Ken Foxe FOI 2020/0341

No.	Date of Record	Brief Description	Grant/Part Grant/Withhold	Relevant Sections of the Act
4	12/10/2020	Attachment to Record 3 - to email 20/10/09 1340	Grant	
29	31/10/2020	Attachment to Record 28 - EY 1GC DOT Update and Confirmation 29 Oct 2020 v1	Grant	
34	04/11/2020	Attachment to Record 33 - 1GC Data Group Meeting 5 Nov 2020 v0.1	Grant	
37	04/11/2020	Attachment to Record 36 - 1GC Governance 4 Nov 2020 v0.7	Grant	
38	04/11/2020	Attachment to Record 36 - 1GC Data Group Meeting 5 Nov 2020 v0.7	Grant	
41	06/11/2020	Attachment to Record 40 - EY 1GC DOT Update 2 Deck 6 Nov 2020 v1.3	Grant	
42	06/11/2020	Attachment to Record 40 - 1GC Insights Issue 1 - 6 Nov	Grant	
47	09/11/2020	Attachment to Record 46 - 1GC Analysis Direction 9 November 2020 v1 DRAFT	Part Grant	Section 37(1) – Personal Information*
53	12/11/2020	Attachment to Record 51 - 1GC Weekly Programme Report Weeks 1-3 09112020	Grant	
58	12/11/2020	Attachment to Record 57 - Attachment 1GC Analysis Direction 11 November 2020 v1.1 from email 201111 1151	Part Grant	Section 37(1) – Personal Information*
62	16/11/2020	Attachment to record 61 - 1GC Priority Use Cases v1.1 from email 201116 1259	Grant	
67	16/11/2020	Attachment to Record 66 - EY 1GC DOT Update 3 Deck 13 Nov 2020 v1	Part Grant	Section 37(1) – Personal Information*
69	16/11/2020	Attachment to Record 68 - Priority Use Cases 16 Nov 2020 v1.2 from email 201116 1518	Grant	

71	17/11/2020	Attachment to Record 70 - 1GC Case Levelling Analysis 16 November 2020 v1 from email 201116 2254	Grant	
75	17/11/2020	Attachment to Record 74 - 1GC DOT Interim Update 4 Deck 18 Nov 2020 v1.0	Part Grant	Section 37(1) – Personal Information*
79	19/11/2020	Attachment to Record 78 - 1GC DOT Interim Update	Part Grant	Section 37(1) – Personal Information*
90	20/11/2020	Attachment to Record 89 - Confidentiality Agreement DOH and EY Final for review from email 201120 1112	Withhold	Section 36 (1) (b) and (c) - Commercially sensitive information
95	22/11/2020	Attachment to Record 94 - 1GC DOT Update 5 Deck 23 Nov 2020 v0.2 Draft Issued from email 201121 1808	Part Grant	Section 37(1) – Personal Information*
96	22/11/2020	Attachment to Record 94 - 1GC DOT Update 5 DRAFT Deck 23 Nov 2020 v0.4 shared	Part Grant	Section 37(1) – Personal Information*
98	23/11/2020	Attachment to Record 97 - 1GC DOT Update 5 Deck 23 Nov 2020 v0.9 Shared from email 1135	Part Grant	Section 37(1) – Personal Information*
99	23/11/2020	Attachment to Record 97 - 1GC DOT Update 5 Deck 23 Nov 2020 v0.10 Shared	Part Grant	Section 37(1) – Personal Information*
104	24/11/2020	Attachment to Record 103 - Midterm Analysis 23 Nov 2020 v1 Shared	Part Grant	Section 37(1) – Personal Information*
109	25/11/2020	Attachment to Record 108 - C-19 Data Analytics Insights to Date 25 Nov 2020 v1.6 from email at 0900	Part Grant	Section 37(1) – Personal Information*
111	25/11/2020	Attachment to Record 110 - Confidentiality Agreement DOH and EY Final For Signature from email 201120 1712	Withhold	Section 36 (1) (b) and (c) - Commercially sensitive information
112	25/11/2020	Attachment to Record 110 - Confidentiality Agreement DOH and EY Final PP Signature from email 201123 1925	Withhold	Section 36 (1) (b) and (c) - Commercially sensitive information

113	25/11/2020	Attachment to Record 110 - Confidentiality Agreement DOH and EY Final for review (EY mark up) 2 from email 201125 1734	Withhold	Section 36 (1) (b) and (c) - Commercially sensitive information
114	25/11/2020	Attachment to Record 110 - Confidentiality Agreement DOH and EY Final for review (EY mark up) from email 201125 1734	Withhold	Section 36 (1) (b) and (c) - Commercially sensitive information
116	26/11/2020	Attachment to Record 115 - C-19 Data Analytics Insights to Date 25 Nov 2020 v1.7 from email 201125 1918	Part Grant	Section 37(1) – Personal Information*
117	26/11/2020	Attachment to Record 115 -C-19 Data Analytics Insights to Date 25 Nov 2020 v1.8 from email 201126 0754	Part Grant	Section 37(1) – Personal Information*
121	26/11/2020	Attachment to Record 120 - C-19 Data Analytics Insights to Date 26 Nov 2020 v3 Final	Part Grant	Section 37(1) – Personal Information*
123	26/11/2020	Attachment to Record 122 - C-19 Data Analytics Insights to Date 25 Nov 2020 v1.11 from email 201126 1440	Part Grant	Section 37(1) – Personal Information*
125	26/11/2020	Attachment to Record 124 - C-19 Data Analytics Insights to Date 26 Nov 2020 v3 Display Only	Part Grant	Section 37(1) – Personal Information*
128	28/11/2020	Attachment to Record 127 - C-19 Data Analytics Insights to Date 26 Nov 2020 v2.1 (Core)	Withhold	Section 15(1)(d) - Information already in the public domain - https://assets.gov.ie/99307/c14f50b5-926c-4b57-8a6f-e5c905db33e0.pdf
132	30/11/2020	Attachment to Record 131 - Confidentiality Agreement DOH and EY Final PP Signature 2 from email 201120 0825	Withhold	Section 36 (1) (b) and (c) - Commercially sensitive information
133	30/11/2020	Attachment to Record 131 - Confidentiality Agreement DOH and EY Final for review (EY mark up 2) from email 201130 0825	Withhold	Section 36 (1) (b) and (c) - Commercially sensitive information
136	30/11/2020	Attachment to Record 135 - 1GC Analysis of PUP Impact DRAFT 24 Nov 20	Grant	

138	30/11/2020	Attachment to Record 137 - 1GC Priority Use Case Analysis	Grant	
141	01/12/2020	Attachment to Record 140 - Effects of human mobility restrictions on the spread of COVID-19 in Shenzhen, China: a modelling study using mobile phone data	Withhold	Section 15(1)(d) Information already in the public domain - https://pubmed.ncbi.nlm.nih.gov/32835199/
151	07/12/2020	Attachment to Record 150 - 1GC Weekly Programme Report	Grant	
153	07/12/2020	Attachment to Record 152 - WEEK 7 FINAL1GC DECK WEEK 7 (4 DEC)	Grant	
158	07/12/2020	Attachment to Record 157 - 1GC Priority Use Cases WC0412	Grant	
184	11/12/2020	Attachement to Record 183 - WEEK 8 1GC INTERIM DECK FINAL (THURS 10 DEC)	Grant	
189	11/12/2020	Attachment to Record 188 - 1GC Weekly Programme Report 20201211 DRAFT v0.2	Grant	
192	14/12/2020	Attachment to Record 191 - WEEK 8 1GC DECK FINAL (FRI 11 DEC)	Grant	
207	18/12/2020	Attachment to Record 206 - WEEK 9 1GC FINAL DECK (FRI 18 DEC) Final 3	Part Grant	Section 37(1) – Personal Information*
209	18/12/2020	Attachment to Record 208 - 1GC Weekly Programme Report 20201218 DRAFT v0.2	Grant	
211	21/12/2020	Attachment to Record 210 - 1GC Week 9 Level 5 and now health metrics from email 201218 1748	Grant	
213	21/12/2020	Attachment to Record 212 - C-19 Data Analytics Insights - selected data 21 Dec from email 1131 201221	Withhold	Section 28(1) Meetings of the Government
218	21/12/2020	Attachment to Record 217 - C-19 Data Analytics Insights SC2 21 Dec 2020 v1 Submitted	Withhold	Section 28(1) Meetings of the Government
224	22/12/2020	Attachment to Record 223 - Daily RAG 22 DEC 2020 Shared	Grant	

226	23/12/2020	Attachment to Record 225 - WEEK 10 1GCC-19 Data Analytics Insights 23 DEC FINAL from email 1140	Grant	
228	29/12/2020	Attachment to Record 227 - Daily RAG 29 DEC	Grant	
231	30/12/2020	Attachment to Record 229 - Daily RAG 30 DEC	Grant	

* Information redacted on this ground relates to outbreak data at county level in specific settings on a specific date, thereby potentially identifiable.

Roinn an Taoisigh
Department of the Taoiseach

16 October, 2021

Mr Ken Foxe
ken@righttoknow.ie

Our ref: FOI/2020/0341

Dear Mr Foxe,

I write in relation to your Freedom of Information request received by this department for:

- *a record of how much was paid to EY Consulting for advice/research relating to the Covid-19 pandemic.*
- *a copy of the tender or contractual documents relating to the provision of that service by EY for the Department.*
- *a copy of the business case, brief or guidelines prepared for EY relating to the provision of that service for the Department.*
- *copies of all emails between the individual with oversight for this research project and EY with regard to their work/research.*

Please find attached a revised schedule and records for release. 25 additional records are being released in full and a further 17 records are being partially released.

Please note that a number of records contain a range of proposals on how the 1 Government Centre (1GC) project could run - including on oversight structures, data sources and uses and stakeholders. These early records were introductory, showing the breadth of data sources available and how they are being used in other geographies. This does not mean they were considered for Ireland. These documents were a springboard for a frank discussion on establishing the operational role of the 1GC project. Not all avenues outlined in the documents were agreed upon or actioned, and were tabled for the purposes of debate only. The records should be read in this context.

Specifically, record 4 shows the 1GC working principles and state a "Default assumption that 1GC only has access to aggregated and not citizen data". This principle of using aggregate data was applied for all 1GC use cases, e.g.:

- Covid-19 case data is at an aggregate county and LEA level, similar to that shared on Geohive
- Garda fine data is at an aggregate by fine type and the same as shared on the Dept of Justice website
- Dublin footfall and road vehicle data is a count per major street and similar to that shared on the respective government websites

- Banking payments data was at a "by type" level, similar to what is shared by the periodic central bank reports

The records also reference a potential Social Distance Index for Ireland, which looked to identify locations with a high congregation of people. This use case was not progressed.

Throughout the pandemic, restrictions have been introduced and eased, as appropriate, to address the public health risk at a given time taking account of public health, social and economic impacts. As part of this process, and to inform decision-making, information from a variety of sources is used. Government considers carefully all of the information and facts obtained with a view to making its decisions. Therefore, the insights produced do not provide a complete picture of the considerations of Government in its decision making. At times they remained a work in progress and did not capture all the relevant data available and insights may have been interim/incomplete or still in draft form. Insight reports were accompanied by oral briefings providing clarifications and context not captured in the records. The records should be read in this context.

Records 47, 58, 67, 75, 79, 95, 96, 98, 99, 104, 109, 116, 117, 121, 123, 125, 207

These records are being partially granted as they contain personally identifiable information. Specifically, where there are references to outbreaks/cases of fewer than 5, identified in a single county, setting type and week, this has been redacted. While the data only includes a count and not any personal details, you could still feasibly identify the setting and therefore possibly the individuals involved in this report. Therefore, any outbreak data involving fewer than 5 outbreaks/cases has been redacted.

Records: 90, 111, 112, 113, 114, 132 and 133

These records are considered exempt under section 36 as they contain: commercial or other information whose disclosure could reasonably be expected to result in a material financial loss or gain to the person to whom it relates; and information whose disclosure could prejudice the conduct or outcome of negotiations of the organisations to whom they relate.

The records withheld under this ground refer to drafts of the confidentiality and non-disclosure agreement signed by EY and the Department of Health for the sharing of data by the Department of Health with EY. The drafts would reveal information about the negotiations between the parties. The Department of the Taoiseach was not a party to this or included in the agreement. The sharing of these documents from the Department of Health to this Department does not negate the sensitivity of the material contained within or the confidential nature of the records.

In assessing the application of Section 36 (3), the public interest factors that were considered in favour of release of these records were:

- the need for openness and transparency about the work of the Department which is envisaged under the FOI Act;
- COVID-19 has had, and continues to have, a very significant impact on the social and economic life of the country and the people who live here and the need for the public to have access to information in the possession of Government Departments in relation to matters which affect them;
- the need for the public to be well informed about information held by Government Departments to stimulate public debate and commentary on important public policy issues;
- the need to provide accountability regarding expenditure of public funds, the work of public officials and the work of companies engaged by Government Departments to assist them.

The public interest factors that were considered against release of these records were:

- the records relate to a contract between third parties i.e. the Department of Health and EY and the information contained therein would not provide any insights into the work of the Department or on any important public policy issues;
- the risk of a prejudicial effect on any future contractual agreements or arrangements that EY or the Department of Health may wish to enter in the future if the contents of this contract become public knowledge;
- EY's competitors becoming aware of the details of a contract it has and using this to their advantage in the future thus resulting in a negative effect on EY's business or competitive position;
- the FOI Acts itself recognises that the right to access records held by Government Departments is not unlimited and is subject to the exemption grounds specified.

I can confirm EY were consulted on these records and consider them to be commercially sensitive. Having taken the factors for and against release into account it is considered that the public interest would on balance be better served by refusing rather than by granting the request in relation to these records.

Should you have any questions or concerns regarding the above, please contact me at the email below.

Yours sincerely,

[redacted]
Martina Shaughnessy
Social Policy and Public Service Reform Division

[redacted]

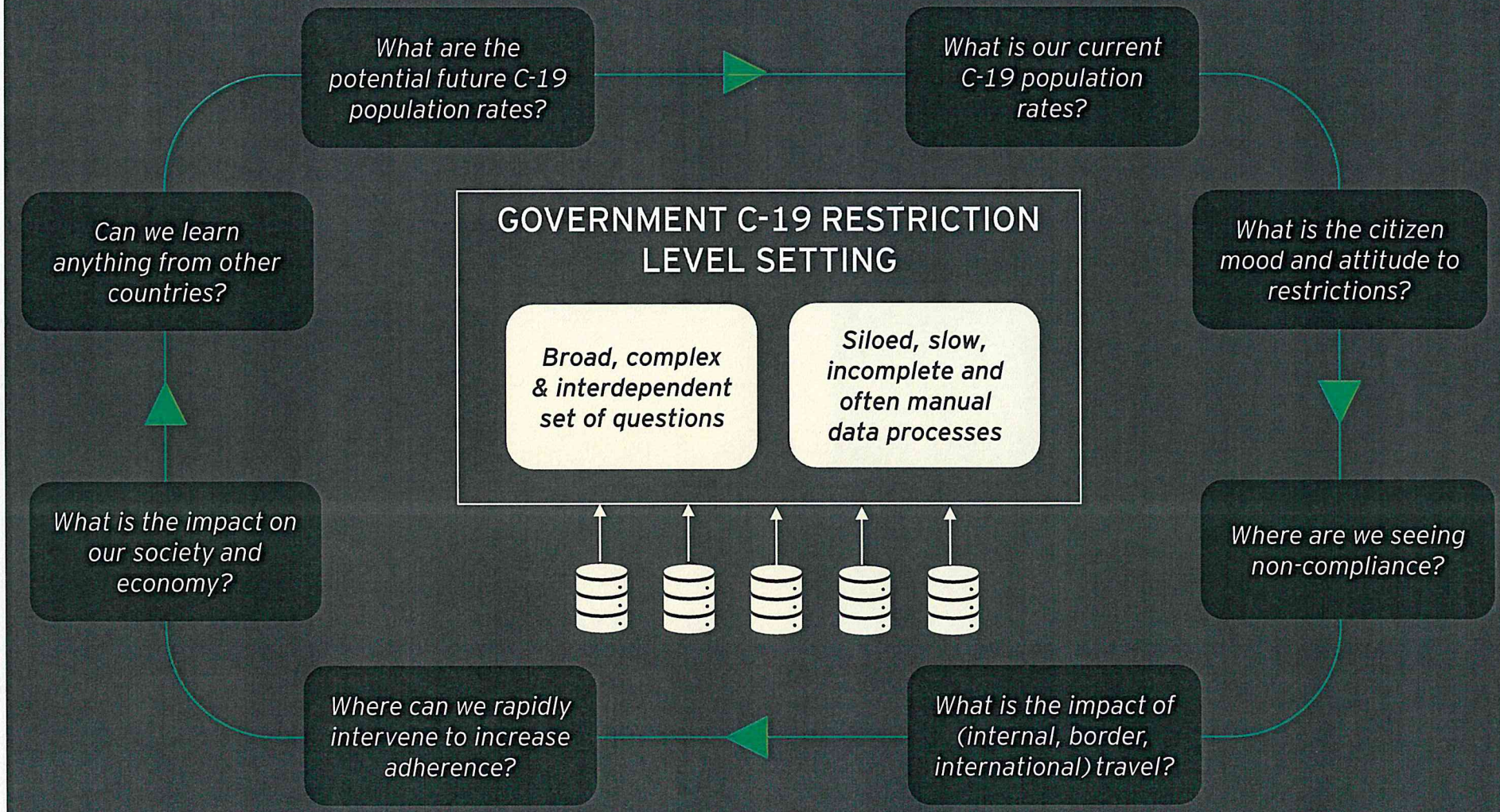
C19 One Government Centre (1GC)

Discussion Document

October 2020

EY
Building a better working world

Setting the C-19 Restriction Level for Ireland; Balancing a broad and complex set of questions with inadequate data



C19 One Government Centre (1GC) providing a consolidated view of performance and directing activities

C19 1GC

A central team and platform integrating data and insights across a variety of internal and external sources to coordinate a whole of government approach to tackling the crisis

Improving visibility with a cross government and society view of Ireland's performance in tacking this crisis

SURVEILANCE

Use computer vision on CCTV to assess location compliance to social distancing. Direct enforcement activities to address

Access | Complex | Private

CITIZEN MOVEMENT

Understand citizen social distancing and travel patterns through using mobile data

Access | Complex | Private

ECONOMIC / SPEND

Combine national forecasts with sector and citizen credit and spend status to inform economic position

Access | Complex | Private

SENTIMENT

Use social media and select focus groups to understand public mood and to inform compliance activities

Access | Complex | Private

INTERNATIONAL

Link in with NPHET and obtain international research good practice to identify learning opportunities

Access | Complex | Private

TRANSPORT

Understand performance and compliance of public transport and private vehicles. Target higher risk flights

Access | Complex | Private

TAX

Understand the impact on public purse. Specific focus on higher risk sectors. Quantify cross border implications

Access | Complex | Private

HEALTH

Incorporate HSE existing C19 track and trace and health capacity assessment information

Access | Complex | Private

WELFARE

Assess the changing impact on state welfare by citizen group and location. Add food bank ongoing demand

Access | Complex | Private

Directing the cross government response

- NPHET Level Recommendations
- Citizen Communications
- Tax and Welfare Interventions
- Compliance Enforcement
- Education and Transport Policy
- Targeted Eircode Interventions

EY

There is a wealth of data available with varying ease to access and privacy concerns

EASE OF COLLECTION

MOBILE DEVICE DATA	▪ Citizen location and movement ▪ Citizen app and service usage ▪ Location-based population density	▪ Citizen social network and connections ▪ Location based population variations / movement
PRIVATE SECTOR TRANSACTION DATA	▪ Card spend transactions by type and area ▪ Credit score and lending by customer type and region	▪ Tourist flight and hotel details ▪ Retail point of sale information ▪ CCTV (private and public sector)
PUBLIC SECTOR AND SEMI-STATE DATA	▪ C-19 enquiries, tests, cases, admissions and mortality ▪ Detailed disease lab results ▪ Health system capacity ▪ GP Referrals and appointments ▪ PCRS Pharmacy prescriptions ▪ Use of mental health and counselling	▪ Public transport usage, including road tolls ▪ Welfare Payments inc Emergency and tax payments ▪ Crime rates by region ▪ CBI CCR citizen debt levels ▪ Births, marriages and divorces ▪ Govt worker absenteeism
OPEN AND PUBLICLY AVAILABLE DATA	▪ GeoHIVE cases by electoral area, admissions, transmission mode categories ▪ Mobile operator macro level population movement by transport, retail, etc ▪ Social Medial sentiment	▪ DataGov with c 25 datasets covering C-19 and wider government data, e.g. traffic (inc border), emergency payments, etc ▪ C-19 cases, deaths and testing international benchmarks

PRIVACY CONCERNS

EY

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Directing the cross government response

- NPHET Level Recommendations
- Citizen Communications
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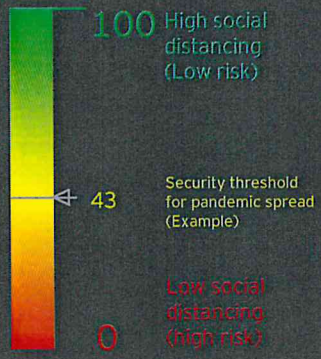
- Compliance Enforcement
- Education and Transport Policy
- Targeted Eircode Interventions

EY Social Distance Index (SDI) provides a rolling 15 minute assessment of social distancing adherence

Mobile data can help us understand citizen behaviours (social distancing, crowd hotspots and travel). Clearly, care is required to balance with citizen rights. EY completed a successful POV for London to assess social distancing using anonymised mobile data for registered citizens. We propose to start with an Irish Social Distance Index while exploring other opportunities with mobile operators.

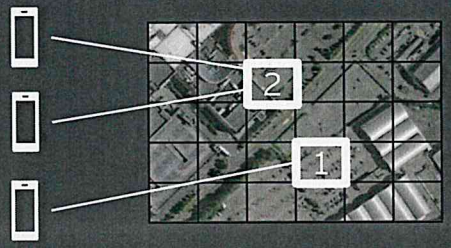
SDI

SDI is calculated for an area and a period of time

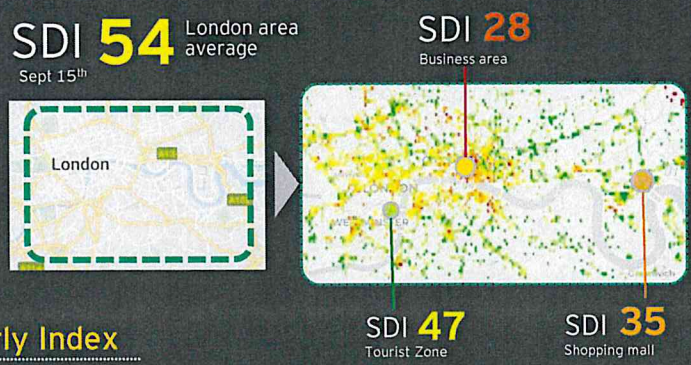


Using app data to link to areas

Uses mobile data from citizens who have registered for specific apps to count phones in 25m tiles every 15 mins

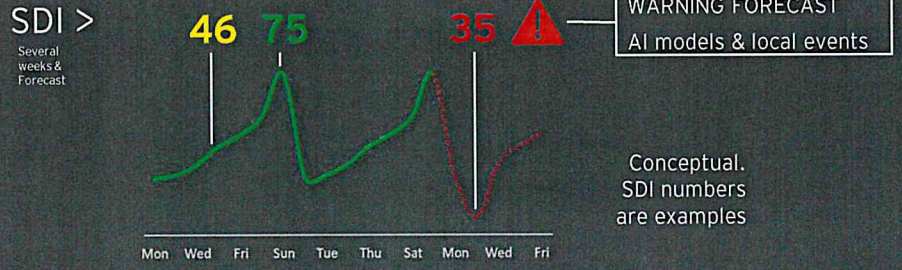


City SDI example during normal time



Historical information & Forecasts

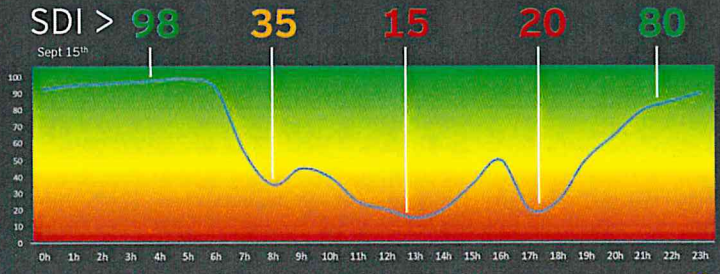
Institutions can track SDI history and also anticipate potential concentrations that would need action to prevent pandemic spread.



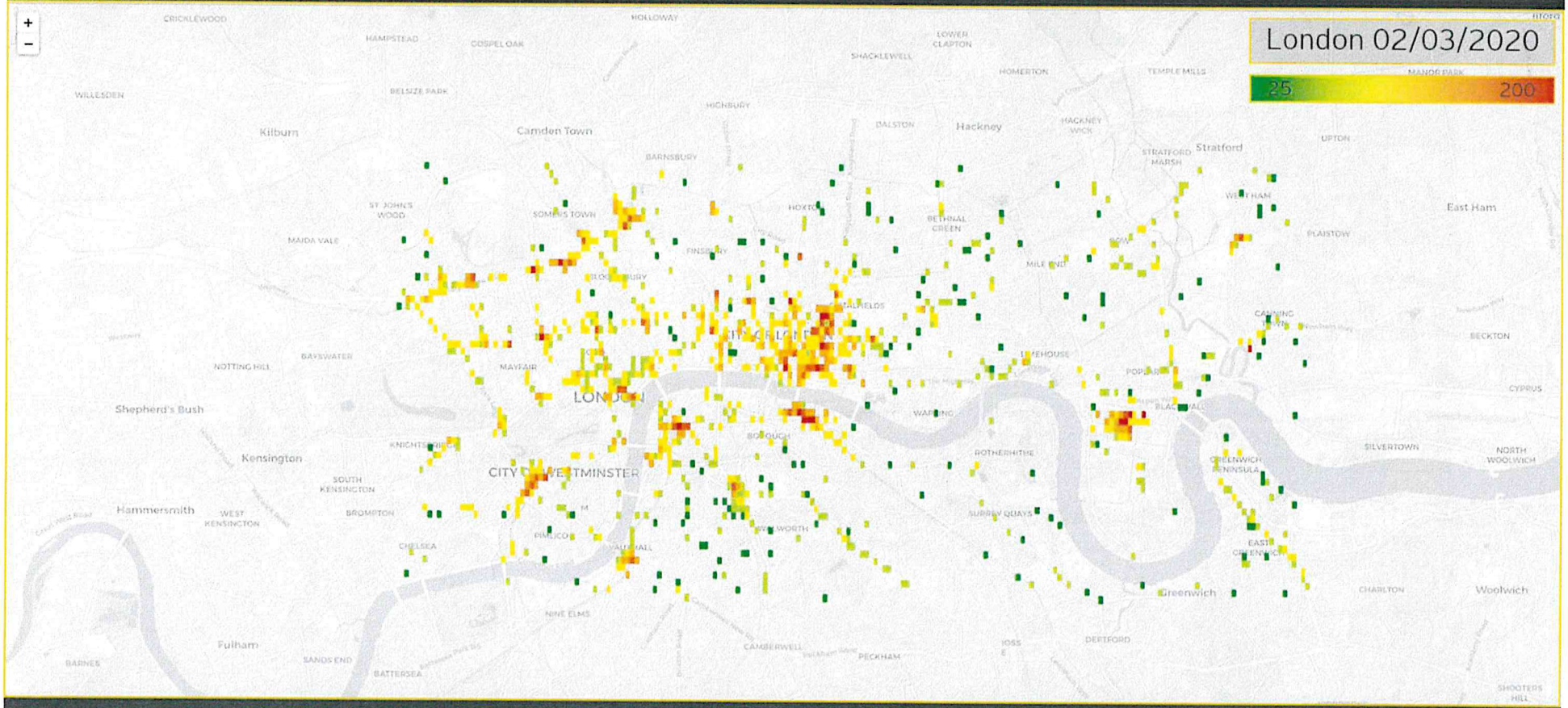
Conceptual. SDI numbers are examples

Hourly Index

SDI reveals social distancing zoomed up to 15' intervals on any area.



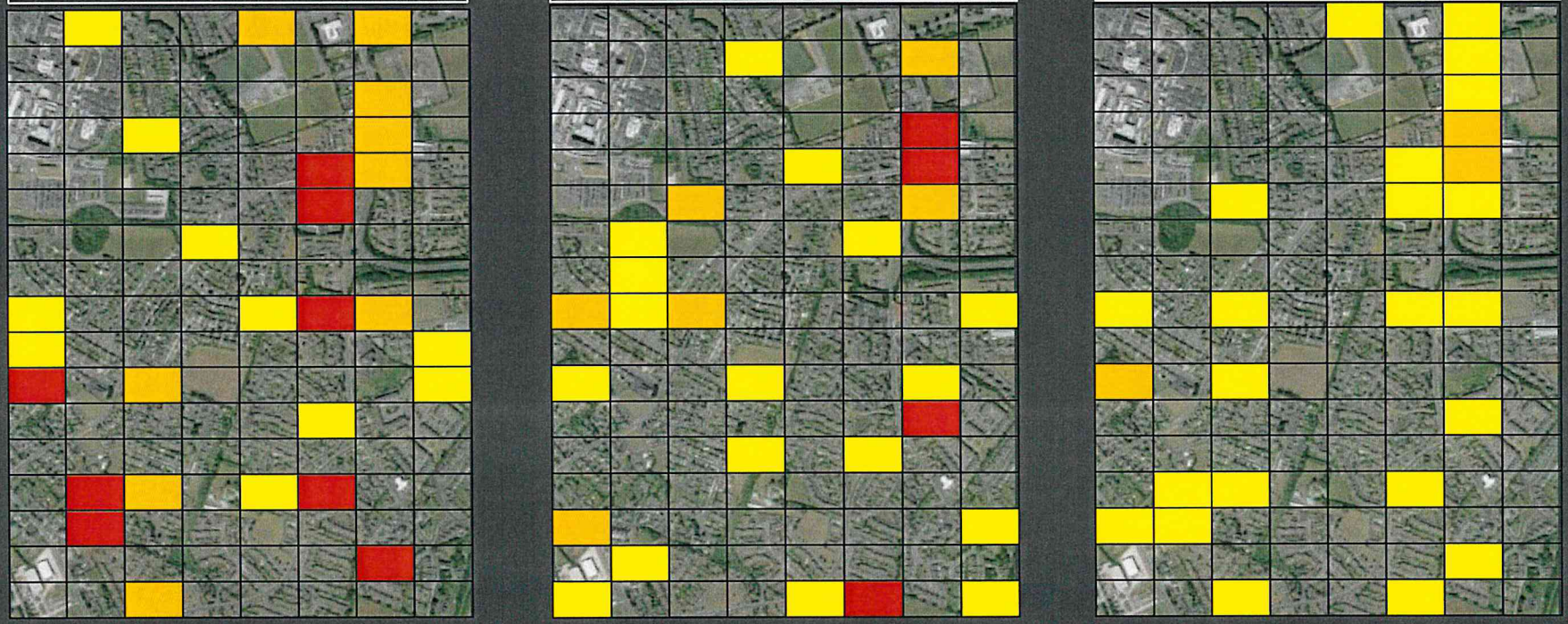
Social Distance Index London Demonstration



Combining C-19 prevalence and SDI at Eircode level to better target interventions and identify higher risk areas

Combining C-19 prevalence information with previous and current restrictions adherence (starting with Social Distancing) should inform disease spread and may help us get ahead of future outbreaks

Disease Prevalence × Social Distancing Adherence → Potential Future Risk Areas



Potential to also add "tile-level" location travel information from mobile operators to explain cross country spread

Other counties are using data and digital to manage their response to C-19 in different ways

Spread Awareness and Enforcement	South Korea	Publishing detailed case location information to inform citizen decisions
	Singapore	Requiring citizen verifications at specific points to validate compliance
	China	Using apps and individual C-19 Status to restrict access
Spread Prediction	California	Using of AI to predict outbreaks and directing response / hospital capacity planning accordingly
Restriction Level Setting by area and Policy Design	Germany	Using location aggregated mobile data for population density and movement to inform policy development
Tourist Compliance	Thailand	Mandatory usage of tracking app for new arrivals into country

We propose a rapid one-week design phase to then begin to stand up 1GC in a series of two week agile sprints

1 week → 4 weeks → 2 week sprints

1. Design and Plan 1GC

- Run design session to confirm requirement and prioritise
- Shape related data / insight requests
- Meet with government and stakeholder organisations to explain the ask and plan delivery
- Meet with Ireland data teams (GeoHive, Open Data, etc) to confirm available data today and approach to integrating
- Meet with mobile operators and banks to explain the ask and plan delivery
- Architect the 1GC MSFT Azure Insight Platform (inc data security)
- Define the 1GC people, process, governance, location and infrastructure requirements

2. Stand Up 1GC with Initial Insights

- Stand up the 1GC location and insight platform
- Incorporate the initial data feeds (from government and social media)
- Stand up 1GC processes and establish formal connections across government and key stakeholders
- Mobilise the SDI Ireland team and confirm the detailed requirement
- Confirm progress with mobile operators and banks to provide required data
- Run first 1GC insight overview session to provide consolidated view across government
- Validate priorities for next 1GC sprint

3. Expand and Iterate 1GC

- Incorporate new (government, SDI, mobile operator, bank, etc) data and analysis into 1GC Insight Platform
- Consolidate into overarching 1GC viewpoint and run related insight sessions
- Support specific government research requests and input to level recommendations
- Input to government communications approach
- Validate priorities for next 1GC sprint

Iterative and evolve direction with changes in Ireland and priorities, e.g. Christmas, Sporting Finals, winter flu, (hopefully) vaccine rollout, Brexit etc

EY

Proposed next steps

Validate the objectives and requirements

Engage to develop the detailed plan and (Government and EY) joint resourcing

Mobilise the team and start to stand up 1GC

C19 One Government Centre (1GC) Update and Phasing Confirmation

October 2020

EY
Building a better working world

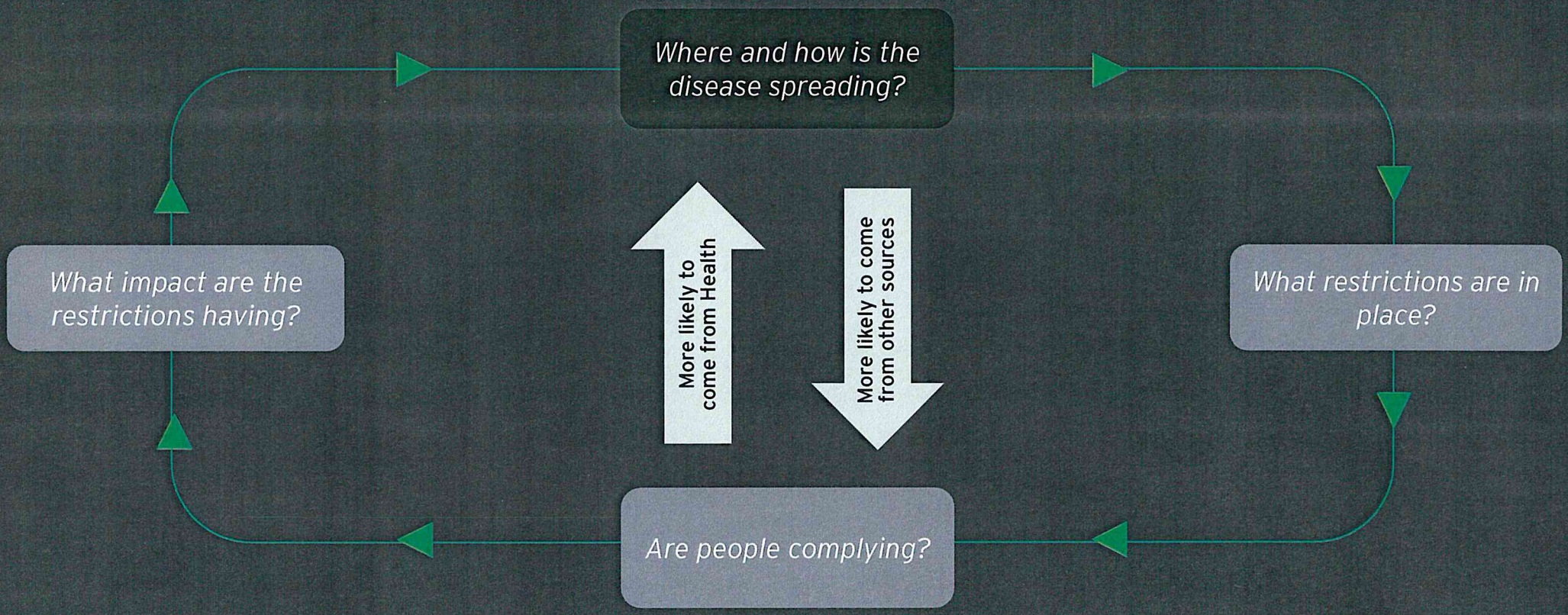
Agenda

- Key Questions to Answer
- Overview of Restriction and Insight Sources
- Phasing of Briefing Schedule and Alert Insights
- Agreement on DoT and wider Government Requirements to Deliver
- Immediate Next Steps

Appendix

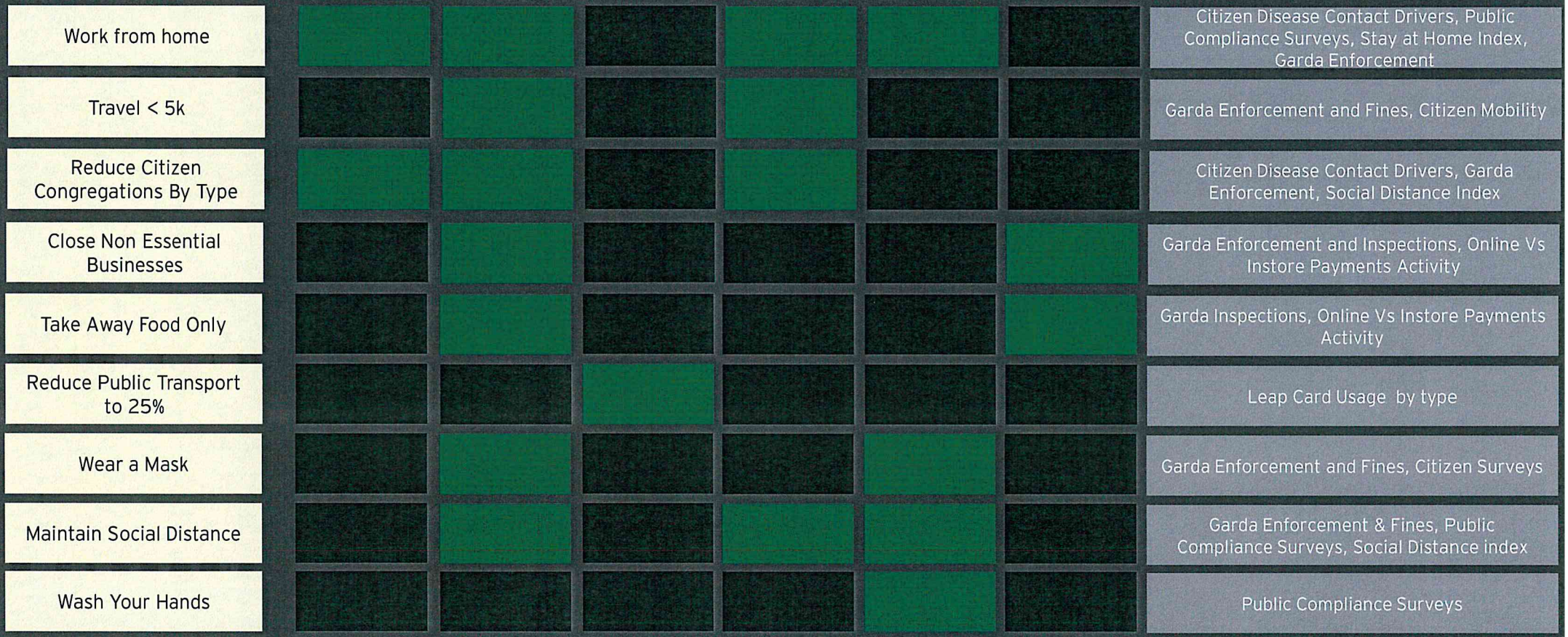
- Progress Report
- Detailed Restriction to Insight Mapping
- Detail of Health Insights

Answer four key questions to support government decision making



Proposed insight to inform the status and impact for each Restriction

Key Source



How insights come together to help inform Restriction decisions (illustrative example for Meath)

EXAMPLE QUESTIONS

ARE HOUSE GATHERINGS DRIVING DISEASE SPREAD?

ANALYSIS OUTPUT

- House Gatherings are responsible for 17% of all identified transmissions. This rises to 45% in Meath
- There is a strong correlation between House Gathering non-compliance measures and disease spread by small area
- We are also seeing a deteriorating trend for disease spread in areas with house gatherings

EVIDENCE

- Track and Trace identifying House Gatherings as key source of transmission
- Public Compliance Surveys showing Meath with higher cases not complying
- Mobile Insights showing higher movement and distancing in Meath
- Garda Enforcement more active in higher rate areas, inc Meath
- Disease prevalence trend and early indicator increasing

CONCLUSION

THE EVIDENCE WOULD SUGGEST YES. MORE IS ALSO REQUIRED IN SPECIFIC CITIES COUNTIES TO ENSURE COMPLIANCE

EY

Briefing Schedule Incorporating Restrictions and Health

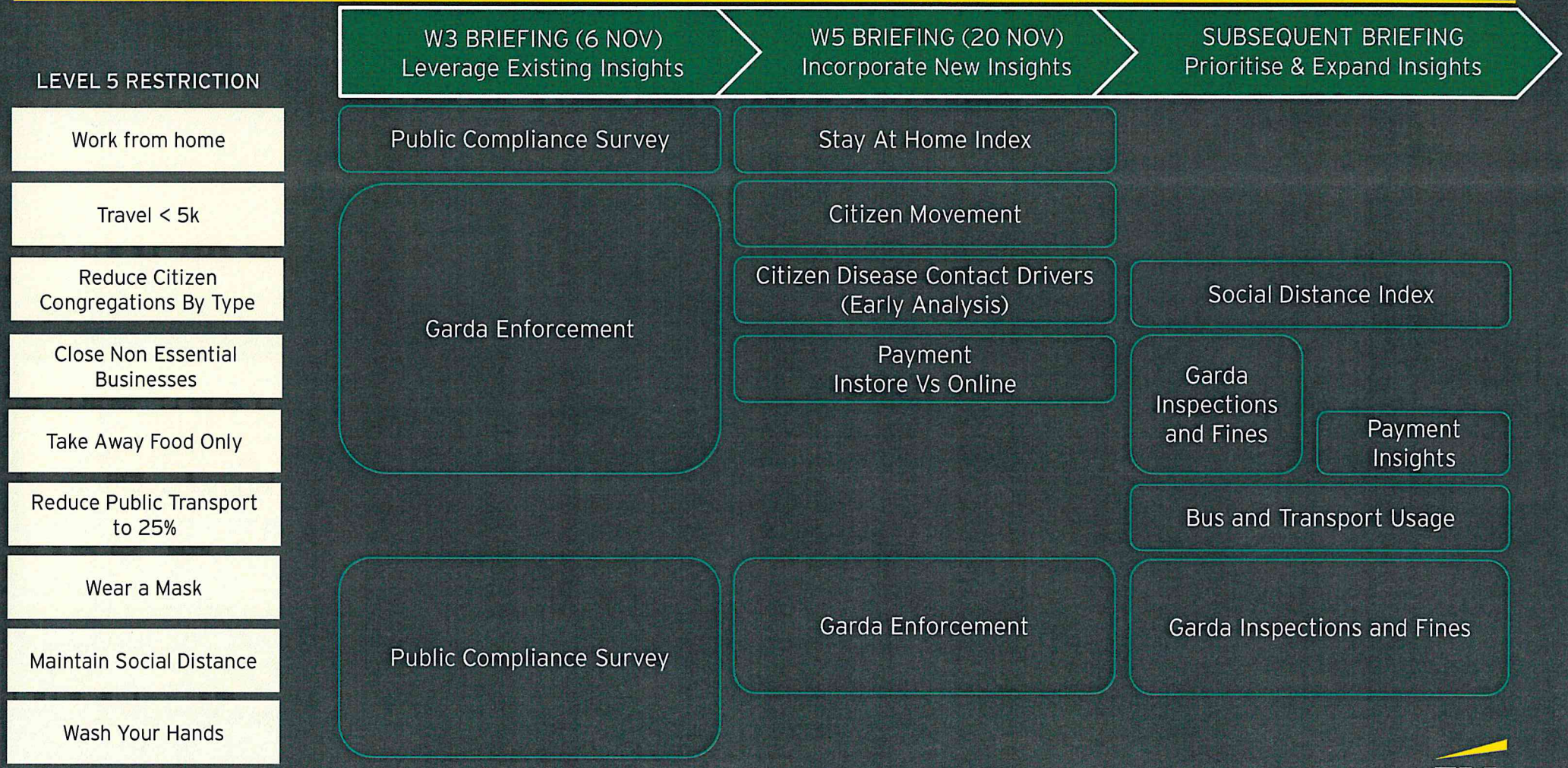
Potential to Accelerate

Standing up regular briefings in Room 350 and alerts to update key stakeholders on current status and related insights

	W3 BRIEFING (6 NOV) Leverage Existing Insights	W5 BRIEFING (20 NOV) Incorporate New Insights	SUBSEQUENT BRIEFING Prioritise & Expand Insights
Adherence to and Impact of Restrictions	Public Attitudes and Compliance Survey	Stay at Home Index; Citizen Movement	Social Distance Index; Testing Show No Show
	Garda Enforcement	Industry Compliance (Pay Instore vs Online); Garda Activity (TBC)	Garda Business Inspection and Fixed Notice
Disease Prevalence and Spread	Disease Prevalence and Testing Rates	Citizen Disease Contact Drivers (Early Analysis)	Citizen Positivity Drivers; Disease Contact Drivers
	Health Capacity Implications; Country Comparisons (NI Detail)	Citizen Reported Symptoms (e.g. App, FB Survey)	Citizen Symptoms (Pharma, HSE Web Search)
Wider Societal Impact (Lower Priority)	Welfare and Public Service; Economic Impact		Bus Usage (e.g. School kids); Public Sentiment (if required)

EY

Briefing Schedule By Restriction Type



What we need DoT and other government departments to deliver

REQUIREMENT	USE CASES	STATUS	DESCRIPTION
Align with NEPHT	All Health Related	For Discussion	• Requirement to understand health findings and rationale for recommendations • Input to ongoing Use Case prioritisation • Potential attendance at weekly briefing
Access to appropriate mobility data	• Social Distance Index • Stay at Home Index • Citizen Mobility	Action Required by DOT	• DOH or other Government Dept to continue and expand 3mobile agreement • Note the current agreement is limited (not including Social Distance) and expires soon • Review and recommend whether to extend for other mobile operators after Week 5
Stand Up Appropriate Analytics Environment within HSE	Many	Team Priority to Resolve	• Making good progress with HSE • Needs continued prioritisation and leveraging existing infrastructure to deliver within required timeframe
Access to Track and Trace detailed data	• Citizen Disease Contact Drivers • Citizen Positivity Contact Drivers • Citizen Test Show No Show Drivers	Team Priority to Resolve	• Making good progress with HSE • Proposed approach is for1GC Data Scientists to work directly T&T insight team to deliver
Access to public survey data	• Public Attitudes and Compliance • Citizen Reported Symptoms	Team Progressing	• DOH to share Amárach public opinion survey • University to gain access to detailed FB survey data
Financial Services companies create and share payment related Use Cases	Business Compliance by Industry (Instore Online)	Team Progressing	• AIB and VISA keen to support • Confirming with CBI approach, including data sharing agreement
Government Departments to create and share specific Use Cases	Many	Team Progressing	• Already have access to GeoHive and CSO • Confirming specific approach with various government departments, including any data governance and sharing

Next steps

- Deliver prioritised Use Cases (including with input from appropriate stakeholders)
- Stand Up Microsoft Azure insight Platform with HSE
- Stand Up Room 350 and MSFT Azure Hub
- Agree format and cadence for Room 350 Briefings and Alerts

WHAT ELSE IS MISSING?

Appendix

Update On Week 2 Progress

- Established and running PMO and governance
- Agreed SOW for first five weeks with HSE and now being signed
- Agreed and implementing related contract management approach with HSE
- Established Room 350 and Microsoft Hub delivered
- Agreed with DoT Room 350 attendance and C-19 compliance reporting approach
- Reviewed and Prioritised Use Cases versus each Restriction
- Met with Revenue, DEASP, Garda, CSO, HSE, DOH, OSI, CBI, VISA, AIB and 3mobile to confirm detailed requirements and shape approach to deliver
- Completing gap analysis and detailed definition for all priority Use Cases, covering the following data sources:
  - Aggregated Mobile and App data
  - Payments information
  - Public surveys
  - Public Sector information (included CSO and GeoHive)
- Completed detailed assessment of suitable data to use for Social Distance Index for Ireland
- Agreed draft governance approach with HSE and CSO for standing up Insight Platform
- Started workshops with HSE to validate solution architecture and rapid approach for delivering
- Completed first draft of C-19 Insight Register (and will now expand for additional government departments)
- Started to define briefings approach, including cadence with governance departments to receive related inputs

Building on existing HSE Insights to better understand drivers of C-19 spread by region, citizen type and contact type

C-19 APP & HSE WEB

How are you feeling today?

Citizen Location, Response Rates, Response, Web Search

MAINTAIN SEPARATION

C-19 TRACK AND TRACE

1. Inform citizen they are a close contact of a confirmed case, require isolation, arrange testing
2. Confirm case outcome and next steps
3. Complete Contact Tracing to identify close contacts

Citizen Location, Job, Age, Ethnicity — **Testing Show / No Show** — **Testing Outcome** — **Contact Citizen Characteristics and Contact Type**

APPLY DATA ANALYSIS (INC UNSTRUCTURED TEXT ANALYTICS) TO ANSWER KEY QUSTIONS

C-19 TRACK AND TRACE

What are the citizen characteristics predicting no shows for testing? How is that changing over time? Does is align with the wider compliance and attitudinal information? Are there higher risk (of having C-19 or being in a vulnerable group) no shows we want to prioritise?

What are the citizen characteristics predicting positive testing? How is that changing over time? Does it align with wider prevalence insights?

(IMMEDIATE PRIORITY)
Where are the contacts for positive cases happening? How does this align with our prioritised restrictions?

C-19 APP & HSE WEB

Is there a relationship between App response rate and regional attitudes? Is there a relationship between App symptoms rates and subsequent disease prevalence?

Phase 0 – insights aligned to restrictions

Restriction	Data Required	Source	RAG	Phase	Type
People are asked to stay at home. People should work from home unless providing an essential service for which their physical presence is required	Mobile data	Three	High	Phase 0	New
People will be permitted to exercise within a radius of 5 km of their home	Mobile data	Three	High	Phase 0	New
	Corss border spend patterns	AIB/VISA/CBI	High	Phase 0	New
	Point of Sale	AIB/VISA/CBI	High	Phase 0	New
There will be a penalty for movement outside 5km of home, with exemptions to this for essential work and essential purposes	Mobile data	Three	High	Phase 0	New
Schools, early learning and childcare services will continue to remain open	School outbreaks	HSE	High	Phase 0	Co-Develop
	Mobile phone data usage	Three	High	Phase 0	New
Non-contact training can continue for school aged children, outdoors in pods of 15. All other training activities should be individual only, with some exemptions	Mobile data	Three	High	Phase 0	New
No social/family gatherings should take place, with the exemptions to this for weddings and funerals	Mobile data	Three	High	Phase 0	New
	Contact tracing	HSE	High	Phase 0	Co-Develop
It is possible to meet with one other household in an outdoor setting which is not a home or garden, such as a park, including for exercise	Mobile data	Three	High	Phase 0	New
	Contact tracing	HSE	High	Phase 0	Co-Develop
There should be no organised indoor or outdoor events	Contact tracing	HSE	High	Phase 0	Co-Develop
	Mobile data	Three	High	Phase 0	New
Essential retail and essential services will remain open	Mobile data	Three	High	Phase 0	New
Public transport will operate at 25% capacity for the purposes of allowing those providing essential services to get to work [School transport unaffected]	Mobile data	Three	High	Phase 0	New
In line with current NPHET advice in respect of Level 5, professional, elite sports and inter-county Gaelic games, horse-racing and greyhound racing can continue behind closed doors	Mobile data	Three	High	Phase 0	New
Bars, cafes, restaurants and wet pubs may provide take-away and delivery services only. Wet pubs in Dublin remain closed	Mobile data	Three	High	Phase 0	New
Hotels, guesthouses and B&Bs may remain open, but only to support provision of essential services	Mobile data	Three	High	Phase 0	New
Those aged over 70 and the medically vulnerable are advised to continue to exercise personal judgement. It is recommended that they stay at home as much as possible, limit engagement to a very small network for short periods of time, while remaining physically distanced. When taking exercise outdoors, it is important to maintain 2 metres distance from others and wash hands on returning home. It is recommended to shop during designated hours only, while wearing a face covering, and to avoid public transport	Mobile data	Three	High	Phase 0	New
Museums, galleries and other cultural attractions will remain closed	Mobile data	Three	High	Phase 0	New
Libraries will be available for online services only	Mobile data	Three	High	Phase 0	New
Outdoor playgrounds, play areas and parks will remain open with protective measures	Mobile data	Three	High	Phase 0	New
	Contact tracing	HSE	High	Phase 0	Co-Develop
	Local community outbreaks	HSE	High	Phase 0	Co-Develop
Visits to Long Term Residential Care facilities are suspended with the exception of visits required for critical and compassionate circumstances	Mobile data	Three	High	Phase 0	New
	Care facility cases / outbreaks	HSE	High	Phase 0	Co-Develop

Phase 1 - insights aligned to restrictions

Restriction	Data Required	Source	RAG	Phase	Type
People are asked to stay at home. People should work from home unless providing an essential service for which their physical presence is required	Spend - PoS lunch	AIB/VISA/CBI	Medium	Phase 1	New
	Public transport usage. Leap Cards for Students	NTA	High	Phase 1	Curated
	Wage subsidy payments	DEASP	High	Phase 1	Curated
	Use of motorways and main roads (NTA)	NTA	High	Phase 1	Curated
	Internet usage at home	Three	High	Phase 1	New
People will be permitted to exercise within a radius of 5 km of their home	No. of breach notices	Garda	High	Phase 1	Curated
	Social distance index	Three	High	Phase 1	New
	Open data roads	TII	High	Phase 1	Curated
There will be a penalty for movement outside 5km of home, with exemptions to this for essential work and essential purposes	Lunch spend	AIB/VISA/CBI	High	Phase 1	New
	No. of breach notices	Garda	High	Phase 1	Curated
Schools, early learning and childcare services will continue to remain open	Student Leap Card usage	NTA	High	Phase 1	Curated
There should be no visits to other people's homes or gardens	Close contact details	HSE	High	Phase 1	Co-Develop
Extended household for defined categories of individuals to support those at risk of social isolation and/or mental ill-health	Close contact details	HSE	High	Phase 1	Co-Develop
No social/family gatherings should take place, with the exemptions to this for weddings and funerals	Event plans and lists	Facebook	High	Phase 1	New
	Bookings of events, large bills at restaurants	AIB/VISA/CBI	High	Phase 1	New
It is possible to meet with one other household in an outdoor setting which is not a home or garden, such as a park, including for exercise	Event plans and lists	Facebook	High	Phase 1	New
There should be no organised indoor or outdoor events	Event plans and lists	Facebook	High	Phase 1	New
Essential retail and essential services will remain open	Credit / Debit card in city centres / shopping locations	AIB/VISA/CBI	High	Phase 1	New
	Level of online shopping spend	AIB/VISA/CBI	High	Phase 1	New
	Use of motorways and main roads	TII	High	Phase 1	Curated
	Use of public transport	NTA	High	Phase 1	Curated
Public transport will operate at 25% capacity for the purposes of allowing those providing essential services to get to work [School transport unaffected]	Public transport usage	NTA	High	Phase 1	Curated
Bars, cafes, restaurants and wet pubs may provide take-away and delivery services only. Wet pubs in Dublin remain closed	Spending information (Pointof Sales & ATM withdrawls)	AIB/VISA/CBI	High	Phase 1	New
	No. of breach notices	Garda	High	Phase 1	Curated
	Events plans and lists	Facebook	High	Phase 1	New
	Eat in vs takeaway spending	AIB/VISA/CBI	Medium	Phase 1	New
Those aged over 70 and the medically vulnerable are advised to continue to exercise personal judgement. It is recommended that they stay at home as much as possible, limit engagement to a very small network for short periods of time, while remaining physically distanced. When taking exercise outdoors, it is important to maintain 2 metres distance from others and wash hands on returning home. It is recommended to shop during designated hours only, while wearing a face covering, and to avoid public transport	Use of senior travel passes	NTA	High	Phase 1	Curated
	Card transaction locations relative to registered address	AIB/VISA/CBI	Medium	Phase 1	New
Museums, galleries and other cultural attractions will remain closed	Change in public transport patterns near locations	NTA	Medium	Phase 1	Curated
	No. of breach notices	Garda	High	Phase 1	Curated
	Debit/ Credit Card activity near location	AIB/VISA/CBI	High	Phase 1	New
Libraries will be available for online services only	Card activity near location compared to pre restriction levels	AIB/VISA/CBI	High	Phase 1	New
Outdoor playgrounds, play areas and parks will remain open with protective measures	Credit / Debit card spend near location during working hours	AIB/VISA/CBI	Medium	Phase 1	New
Visits to Long Term Residential Care facilities are suspended with the exception of visits required for critical and compassionate circumstances	No. of breach notices	Garda	High	Phase 1	Curated
Citizen adherence and sentiment	Compliance symptom survey	Facebook	High	Phase 1	New
	Sentiment analysis by region	Twitter	High	Phase 1	New

Phase 2 - insights aligned to restrictions

Restriction	*Data Required*	*Source*	*RAG*	*Phase*	*Type*
Schools, early learning and childcare services will continue to remain open	No. of students not at school	DES	Low	Phase 2	Curated
Schools, early learning and childcare services will continue to remain open	No. of Absent Teachers	DES	Low	Phase 2	Curated
Schools, early learning and childcare services will continue to remain open	No. of online classes	DES	Low	Phase 2	Curated
Non-contact training can continue for school aged children, outdoors in pods of 15. All other training activities should be individual only, with some exemptions	GAA Return to Play details	GAA	Medium	Phase 2	Curated
Non-contact training can continue for school aged children, outdoors in pods of 15. All other training activities should be individual only, with some exemptions	SportLomo details	IRFU	Medium	Phase 2	Curated
Religious services will be available online	Number of online users for religious services	HSE	Low	Phase 2	Co-develop
Libraries will be available for online services only	Volumes of online users compared to pre-restriction	Libraries Ireland	Low	Phase 2	Curated

C19 One Government Centre (1GC) Data Group Meeting Update

5 November 2020

EY
Building a better working world

Introduction to the C-19 One Government Centre (1GC)

OBJECTIVE

Helping improve visibility and decision making with a cross government and society view of Ireland's performance in tacking this crisis

INCLUDING

Providing updates of overall performance to Central Government

Adding Capacity to Select Departments for additional insights

Creating and Sharing Select New (Non-Health) Insights

EXAMPLE

e.g. Room 350 Briefing Room in Government Buildings

e.g. Data Scientists to support HSE Contact Tracing Text Analytics

e.g. Social Distance Index providing view of citizen congregation

An appropriate Governance structure to direct insight prioritisation and ensure appropriate data governance

1GC INSIGHT GOVERNANCE GROUP

- Senior cross government leaders providing direction to 1GC on future required insights
- Signs off related 1GC data requests (both 1GC accessing and sharing data)
- Participates in monthly 1 hour wavespace session to verify future requirement and confirm sign off

1GC INSIGHT WORKING GROUP

- Cross government data owners shaping and directing related insight priorities and requests for the Governance Group
- Responsible for actioning related data request when signed off by 1GC Insight Governance Group
- Specific monthly session the week before the above wavespace session to inform the requests

1GC INSIGHT TEAM

- Specific team focused on creating and sharing cross government insights
- Has overall responsibility for coordinating the 1GC insight Governance Group and Working Group and making the related data requests
- Only has access to specific data sets agreed by the 1GC Insight Governance Group

1GC Working Principles

Directed by the requirement to help senior government decision making

Collect once, use many times
Build from existing insights and capabilities wherever possible

Respect cross government decision governance
1GC only has access to data agreed by the Insight Governance Group

Regular engagement with each "Insight Owner" to ensure briefings are correct and aligned

Rigorous approach to compliance and security
Default assumption that 1GC only has access to aggregated and not citizen data

Iterate and evolve requirements to meet changing nature of this crisis

Engaging with a breadth of Government and Private Sector Stakeholders to ensure a consistent and aligned approach (TBC)

ORGANISATION	DISCUSSION	CONTACTS
CSO		
OSI		
DOH		
HSE		
Revenue		
DEASP		
Garda		
CBI		
TII		
NTA		
AIB		
VISA		
3 Mobile / CK Delta		

Overview of 1GC Briefing Schedule Incorporating Use Cases

Requires 3mobile Data. Confirming approach with Health Stakeholders and DOH for 3mobile contract

Standing up regular briefings in Room 350 and alerts to update key stakeholders on current status and related insights

	W3 BRIEFING (6 NOV) Leverage Existing Insights	W5 BRIEFING (20 NOV) Incorporate New Insights	SUBSEQUENT BRIEFING Prioritise & Expand Insights
Adherence to and Impact of Restrictions	Public Attitudes and Compliance Survey	Stay at Home Index; Citizen Movement	Social Distance Index; Testing Show No Show
	Garda Enforcement	Industry Compliance (Instore vs Online); Garda Activity (TBC); Public Transport and Car Journeys	Garda Business Inspection and Fixed Notice
Disease Prevalence and Spread	Disease Prevalence and Testing Rates	Citizen Disease Contact Drivers and Super Spreaders (Early Analysis)	Citizen Positivity Drivers; Disease Contact Drivers
	Health Capacity Implications; Country Comparisons	Citizen Reported Symptoms (e.g. App, FB Survey)	Citizen Symptoms (Pharma, HSE Web Search)
Wider Societal Impact (Lower Priority)	Welfare and Public Service; Economic Impact		Bus Usage (e.g. School kids); Public Sentiment (if required)

EY

Social Distance Index (SDI) provides a rolling assessment of social distancing adherence

Mobile data can help us understand citizen behaviours (social distancing, crowd hotspots and travel). Clearly, care is required to balance with citizen rights. EY completed a successful POV for London to assess social distancing using anonymised mobile data for registered citizens. We propose to start with an Irish Social Distance Index while exploring other opportunities with mobile operators.

SDI

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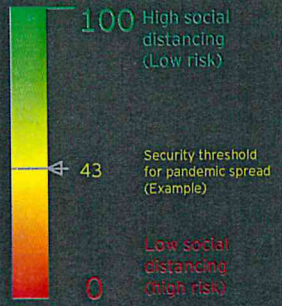

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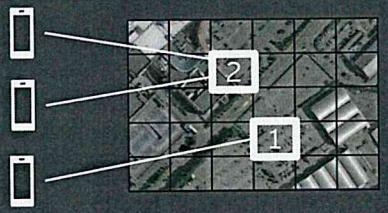


City SDI example during normal time

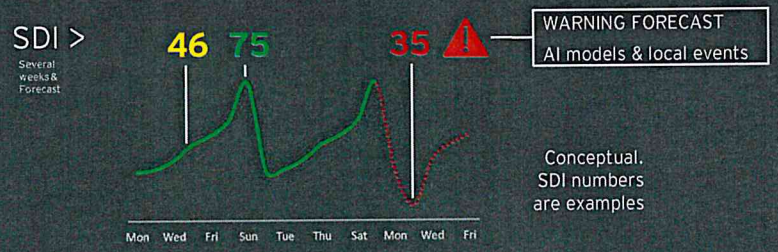
SDI 54 London area average
Sept 15th

Implementation approach for Ireland

- A detailed analysis of the same app data for Dublin and Cork showed specific quality issues for Dublin
- We have therefore been working with 3mobile to validate the same approach using mobile operator data
- 3 mobile have c 30% market penetration in Ireland and can provide every sub-container including 50 of their mobile phones
- We are completing a detailed assessment of a sample of this data. The initial findings are v positive. We also expect the SDI to be built and made available in GeoHive
- Detailed user requirements will then be defined in a working session with health and other stakeholders. Dublin and Cork will be the initial focus
- Note this is dependent on an extended contract with 3mobile

Historical information & Forecasts

Institutions can track SDI history and also anticipate potential concentrations that would need action to prevent pandemic spread.



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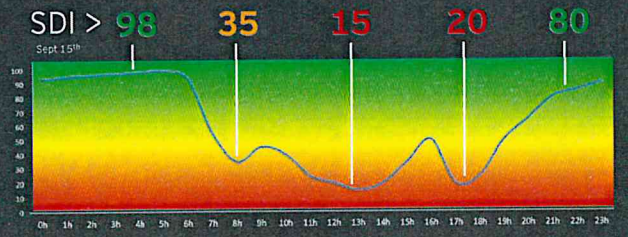

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CSO	• Insight Governance Group and Insight Working Group • Defining specific Use Cases and approach	• Padraig Dalton, CEO • Paul Morrin, Deputy CEO • Kieran Culhane, Senior Statistician
DOH	• Insight Governance Group and Insight Working Group • Defining specific Use Cases and approach • 3 mobile contract	• Muiris O'Connor, Assistant Secretary • Alan Cahill, Statistics and Analytics Service • Sarah Glavey, Principal Officer
HSE	• Insight Governance Group and Insight Working Group • Defining specific Use Cases and approach • 1GC Azure Set Up • Data provision for initial Use Cased	• Joe Ryan, National Director • Helen Coughlan, CTO • Yvonne Goff, Director, Transformation Programme • Tom Laffan, OoCIO • Emmett Carolan, Technology Lead
GeoHive	• Insight Governance Group and Insight Working Group • Defining specific Use Cases and approach	• Lorraine McNerney, OSI CIO • Justin Gleeson Maynooth University • Eamonn Clinton, OSI • Mick Byrne ESRI Ireland
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DEASP	• Insight Governance Group and Insight Working Group • Defining specific Use Cases and approach	Dermot Corcoran, Principal Officer, BI
Garda	• Insight Governance Group and Insight Working Group • Defining specific Use Cases and approach	• Andrew O'Sullivan, CIO • Lois West, Deputy Head of Analysis • Sara Parsons, Deputy Head of Analysis
CBI	• Insight Governance Group and Insight Working Group • Defining specific Use Cases and approach, including linking in with AIB and VISA	• Rory McElligott, Head of Statistics
NTA	Input to specific Use Cases and approach	Mark Stopes, Head Of Business Intelligence
AIB	Input to specific Use Cases and approach	Jonathan Duggan, Head of Data and Analytics Donnchadh MacAodha, Reg Relations
VISA	Input to specific Use Cases and approach	Chris Hulm, UKI Government Relations
3 Mobile / CK Delta	Input to specific Use Cases and approach	Ken McGrath, Government Lead, Cian Maher, Solution Architect, Will Thurley, CK Delta, Geoff McGrath, CK Delta

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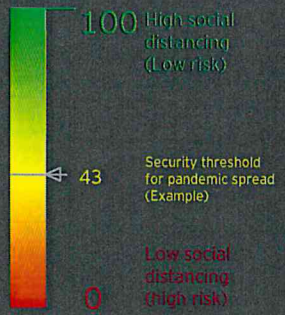

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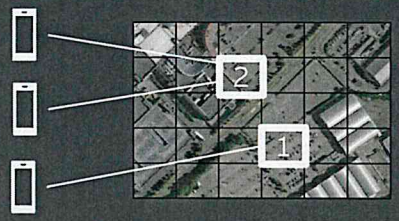

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Tourist Zone

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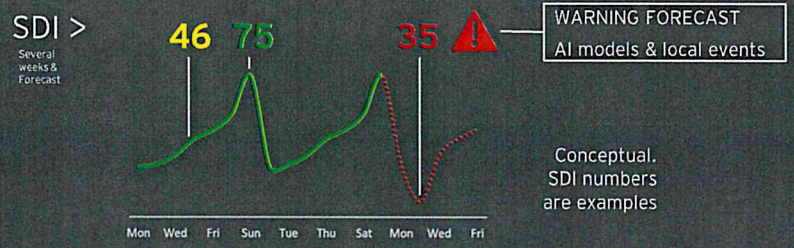

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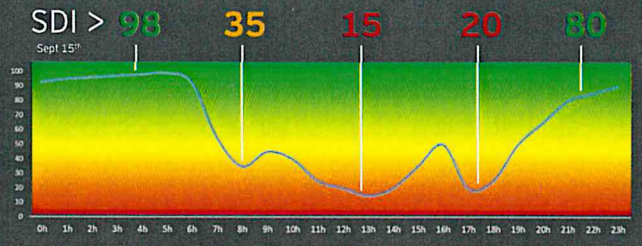

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C19 1 Government Centre (1GC)
Update briefing
6th November 2020
EY
Building a better working world

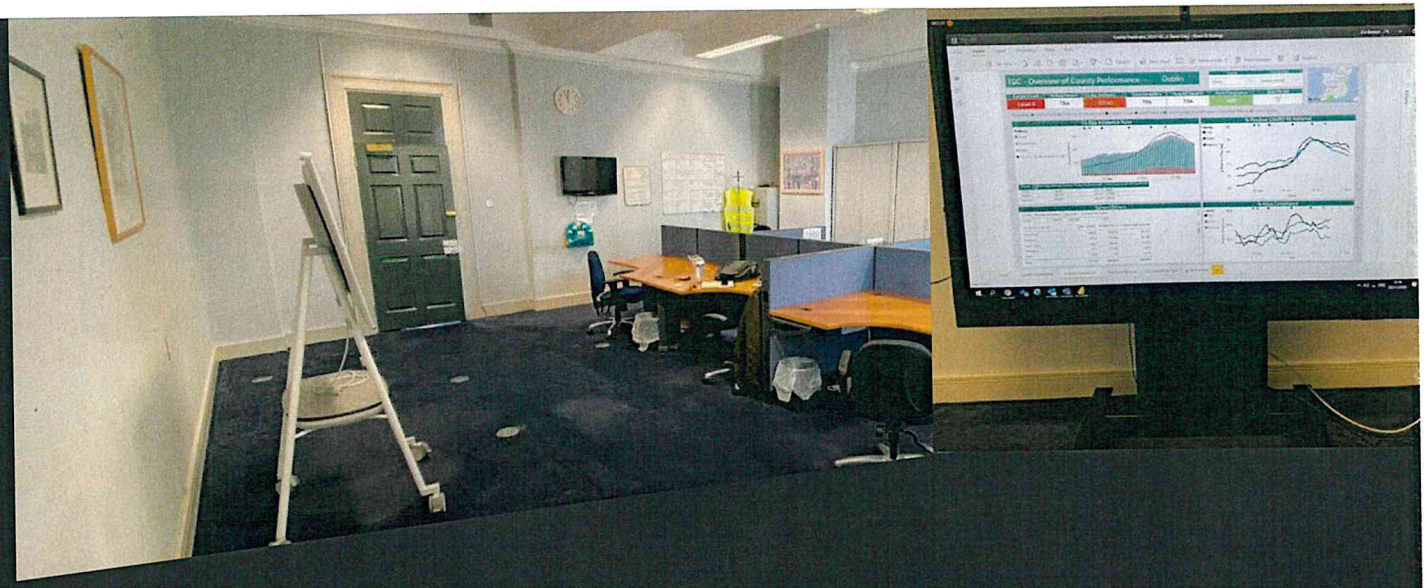
1GC update - Week 3

Agenda

- Room 350 walkthrough
- Initial Dashboard review

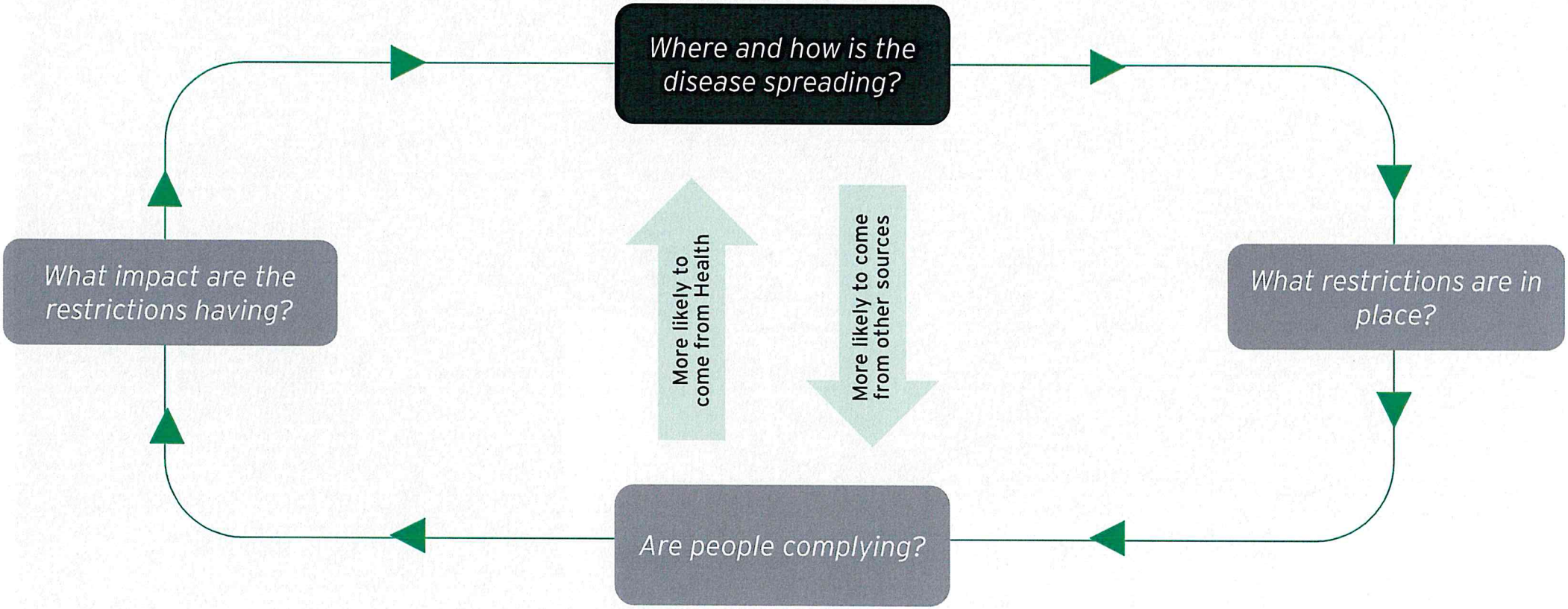
- Progress update

- Stakeholder update
- Briefing and Alert plans



ROOM 350 walkthrough

Answer four key questions to support government decision making



Progress update

GOVERNANCE AND SET UP

- SOW complete and signed
- Onboarded Data Science team onto 1GC and expecting HSE logons today
- Continued detailed workshops with HSE to define 1GC Azure detailed architecture and delivery plan
- Delivered and configured two MSFT Hubs for Room 350
- Draft Room 350 Briefing and Alert Approach defined and for review today
- Decision Governance high level design defined and included in the appendix

USE CASE DESIGN

- Received Ireland county restriction detail now to be incorporated into impact analysis
- Meeting with DOH to introduce project and agree next steps re 3 mobile data
- Follow up meetings with CSO, AIB, 3 mobile, HSE, NTA and updates with Revenue, Garda, DEASP to progress Use Cases
- Agreed with AIB Use Case data request and expect to include insights next week
- Specific discussions with HSE to incorporate Disease Indicator metrics (App, Web Search)
- Completed detailed assessment of 3mobile sample data and in process of validating detailed Social Distance Index design with Covid19 Data Coordination Group and Garda

INSIGHT DEVELOPMENT

- Worked with HSE to define and deliver first Health "existing insights" Use Case, Data Request and Prototype for review today
- Complete initial analysis into FB Ireland compliance and included in briefing today
- Completed initial desktop research into C-19 restrictions and impact academic papers
- Completed initial analysis into peer country restriction impact to now be expanded
- Completed first 1GC Insight "coffee table" book, including summary of the above desktop research, and available in Room 350
- Added to TII transport insight distribution list and expect to include insights next week

Where we are with the key DoT and Government Dependencies

REQUIREMENT	USE CASES	STATUS	DESCRIPTION
Align with NEPHT	All Health Related	For Discussion	• Requirement to understand health findings and rationale for recommendations • Input to ongoing Use Case prioritisation • Potential attendance at weekly briefing • Updates with C-19 Data Group and DOH this week
Access to appropriate mobility data	• Social Distance Index • Stay at Home Index • Citizen Mobility	Action Required by DOT	• Initial contract request went into DOH and now agreeing detailed definition with various stakeholders • Review and recommend whether to extend for other mobile operators after Week 5
Stand Up Appropriate Analytics Environment within HSE	Many	Team Priority to Resolve	• Now in detailed definition with HSE to define • Needs continued prioritisation and leveraging existing infrastructure to deliver within required timeframe
Access to Track and Trace detailed data	• Citizen Disease Contact Drivers • Citizen Positivity Contact Drivers • Citizen Test Show No Show Drivers	Team Priority to Resolve	• Proposed approach is for1GC Data Scientists to work directly T&T insight team to deliver • Request now with HSE to grant access to identified individuals
Access to public survey data	• Public Attitudes and Compliance • Citizen Reported Symptoms	Team Progressing	• DOH to share Amárach public opinion survey • University to gain access to detailed FB survey data
Financial Services companies create and share payment related Use Cases	Business Compliance by Industry (Instore Online)	Team Progressing	• AIB now agreed to provide data and expected next week • Will assess detail and extend to VISA as required
Government Departments to create and share specific Use Cases	Many	Team Progressing	• Already have access to GeoHive and CSO • Confirming specific approach with various government departments, including any data governance and sharing

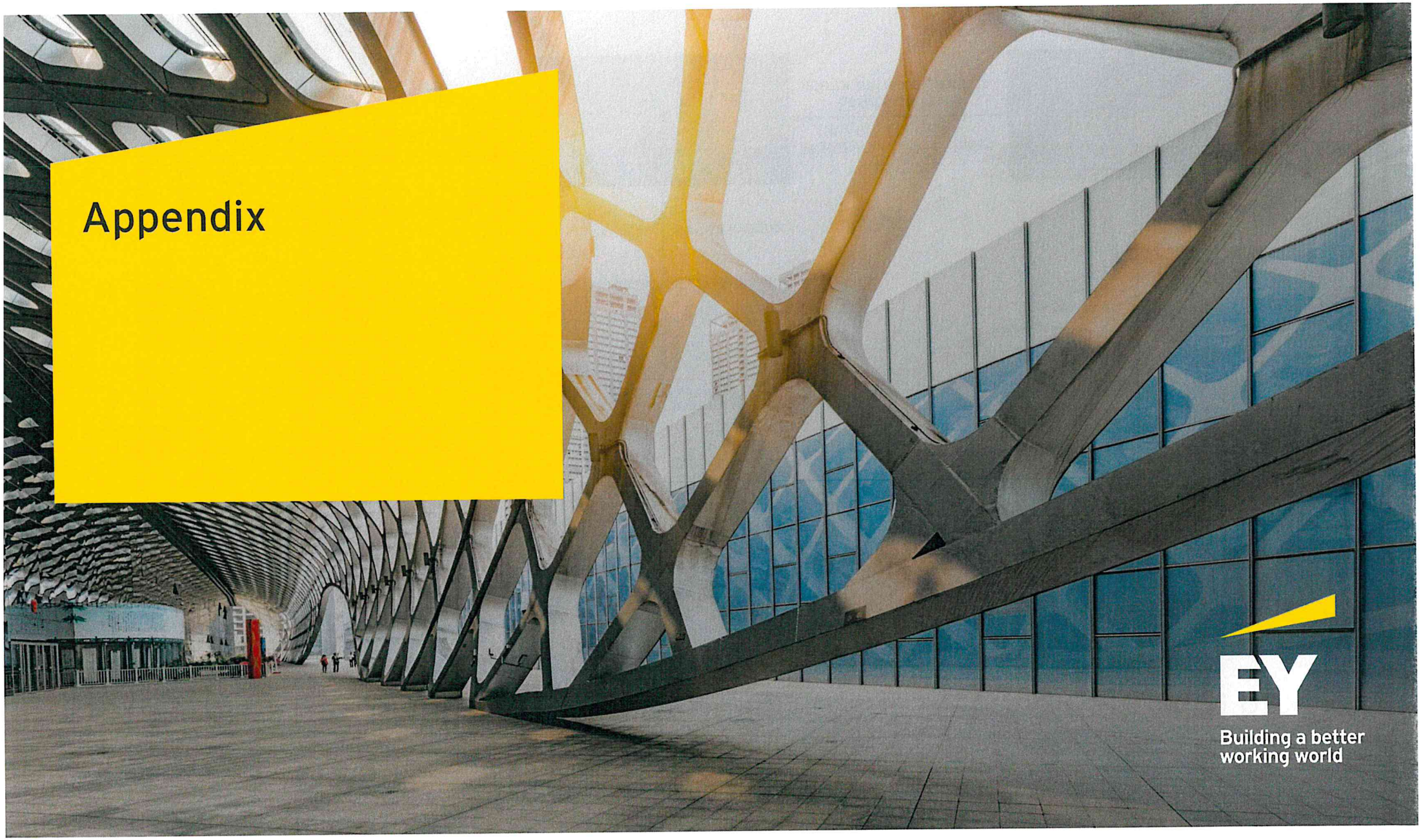
Briefing and Alerts

Briefings	Daily Briefings	8:15, Noon, 3pm Each Day Ad Hoc 8am to 6pm	▪ Regular briefing providing overview of status at country and priority counties and associated impact of Restrictions ▪ Expands with additional data insights being delivered. Also, highlights any new international / Irish research ▪ Potential to give country or insight specific versions to extended stakeholder list as requested
	Deep Dive Reports	Wed 1:30pm	▪ Deeper dive on specific agreed area with briefing delivered by 1GC and specific identified individual restrictions ▪ Includes specific restriction deep dive, vaccine rollout, etc
Alerts	Event Brief	As Required	▪ Ad hoc provision of specific briefing paragraph to senior government stakeholders providing context to a specific event
	Alert Update	As Required	▪ WhatsApp Update in the event of agreed specific criteria being breached. Criteria focused on case numbers accelerating or hospital approaching capacity ▪ As required, follow up quickly with short paper responding to specific issues

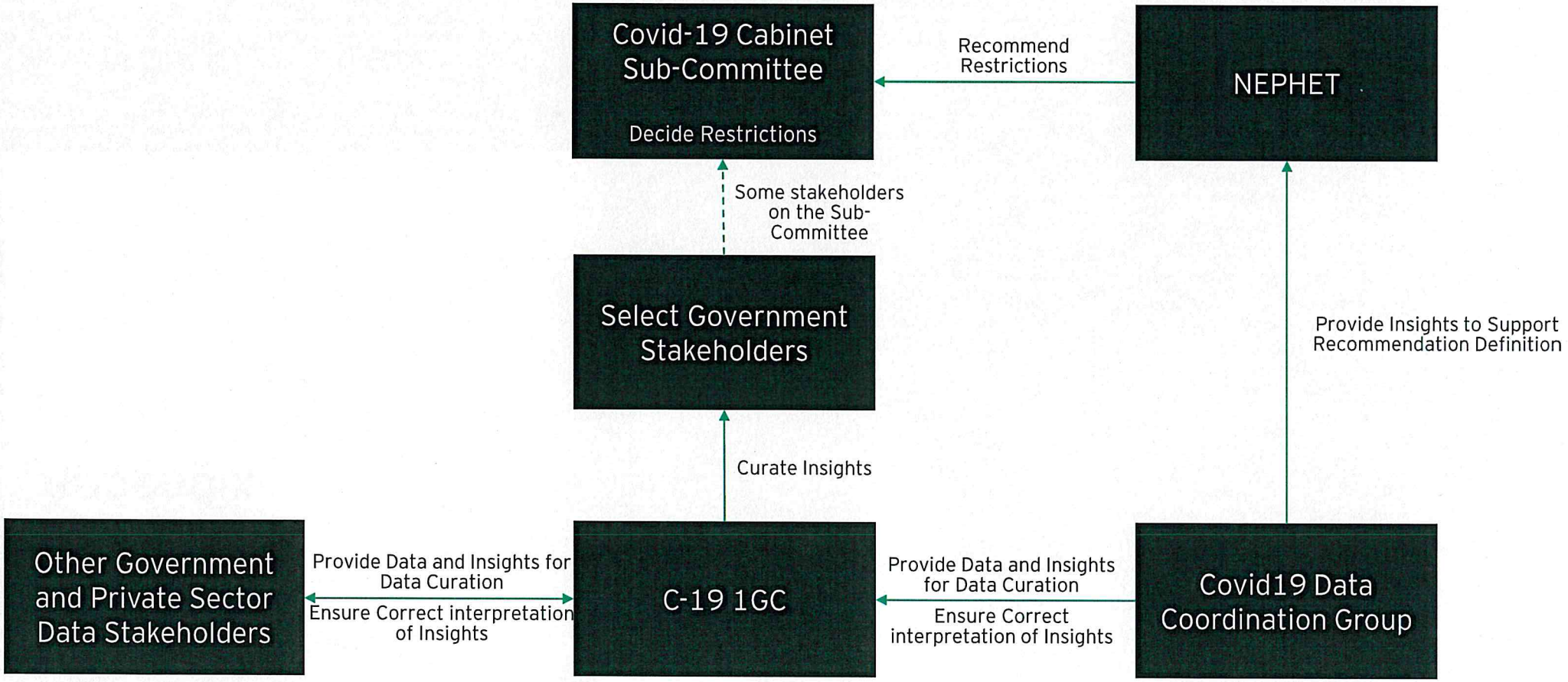
Next Steps

- Update Room 350 Use Case Design based on your feedback
- Expand Room 350 for new Use Case Insights (shown in room)
- Run Room 350 Briefings and Alerts as agreed
- Stand Up Microsoft Azure insight Platform with HSE and begin T&T detailed
- Agree detailed design of Social Distance Index and confirm DOH Contract

Appendix



1GC curates the insights for senior government stakeholders with no impact on C-19 government decision governance



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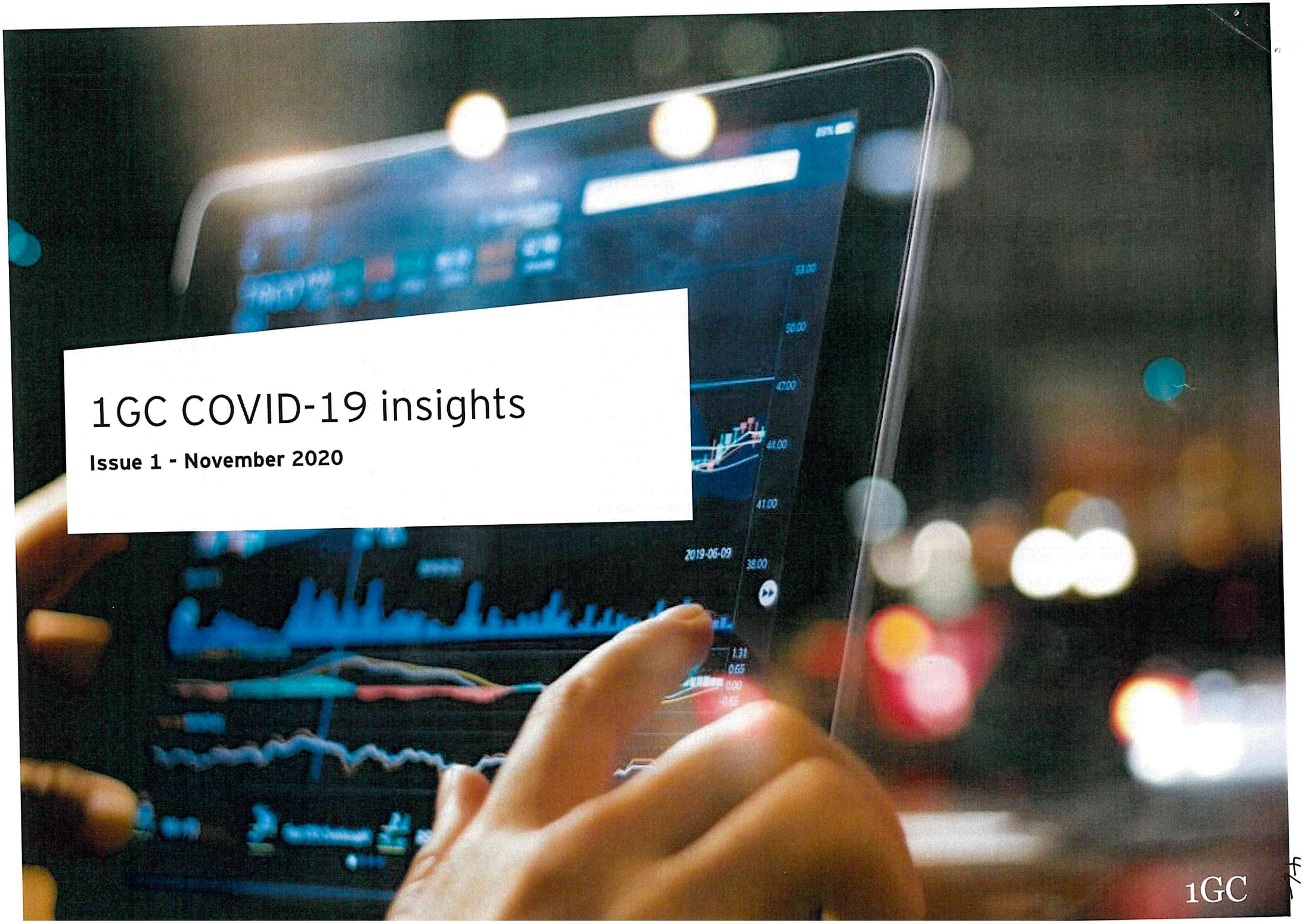

1GC COVID-19 insights
Issue 1 - November 2020
1GC

Stopping super-spreaders and associated events supresses the spread of C-19

Super-spreaders and associated events can lead to a major increase in C-19 cases and can account for a large proportion of cases in a given region.

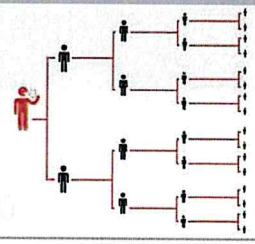
Limiting the capacity of events and banning others which are more suspectable to super-spreading, such as an indoor mass gatherings, can be effective in stopping spread.

Social characteristics identified

- Work in or visit crowded places often
- Travel to many places because of the nature of their work
- Jobs including; religious leaders, restaurant, hotel, or hospital staff
- Work or live in a confined space which increases the possibility of transmission
- Risk takers may wilfully disregard instructions to quarantine or intention to harm others
- Regularly attend public gatherings, often religious gatherings

(Indian Journal of Public Health, Issue 0019, 557X)

R0 example



R0 describes how many cases of a disease an infected person will go on to cause. This scenario outlined is R0=2.

Source: How Scientists Quantify the Intensity of an outbreak Like COVID-19

Clinical characteristics identified

- Tend to have a heavy dose of infection and shed more virus meaning they are more infectious
- May have more severe cough, thereby more likely to spread infection through droplets
- In most instances, have spread infection before they even know that they are infected which can lead to super-spreading events

(Indian Journal of Public Health, Issue 0019, 557X)

Super spreaders and super-spreading events

- Super-spreaders are individuals who generate a more-than-expected number of secondary cases
- Super-spreading events (SSEs) are where an unexpectedly large number of cases are generated from a single gathering
- Super-spreading events are not a new phenomenon and have been reported with other coronavirus outbreaks, including severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome
- Research has identified multiple bottleneck episodes, that are most likely associated with super-spreader hosts, explain COVID-19 pandemic to a large extent
- Prevention and mitigation of SSEs depends on quickly recognizing and understanding these events, particularly within healthcare settings. By better understanding the transmission dynamics of these events, it aids teams in effective prevention and control measures which work to help limit the spread of the disease

Source: Journal of Hospital Infection, Volume 105, Issue 4, August 2020, Genome Research doi: 10.1101, Emerging Infectious Diseases, Volume 26 - June 2020)

Case study in Georgia, USA

- **Approximately 20% of all C-19 infections in the state of Georgia in the early stages of the COVID19 pandemic were proven to directly link to 2% of the confirmed cases**
- The framework build on a model which was developed for modelling Ebola outbreaks during the epidemic in Western Africa
- The analysis used Georgia Department of Public Health Data between March 7 May 2020 and included both rural and urban areas

Source: PNAS, Characterizing superspreading events and age-specific infectiousness of SARS-CoV-2 transmission in Georgia, USA May 2020

Case study in Boston, MA

- Viruses carrying the characteristic mutation from the **BioGen conference in Boston at the end of February 2020 infected hundreds of people in the Boston area.** This studied nearly 800 coronavirus genomes, and was conducted by researchers at the Broad Institute, Massachusetts General Hospital, the Massachusetts Department of Public Health and several other institutions in the state. A further finding is that **victims could be traced as far away as Alaska**, Senegal and Luxembourg, showing the potential for super-spreading events to lead to outbreaks across many countries
- As of mid-July, the variant had been found in about one-third of the cases sequenced in Massachusetts and 3 percent of all genomes studied thus far in the United States
- The study is probably the largest genomic analysis of any U.S. outbreak so far and is among the most detailed looks at how coronavirus cases exploded in the pandemic's first wave

Source: PubMed.gov, Phylogenetic analysis of SARS-CoV-2 in the Boston area highlights the role of recurrent importation and superspreading events, August 2020

Irish restrictions

- Research shows that limiting the numbers of people who can congregate limits superspreading events
- The Irish level 5 restrictions follow this guidance and approach

Next steps

- Analyse test and trace data to identify super spreader events
- Test hypothesis regarding super spreader events linked to certain job types
- Use analysis to help to inform potential restrictions on events and gatherings

The most at risk occupations for contracting C-19 are also those most at risk of severe outcomes

High-contact professions are at highest risk of contracting C-19. These occupations also have the highest risk of severe outcomes.

Additional consideration should be given to how infection risk can be mitigated e.g. adequate PPE, barriers, paid sick leave.

ESRI: key findings (Ireland)

- There are differences in health and socio-economic status between occupations in Ireland
- **Occupations at highest risk of severe outcomes are those deemed essential for running society. These tend to be lower-paid and less secure professions**
- Consideration should be given to how infection risk can be mitigated in certain occupations e.g. adequate PPE, barriers/screens/contactless payments

Occupations at highest risk for COVID-19	COVID-19 chronic illness	% aged 50+	Live in deprived quintile
Housekeeping	34%	53%	27%
Caring personal services	22%	34%	28%
Welfare and housing professionals	19%	32%	25%
Road transport drivers	26%	47%	28%
Health, social services managers	16%	41%	18%
Agriculture and related	20%	63%	15%
Construction operatives	14%	35%	29%
Sales and retail assistants	13%	17%	25%
Cleaners	18%	28%	40%
Process plant occupations	23%	22%	28%
All workers	15%	28%	17%

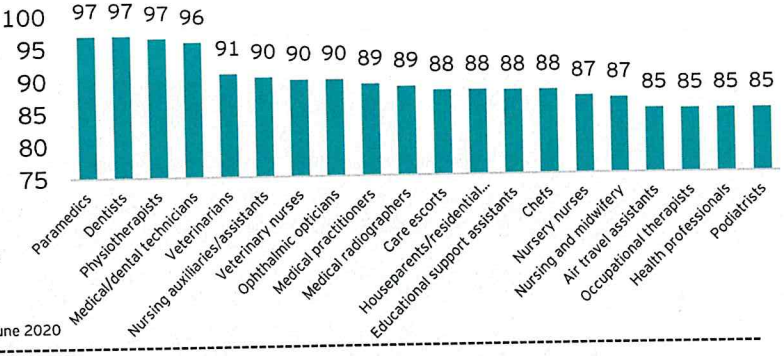
Source: ESRI, Differences in risk of severe outcomes from COVID-19 across occupations in Ireland, July 2020

CSO: key findings (Ireland)

- **In general, there was a correlation between working in proximity to others and increased exposure to disease**
- Paramedics, dental practitioners and physiotherapists ranked themselves as working in closest proximity to others
- Medical and dental technicians (including dental nurses) are again the group who rated themselves as being most exposed to disease while nursing and midwifery professionals are the second-highest ranked group for such exposure

Source: CSO, Occupations with potential exposure to COVID-19, June 2020

Proximity by occupation, top 20 (100= max)



Case study - COVID transmission across six Asian countries

- The five occupation groups with the most cases were healthcare workers (22%), drivers and transport workers (18%), services and sales workers (18%), cleaning and domestic workers (9%) and public safety workers (7%)
- **Possible work-related transmission played a substantial role in early outbreak (47.7% of early cases)**
- Occupations at risk varied from early outbreak (predominantly services and sales workers, drivers, construction laborers, and religious professionals) to late outbreak (predominantly HCWs, drivers, cleaning and domestic workers, police officers, and religious professionals)
- Work-related transmission is considerable in early COVID-19 outbreaks, and the elevated risk of infection was not limited to healthcare workers. Implementing preventive/surveillance strategies for high-risk working populations is warranted

Source: Work-related COVID-19 transmission in six Asian countries/areas: A follow-up study, May 2020

Case study - construction workers in Texas (US)

- Resuming construction work during shelter-in-place orders was associated with increased hospitalisation risks in the construction workforce and increase transmission in the surrounding community. Construction workers had a nearly 5-fold increased risk of hospitalization based on data through to August 2020, compared with other occupational categories
- **Enacting workplace safety policies and providing paid sick leave could protect essential workers in high-contact industries and prevent further widening of disparities in COVID-19 morbidity and mortality**

Source: Research paper, Estimated Association of Construction Work With Risks of COVID-19 Infection and Hospitalization in Texas, October 2020

ECDC: key findings (EU/EEA and UK)

- Most exposed workers are those who are in close physical proximity to others, particularly when working indoors, sharing transport or accommodation, in the absence of mitigation measures
- Aside from healthcare, large numbers of clusters occurred in the food packaging and processing sectors, factories and manufacturing and offices
- Occupations are commonly linked to socio-economic status which can also affect the individual's risk of COVID-19
- **Increased focus on testing for COVID-19 in workplace settings, combined with robust polices on physical distancing, hygiene and cleaning, appropriate use of PPE and hand hygiene will help prevent further outbreaks.** Robust surveillance and contact tracing are essential, as are clear protocols on how to address outbreaks when they are detected

Source: ECDC, COVID-19 clusters and outbreaks in occupational settings in the EU/EEA and the UK, August 2020

Next steps

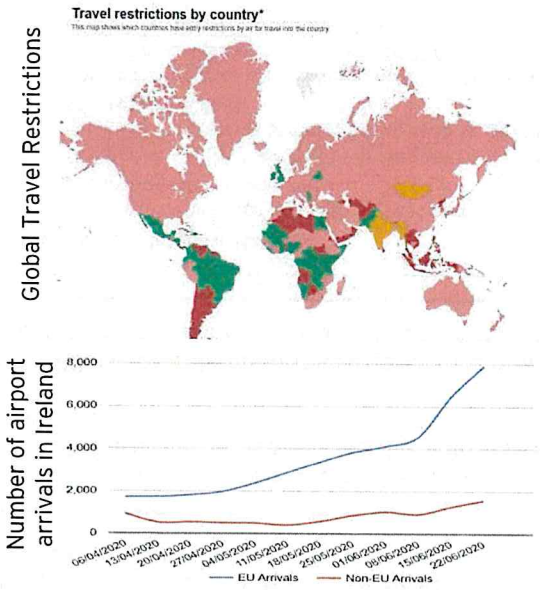
- Evaluate the trends in COVID-19 cases and outcomes by occupational group to inform future interventions by sector

1GC

Countries employing more stringent travel restrictions have seen lower number of cases per capita

There is a strong correlation between the number of cases per million and the level of travel restrictions across countries.
Travel restrictions can play a valuable role in slowing the growth of cases and are most effective when utilised with quarantine and observation procedures.

- Ireland and the UK are in have employed fewer C-19 restrictions with regards to air travel than some of their European counterparts. Ireland's Chief Medical Officer stated that there is a **"substantial risk associated with international travel"** and will play an important role in keeping figures low once brought under control on a national level. A correlation can be seen between the application of strict restrictions and a the number of cases per million
- A number of studies concluded that travel bans/restrictions can play a valuable role in slowing the growth of cases [1][2] and **are most effective when utilised with quarantine and observation procedures**. It is worth noting that one of these studies looked at a travel ban from China during initial outbreak where the ban would have been most effective in delaying an early spike in cases



- Completely closed: Only citizens, residents returning home, or people in other special circumstances may enter the country – 51 countries
- Partially open: Entrance into the country may depend on the traveller's citizenship, point of origin, or other specific regulations – 97 countries
- Reopening soon: The country has announced a specific date for reopening, but certain entry requirements may still apply – 5 countries
- No restrictions: The country has no formal restrictions on entry by air, but is still monitoring the situation and may have other travel policies in place – 67 countries

There was significant growth in the number of arrivals into Ireland between April and June, however, this is substantially less than June 2019 as overseas arrivals fell 97%.

CSO reporting of data related to the number of arrivals into the country ceased in June. We intend to incorporate this data into our regular insights.

Detail of border control measures for selected countries (*denoting island nation)		Cases/ m	Deaths /m
New Zealand*	Border closed to most visitors; all arrivals are tested and quarantined for 14 days	335	5.1
South Korea	All arrivals must submit a health declaration form, install a mobile phone app, have temperature screening, testing, and 14-day quarantine	525	9.1
Hong Kong	Border closed to visitors; all arrivals must submit a health declaration form online, have temperature screening and testing on arrival, and serve a 14-day quarantine	717	14.2
Japan*	All arrivals are subject to 14-day quarantine, and travellers from selected countries are denied entry or, if allowed for exceptional reasons, subject to testing	813	14.1
Australia*	Borders are currently closed for most international visitors, and a 14 day quarantine is required for those able to travel	1,083	36.3
Norway	Reopened borders to specified Nordic regions with low rates of transmission; arrivals from outside these regions are subject to 10-day quarantine	3,935	53.1
Germany	People entering or returning to Germany from a country designated as a risk area are tested and required to quarantine	6,688	128.7
Denmark	Arrivals from 'banned' countries are required to provide a 'worthy' purpose to enter and must provide proof of a negative test taken no more than 72 hours prior to entry	8,562	124.9
Singapore *	Border closed to most visitors; all arrivals must submit a health declaration form, serve a 14-day Stay Home Notice, and be tested	9,918	5.0
Ireland	Arrivals from non-green regions are requested to restrict movement for 14 days. All Arrivals must complete a Public Health Passenger Locator Form prior to arrival	12,768	392
England	Arrivals from particular countries must provide their journey and contact details, and self-isolate at home for 14 days	15,617	733.1
Spain	Fully reopened borders to all countries from July 1, 2020 (inbound travellers will not be quarantined)	26,935	776
Total case numbers as of 04/11/2020			

Next steps

- Further investigation to determine the full impact of travel restrictions on the overall prevalence of C-19 cases
- Provide insight into the prospective 'value' for Ireland in implementing greater restrictions, by comparing potential reduction of case numbers against economic cost

Sources: [1] The effectiveness of full and partial travel bans against COVID-19 spread in Australia for travellers from China during and after the epidemic peak in China , [2] Travel-related control measures to contain the COVID-19 pandemic: a rapid review , [3] NTA, [4] Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe, Kayak Travel Restrictions, Financial Times

Rise in cases does not appear to be solely linked to return to schools

The return of children to school in Ireland has coincided with a second wave of C-19 cases. Trends in other European countries indicate that schools may not be to blame for the increase.
Studies from the US suggest that appropriate testing and quarantine measures can prevent clusters occurring in school settings.

The rise in cases in wave 2 in Europe does not appear to be solely related to schools re-opening

- Only considering trends in Irish C-19 cases, it would appear that reopening schools contributed heavily to the initiation of a second wave of cases – aligning with a study by the University of East Anglia
- However, when also considering countries such as Denmark, France and Belgium, where a phased return to school took place between 15 April and 31 July, **a similar spike in cases is not observed in the following period, making the link between students returning to school and greater cases less clear**
- The rise in cases may be attributable to reduction in school compliance due to reduced concern by young people, combined with a return to school and therefore an increase in close contacts

The coming weeks are a critical indicator for schools

- With the rest of the country in lockdown, we should be able to evaluate the impact of schools on the overall spread of C-19 within Ireland, inform key decisions moving forward

Case study – C-19 outbreak in summer camp in Maine (US)

- A camp in Maine implemented a multi-layered detection and isolation strategy, and managed to identify and isolate three asymptotic cases, preventing an outbreak in its 1,022 attendants. Using two-week quarantines before the camp started, limiting indoor interactions and staggering dinner times, this camp was successfully able to control C-19 spread

Sources: Preventing and Mitigating SARS-CoV-2 Transmission – Four Overnight Camps, Maine, June–August 2020

Case study – C-19 outbreak in school retreat – Wisconsin (US)

- A camp in Wisconsin had an outbreak when a student, who had tested negative one week prior to the camp, developed C-19. The camp did not have the means to quarantine the student for the necessary 14 days, and this case lead to led to 116 camp attendees (76%) being diagnosed with C-19

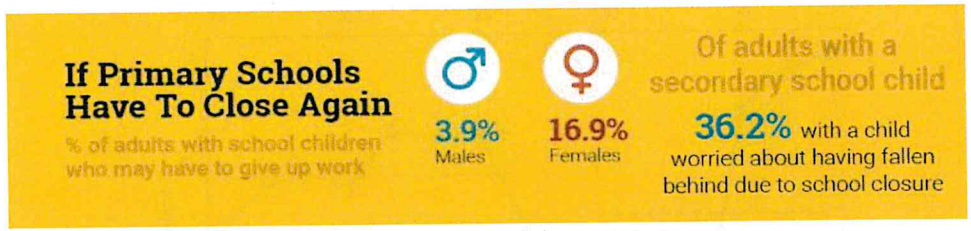
Source: COVID-19 Outbreak at an Overnight Summer School Retreat — Wisconsin, July–August 2020,

C-19 testing and schools reopening

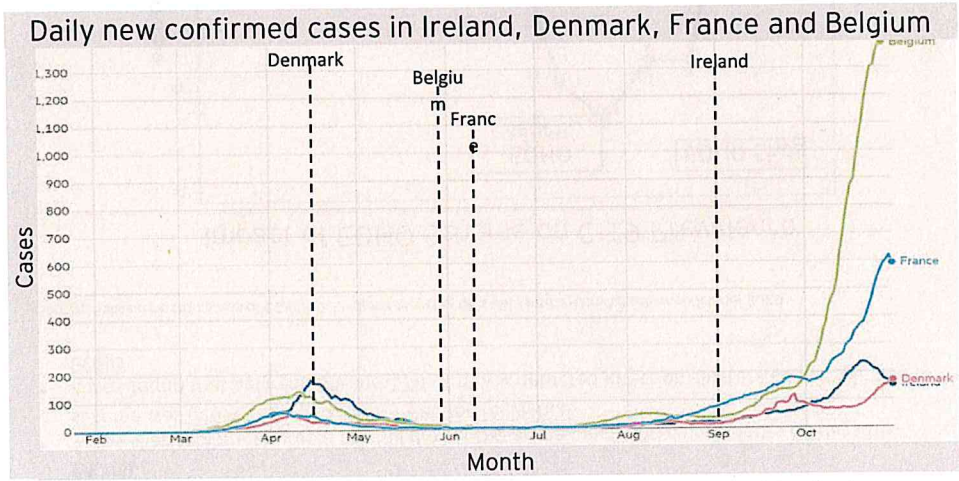
- While these examples show that rigorous screening and testing help to control C-19 spread in children, implementing this approach in schools may not be realistic. With students travelling to and from school each day, required levels of quarantining and isolation cannot be guaranteed. Furthermore, most reopening plans instead focus on screening for C-19 symptoms and an estimated 40% of Covid-19 cases are asymptomatic, and 50% of transmissions occur from asymptomatic persons. Testing in schools will be difficult, but random testing could help. After its teachers union threatened to strike over safety concerns, New York City added monthly random screening testing for 10-20% of staff and students, with more frequent testing in hot spots

Source: The Missing Piece – SARS-CoV-2 Testing and School Reopening,

- Despite challenges, there are significant implications to closing schools again. A survey conducted in Ireland found 4% of adult males and 17% of adult females may have to give up work if primary schools close again while 36% of adults with a secondary school student had a child that was worried about having fallen behind due to school closures in Spring



Source: Social Impact of COVID-19 Survey August 2020: The Reopening of Schools



Source: FT Coronavirus tracker: see how your country compares

Next steps

- Monitor the rate of change in daily cases over the coming weeks to understand the degree of impact schools have on case numbers
- Further investigate impacts of compliance and public sentiment to understand the effects on case numbers

1GC

Opening restaurants and bars has been linked to a rise in C-19 cases. However, evidence suggests operating with restrictions may not significantly increase spread

Opening restaurants has generally coincided with considerably increased levels of C-19. However, caution should be taken as a willingness to eat out may indicate more relaxed attitudes to C-19, and coincides with countries having less restrictions.

More detailed analysis is required to better understand the impact of restaurants on C-19 spread.

Case study: Impacts of restaurants (USA)

- Adults with positive C-19 test results were twice as likely to have reported dining at a restaurant than those who did not
- The difficulty in maintaining social distance in restaurants and the need to remove masks during eating were cited as two major issues with keeping restaurants open

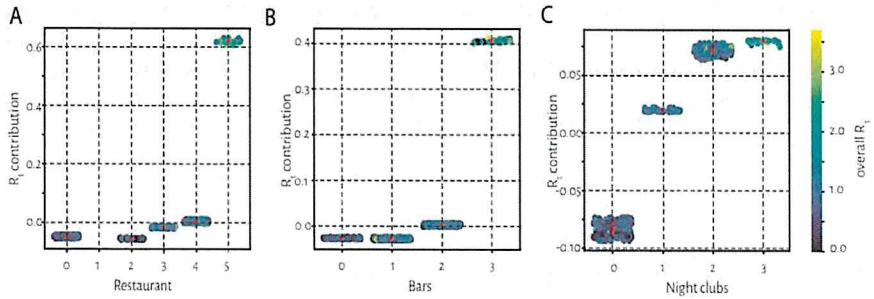
Source: Community and Close Contact Exposures Associated with COVID-19, July 2020

Case study: Impact of bars, restaurants and nightclubs (Switzerland)

*Study not yet peer reviewed

- Opening restaurants, bars and night clubs rose the reproduction ratio in the country by 0.03, 0.05 and 0.25 respectively
- The below graph shows the impact on the reproduction ratio (Rt) opening restaurants, bars and night clubs at different levels of lockdown (with 0 representing complete closure) across 26 cantons in Switzerland. Restaurants and bars operating with higher levels of restrictions (social distancing, restricting numbers) have little effect on Rt. However, with no restrictions, Rt rises significantly in each case. This indicates that restaurants and bars can be reopened with some restrictions without greatly increasing the reproduction ratio of C-19

Source: How Policies on Restaurants, Bars, Nightclubs, Masks, Schools, and Travel Influenced Swiss COVID-19 Reproduction Ratios, October 2020

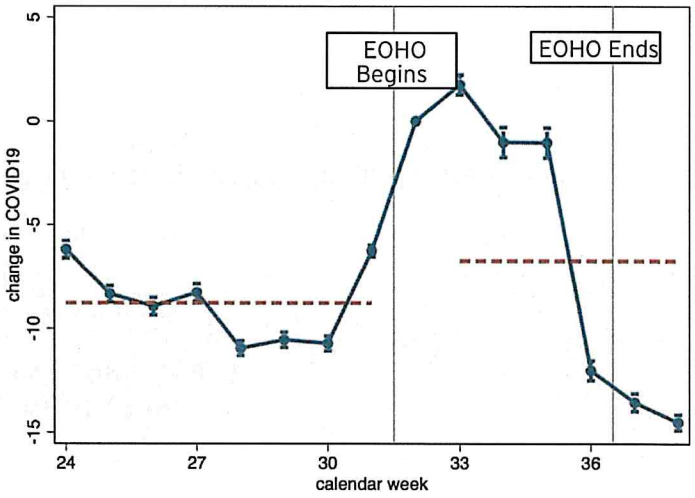


Case study: Eat out to help out (UK)

- Areas with higher take-up of the scheme (3 - 31 August) aimed at boosting the restaurant sector, saw a notable increase in new C-19 infection clusters within a week of its introduction. They also saw a deceleration in infections within two weeks of the programme ending
- Areas that exhibited notable rainfall during the prime lunch and dinner hours on days the scheme was active recorded lower infection incidence
- It was found that between 8% and 17% of newly detected infection clusters could be linked to EOHO

Source: Subsidizing the spread of COVID19: Evidence from the UK's Eat-Out-to-Help-Out scheme, October 2020

Impact of EOHO Scheme on C-19 Prevalence



Next steps

- Analyse the impact of restaurants on C-19 spread, including social distancing and other proactive measures in place
- Help to inform the analysis on reopening restaurants, pubs and other social activities and the level of restrictions that must be in place to do this successfully

1GC

Compliance with mobility and social restrictions are key to preventing new cases

A high correlation has been found between mobility and the growth rate of cases in the US, and low levels of mobility help reduce the spread of C-19. Irish mobility levels during level 5 have not fallen to the same rates as March/April indicating lower compliance with restrictions in place.

- It is clear that C-19 has affected mobility levels throughout the country. Even during the period of lower restrictions during the summer months, levels of mobility, especially walking and transit travel, remain considerably lower than pre lockdown levels
- Despite restrictions implemented during the second wave of C-19, mobility levels in Ireland did not drop to the levels seen during the first lockdown in March. With restrictions during both waves curtailing travel, this indicates that compliance during wave 2 has been lower than during wave 1
- During the first wave, there were many unknowns about the virus details such as full symptoms and mortality rate. This may have contributed to greater public compliance with restrictions
- During wave 2, public understanding of C-19 has been higher, with more known about the virus. The death rates, severity of sickness and recovery time are better understood, and this likely leads to less public fear of catching the virus, especially in younger people who are far less likely to be seriously or fatally ill
- This issue may also be exacerbated by lockdown fatigue, nearly eight months into the pandemic

Case study - Association between mobility and C-19 transmission (US)

- Mobile data was used to examine the impact of mobility on C-19 growth rates. **The study found a strong correlation between growth rates and mobility for 20 of the 25 counties analysed. This indicates that levels of mobility are a key indicator in the spread of C-19 in many cases**
- No distinction was made between low and high risk trips (with no indication of journey length or the number of stops made), however, mobility was nevertheless found to be highly significant when attempting to prevent the spread of C-19
- Whilst Irish analysis has not yet taken place, the higher levels of mobility during the second C-19 wave relative to the wave 1, coupled with the higher number of daily cases seen shows that such a relationship is worth investigating

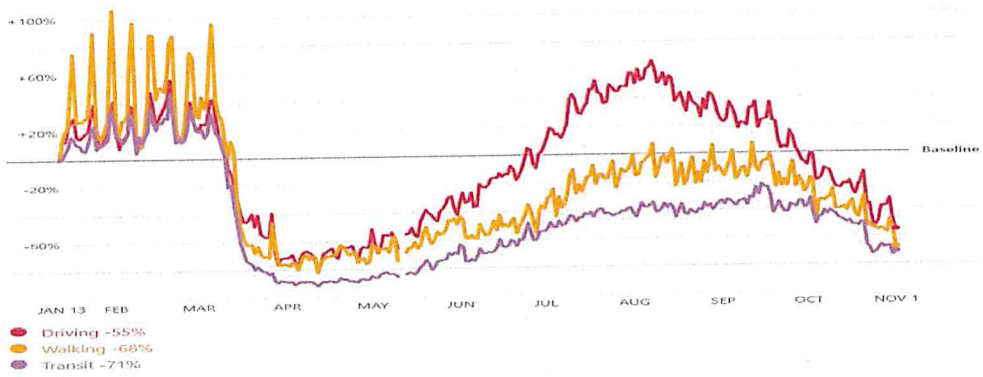
Source: Association between mobility patterns and COVID-19 transmission in the USA: a mathematical modelling study

Mobility and compliance with restrictions in Ireland

- Higher mobility indicates a lower level of compliance with level 5 restrictions, acting as further evidence for lower willingness to comply with government measures during the second wave of C-19
- Compliance with self-oriented measures such as washing hands, social distancing when queueing and using hand sanitizer has risen since March, according to the Amárach public opinion survey (2/11). However, **social compliance measures, such as staying at home and contacting older relatives and friends, remain considerably lower than March, April and even May.** This indicates that compliance both in terms of mobility and social measures were lower during the second wave of C-19

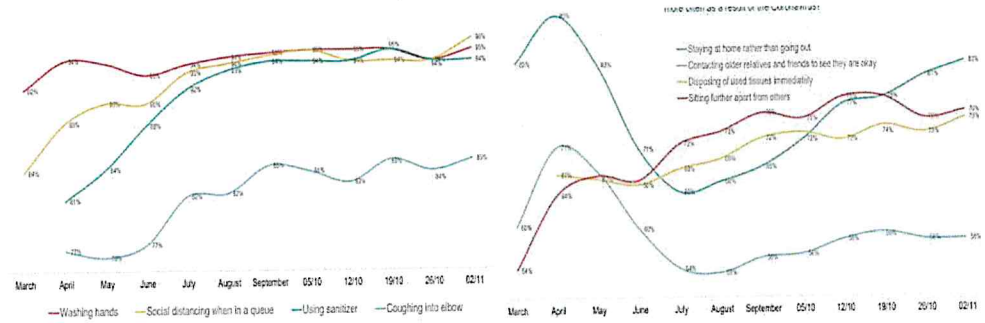
Source: Amárach Public Health Survey (02/11)

Mobility in Ireland during 2020



Source: Covid-19 Apple Mobility

Ireland public compliance surveys



Source: Amárach Public Health Survey (02/11)

Next steps

- Further investigate the levels of mobility throughout Ireland at a more granular level to better understand levels of travel and compliance on a county-by-county basis

1GC

1GC Priority Analysis (DRAFT TO BE UPDATED)

#	Area	Summary of points
1	The impact of restrictions	• There are a number of county examples, including Dublin, Cork, where there are interesting differences of the timing of restriction versus the impact. • Noted that we now have 'control groups' for certain measures based on activity over the summer (RoI). Additional evidence and control groups from measures in NI. • For example, the impact of Level 3 (pubs versus no pubs in different parts of the country) • Level 3 + versus Level 5. the curve seems to be turning a corner on basis of Level 3+ rather and Level 5. • ***Action*** *deeper analysis on the restriction (level by level, disaggregated measures) versus impact for control groups. Consider a county by county analysis, and then group by theme. In addition, assess if any useful information from NI restrictions/impact (public data)*
2	The impact of key events versus overall trends	• Hypothesis is that the sharp rise in many counties has been caused by events / noncompliance / behaviours rather level of restrictions not having desired impact • A potential example is the county final wins in Cavan and Meath contribute significantly. Another potential example is [redacted] celebrations in pubs, house parties • Basic analysis on Cavan based on GeoHive local electoral area, strong correlation between county final winner location and strong disease incidence rate. • Would also be helpful to look at this by age profile for these outbreaks and how they differ from the wider county and country age profile. It is not necessarily the player cohort that are the offenders • ***Action*** *county by county analysis to identify trends versus key events causing disease spread. This includes considering the time of GAA finals and their potential relationship with specific outbreaks.*
3	The different dynamics (Laois V Offaly V Kildare)	• Useful to look at Kildare, Laois and Offaly. All 3 counties went into the same county level hard restrictions due to meat plant outbreaks • The disease incidence curves for each county differs. Offaly and Laois appeared to recover more quickly. • *Action linked to (3) above, deeper county level analysis required for this cohort of counties*

#	Area	Summary of points
4	The impact of improved communications on reducing your close contacts	• Deliberate change in communications re your number of close contacts on [18 Oct check date]. Prof Philip Nolan simple messaging on "halving your close contacts" • Perception that this simple messaging landed well and had desired impact. • *Action perform analysis to investigate if this is a consistent trend.*
5	Precision of location information available	• The analysis was currently at county level based on the location of testing • Deeper analysis at local electoral area was being made available weekly through GeoHive • Objective is to get Eircode home address for each person being testing. Would facilitate linking across numerous state datasets through CSO (welfare, revenue). This can only improve our contact tracing intelligence. • HSE has been asked to progress this but not clear what current status is. Discussed that it should be possible to ascertain Eircode from address. • *The options discussed which need to be progressed by 1GC team. This level of analysis is critical for set of briefings:* ○ *Understand the coding of the GeoHive data. Some is already translating this to local electoral area. Obtain data if helpful* ○ *Understand the current status of geocoding with the HSE, what progress have they made and when will this be ready* ○ *Look for alternative approaches e.g. we know that GP referral system SWIFTQ has the addresses, we know we have mobile numbers of citizens could they be reveres looked up, etc* •
6	Contact tracing process and data limitations	• The detailed Track and Trace data is worth further consideration. This included dashboards showing number of close contacts by county and transmission source from contact tracing • There are limitations with this data, as current contact tracing system is under pressure with large volume of cases (light touch on many cases, versus deep intelligence) • 1GC team to review how to present this information and do additional analysis on the contact tracing information. • *Action as already planned, do additional analysis on contact tracing data. Is this telling us anything further, important to link this to 5 above* • *1GC team to consider if alternative CT approach on a particular county would be helpful*

#	Area	Summary of points
7	The impact of cross border, specific discussion on Donegal	• There is undoubtedly a cross border effect and the situation in NI is worrying given the latest trends • Cross border movement is having an impact. Most likely that this is being caused by ROI movement over border and bringing disease back (as restrictions lower in NI for a period) • Donegal used as an example and disease incidence in Ballyshannon Vs Donegal Town Vs Letterkenny / Buncranna (likened to "suburbs of Derry" in terms of social activity etc). Numbers increase dramatically as get close to border • *Action as per (2), (3), (5) deeper analysis required by local electoral area. Addition of mobility data critical to understanding cross border activity.*
8	Impact of alcohol	• Generally accepted that there is a link to alcohol for many spread events. This is not just pub but also off licence sales • The previous restriction where €9 meal was required intended to reduce potential for large amounts of alcohol to be consumed in pub environment • Concern that this is simply shifting to off licence and house party environment. Consideration being given to restrictions / limits on alcohol sales / curfews. • *Action is it possible to engage with multiples to get access to alcohol sales data*

9	Additional data to be included dashboards for reference	• Whilst other health, research and economic data is available and being analysed separately, it would be very helpful to bring all of this into the same place
		• This is particularly important for briefings with politicians
		• *1GC team to action the following specific datasets and incorporate into the county / LEA analysis:*
		  ○ *Cases / Hospitalisations / Deaths*
		  ○ *Excess mortality analysis performed by CSO*
		  ○ *Hospitalisations*
		  ○ *Median age of deaths*
		  ○ *Economic factors such as small business claims, PUP*

11	Mobility data	• Getting mobile data is of key importance • Currently with DOH but contract not yet finalised • 1GC requested that this needs to be in place and data flowing by end of this week (13 Nov) if we are to include any of this analysis in upcoming restriction discussions. • Aim to also get Stay at Home index from March if possible • Analysis around stay at home index versus social distance index to be separated. The latter will take longer to do • *Action DOH to finalise contract this week*

#	Area	Summary of points
		• *1GC team to continue to monitor and push.* • *Action 1GC team to consider additional requests to other mobile companies*
12	Considerations for Christmas restrictions	• The current early stage thinking is that the next set of restrictions likely to be Level 3 + "Christmas package" • The level of restrictions is likely to be Level 3 with some things allowed from Level 2 and some things not allowed from Level 4. • There is a need to understand our typical behaviours at Christmas versus the types of events that have caused us problems versus the potential restriction measures that could be implemented. This will help inform the decision on restriction measures. • The analysis to be performed by 1GC important to help with which specific measures to be implemented • It is unlikely that the Government would impose localised restrictions as communication is difficult and risk of social tourism • *Action as per (1), understand for each of the levels what is different and what do we know to help inform upcoming restriction discussions*

Next steps and alignment with key Government meetings

Specific actions are noted in the table above. The next 10-15 days will be critical as the numbers fall and continued focus on the impact on Christmas. Key points to note:

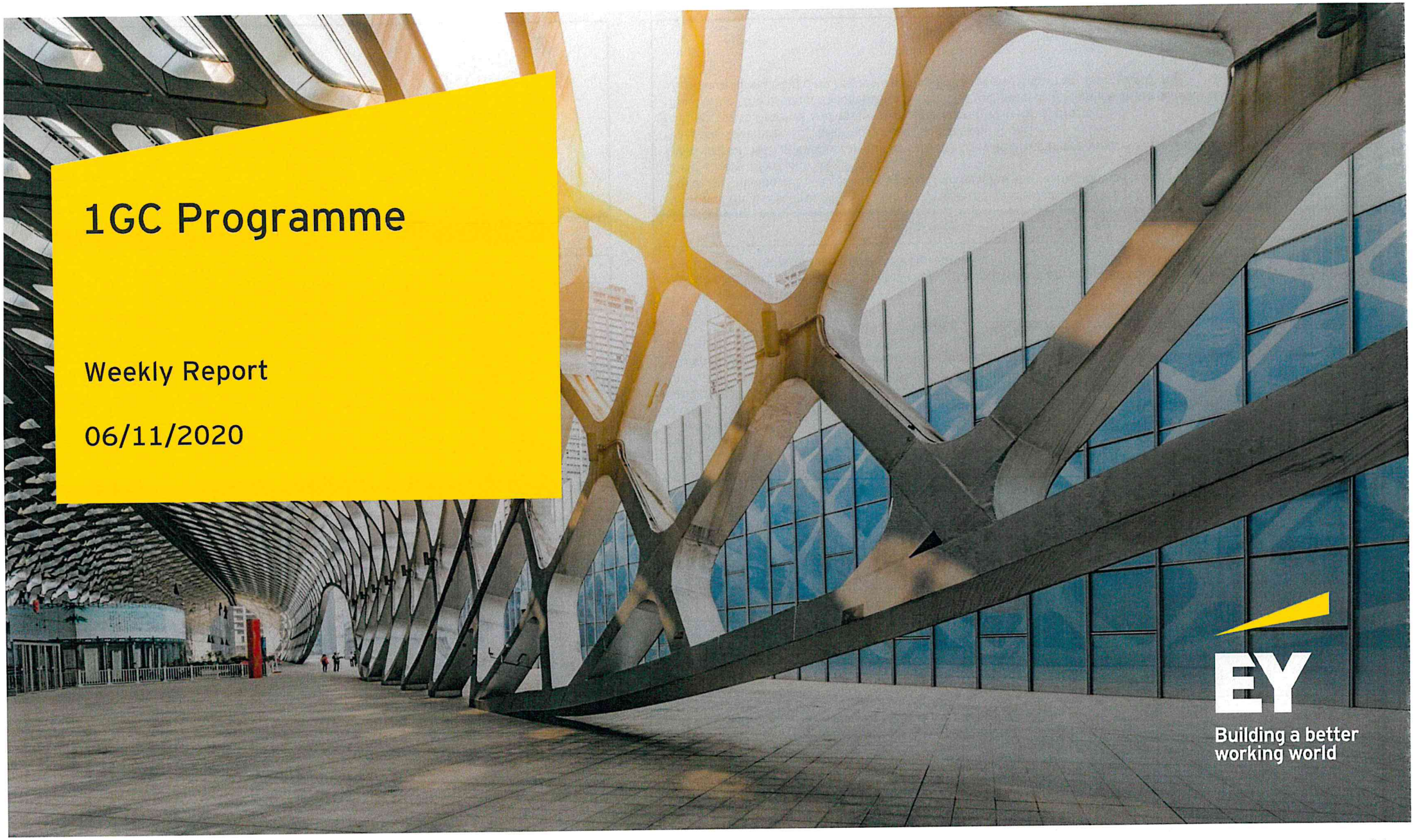
- Level 5 restrictions are scheduled to expire 1 December 2020. Current thinking is that we will continue at Level 5 for full 6 weeks to help drive disease incidence down
- The key NPHET and cabinet covid sub committee meetings will be 26 or 27 November. These meetings will decide the next restriction levels.
- The next 2 weeks will be critical for our analysis. Briefing scheduled for 12 November, but "don't be surprised if call you back in quite quickly the following week".

For discussion with team, key focus areas:

- **National and county by county review of evidence on compliance and impact of restrictions retrospective**
  - What have the various control groups told us about specific restrictions / easing of restrictions
  - There are specific reasons for high cases in many counties that deviate from national average, evidence needed e.g. gaa, border crossings, super spreader, etc as this is an important part of story
  - Better location and mobility information required to help assess compliance and correlation to key events
- **Anticipating where pressure will come from in the immediate term and consideration for what this means restrictions:**
  - The key pressure will come from non-essential retail, church gatherings, pubs, restaurants. In particular Christmas is a critical trading period for many of these sectors.

- In addition, from a wider public perspective culturally there are many things that we like to do at Christmas (house visits, large family gatherings, mini breaks, etc)
- Need information to help navigate decisions around next round of restrictions
  - *[E.g. 1 illustrative example - we have seen from the summer that indoor social house gatherings caused significant spread and there is a tendency to see increased house visiting / gatherings at Christmas, so we need to continue with a restriction on family only visits]*
  - *E.g. 2 illustrative example – social gatherings in wet pubs involving alcohol (no food) remain a concern, and we know that Christmas is a time when we gather socially with people we haven't seen for a long time, so we can only open pubs that serve food and impose a time limit of]*

- **Creating holistic view**
  - To help support decision making, 1GC needs to create a holistic view of the health and non-health data.
  - This rounded view will be particularly important for politicians


1GC Programme
Weekly Report
06/11/2020
EY
Building a better working world

1GC Status Report (06/11/2020)

Overall		Schedule		Scope		Cost	

Critical /at risk Warning On Track

Reason for Status (if not GREEN)

N/A

Milestone	Status	Date Last Period	Due Date
Confirm Phase 1 Use Case Priorities		N/A	29/10
Complete all 1GC Data Requests		N/A	03/11
Establish 1G Briefing Room		N/A	05/11
Complete 1GC Briefing: Existing Insights		N/A	06/11
Complete Initial Restriction Analysis		N/A	13/11
Receive 3 Mobile Data / Commence SDI Build		N/A	16/11
Deploy Azure Environment		N/A	TBC
Complete 1GC Briefing: Expanded Insights		N/A	20/11

Items for Attention

Highlights / Risks / Issues / Decisions

- DoH contract with Three Mobile

Key Achievements

- SOW complete and signed by HSE
- Continued detailed workshops with HSE to define 1GC Azure detailed architecture and delivery plan
- Completed initial desktop research into C-19 restrictions and impact academic papers
- Completed first 1GC Insight "coffee table" book, including summary of the above desktop research, and available in Room 350
- Delivered and configured two MSFT Hubs for Room 350
- Draft Room 350 Briefing and Alert Approach defined and for review today
- Worked with HSE to define and deliver first Health "existing insights" Use Case, Data Request and Prototype for review today
- Completed initial analysis into peer country restriction impact to now be expanded
- Follow up meetings with CSO, AIB, 3 mobile, HSE, NTA and updates with Revenue, Garda, DEASP to progress Use Cases
- Added to TII transport insight distribution list and expect to include insights next week
- Completed detailed assessment of 3mobile sample data and in process of validating detailed Social Distance Index design with relevant stakeholders
- Made first formal request to DOH summarising 3 mobile contract data requirements to be validated with the above group plus Garda
- Delivery team mobilised
- Set up physical space (i.e. a dedicated room / demonstration environment within Government Buildings) which was ready for the first briefing on Friday 6th November

Planned Activities / Forward Look

- Continue the workshops with the HSE to finalise the detailed architecture for the 1GC Azure platform
- Focus on building out use cases analysing the impact of the restriction levels implemented to date across Ireland for Covid-19 e.g. Level 2,3, 3+, 5 etc.,
- Hold session with relevant stakeholders for the Stay at Home Index and the Social Distancing Index
- Prepare November 13th briefing content and presentations
- Get access to GeoHive and assess use cases currently in the platform
- Build out of the product documentation including the initial development of the product backlog
- Continue formalising data requests and begin to receive data from sources e.g. AIB

1GC Detailed Update

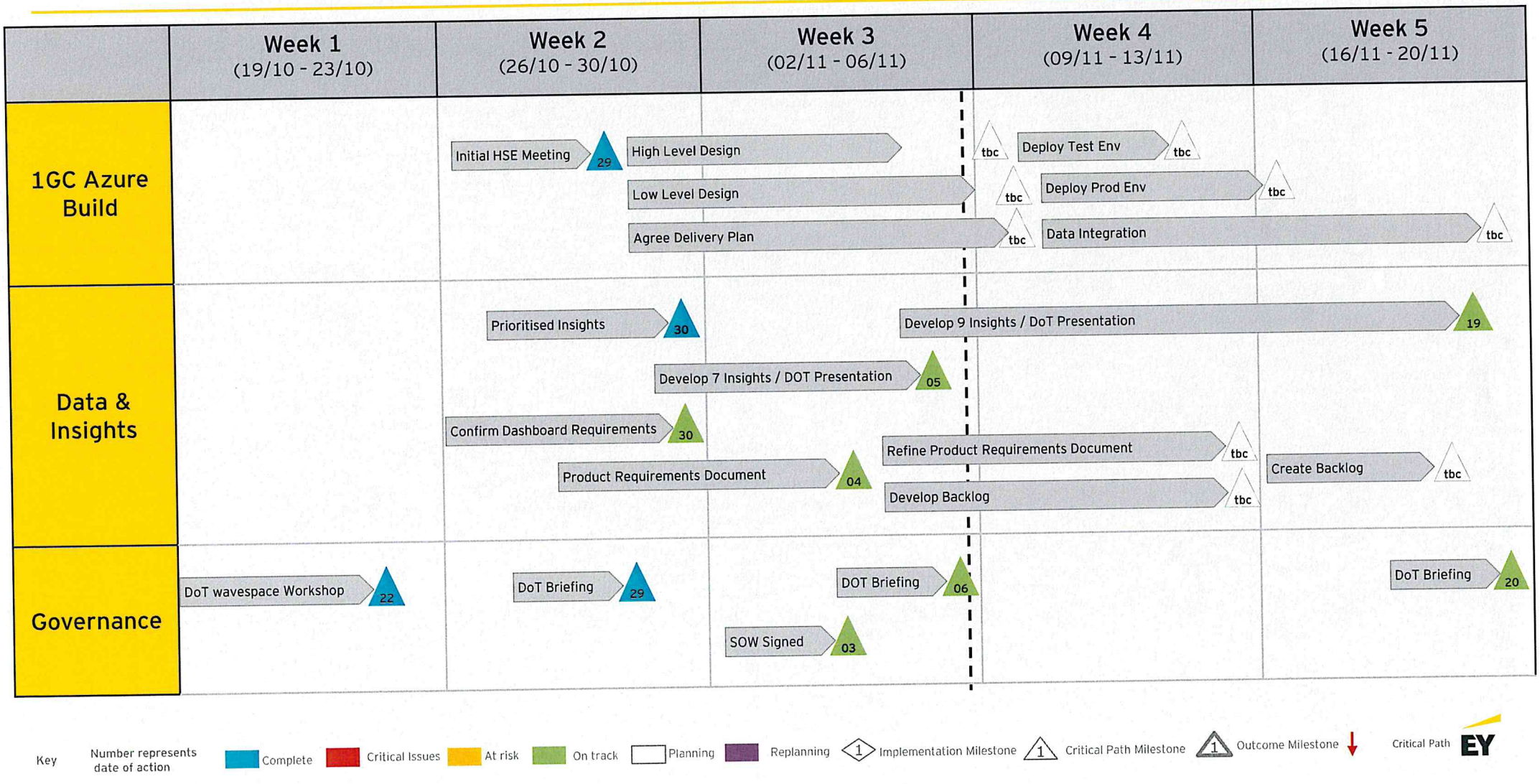
Area	Achievements	Forward Look
Governance	**Achievements** • SOW complete and to be signed by HSE • Delivered and configured two MSFT Hubs for Room 350	**Forward Look** • Formalise request for Three Mobile to progress the contract with the DoH
1GC Azure Build	**Achievements** • Continued detailed workshops with HSE to define 1GC Azure detailed architecture and delivery plan	**Forward Look** • Continue the workshops with the HSE to finalise the detailed architecture for the 1GC Azure platform • Finalise the data ingestion model that will be used for the 1GC Azure Platform • Explore additional areas of consideration e.g. access rights, user role management etc
Data & Insights	**Achievements** • Completed initial desktop research into C-19 restrictions and impact academic papers • Completed first 1GC Insight "coffee table" book, including summary of the above desktop research, and available in Room 350 • Draft Room 350 Briefing and Alert Approach defined and for review today • Worked with HSE to define and deliver first Health "existing insights" Use Case, Data Request and Prototype for review today • Complete initial analysis into FB Ireland compliance and included in briefing today • Completed initial analysis into peer country restriction impact to now be expanded • Received Ireland county restriction detail now to be incorporated into impact analysis • Meeting with DOH to introduce project and agree next steps re 3 mobile data • Follow up meetings with CSO, AIB, 3 mobile, HSE, NTA and updates with Revenue, Garda, DEASP to progress Use Cases • Added to TII transport insight distribution list and expect to include insights next week • Agreed with AIB Use Case data request and expect to include insights next week • Specific discussions with HSE to incorporate Disease Indicator metrics (App, Web Search) • Completed detailed assessment of 3mobile sample data and in process of validating detailed Social Distance Index design with relevant stakeholders • Made first formal request to DOH summarising 3 mobile contract data requirements to be validated with the above group plus Garda	**Forward Look** • Focus on building out use cases analysing the impact of the restriction levels implemented to date across Ireland for Covid-19 e.g. Level 2,3, 3+, 5 etc., • Confirming the Art of the Possible with Three Mobile with regard to the Stay at Home Index and the Social Distancing Index • Hold session with relevant stakeholders for the Stay at Home Index and the Social Distancing Index • Prepare November 13th briefing content and presentations • Get access to GeoHive and assess use cases currently in the platform • Build out of the product documentation including the initial development of the product backlog • Engage with the an Garda Siochana, Revenue, DESAP, NTA, TII on the data requirements and requests for use cases to be delivered over the coming weeks • Collect and analyse citizen spend data from AIB (i.e. spend per sector, online vs. In-store, and branch footfall)

1GC Resource Tracker

Area	Team Member	Role	Last 3 Week (Days)	Next Week Forecast (Days)
Governance	Paul Pierotti	Responsible Executive	15	5
	Emmanuel Adeleke	Programme Manager and Stakeholder Engagement Lead	15	5
	Emma O' Sullivan	Programme Office	14	5
1GC Azure Build	Nigel Foley	Delivery Lead	14	5
	Paul Browne	Cloud Engineer	5	5
Data & Insights	Cillian Leonowicz	Insight Design Lead	15	5
	Rory Herron	Insight Design Consultant	15	5
	Nikunj Maheshwari	Data Scientist	2	5
	Graham Catchpole	Senior Data Analyst	3	3
	Ross Morrison	Data Engineer	0	5
	Rory Murphy	Data Analyst	14	5
	Fiona Murphy	Data Scientist	10	5
	Eve Bannon	Senior Data Analyst	10	5
	John Hallahan	Op Model Design Manager	9	5
	Cillian Bisset	Data Analyst	14	5
	Nitin Goutham	Data Scientist	6	5
	Kenny Hazlett	Data Engineer	7	5
Strategic Design	Helena O'Dwyer	wavespace Lead	3	1
	Donal Browne	wavespace Manager	1	1
	Daniel Murphy	wavespace Manager	1	1

EY

1GC Plan on the Page



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		○ *Understand the current status of geocoding with the HSE, what progress have they made and when will this be ready* ○ *Look for alternative approaches e.g. we know that GP referral system SWIFTQ has the addresses, we know we have mobile numbers of citizens could they be reveres looked up, etc*
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		• *Action is it possible to engage with multiples to get access to alcohol sales data* • *Priority to get the data this week. Analysis next week*

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		• This is particularly important for briefings with politicians
		• *1GC team to action the following specific datasets and incorporate into the county / LEA analysis:*
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		  ○ *Hospitalisations*
		  ○ *Median age of deaths*
		  ○ *Economic factors such as small business claims, PUP*
		• *Initial updates this week. Focus on expanding next week*

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Next steps and alignment with key Government meetings

Specific actions are noted in the table above. The next 10-15 days will be critical as the numbers fall and continued focus on the impact on Christmas. Key points to note:

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  - Need information to help navigate decisions around next round of restrictions
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- **Creating holistic view**
  - To help support decision making, 1GC needs to create a holistic view of the health and non-health data.
  - This rounded view will be particularly important for politicians

1GC Priority Use Case Analysis

Based on Briefing Session 13 Nov 2020

USE CASE	DESCRIPTION	OUTSTANDING ACTIONS	PRIORITY	DEPENDENCY	OWNER
Ireland Restriction Impact	Retrospective Analysis of introduction and removal of restrictions in Ireland to seek to isolate individual value. Informs future restrictions decisions	• Complete sensitivity analysis for 7-15 days outcome • Add university opening and going online • Add NI restrictions for Border Counties • Complete Restriction Analysis • Confirm and if yes complete multivariate analysis	VERY HIGH	None	Graham and Fiona
International Restrictions Impact	Retrospective Analysis of introduction and removal of restrictions in Europe to seek to isolate individual value. Informs future restrictions decisions	• Increase to 12 countries • Add additional identified restriction data • Complete Restriction Analysis • Confirm and if yes complete multivariate analysis	VERY HIGH	None	Nitin and Nik
Current Increase Explanation	Understand the recent slowing / reversal of cases reduction	• Understand the recent changes by LED • Overlay most recent outbreak data, e.g. funerals, etc • Overlay with recent mobility data, e.g. TII, Google, Apple • Compare with May decline to see what is different	VERY HIGH	None	TBC
Track and Trace Text Analytics	Detailed analysis of contact explanations to better understand causes of outbreaks	• Complete analysis for "communion parties", "hotels" and "schools/universities" • Quantify positivity rate for each category and compare versus average around the same time • Add Roscommon final to GAA analysis	HIGH	None	Kenny
Christmas Disease Rates	Understand disease growth and restrictions implications over Christmas	• Incorporate Christmas Disease Forecast Estimates from NEPHET to understand impact of Christmas period by county / LED • Inform related restrictions analysis accordingly	HIGH	None	TBC
Facebook Survey Tool	Create Excel showing Facebook Survey compliance by county and restriction	• Add all "compliance" self reporting metrics, e.g. mask wearing, hand washing, social distancing, etc • Create front end allowing user to select and compare counties over time and with restriction milestones highlighted	MED	None	TBC
County Analysis	Detailed LED level analysis per county showing key drivers of spread	• Complete for Cork, Waterford, Galway, Limerick and Carlow • Complete specific comparison for all border county LEDs and confirm relationship with geographic proximity	MED	None	TBC

1GC Priority Use Case Analysis

Based on Briefing Session 13 Nov 2020

USE CASE	DESCRIPTION	OUTSTANDING ACTIONS	PRIORITY	DEPENDENCY	OWNER
Impact of Alcohol	Understand the impact of alcohol sales on outbreaks to better inform related restriction setting	• Get AIB data (dependency) • Merge with disease prevalence • Complete the related analysis to assess and quantify the relationship	HIGH	Awaiting AIB Data	Manny

Dashboard Enhancements	Create an interactive dashboard to support senior government stakeholder briefings	• Create view for politicians summarising counties:
		  • Cases / Hospitalisations / Deaths
		  • Excess mortality analysis performed by CSO
		  • Hospitalisations
		  • Median age of deaths
		  • Economic factors such as small business claims, PUP
			MED	None	Graham and Fiona

Senior Briefings	Prepare briefing plan and story board for senior government stakeholders	• Enhance our county and national analysis as outline above, bring all analysis up to date • Improve the restriction impact analysis • Integrate measures of compliance, particularly trending in the last number of weeks • Integrate wider sources such as deaths, excess mortality, etc	HIGH	None	Eve, Manny
Christmas Briefing	Our ability to monitor compliance will be critical for December	• Consider an enhanced daily analysis snapshot and briefing schedule	MED	None	Eve
Impact of Working From Home	Understand the impact of working from home on outbreaks to better inform related restriction setting	• Get Stay at Home Index from 3 mobile (dependency) • Merge with disease prevalence • Complete the related analysis to assess and quantify the relationship	HIGH	Awaiting 3 Mobile Data	John
Impact of Social Distance	Understand the impact of social distancing on outbreaks to better inform related restriction setting	• Get Social Distance data from 3 mobile (dependency) • Create Social Distance Index for Dublin • Merge with disease prevalence • Complete the related analysis to assess and quantify the relationship	HIGH	Awaiting 3 Mobile Data	John

C19 1 Government Centre (1GC)
Update briefing
13th November 2020
EY
Building a better working world

1GC update - Week 3

Agenda

- Overview of County Insights
- Overview Restriction Insights
- Implications for Christmas

- Progress update

- Stakeholder update

Summary of Initial Findings

The additional LED data helps explain change in C-19 spread into three broad categories;

1. Driven by proximity to the border
2. Driven by a specific outbreak events
3. Following national restriction trend change.

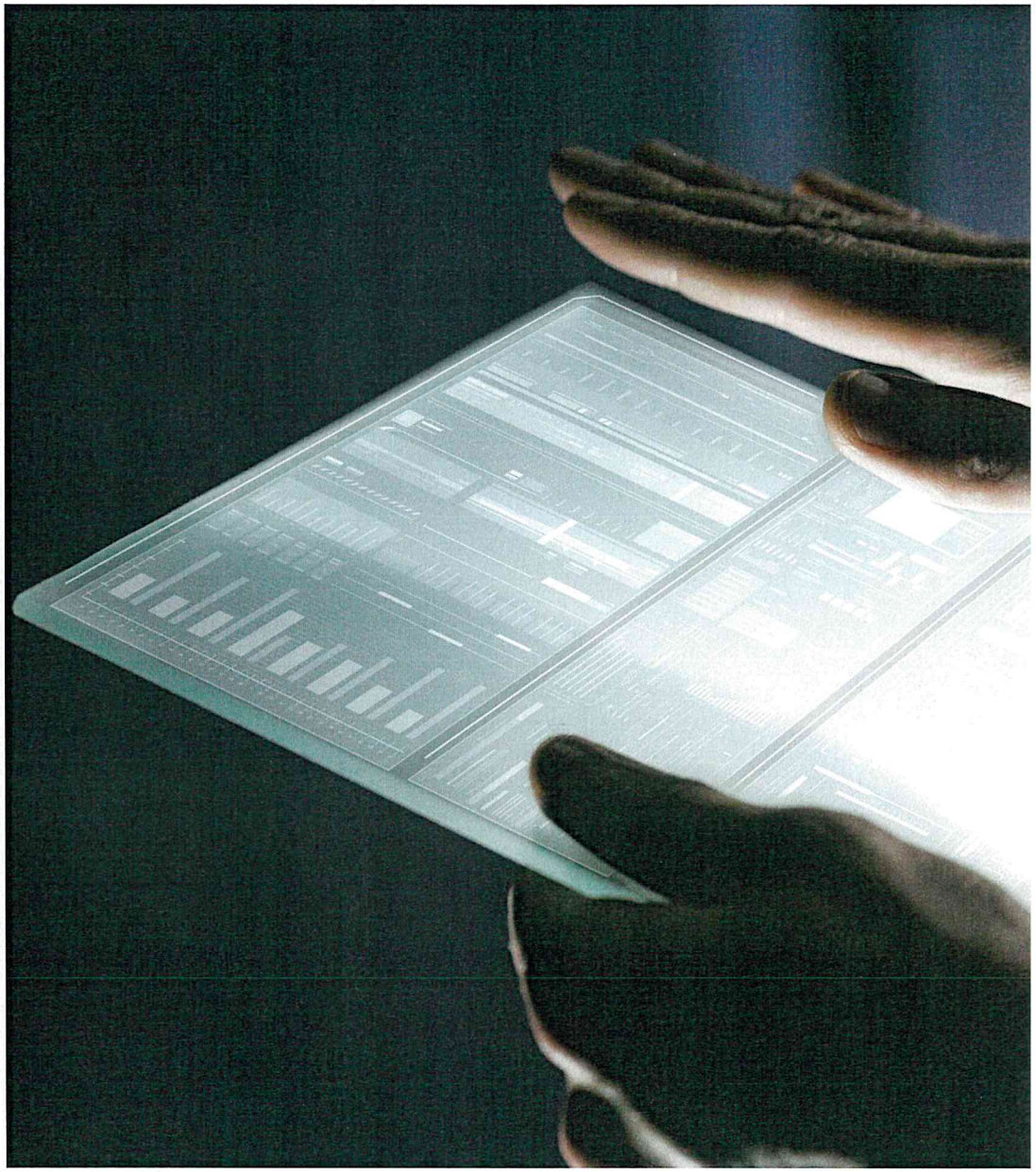
The Irish and international research is confirming the view that:

1. Some restrictions are effective at managing disease spread
2. Some restrictions help target extreme outbreak events
3. More work is to be done to prove the case for some restrictions.

While accepting small samples, a detailed analysis of Track and Trace confirms that:

1. Increases in LED cases are driven by single specific events
2. Super-spreaders are four years younger, more likely to have caught the disease in a social setting and have far higher close contacts.

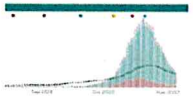
Overview of county performance



Overview of Incident Rate Per Capital Per County

Average Two Weekly Incident Rate Per 100k	06 Aug	13 Aug	20 Aug	27 Aug	03 Sep	10 Sep	17 Sep	24 Sep	01 Oct	08 Oct	15 Oct	22 Oct	29 Oct	05 Nov	12 Nov
Carlow	0	0	0	0	0	2	17	34	35	41	72	179	238	176	81
Cavan	18	16	7	13	17	20	22	24	60	175	553	923	752	355	116
Clare	6	9	18	20	20	21	23	29	49	122	233	268	211	151	72
Cork	2	4	6	8	8	8	12	35	80	123	209	320	332	256	126
Donegal	6	11	11	11	11	13	45	124	215	319	377	339	324	298	171
Dublin	16	21	27	38	49	66	105	145	167	173	203	269	286	233	124
Galway	4	6	6	6	6	15	23	38	71	100	180	324	362	245	102
Kerry	1	2	4	5	7	11	16	19	25	65	141	239	263	182	101
Kildare	36	97	141	122	80	67	59	66	71	91	173	255	241	156	69
Kilkenny	1	12	38	61	54	35	27	23	27	46	97	170	173	133	82
Laois	2	2	15	32	34	33	36	27	24	83	134	169	187	152	90
Limerick	15	25	40	45	55	64	56	47	52	136	230	296	322	249	131
Longford	0	0	0	2	2	1	5	4	17	39	53	183	254	171	85
Louth	4	9	13	13	13	27	73	100	89	99	169	311	336	231	115
Mayo	7	7	2	2	3	4	16	28	31	43	96	204	255	207	116
Meath	5	8	12	13	12	14	20	32	51	89	215	466	498	289	125
Monaghan	2	6	13	15	12	16	17	45	139	232	347	483	429	224	87
National	11	18	26	32	33	39	56	76	98	130	197	293	305	224	112
Offaly	28	66	73	65	54	50	70	75	78	115	168	209	203	141	63
Roscommon	4	2	7	10	16	17	23	40	102	156	154	208	240	197	110
Sligo	9	11	6	0	3	30	59	63	64	120	299	515	524	326	129
Tipperary	2	1	24	48	43	32	19	12	22	48	72	95	107	111	71
Waterford	6	19	46	60	50	52	86	106	80	65	113	212	279	243	124
Westmeath	9	10	10	12	22	35	60	70	85	135	238	404	398	255	126
Wexford	7	11	8	15	24	24	26	24	30	62	151	285	259	120	42
Wicklow	1	3	9	22	27	30	44	43	48	72	87	110	116	88	47

County View - Cavan

Total Confirmed Cases	Trend vs. National
2,103	

Summary

Border County

- As a border county Cavan has witnessed high rates of infection in particular in the Cavan-Belturbet LEA
- Challenge of cross-border variance in restriction levels and their application

Private House Outbreaks

- "Private House" outbreaks in late September grew significantly

GAA Football County Final

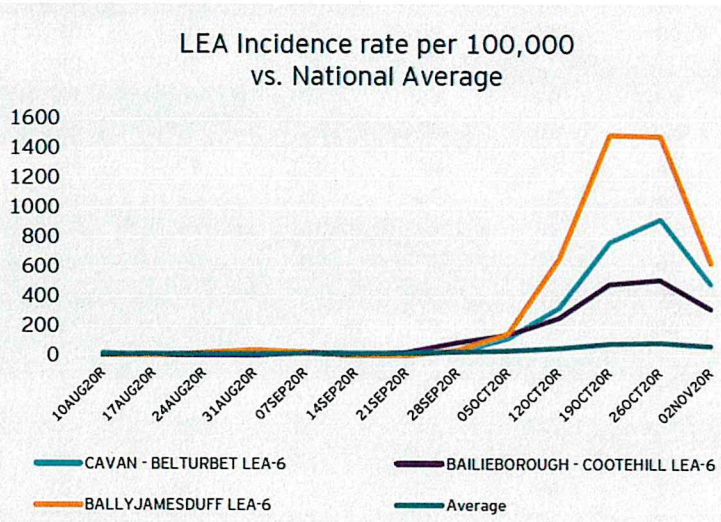
- Crosserlough (LEA - Ballyjamesduff) win County Final for the first time in 48 years
- Reports of celebrations and "lock ins"
- [redacted]
- [redacted]
- Additional [redacted], 22 in schools and 18 in the community

Commentary on Restrictions

- Case incidents increase appear to coincide with easing of restrictions and events above
- Level 4 appears to have desired impact of reducing incident rate
- Level 5 further accelerates case incident reduction

Employment Summary

- Cavan had c.47% of its workforce on PUP or TWSS (15k) at the peak in early May. The numbers on PUP have risen back to peak levels (5k) in recent weeks
- Manufacturing, retail and health are the largest employing sectors (c.39% of employment). These are all sectors that are unable to work from home, have been more negatively impacted and more at risk from C-19 (CSO, EY 2019 employment estimates).

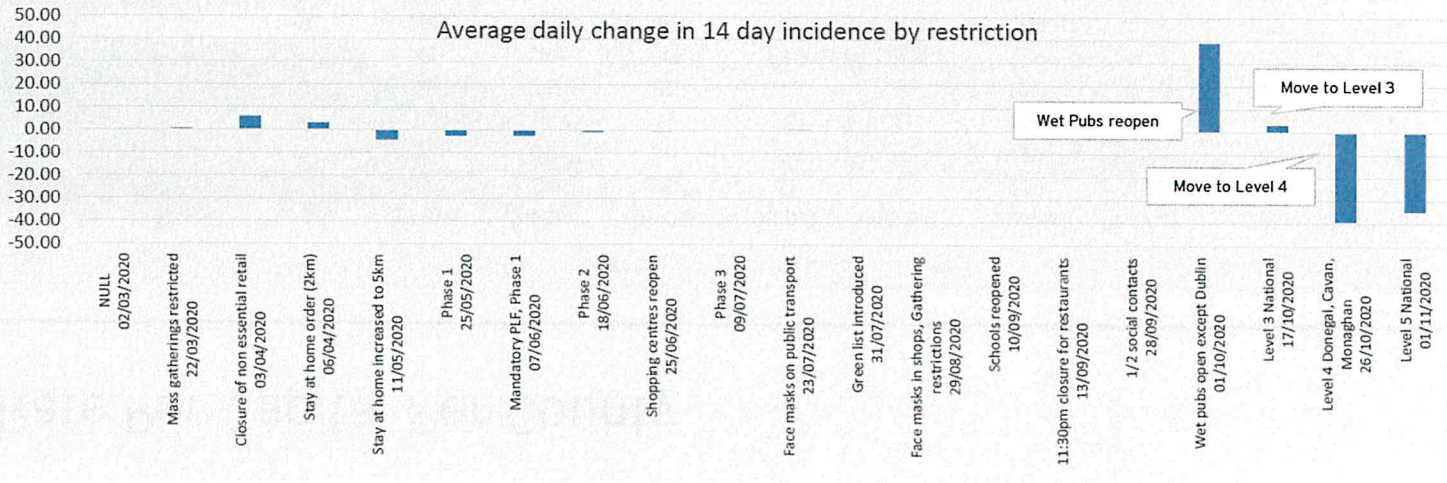


Since the 1st of September

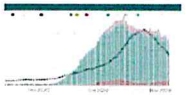
1,223 cases, with 32% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	215	72
[redacted]	[redacted]	[redacted]
Workplace	29	12
School	22	7
Sporting activity/fitness	19	1

Notable events	Date	No. of cases
[redacted]	[redacted]	[redacted]
Sporting activity/fitness	04/10/2020	19
Community outbreak	07/10/2020	16
[redacted]	06/10/2020	8
[redacted]	26/09/2020	7
Childcare facility	21/10/2020	7
Private house	13/10/2020	7



County View - Donegal

Total Confirmed Cases	Trend vs. National
2,443	

Summary

Border County

- Incidence rates in LEAs bordering Northern Ireland were consistently higher than other areas in the county

Mask Compliance

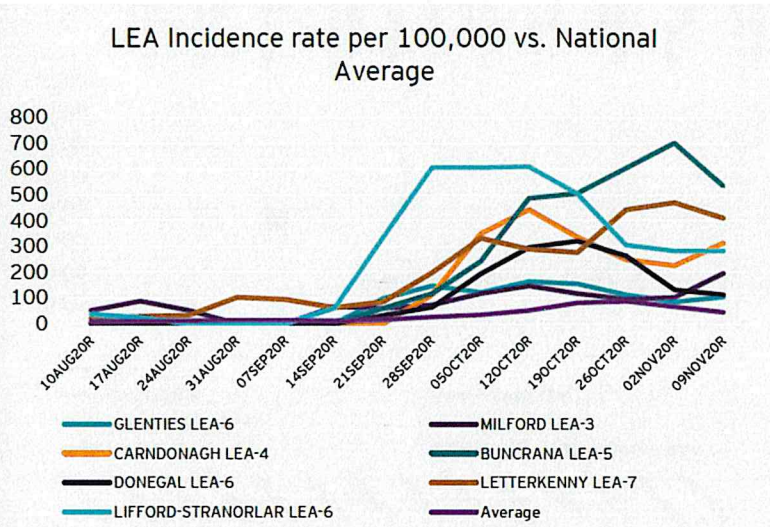
- Mask compliance in Donegal reduced (against national and previous Donegal trend) with Level 4 restrictions

Commentary on Restrictions

- Outbreaks in hospitals and nursing homes lead to 100+ cases
- Private Household attributable to 67% of outbreaks in the county since September
- [redacted]
- Low association between outbreaks and sporting activities.
- County Football Championship Final was cancelled

Employment summary

- Donegal had c.49% of its workforce on PUP or TWSS (30k) at the peak in early May. The numbers currently on PUP remain significantly lower than peak (12k versus 23k)
- Retail, education and health are the largest employing sectors (c.35% of employment). Donegal has the second highest concentration in accommodation and food employment (8%) in Ireland after Galway (CSO, EY 2019 employment estimates).

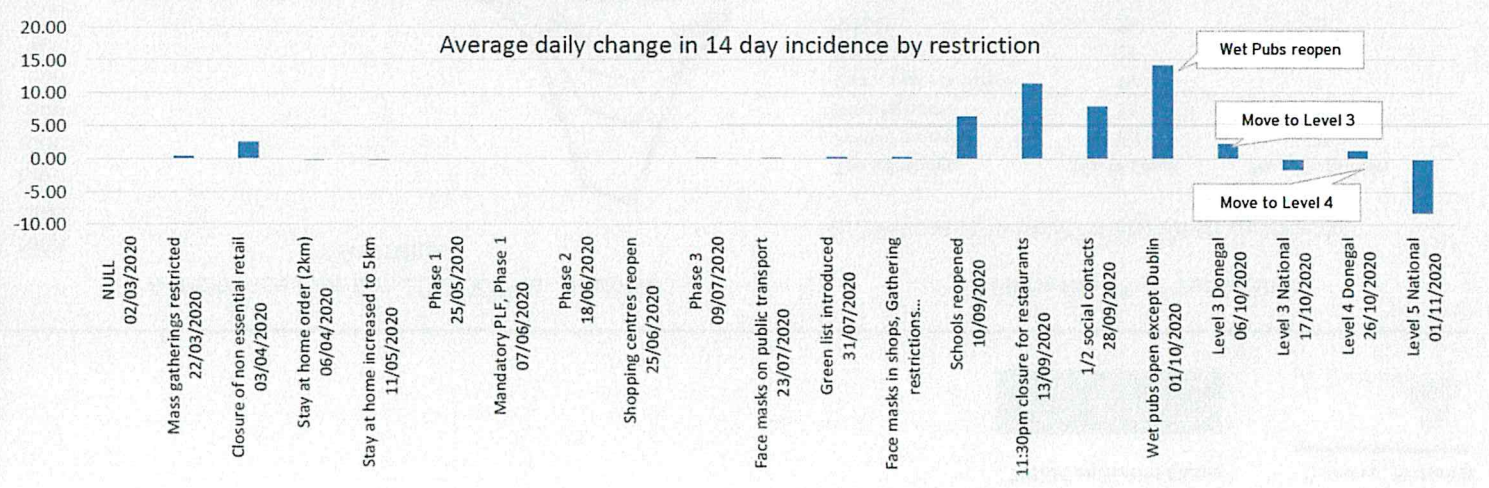


Since the 1st of September

1,948 cases, with 61% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	579	208
Workplace	145	25
Extended family	95	16
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

Notable events	Date	No. of cases
[redacted]	[redacted]	[redacted]
Workplace	23/09/2020	55
[redacted]	[redacted]	[redacted]
Social gathering	24/10/2020	20
Other	25/09/2020	14



County View - Meath

Total Confirmed Cases	Trend vs. National
3,131	

Summary

Outbreak

- Private homes leader in outbreaks with 61% of total. 3.2 cases per outbreak on average
- A Nursing Home outbreak with 33 cases
- One significant community outbreak of 29 cases

GAA Football County Final

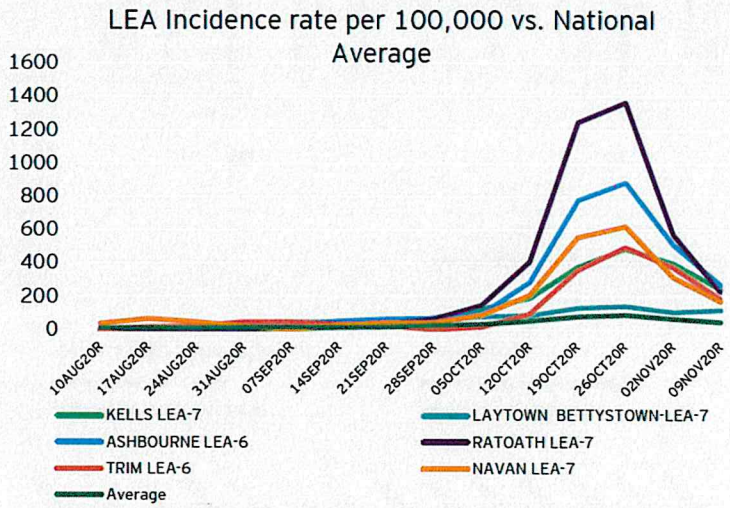
- In the week following Ratoath's Senior Football Championship victory (October 4th), cases in the Ratoath LEA rapidly spiked
- This was followed by a rise in incidences throughout the rest of the county

Commentary on Restrictions

- In the days following level 3 restrictions in Meath, cases began to stabilize and fall.
- Level 5 restrictions helped to accelerate this decline in cases, bringing Meath's incidence rate down from nearly double the national rate in mid-late October to both levels being nearly equal by November.

Employment summary

- Meath had c.42% of its workforce on PUP or TWSS (40k) at the peak in early May. The numbers currently on PUP remain slightly lower than peak (13k versus 15k) and remains just below national average levels (CSO, EY 2019 employment estimates).

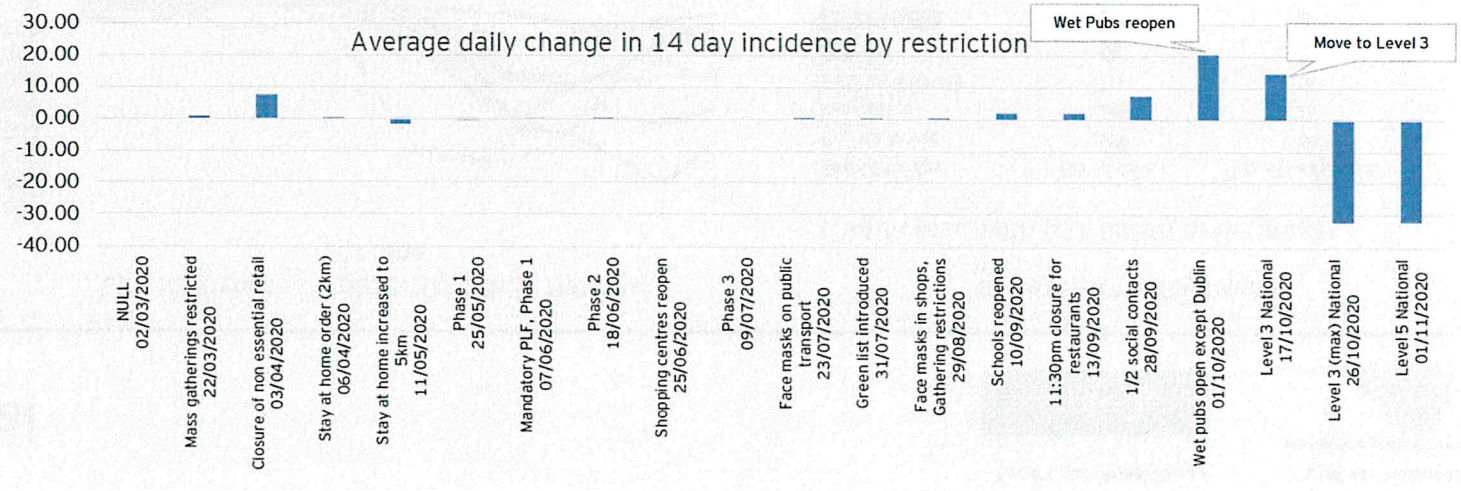


Since the 1st of September

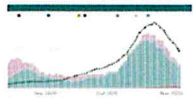
2,299 cases, with 27% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	392	121
Nursing home	52	9
Community outbreak	45	4
Workplace	35	16
School	25	10

Notable events	Date	No. of cases
Nursing home	[redacted]	33
Community outbreak	10/10/2020	29
Community outbreak	13/10/2020	12
Workplace	19/10/2020	11
Extended family	13/10/2020	10



County View - Laois, Offaly and Kildare

Total Confirmed Cases	Trend vs. National
5,879	

Summary

Summer Outbreaks

- Increasing case number trend emerges in July
- Outbreaks concentrated in food and meat processing plants
- Highest numbers in Offaly in Edenderry (93 of 103 cases) in two weeks preceding August 17th, with Kildare largely focussed in Athy/Newbridge (134/85 of 266)

Commentary on Restrictions - Laois & Offaly

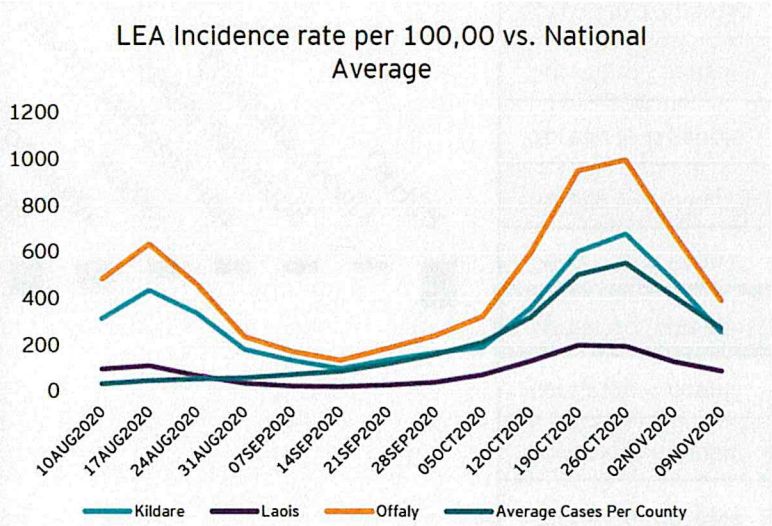
- County lockdowns for Laois, Offaly and Kildare from August 8th
- Offaly and Laois leave lockdown on 21st August and the following week cases begin to rise in Offaly with minimal decrease in Laois

Commentary on Restrictions - Kildare

- Kildare lockdown extended for an additional 10 days
- Case numbers fall however prevalence appears to shift from the south and middle of the county (Athy. Kildare Town , and Newbridge) to the north of the county (Naas, Maynooth and Celbridge)
- As cases increase in North Kildare from October a similar trajectory of case growth appears in Dublin West

Employment summary

- These counties had c.40% of its workforce on PUP or TWSS (73k) at the peak in early May. The numbers currently on PUP remain significantly lower than peak (24k versus 73k)
- Retail is the largest employer in all three counties (CSO, EY 2019 employment estimates).

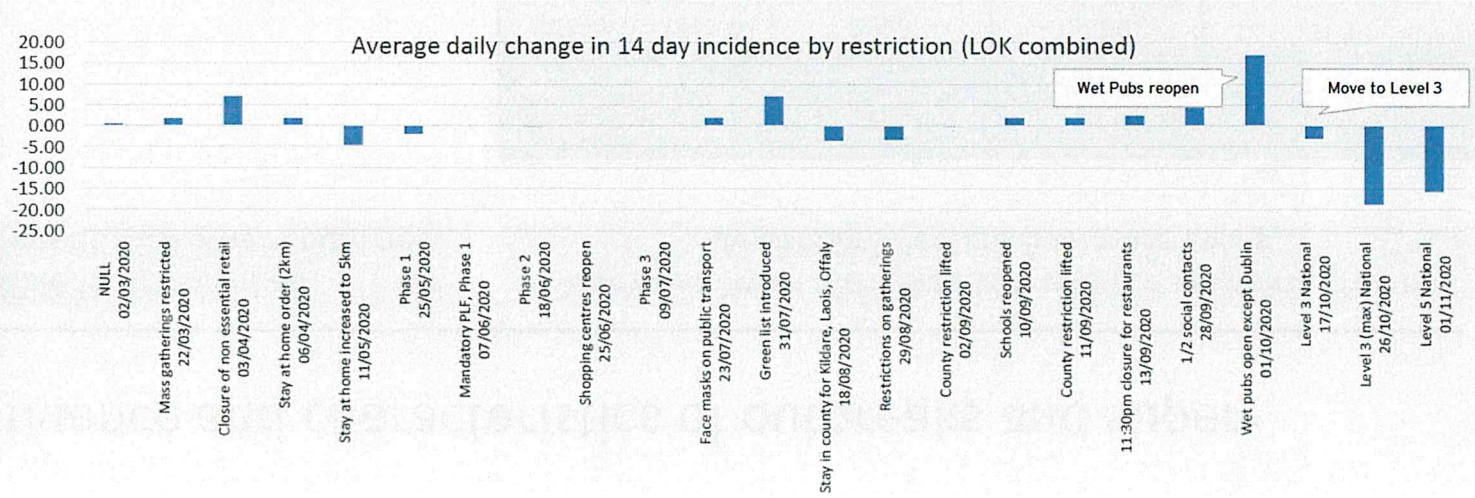


Since the 1st of September

2,644 cases, with 47% linked to outbreaks

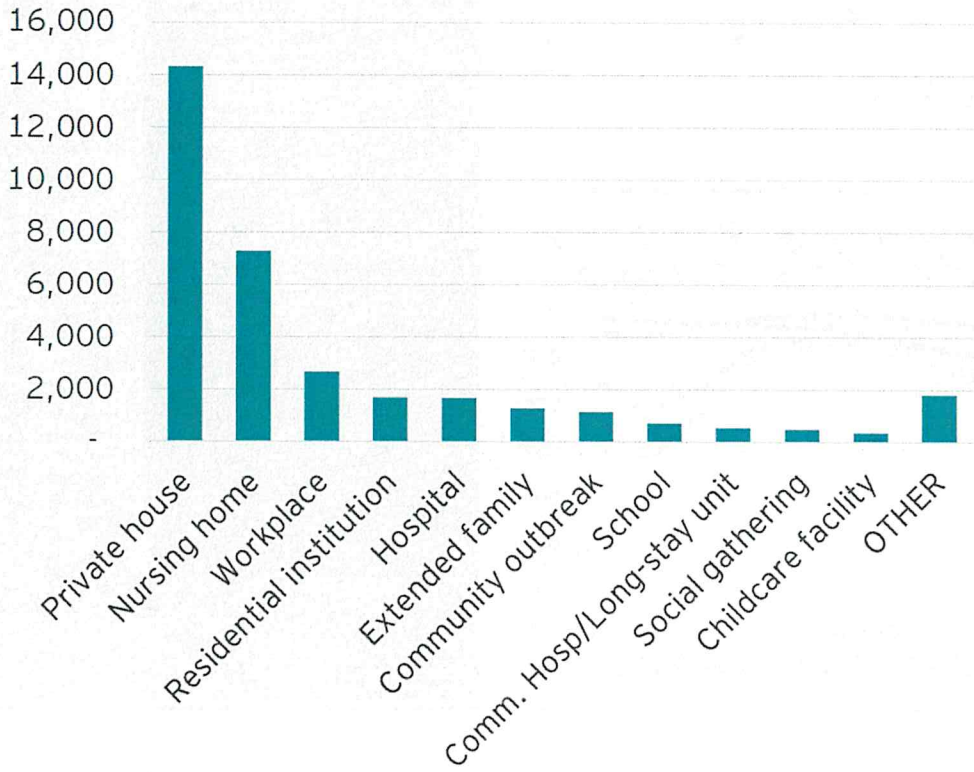
Top 5 settings	No. of cases	No. of outbreaks
Private house	609	242
Nursing home	183	13
Hospital	97	13
School	83	22
Extended family	59	9

Notable events	Date	No. of cases
Nursing home	[redacted]	52
Nursing home	[redacted]	47
Nursing home	[redacted]	35
Hospital	[redacted]	34
Extended family	29/09/2020	19



Understanding the influence and characteristics of outbreaks and super-spreaders

Outbreaks are responsible for c 50% of all Irish C-19 cases, which is consistent with other countries



SOURCE:CIDR

Track and Trace identifies 12% of all cases being driven by people infecting 5 or more cases

Spreader Category	Positive Cases	Infected People	% Infected
Spread to 1 person	2025	2025	100%
Spread to 2 people	733	1466	65%
Spread to 3 people	313	939	39%
Spread to 4 people	154	616	23%
Spread to 5 people	72	360	12%
Spread to 6 people	19	114	5%
Spread to 7 people	10	70	3%
Spread to 8 people	9	72	2%
Spread to 9 people	4	36	1%
Spread to 10 people	1	10	0%
Spread to 11 people	1	11	0%

SOURCE: TRACK AND TRACE TOTAL CASES AT 15 OCT

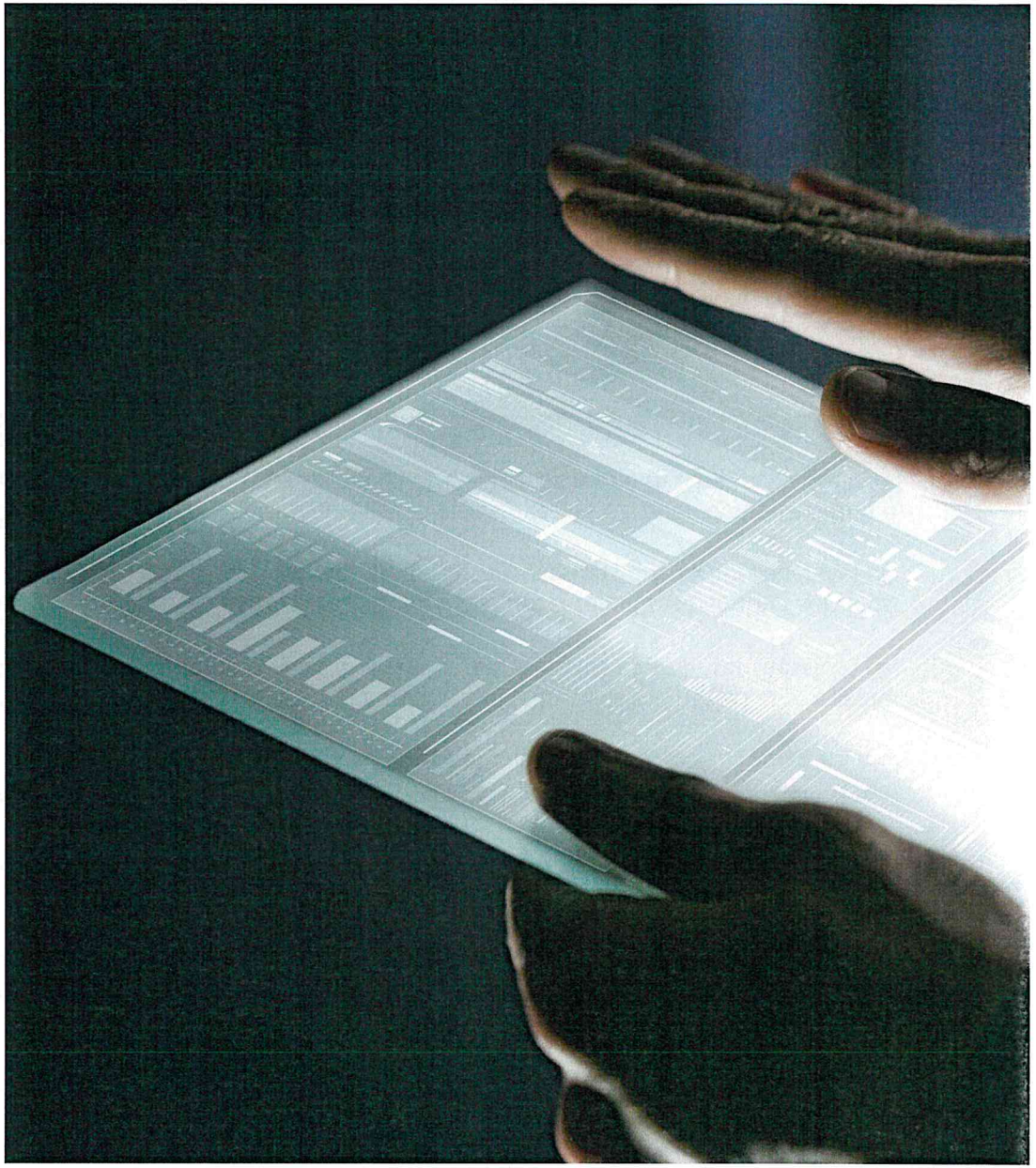
Super spreaders characteristic overview

	NON SUPERSPREADER	SPREADER (1-4 contacts)	SUPER SPREADER (>=5 contacts)
GENDER	Female - 54%	Female - 52%	Female - 52%
MEDIAN AGE	38	36	34
GREATER DUBLIN	32.7%	29.9%	31.8%
BORDER COUNTY	Cavan - 2.8% Donegal - 3.7% Louth - 2.5% Monaghan - 1.5%	Cavan - 2.7% Donegal - 4.7% Louth - 2.3% Monaghan - 2%	Cavan - 1.5% Donegal - 4.5% Louth - 1.5% Monaghan - 0%
NUMBER OF CLOSE CONTACTS	Mean - 0	Mean - 1.6	Mean - 5.8
CONTACT TYPE	Household - 54.1% Social - 26.8% Work - 11.3%	Household - 49.7% Social - 28.9% Work - 12%	Household - 43% Social - 33.1% Work - 12.1%

"Half your contacts" does appear to have worked with the Level 3 restrictions (18-21 Oct)

COUNTY	NUMBER OF CONTACTS ONE WEEK BEFORE 18 OCT	NO OF CONTACTS TWO WEEKS AFTER 18 OCT	% CHANGE	DIRECTION
Meath	16.33	4.83	-70%	↓
Laois	12.00	-	-100%	↓
Clare	10.33	9.88	-4%	
Galway	8.50	8.50	0%	
Waterford	8.00	6.33	-21%	↓
Kerry	7.67	4.50	-41%	↓
Dublin	7.25	3.33	-54%	↓
Louth	7.00	4.40	-37%	↓
Cork	6.50	4.73	-27%	↓
Offaly	6.33	13.00	105%	
Carlow	6.00	1.00	-83%	↓
National	6.54	4.69	-28%	↓

Restrictions, Contacts & Setting Analysis



Summary of select international research into C-19 restrictions

Restriction	Impact Assessment	International Evidence
Work from home	Moderate	A reduction in Rt of 0.2-0.4 if those capable of working from home do so [1]
Travel < 5k	Moderate to High	Travel restrictions help to reduce seeding in lower risk areas but provide limited impact if the disease is already widespread. [1]
Reduce Citizen Congregations By Type	Moderate to High	Contact with +1 household predicted substantial increase of transmission rates. Large events can result new outbreaks within communities, but less responsible for overall transmission. [1]
Close Non Essential Businesses	Moderate (Varies Per Type)	Gyms and leisure centres present higher risk than non-essential retail. Close-contact services have high risk of transmission but lower impact on total transmissions due to infrequency [1]
Take Away Food Only	Moderate to High	The UK 'eat out to help out' scheme saw an increase in cases over its duration demonstrating a link between restaurants and cafes and the spread of C-19. Transmission in bars, pubs likely [1]
Reduce Public Transport to 25%	Moderate	Demand for public transport is lower. Limitation of public transport capacity has a lower impact than other restrictions. [1]
Wear a Mask	Moderate to High	Most beneficial when social distancing is difficult or building ventilation is poor. Evidence from UK healthcare body suggest universal masking helped bring hospital outbreaks under control [1]
Maintain Social Distance	High	Where countries implemented social distancing measures quickly there is a marked decrease in disease prevalence [2]
Wash Your Hands	High	Hand washing has been linked to significant reduction in risks related to contracting C-19 and is most effective when actioned based on events rather than at fixed times [3]

Source: [1] NPIS - Summary of the effectiveness and harms of different non-pharmaceutical interventions (Sept-20), [2] Understanding COVID-19 transmission, health impacts and mitigation: timely social distancing is the key, [3] Sage - What is the evidence for the effectiveness of hand hygiene in preventing the transmission of respiratory viruses?

Analysis of positive contact types – some insights gained but issues with data quality

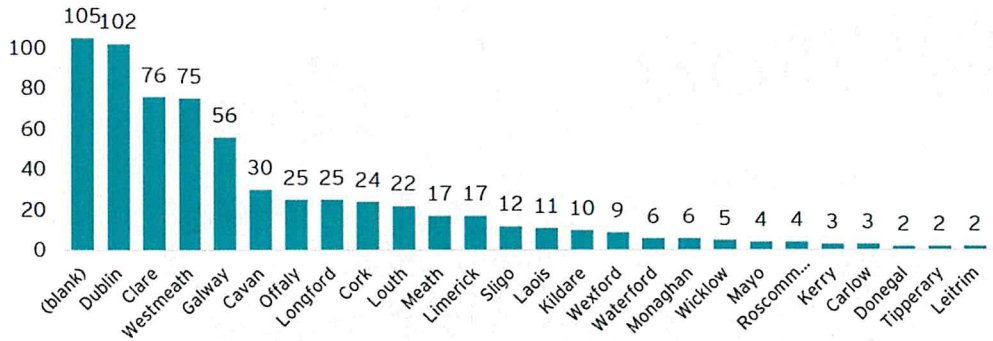
Source: Contact tracing analysis

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

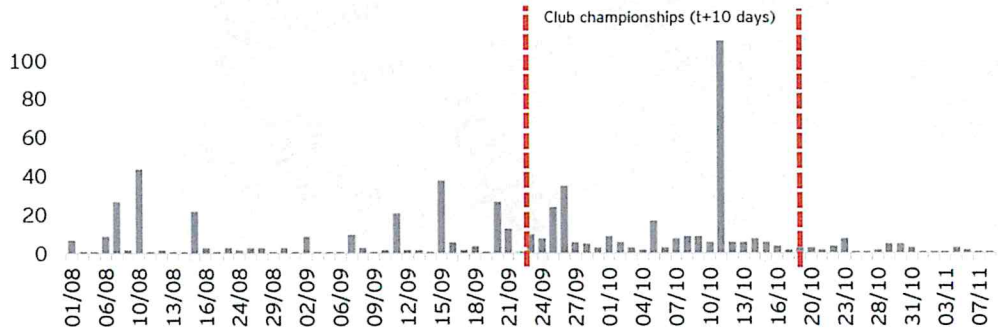
GAA-related events generated clusters of contacts, but absolute levels remain low

GAA-related terms mentioned 653 times since March

GAA and related terms mentioned in free text (by county)



GAA and related terms mentioned in free text (over time)



Note - there were 16 mentions before 1 Aug 2020

Key message: GAA events and celebrations appear to have generated incidences of high numbers of contacts with positive individuals. However, overall levels appear low.

Clare

24 GAA contacts on 7 Aug

33 GAA contacts on 10 Aug

End of July start for club games in Clare as master fixtures committee recommend new formats

Galway

34 contacts on 15 Sep

Mention a specific GAA team

Westmeath

52 GAA contacts on 11 Oct

GAA related

Football senior finals on 27 Sep

Dublin

17 contacts on 15 Aug

Mention a specific GAA camp

Camps took place between 22 July and 23 Aug

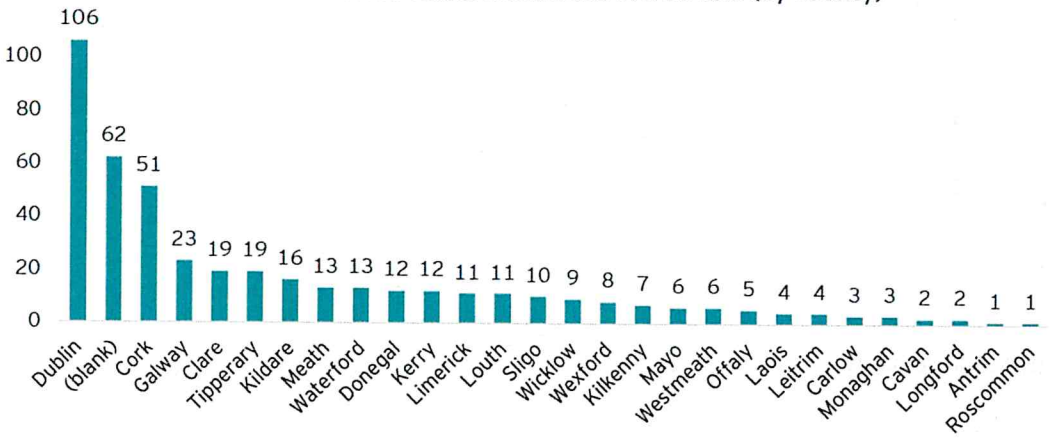
Source: Contact tracing analysis
Terms searched: terms 'GAA', 'Gaelic', 'County Final', 'County Championship', Hurling' and 'Football'
Football and hurling championships took place between 13 Sep and 9 Oct 2020

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Contacts generated in restaurant settings, however overall levels remain low

Restaurants mentioned 439 times since March

Restaurant related terms mentioned in free text (by county)



Key message: Restaurants generated contacts, however absolute levels remain relatively low given data available.

Dublin

18 contacts relating to a coffee chain 17-19 Aug

5 contacts relating to Dublin restaurant chain 24-25 Sep

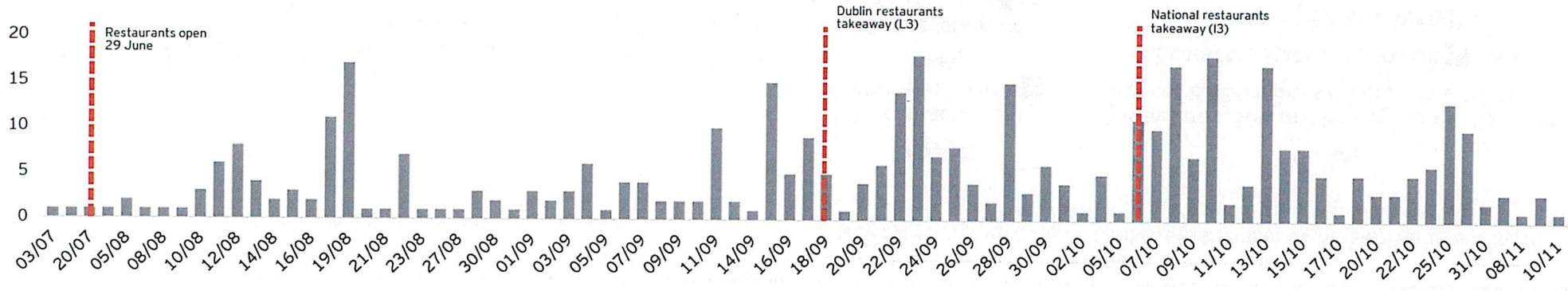
Cork

5 contacts relating to a restaurant chain 28 Sep

4 contacts relating to one restaurant

4 contacts relating to a fast food chain 9-10 Nov

Restaurant related terms mentioned in free text (over time)



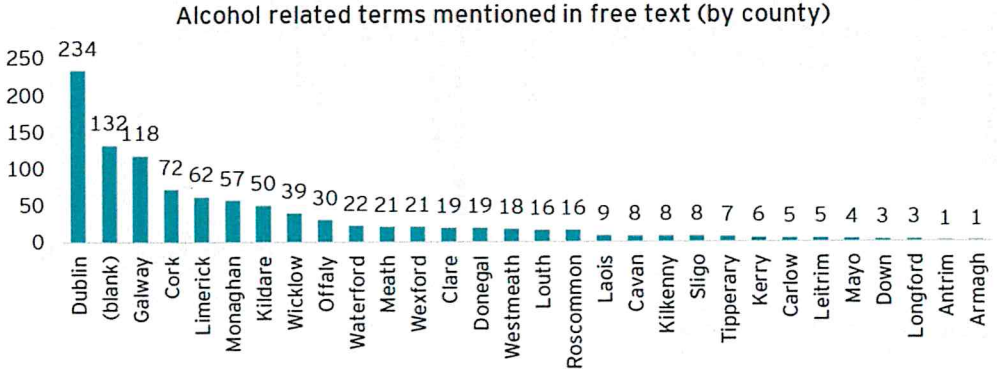
Note - there were 18 mentions before 1 July 2020

Source: Contact tracing analysis
Terms searched: Restaurant, eating out, out for a meal, and a list of all national chains in Ireland

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Alcohol and social gatherings generated contacts with positive individuals

Alcohol and party-related terms mentioned 1,017 times since March



Key message: Alcohol-related events appear to be a driver in contacts generated, with relatively high numbers given data available.

Limerick

17 contacts from confirmation party Aug

33 contacts from communion party Oct

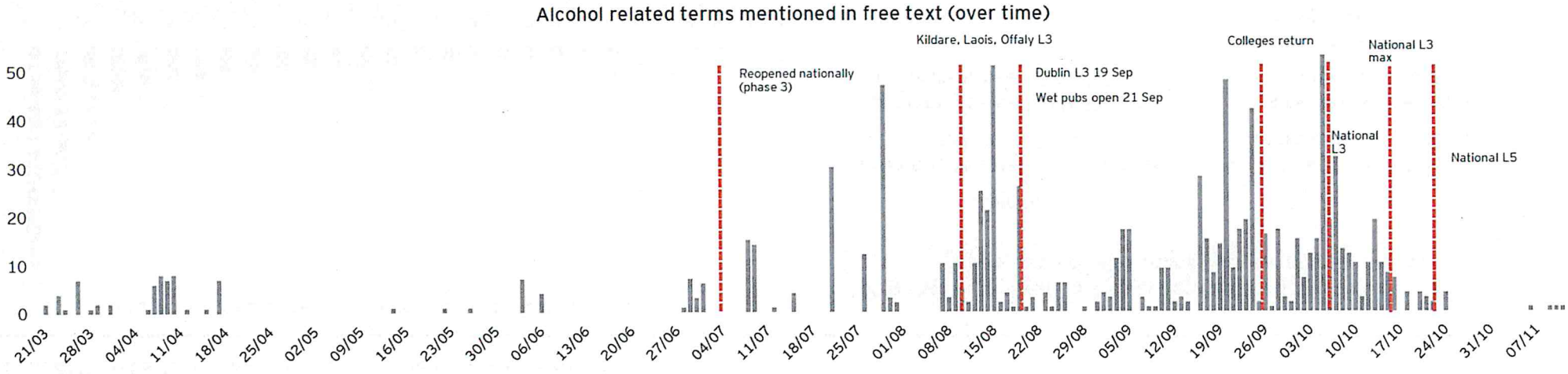
Galway

Galway has c.50% smaller population than Cork but has c.65% more alcohol related contacts

22 contacts from one party on July

15 contacts from a kids' party Sep

31 contacts from a party Sep



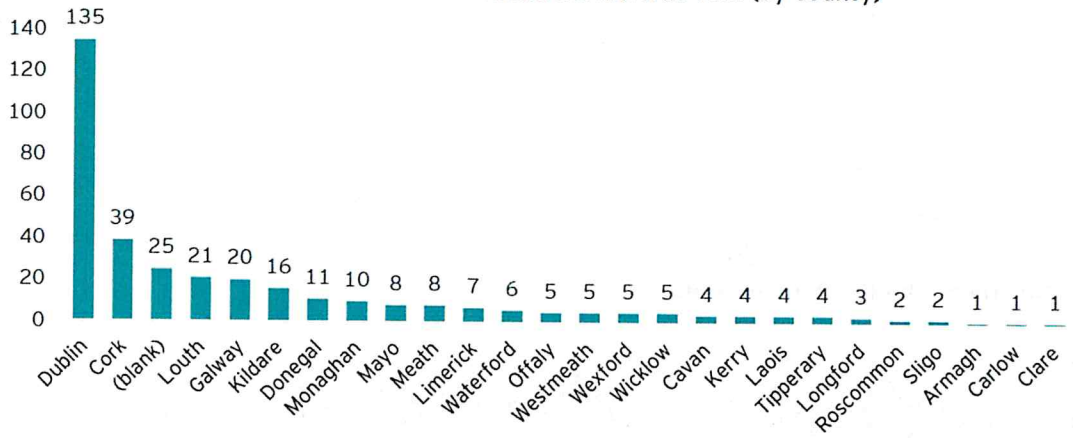
Source: Contact tracing analysis
Terms searched: alcohol', 'drink', 'party', 'celebration', 'booze', 'beer', 'wine', 'cans', 'pint'

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Close contact services generate a low number contacts in majority of counties

Close contact personal services (hairdressers, beautician, barber etc.) mentioned 352 times since March

Close contact services mentioned in free text (by county)



Key message: Close contact personal services generated a relatively low number of contacts, given data available. Contacts appear to be generated from a small number of occurrences.

Dublin

7 contacts from one hairdresser 3 Sep

8 contacts from salon likely to be in the same location 30 Sep

8 contacts from salon 15 Oct

Cork

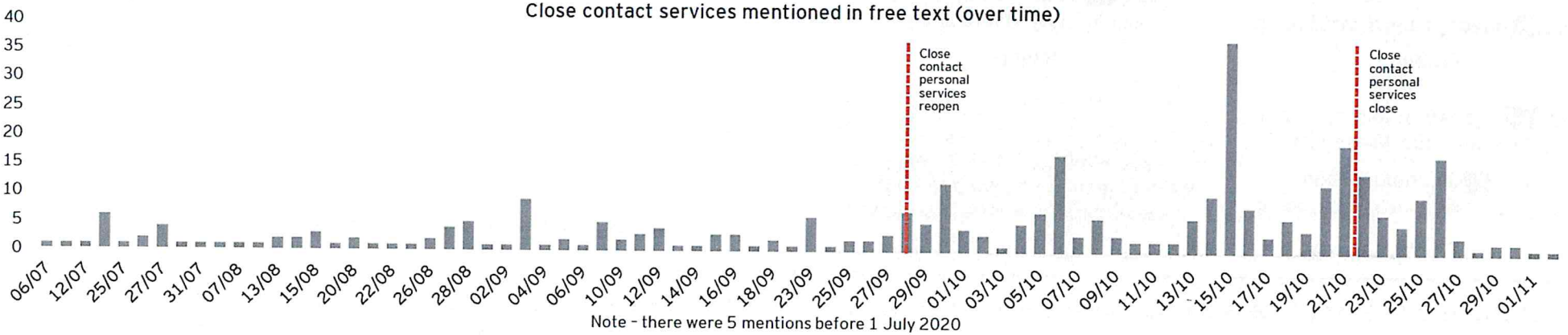
11 contacts from one hairdresser 21-22 Oct

3 contacts from hairdresser/barber (not necessarily linked) 23 Oct

Louth

14 contacts likely from one hairdresser 21-22 Oct

Close contact services mentioned in free text (over time)



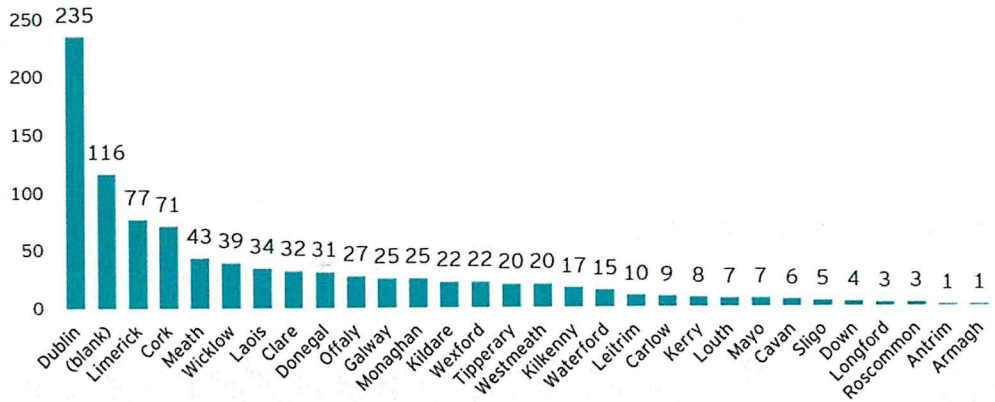
Note - there were 5 mentions before 1 July 2020

Source: Contact tracing analysis
Terms searched: 'hairdresser', 'salon', 'nail bar', 'beauty bar', 'tanning', 'beautician', 'tattoo'.

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Traditionally religious* celebrations account for high number of contacts

Weddings, mass, worship, funeral related terms mentioned 935 times since March, spike seen in Autumn months



Key message: Religious related events and parties appear to be a driver in contacts generated.

Dublin

15 contacts from family funeral/communion Sep

17 contacts from funeral Oct

36 contacts from a wedding Oct

19 contacts from a funeral Nov

Cork

8 contacts from a wedding, mass and communion Sep

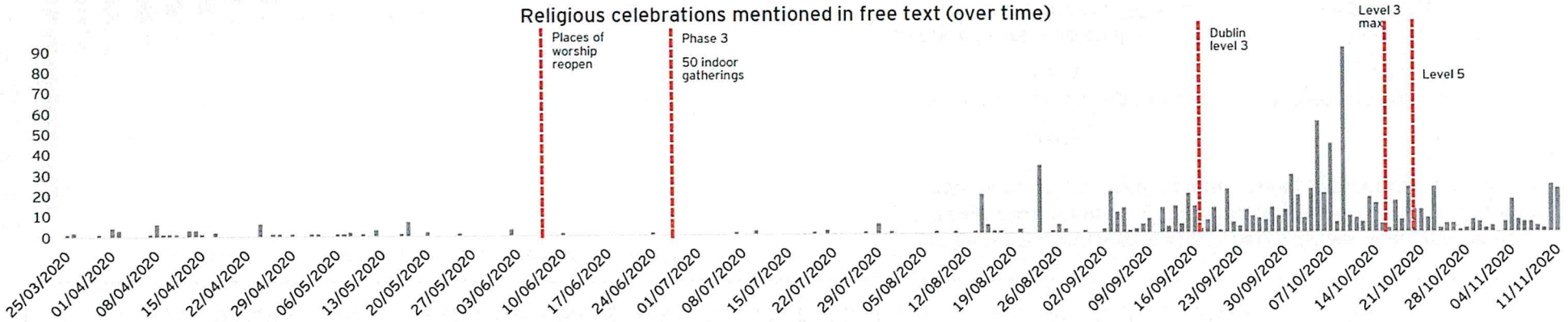
12 cases from a funeral, 4 contacts due to wedding Oct

Limerick

6 contacts from a funeral May

15 contacts from a confirmation party Aug

33 contacts from a communion party Oct

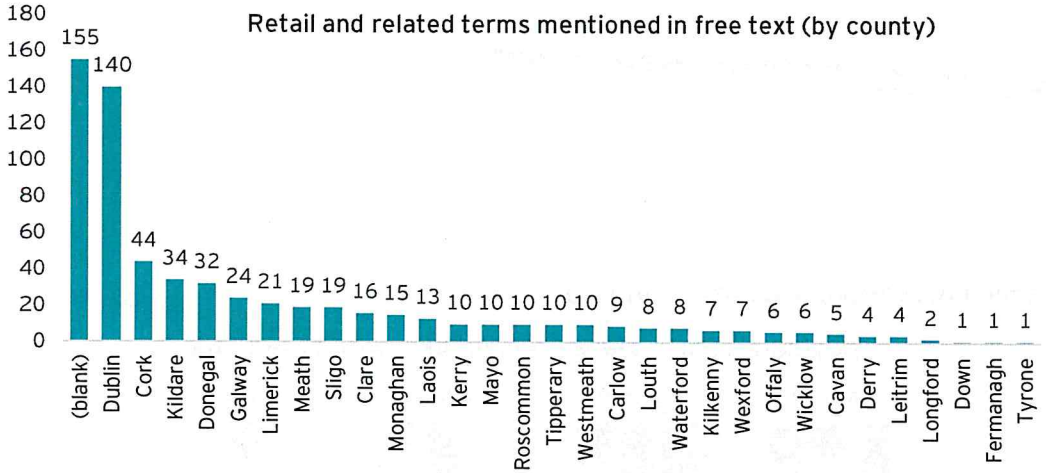


Source: Contact tracing analysis
Terms searched: 'mass, church, worship, communion, funeral, wedding, confirmation service, confirmation party, temple, synagogue, mosque and prayers
*Terms include weddings and funerals which may not be religious services

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Retail generates contacts with positive cases, but low overall incidences recorded

Retail and related terms account for 651 contact circumstances with positive individuals



Retail store cases appear to be driving by smaller outbreaks rather than large clusters

Dublin

No large clusters, largest number of contacts on a single day was 5

5 contacts in supermarket 18 May

Kildare

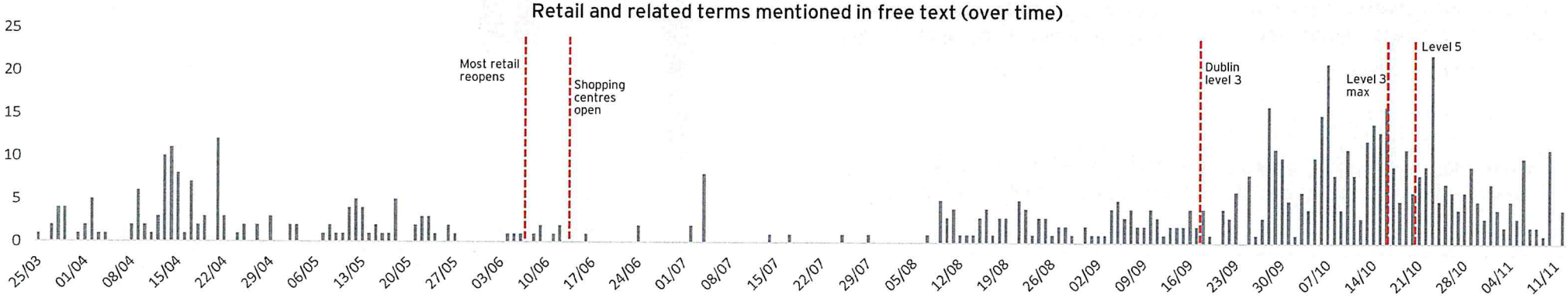
No large clusters, largest number of contacts on a single day was 3

2 contacts in shop 19 Oct

Cork

No large clusters largest number of contacts on a single day was 5

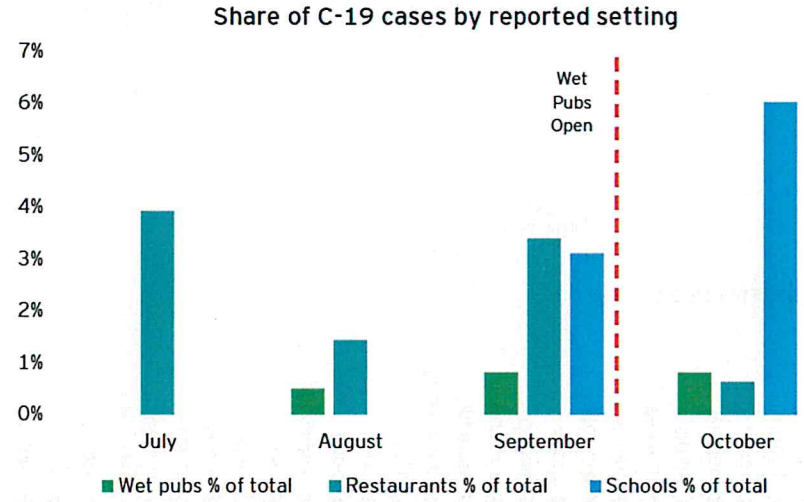
5 contacts in supermarket 10 Nov



Source: Contact tracing analysis
Terms searched: shop, SuperValu,Lidl,Tesco,Aldi,Dunnes Stores,Eurospar,Iceland,Marks & Spencer, Donnybrook Fair, Joyces,Fresh, Spar,Centra,Londis,Mace,Gala,Daybreak,Costcutter,Applegreen, Newsagent

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Wet pubs reopening – growth in cases in Dublin slower than the national average



Source: CIDR

Dublin saw a slower rise in cases compared to the national average, following the reopening of wet pubs outside Dublin on 21 September

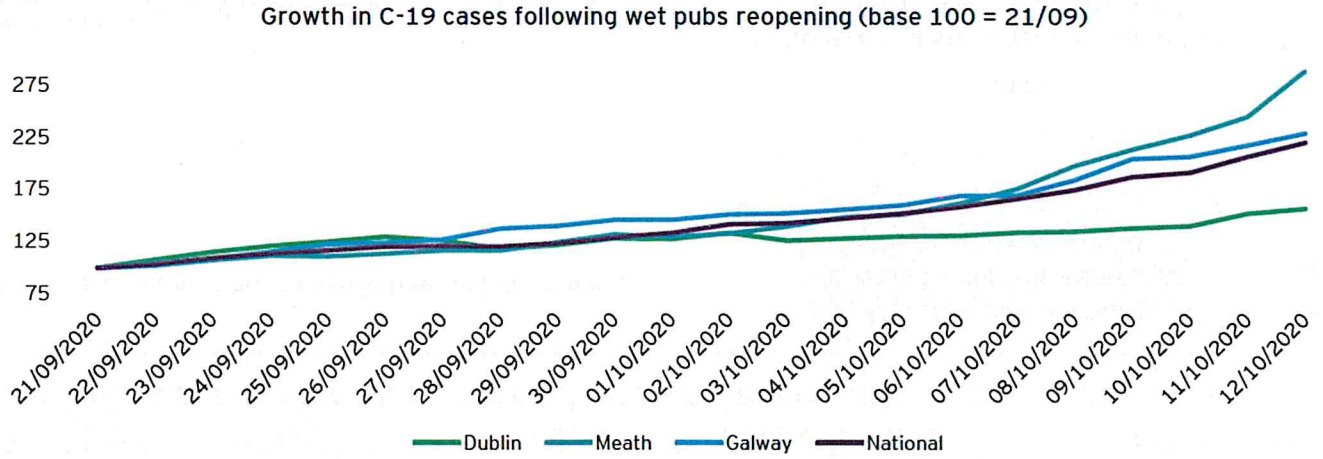
Dublin

Daily cases in Dublin increased by an average of 2% per day in the three weeks after this change.

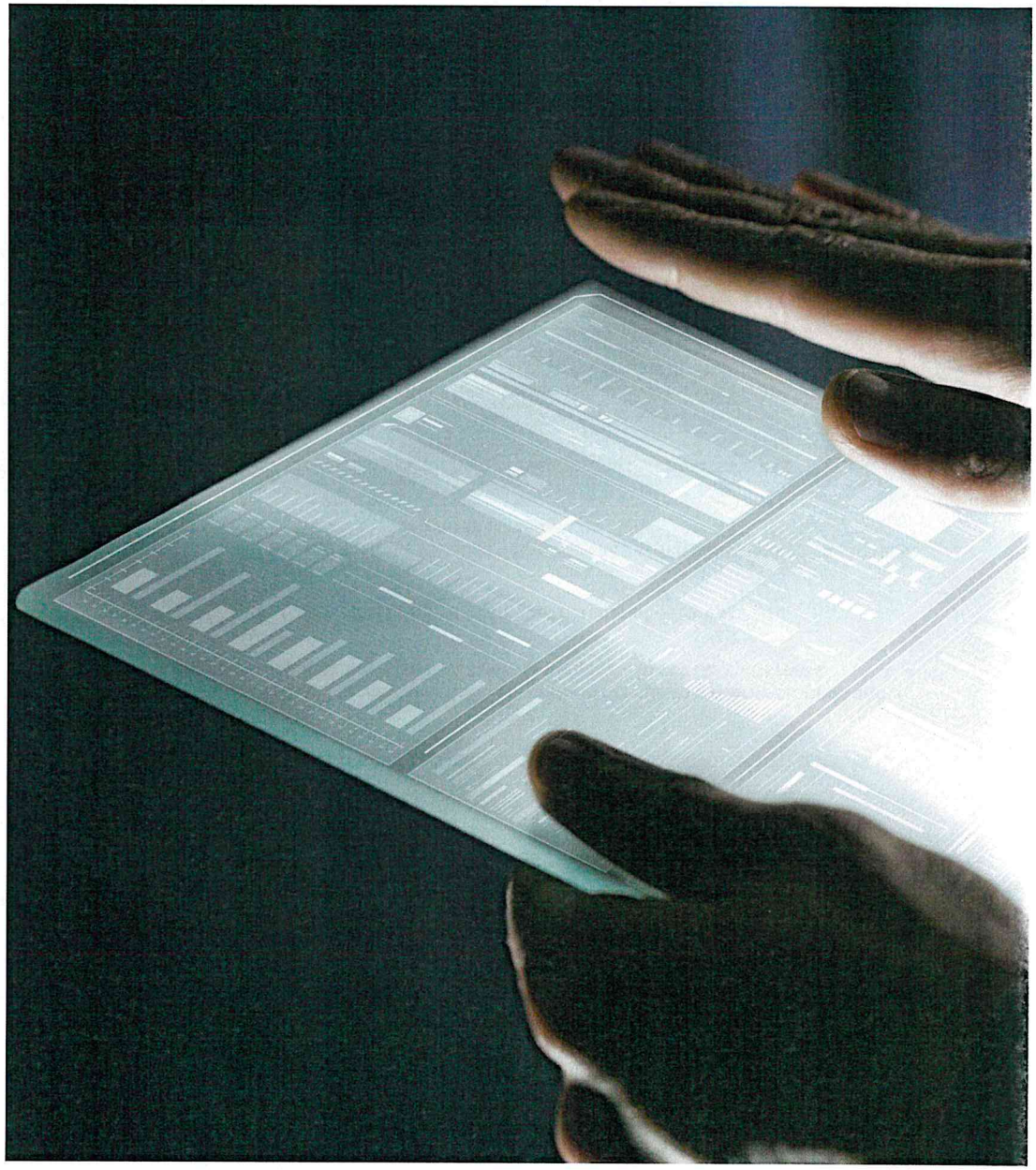
National daily cases rose by 6.7% per day during the same period.

Cork and Galway

Travel within rose by 7.3% in Cork and 5.4% in Galway immediately after the date the pubs reopened.



Planning for
Christmas?



Potential implications for Christmas for discussion (and focus for next week)

Christmas Activity	Mitigations	Comment
Bars and Restaurants	Limit on customer numbers, 2m apart, cashless payments, €9 food purchase, time-limit, outdoor service	Transmission in bars likely due to lack of masks/long term exposure / loud talking / poor ventilation
Nationwide Visits/ Christmas Dinner	Domestic travel restrictions, disposable cutlery, doors and windows open, no buffet style meals	High risk of transmission in households due to airborne droplets and shared surfaces
Sporting Events	As with current restrictions	GAA training and celebrations are linked to a number of outbreaks across counties
House Gatherings / Parties	As with current restrictions	High risk of transmission in households due to airborne droplets and shared surfaces. Wet pub contagion. Link to LED outbreaks
Christmas Shopping	Click & collect, queueing systems, masks, possible booking in shopping centres (Kildare Village), cashless payments	Retail outlets linked to smaller number of outbreaks
Christmas Plays/Concerts/ Mass	As with current restrictions	Large events can cause new outbreaks within communities but are less responsible for overall transmission
Travel Home to Ireland	Safeguards in place for high risk countries , EU traffic light system, quarantine period after arrival	Travel restrictions help reduce spread in lower risk areas
City Breaks Abroad	Safeguards in place for high risk countries, EU traffic light system, quarantine period after arrival	Travel restrictions help reduce spread in lower risk areas
Visits to Santa	With safeguards such as masks, hand sanitizer stations, 2m apart, drive-in Santa (RDS), virtual Santa (Already organised in some schools)	Staying 2m apart reduces the chance of being exposed from respiratory droplets emitted by others
Hotel Breaks in Ireland	No buffet style meals, 2m apart, domestic travel restrictions may apply	Travel restrictions help reduce spread in lower risk areas
Charitable Events	2m apart, limit on number allowed at gatherings, virtual events, outdoor events	Large events can cause new outbreaks within communities
Christmas Markets	Restriction to essential items, cashless payment where possible, 2m apart, masks, crowd control	Outdoor activities generally are lower risk than indoor activities. Peer countries are cancelling such events

What is the international evidence telling us about preparing for festivals?

Christmas	France	Waiting to decide plans after lockdown impacts are analysed, expected early December
	UK	Large Christmas markets cancelled in Birmingham, Edinburgh, London, Glasgow and Bristol
Thanksgiving	Tennessee, USA	Restricted the size of private gatherings to 10, and limited to three households
	Minnesota, USA	Recommendation to socially isolate for two weeks beforehand
	Canada	Ontario imposed a 10-person bubble to contain COVID-19
Diwali	UK	Diwali celebrations at Trafalgar Square have been swapped for a virtual celebration
	India	Many states have banned the use and sale of firecrackers
Ramadan	Egypt	Ramadan bazaars with stalls selling food, drinks and clothes were not allowed
	Malaysia	Group iftars and charity tables were banned
	Saudi Arabia	Shortening of Tarawih prayers, which were held without public attendance
Eid ul-Fitr	Malaysia	Only allowed to visit relatives who live nearby with gatherings limited to 20 people

Progress update

Progress update

GOVERNANCE AND SET UP

- Delivered weekly Progress Report and Progress Update meeting today
- Delivered 1GC Azure detailed design and shared with HSE
- Completed first 1GC Azure feedback session with HSE Technology team and now updating accordingly
- Completed first full draft of 1GC Data Protection Impact Assessment
- Meetings with GeoHive, CSO, DOH and HSE to discuss data requirements and ownership. Requires DOT input (see next page)
- Gained access to HSE Track and Trace data for analysis included today
- Meeting today with Covid19 Data Coordination Group to introduce project

USE CASE DESIGN

- Send detailed mobile requirements to DOH to support 3 mobile contract discussions
- Met with DOH Disease Modellers to get their input to the Social Distance Index Design
- AIB completed payments analysis and now awaiting confirmation on how to send
- Confirmed required changes to 1GC Dashboard with initial focus on changes relevant to this weeks' analysis. Other changes (such as politician view) to be updated next week

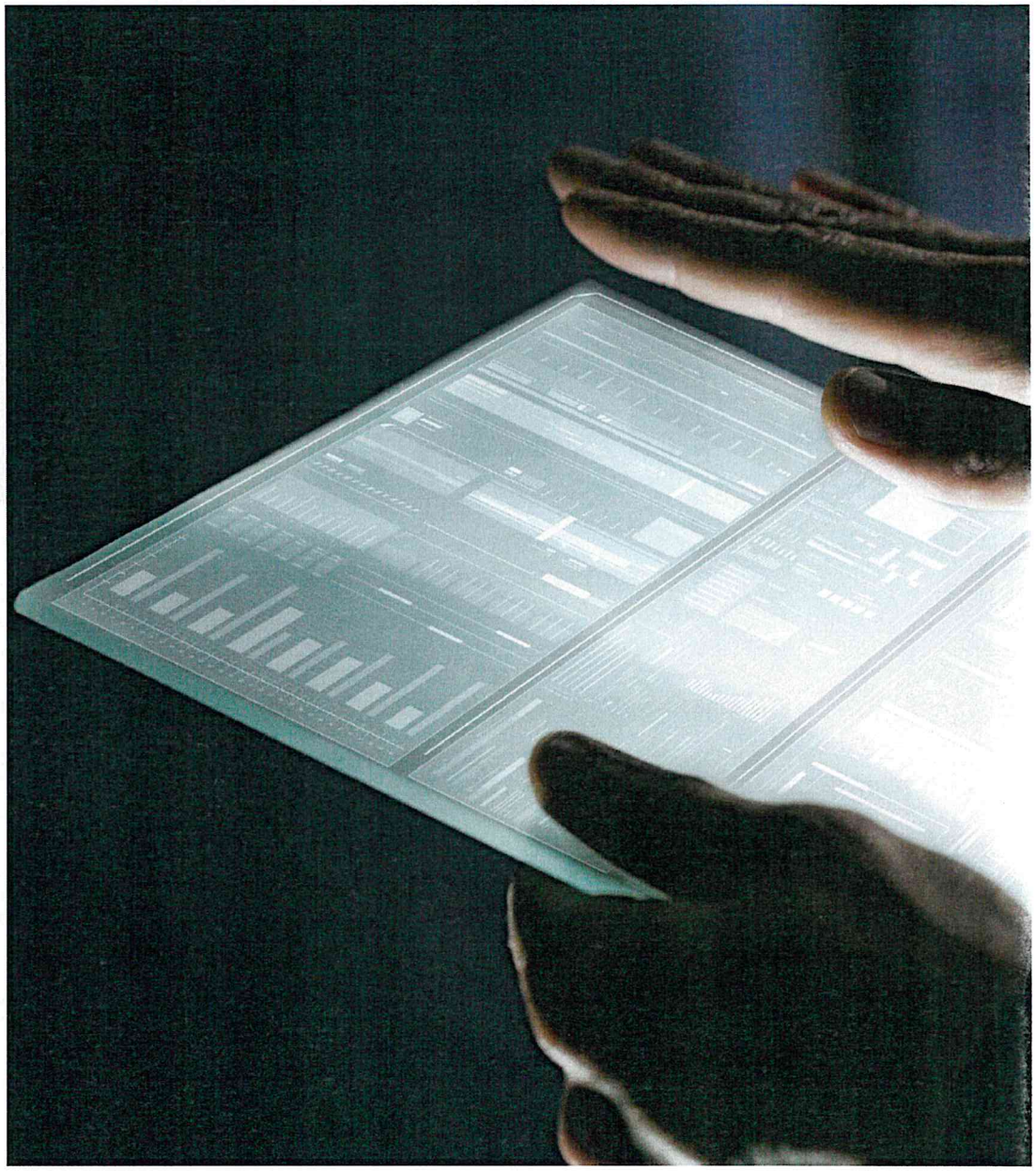
INSIGHT DEVELOPMENT

- Update on specific "control group" cross county analysis and with summary included today
- This includes cross border analysis, "Half Your Contacts" success, Donegal assessment, comparison between Laois, Kilkenny and Offlay, Wet Pub Dublin vs Cork, etc
- Detailed analysis of international and Ireland restriction "value" and with summary included today
- Initial analysis of T&T contact text fields and super-spreader characteristics and included today
- Summary analysis of economic impact per restriction and industry and included today

Next steps

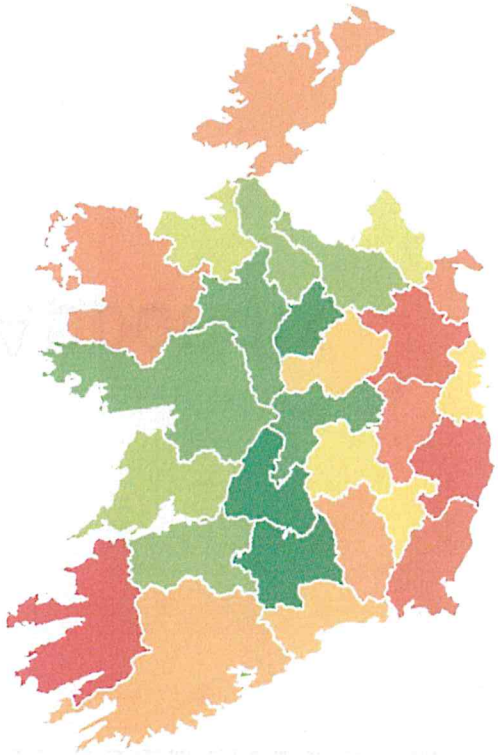
- Update and expand Use Cases for feedback from today and with LED and restriction focus
- Resolve Data Protection and Data Sharing Points
- Stand Up Microsoft Azure insight Platform with HSE
- Confirm DOH Contract, get access to 3 mobile data and start build / incorporation of insights

Appendix



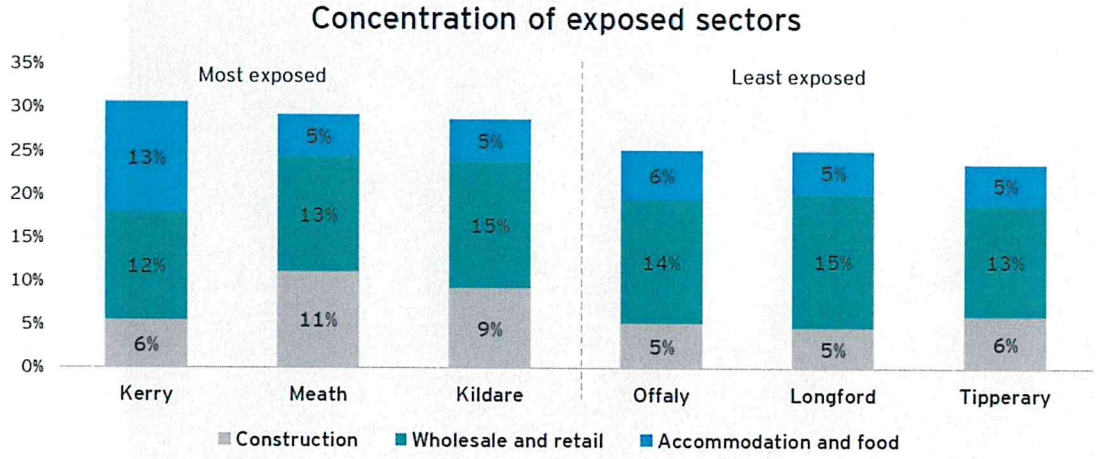
PUP analysis: Kerry, Wicklow and Meath highest 'exposure' to C-19 disruption given sectoral mix

COVID-19 sector 'exposure' by county



Sectors were ranked according to their risk of Covid-19 lockdown disruption (1-5). Counties were then ranked based on their sectorak employment mix to assess those at most risk of disruption.

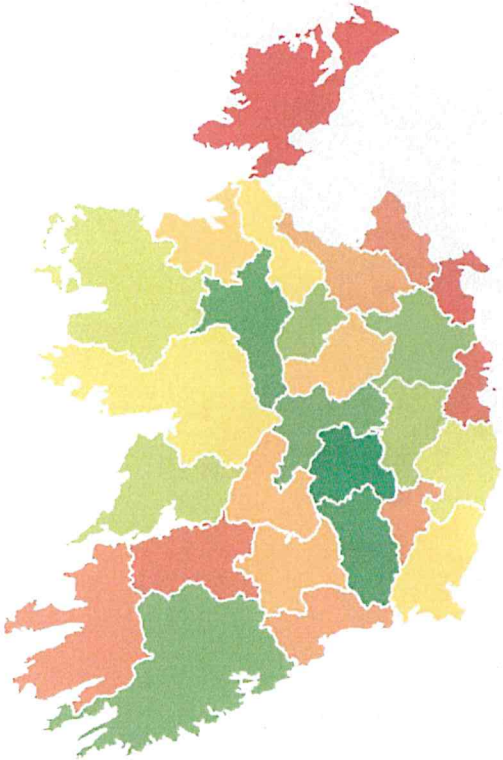
- Kerry, Wicklow, Meath, Wexford and Kildare have the highest exposure given sectoral composition, skewed more towards hospitality and public-facing sectors
- Tipperary, Longford, Offaly and Roscommon have the lowest exposure risk



Source: CSO, DEASP, EY analysis, EY 2019 local employment estimates

PUP analysis: Border counties doing worse than expected given sectoral mix

PUP payments versus national average (9 Nov)



PUP recipients in each county were compared to national average levels expected by sector. This assessed if counties are performing better or worse than the national average given their sectoral composition.

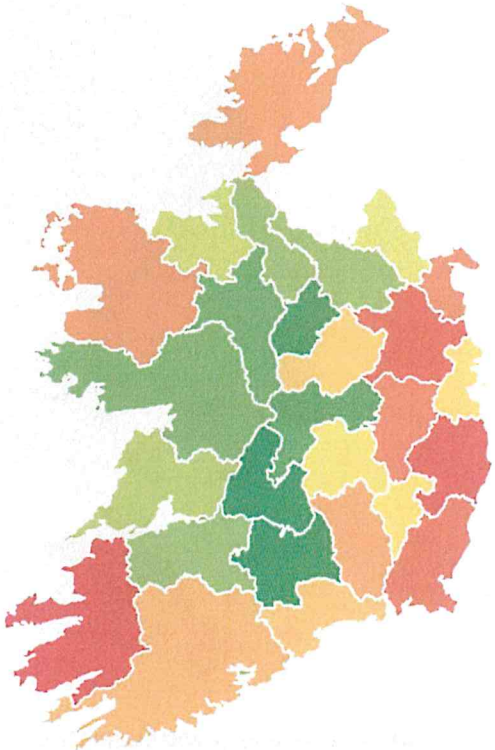
- Donegal, Louth, Limerick, Dublin and Monaghan are currently worst-performing compared to national average
- Laois, Kilkenny, Roscommon, Offaly and Cork doing better than national average given sector mix
- Donegal, Dublin and Monaghan have been at higher restriction levels than the rest of the country for longer

County performance V national average (9 Nov)

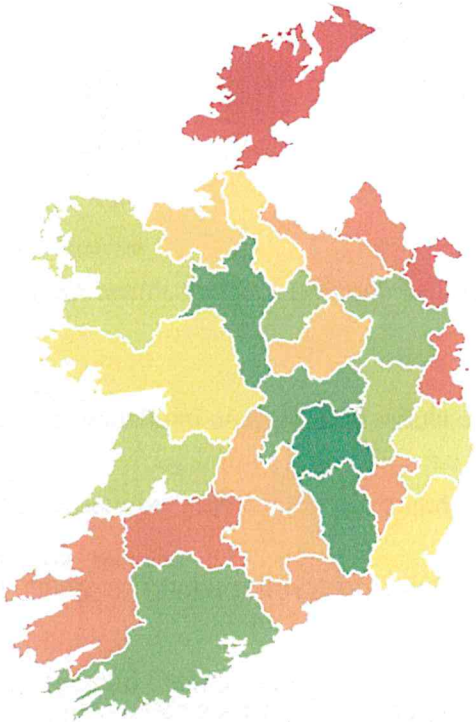
Source: CSO, DEASP, EY analysis, EY 2019 local employment estimates

PUP analysis: C-19 case rates and prolonged restrictions levels appear to be impacting unemployment levels

Sector "exposure" by county



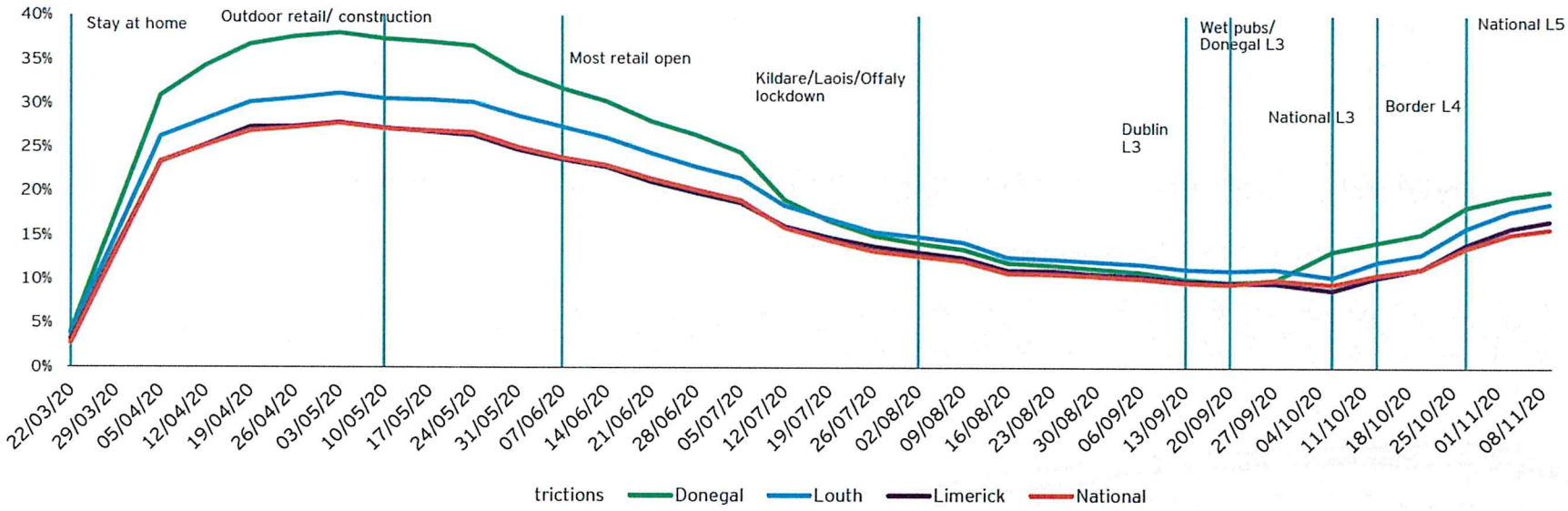
PUP payments versus national average (9 Nov)



- Border counties are performing worse than expected in terms of current PUP recipients given 'exposure' risk
- Cork, Mayo, Galway and Wicklow are doing better than expected, and have been in lockdown for less time than Dublin and the border region

Source: CSO, DEASP, EY analysis

Donegal consistently above national average for employment impacts, even before additional lockdown



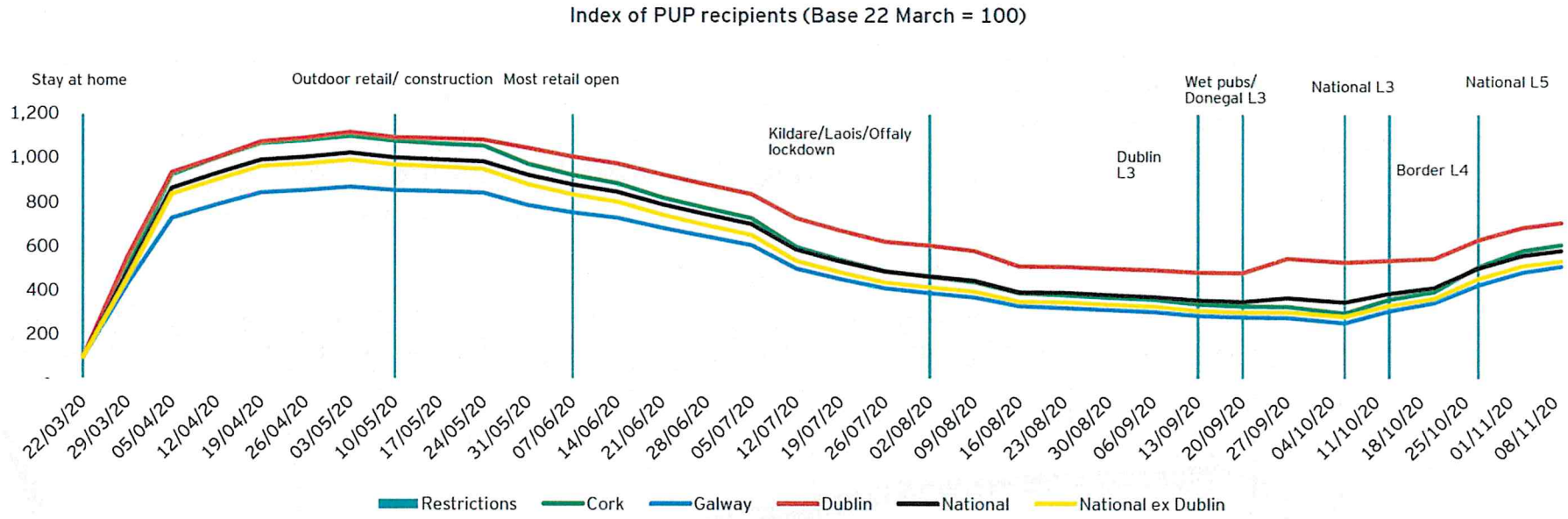
PUP % share of 2019 employment (est)

	National	Donegal	Louth
Peak	28% (602k)	38% (23k)	31% (17k)
Current	**16% (343k)**	**20% (12k)**	**17% (10k)**
Open to level 3	+ 86k	+3k	+ 3k
Level 3 to level 4	N/A	+ 2k	N/A
Level 3 to Level 5	+46k	+14k	+2k

- PUP levels in Level 5 have not risen to wave 1 peak (early May)
- Donegal performing worse than average due to sectoral composition and prolonged lockdown

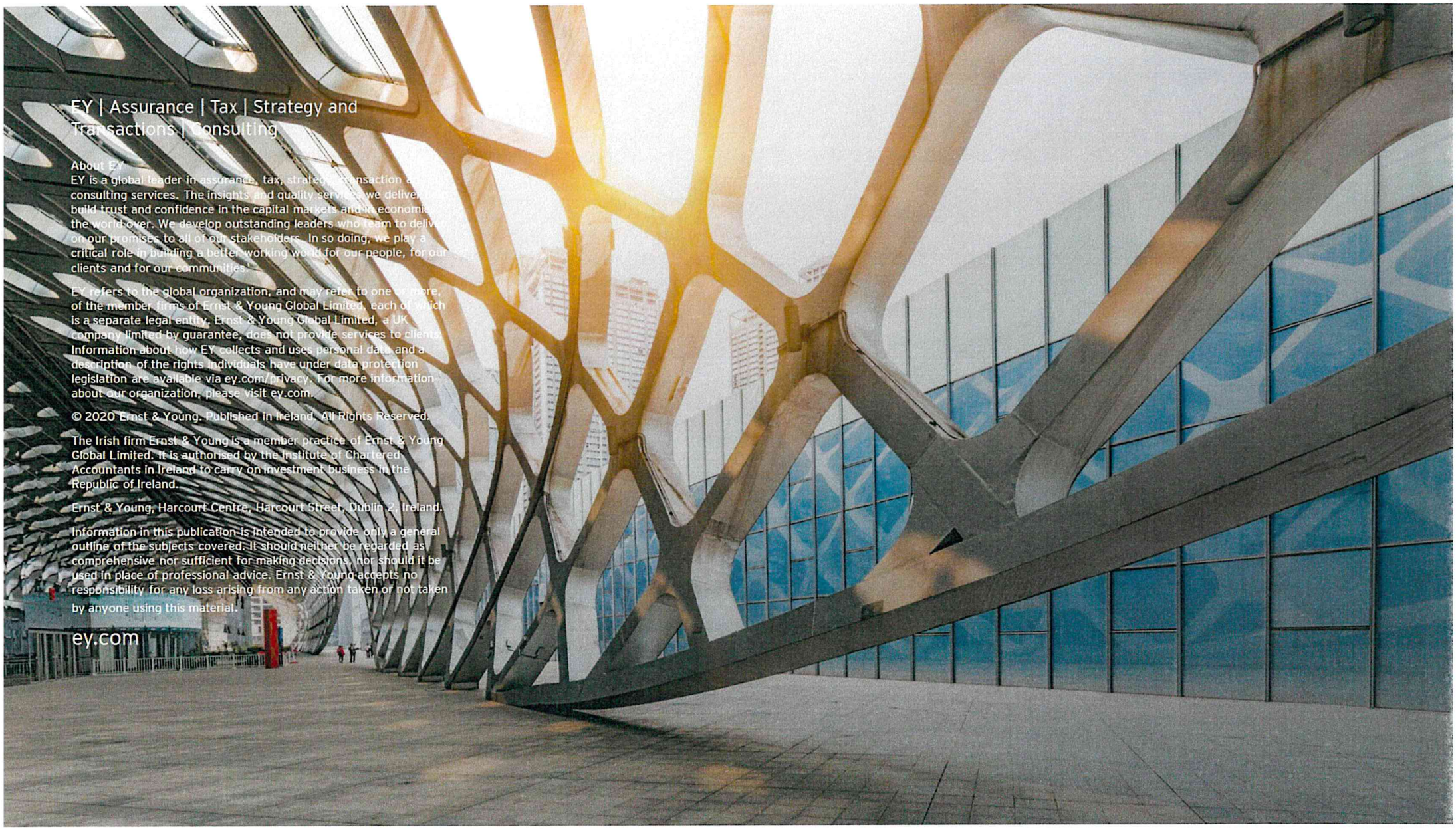
Source: CSO, DEASP, EY analysis, EY 2019 local employment estimates

PUP levels increase with Level 5, but remain 43% below previous peak



PUP levels	3 May (peak)	6 Oct (low)	9 Nov (latest)	Peak - low	Low - latest
Cork	62k	17k	35k	-73%	+103%
Galway	33k	10k	19k	-71%	+100%
Donegal	23k	6k (20 Sept)	12k	-74%	+103%
Dublin	176k	76k (20 Sept)	112k	-57%	+47%
National ex. Dublin	427k	122k	231k	-71%	+89%
National	602k	206k	343k	-66%	+67%

Source: EY analysis



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1GC Priority Use Case Analysis

Based on Briefing Session 13 Nov 2020

USE CASE	DESCRIPTION	OUTSTANDING ACTIONS	PRIORITY	DEPENDENCY	OWNER
Ireland Restriction Impact	Retrospective Analysis of introduction and removal of restrictions in Ireland to seek to isolate individual value. Informs future restrictions decisions	• Complete sensitivity analysis for 7-15 days outcome • Add university opening and going online • Add NI restrictions for Border Counties • Complete Restriction Analysis • Confirm and if yes complete multivariate analysis	VERY HIGH	None	Graham and Fiona
International Restrictions Impact	Retrospective Analysis of introduction and removal of restrictions in Europe to seek to isolate individual value. Informs future restrictions decisions	• Increase to 12 countries • Add additional identified restriction data • Complete Restriction Analysis • Confirm and if yes complete multivariate analysis	VERY HIGH	None	Nitin and Nik
Current Increase Explanation	Understand the recent slowing / reversal of cases reduction	• Understand the recent changes by LED • Overlay most recent outbreak data, e.g. funerals, etc • Overlay with recent mobility data, e.g. TII, Google, Apple • Compare with May decline to see what is different	VERY HIGH	None	TBC
Track and Trace Text Analytics	Detailed analysis of contact explanations to better understand causes of outbreaks	• Complete analysis for "communion parties", "hotels" and "schools/universities" • Quantify positivity rate for each category and compare versus average around the same time • Add Roscommon final to GAA analysis • Bring together into three or four stories ("party", "funeral", etc)	HIGH	None	Kenny
Christmas Disease Rates	Understand disease growth and restrictions implications over Christmas	• Incorporate Christmas Disease Forecast Estimates from NEPHET to understand impact of Christmas period by county / LED • Inform related restrictions analysis accordingly	HIGH	None	TBC
Facebook Survey Tool	Create Excel showing Facebook Survey compliance by county and restriction	• Add all "compliance" self reporting metrics, e.g. mask wearing, hand washing, social distancing, etc • Create front end allowing user to select and compare counties over time and with restriction milestones highlighted	MED	None	TBC
County Analysis	Detailed LED level analysis per county showing key drivers of spread	• Complete for Cork, Waterford, Galway, Limerick, Carlow and Kerry • Complete specific comparison for all border county LEDs and confirm relationship with geographic proximity	MED	None	TBC

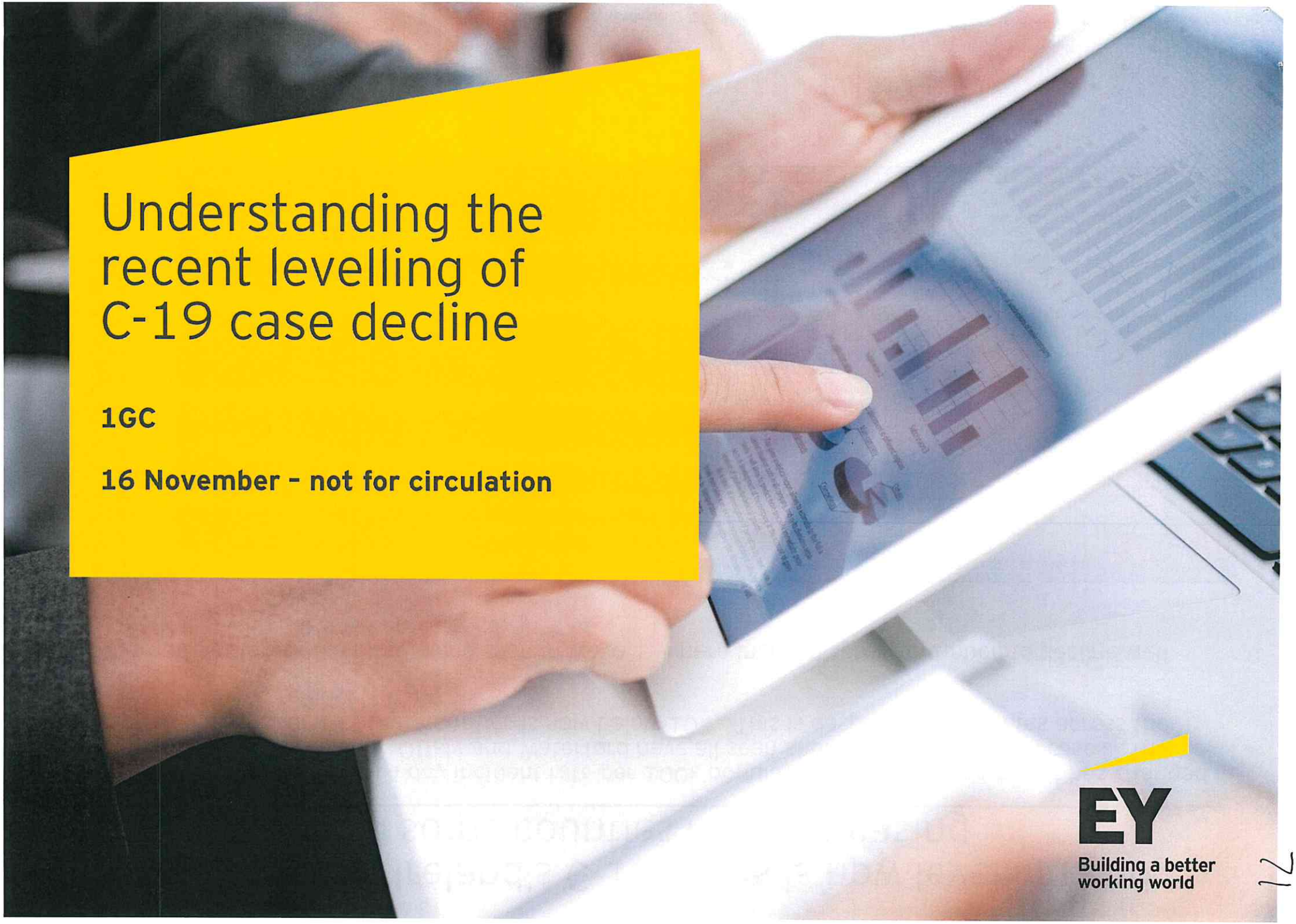
1GC Priority Use Case Analysis

Based on Briefing Session 13 Nov 2020

USE CASE	DESCRIPTION	OUTSTANDING ACTIONS	PRIORITY	DEPENDENCY	OWNER
Impact of Alcohol	Understand the impact of alcohol sales on outbreaks to better inform related restriction setting	• Get AIB data (dependency) • Merge with disease prevalence • Complete the related analysis to assess and quantify the relationship	HIGH	Awaiting AIB Data	Manny

Dashboard Enhancements	Create an interactive dashboard to support senior government stakeholder briefings	• Create view for politicians summarising counties:
		  • Cases / Hospitalisations / Deaths
		  • Excess mortality analysis performed by CSO
		  • Hospitalisations
		  • Median age of deaths
		  • Economic factors such as small business claims, PUP
			MED	None	Graham and Fiona

Senior Briefings	Prepare briefing plan and story board for senior government stakeholders	• Enhance our county and national analysis as outline above, bring all analysis up to date • Improve the restriction impact analysis • Integrate measures of compliance, particularly trending in the last number of weeks • Integrate wider sources such as deaths, excess mortality, etc • Be clear on data / analysis quality in these briefings, e.g. what is "qualitative", "impressionistic", etc	HIGH	None	Eve, Manny
Christmas Briefing	Our ability to monitor compliance will be critical for December	• Consider an enhanced daily analysis snapshot and briefing schedule	MED	None	Eve
Impact of Working From Home	Understand the impact of working from home on outbreaks to better inform related restriction setting	• Get Stay at Home Index from 3 mobile (dependency) • Merge with disease prevalence • Complete the related analysis to assess and quantify the relationship	HIGH	Awaiting 3 Mobile Data	John
Impact of Social Distance	Understand the impact of social distancing on outbreaks to better inform related restriction setting	• Get Social Distance data from 3 mobile (dependency) • Create Social Distance Index for Dublin • Merge with disease prevalence • Complete the related analysis to assess and quantify the relationship	HIGH	Awaiting 3 Mobile Data	John



Understanding the recent levelling of C-19 case decline

1GC

16 November - not for circulation

EY
Building a better working world

12

The reduction in Ireland's C-19 cases is now levelling and with the cases in some counties now increasing

The below table shows the 14 day incident rate per 100k population by county and how it has changed in the last three days. Leitrim, Offaly and Waterford have all seen short term increases in cases. The reduction in cases for 14 other counties is now below 10%. This is despite incident rates across the country still being relatively high.

This is quite different from the trend seen in Wave 1, where incident rates continued to decline well beyond this level of disease prevalence.

Getting worse

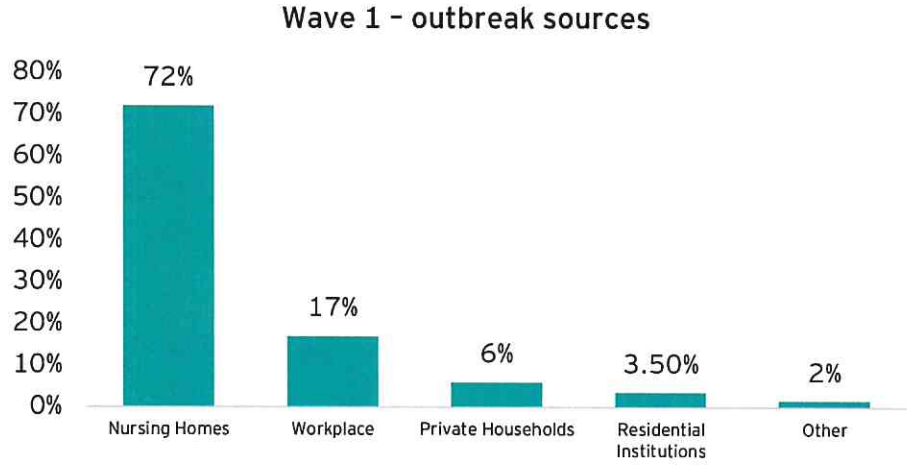
Getting better

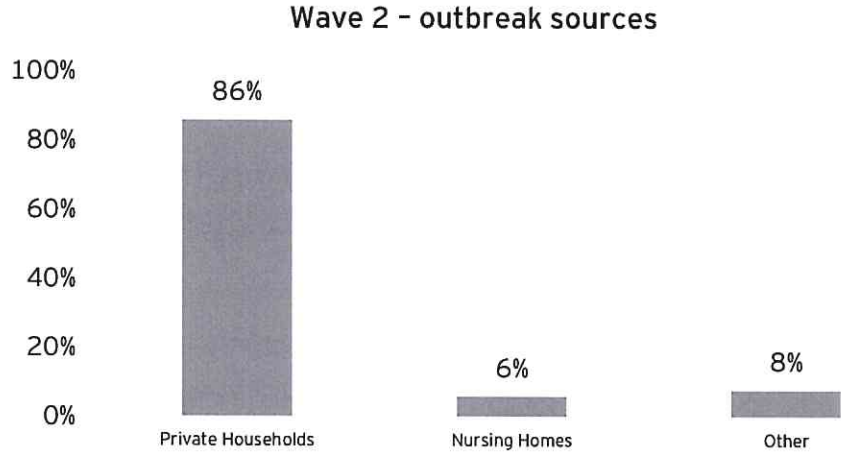
Counties	01/11/2020	02/11/2020	03/11/2020	04/11/2020	05/11/2020	06/11/2020	07/11/2020	08/11/2020	09/11/2020	10/11/2020	11/11/2020	12/11/2020	13/11/2020	14/11/2020	15/11/2020	% Change in last 3 Days
Leitrim	106.1	96.7	84.3	68.7	56.2	31.2	28.1	34.3	37.4	37.4	40.6	53.1	62.4	71.8	78	47%
Waterford	204	201.4	196.3	194.5	188.5	179	164.4	148.1	137.7	130	136	115.3	142	140.3	154.9	34%
Offaly	162.9	159.1	136	118	112.9	111.6	109	115.4	118	106.5	112.9	107.7	110.3	118	137.2	27%
Limerick	269.4	262.7	228.3	227.8	229.9	226.3	218.1	220.1	213.4	209.3	201.1	197.5	196.5	212.9	201.6	2%
Kilkenny	132	142.1	134	136	134	135	141.1	141.1	134	131	133	128	129	132	130	2%
Westmeath	321.1	309.8	306.4	263.6	253.5	221.9	208.4	198.3	179.1	171.2	162.2	167.8	151	167.8	170.1	1%
Monaghan	288.3	273.7	221.5	208.5	177.6	179.2	169.4	146.6	140.1	125.4	125.4	122.2	128.7	135.2	123.8	1%
Wexford	173.7	171	140.3	123.6	125.6	96.2	89.5	83.5	74.8	68.1	67.5	49.4	51.4	48.8	49.4	0%
Kerry	221.4	199.7	186.2	179.4	194.3	190.9	178.7	163.2	155	141.5	141.5	130	128.6	128.6	129.3	-1%
Donegal	321	309.7	305.9	286.4	300.3	299	291.5	295.2	275.8	284.6	300.9	281.4	270.7	272.6	275.8	-2%
Roscommon	204.5	227.8	229.3	223.1	198.3	192.1	176.6	156.5	150.3	173.5	168.9	172	161.1	162.7	165.8	-4%
Wicklow	115.9	115.1	106.7	104.6	106.7	91.3	89.2	89.9	82.9	77.2	71.6	72.3	71.6	71.6	69.5	-4%
Dublin	220.9	227.2	219.5	211.5	201.5	201.1	192.2	186.8	173.7	162.6	154.6	146.2	138.2	143.4	140.3	-4%
Louth	297.2	298.7	256.8	221.9	193.2	201.7	188.5	176.1	159.1	155.2	157.5	159.8	149	152.9	152.9	-4%
Kildare	240.9	231	210.8	186.5	176.6	169	156.4	142.5	122.2	116	101.1	93.9	85.4	93	89	-5%
Laois	205.4	201.9	194.8	177.1	167.7	167.7	168.8	167.7	155.8	152.3	147.6	142.9	131.1	129.9	131.1	-8%
Carlow	268.7	275.8	252.9	245.9	217.8	219.6	187.9	170.4	147.5	130	114.2	101.9	103.6	96.6	93.1	-9%
Tipperary	130.4	130.4	131	130.4	132.2	129.1	128.5	124.1	115.9	124.1	117.8	113.4	117.2	115.3	102.2	-10%
Galway	297.6	283.3	256.9	243.4	211.6	187.9	171.7	145.3	125.9	108.9	108.1	96.9	86.8	82.9	86	-11%
Meath	474.3	482.5	380.4	323	291.7	280.4	260.5	243	212.8	203	172.3	163	152.8	151.8	144.1	-12%
Cavan	590.7	563.2	475.2	364.9	294.1	261.2	231	203.5	156.2	140.5	132.6	118.1	107.6	98.5	103.7	-12%
Clare	229.8	210.4	190.2	187.7	182.6	170	172.5	162.4	138.9	132.1	122.9	109.4	104.4	102.7	93.4	-15%
Longford	247.1	227.5	195.7	185.9	198.2	168.8	168.8	161.5	156.6	149.2	139.5	132.1	122.3	122.3	110.1	-17%
Mayo	243.7	229.9	214.5	195.4	181.6	182.4	183.1	173.2	163.2	147.9	151.7	147.9	144.8	120.3	115.7	-22%
Cork	305.2	278.2	259.7	243.7	235	240.9	217.9	197.8	182.4	159.9	146.1	121.9	109.1	103.2	91.2	-25%
Sligo	360.1	332.6	302.1	283.8	256.4	216.7	207.5	186.2	155.6	152.6	154.1	154.1	145	125.1	111.4	-28%
National	253.5	248	228	212.7	202.1	196.4	185.6	175.5	161	151.5	145	135.3	129.2	130.2	126.9	-6%

Source: HSPC Epidemiology of COVID-19 in Ireland – 14 day report

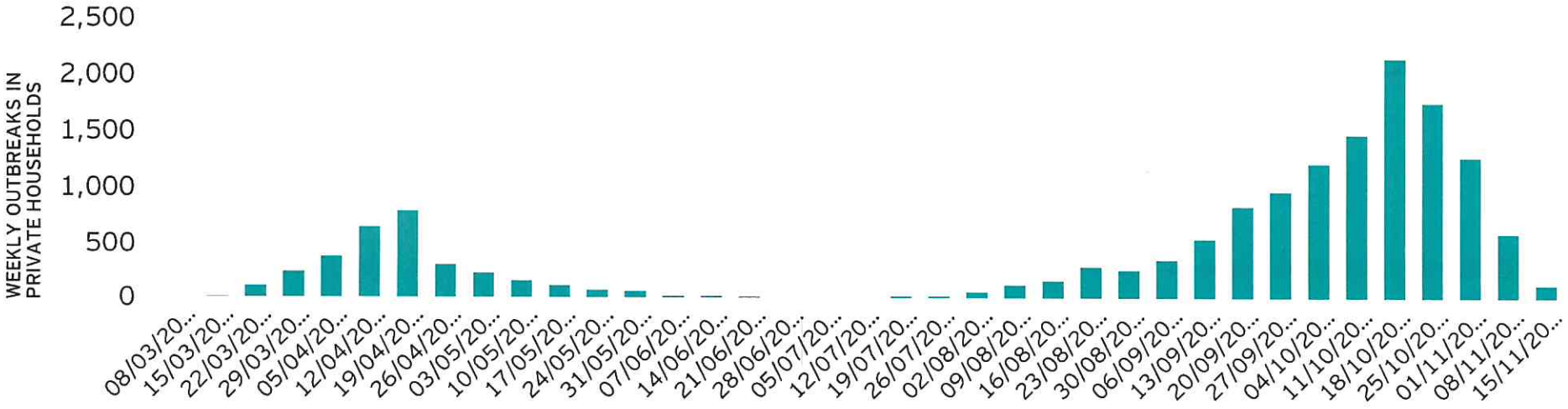
There are fundamental differences between the outbreaks in Wave 1 and Wave 2, which will impact how they trend

Wave 1 was characterised by outbreaks in nursing homes with a median age of 47 years old. Wave 2 has been driven by Private Households and with a median age of 33 years old. That is, both outbreaks have quite different citizen profiles and this will impact how each trends.





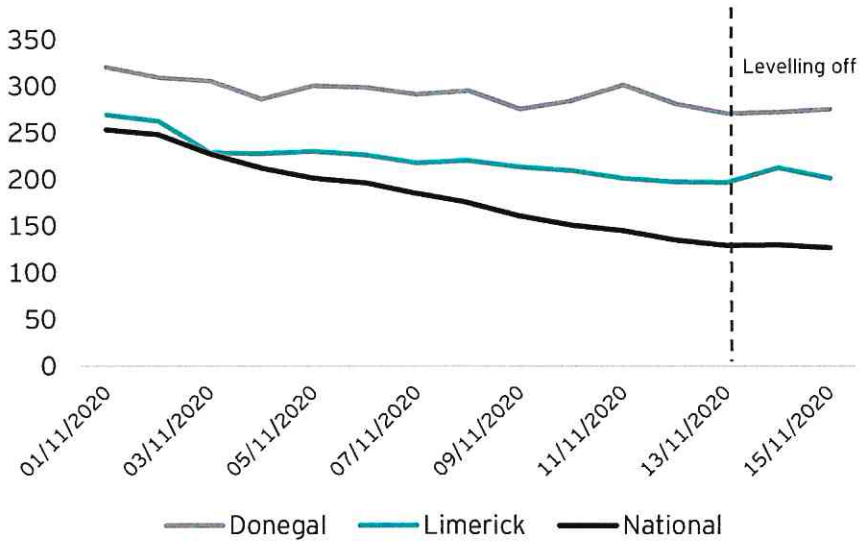
The peak of Private Household outbreaks in Wave 2 is approaching triple that seen during Wave 1.



Source: CIDR Note: Wave 1 measured from 23/04 to 19/0. Wave 2 from 20/10 to 15/11 (5 days before peak number of cases to 3 weeks after peak

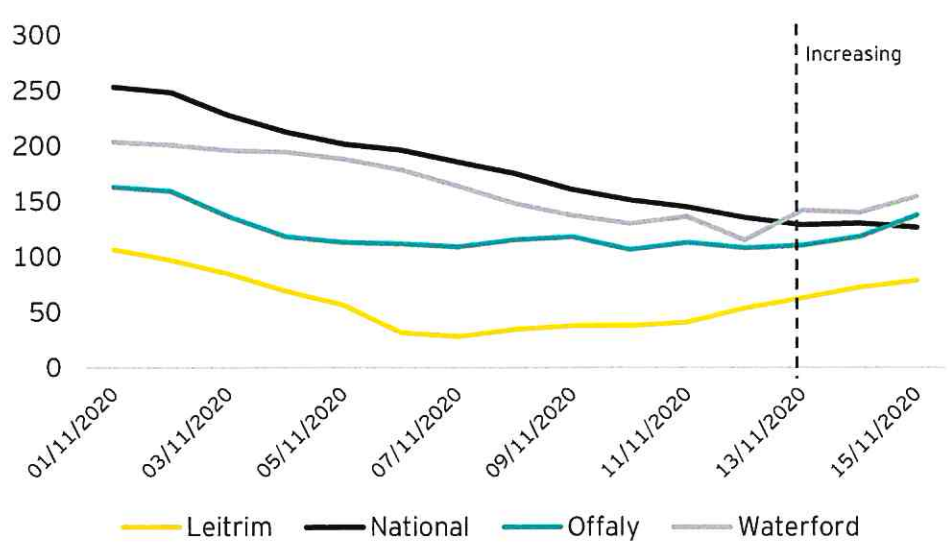
Outbreaks in Private Households and among younger people are impacting the worse performing counties

14-day incidence rate per 100k population



- Limerick and Donegal decreasing at a slower rate compared to other counties
- Limerick - one family outbreak resulted in 149 new cases in October
- Limerick - increase in outbreaks among 20-24 and 15-19 age groups
- Donegal - one Hospital outbreak resulted in 93 new cases since the start of November

14-day incidence rate per 100k population



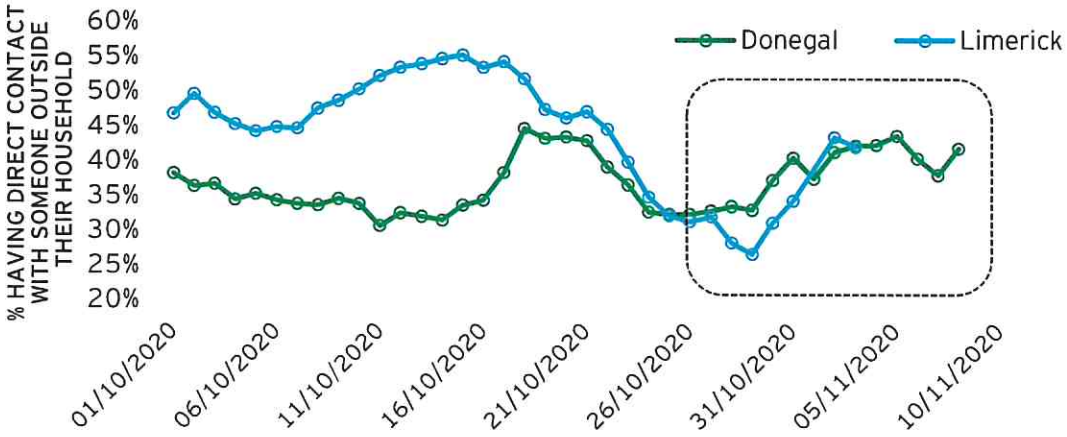
- Leitrim, Offaly and Waterford beginning upward trend with cases increasing
- Waterford - increase in 20-24 age group being infected with Private Household outbreaks
- Waterford - 103 Private Household outbreaks since start of October compared to 37 Private Household outbreaks in total before October

 Source: CIDR

The levelling of disease spread coincides with increases in direct contacts outside the household, but not mobility

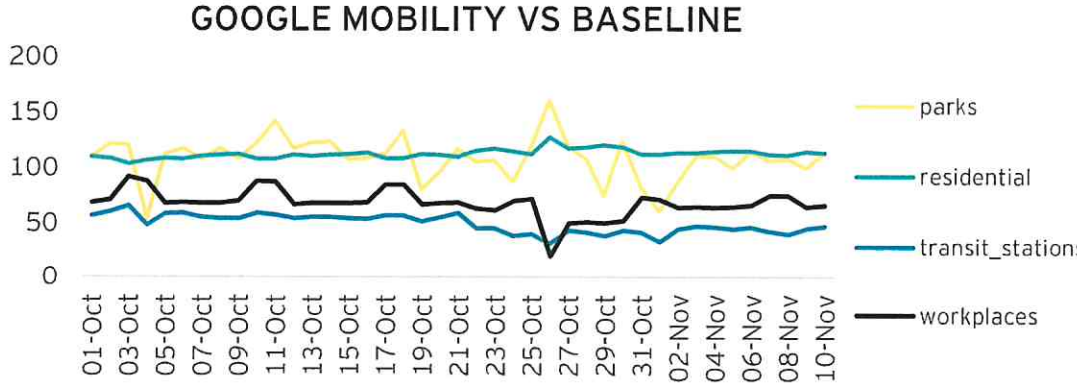
Limerick and Donegal both saw increases in those reporting direct contact outside their household between 29 October and 2 November. The infection rate in both counties is now levelling.

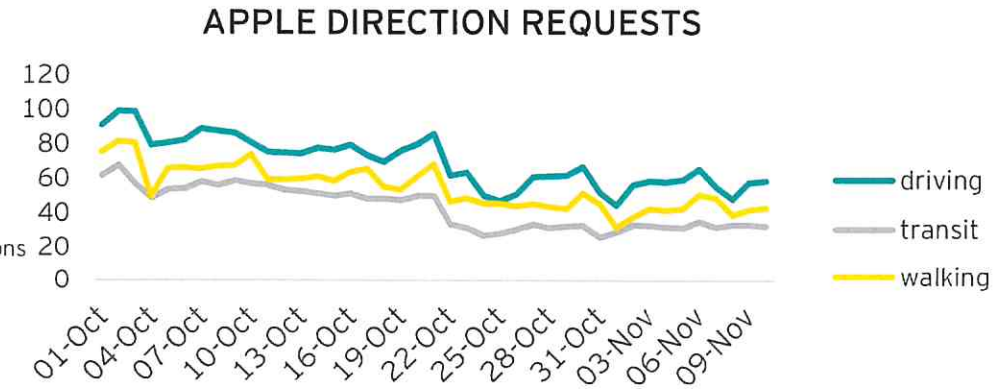
Also, the Amárach Public Health Survey shows the level of people believing that the pandemic is behind us reducing from 43% in May to 22% in November. This may point to lockdown fatigue, with no clear end in sight resulting in reduced compliance.



Source: Facebook survey, 13 November 2020

The most recent Google and Apple mobility reports are show below. Neither show any significant change in mobility around the time of the recent slowing of C-19 decline.





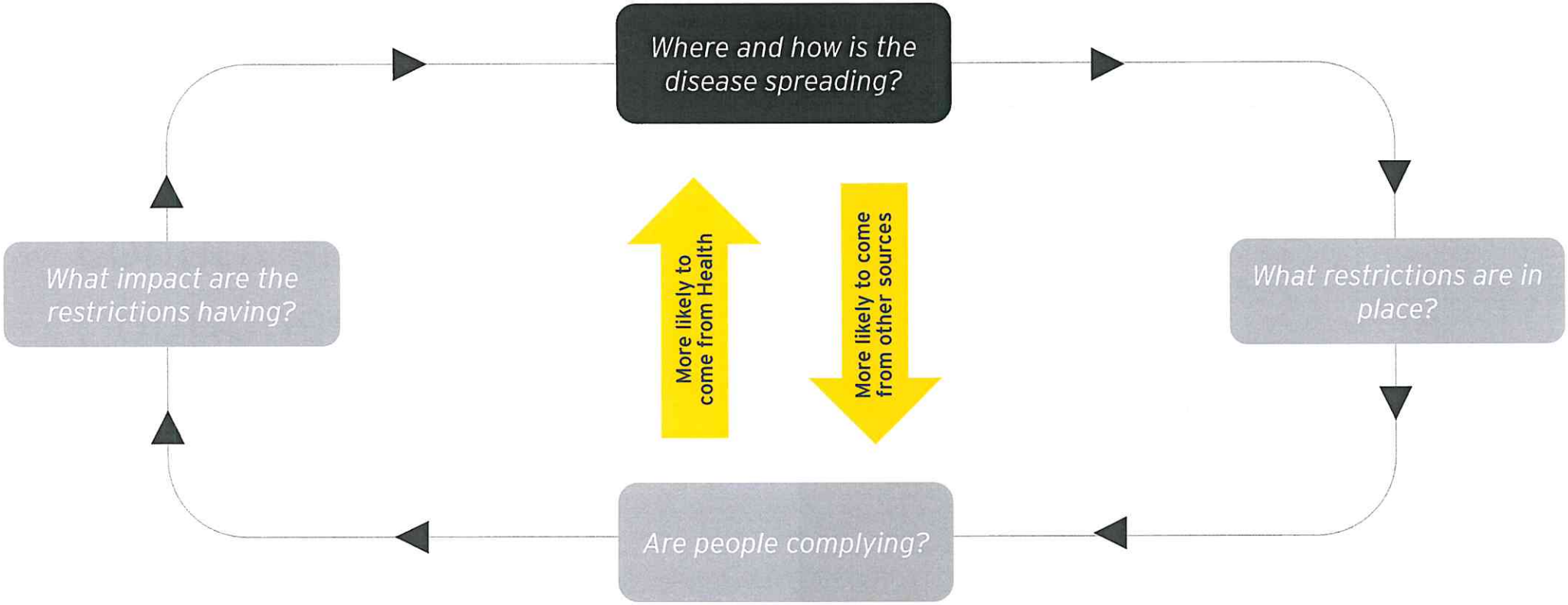
C19 1 Government Centre (1GC)
Interim briefing - not for circulation
18 November 2020
EY
Building a better working world

1GC interim update - Week 5

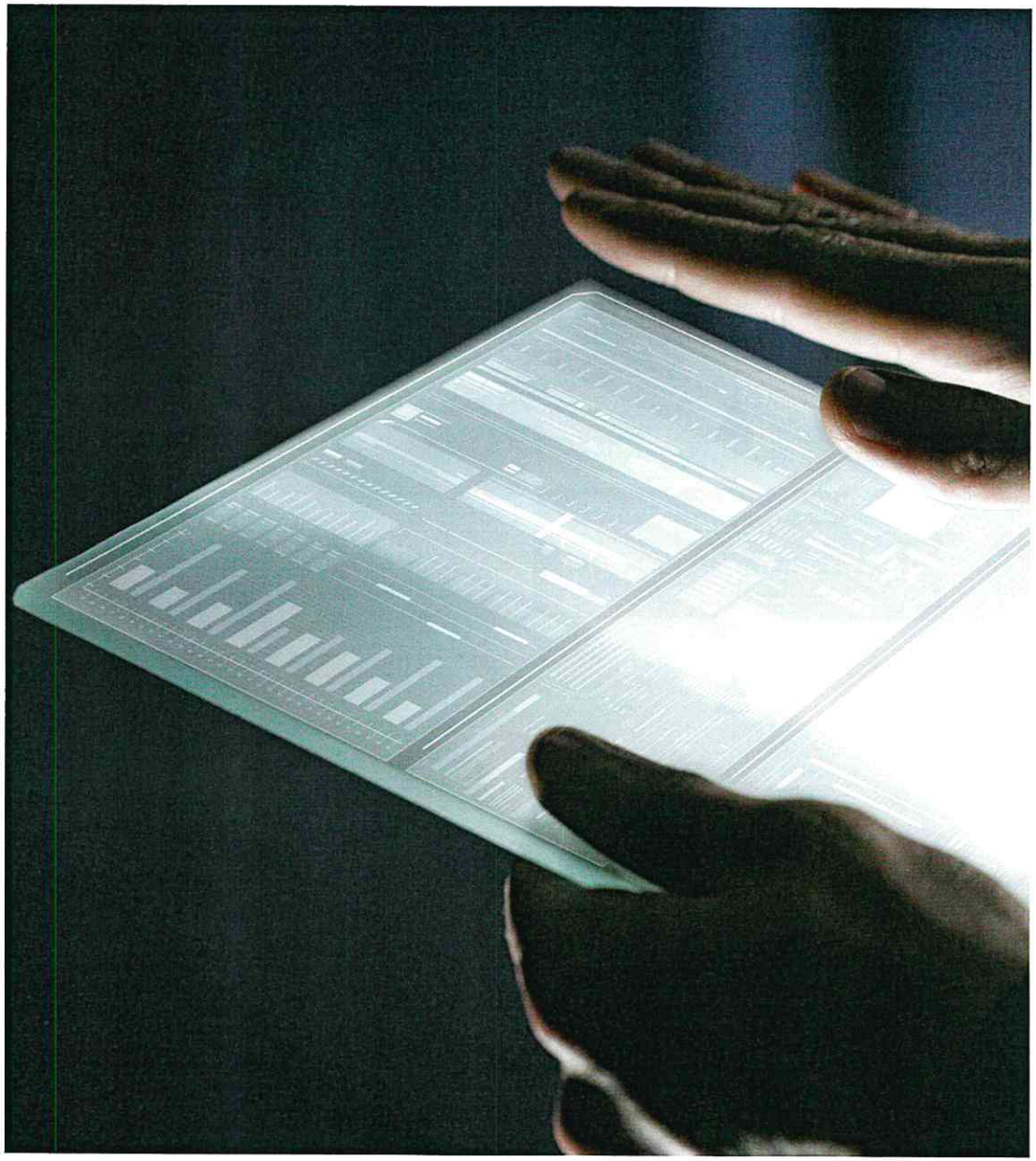
Agenda

- Briefings shared to date
- Continuation of county analysis
- Restrictions impact analysis

Answering four key questions to support government decision making



Continuation of county analysis



Overview of Incident Rate Per Capital Per County

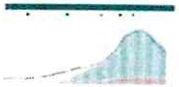
Average Two Weekly Incident Rate Per 100k	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep	01-Oct	02-Oct	03-Oct	04-Oct	05-Oct	06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	01-Nov	02-Nov	03-Nov	04-Nov	05-Nov	06-Nov	07-Nov	08-Nov	09-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov
Carlow	39	37	33	35	35	37	39	40	42	44	42	40	39	39	26	33	35	44	44	44	42	42	40	42	54	61	74	77	83	84	119	116	149	167	198	204	242	242	270	292	306	311	327	327	293	299	270	278	249	242	214	213	177	160	137	126	105	95	98	91	88
Cavan	20	22	22	21	24	24	22	22	32	37	37	49	51	47	56	67	79	84	88	114	134	144	164	200	303	339	386	412	571	641	735	760	811	824	910	###	###	###	983	966	967	964	810	752	668	645	589	562	474	365	295	263	232	206	159	143	133	119	112	102	108
Clare	29	30	35	38	42	44	41	44	40	40	41	47	50	53	63	76	76	87	96	121	144	158	183	199	246	261	268	304	310	306	309	322	326	327	322	313	304	311	272	264	281	252	248	253	255	235	229	209	189	186	181	173	171	160	139	132	122	109	104	104	93
Cork	11	12	14	17	23	27	32	36	42	47	52	62	66	71	81	88	97	102	105	110	111	119	127	140	155	159	181	199	209	232	237	256	275	308	322	336	340	327	334	347	337	335	333	331	334	318	305	276	258	242	233	239	216	195	179	158	143	119	108	102	89
Donegal	46	56	64	73	84	97	106	122	148	159	178	185	191	204	211	219	233	258	265	273	293	312	319	326	324	345	355	355	354	367	365	356	344	347	329	320	320	312	324	322	329	318	313	317	322	310	320	309	305	286	300	297	290	293	275	285	273	281	271	272	275
Dublin	109	114	121	123	136	137	136	140	144	146	148	152	160	154	159	163	168	172	161	166	162	171	165	163	173	174	177	180	184	193	197	201	223	231	238	241	252	257	253	255	255	258	255	252	252	237	220	226	217	209	200	199	191	185	172	161	151	142	134	139	136
Galway	22	24	29	27	28	30	32	39	39	45	46	54	62	65	74	81	79	85	89	93	92	97	107	113	137	153	155	165	173	203	228	262	273	288	314	326	355	372	368	373	382	384	370	354	341	313	296	282	255	243	211	187	171	144	126	109	108	97	86	83	86
Kerry	22	22	19	18	19	18	19	19	19	24	22	24	25	22	20	21	26	40	46	52	62	64	73	91	106	110	113	144	153	177	174	197	215	240	246	263	269	257	269	291	299	279	281	269	271	236	220	198	183	178	194	190	177	162	153	139	139	129	128	128	127
Kildare	54	59	63	58	59	67	67	69	71	75	76	75	78	77	85	82	80	97	95	94	87	98	99	108	125	146	154	168	188	198	204	208	244	257	278	293	305	303	298	301	306	298	289	290	292	270	242	231	210	186	177	169	156	143	121	118	103	94	85	93	89
Kilkenny	30	27	21	24	22	26	21	22	21	19	24	26	26	26	26	29	38	40	45	42	43	51	51	59	61	73	87	98	105	109	123	142	146	154	165	165	177	174	180	175	176	173	171	168	150	133	131	139	134	136	134	134	141	141	133	128	130	125	126	129	126
Laois	45	48	46	44	44	44	46	47	40	33	34	31	32	32	35	43	43	76	76	89	87	96	105	123	124	133	135	139	136	161	169	151	174	185	201	214	222	220	220	233	242	251	256	231	235	227	208	204	197	179	170	174	175	174	163	157	155	149	136	136	137
Leitrim	81	81	78	72	75	41	44	44	44	41	34	37	37	25	19	25	25	28	31	31	28	34	34	53	81	97	125	137	147	162	218	218	225	240	253	262	272	278	259	247	222	209	200	178	125	122	109	97	84	69	56	31	28	34	37	37	47	56	81	81	87
Limerick	51	55	53	49	45	44	39	39	36	34	35	33	33	34	39	37	45	58	69	90	96	107	114	119	145	160	167	182	189	207	208	231	246	248	277	280	290	301	288	293	306	299	310	306	312	277	269	262	228	227	229	221	216	218	211	207	198	195	195	211	201
Longford	51	51	49	49	46	37	39	39	34	32	37	39	49	59	73	98	120	127	132	147	152	154	169	169	176	208	193	196	181	193	176	213	240	254	279	291	281	308	296	281	289	291	306	279	294	259	245	223	193	181	193	166	164	157	152	142	132	127	115	115	103
Louth	88	91	94	96	102	102	98	107	109	101	95	104	92	80	76	75	74	79	77	88	90	85	85	89	116	109	116	115	152	161	181	185	188	178	221	261	293	283	272	286	299	311	289	296	293	285	297	297	257	219	193	202	189	177	159	155	157	156	147	151	151
Mayo	20	19	26	27	26	26	31	30	29	32	31	32	30	28	26	28	24	26	30	33	32	36	42	42	54	67	75	80	90	107	123	131	150	167	185	208	228	243	250	246	256	266	259	248	242	261	246	232	216	198	183	184	185	176	162	147	151	145	141	118	113
Meath	30	28	28	27	32	32	35	38	37	44	42	47	44	47	51	62	67	71	68	85	90	96	115	129	164	183	199	213	306	357	403	452	490	488	591	629	657	656	648	649	661	651	590	558	531	481	450	448	352	314	282	272	249	232	204	201	172	154	141	140	133
Monaghan	28	29	26	24	39	39	37	37	54	60	68	93	116	135	134	166	173	189	178	207	226	257	257	270	303	319	331	313	362	350	368	350	375	365	402	389	406	409	384	375	349	363	323	310	305	303	288	269	218	205	171	176	166	142	137	121	122	116	117	124	112
Offaly	63	63	62	60	64	60	62	56	59	56	59	56	63	62	65	67	74	77	77	99	103	104	110	123	130	136	140	145	141	151	140	177	201	195	210	224	222	224	214	224	217	222	227	218	236	191	162	153	130	112	106	100	96	97	99	85	99	94	87	95	114
Roscommon	29	29	31	33	33	45	54	57	62	67	64	76	84	99	102	121	133	143	161	155	155	170	166	166	192	184	200	181	187	201	198	201	223	232	228	239	260	271	260	276	263	263	259	231	240	229	203	225	229	218	195	189	174	153	152	175	170	175	163	166	169
Sligo	8	8	12	11	15	17	15	17	17	17	18	24	32	27	27	31	27	38	55	64	75	90	107	137	150	163	175	186	208	241	291	304	294	325	356	366	395	406	409	423	438	438	423	397	359	354	356	333	304	285	259	220	211	189	159	154	154	154	140	128	114
Tipperary	20	19	19	19	19	18	16	17	16	19	18	21	24	24	25	31	32	36	40	48	53	55	58	58	66	70	71	78	83	79	88	93	110	113	115	118	120	126	124	134	139	133	139	145	133	139	131	130	130	130	132	130	128	122	117	123	118	113	117	114	101
Waterford	71	81	84	85	89	95	97	97	87	88	86	67	67	59	53	44	38	35	34	28	31	32	40	46	56	64	61	66	70	83	109	131	132	143	155	160	173	176	194	205	215	226	225	228	210	205	201	201	195	194	187	176	163	146	136	128	134	114	142	141	156
Westmeath	48	47	47	48	52	51	52	51	48	50	55	54	55	47	48	52	62	66	64	68	80	88	96	100	105	115	148	167	171	217	211	251	294	324	337	425	435	453	455	460	453	461	465	415	440	402	369	372	354	266	255	229	216	208	184	158	151	162	133	150	150
Wexford	33	35	35	36	34	33	23	23	25	28	28	27	27	35	33	33	35	40	41	48	57	73	80	85	98	112	130	160	173	188	202	250	271	272	297	298	301	322	318	313	301	268	257	258	242	192	174	172	141	124	126	96	89	83	74	67	67	48	49	49	49
Wicklow	52	65	70	70	70	72	70	77	74	71	69	65	67	70	73	65	72	74	77	78	78	77	76	76	80	84	88	91	87	89	91	103	119	120	124	124	129	145	145	149	149	145	147	149	141	130	117	116	107	104	106	91	88	89	82	77	89	86	84	85	85
National	56	59	62	63	68	70	71	74	76	79	80	84	88	88	92	96	101	108	107	114	116	124	128	134	150	158	167	177	190	207	217	231	251	261	279	290	302	305	302	307	309	307	298	291	286	268	253	247	226	211	201	195	184	173	159	150	142	133	127	128	124

County view - Cork

Total Confirmed Cases

6,033

Trend vs. National



Summary

Key Events

- Cases in Cork city rose as wet pubs reopened, with mobility within the county rising 7.3%. Cases around the rest of the county followed shortly after
- Cork had a large number of GAA games on 03/10 and 04/10. No matches occurred after this, with level 3 restrictions being applied around this time
- Cases throughout Cork began to fall 10 days after this, indicating both measures were effective
- Cases in Cork City South Central, the LEA containing UCC, were twice as high as other LEAs in Cork city during mid October. This gap disappeared by November, indicating reopening the college negatively impacted C-19 spread

Cork City as an epicentre

- Cork city was most severely affected. A clear trend of Cork city vs the rest of the county emerges from the data
- 68 cases were detected in one community outbreak in [redacted] with two large nursing home outbreaks (38/32 cases) also detected

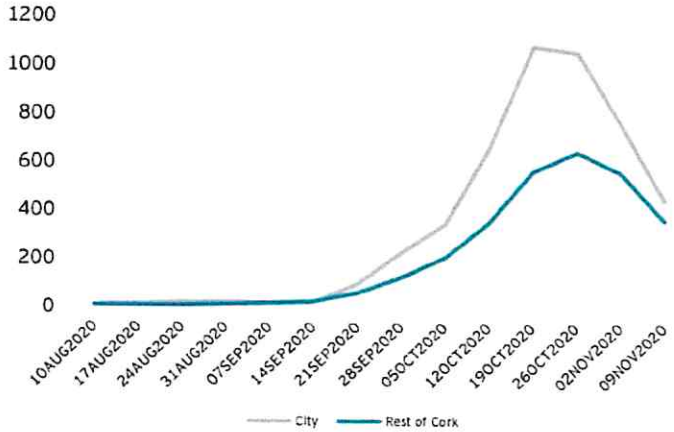
Weekend of 14/11

- While incidence rates are falling, Gardai had to disperse large crowds in the city centre this weekend due to individuals consuming takeaway alcohol in large crowds
- Areas such as Grand Parade at Coal Quay noted as popular for these activities

Employment summary

- Manufacturing is the largest employment sector in Cork (c.15%), followed by retail (12%) and health (11%) (EY 2019 employment estimates)
- At peak, 39% of Cork's workforce were on PUP or TWSS (96k). Current PUP levels are currently much lower than the previous peak (35k versus 62k in May)

Cases in Cork city vs rest of county



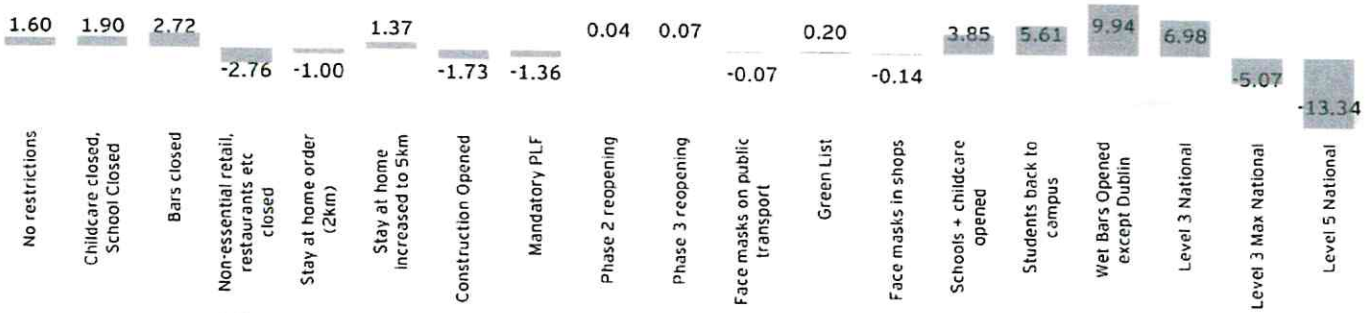
Since the 1st of September

4,385 cases, with 44% linked to outbreaks

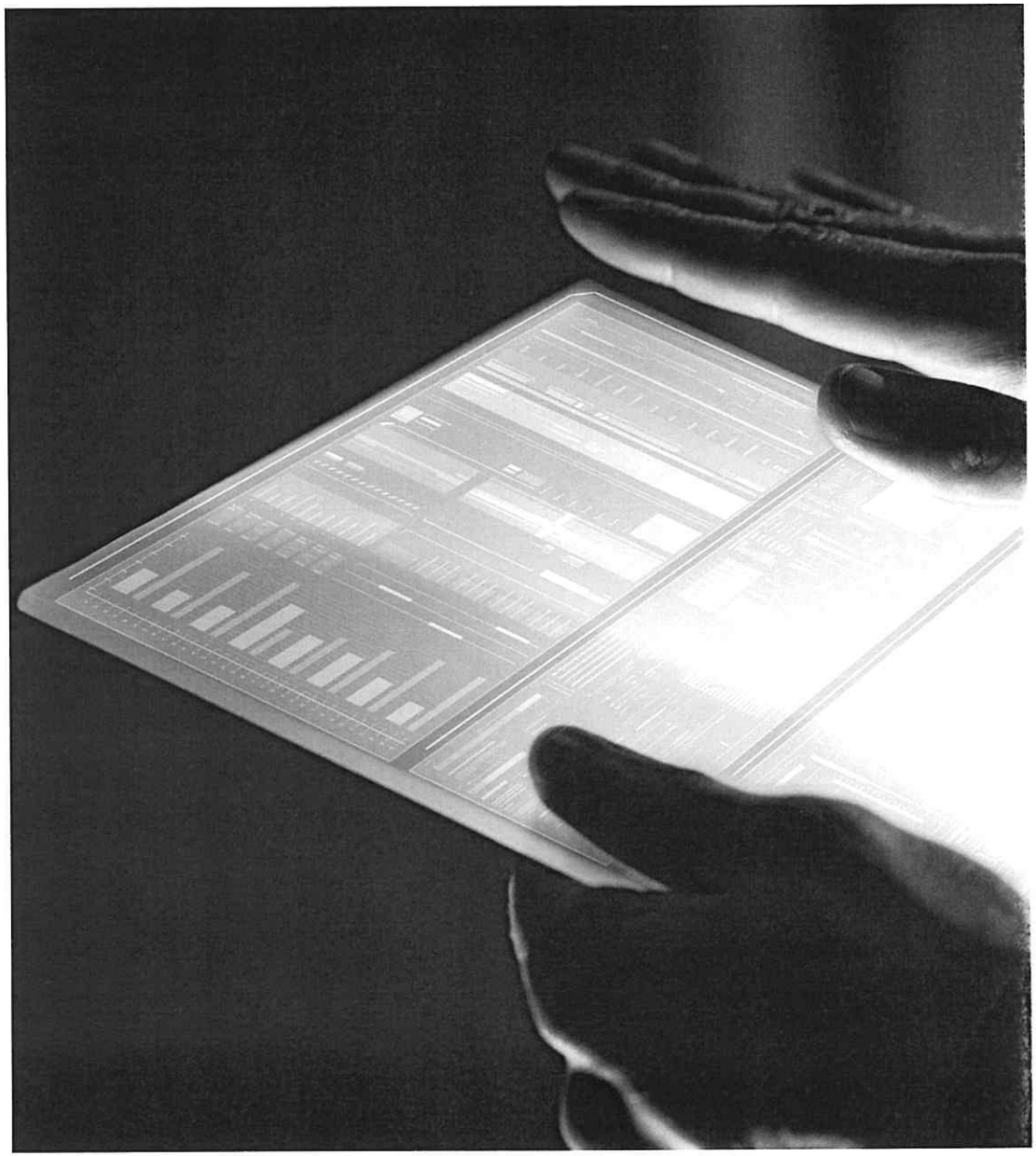
Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	868	332
Community outbreak	393	60
Nursing home	105	8
School	103	21
Extended family	82	20

Notable events	Date	No. of cases
Community outbreak	26/10/2020	68
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	38
Nursing home		30
Community outbreak	22/09/2020	29

Average Daily Change in 14 day incidence by restriction



Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties - highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

International restriction analysis

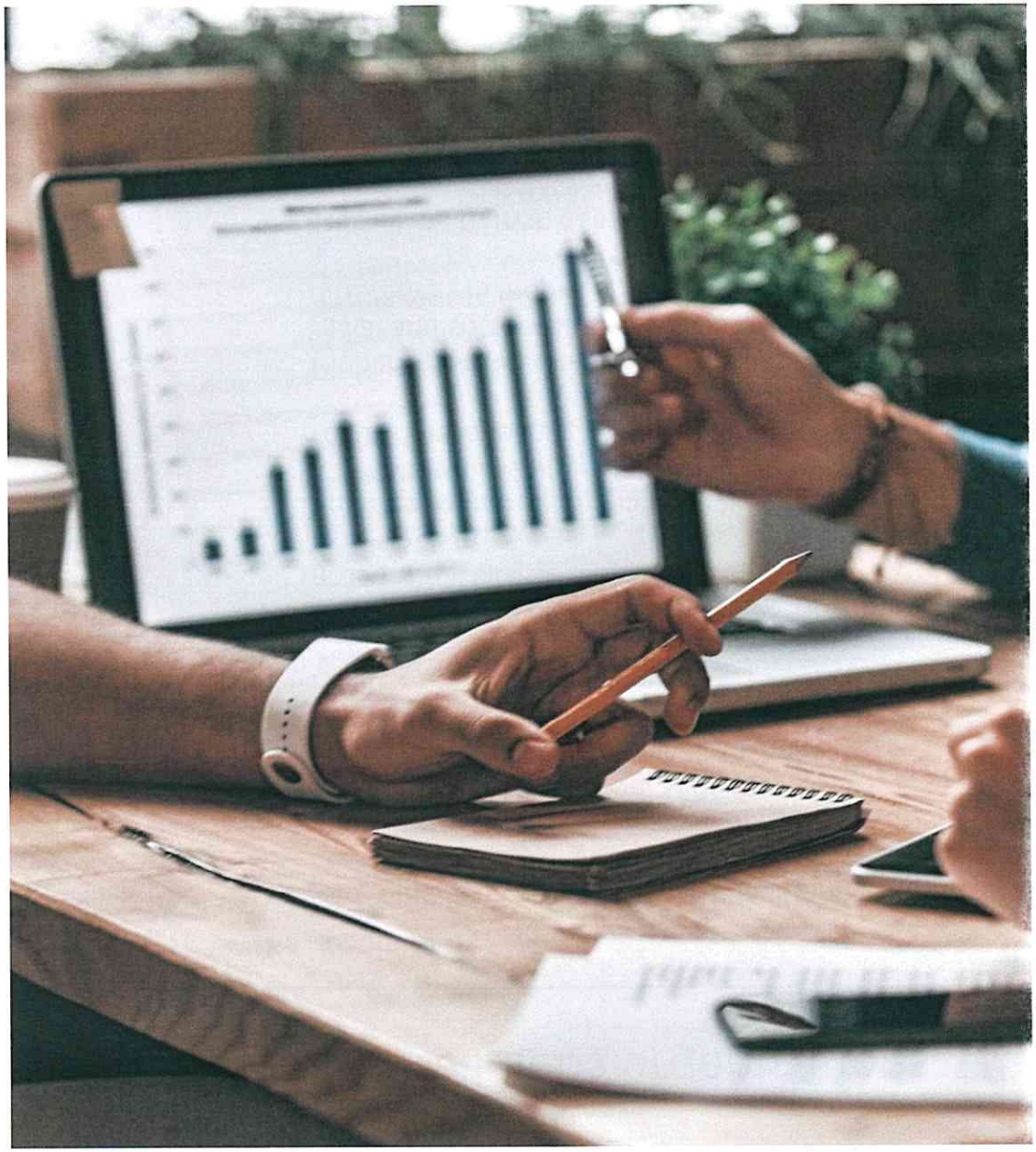
A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries for publication this week

International desktop research

Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular 1GC COVID-19 insights publication and with new research included today

Ireland – restrictions analysis

Interactive demo showing restrictions impact analysis by county



US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.).

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

Selected cities – cases generated and positivity rates

	San Francisco		Chicago		New York	
	Cases	Positivity rate	Cases	Positivity rate	Cases	Positivity rate
Full-service restaurants	+12k	0.09%	+89k	0.33%	+199k	0.22%
Fitness centres	+1k	0.02%	+20k	0.13%	+70k	0.20%
Religious organisations	+479	0.04%	+9k	0.28%	+30k	0.49%
Take-out restaurants	+290	0.01%	+14k	0.14%	+19k	0.11%
Grocery stores	+150	0.01%	+3k	0.19%	+11k	0.15%
Department stores	+40	0.00%	+540	0.02%	+1k	0.03%
Pharmacies	+40	0.01%	+250	0.02%	+1k	0.02%

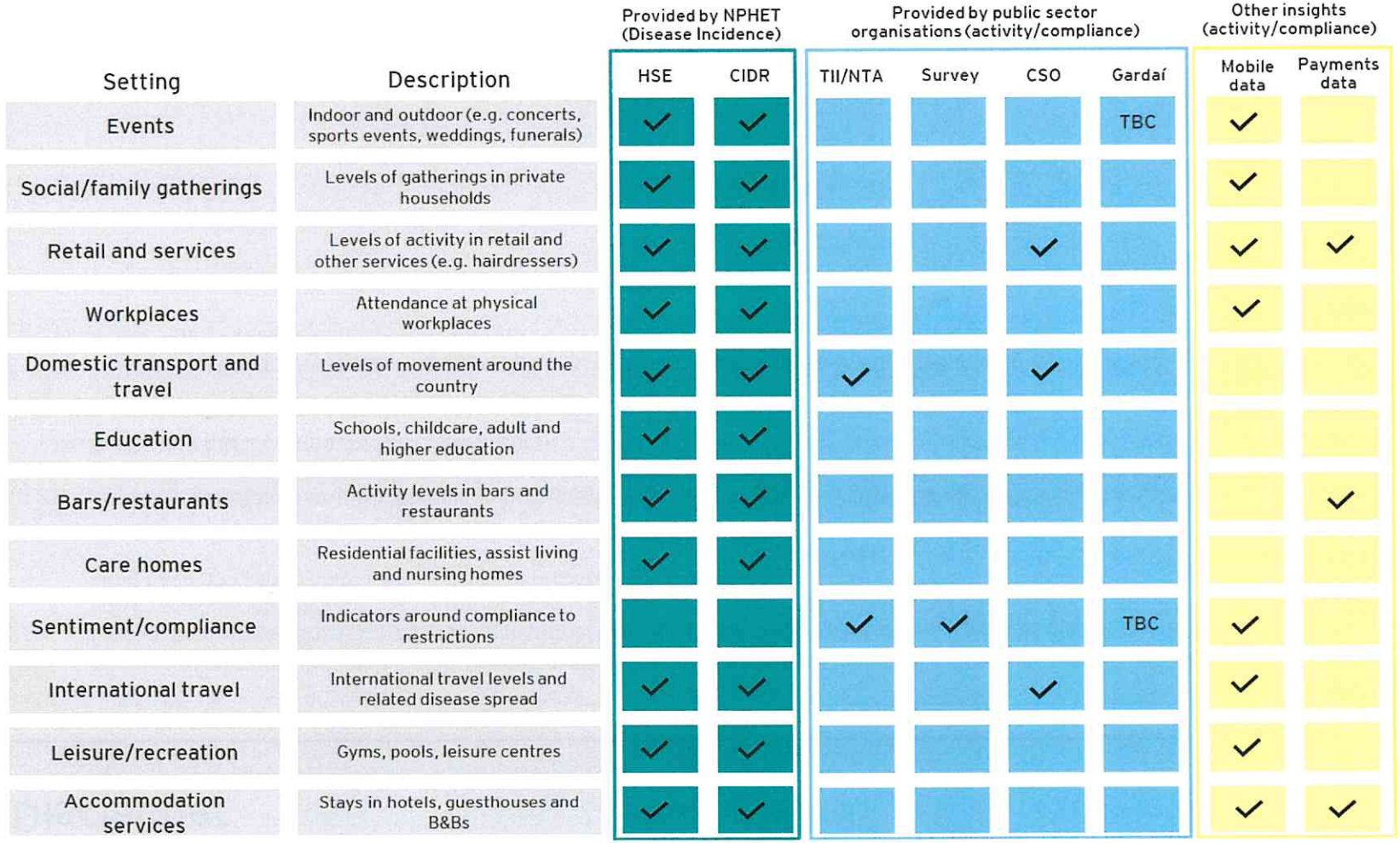
Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
Note: Calculation of positivity rate using cases generated as a proportion of visits generated

Key findings

- The table depicts the expected additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1 March and 10 May) and the associated positivity rate of the population who visit the location
- A small fraction of 'super-spreader' locations account for a large majority of infections
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility
- This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10)

Approach to Christmas monitoring

We will use a variety of existing data sources to monitor restriction performance over the Christmas period



Setting	Description	Provided by NPHET (Disease Incidence)		Provided by public sector organisations (activity/compliance)				Other insights (activity/compliance)	
		HSE	CIDR	TII/NTA	Survey	CSO	Gardaí	Mobile data	Payments data
Events	Indoor and outdoor (e.g. concerts, sports events, weddings, funerals)	✓	✓				TBC	✓	
Social/family gatherings	Levels of gatherings in private households	✓	✓					✓	
Retail and services	Levels of activity in retail and other services (e.g. hairdressers)	✓	✓			✓		✓	✓
Workplaces	Attendance at physical workplaces	✓	✓					✓	
Domestic transport and travel	Levels of movement around the country	✓	✓	✓		✓			
Education	Schools, childcare, adult and higher education	✓	✓						
Bars/restaurants	Activity levels in bars and restaurants	✓	✓						✓
Care homes	Residential facilities, assist living and nursing homes	✓	✓						
Sentiment/compliance	Indicators around compliance to restrictions			✓	✓		TBC	✓	
International travel	International travel levels and related disease spread	✓	✓			✓		✓	
Leisure/recreation	Gyms, pools, leisure centres	✓	✓					✓	
Accommodation services	Stays in hotels, guesthouses and B&Bs	✓	✓					✓	✓

Approach overview

- Leverage existing health data from NPHET, curate data from Government agencies and create new insights from additional data sources
- Analyse all data to provide insights on effectiveness of restrictions over the agreed period
- Analyse the link to disease prevalence in each setting
- Leverage insights to inform restriction measures for future planning as well as provide "stories" to help bring to life for the public

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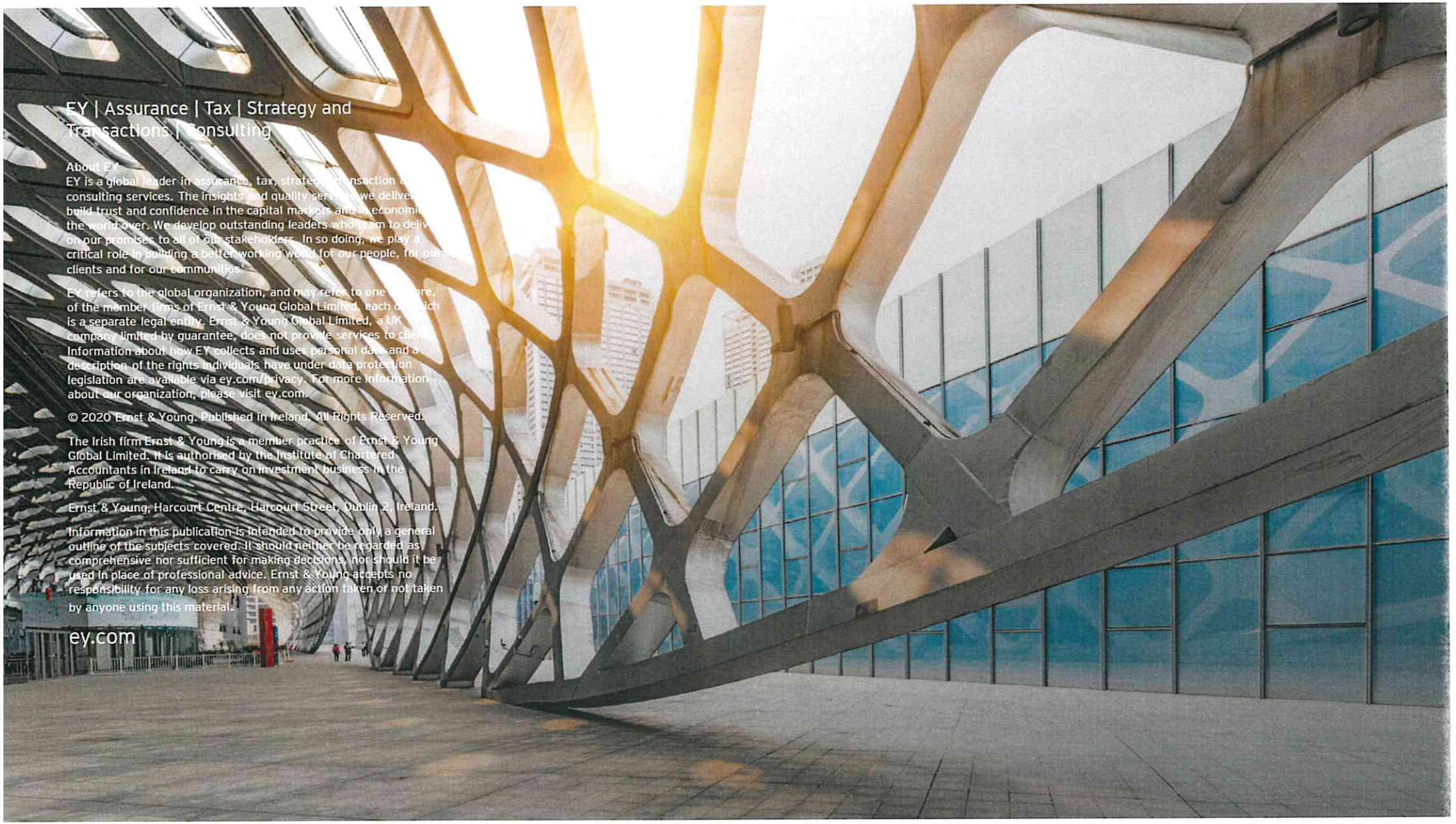
- You have asked us to report to you in a presentation format, which is inevitably briefer than a full written report. Consequently, there will be some information which may have been of interest to you which will not be provided to you, and you accept that we will be using our judgement when determining the content of the presentation.

- The information in this presentation pack will have been supplemented by matters arising from any oral presentation by us, and should be considered in the light of this additional information.



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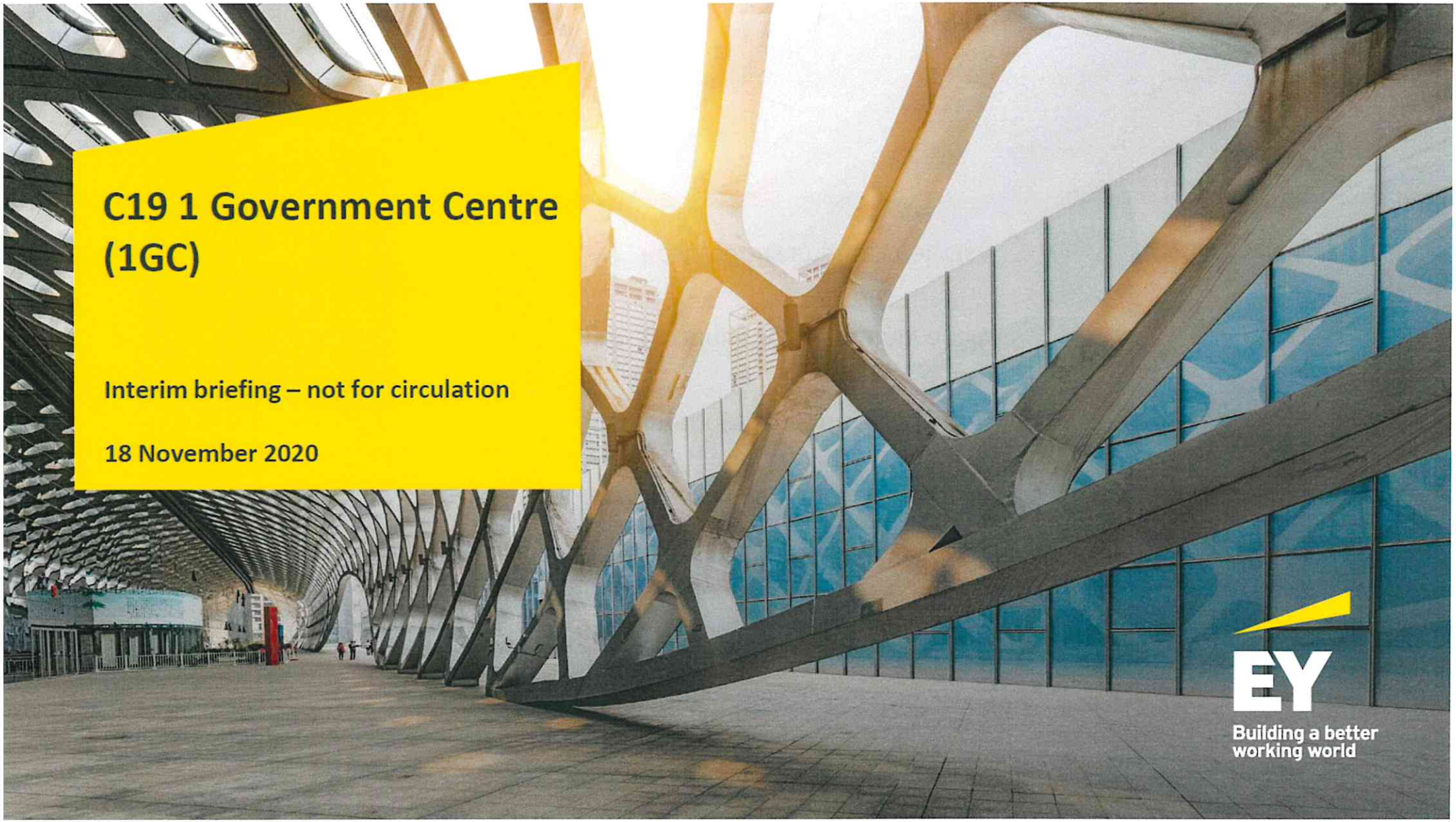
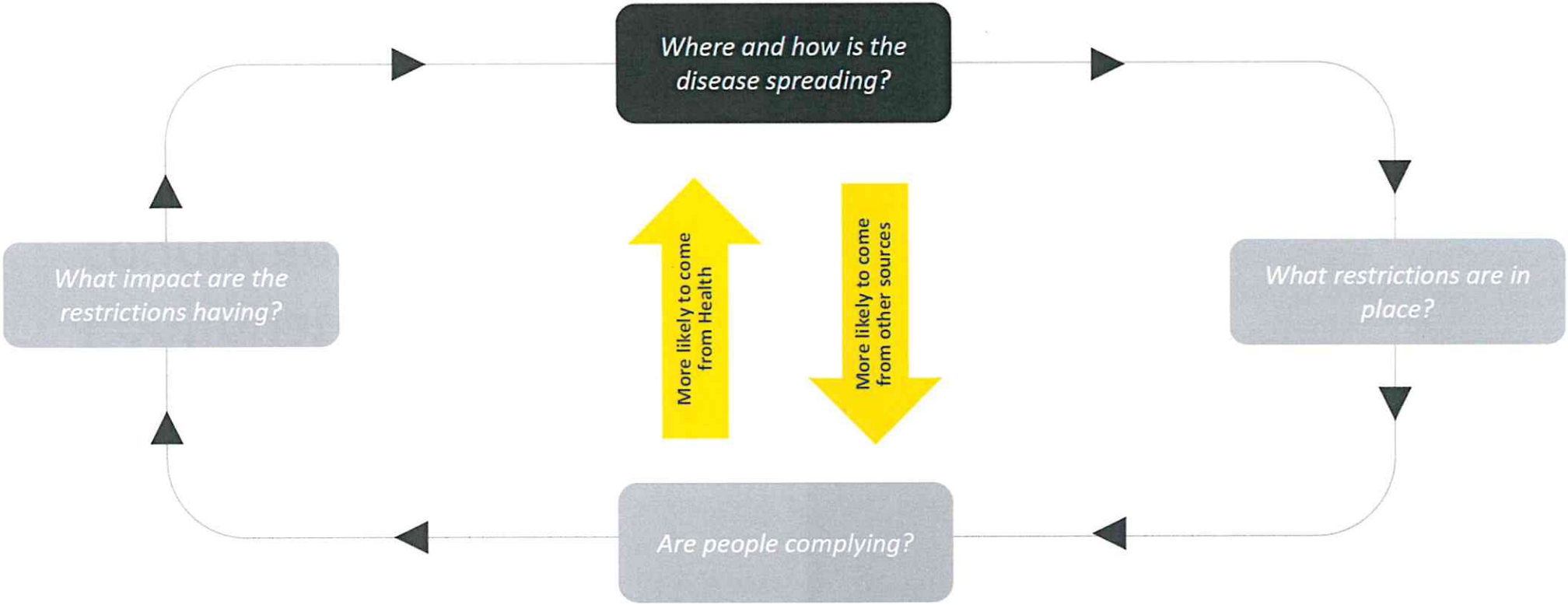

C19 1 Government Centre (1GC)
Interim briefing – not for circulation
18 November 2020
EY
Building a better working world

1GC interim update – Week 5

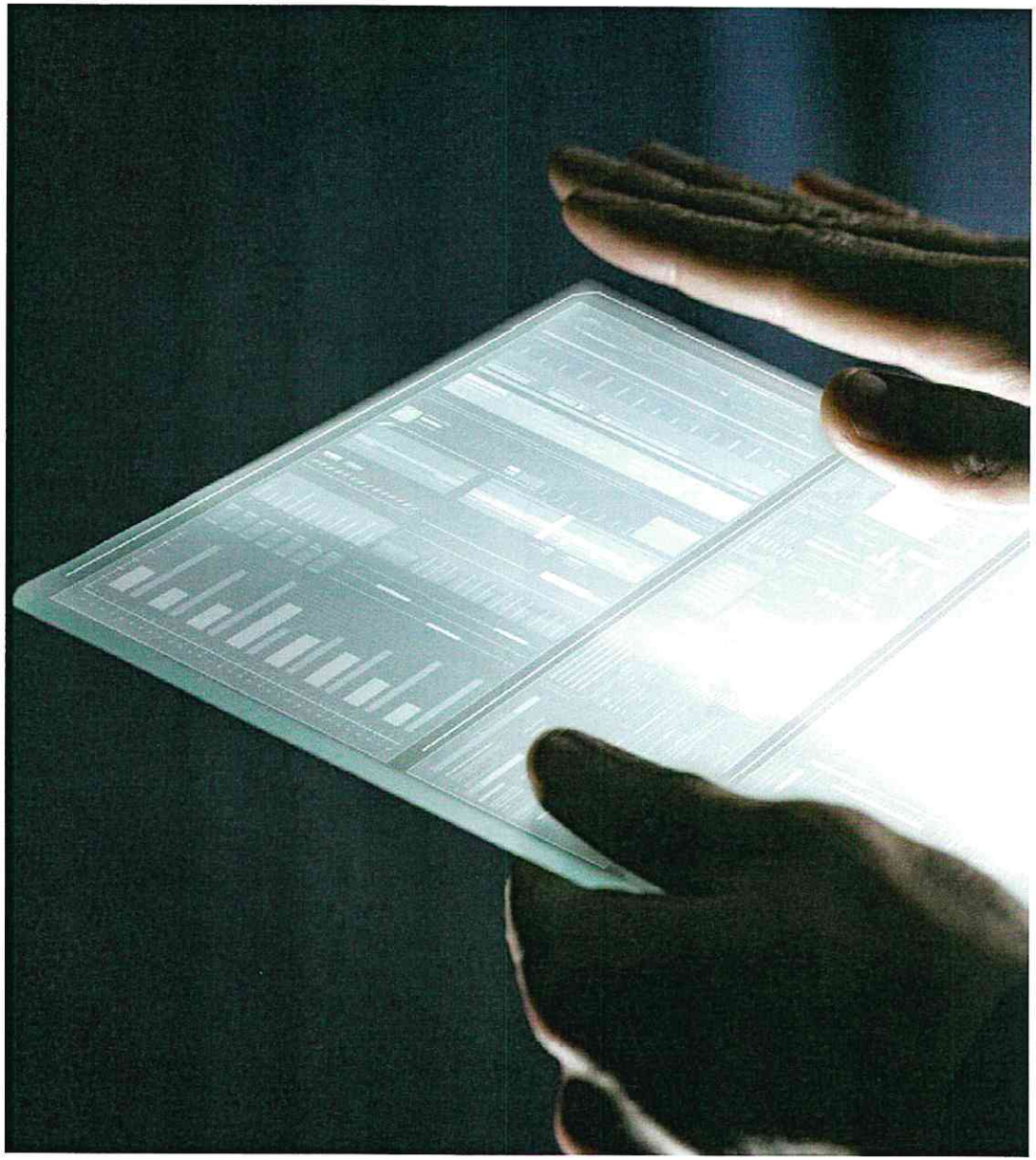
Agenda

- Briefings shared to date
- Continuation of county analysis
- Restrictions impact analysis

Answering four key questions to support government decision making



Continuation of county analysis



Overview of Incident Rate Per Capital Per County

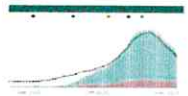
Average Two Weekly Incident Rate Per 100k	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep	01-Oct	02-Oct	03-Oct	04-Oct	05-Oct	06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	01-Nov	02-Nov	03-Nov	04-Nov	05-Nov	06-Nov	07-Nov	08-Nov	09-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov
Carlow	39	37	33	35	35	37	39	40	42	44	42	40	39	39	26	33	35	44	44	44	42	42	40	42	54	61	74	77	83	84	119	116	149	167	198	204	242	242	270	292	306	311	327	327	293	299	270	278	249	242	214	213	177	160	137	126	105	95	98	91	88
Cavan	20	22	22	21	24	24	22	22	32	37	37	49	51	47	56	67	79	84	88	114	134	144	164	200	303	339	386	412	571	641	735	760	811	824	910	###	###	###	983	966	967	964	810	752	668	645	589	562	474	365	295	263	232	206	159	143	133	119	112	102	108
Clare	29	30	35	38	42	44	41	44	40	40	41	47	50	53	63	76	76	87	96	121	144	158	183	199	246	261	268	304	310	306	309	322	326	327	322	313	304	311	272	264	281	252	248	253	255	235	229	209	189	186	181	173	171	160	139	132	122	109	104	104	93
Cork	11	12	14	17	23	27	32	36	42	47	52	62	66	71	81	88	97	102	105	110	111	119	127	140	155	159	181	199	209	232	237	256	275	308	322	336	340	327	334	347	337	335	333	331	334	318	305	276	258	242	233	239	216	195	179	158	143	119	108	102	89
Donegal	46	56	64	73	84	97	106	122	148	159	178	185	191	204	211	219	233	258	265	273	293	312	319	326	324	345	355	355	354	367	365	356	344	347	329	320	320	312	324	322	329	318	313	317	322	310	320	309	305	286	300	297	290	293	275	285	273	281	271	272	275
Dublin	109	114	121	123	136	137	136	140	144	146	148	152	160	154	159	163	168	172	161	166	162	171	165	163	173	174	177	180	184	193	197	201	223	231	238	241	252	257	253	255	255	258	255	252	252	237	220	226	217	209	200	199	191	185	172	161	151	142	134	139	136
Galway	22	24	29	27	28	30	32	39	39	45	46	54	62	65	74	81	79	85	89	93	92	97	107	113	137	153	155	165	173	203	228	262	273	288	314	326	355	372	368	373	382	384	370	354	341	313	296	282	255	243	211	187	171	144	126	109	108	97	86	83	86
Kerry	22	22	19	18	19	18	19	19	19	24	22	24	25	22	20	21	26	40	46	52	62	64	73	91	106	110	113	144	153	177	174	197	215	240	246	263	269	257	269	291	299	279	281	269	271	236	220	198	183	178	194	190	177	162	153	139	139	129	128	128	127
Kildare	54	59	63	58	59	67	67	69	71	75	76	75	78	77	85	82	80	97	95	94	87	98	99	108	125	146	154	168	188	198	204	208	244	257	278	293	305	303	298	301	306	298	289	290	292	270	242	231	210	186	177	169	156	143	121	118	103	94	85	93	89
Kilkenny	30	27	21	24	22	26	21	22	21	19	24	26	26	26	26	29	38	40	45	42	43	51	51	59	61	73	87	98	105	109	123	142	146	154	165	165	177	174	180	175	176	173	171	168	150	133	131	139	134	136	134	134	141	141	133	128	130	125	126	129	126
Laois	45	48	46	44	44	44	46	47	40	33	34	31	32	32	35	43	43	76	76	89	87	96	105	123	124	133	135	139	136	161	169	151	174	185	201	214	222	220	220	233	242	251	256	231	235	227	208	204	197	179	170	174	175	174	163	157	155	149	136	136	137
Leitrim	81	81	78	72	75	41	44	44	44	41	34	37	37	25	19	25	25	28	31	31	28	34	34	53	81	97	125	137	147	162	218	218	225	240	253	262	272	278	259	247	222	209	200	178	125	122	109	97	84	69	56	31	28	34	37	37	47	56	81	81	87
Limerick	51	55	53	49	45	44	39	39	36	34	35	33	33	34	39	37	45	58	69	90	96	107	114	119	145	160	167	182	189	207	208	231	246	248	277	280	290	301	288	293	306	299	310	306	312	277	269	262	228	227	229	221	216	218	211	207	198	195	195	211	201
Longford	51	51	49	49	46	37	39	39	34	32	37	39	49	59	73	98	120	127	132	147	152	154	169	169	176	208	193	196	181	193	176	213	240	254	279	291	281	308	296	281	289	291	306	279	294	259	245	223	193	181	193	166	164	157	152	142	132	127	115	115	103
Louth	88	91	94	96	102	102	98	107	109	101	95	104	92	80	76	75	74	79	77	88	90	85	85	89	116	109	116	115	152	161	181	185	188	178	221	261	293	283	272	286	299	311	289	296	293	285	297	297	257	219	193	202	189	177	159	155	157	156	147	151	151
Mayo	20	19	26	27	26	26	31	30	29	32	31	32	30	28	26	28	24	26	30	33	32	36	42	42	54	67	75	80	90	107	123	131	150	167	185	208	228	243	250	246	256	266	259	248	242	261	246	232	216	198	183	184	185	176	162	147	151	145	141	118	113
Meath	30	28	28	27	32	32	35	38	37	44	42	47	44	47	51	62	67	71	68	85	90	96	115	129	164	183	199	213	306	357	403	452	490	488	591	629	657	656	648	649	661	651	590	558	531	481	450	448	352	314	282	272	249	232	204	201	172	154	141	140	133
Monaghan	28	29	26	24	39	39	37	37	54	60	68	93	116	135	134	166	173	189	178	207	226	257	257	270	303	319	331	313	362	350	368	350	375	365	402	389	406	409	384	375	349	363	323	310	305	303	288	269	218	205	171	176	166	142	137	121	122	116	117	124	112
Offaly	63	63	62	60	64	60	62	56	59	56	59	56	63	62	65	67	74	77	77	99	103	104	110	123	130	136	140	145	141	151	140	177	201	195	210	224	222	224	214	224	217	222	227	218	236	191	162	153	130	112	106	100	96	97	99	85	99	94	87	95	114
Roscommon	29	29	31	33	33	45	54	57	62	67	64	76	84	99	102	121	133	143	161	155	155	170	166	166	192	184	200	181	187	201	198	201	223	232	228	239	260	271	260	276	263	263	259	231	240	229	203	225	229	218	195	189	174	153	152	175	170	175	163	166	169
Sligo	8	8	12	11	15	17	15	17	17	17	18	24	32	27	27	31	27	38	55	64	75	90	107	137	150	163	175	186	208	241	291	304	294	325	356	366	395	406	409	423	438	438	423	397	359	354	356	333	304	285	259	220	211	189	159	154	154	154	140	128	114
Tipperary	20	19	19	19	19	18	16	17	16	19	18	21	24	24	25	31	32	36	40	48	53	55	58	58	66	70	71	78	83	79	88	93	110	113	115	118	120	126	124	134	139	133	139	145	133	139	131	130	130	130	132	130	128	122	117	123	118	113	117	114	101
Waterford	71	81	84	85	89	95	97	97	87	88	86	67	67	59	53	44	38	35	34	28	31	32	40	46	56	64	61	66	70	83	109	131	132	143	155	160	173	176	194	205	215	226	225	228	210	205	201	201	195	194	187	176	163	146	136	128	134	114	142	141	156
Westmeath	48	47	47	48	52	51	52	51	48	50	55	54	55	47	48	52	62	66	64	68	80	88	96	100	105	115	148	167	171	217	211	251	294	324	337	425	435	453	455	460	453	461	465	415	440	402	369	372	354	266	255	229	216	208	184	158	151	162	133	150	150
Wexford	33	35	35	36	34	33	23	23	25	28	28	27	27	35	33	33	35	40	41	48	57	73	80	85	98	112	130	160	173	188	202	250	271	272	297	298	301	322	318	313	301	268	257	258	242	192	174	172	141	124	126	96	89	83	74	67	67	48	49	49	49
Wicklow	52	65	70	70	70	72	70	77	74	71	69	65	67	70	73	65	72	74	77	78	78	77	76	76	80	84	88	91	87	89	91	103	119	120	124	124	129	145	145	149	149	145	147	149	141	130	117	116	107	104	106	91	88	89	82	77	89	86	84	85	85
National	56	59	62	63	68	70	71	74	76	79	80	84	88	88	92	96	101	108	107	114	116	124	128	134	150	158	167	177	190	207	217	231	251	261	279	290	302	305	302	307	309	307	298	291	286	268	253	247	226	211	201	195	184	173	159	150	142	133	127	128	124

County view - Cork

Total Confirmed Cases

6,033

Trend vs. National



Summary

Key Events

- Cases in Cork city rose as wet pubs reopened, with mobility within the county rising 7.3%. Cases around the rest of the county followed shortly after Source: Mobility Data
- Cork had a large number of GAA games on 03/10 and 04/10. No matches occurred after this, with level 3 restrictions being applied around this time
- Cases throughout Cork began to fall 10 days after this, indicating both measures were effective
- Cases in Cork City South Central, the LEA containing UCC, were twice as high as other LEAs in Cork city during mid October. This gap disappeared by November, indicating reopening the college negatively impacted C-19 spread

Cork City as an epicentre

- Cork city was most severely affected. A clear trend of Cork city vs the rest of the county emerges from the data
- 68 cases were detected in one community outbreak in [redacted] with two large nursing home outbreaks (38/32 cases) also detected Source: CIDR

Weekend of 14/11

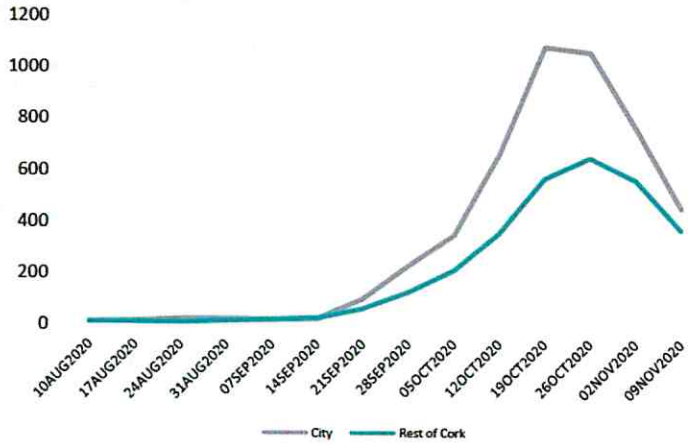
- While incidence rates are falling, Gardai had to disperse large crowds in the city centre this weekend due to individuals consuming takeaway alcohol in large crowds
- Areas such as Grand Parade at Coal Quay noted as popular for these activities

Employment summary

Source: Cork Beo

- Manufacturing is the largest employment sector in Cork (c.15%), followed by retail (12%) and health (11%) (EY 2019 employment estimates)
- At peak, 39% of Cork's workforce were on PUP or TWSS (96k). Current PUP levels are currently much lower than the previous peak (35k versus 62k in May)

Cases in Cork city vs rest of county



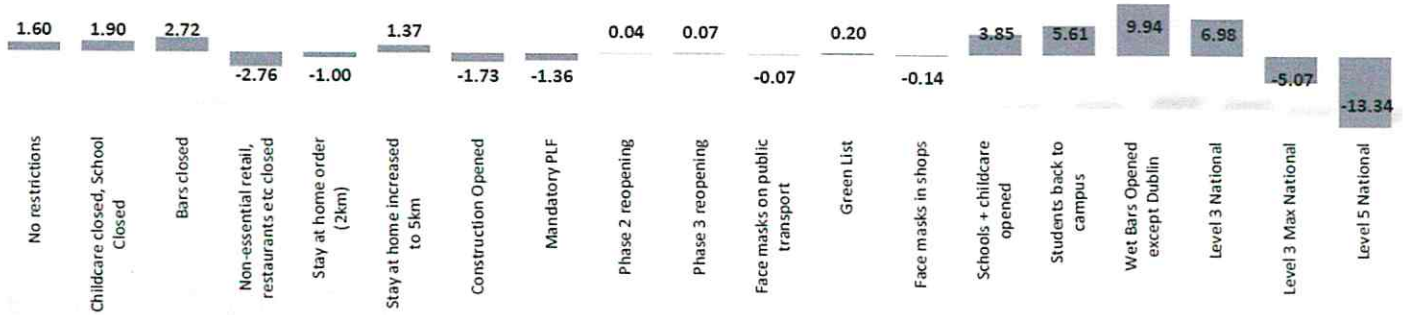
Since the 1st of September

4,385 cases, with **44% linked to outbreaks**

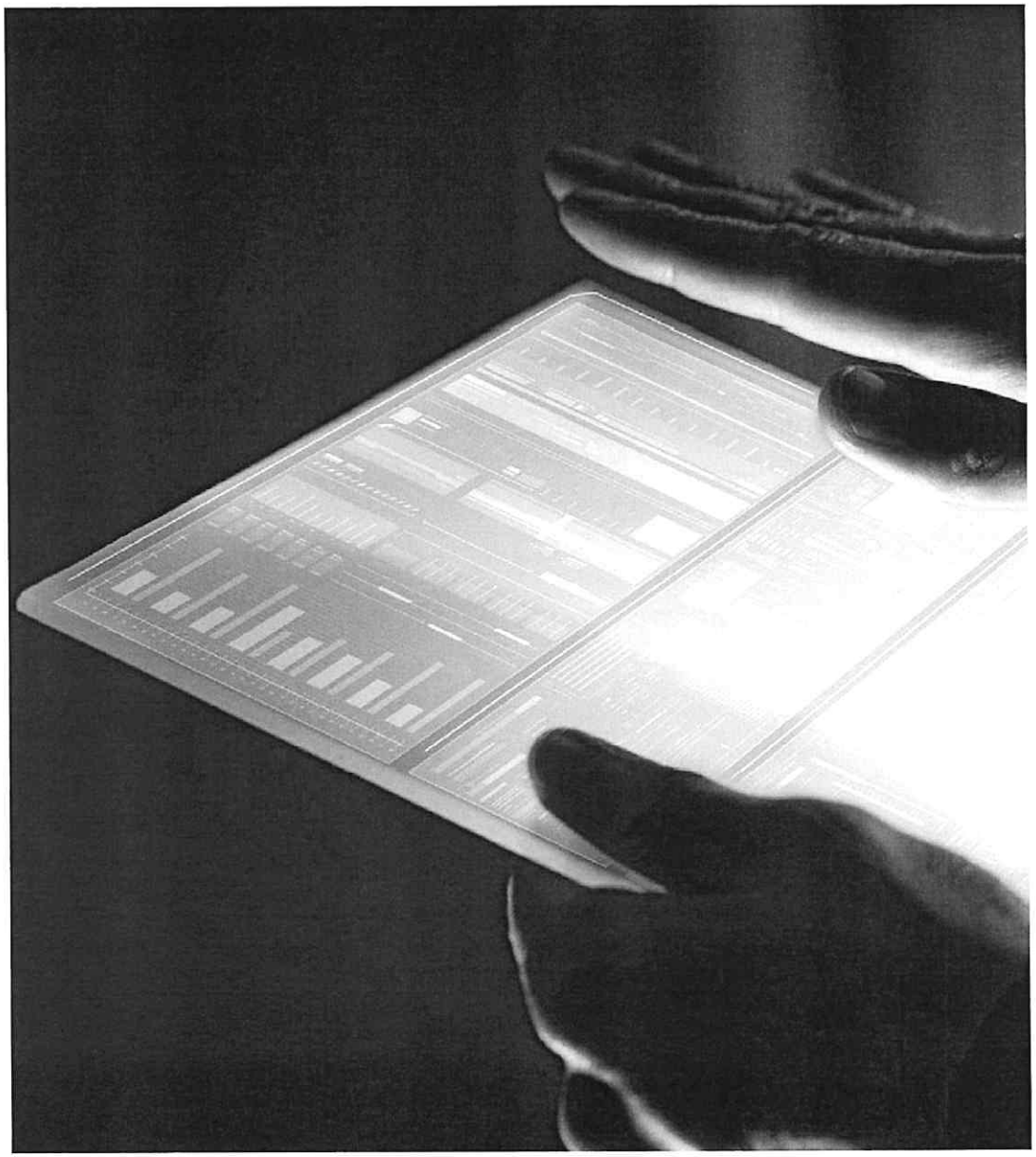
Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	868	332
Community outbreak	393	60
Nursing home	105	8
School	103	21
Extended family	82	20

Notable events	Date	No. of cases
Community outbreak	26/10/2020	68
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	38
Nursing home		30
Community outbreak	22/09/2020	29

Average Daily Change in 14 day incidence by restriction



Restrictions impact analysis



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Calculates potential visits and infections over two months generated by the re-opening of certain locations.

Selected cities – cases generated and positivity rates

	San Francisco		Chicago		New York	
	Cases	Positivity rate	Cases	Positivity rate	Cases	Positivity rate
Full-service restaurants	+12k	0.09%	+89k	0.33%	+199k	0.22%
Fitness centres	+1k	0.02%	+20k	0.13%	+70k	0.20%
Religious organisations	+479	0.04%	+9k	0.28%	+30k	0.49%
Take-out restaurants	+290	0.01%	+14k	0.14%	+19k	0.11%
Grocery stores	+150	0.01%	+3k	0.19%	+11k	0.15%
Department stores	+40	0.00%	+540	0.02%	+1k	0.03%
Pharmacies	+40	0.01%	+250	0.02%	+1k	0.02%

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
Note: Calculation of positivity rate using cases generated as a proportion of visits generated

Key findings

- The table depicts the expected additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1 March and 10 May) and the associated positivity rate of the population who visit the location
- A small fraction of 'super-spreader' locations account for a large majority of infections
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility
- This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10)

Approach to Christmas monitoring

We will use a variety of existing data sources to monitor restriction performance over the Christmas period

		Provided by NPHET (Disease Incidence)		Provided by public sector organisations (activity/compliance)				Other insights (activity/compliance)	
Setting	Description	HSE	CIDR	TII/NTA	Survey	CSO	Gardaí	Mobile data	Payments data
Events	Indoor and outdoor (e.g. concerts, sports events, weddings, funerals)	✓	✓				TBC	✓	
Social/family gatherings	Levels of gatherings in private households	✓	✓					✓	
Retail and services	Levels of activity in retail and other services (e.g. hairdressers)	✓	✓			✓		✓	✓
Workplaces	Attendance at physical workplaces	✓	✓					✓	
Domestic transport and travel	Levels of movement around the country	✓	✓	✓		✓			
Education	Schools, childcare, adult and higher education	✓	✓						
Bars/restaurants	Activity levels in bars and restaurants	✓	✓						✓
Care homes	Residential facilities, assist living and nursing homes	✓	✓						
Sentiment/compliance	Indicators around compliance to restrictions			✓	✓		TBC	✓	
International travel	International travel levels and related disease spread	✓	✓			✓		✓	
Leisure/recreation	Gyms, pools, leisure centres	✓	✓					✓	
Accommodation services	Stays in hotels, guesthouses and B&Bs	✓	✓					✓	✓

Approach overview

- Leverage existing health data from NPHET, curate data from Government agencies and create new insights from additional data sources
- Analyse all data to provide insights on effectiveness of restrictions over the agreed period
- Analyse the link to disease prevalence in each setting
- Leverage insights to inform restriction measures for future planning as well as provide "stories" to help bring to life for the public

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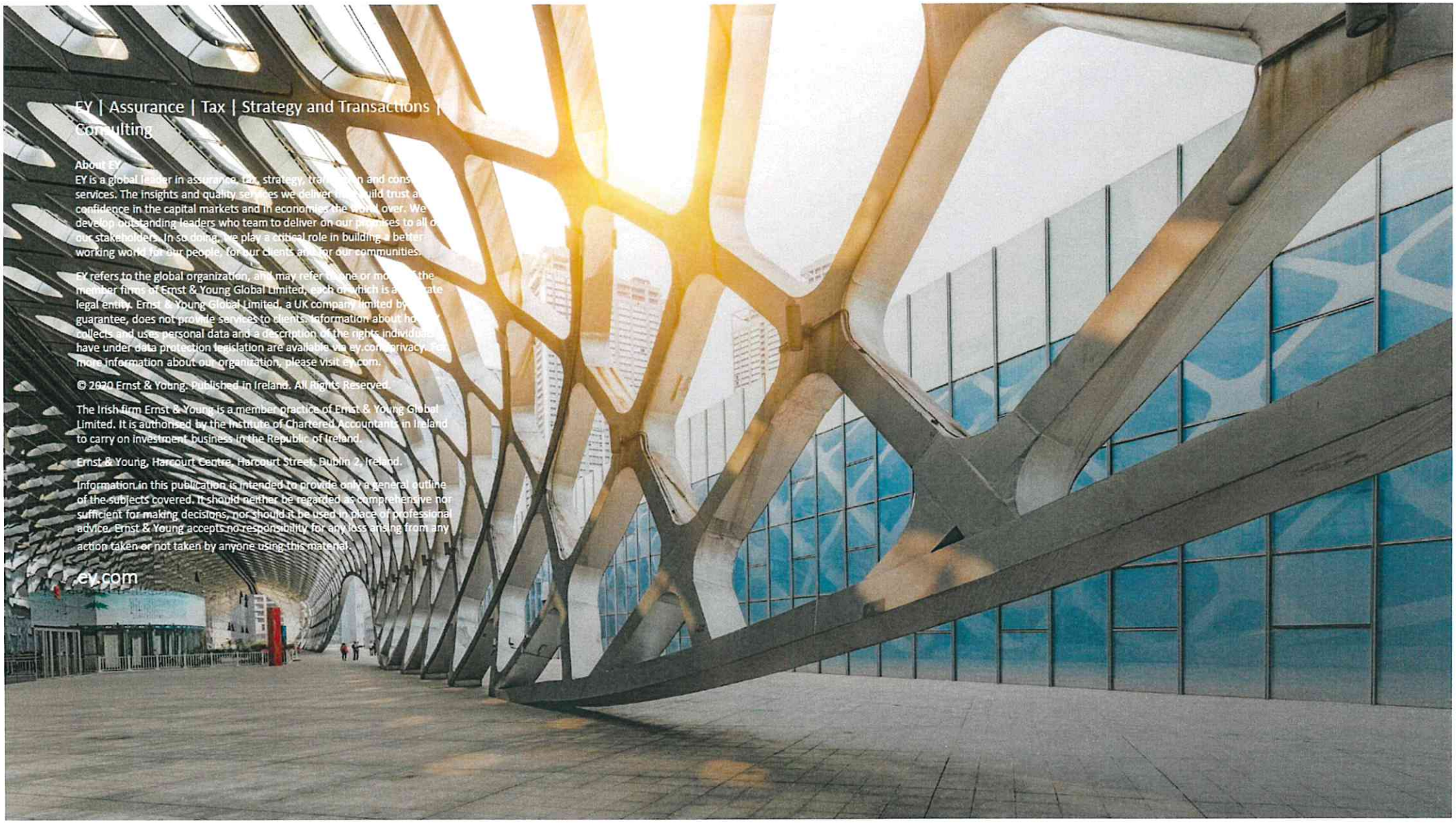
- The information in this presentation pack will have been supplemented by matters arising from any oral presentation by us, and should be considered in the light of this additional information.



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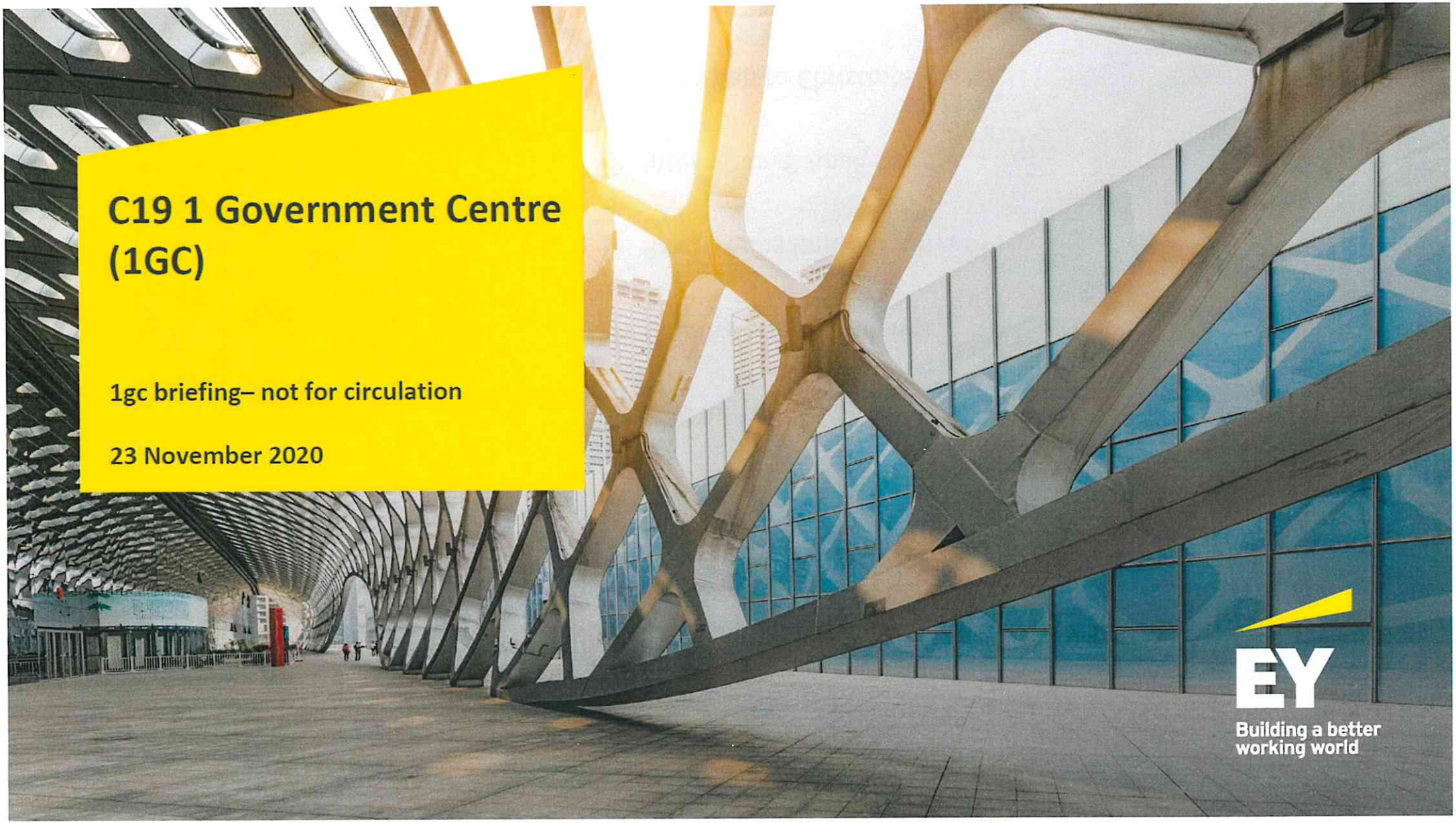
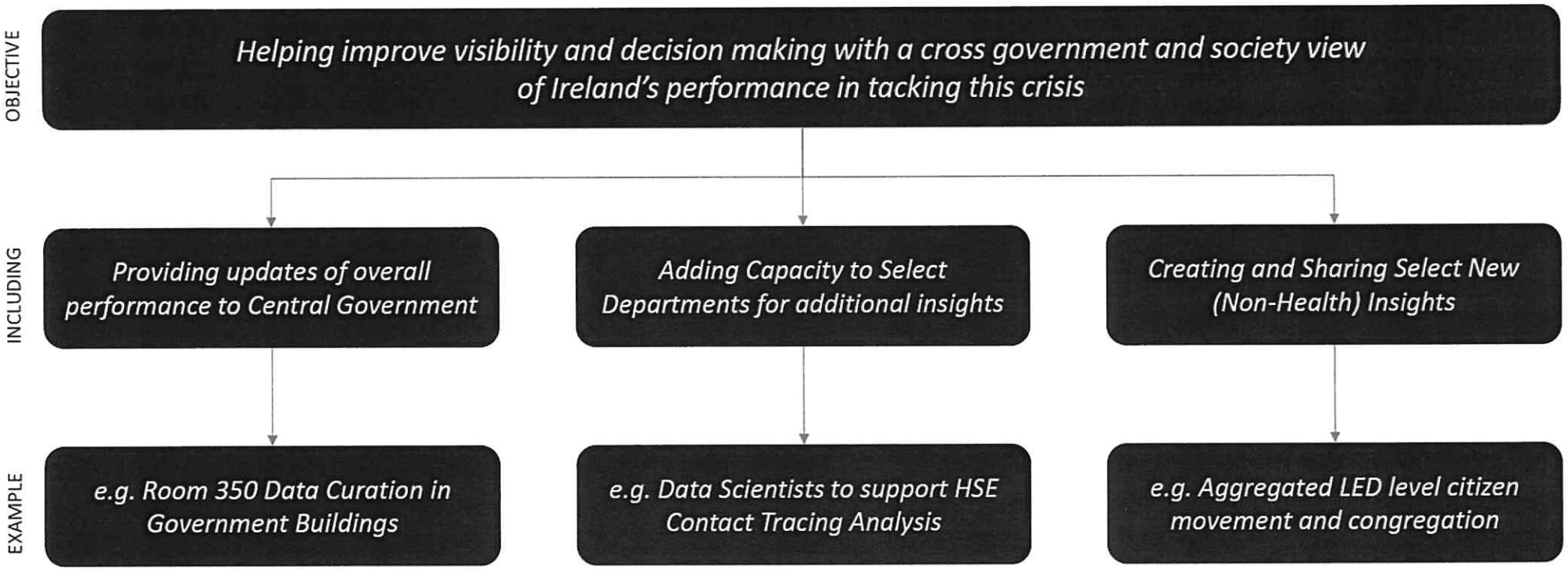

C19 1 Government Centre (1GC)
1gc briefing– not for circulation
23 November 2020
EY
Building a better working world

1GC update – Week 6

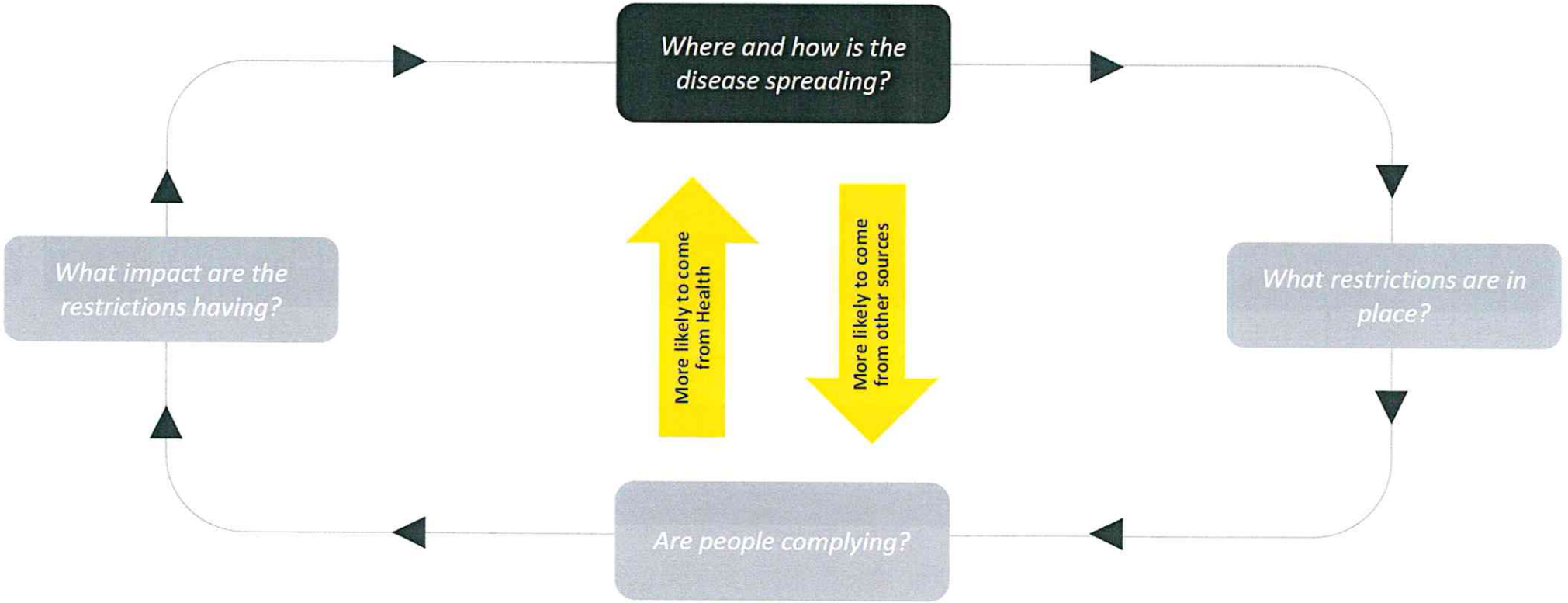
Agenda

- 1GC Intro
- Country Specific Analysis
- Restrictions Impact analysis
- International Analysis
- Roadmap to Christmas

Introduction to the C-19 One Government Centre (1GC)



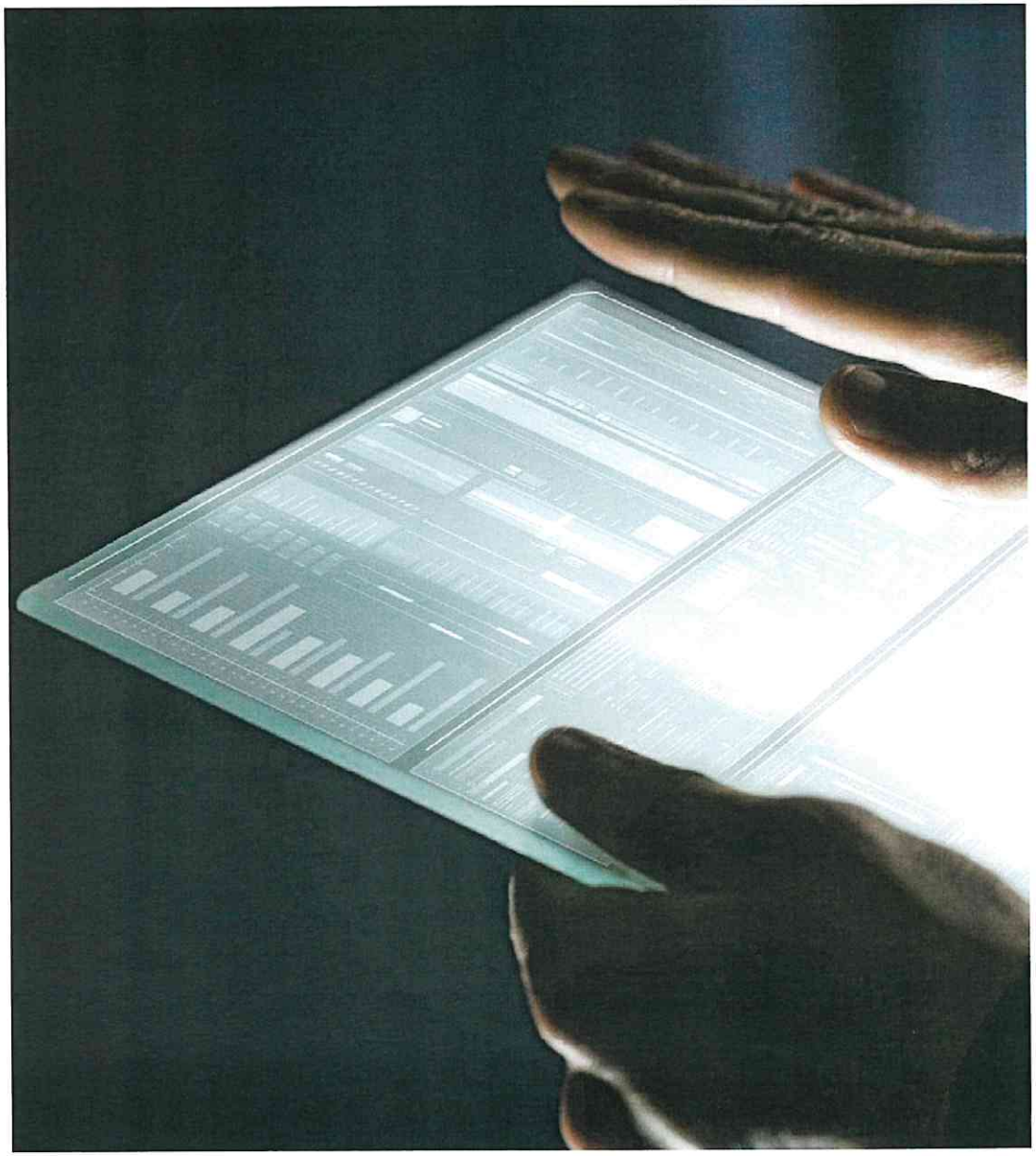
Answering four key questions to support government decision making



1GC curates NPHET / HSE insights

1GC also creates new Insights

County specific analysis



Introduction to County Specific Analysis

This section summarises the how C-19 is spreading in select countries. They can be broadly put into four categories:

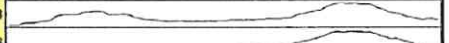
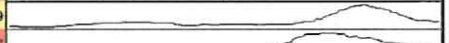
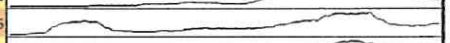
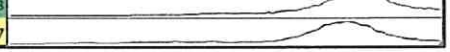
1. Driven by proximity to the border

2. Driven by a specific outbreak event (while accepting that all counties have outbreaks), e.g.
   - Nursing Homes
   - Workplace
   - Social
   - Private House
   - University

3. Following the national restriction trend change

4. Dublin

County Analysis Summary

County	Border County	Major Incidence	Dublin and Surrounding Area	Following National Restrictions Trend	Wave One Outbreak Sources	Wave Two Outbreak Sources	Change in 14 day incidence rate (14/11-17/11)	Wave 2 Incidence rate
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	-0.14	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	0.1	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/ Long-Stay Unit	Private Houses, Hospitals, Extended Family	0.06	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Insitutions	-0.08	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/ Other Ceremony	0.13	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	0.01	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	-0.18	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	-0.03	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	-0.08	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	-0.1	
Kerry		✓		✓	Private Houses, Residential Insitutions, Hospital	Private House, Community Outbreak, Nursing Home	-0.11	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	0.15	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	-0.09	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	0.17	
Laois*		✓			Workplace, Hospital, Community Hospital/ Long-Stay Unit	Private House, Workplace, Nursing Home	-0.32	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	-0.02	
Offaly*		✓			Workplace, Hospital, Community Hospital/ Long-Stay Unit	Private House, Workplace, Nursing Home	0.06	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	-0.05	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	0.05	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	0.05	
Kilkenny*		✓			Hospital, Private House, Community Hospital/ Long-Stay Unit	Private House, Workplace, Hospital	-0.09	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	-0.03	
Mayo				✓	Nursing Home, Hospital, Community Hospital/ Long-Stay Unit	Private House, Nursing Home, School, Workplace	-0.04	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/ Other Ceremony	-0.23	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	-0.33	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	-0.07	

*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR

**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Wave 1: 03/03-25/07 Wave 2: 26/07-20/11

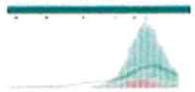
Overview of Incidence Rate Per Capital Per County

UPDATE FOR NEW DATA

The below heatmap shows the county incident rate per capital over the last two months. The overall reduction in cases has levelled in the week with some counties now increasing.

| Two Weekly Incidence Rate Per 100k | 17-Sep | 18-Sep | 19-Sep | 20-Sep | 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | Change Last 3 Days |
|---|---|---

County view – Cavan (19/11)

Total Confirmed Cases	Trend vs. National
2,183	

Summary

Previous Findings: Border County

- As a border county Cavan has witnessed high rates of infection in particular in the Cavan-Belturbet LEA
- Challenge of cross-border variance in restriction levels

Previous Findings: Outbreaks

- "Private House" outbreaks in late September grew
- Crosserlough (LEA - Ballyjamesduff) win County Final, with reports of celebrations and "lock ins"
- [redacted] 22 in schools and 18 in the community

Previous Findings: Restrictions

- Case incidents increase appear to coincide with easing of restrictions and events above
- Level 4 appears to have desired impact of reducing incident rate
- Level 5 further accelerates case incident reduction

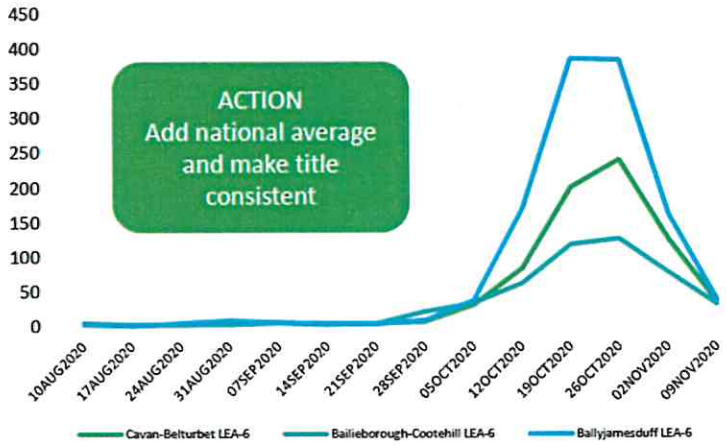
November Findings: Level 5 Impact

- Travel along the Belturbet bypass (border road) fell by 33% during October
- Incidence rate has fallen from 2.5 times the national average to the national average during November
- Outbreak-related cases fell from 90 in the last 2 weeks of October to 13 in the first two weeks of November

Employment Summary

- Cavan had c.47% of its workforce on PUP or TWSS (15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP which is down from 9.7k in May (CSO, DSP)

Cavan Cases By LEA



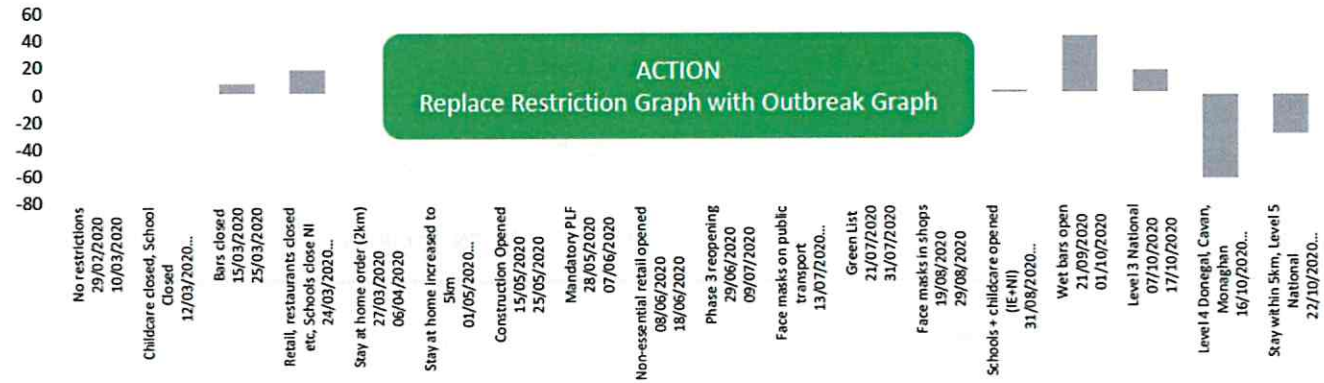
Since the 1st of September

1,272 cases, with **32% linked to outbreaks**

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	215	72
Community outbreak	51	2
Nursing home	29	12
School	24	8
Extended family	19	1

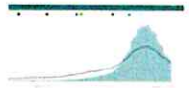
Notable events	Date	No. of cases
Community outbreak	09/10/2020	50
Restaurant / Cafe	04/10/2020	19
Nursing home	[redacted]	16
Nursing home		8
Community outbreak	21/10/2020	7

Average Daily Change in 14 day incidence by restriction



County View – Meath (13/11)

WORK IN PROGRESS

Total Confirmed Cases	Trend vs. National
3,383	

Summary

Outbreak

- Private homes leader in outbreaks with 61% of total. 3.2 cases per outbreak on average
- A Nursing Home outbreak with 33 cases
- One significant community outbreak of 29 cases

GAA Football County Final

- In the week following Ratoath's Senior Football Championship victory (October 4th), cases in the Ratoath LEA rapidly spiked
- This was followed by a rise in incidences throughout the rest of the county

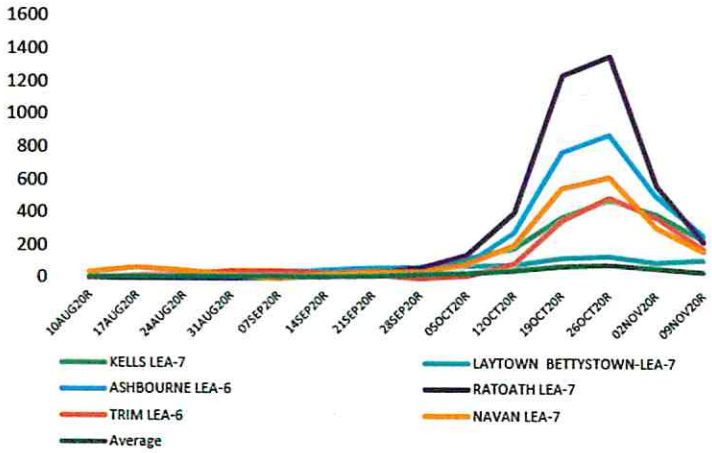
Commentary on Restrictions

- In the days following level 3 restrictions in Meath, cases began to stabilize and fall.
- Level 5 restrictions helped to accelerate this decline in cases, bringing Meath's incidence rate down from nearly double the national rate in mid-late October to both levels being nearly equal by November.

Employment summary

- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP remain lower than peak (13k versus 25k) levels (CSO, DSP)

LEA Incidence rate per 100,000 vs. National Average



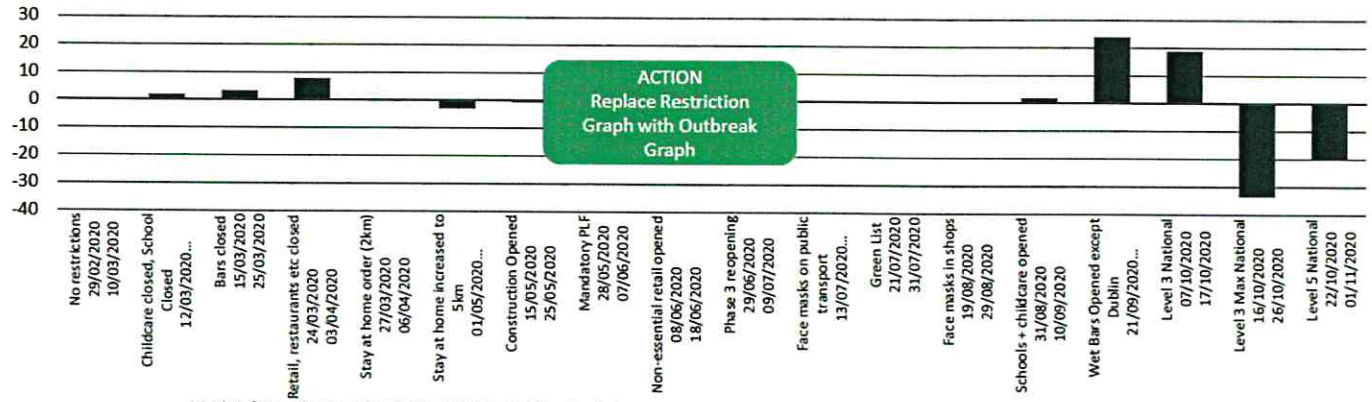
Since the 1st of September

2,466 cases, with 27% linked to outbreaks

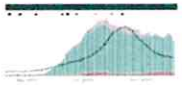
Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	397	121
Nursing home	74	9
Community outbreak	45	4
Workplace	38	18
School	25	10

Notable events	Date	No. of cases
Nursing home	[redacted]	51
Community outbreak	10/10/2020	29
Community outbreak	13/10/2020	12
Workplace	19/10/2020	11
Nursing home	[redacted]	10

Average Daily Change in 14 day incidence by restriction



County View – Donegal (20/11)

Total Confirmed Cases	Trend vs. National
2,755	

Summary

Border County

- Incidence rates in LEAs bordering Northern Ireland were consistently higher than other areas in the county

Compliance

- Mask compliance in Donegal reduced (against national and previous Donegal trend) with Level 4 restrictions. This is against the trend in Donegal for Level 3
- Road travel near the border fell by 27% between September and October, likely a result of level 3 restrictions and restrictions in Derry
- However, from October to November, road travel on this road rose by 6%, despite additional restrictions in both countries being put in place

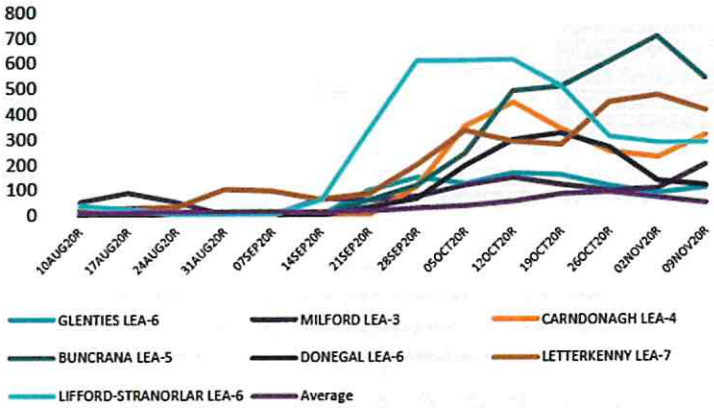
Commentary on Restrictions

- Despite level 5 being effective in other counties, cases in Donegal continue to decline at a far lower rate compared to national levels
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted].
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November
- Low association between outbreaks and sporting activities. County Football Championship Final was cancelled

Employment summary

- Donegal had c.49% of its workforce on PUP or TWSS (30k) at the peak in early May (EY 2019 employment estimates) . The numbers currently on PUP remain lower than peak (12k versus 23k) (CSO, DSP)

LEA Incidence rate per 100,000 vs. National Average



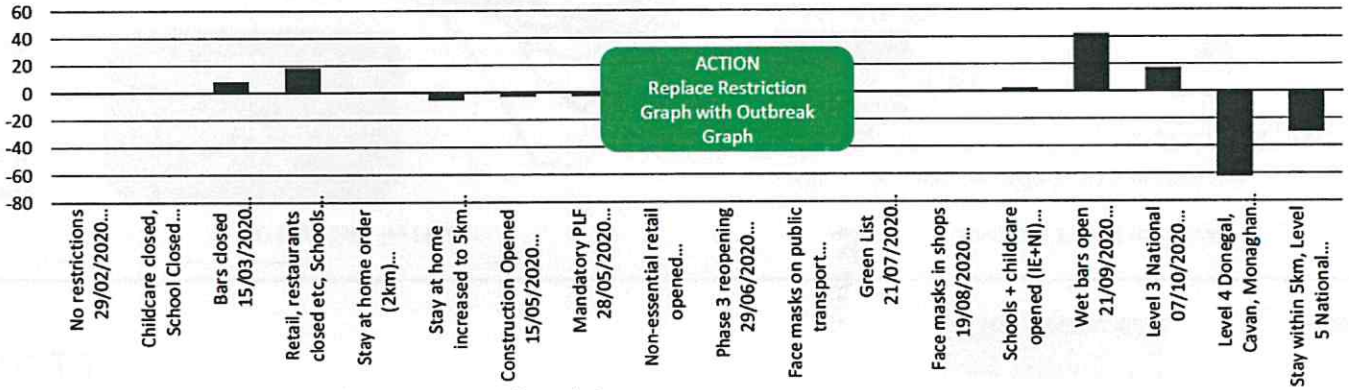
Since the 1st of September

2165 cases, with 62% linked to outbreaks

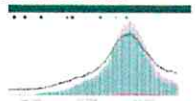
Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	651	235
Workplace	159	28
Hospital	126	5
Extended family	118	19
Nursing home	58	5

Notable events	Date	No. of cases
Hospital	[redacted]	99
Workplace	23/09/2020	55
Nursing home	[redacted]	49
Social gathering	24/10/2020	20
Hospital	[redacted]	17

Average Daily Change in 14 day incidence by restriction



County view – Galway (20/11)

Total Confirmed Cases	Trend vs. National
2,609	

Summary

Key Events

- NUI Galway, located in Galway City Central LEA, reopened on 24/09. Within 10 days, cases in this LEA spiked
- Wet pubs reopening saw mobility within the county rise by 5.4%. Cases around the rest of the city began to rise during mid-October
- GAA senior championship football semi-finals and finals occurred in the last week of September, which, with the pubs open, may have exacerbated the spread during this time
- Ten days after national level 3 lockdown (27/10) we see cases decline almost immediately, falling below national levels in November
- An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

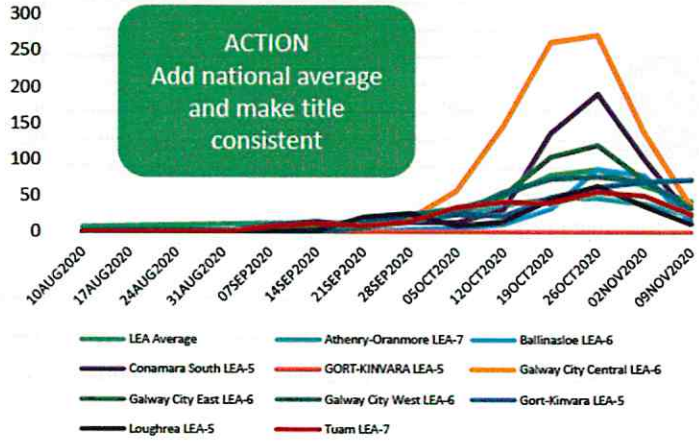
Outbreaks

- [redacted], had a confirmed outbreak in mid-October
- [redacted]
- Throughout November, private household cases were responsible for 49% of outbreak cases, with the nursing home outbreak and community outbreaks making up a large proportion of the remaining percentage

Employment summary

- Galway had c.39% of its workforce on PUP or TWSS (49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP which is down from 32.5k in May (CSO, DSP)

Daily cases by LEA



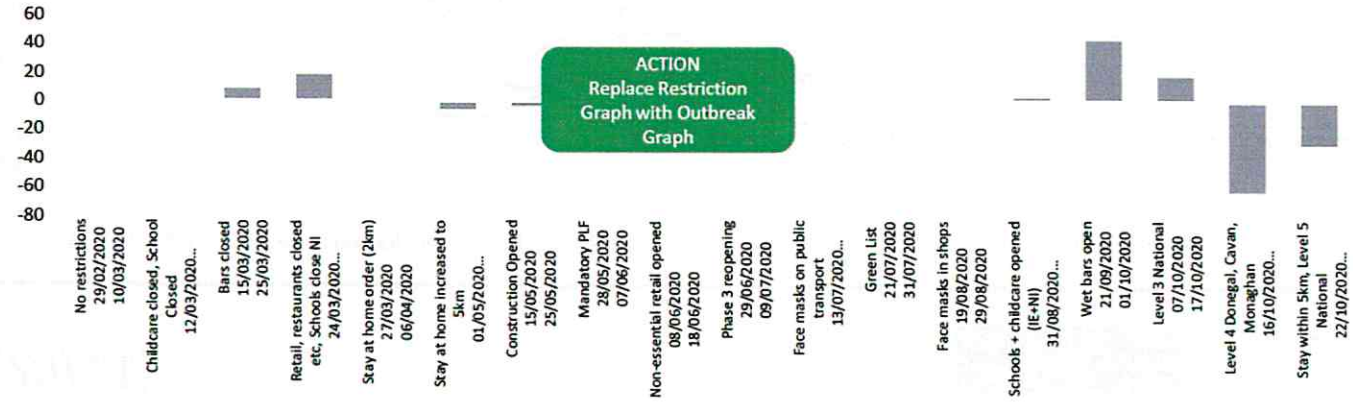
Since the 1st of September

2,060 cases, with **66% linked to outbreaks**

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	723	293
Community outbreak	207	30
[redacted]	[redacted]	[redacted]
Childcare facility	61	8
School	37	11

Notable events	Date	No. of cases
Community outbreak	24/09/2020	114
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Social gathering	19/09/2020	20
Community outbreak	25/09/2020	18

Average Daily Change in 14 day incidence by restriction



Dublin – local authority breakdowns over time

ACTION
MAKE for Wave 2 only

		16MAR	23MAR	30MAR	06APR	13APR	20APR	27APR	04MAY	11MAY	18MAY	25MAY	01JUN	08JUN	15JUN	22JUN	29JUN	06JUL	13JUL	20JUL	27JUL	03AUG	10AUG	17AUG	24AUG	31AUG	07SEP	14SEP	21SEP	28SEP	05OCT	12OCT	19OCT	26OCT	02NOV	09NOV
Fingal	RUSH-LUSK LEA-5	3	14.4	49	121.1	175.9	227.8	170.2	69.2	51.9	31.7	17.3	3	3	3	3	3	3	3	3	3	3	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2
	SWORDS LEA-7	3	38.9	74	155.7	311.5	350.4	305.6	188.8	60.3	42.8	40.9	23.4	3	3	3	13.6	11.7	3	15.6	23.4	11.7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	247.2	297.8	371.8	288.1
	BLANCHARDSTOWN-MULHUDDART LEA-5	14.2	48.1	102	243.6	444.7	501.3	515.5	512.6	274.7	59.5	34	48.1	39.7	22.7	3	3	3	14.2	22.7	28.3	22.7	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	269.1
	CASTLEKNOCK LEA-6	3	32.5	65	169.1	336	370.7	316.5	192.9	52	17.3	13	3	3	13	3	3	3	3	3	10.8	13	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	299.2	201.6	132.2
	HOWTH-MALAHIDE LEA-7	3	73	110.4	146.1	251.2	254.7	162.1	115.8	80.2	41	28.5	17.8	14.3	10.7	12.5	3	3	3	3	3	8.9	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9
	BALBRIGGAN LEA-5	3	30.1	68.4	125.8	213.3	284.4	278.9	172.3	71.1	27.3	38.3	43.8	13.7	3	3	3	3	3	3	3	3	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2
	ONGAR LEA-5	3	41.9	114.4	195.3	346	362.8	214.9	131.2	67	16.7	19.5	25.1	3	3	3	3	3	14	3	3	3	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7
Dún Laoghaire-Rathdown	STILLORGAN LEA-6	3	62.3	170.4	213.1	239.3	239.3	190.1	140.9	147.5	108.2	22.9	16.4	3	3	3	3	3	3	3	3	3	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8
	DUNDRUM LEA-7	3	42.7	93.5	189.6	272.3	251	146.9	85.4	74.8	40.1	18.7	13.4	18.7	18.7	3	3	3	3	3	3	3	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	69.4
	GLENCULLEN-SANDYFORD LEA-7	3	27.3	98.3	166.6	199.3	177.5	202.1	152.9	54.6	49.2	3	3	3	3	3	3	3	3	3	3	3	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3
	KILLINEY-SHANKILL LEA-7	13.1	28.9	76.2	133.9	204.8	223.2	144.4	91.9	105	76.2	13.1	3	3	3	3	3	3	3	3	3	3	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	47.3
	DÚN LAOGHAIRE LEA-7	14.4	45.6	127.3	235.4	295.5	237.8	156.1	141.7	108.1	52.9	28.8	19.2	3	12	3	3	3	3	3	3	3	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	79.3
	BLACKROCK LEA-6	14.8	38.5	118.6	198.7	272.8	246.1	157.1	177.9	157.1	97.8	62.3	74.1	68.2	20.8	3	3	3	20.8	17.8	3	3	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2
South Dublin	LUCAN LEA-5	3	18	107.7	266.3	496.7	601.4	403.9	239.4	152.6	89.8	92.8	68.8	41.9	26.9	3	3	18	3	3	3	18	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6
	TALLAGHT CENTRAL LEA-6	3	39.3	92.6	157.4	266.1	361	291.6	138.8	111.1	106.4	74	60.2	30.1	3	3	3	3	3	3	3	3	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	171.2
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	68.9	123.2	152.4	238	298.5	242.1	146.1	85.6	56.4	50.1	25	3	3	3	3	3	3	3	12.5	3	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7
	FIRHOUSE-BOHERNABREENA LEA-5	3	58.5	90.6	108.2	292.4	368.4	292.4	231	108.2	61.4	40.9	17.5	14.6	3	3	3	3	3	3	3	23.4	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8
	TALLAGHT SOUTH LEA-5	3	28.2	90.2	155.1	256.6	344	358.1	290.4	248.1	183.3	104.3	81.8	59.2	47.9	22.6	14.1	3	3	19.7	36.7	42.3	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	310.2
	CLONDALKIN LEA-7	30.1	83.8	172	279.4	367.6	421.3	475.1	412.7	264.4	219.3	159.1	66.6	19.3	15	12.9	3	3	3	3	3	21.5	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	217.1
	PALMERSTOWN-FONTHILL LEA-5	3	26.3	99.9	126.2	207.7	231.4	126.2	99.9	81.5	34.2	3	3	3	3	3	3	3	15.8	13.1	3	3	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1
Dublin City	BALLYMUN-FINGLAS LEA-6	3	18.2	74.5	178.1	325.4	390.8	430.8	318.1	138.2	87.3	49.1	36.4	27.3	21.8	12.7	14.5	9.1	3	9.1	10.9	3	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7
	CABRA-GLASNEVIN LEA-7	3	42.6	83.5	160.3	318.8	375.1	395.6	354.6	155.2	56.3	58	40.9	17	3	3	3	8.5	20.5	23.9	17	10.2	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	162
	BALLYFERMOT-DRIMNAGH LEA-5	17.4	41.2	99.9	225.8	343	373.4	356	225.8	78.1	41.2	19.5	10.9	3	3	3	3	10.9	3	13	13	3	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	197.5
	KIMMAGE-RATHMINES LEA-6	9	62.7	132.5	166.5	241.7	315.1	241.7	141.4	87.7	39.4	16.1	3	3	3	3	3	3	12.5	23.3	10.7	3	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188
	PEMBROKE LEA-5	11	57.2	131.9	175.9	274.9	299.1	299.1	270.5	136.3	77	41.8	30.8	17.6	3	11	3	3	3	11	3	3	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	90.2
	SOUTH EAST INNER CITY LEA-5	12.3	32	76.3	115.8	150.2	155.2	91.1	81.3	69	17.2	3	3	3	3	3	3	3	12.3	59.1	49.3	3	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7
	NORTH INNER CITY LEA-7	7.9	39.3	78.6	108.5	198.1	235.8	169.8	117.9	89.6	62.9	40.9	28.3	11	3	14.1	12.6	3	3	7.9	12.6	15.7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	122.6
	CLONTARF LEA-6	3	40.6	107	171.6	276.8	345.1	374.7	293.5	107	31.4	24	16.6	3	18.5	14.8	3	3	3	9.2	9.2	3	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	116.3
	DONAGHMEDE LEA-5	3	21.6	98.6	230.8	389.5	401.5	327	204.4	50.5	31.3	26.4	3	3	14.4	16.8	3	3	3	3	12	19.2	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7
	ARTANE-WHITEHALL LEA-6	3	56.7	129	260	445.7	502.4	473.1	308.9	109.5	70.4	66.5	41.1	13.7	13.7	17.6	11.7	3	11.7	11.7	27.4	37.1	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9
	SOUTH WEST INNER CITY LEA-5	3	66.1	141.7	172.4	281	297.6	214.9	188.9	132.3	66.1	35.4	23.6	3	3	3	3	3	3	11.8	18.9	11.8	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1

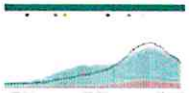
There is a moderate correlation between areas hit hard in Wave 1 and Wave 2, with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin, Artane-Whitehall, etc. Note these areas contain many more EDs that were classified as "marginally disadvantaged" or "disadvantaged" on the Pobal HP Social Deprivation Index than areas with lower incidence rates, which contained many EDs classified as "affluent".

County view – Dublin (19/11)

Total Confirmed Cases

26,221

Trend vs. National



Summary

Key Events

- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire–Rathdown seeing lower overall incidence. This is consistent with socio-economic differences per area
- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases, whereas in other counties Level 3 may have been sufficient

Outbreaks

- 80% of outbreak cases in the last 8 weeks came from private houses. Other common settings include nursing homes, hospitals, and schools and childcare facilities to a lesser extent
- Notable outbreaks include a 308 case extended family outbreak in [redacted], 77 case nursing home outbreak in [redacted], and a 66 case outbreak at social gathering in [redacted]

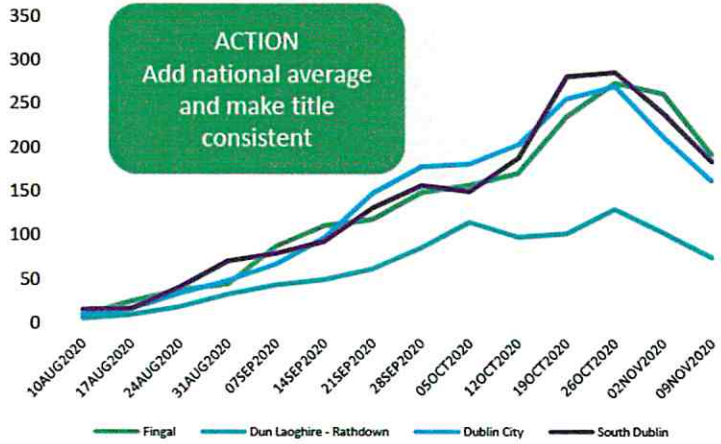
Tallaght Resurgence

- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Employment summary

- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k, compared to a peak of 176k in May (CSO, DSP)

Dublin Broken Down by local authorities (/100k)



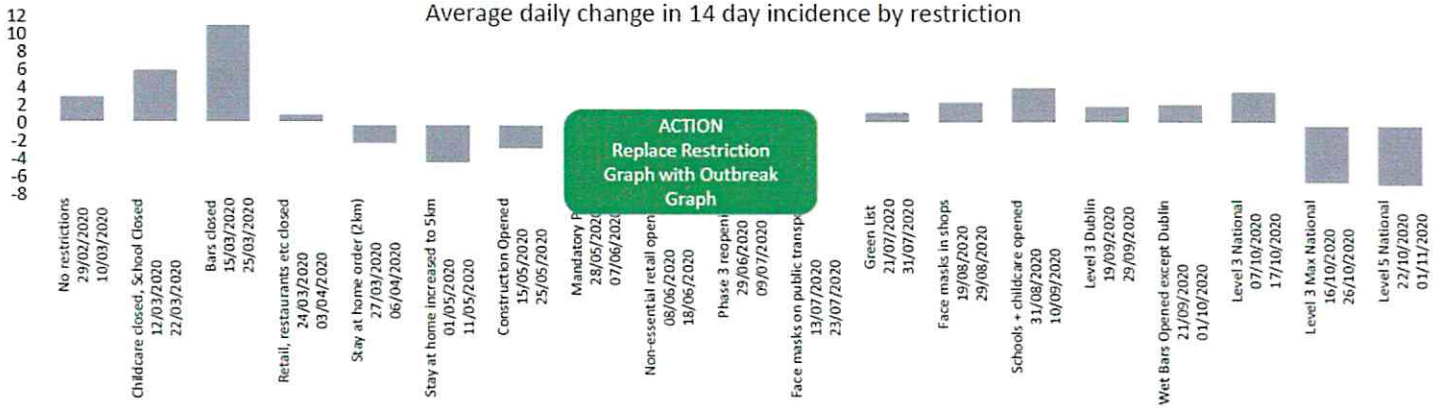
Since the 1st of September

12,606 cases, with **56% linked to outbreaks**

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	5225	2075
Extended family	291	3
Nursing home	266	27
School	249	66
Hospital	192	30

Notable events	Date	No. of cases
Extended family	24/09/2020	288
Nursing home	[redacted]	75
Hotel	12/09/2020	38
Childcare facility	20/10/2020	38
Residential institution	02/10/2020	30

Average daily change in 14 day incidence by restriction

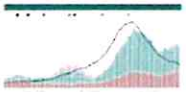


County view – Waterford (20/11)

Total Confirmed Cases

975

Trend vs. National



Summary

Key Events

- Cases spiked in early September due to a meat factory outbreak resulting in 50 cases. This primarily occurred in Waterford city east, south and Tramore-Waterford city west
- Cases rose in the same LEAs in mid October, indicating cases may have come from nearby counties such as Cork, which saw cases rise earlier in the month
- Cases stabilized in the ten days after Level 3 restrictions came into effect
- While falling steadily throughout November, cases began to rise again towards the middle of the month

Outbreaks

- Workplace outbreaks have been prominent in Waterford, making up 30% of outbreak-related cases in November, with the largest resulting in 24 cases
- Private household outbreaks make up another 63% of outbreak-related cases during this period

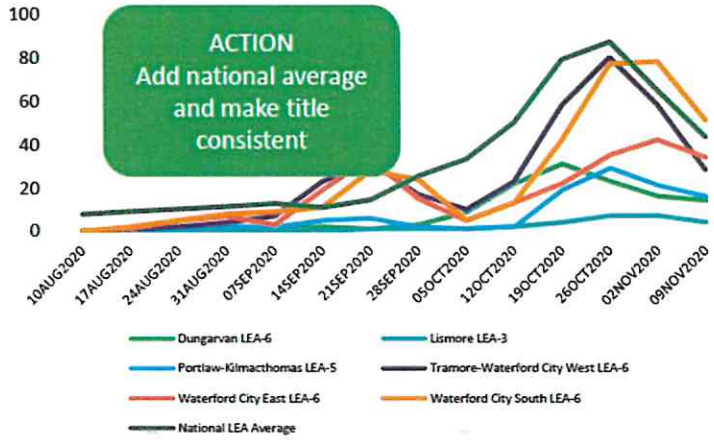
Waterford City

- Outbreaks in September and October were both driven by cases occurring in Waterford city. Unlike other counties, these do not seem to spread throughout Waterford to the same degree, with LEAs outside Waterford city maintaining lower cases compared to national levels

Employment summary

- Waterford had c.45% of its workforce on PUP or TWSS (21k) at the peak in early May (EY 2019 employment estimates). There are currently 8k on PUP which is down from 14k in May (CSO, DSP)

Incidence rate by Waterford LEA



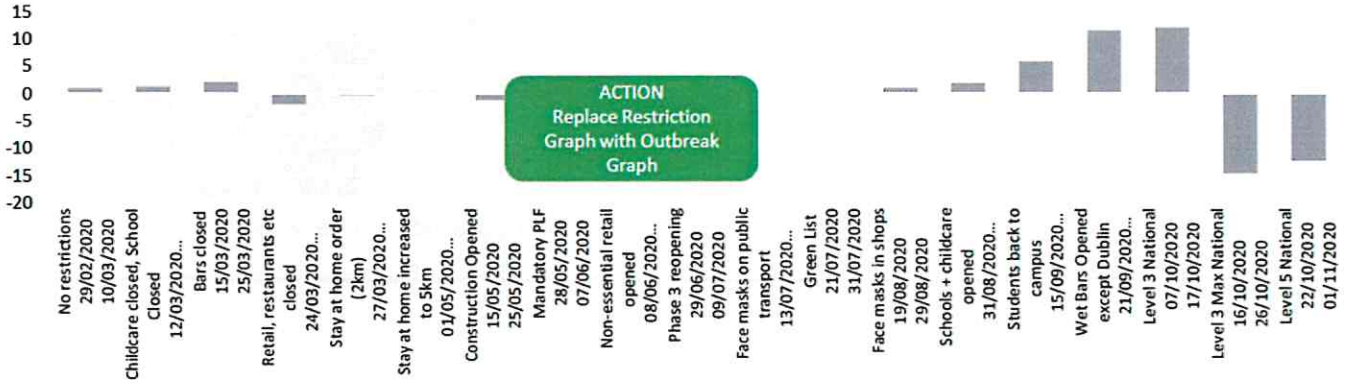
Since the 1st of September

777 cases, with **63% linked to outbreaks**

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	329	135
Workplace	84	8
Community outbreak	20	2
Other	12	2
Extended family	11	3

Notable events	Date	No. of cases
Workplace	04/09/2020	49
Workplace	03/11/2020	21
Community outbreak	02/10/2020	16
Private house	09/09/2020	10
Other	28/10/2020	9

Average Daily Change in 14 day incidence by restriction



County view – Roscommon (20/11)

Total Confirmed Cases	*Trend vs. National*
925	ACTION Add trend vs national

Summary

Key Events

- Level 3 (max) restrictions put in place as of 26th October can be seen to align with a reduction in incidence rate
- In some instances this reduction can be seen to accelerate again with the introduction of level 5 restrictions on the 2nd November (Athlone LEA-5, Roscommon LEA-6, Boyle LEA-6)
- An increase can be seen in Athlone LEA-6 in the week following the football final held September 20th, potentially due to the winner being located in this LEA (Kiltoom)

Outbreaks

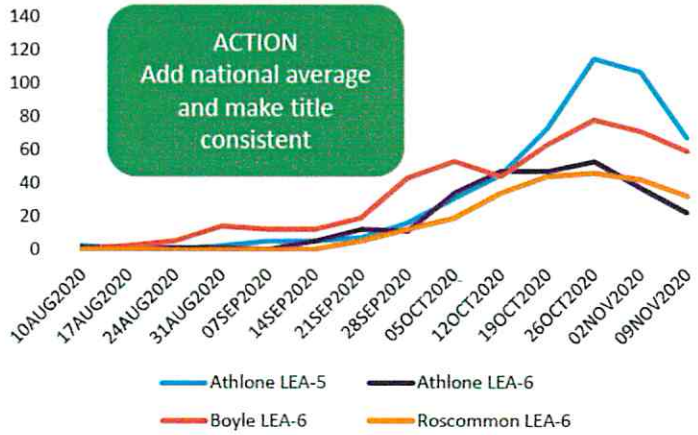
- The main driver of outbreaks within the county since the start of November are those seeded in nursing homes – representing 64%
- Private house outbreaks make up a significant portion of new the remainder at 33% of new outbreaks

Employment summary

Source: CSO, DSP

- Roscommon had c.37% of its workforce on PUP or TWSS (11k) at the peak in early May (EY 2019 employment estimates). There are currently 3k on PUP which is down from 7k in May (CSO, DSP)

Incidence rate by Roscommon LEA



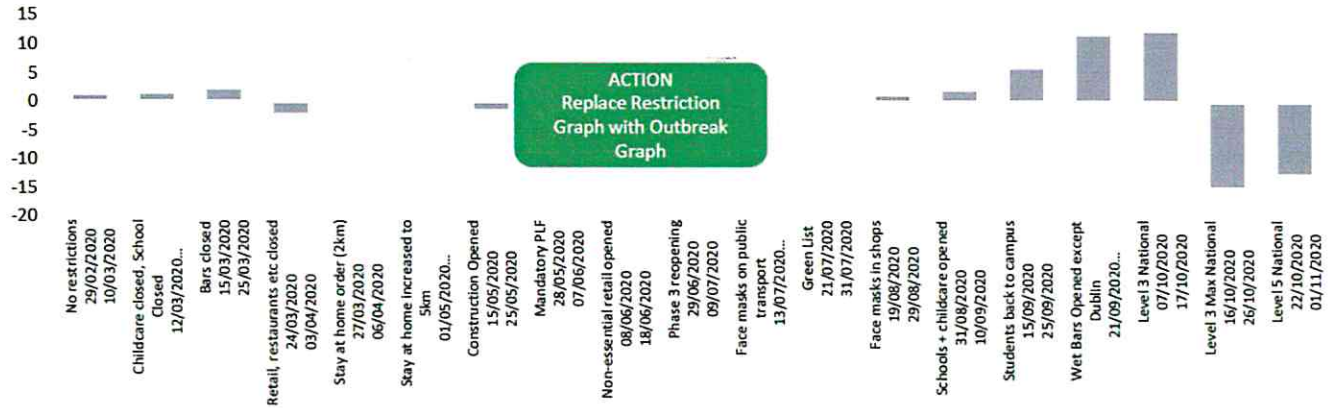
Since the 1st of September

557 cases, with **68% linked to outbreaks**

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	194	78
Nursing home	82	5
Extended family	30	5
[redacted]	[redacted]	[redacted]
Workplace	14	8

Notable events	Date	No. of cases
Nursing home	[redacted]	66
[redacted]	[redacted]	[redacted]
Extended family	09/10/2020	18
Nursing home	[redacted]	12
Private house	14/10/2020	7

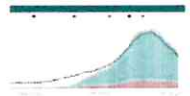
Average Daily Change in 14 day incidence by restriction



RM4

County view – Cork (16/11)

WORK IN PROGRESS

Total Confirmed Cases	Trend vs. National
6,140	

Summary

Key Events

- Cases in Cork city rose as wet pubs reopened, with mobility within the county rising 7.3%. Cases around the rest of the county followed shortly after Source: Mobility Data
- Cork had a large number of GAA games on 03/10 and 04/10. No matches occurred after this, with level 3 restrictions being applied around this time
- Cases throughout Cork began to fall 10 days after this, indicating both measures were effective
- Cases in Cork City South Central, the LEA containing UCC, were twice as high as other LEAs in Cork city during mid October. This gap disappeared by November, indicating reopening the college negatively impacted C-19 spread

Cork City as an epicentre

- Cork city was most severely affected. A clear trend of Cork city vs the rest of the county emerges from the data
- 68 cases were detected in one community outbreak in [redacted] with two large nursing home outbreaks (38/32 cases) also detected Source: CIDR

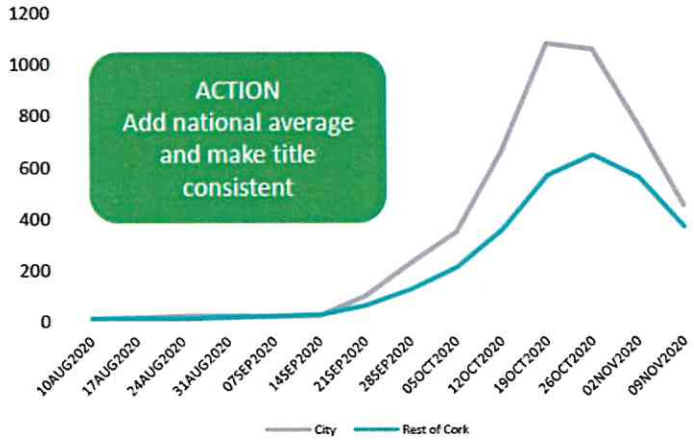
Weekend of 14/11

- While incidence rates are falling, Gardai had to disperse large crowds in the city centre this weekend due to individuals consuming takeaway alcohol in large crowds
- Areas such as Grand Parade at Coal Quay noted as popular for these activities Source: Cork Beo

Employment summary

- At peak, c 39% of Cork's workforce were on PUP or TWSS (96k) (EY 2019 employment estimates). Current PUP levels are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Cases in Cork city vs rest of county



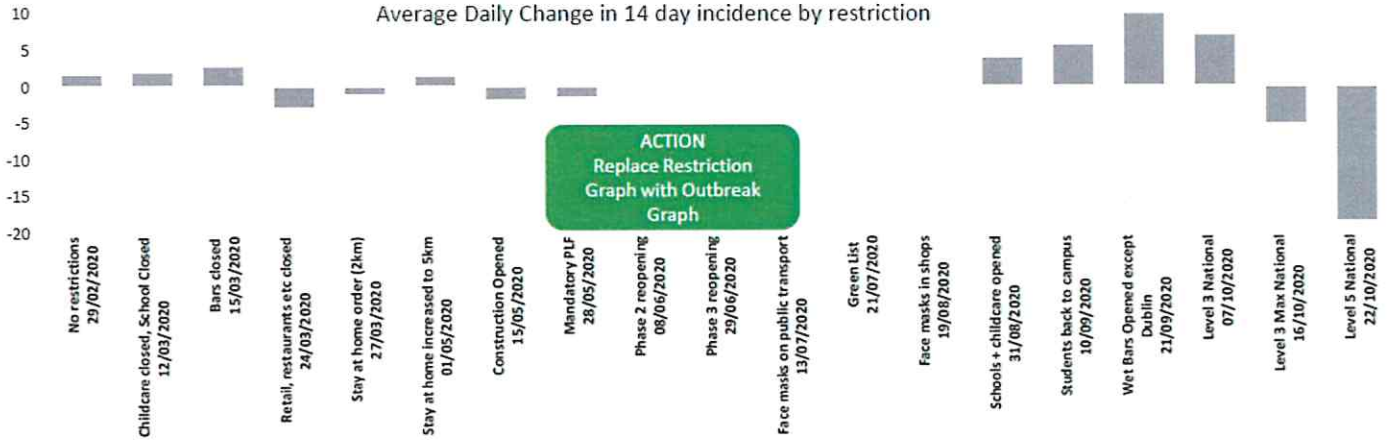
Since the 1st of September

4,492 cases, with **45% linked to outbreaks**

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	929	354
Community outbreak	411	67
Nursing home	114	9
School	113	24
Extended family	90	22

Notable events	Date	No. of cases
Community outbreak	26/10/2020	68
Nursing home	[redacted]	46
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	30
Community outbreak	22/09/2020	29

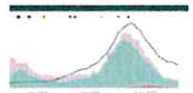
Average Daily Change in 14 day incidence by restriction



Slide 17

RM4 Might update with new CIDR on Monday depending if there is a new set
Rory Murphy, 20/11/2020

County View - Laois, Offaly and Kildare (17/11)

Total Confirmed Cases	Trend vs. National
6,248	

Summary

Summer Outbreaks

- Increasing case number trend emerges in July
- Outbreaks concentrated in food and meat processing plants
- Highest numbers in Offaly in Edenderry (93 of 103 cases) in two weeks preceding August 17th, with Kildare largely focussed in Athy/Kildare (129/151 of 437)

Commentary on Restrictions - Laois & Offaly

- County lockdowns for Laois, Offaly and Kildare from August 8th
- Offaly and Laois leave lockdown on 21st August and the following week cases begin to rise in Laois with minimal decrease in Offaly – note Laois had relatively few cases prior to lockdown

Commentary on Restrictions - Kildare

- Kildare lockdown extended for an additional 10 days
- Case numbers fall however prevalence appears to shift from the south and middle of the county (Athy. Kildare Town , and Newbridge) to the north of the county (Naas, Maynooth and Celbridge)
- As cases increase in North Kildare from October a similar trajectory of case growth appears in Dublin West

Employment summary

- These counties had c.40% of their combined workforce on PUP or TWSS (c.73k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP remain significantly lower than peak (24k versus 44k) (CSO, DSP).

ACTION
Add national average and make title consistent

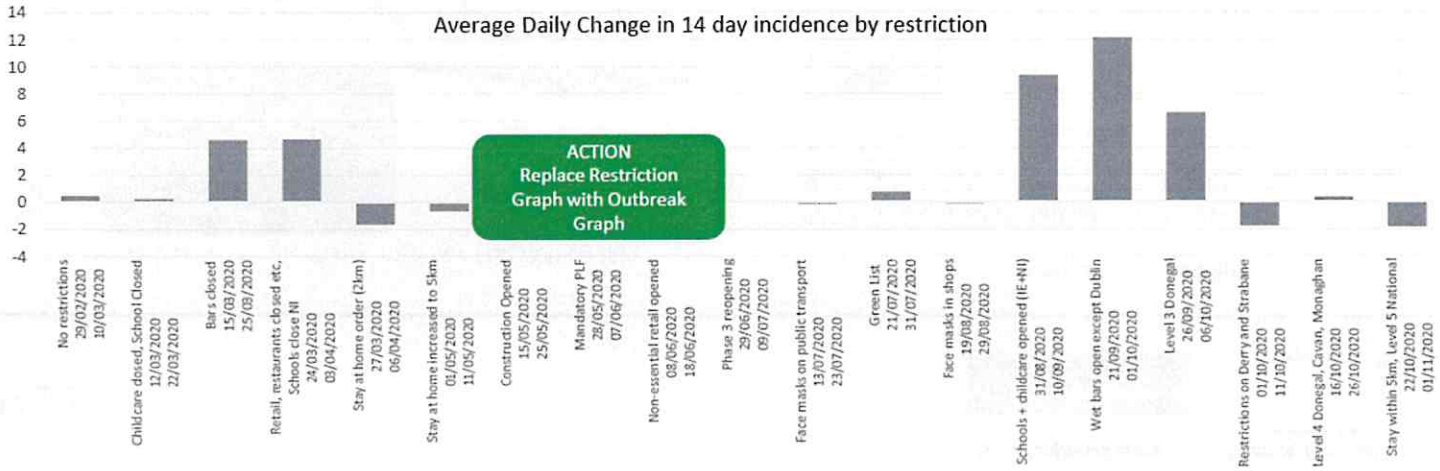
Since the 1st of September

2,859 cases, with 57% linked to outbreaks

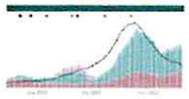
Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	870	342
Nursing home	216	13
Hospital	162	16
School	84	23
Extended family	81	13

Notable events	Date	No. of cases
Nursing home	[redacted]	52
Hospital		49
Nursing home		46
Nursing home		38
Nursing home		38

Average taken across Laois, Offaly, Kildare



County view – Kerry (20/11)

Total Confirmed Cases	Trend vs. National
1,297	

Summary

Key Events

- North Kerry (Listowel) is most severely affected. This coincides with severe outbreaks southern parts of Limerick such as Newcastle West and Adare-Rathkeale, as well as Limerick city
- Killarney and Tralee LEAs are both next in terms of severity of impact, containing two major Kerry towns
- Remainder of county (further south, smaller towns) generally less afflicted

Outbreaks

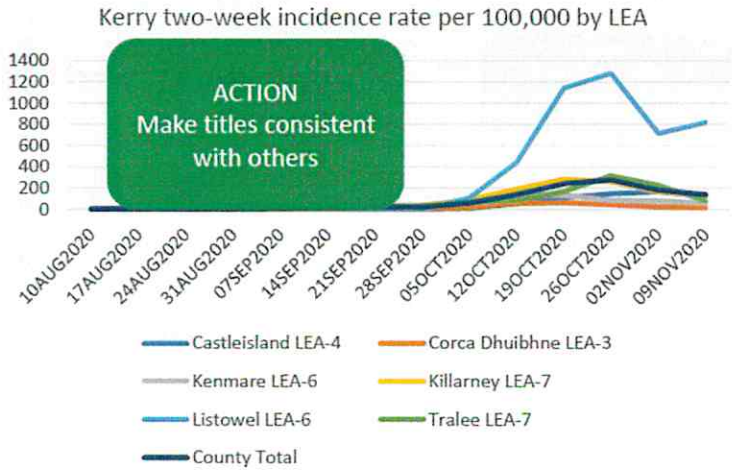
- [redacted]
- Large community outbreak in Kerry of 25 cases
- Private homes also account for a sizable proportion of outbreak-related cases

Listowel's high incidence

- Listowel's incidence effectively tripled the next LEA in terms of incidence. Note the small population of ~14000 people meant 182 cases over a 2-week period prior to Oct 26th translates to very high incidence – a small number of cases would translate to high population-adjusted incidence

Employment summary

- Kerry had c.49% of its workforce on PUP or TWSS (32k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP which is down from 22k in May (CSO, DSP)

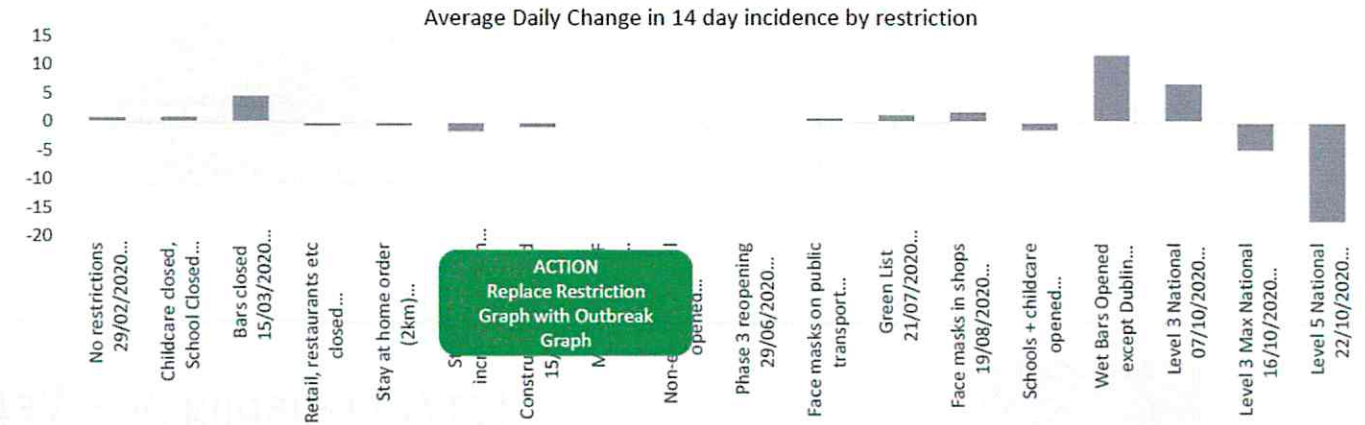


Since the 1st of September

963 cases, with **45% linked to outbreaks**

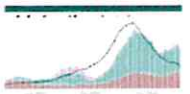
Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	150	53
Community outbreak	101	14
[redacted]	[redacted]	[redacted]
Extended family	25	7
School	23	4

Notable events	Date	No. of cases
[redacted]	[redacted]	[redacted]
Community outbreak	03/09/2020	43
Community outbreak	23/10/2020	25
Religious/Other ceremony	16/10/2020	11
Restaurant / Cafe	11/09/2020	11



County view – Limerick (20/11)

WORK IN PROGRESS

Total Confirmed Cases	Trend vs. National
2,542	

Summary

Key Events

- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November. Note Listowel (northernmost LEA in Kerry) experienced the highest incidence levels in that county
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others – the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

Outbreaks

- [redacted], affecting nearby counties as well such as Kerry, Clare and Tipperary
- Major 122 case community outbreak stands out in late October
- 149 case extended family outbreak mid-early October

Employment summary

- Limerick had c.43% of its workforce on PUP or TWSS (34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP which is down from 22k in May (CSO, DSP)

Limerick C19 Two-Week Incidence per 100k by LEA

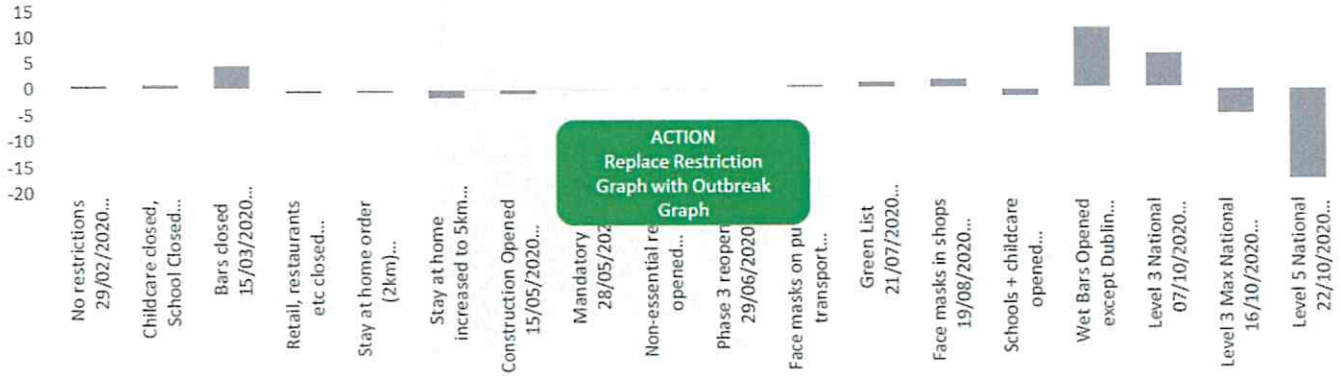
Since the 1st of September

1771 cases, with **39% linked to outbreaks**

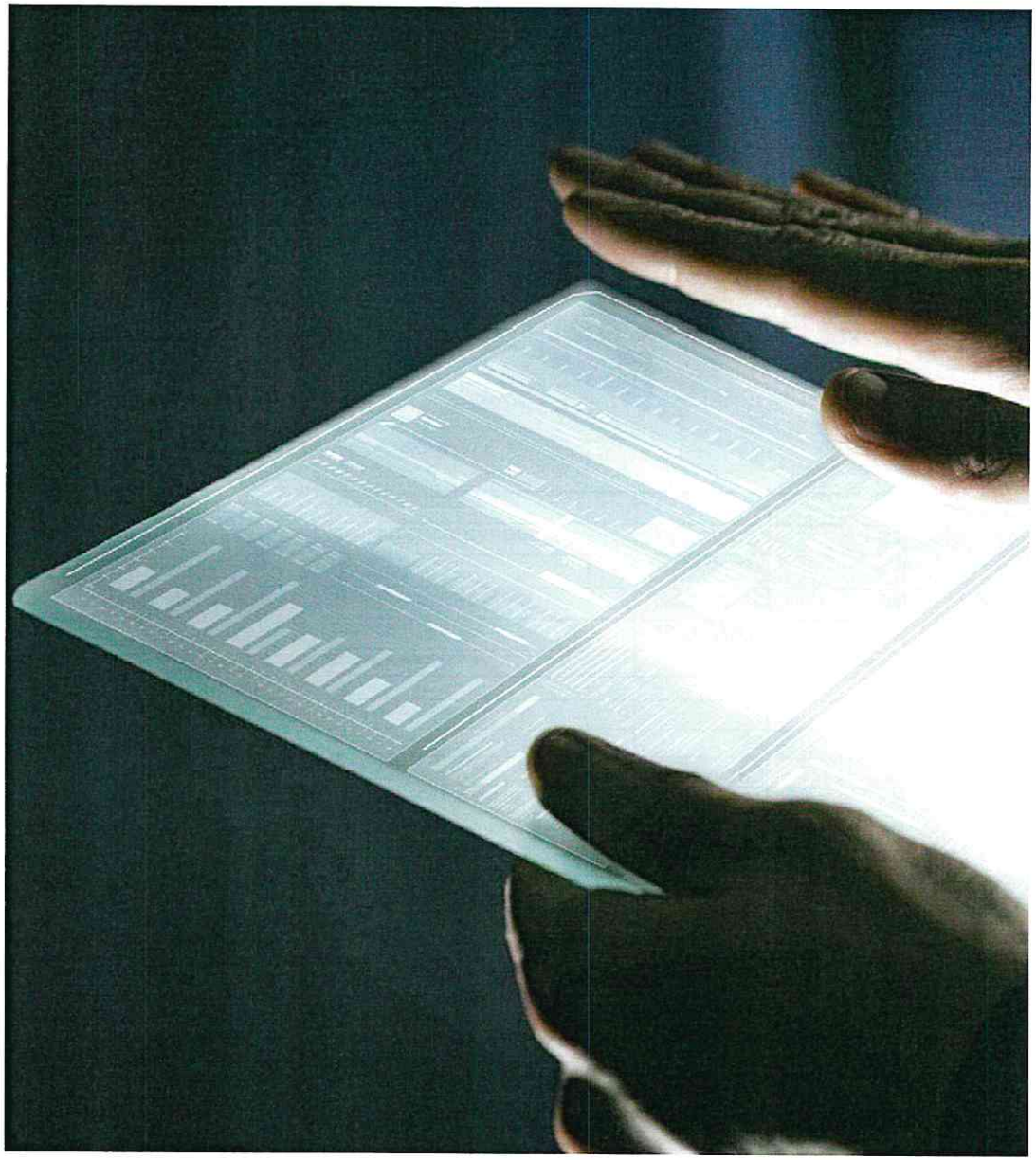
Top 5 Settings	No. of Cases	No. of Outbreaks
Extended family	242	19
Community outbreak	117	8
[redacted]	[redacted]	[redacted]
Private house	66	34
Social gathering	51	5

Notable events	Date	No. of cases
Extended family	23/09/2020	141
Community outbreak	08/10/2020	94
[redacted]	[redacted]	[redacted]
Residential institution	13/10/2020	31
Social gathering	15/10/2020	25

Average Daily Change in 14 day incidence by restriction



Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties – highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

International restriction analysis

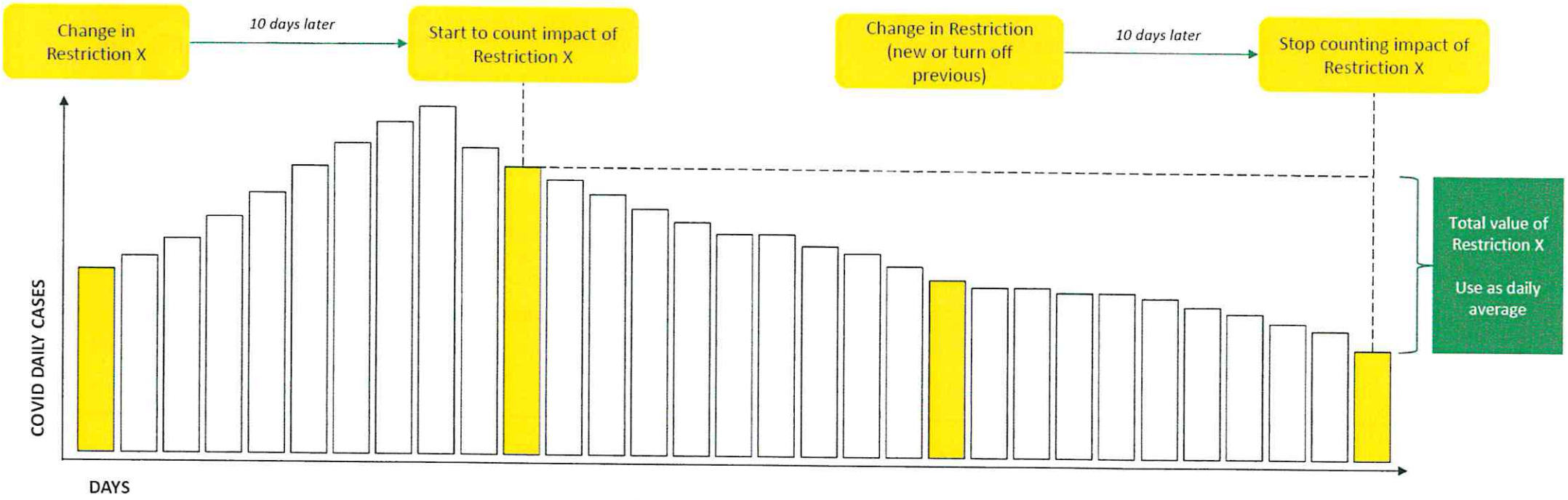
A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

International desktop research

Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular 1GC COVID-19 insights publication and with new research included today

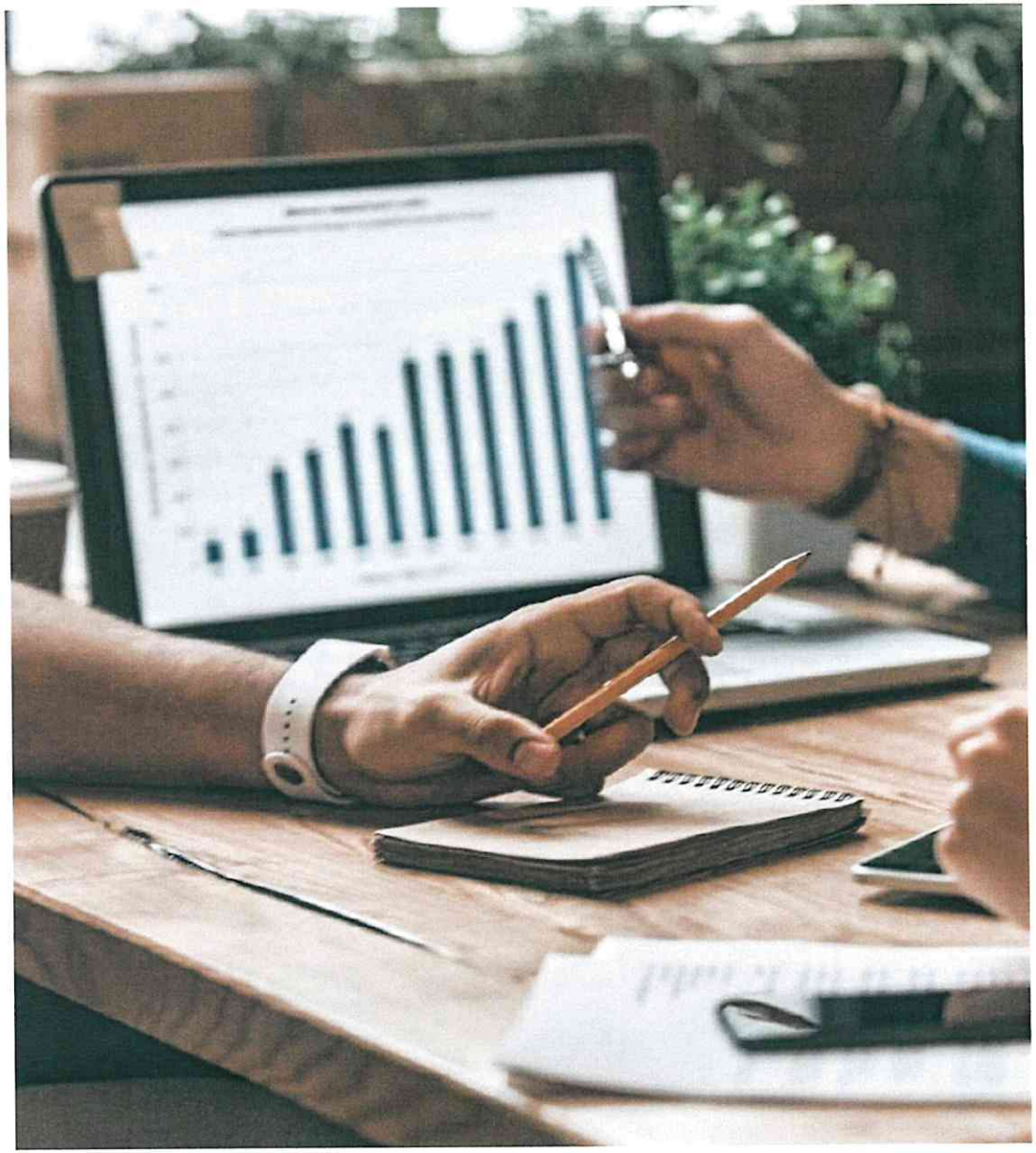
Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There has been relatively few changes, which are generally applied in combination, hiding the unit value per restriction. There is also time a lag between a restriction change and the impact being seen. However, it is also clearly important that restrictions decisions are made with the maximum understanding of the impact. Hence, 1GC has used the below methodology to quantify changes in restrictions. This calculation has been applied for both Ireland and select international countries. The outputs should be seen as directionally useful rather than precise statistical outputs. They are also presented alongside international academic research to provide a broad view to support decisions.



Ireland – restrictions analysis

Interactive demo showing restrictions impact analysis by county

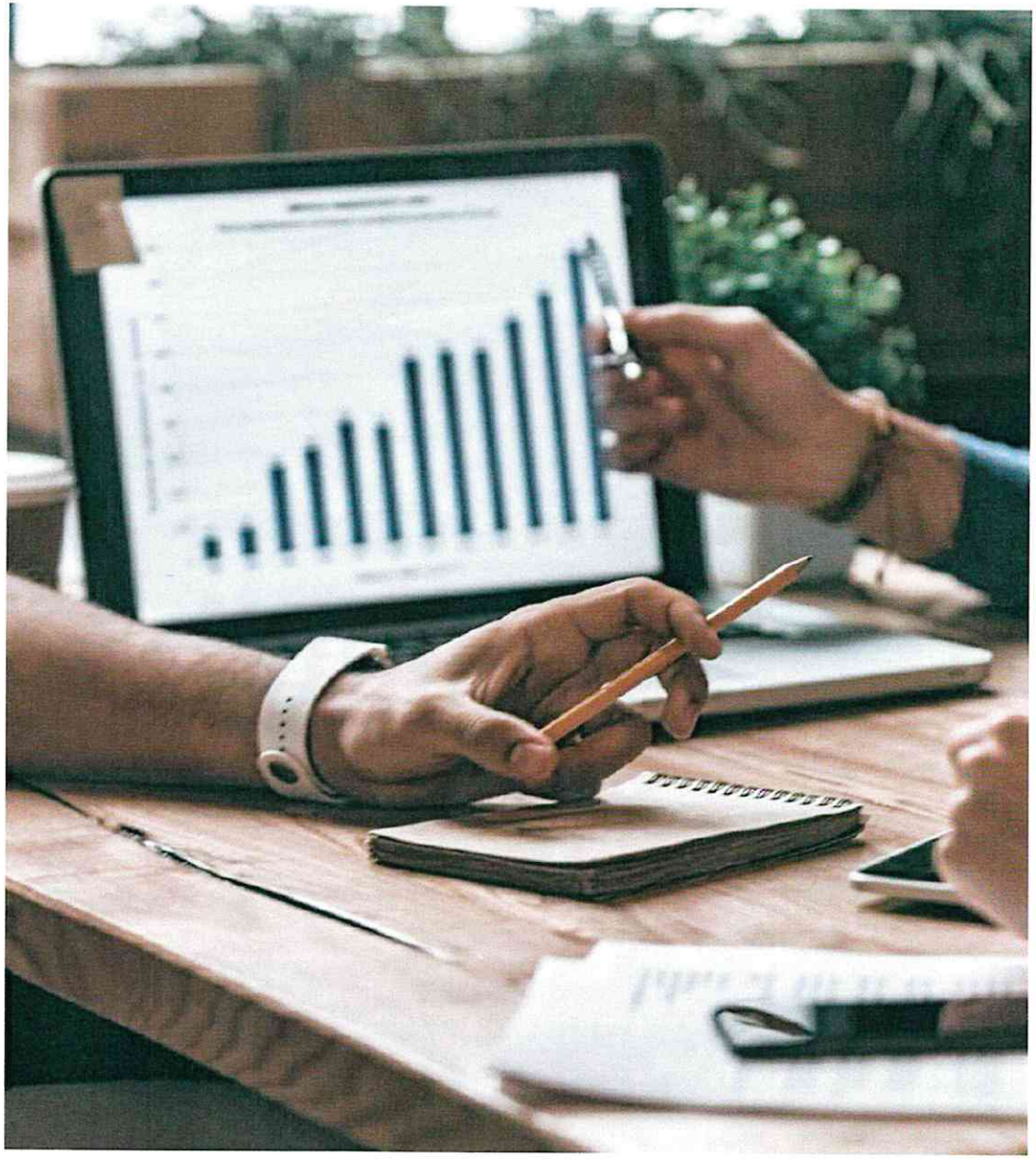


Track and Trace Free Text Analysis

The HSE Track and Trace system captures the information for each citizen being tested for C-19. This includes a contact type field, which explains the contact between citizens that the test resulted from. Contact categories are selected by the contact tracer from a drop down list, including "social", "work", etc.

There is also a free text field where the contact tracer may add further details. For example, if the category was "social" then the free text field may say "attended sports game together".

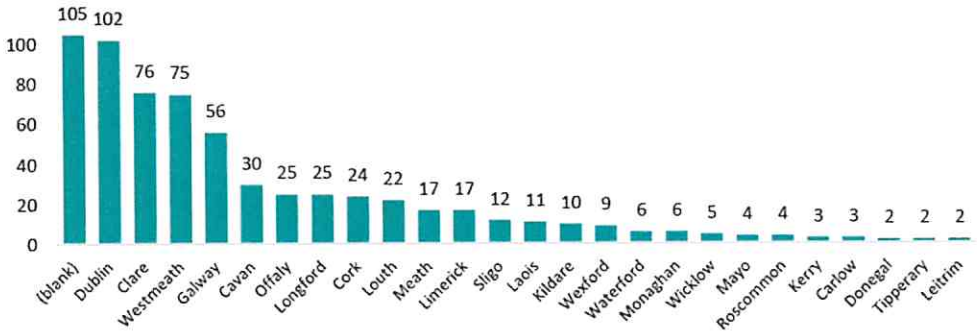
A selection of the analysis of this free text field is shown in this section. Note it is a relatively small sample of data and should be treated only as directionally informative.



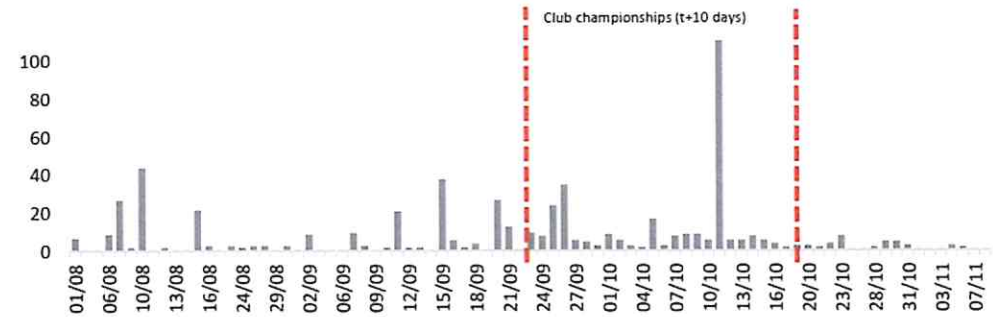
GAA-related events generated clusters of contacts, but absolute levels remain low

GAA-related terms mentioned 653 times since March

GAA and related terms mentioned in free text (by county)



GAA and related terms mentioned in free text (over time)



Note – there were 16 mentions before 1 Aug 2020

Key message: GAA events and celebrations appear to have generated incidences of high numbers of contacts with positive individuals. However, overall levels appear low.

Clare

24 GAA contacts on 7 Aug

33 GAA contacts on 10 Aug

End of July start for club games in Clare as master fixtures committee recommend new formats

Galway

34 contacts on 15 Sep

Mention a specific GAA team

Westmeath

52 GAA contacts on 11 Oct

GAA related

Football senior finals on 27 Sep

Dublin

17 contacts on 15 Aug

Mention a specific GAA camp

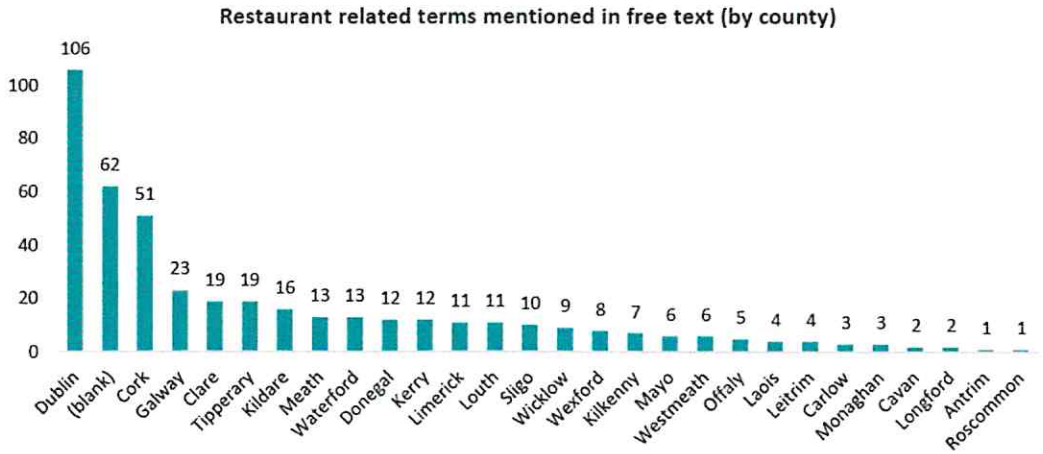
Camps took place between 22 July and 23 Aug

Source: Contact tracing analysis
Terms searched: terms GAA , Gaelic , County Final , County Championship , Hurling and Football
Football and hurling championships took place between 13 Sep and 9 Oct 2020

Note: Analysis completed using the small available sample of track and trace free text data. Treat only as directionally informative

Contacts generated in restaurant settings, however overall levels remain low

Restaurants mentioned 439 times since March



Key message: Restaurants generated contacts, however absolute levels remain relatively low given data available.

Dublin

18 contacts relating to a coffee chain 17-19 Aug

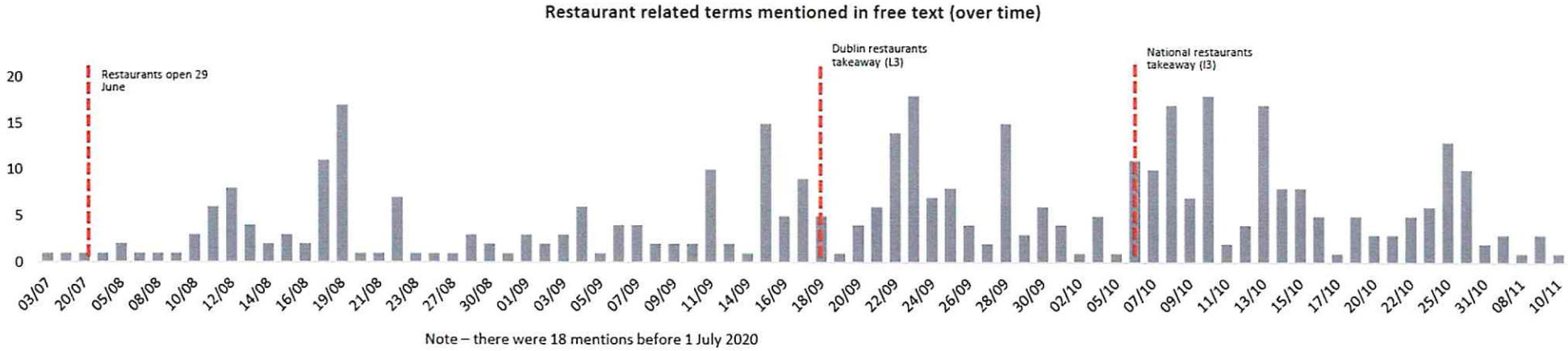
5 contacts relating to Dublin restaurant chain 24-25 Sep

Cork

5 contacts relating to a restaurant chain 28 Sep

4 contacts relating to one restaurant

4 contacts relating to a fast food chain 9-10 Nov



Note – there were 18 mentions before 1 July 2020

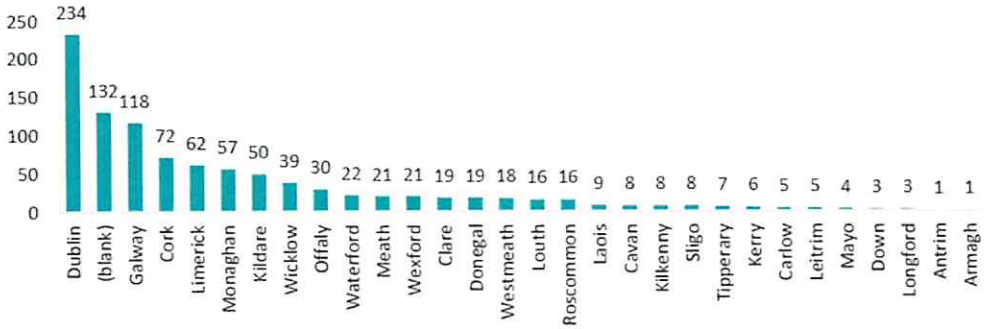
Source: Contact tracing analysis
Terms searched: Restaurant, eating out, out for a meal, and a list of all national chains in Ireland

Note: Analysis completed using the small available sample of track and trace free text data. Treat only as directionally informative

Alcohol and social gatherings generated contacts with positive individuals

Alcohol and party-related terms mentioned 1,017 times since March

Alcohol related terms mentioned in free text (by county)



Key message: Alcohol-related events appear to be a driver in contacts generated, with relatively high numbers given data available.

Limerick

17 contacts from confirmation party Aug

33 contacts from communion party Oct

Galway

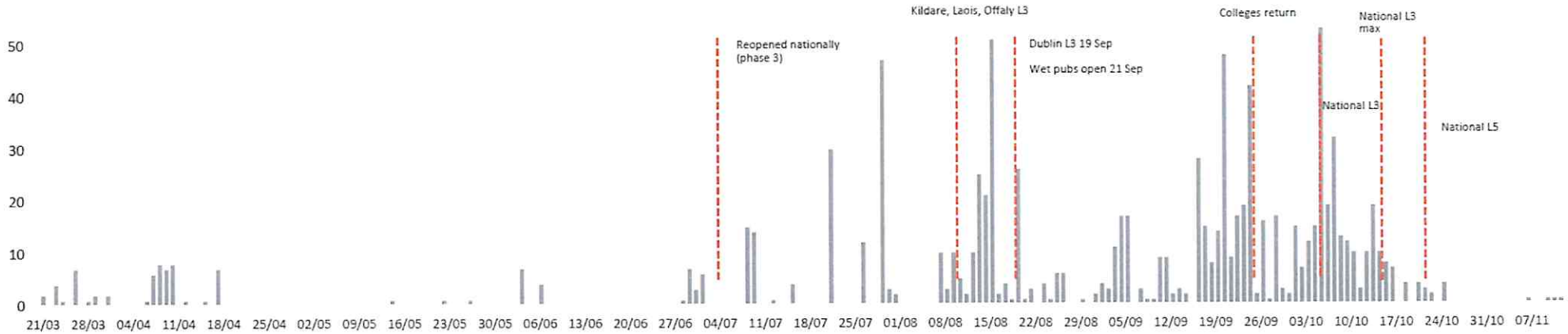
Galway has **c.50%** smaller population than Cork but has **c.65%** more alcohol related contacts

22 contacts from one party on July

15 contacts from a kids' party Sep

31 contacts from a party Sep

Alcohol related terms mentioned in free text (over time)



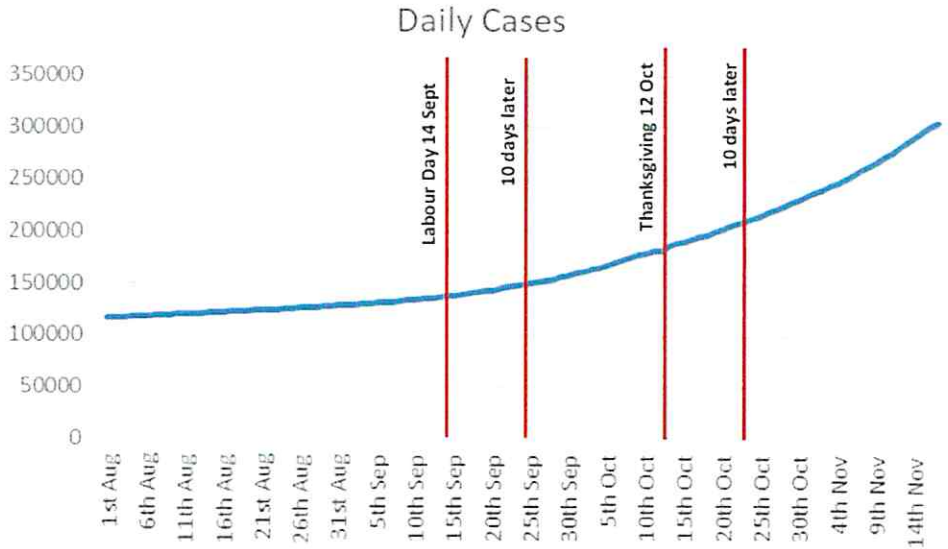
Source: Contact tracing analysis
Terms searched: alcohol , drink , party , celebration , booze , beer , wine , cans , pint

Note: Analysis completed using the small available sample of track and trace free text data. Treat only as directionally informative

Canadian Thanksgiving: Test & Trace data and case numbers show surge in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first surge in Spring.



Source: https://health-infobase.canada.ca/covid-19/

Key findings:

- Canada saw a surge in COVID-19 cases in the days and weeks that followed Thanksgiving, the **highest rates** since the first surge in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; **4,109 new daily cases** were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Track & Trace records show that Thanksgiving gatherings directly resulted in **viral spread**
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases **dramatically changed** after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has **doubled** from 155,000 on 28 September to over 310,000 on 18th November
- A similar **spike** is noticed on 14 September, 14 days after **Canadian Labour day** was celebrated

US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.).

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

Selected cities – cases generated and positivity rates

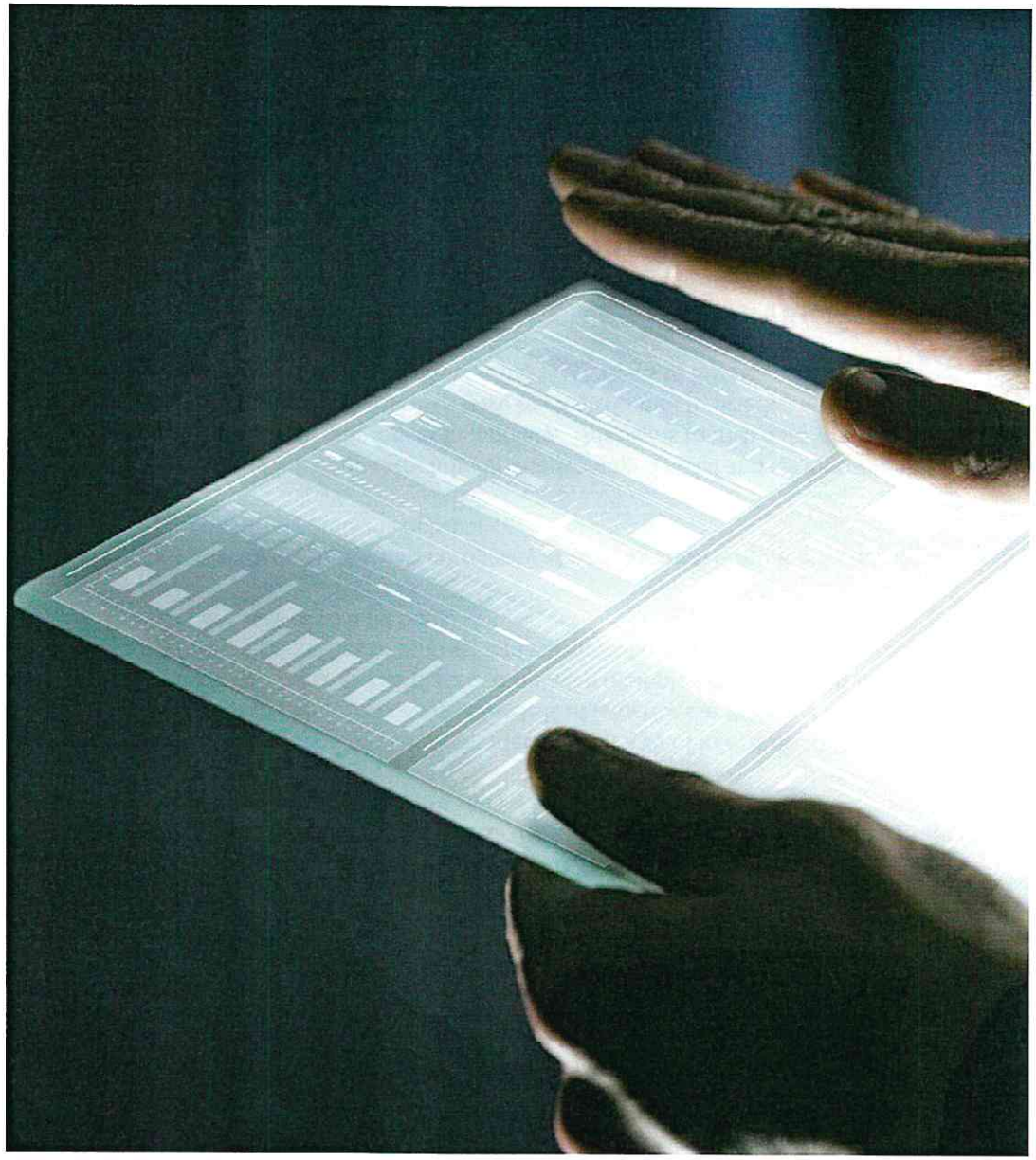
	San Francisco		Chicago		New York	
	Cases	Positivity rate	Cases	Positivity rate	Cases	Positivity rate
Full-service restaurants	+12k	0.09%	+89k	0.33%	+199k	0.22%
Fitness centres	+1k	0.02%	+20k	0.13%	+70k	0.20%
Religious organisations	+479	0.04%	+9k	0.28%	+30k	0.49%
Take-out restaurants	+290	0.01%	+14k	0.14%	+19k	0.11%
Grocery stores	+150	0.01%	+3k	0.19%	+11k	0.15%
Department stores	+40	0.00%	+540	0.02%	+1k	0.03%
Pharmacies	+40	0.01%	+250	0.02%	+1k	0.02%

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html
Note: Calculation of positivity rate using cases generated as a proportion of visits generated

Key findings

- The table depicts the expected additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10)
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more

Roadmap for next six weeks



Approach to Christmas monitoring

We will combine a variety of data sources to monitor activity over the Christmas period

Setting	Description	Provided by NPHET (Disease Incidence)		Provided by public sector organisations (activity/compliance)				Newly generated insights (activity/compliance)	
		HSE	CIDR	TII/NTA	Survey	CSO	Gardaí	Mobile data	Payments data
Events	Indoor and outdoor (e.g. concerts, sports events, weddings, funerals)	✓	✓				TBC	✓	
Social/family gatherings	Levels of gatherings in private households	✓	✓					✓	
Retail and services	Levels of activity in retail and other services (e.g. hairdressers)	✓	✓			✓		✓	✓
Workplaces	Attendance at physical workplaces	✓	✓					✓	
Domestic transport and travel	Levels of movement around the country	✓	✓	✓		✓			
Education	Schools, childcare, adult and higher education	✓	✓						
Bars/restaurants	Activity levels in bars and restaurants	✓	✓						✓
Care homes	Residential facilities, assist living and nursing homes	✓	✓						
Sentiment/compliance	Indicators around compliance to restrictions			✓	✓		TBC	✓	
International travel	International travel levels and related disease spread	✓	✓			✓		✓	
Leisure/recreation	Gyms, pools, leisure centres	✓	✓					✓	
Accommodation services	Stays in hotels, guesthouses and B&Bs	✓	✓					✓	✓

Approach overview

- Leverage existing health data from NPHET, curate data from Government agencies and create new insights from additional data sources
- Combine all data to monitor and provide insights on effectiveness and impact of restrictions and behaviours over Christmas
- Leverage insights to inform restriction measures for future planning as well as provide "stories" to help bring to life for the public
- Aggregated and anonymised data only. No personal identifiable data

What will the next six weeks look like?

Data is anonymised and aggregated to LED or country and by industry type.
No personal identifiable information

This week W/c 16 Nov	Week 2 W/c 23/11	Week 3 W/c 30/11	Week 4 W/c 7/12	Week 5 W/c 14/12	Week 6 W/c 21/12
Proposed briefing frequency					
Weekly/ ad-hoc	Weekly / ad-hoc	Weekly / ad-hoc	Daily / ad-hoc	Daily / ad-hoc	Daily / ad-hoc
Insights delivered					
County dashboard	County dashboard	County dashboard	County dashboard	County dashboard	County dashboard
Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers
Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact
Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis
	Transport	Transport	Transport	Transport	Transport
	Facebook survey	Facebook survey	Facebook survey	Facebook survey	Facebook survey
	Spending data	Spending data	Spending data	Spending data	Spending data
		Stay at home index	Stay at home index	Stay at home index	Stay at home index
				Social distance index	Social distance index

Disease monitoring
Restrictions
Compliance
New

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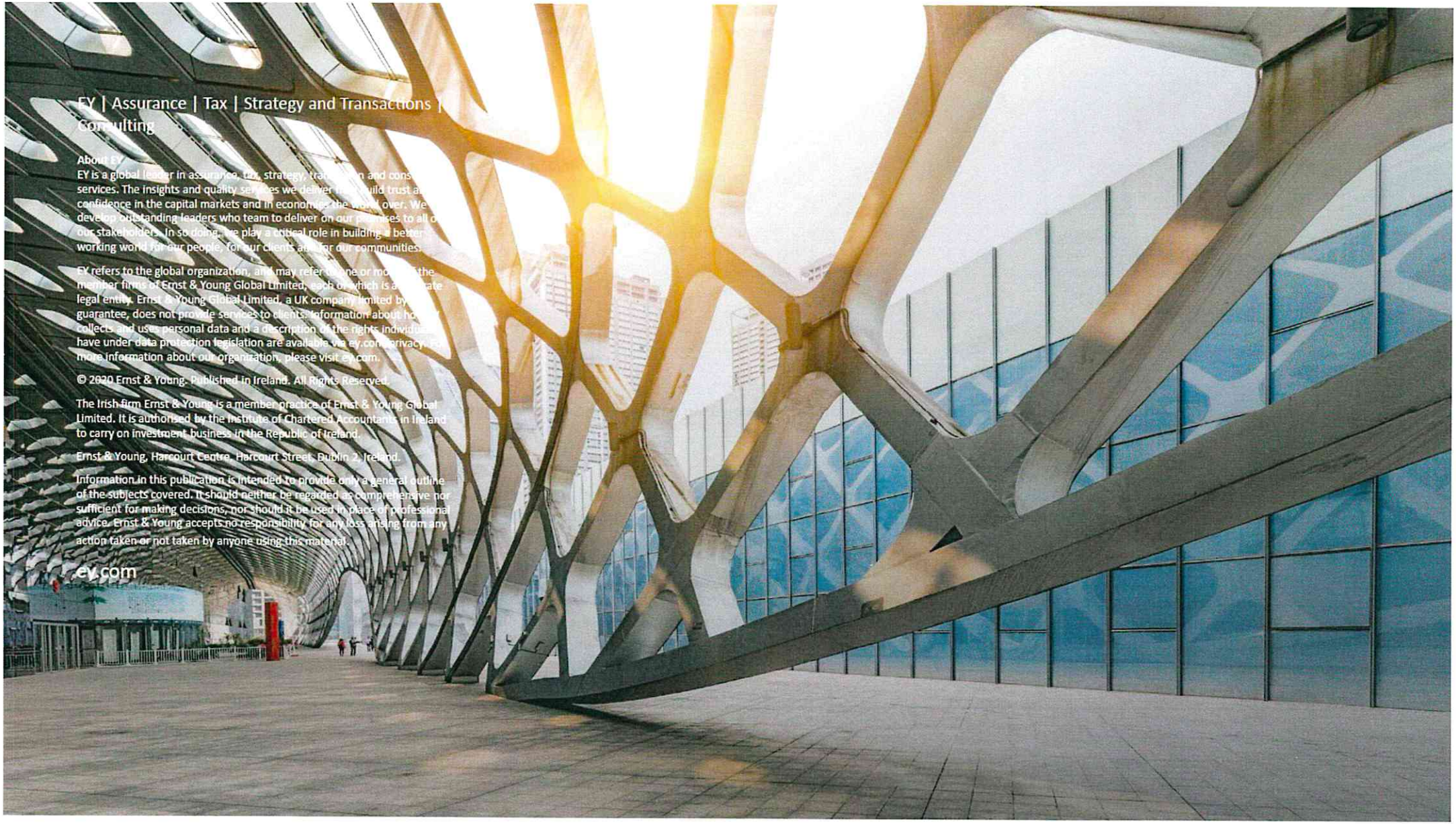

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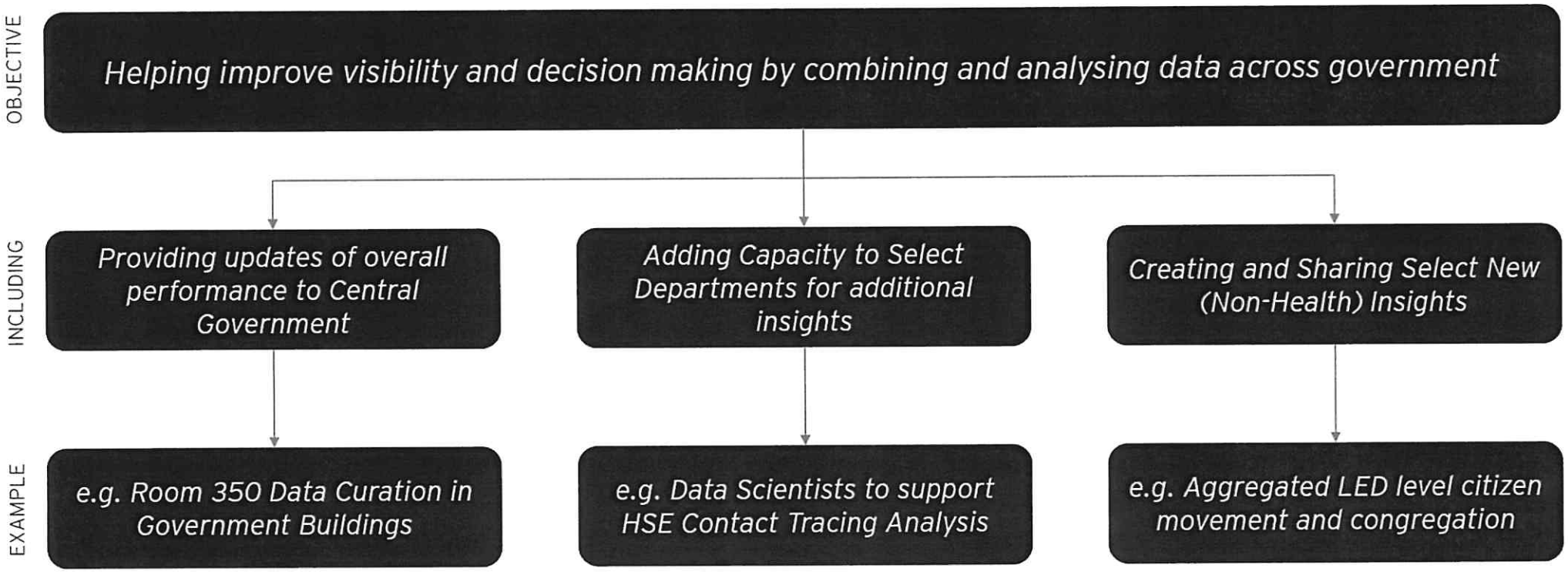
1GC update - Week 6

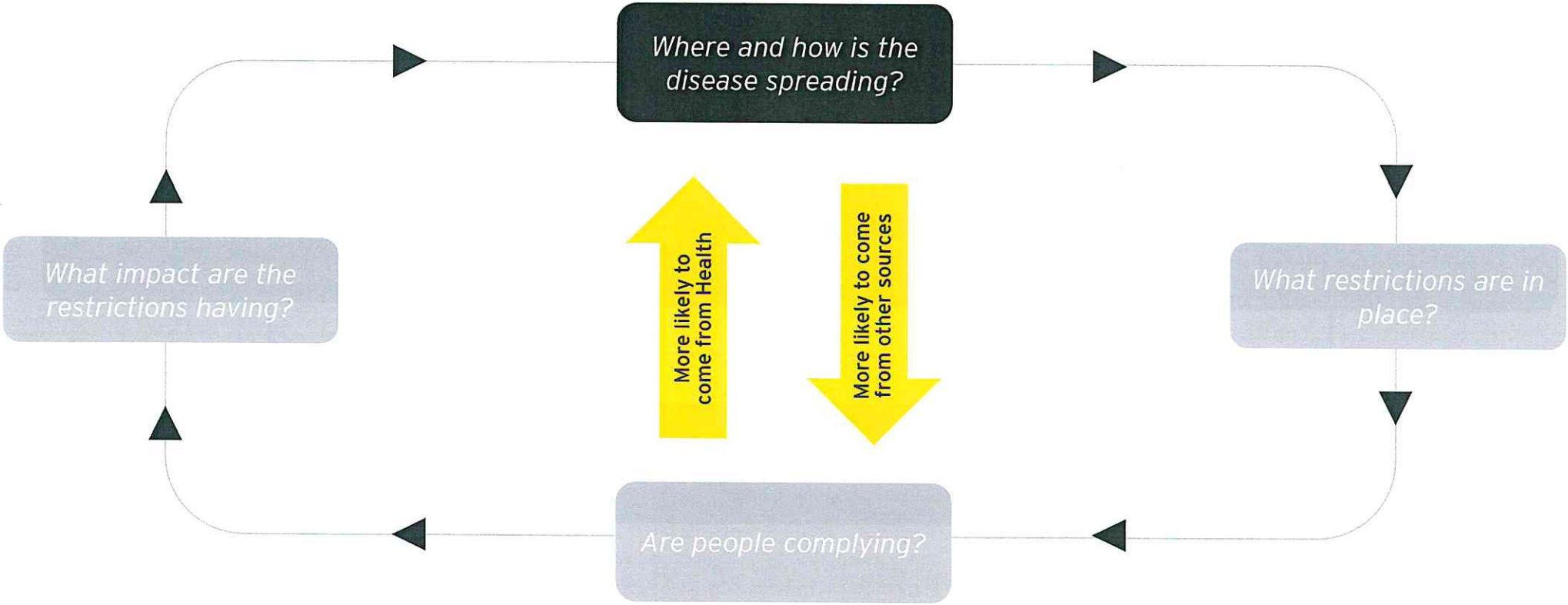
Agenda

- 1GC Intro
- County Specific Analysis
- Restrictions Impact analysis
- International Analysis
- Roadmap to Christmas

Introduction to the C-19 One Government Centre (1GC)



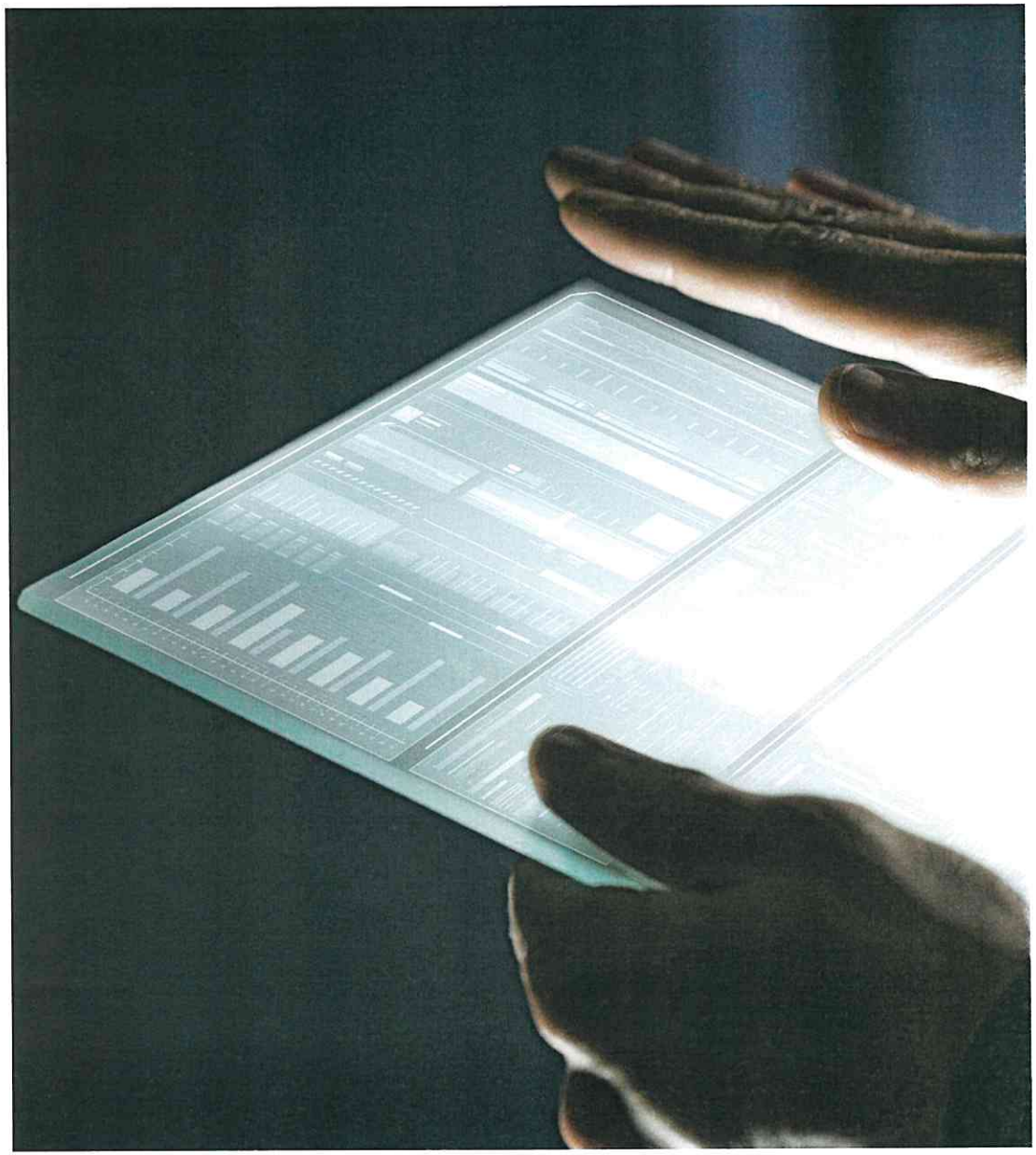
Answering four key questions to support government decision making



1GC curates NPHET / HSE insights

1GC also creates new Insights

County specific analysis



Introduction to County Specific Analysis

This section summarises the analysis for each county. The data suggests that the profiles of counties can be broadly categorised as follows:

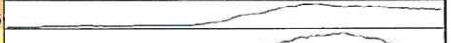
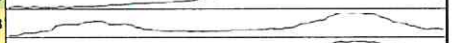
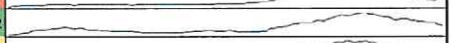
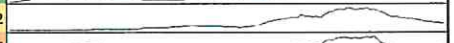
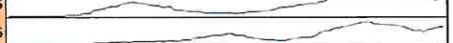
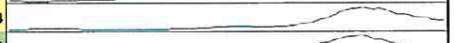
1. Driven by proximity to the border

2. Driven by significant known outbreak event(s) (while accepting that all counties have outbreaks), e.g.
   - Nursing Homes
   - Workplace
   - University
   - Social
   - Private House

3. Following the national restriction trend change

4. Dublin

County Analysis Summary

County	Border County	Major Incidence	Dublin and Surrounding Area	Following National Restrictions Trend	Wave One Outbreak Sources	Wave Two Outbreak Sources	Change in 14 day incidence rate (14/11-17/11)	Wave 2 Incidence rate
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	-0.14	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Instutions	0.1	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Famliy	0.06	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential insitutions	-0.08	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	0.13	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	0.01	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	-0.18	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	-0.03	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	-0.08	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	-0.1	
Kerry		✓		✓	Private Houses, Residential Insitutions, Hospital	Private House, Community Outbreak, Nursing Home	-0.11	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	0.15	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	-0.09	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	0.17	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	-0.32	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	-0.02	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	0.06	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	-0.05	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	0.05	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	0.05	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	-0.09	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	-0.03	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	-0.04	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	-0.23	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	-0.33	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	-0.07	

*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR

**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Wave 1: 03/03-25/07 Wave 2: 26/07-20/11

Overview of Incidence Rate Per Capital Per County

UPDATE FOR NEW DATA

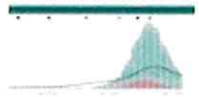
The below heatmap shows the county incident rate per capital over the last two months. The overall reduction in cases has levelled in the week with some counties now increasing.

| Two Weekly Incidence Rate Per 100k | 17-Sep | 18-Sep | 19-Sep | 20-Sep | 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | Change Last 3 Days |
|---|---|---

County view - Cavan (19/11)

ACTION
Make sure stands as stand alone slide

WORK IN PROGRESS

Total Confirmed Cases	Trend vs. National
2,183	

Cavan profile:

- Cavan has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Part of Cavan borders with NI where different restrictions are in place

Summary analysis:

- Cavan-Belturbet LEA which is the only part of Cavan with a NI border is experiencing a higher disease incidence than national average
- Ballyjamesduff LEA has the highest incidence rate. The timing of the acceleration of growth rate appears to correlate with reports of celebrations and 'lock ins' for Crosserlough county final win
- Level of private house outbreaks during September and October grew
- Continued outbreaks in nursing homes and [redacted] through October
- Travel along the Belturbet by-pass fell 33% during October

Restriction impact:

- The timing of the growth of cases appears to correlate with the events listed above and the opening of wet pubs
- Level 4 restrictions imposed for the border counties appears to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level further

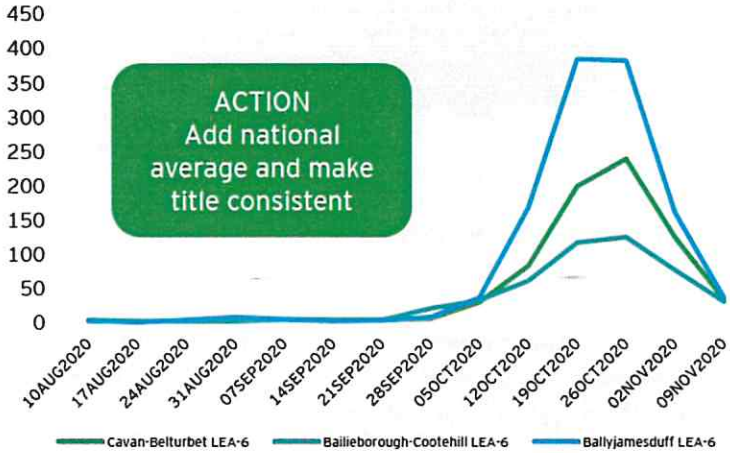
Employment Summary:

- Cavan had c.47% of its workforce on PUP or TWSS (15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP which is down from 9.7k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

Breakdown by LED



ACTION
Add national average and make title consistent

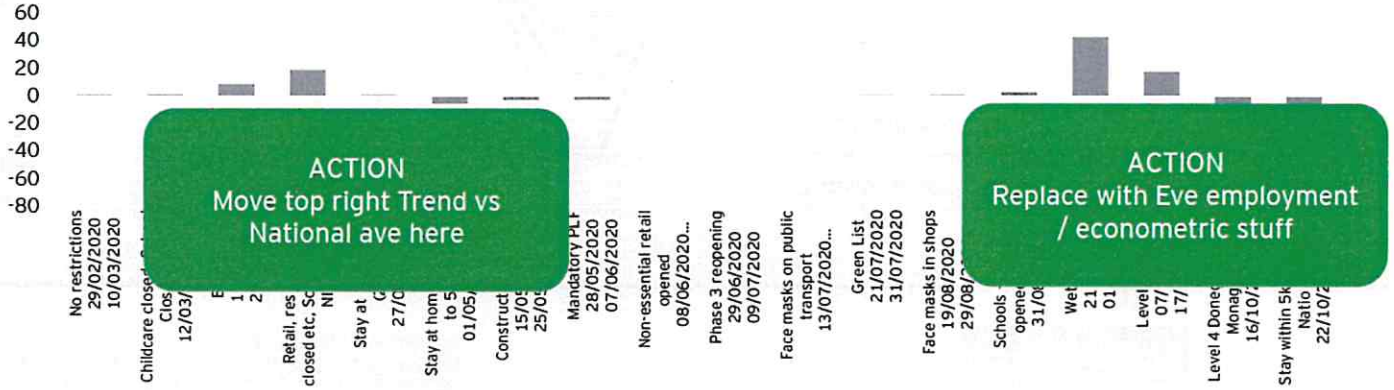
Since the 1st of September

1,272 cases, with 32% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	215	72
Community outbreak	51	2
Nursing home	29	12
School	24	8
Extended family	19	1

Notable events	Date	No. of cases
Community outbreak	09/10/2020	50
Restaurant / Cafe	04/10/2020	19
Nursing home	[redacted]	16
Nursing home	[redacted]	8
Community outbreak	21/10/2020	7

Average Daily Change in 14 day incidence by restriction



ACTION
Move top right Trend vs National ave here

ACTION
Replace with Eve employment / econometric stuff

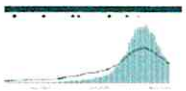
County View - Meath (13/11)

WORK IN PROGRESS

Total Confirmed Cases

3,383

Trend vs. National



Meath profile:

- Meath has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Dublin borders including a significant commuter population

Summary analysis:

- Ratoath LEA has the highest incidence rate. The timing of the acceleration of growth rate appears to correlate with reports of celebrations and 'lock ins' for Ratoath county final win
- Level of private house outbreaks during September and October grew
- Continued outbreaks in nursing homes, one significant outbreak of 50 cases [redacted]
- One significant community outbreak of 29 cases

Restriction impact:

- The timing of the growth of cases appears to correlate with the events listed above and the opening of wet pubs
- Level 3 (max) restrictions imposed nationally appear to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level further

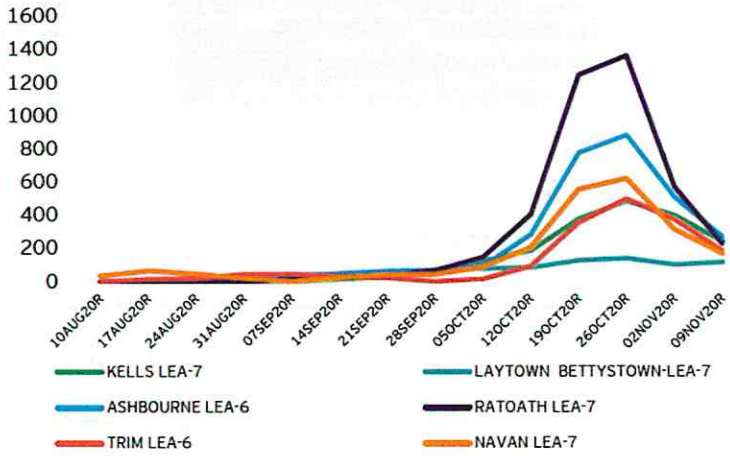
Employment summary

- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP remain lower than peak (13k versus 25k) levels (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

Breakdown by LED



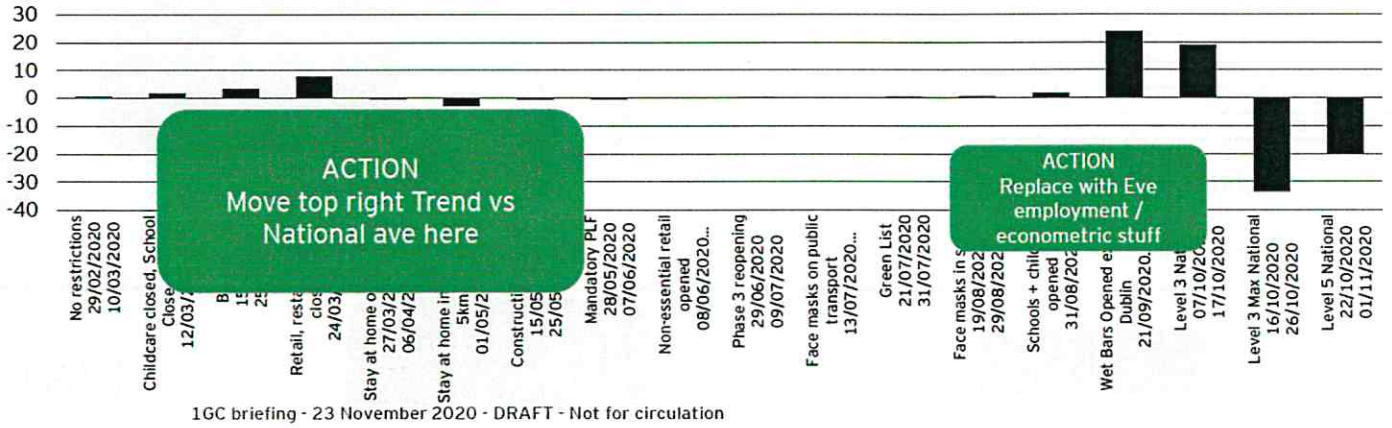
Since the 1st of September

2,466 cases, with 27% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	397	121
Nursing home	74	9
Community outbreak	45	4
Workplace	38	18
School	25	10

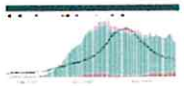
Notable events	Date	No. of cases
Nursing home	[redacted]	51
Community outbreak	10/10/2020	29
Community outbreak	13/10/2020	12
Workplace	19/10/2020	11
Nursing home	[redacted]	10

Average Daily Change in 14 day incidence by restriction



County View - Donegal (20/11)

WORK IN PROGRESS

Total Confirmed Cases	Trend vs. National
2,755	

Donegal profile:

- Donegal has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Disease incidence higher and earlier versus national average, and reducing at a slower rate
- Large part of Donegal borders with NI where different restrictions are in place

Summary analysis:

- Lifford and Stranolar LEA close to the NI border with Derry, experienced an earlier and higher disease incidence
- Other eastern parts of Donegal (Buncrana, Letterkenny and Carndonagh) have the highest incidence rates
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted].
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November

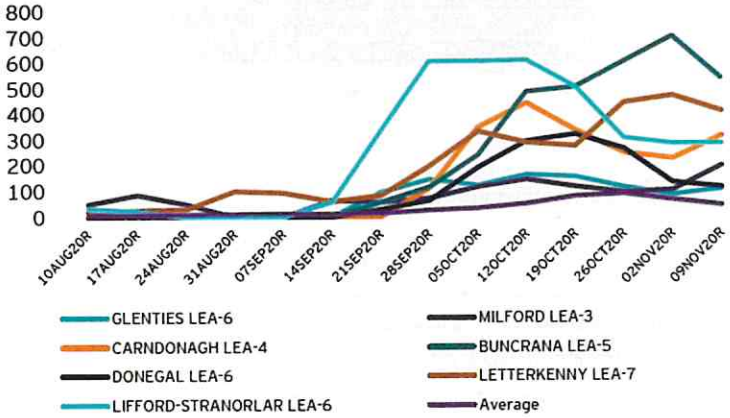
Restriction impact:

- Disease incidence continued to rise after level 3 Donegal announcement
- Specific restrictions in NI (1/10) on bars and restaurants appeared to have had impact
- Despite level 5 being effective in other counties, cases in Donegal continue to decline at a far lower rate compared to national levels
- Mask compliance in Donegal reduced (against national and previous Donegal trend) with Level 4 restrictions. This is against the trend in Donegal for Level 3

Employment summary

- Donegal had c.49% of its workforce on PUP or TWSS (30k) at the peak in early May (EY 2019 employment estimates) . The numbers currently on PUP remain lower than peak (12k versus 23k) (CSO, DSP)

LEA Incidence rate per 100,000 vs. National Average



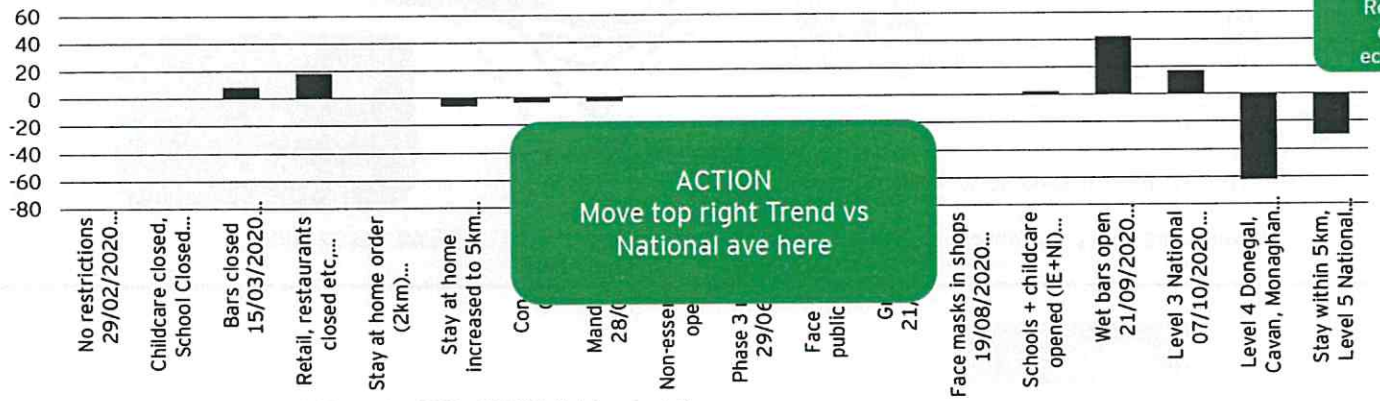
Since the 1st of September

2165 cases, with 62% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	651	235
Workplace	159	28
Hospital	126	5
Extended family	118	19
Nursing home	58	5

Notable events	Date	No. of cases
Hospital	[redacted]	99
Workplace	23/09/2020	55
Nursing home	[redacted]	49
Social gathering	24/10/2020	20
Hospital	[redacted]	17

Average Daily Change in 14 day incidence by restriction



ACTION
Move top right Trend vs National ave here

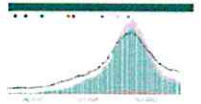
ACTION
Replace with Eve employment / econometric stuff

County view - Galway (20/11)

Total Confirmed Cases

2,609

Trend vs. National



Galway profile:

- Galway experienced a higher 14 day disease incidence rate per 100k during second wave than the national average. It has now come back down below national average levels since early November

Summary analysis:

- Galway City Central, Connemara South and Galway City East have had the highest 14-day incidence rates throughout October. A number of key events occurred in late September which could have contributed to this increase
- Cases within Galway City Central LEA appear to have increased in this period following the reopening of NUI Galway on the 24 September
- Wet pubs also opened in late September which saw mobility within the county rise by 5.4%
- GAA senior championship football semi-finals and finals also occurred in the last week of September.
- Throughout November, private household cases were responsible for 49% of outbreak cases, with [redacted] outbreak and community outbreaks making up a large proportion of the remaining percentage

Restriction impact:

- Cases begin to decline ten days after the national level 3 lockdown (27/10), falling below national levels in November. An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

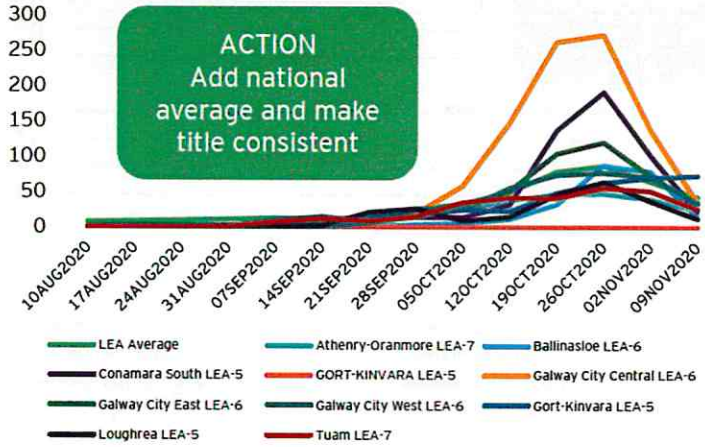
Employment summary:

- Galway had c.39% of its workforce on PUP or TWSS (49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP which is down from 32.5k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

Daily cases by LEA



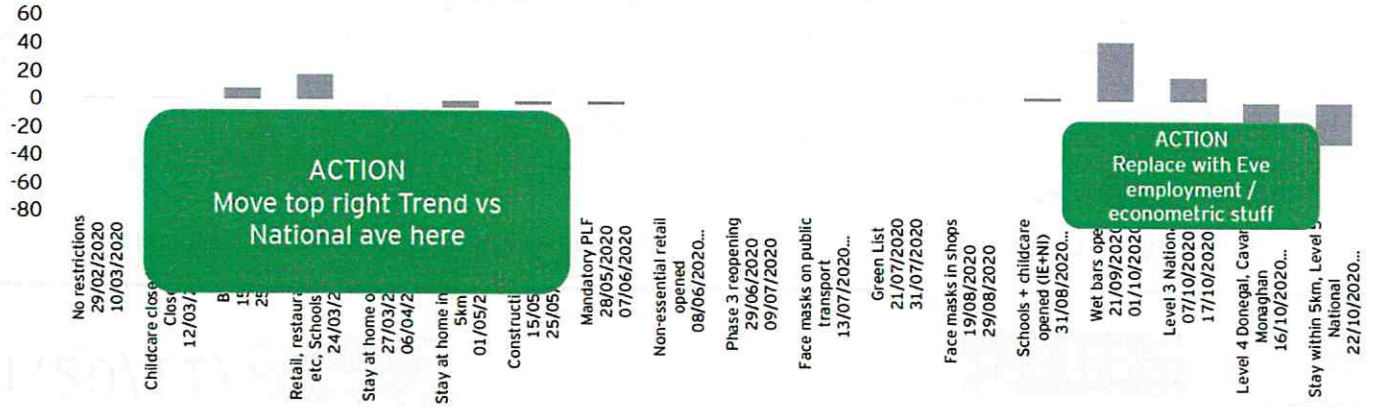
Since the 1st of September

2,060 cases, with 66% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	723	293
Community outbreak	207	30
[redacted]	[redacted]	[redacted]
Childcare facility	61	8
School	37	11

Notable events	Date	No. of cases
Community outbreak	24/09/2020	114
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Social gathering	19/09/2020	20
Community outbreak	25/09/2020	18

Average Daily Change in 14 day incidence by restriction



Dublin – local authority breakdowns over time

ACTION
MAKE for Wave 2 only

		16MAR	23MAR	30MAR	06APR	13APR	20APR	27APR	04MAY	11MAY	18MAY	25MAY	01JUN	08JUN	15JUN	22JUN	29JUN	06JUL	13JUL	20JUL	27JUL	03AUG	10AUG	17AUG	24AUG	31AUG	07SEP	14SEP	21SEP	28SEP	05OCT	12OCT	19OCT	26OCT	02NOV	09NOV
Fingal	RUSH-LUSK LEA-5	3	14.4	49	121.1	175.9	227.8	170.2	69.2	51.9	31.7	17.3	3	3	3	3	3	3	3	3	3	3	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2
	SWORDS LEA-7	3	38.9	74	155.7	311.5	350.4	305.6	188.8	60.3	42.8	40.9	23.4	3	3	3	13.6	11.7	3	15.6	23.4	11.7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	247.2	297.8	371.8	288.1
	BLANCHARDSTOWN-MULHUDDART LEA-5	14.2	48.1	102	243.6	444.7	501.3	515.5	512.6	274.7	59.5	34	48.1	39.7	22.7	3	3	3	14.2	22.7	28.3	22.7	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	269.1
	CASTLEKNOCK LEA-6	3	32.5	65	169.1	336	370.7	316.5	192.9	52	17.3	13	3	3	13	3	3	3	3	3	10.8	13	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	299.2	201.6	132.2
	HOWTH-MALAHIDE LEA-7	3	73	110.4	146.1	251.2	254.7	162.1	115.8	80.2	41	28.5	17.8	14.3	10.7	12.5	3	3	3	3	3	8.9	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9
	BALBRIGGAN LEA-5	3	30.1	68.4	125.8	213.3	284.4	278.9	172.3	71.1	27.3	38.3	43.8	13.7	3	3	3	3	3	3	3	3	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2
	ONGAR LEA-5	3	41.9	114.4	195.3	346	362.8	214.9	131.2	67	16.7	19.5	25.1	3	3	3	3	3	14	3	3	3	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7
Dún Laoghaire-Rathdown	STILLORGAN LEA-6	3	62.3	170.4	213.1	239.3	239.3	190.1	140.9	147.5	108.2	22.9	16.4	3	3	3	3	3	3	3	3	3	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8
	DUNDRUM LEA-7	3	42.7	93.5	189.6	272.3	251	146.9	85.4	74.8	40.1	18.7	13.4	18.7	18.7	3	3	3	3	3	3	3	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	69.4
	GLENCULLEN-SANDYFORD LEA-7	3	27.3	98.3	166.6	199.3	177.5	202.1	152.9	54.6	49.2	3	3	3	3	3	3	3	3	3	3	3	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3
	KILLINEY-SHANKILL LEA-7	13.1	28.9	76.2	133.9	204.8	223.2	144.4	91.9	105	76.2	13.1	3	3	3	3	3	3	3	3	3	3	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	47.3
	DÚN LAOGHAIRE LEA-7	14.4	45.6	127.3	235.4	295.5	237.8	156.1	141.7	108.1	52.9	28.8	19.2	3	12	3	3	3	3	3	3	3	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	79.3
	BLACKROCK LEA-6	14.8	38.5	118.6	198.7	272.8	246.1	157.1	177.9	157.1	97.8	62.3	74.1	68.2	20.8	3	3	3	20.8	17.8	3	3	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2
South Dublin	LUCAN LEA-5	3	18	107.7	266.3	496.7	601.4	403.9	239.4	152.6	89.8	92.8	68.8	41.9	26.9	3	3	18	3	3	3	18	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6
	TALLAGHT CENTRAL LEA-6	3	39.3	92.6	157.4	266.1	361	291.6	138.8	111.1	106.4	74	60.2	30.1	3	3	3	3	3	3	3	3	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	171.2
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	68.9	123.2	152.4	238	298.5	242.1	146.1	85.6	56.4	50.1	25	3	3	3	3	3	3	3	12.5	3	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7
	FIRHOUSE-BOHERNABREENA LEA-5	3	58.5	90.6	108.2	292.4	368.4	292.4	231	108.2	61.4	40.9	17.5	14.6	3	3	3	3	3	3	3	23.4	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8
	TALLAGHT SOUTH LEA-5	3	28.2	90.2	155.1	256.6	344	358.1	290.4	248.1	183.3	104.3	81.8	59.2	47.9	22.6	14.1	3	3	19.7	36.7	42.3	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	310.2
	CLONDALKIN LEA-7	30.1	83.8	172	279.4	367.6	421.3	475.1	412.7	264.4	219.3	159.1	66.6	19.3	15	12.9	3	3	3	3	3	21.5	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	217.1
	PALMERSTOWN-FONTHILL LEA-5	3	26.3	99.9	126.2	207.7	231.4	126.2	99.9	81.5	34.2	3	3	3	3	3	3	3	15.8	13.1	3	3	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1
Dublin City	BALLYMUN-FINGLAS LEA-6	3	18.2	74.5	178.1	325.4	390.8	430.8	318.1	138.2	87.3	49.1	36.4	27.3	21.8	12.7	14.5	9.1	3	9.1	10.9	3	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7
	CABRA-GLASNEVIN LEA-7	3	42.6	83.5	160.3	318.8	375.1	395.6	354.6	155.2	56.3	58	40.9	17	3	3	3	8.5	20.5	23.9	17	10.2	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	162
	BALLYFERMOT-DRIMNAGH LEA-5	17.4	41.2	99.9	225.8	343	373.4	356	225.8	78.1	41.2	19.5	10.9	3	3	3	3	10.9	3	13	13	3	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	197.5
	KIMMAGE-RATHMINES LEA-6	9	62.7	132.5	166.5	241.7	315.1	241.7	141.4	87.7	39.4	16.1	3	3	3	3	3	3	12.5	23.3	10.7	3	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188
	PEMBROKE LEA-5	11	57.2	131.9	175.9	274.9	299.1	299.1	270.5	136.3	77	41.8	30.8	17.6	3	11	3	3	3	11	3	3	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	90.2
	SOUTH EAST INNER CITY LEA-5	12.3	32	76.3	115.8	150.2	155.2	91.1	81.3	69	17.2	3	3	3	3	3	3	3	12.3	59.1	49.3	3	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7
	NORTH INNER CITY LEA-7	7.9	39.3	78.6	108.5	198.1	235.8	169.8	117.9	89.6	62.9	40.9	28.3	11	3	14.1	12.6	3	3	7.9	12.6	15.7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	122.6
	CLONTARF LEA-6	3	40.6	107	171.6	276.8	345.1	374.7	293.5	107	31.4	24	16.6	3	18.5	14.8	3	3	3	9.2	9.2	3	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	116.3
	DONAGHMEDE LEA-5	3	21.6	98.6	230.8	389.5	401.5	327	204.4	50.5	31.3	26.4	3	3	14.4	16.8	3	3	3	3	12	19.2	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7
	ARTANE-WHITEHALL LEA-6	3	56.7	129	260	445.7	502.4	473.1	308.9	109.5	70.4	66.5	41.1	13.7	13.7	17.6	11.7	3	11.7	11.7	27.4	37.1	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9
	SOUTH WEST INNER CITY LEA-5	3	66.1	141.7	172.4	281	297.6	214.9	188.9	132.3	66.1	35.4	23.6	3	3	3	3	3	3	11.8	18.9	11.8	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1

There is a moderate correlation between areas hit hard in Wave 1 and Wave 2, with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin, Artane-Whitehall, etc. Note these areas contain many more EDs that were classified as "marginally disadvantaged" or "disadvantaged" on the Pobal HP Social Deprivation Index than areas with lower incidence rates, which contained many EDs classified as "affluent".

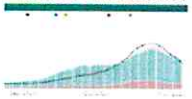
County view - Dublin (19/11)

WORK IN PROGRESS

Total Confirmed Cases

26,221

Trend vs. National



Dublin profile:

- Not surprisingly, Dublin's 14 day disease incidence rate per 100k during second wave is in line with the national average
- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire-Rathdown seeing lower overall incidence

Summary analysis:

- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Restriction analysis:

- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases
- Not opening the wet pubs does appear to have helped Dublin with the subsequent increase in cases being slower than the national average

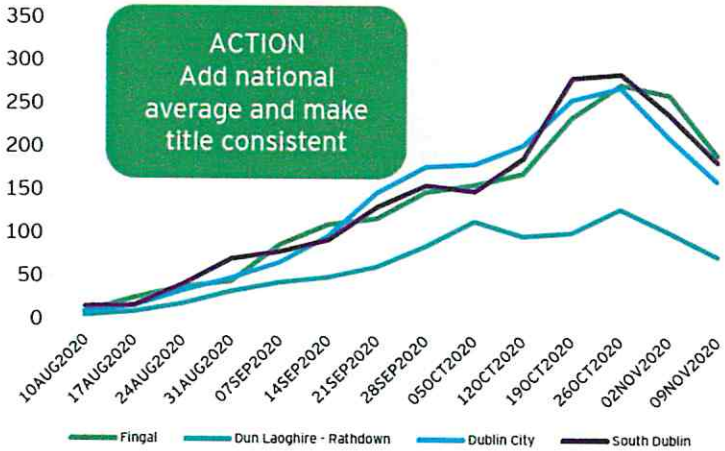
Employment summary:

- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k, compared to a peak of 176k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

Dublin Broken Down by local authorities (/100k)



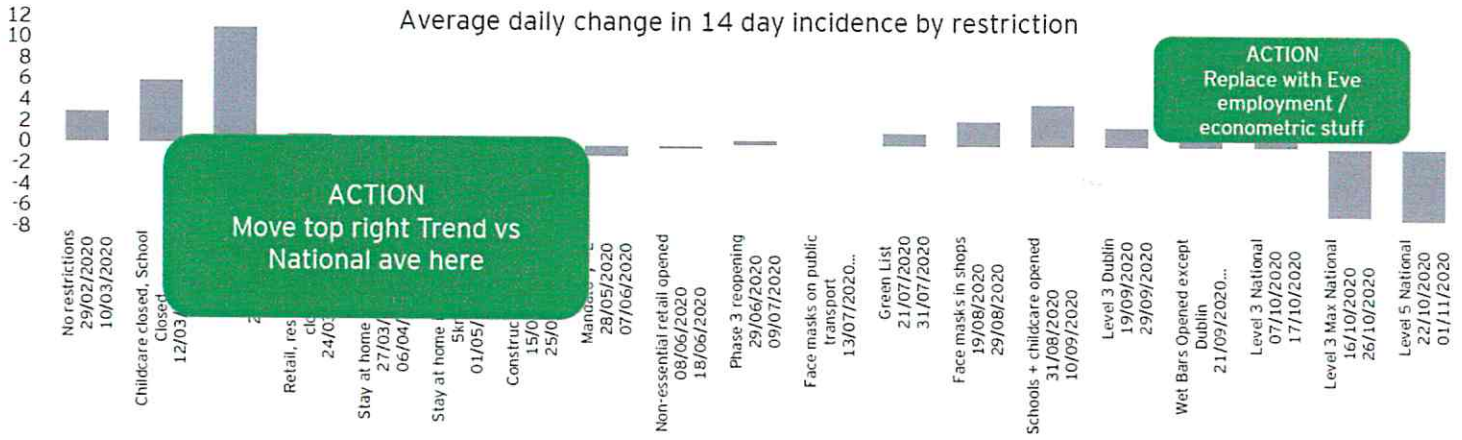
Since the 1st of September

12,606 cases, with 56% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	5225	2075
Extended family	291	3
Nursing home	266	27
School	249	66
Hospital	192	30

Notable events	Date	No. of cases
Extended family	24/09/2020	288
Nursing home	[redacted]	75
Hotel	12/09/2020	38
Childcare facility	20/10/2020	38
Residential institution	02/10/2020	30

Average daily change in 14 day incidence by restriction



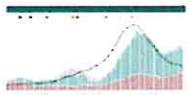
County view - Waterford (20/11)

WORK IN PROGRESS

Total Confirmed Cases

975

Trend vs. National



Waterford profile:

- Waterford experienced a lower 14 day disease incidence rate per 100k during second wave than the national average. However, this changed in recent days with Waterford rising above the national rate in mid-November

Summary analysis:

- Cases rose in early September in Waterford City East, South and Tramore-Waterford City West. There was a meat factory outbreak around this time resulting in 50 cases
- Workplace outbreaks have been prominent in Waterford, making up 30% of outbreak-related cases in November, with the largest resulting in 24 cases
- Private households make up another 63% of outbreak-related cases during this period
- Outbreaks in September and October were both driven by cases occurring in Waterford city. Unlike other counties, these do not seem to spread throughout Waterford to the same degree, with LEAs outside Waterford City maintaining lower cases compared to national levels

Restrictions impact:

- Cases stabilised in the ten days after Level 3 restrictions came into effect
- While falling steadily throughout November, cases began to rise again towards the middle of the month

Employment summary:

- Waterford had c.45% of its workforce on PUP or TWSS (21k) at the peak in early May (EY 2019 employment estimates). There are currently 8k on PUP which is down from 14k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

Incidence rate by Waterford LEA

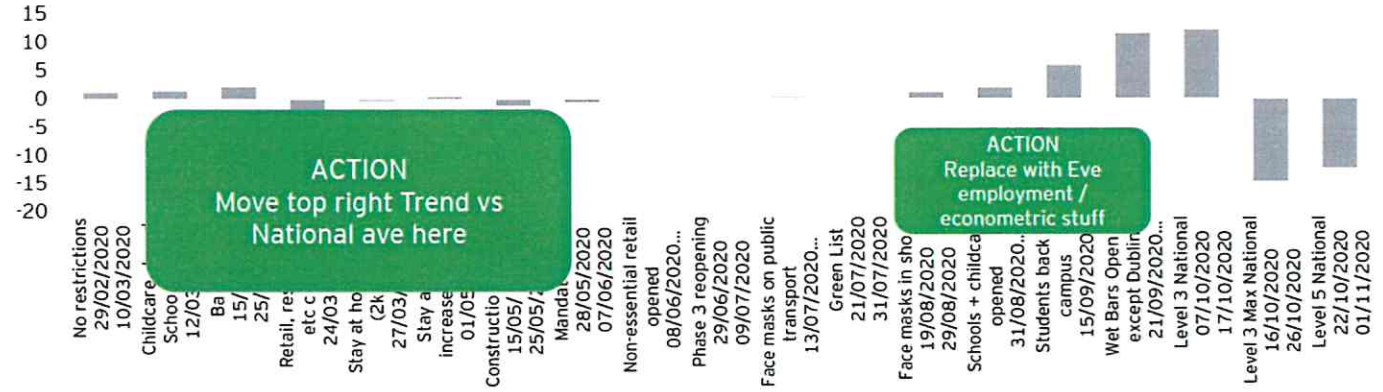
Since the 1st of September

777 cases, with 63% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	329	135
Workplace	84	8
Community outbreak	20	2
Other	12	2
Extended family	11	3

Notable events	Date	No. of cases
Workplace	04/09/2020	49
Workplace	03/11/2020	21
Community outbreak	02/10/2020	16
Private house	09/09/2020	10
Other	28/10/2020	9

Average Daily Change in 14 day incidence by restriction



County view - Roscommon (20/11)

WORK IN PROGRESS

Total Confirmed Cases

925

Trend vs. National

ACTION
Add trend vs national

Roscommon profile:

- Roscommon experienced a lower 14 day disease incidence rate per 100k during second wave than the national average. However, this changed in recent days with Roscommon rising above the national rate in mid-November

Summary analysis:

- The main driver of outbreaks within the county since the start of November are those seeded in nursing homes - representing 64%. Private house outbreaks make up a significant portion of remaining outbreaks, at 33% of new outbreaks
- An earlier increase was seen in Athlone LEA-6 in the week following the football final held 20 September. The winning team was located in this LEA. However other events coincided with this date including the reopening of wet pubs

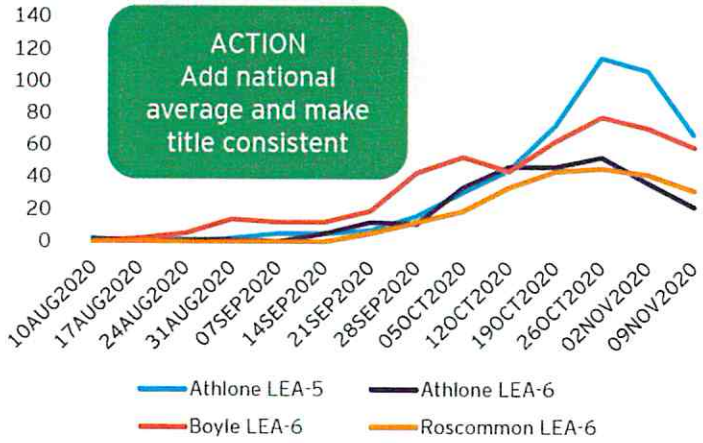
Restrictions Impact:

- Level 3 (max) restrictions put in place as of 16 October can be seen to align with a reduction in incidence rate ten days later
- In some instances, this reduction can be seen to accelerate again with the introduction of level 5 restrictions on 22 October (Athlone LEA-5, Roscommon LEA-6, Boyle LEA-6)

Employment summary

- Roscommon had c.37% of its workforce on PUP or TWSS (11k) at the peak in early May (EY 2019 employment estimates). There are currently 3k on PUP which is down from 7k in May (CSO, DSP)

Incidence rate by Roscommon LEA



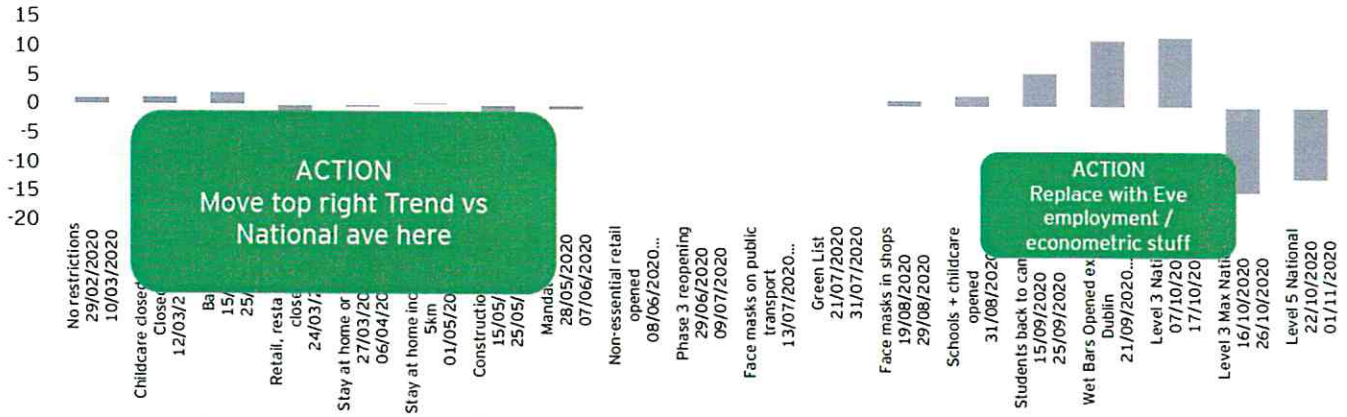
Since the 1st of September

557 cases, with 68% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	194	78
Nursing home	82	5
Extended family	30	5
[redacted]	[redacted]	[redacted]
Workplace	14	8

Notable events	Date	No. of cases
Nursing home	[redacted]	66
[redacted]	[redacted]	[redacted]
Extended family	09/10/2020	18
Nursing home	[redacted]	12
Private house	14/10/2020	7

Average Daily Change in 14 day incidence by restriction



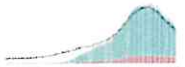
County view - Cork (16/11)

WORK IN PROGRESS

Total Confirmed Cases

6,140

Trend vs. National



Cork profile:

- Cork is broadly aligned with the national average for the 14 day disease incidence rate per 100k during second wave

Summary analysis:

- Cork City is the most impacted area, with the rest of the county following with a reduced incident rate
- Cases in Cork City South Central, the LEA containing UCC, were twice as high as other LEAs in Cork city during mid October. This gap declines with November as the universities went online

Restriction impact:

- Cases in Cork city rose as wet pubs reopened, with mobility within the county rising 7.3%. Cases around the rest of the county followed shortly after
- There were a number of GAA games in early October, which are linked with outbreaks. Level No matches occurred after this, with level 3 restrictions being applied around this time. Cases throughout Cork began to fall 10 days after this, indicating both measures were effective

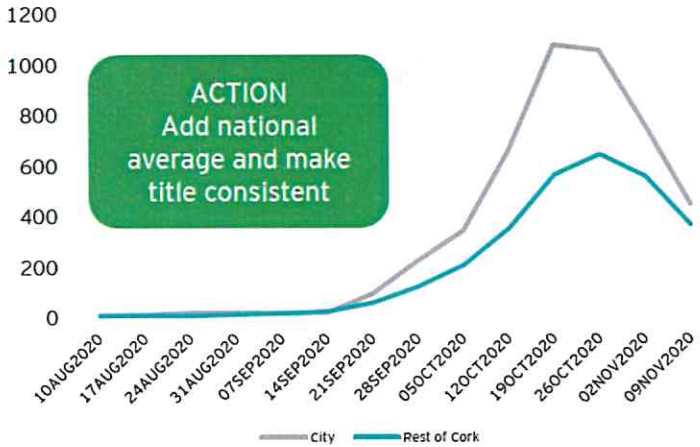
Weekend of 14/11

- While incidence rates are falling, Gardai had to disperse large crowds in the city centre this weekend due to individuals consuming takeaway alcohol in large crowds
- Areas such as Grand Parade at Coal Quay noted as popular for these activities

Employment summary

- At peak, c.39% of Cork's workforce were on PUP or TWSS (96k) (EY 2019 employment estimates). Current PUP levels are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Cases in Cork city vs rest of county



ACTION
Add national average and make title consistent

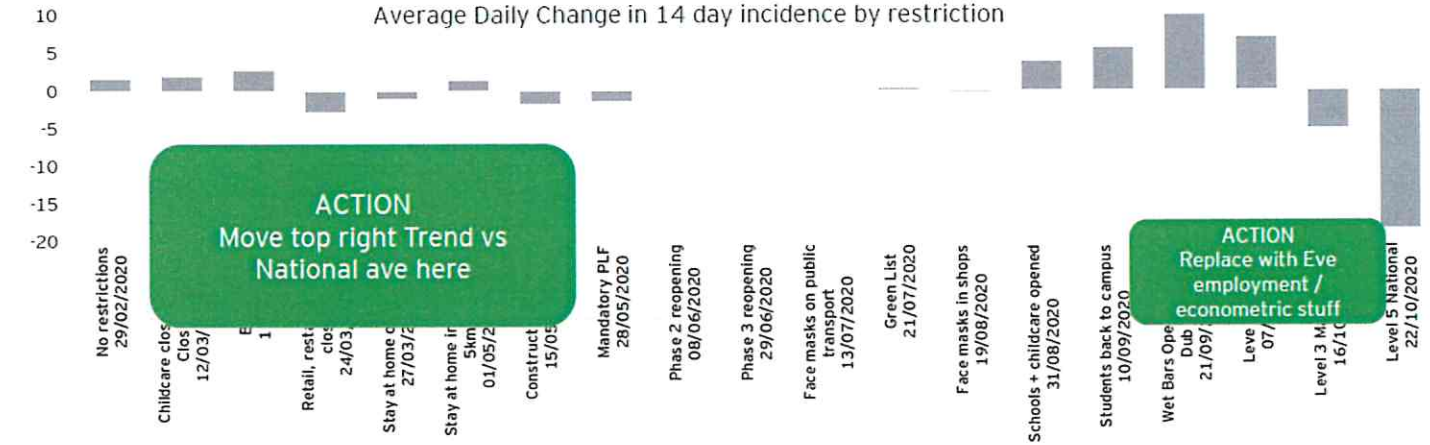
Since the 1st of September

4,492 cases, with 45% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	929	354
Community outbreak	411	67
Nursing home	114	9
School	113	24
Extended family	90	22

Notable events	Date	No. of cases
Community outbreak	26/10/2020	68
Nursing home	[redacted]	46
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	30
Community outbreak	22/09/2020	29

Average Daily Change in 14 day incidence by restriction



ACTION
Move top right Trend vs National ave here

ACTION
Replace with Eve employment / econometric stuff

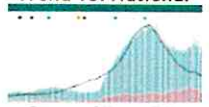
County view - Limerick (20/11)

WORK IN PROGRESS

Total Confirmed Cases

2,542

Trend vs. National



Limerick profile:

- Limerick has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average.
- This is a result of the cases in Limerick not declining to the same extend in the rest of the country

Summary analysis:

- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November. Both are close to Listowel in Kerry, which experienced the highest incidence levels in that county
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others - the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

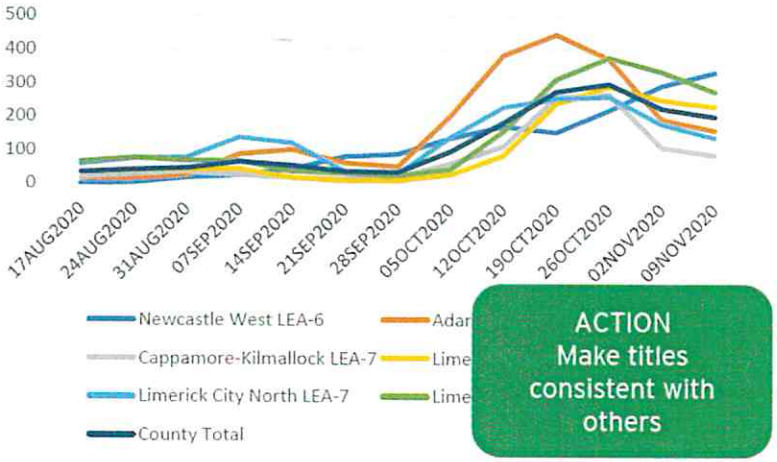
Employment summary:

- Limerick had c.43% of its workforce on PUP or TWSS (34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

Breakdown by LED



ACTION
Make titles consistent with others

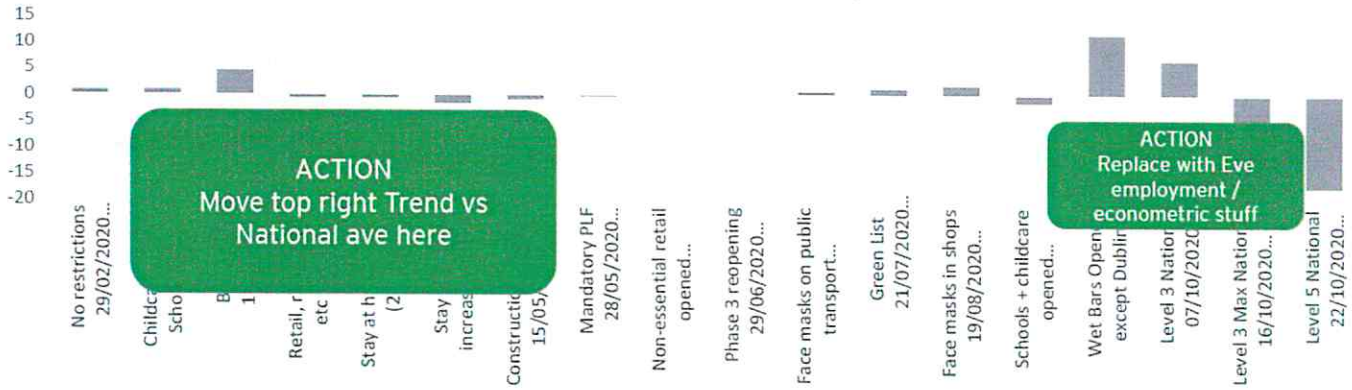
Since the 1st of September

1771 cases, with 39% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Extended family	242	19
Community outbreak	117	8
[redacted]	[redacted]	[redacted]
Private house	66	34
Social gathering	51	5

Notable events	Date	No. of cases
Extended family	23/09/2020	141
Community outbreak	08/10/2020	94
[redacted]	[redacted]	[redacted]
Residential institution	13/10/2020	31
Social gathering	15/10/2020	25

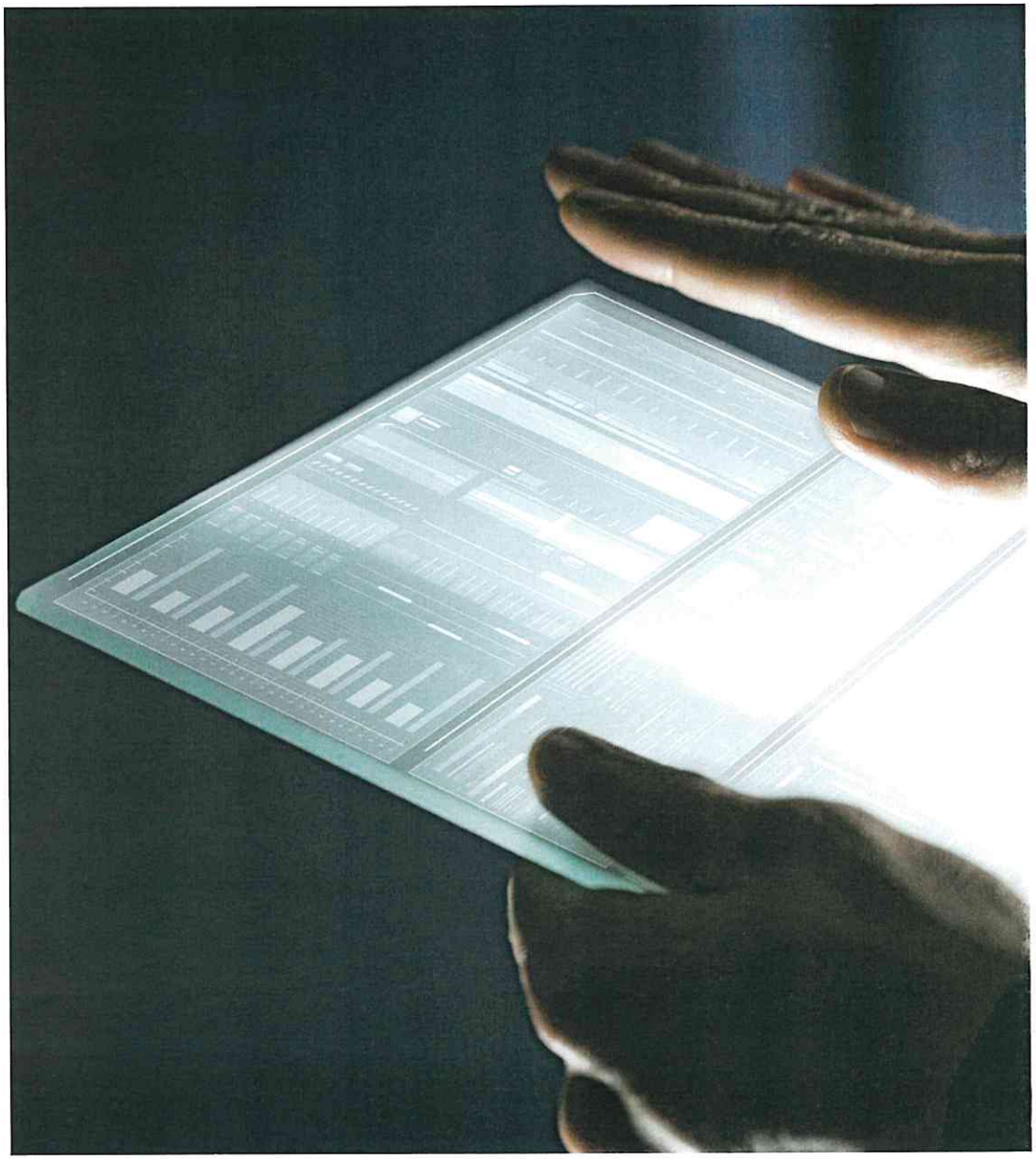
Average Daily Change in 14 day incidence by restriction



ACTION
Move top right Trend vs National ave here

ACTION
Replace with Eve employment / econometric stuff

Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties - highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

International restriction analysis

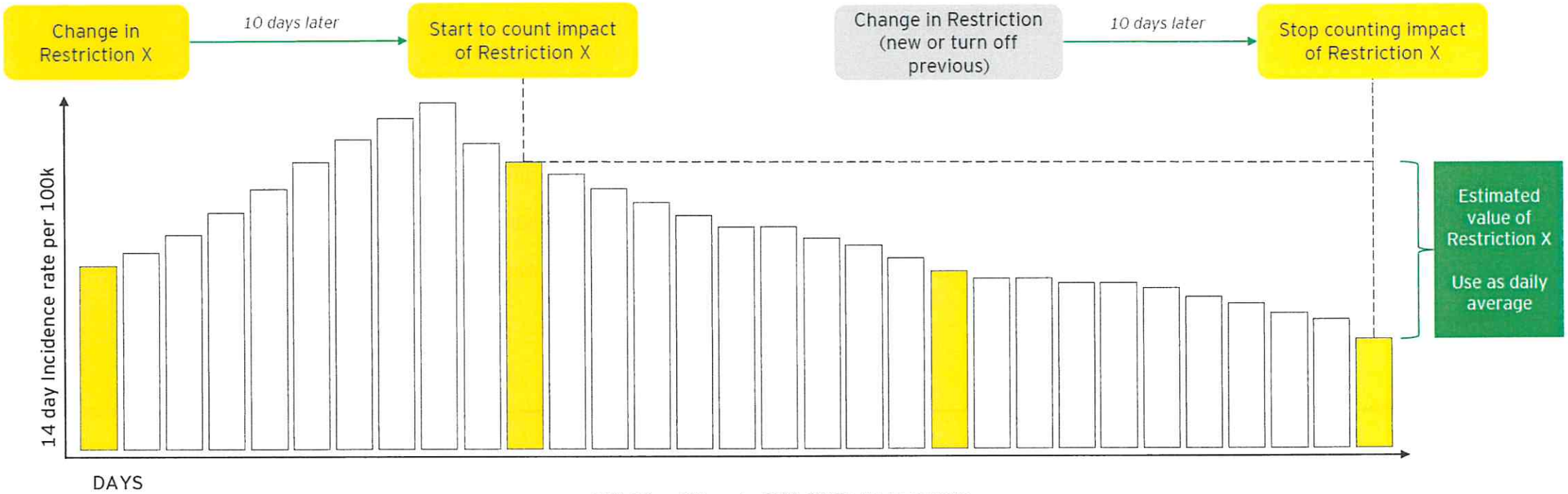
A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

International desktop research

Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular 1GC COVID-19 insights publication and with new research included today

Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There has been relatively few changes, which are generally applied in combination, hiding the unit value per restriction. There is also time a lag between a restriction change and the impact being seen. However, it is also clearly important that restrictions decisions are made with the maximum understanding of the impact. Hence, 1GC has used the below methodology to quantify changes in restrictions. This calculation has been applied for both Ireland and select international countries. The outputs should be seen as directionally useful rather than precise statistical outputs. They are also presented alongside international academic research to provide a broad view to support decisions.



Summary of Restrictions Analysis

Summary slide showing findings per restriction. Basically, one row per restriction

Include Irish, International and academic findings per restriction

Include "Northern Ireland restrictions" as one of the rows

May not include, but good we have a common view

Ireland – restrictions analysis

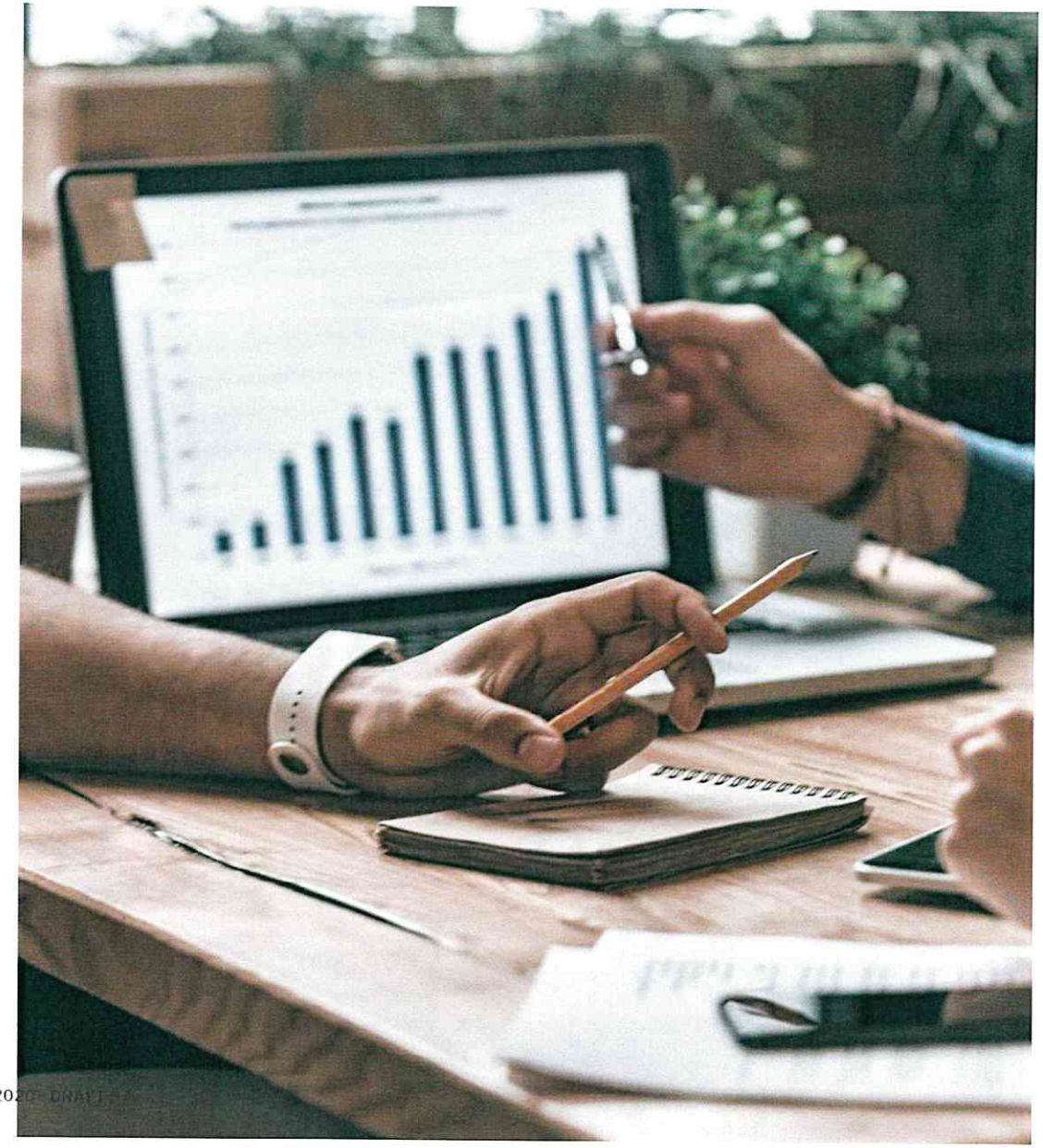
Interactive demo showing restrictions impact analysis by county

Track and Trace Free Text Analysis

The HSE Track and Trace system captures the information for each citizen being tested for C-19. This includes a contact type field, which explains the contact between citizens that the test resulted from. Contact categories are selected by the contact tracer from a drop down list, including "social", "work", etc.

There is also a free text field where the contact tracer may add further details. For example, if the category was "social" then the free text field may say "attended sports game together".

A selection of the analysis of this free text field is shown in this section. Note it is a relatively small sample of data and should be treated only as directionally informative.

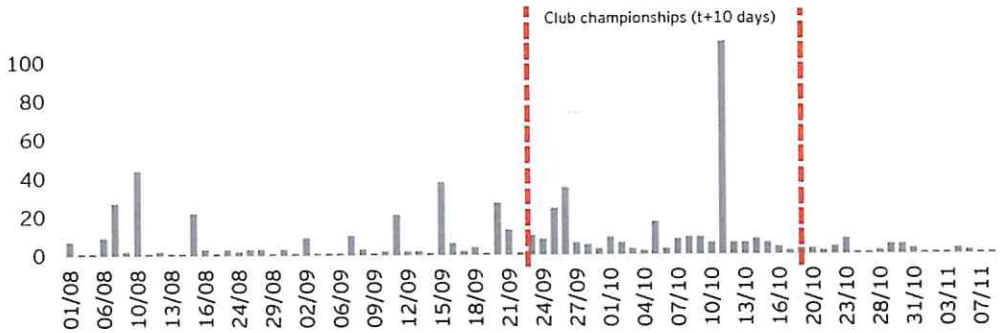


GAA-related events generated clusters of contacts, but absolute levels remain low

GAA-related terms mentioned 653 times since March

GAA and related terms mentioned in free text (by county)

GAA and related terms mentioned in free text (over time)



Note - there were 16 mentions before 1 Aug 2020

Key message: GAA events and celebrations appear to have generated incidences of high numbers of contacts with positive individuals. However, overall levels appear low.

Clare

24 GAA contacts on 7 Aug

33 GAA contacts on 10 Aug

End of July start for club games in Clare as master fixtures committee recommend new formats

Galway

34 contacts on 15 Sep

Mention a specific GAA team

Westmeath

52 GAA contacts on 11 Oct

GAA related

Football senior finals on 27 Sep

Dublin

17 contacts on 15 Aug

Mention a specific GAA camp

Camps took place between 22 July and 23 Aug

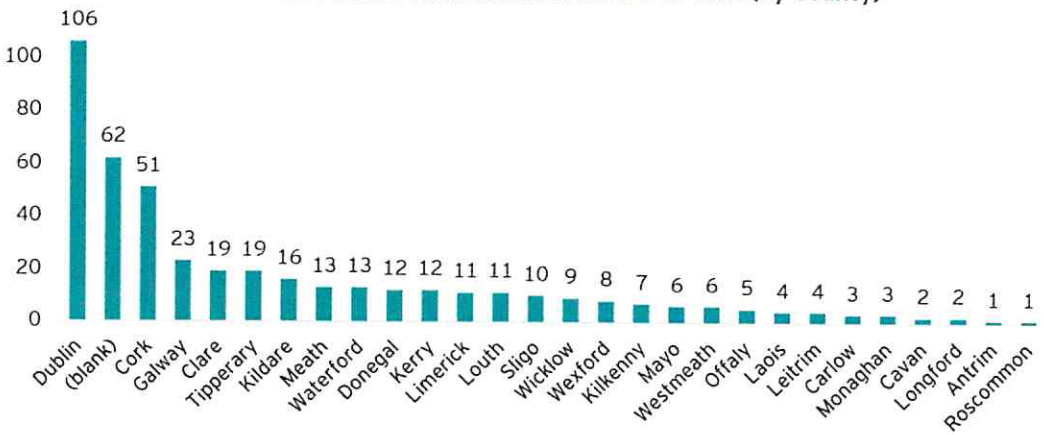
Source: Contact tracing analysis
Terms searched: terms 'GAA', 'Gaelic', 'County Final', 'County Championship', Hurling' and 'Football'
Football and hurling championships took place between 13 Sep and 9 Oct 2020

Note: Analysis completed using the small available sample of track and trace free text data. Treat only as directionally informative

Contacts generated in restaurant settings, however overall levels remain low

Restaurants mentioned 439 times since March

Restaurant related terms mentioned in free text (by county)



Key message: Restaurants generated contacts, however absolute levels remain relatively low given data available.

Dublin

18 contacts relating to a coffee chain 17-19 Aug

5 contacts relating to Dublin restaurant chain 24-25 Sep

Cork

5 contacts relating to a restaurant chain 28 Sep

4 contacts relating to one restaurant

4 contacts relating to a fast food chain 9-10 Nov

Restaurant related terms mentioned in free text (over time)

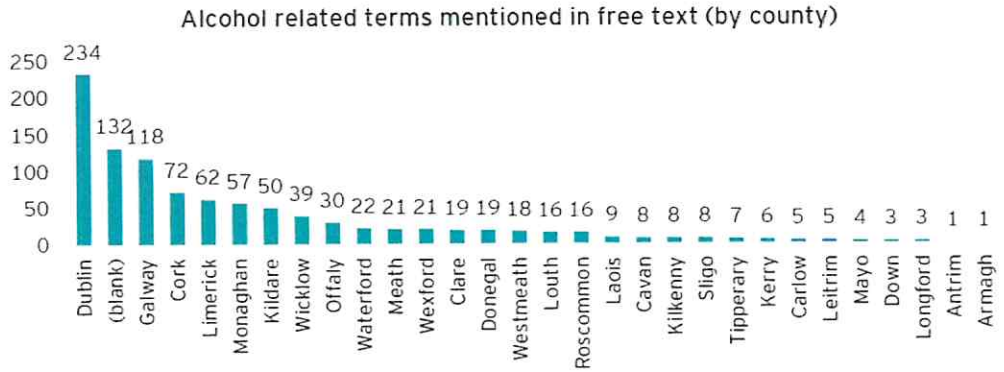
Note - there were 18 mentions before 1 July 2020

Source: Contact tracing analysis
Terms searched: Restaurant, eating out, out for a meal, and a list of all national chains in Ireland

Note: Analysis completed using the small available sample of track and trace free text data. Treat only as directionally informative

Alcohol and social gatherings generated contacts with positive individuals

Alcohol and party-related terms mentioned 1,017 times since March



Key message: Alcohol-related events appear to be a driver in contacts generated, with relatively high numbers given data available.

Limerick

17 contacts from confirmation party Aug

33 contacts from communion party Oct

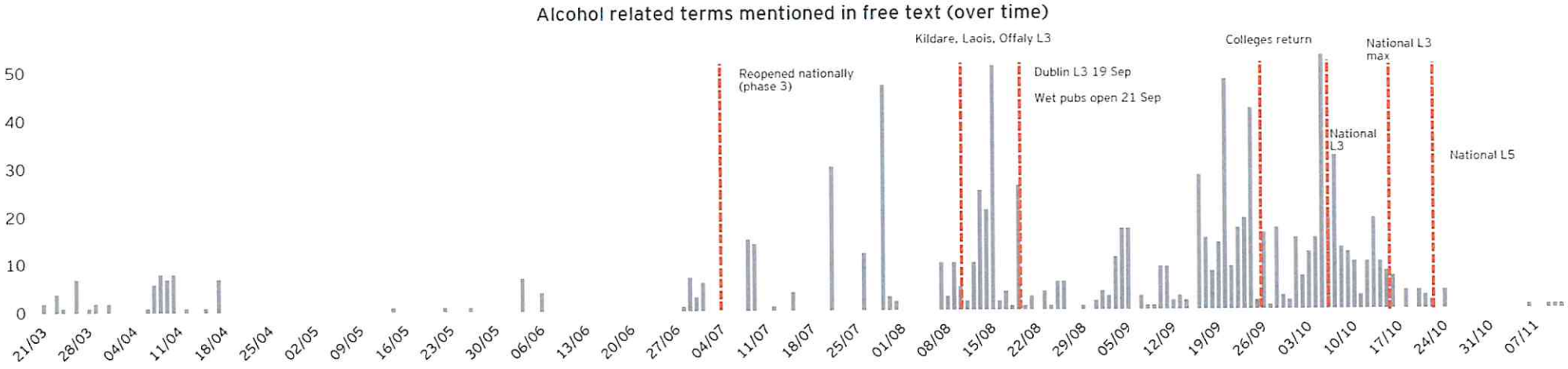
Galway

Galway has c.50% smaller population than Cork but has c.65% more alcohol related contacts

22 contacts from one party on July

15 contacts from a kids' party Sep

31 contacts from a party Sep



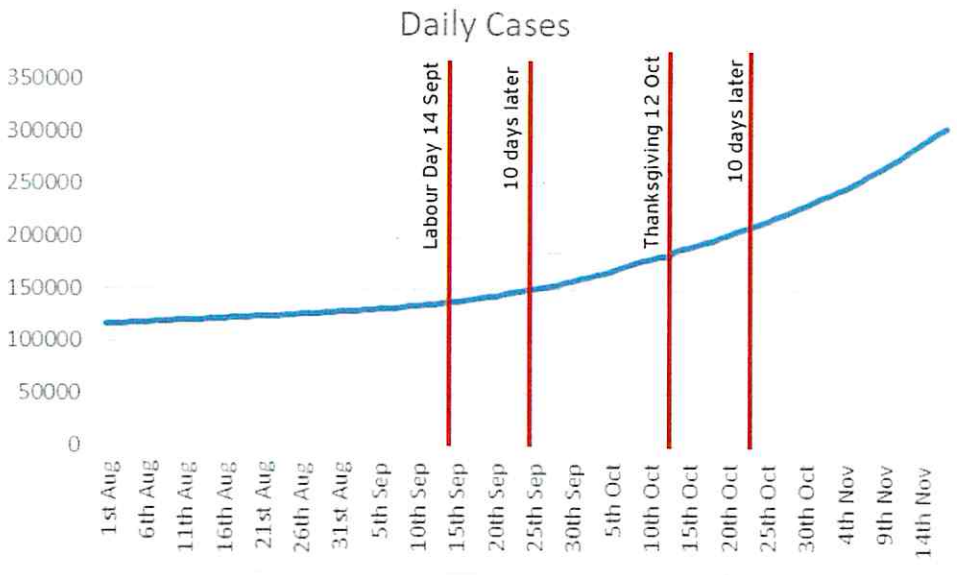
Source: Contact tracing analysis
Terms searched: alcohol', 'drink', 'party', 'celebration', 'booze', 'beer', 'wine', 'cans', 'pint'

Note: Analysis completed using the small available sample of track and trace free text data. Treat only as directionally informative

Canadian Thanksgiving: Test & Trace data and case numbers show surge in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first surge in Spring.



Source: https://health-infobase.canada.ca/covid-19/

Key findings:

- Canada saw a surge in COVID-19 cases in the days and weeks that followed Thanksgiving, the **highest rates** since the first surge in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; **4,109 new daily cases** were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Track & Trace records show that Thanksgiving gatherings directly resulted in **viral spread**
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases **dramatically changed** after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has **doubled** from 155,000 on 28 September to over 310,000 on 18th November
- A similar **spike** is noticed on 14 September, 14 days after **Canadian Labour day** was celebrated

US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.).

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

Selected cities – cases generated and positivity rates

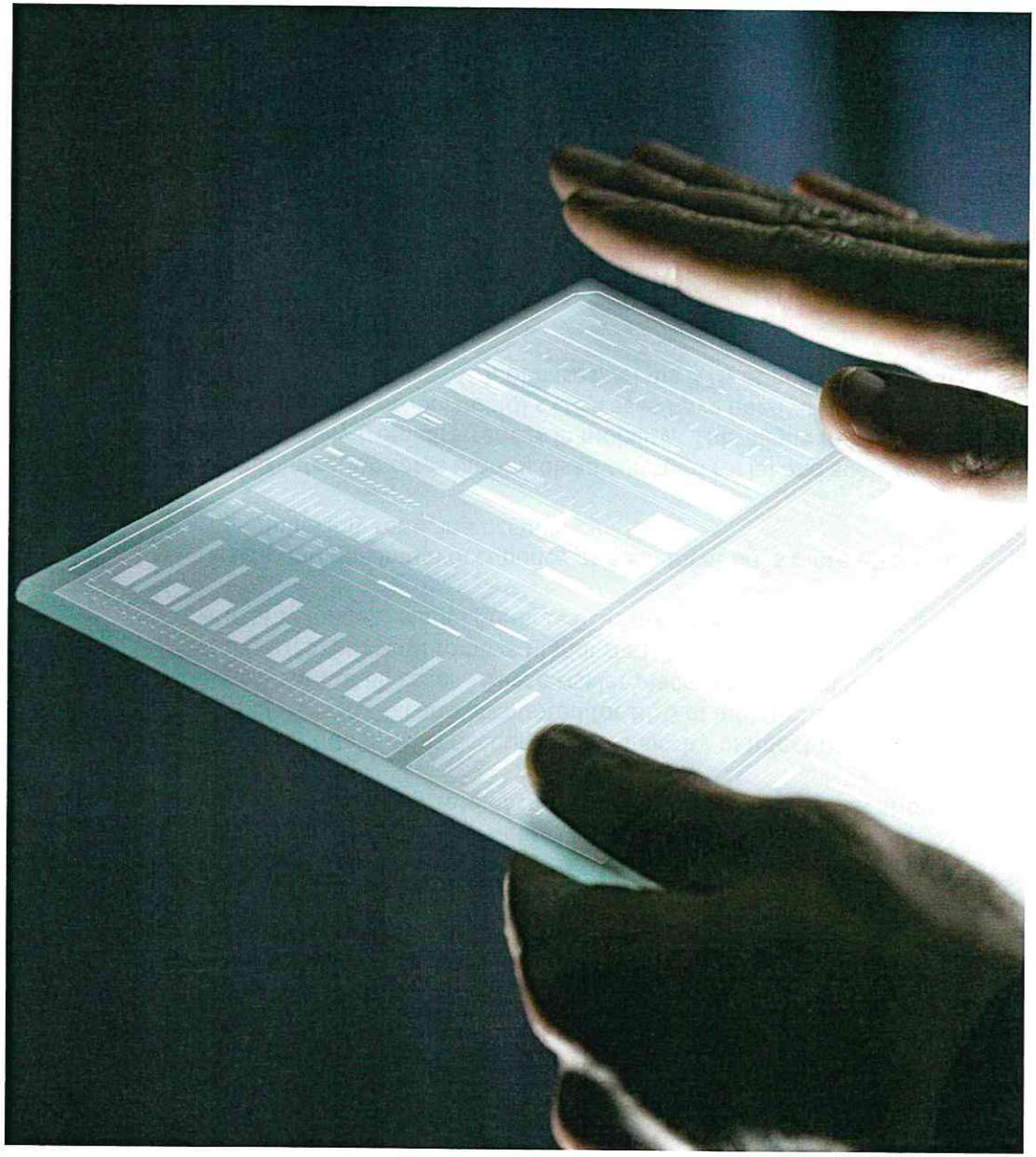
	San Francisco		Chicago		New York	
	Cases	Positivity rate	Cases	Positivity rate	Cases	Positivity rate
Full-service restaurants	+12k	0.09%	+89k	0.33%	+199k	0.22%
Fitness centres	+1k	0.02%	+20k	0.13%	+70k	0.20%
Religious organisations	+479	0.04%	+9k	0.28%	+30k	0.49%
Take-out restaurants	+290	0.01%	+14k	0.14%	+19k	0.11%
Grocery stores	+150	0.01%	+3k	0.19%	+11k	0.15%
Department stores	+40	0.00%	+540	0.02%	+1k	0.03%
Pharmacies	+40	0.01%	+250	0.02%	+1k	0.02%

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html
Note: Calculation of positivity rate using cases generated as a proportion of visits generated

Key findings

- The table depicts the expected additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10)
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more

Roadmap for next six weeks



Approach to Christmas monitoring

We will combine a variety of data sources to monitor activity over the Christmas period

Setting	Description	Provided by NPHET (Disease Incidence)		Provided by public sector organisations (activity/compliance)				Newly generated insights (activity/compliance)	
		HSE	CIDR	TII/NTA	Survey	CSO	Gardaí	Mobile data	Payments data
Events	Indoor and outdoor (e.g. concerts, sports events, weddings, funerals)	✓	✓				TBC	✓	
Social/family gatherings	Levels of gatherings in private households	✓	✓					✓	
Retail and services	Levels of activity in retail and other services (e.g. hairdressers)	✓	✓			✓		✓	✓
Workplaces	Attendance at physical workplaces	✓	✓					✓	
Domestic transport and travel	Levels of movement around the country	✓	✓	✓		✓			
Education	Schools, childcare, adult and higher education	✓	✓						
Bars/restaurants	Activity levels in bars and restaurants	✓	✓						✓
Care homes	Residential facilities, assist living and nursing homes	✓	✓						
Sentiment/compliance	Indicators around compliance to restrictions			✓	✓		TBC	✓	
International travel	International travel levels and related disease spread	✓	✓			✓		✓	
Leisure/recreation	Gyms, pools, leisure centres	✓	✓					✓	
Accommodation services	Stays in hotels, guesthouses and B&Bs	✓	✓					✓	✓

Approach overview

- Leverage existing health data from NPHET, curate data from Government agencies and create new insights from additional data sources
- Combine all data to monitor and provide insights on effectiveness and impact of restrictions and behaviours over Christmas
- Leverage insights to inform restriction measures for future planning as well as provide "stories" to help bring to life for the public
- Aggregated and anonymised data only. No personal identifiable data

What will the next six weeks look like?

Data is anonymised and aggregated to LED or country and by industry type. No personal identifiable information

This week W/c 16 Nov	Week 2 W/c 23/11	Week 3 W/c 30/11	Week 4 W/c 7/12	Week 5 W/c 14/12	Week 6 W/c 21/12
Proposed briefing frequency					
Weekly/ ad-hoc	Weekly / ad-hoc	Weekly / ad-hoc	Daily / ad-hoc	Daily / ad-hoc	Daily / ad-hoc
Insights delivered					
County dashboard	County dashboard	County dashboard	County dashboard	County dashboard	County dashboard
Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers
Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact
Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis
	Transport	Transport	Transport	Transport	Transport
	Facebook survey	Facebook survey	Facebook survey	Facebook survey	Facebook survey
	Spending data	Spending data	Spending data	Spending data	Spending data
		Stay at home index	Stay at home index	Stay at home index	Stay at home index
				Social distance index	Social distance index

Disease monitoring
Restrictions
Compliance
New

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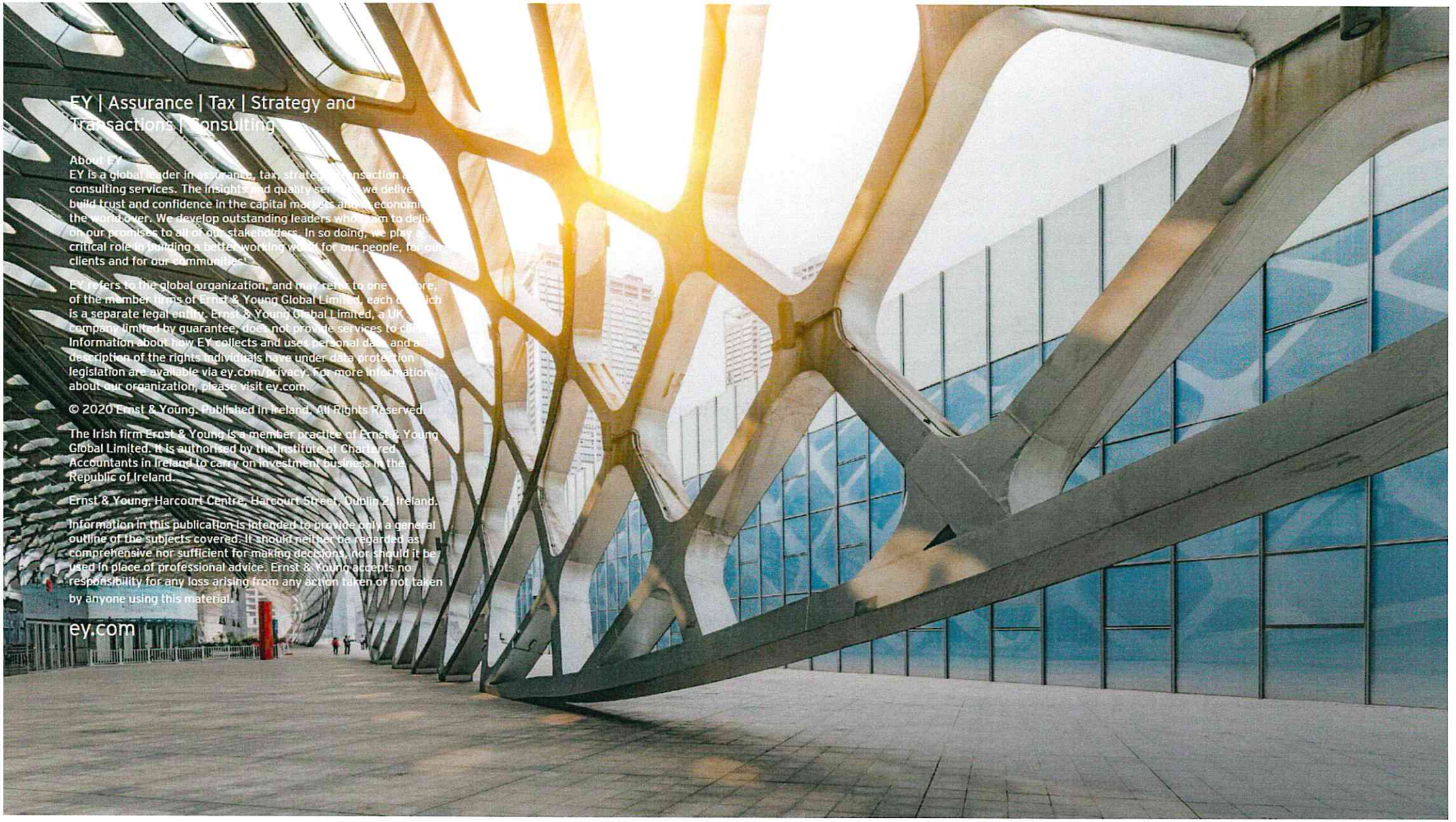

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Data Analytics Insights to Date
Not for Circulation
23 November 2020
EY
Building a better working world

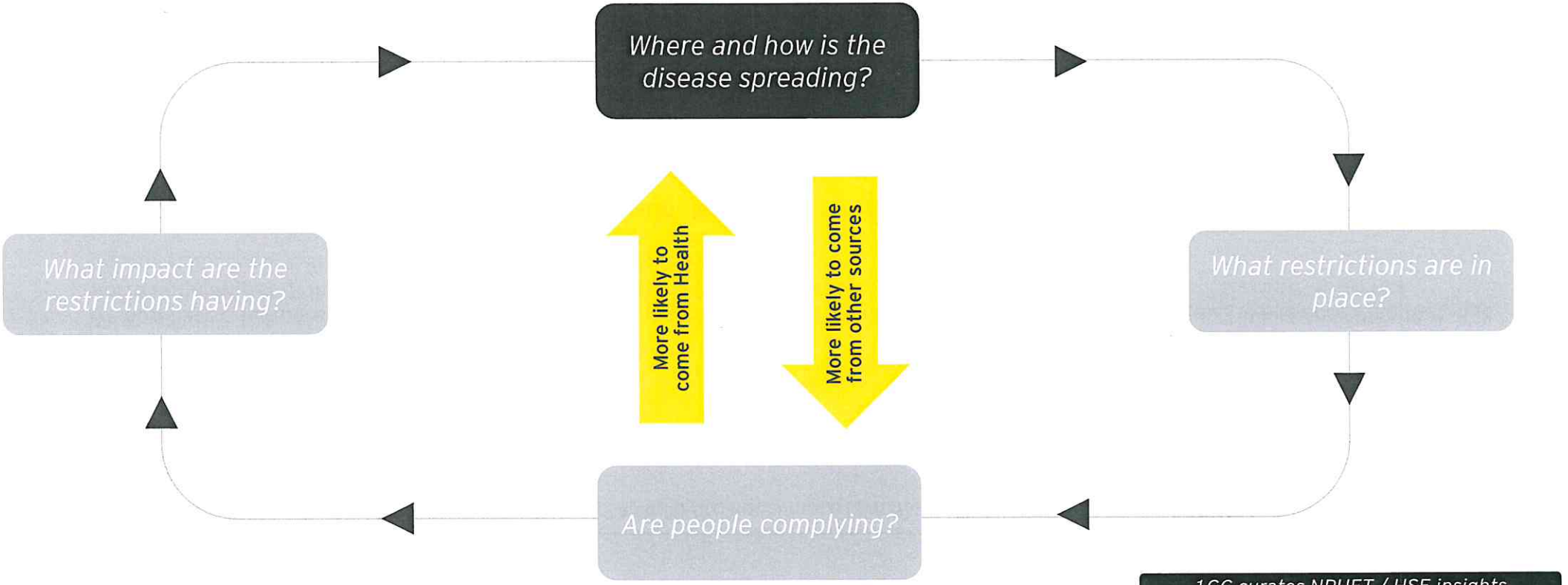
1GC update - Week 6

Agenda

- 1GC Intro
- County Specific Analysis
- Restrictions Impact analysis
- International Analysis
- Roadmap to Christmas

Answering four key questions to support government decision making

Helping improve visibility and decision making by combining and analysing data across government



Summary of Initial Findings

- Extending county analysis to Local Election Areas (LEA) help provide a more specific understanding of what is happening in each county. These profiles can broadly be categorised as follows:
  1. Proximity to the border
  2. Significant known outbreak event(s)
  3. Following the national profile
  4. Dublin

- We now have a far more expansive testing regime. This means it is difficult to directly compare Wave 1 and Wave 2. While accepting that, it is worth noting the shift in outbreaks from being led by Nursing Homes in Wave 1 to Private Households in Wave 2. This contributes to a reduction of 15 years in the median age of cases from Wave 1 to Wave 2

- Social gatherings, citizen congregations, alcohol and specific local events have all appeared to have contributed to Wave 2 outbreaks
- Level 3 appears to have only started to reduce actual cases following the introduction of further household restrictions in mid October

- The wet pubs opened across the country, but not Dublin in late September. There in an accelerated increase in the 14 day disease incidence rate per 100k 10 days later in most counties. This increase has not been seen to the same extent in Dublin

- The LEAs containing University College Cork and National University of Ireland Galway both saw higher case increases than the rest of their city with the universities opening. This difference was reduced when the universities went online. Wet pubs also opened in both cities the week after universities opened

- The northern counties, and especially LEAs on the border, do appear to be impacted by proximity to the border. Donegal is not seeing significant reductions with Level 4 that is seen in other border counties. The introduction of Level 4 in Donegal coincided with a reduction in mask wearing. This goes against national trends

- The reopening of construction, non-essential retail and the wider Phase 3 changes did not appear to have a material impact on the cases nationally or in larger counties

Source: Median Age June 5th: 48 (CSO COVID-19 Deaths and Cases Series 4) - https://www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries4/
Median Age for week ending 30th October: 33 (CSO COVID-19 Deaths and Cases Series 15) - https://www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries15/

Overview of Restriction Analysis Methodology

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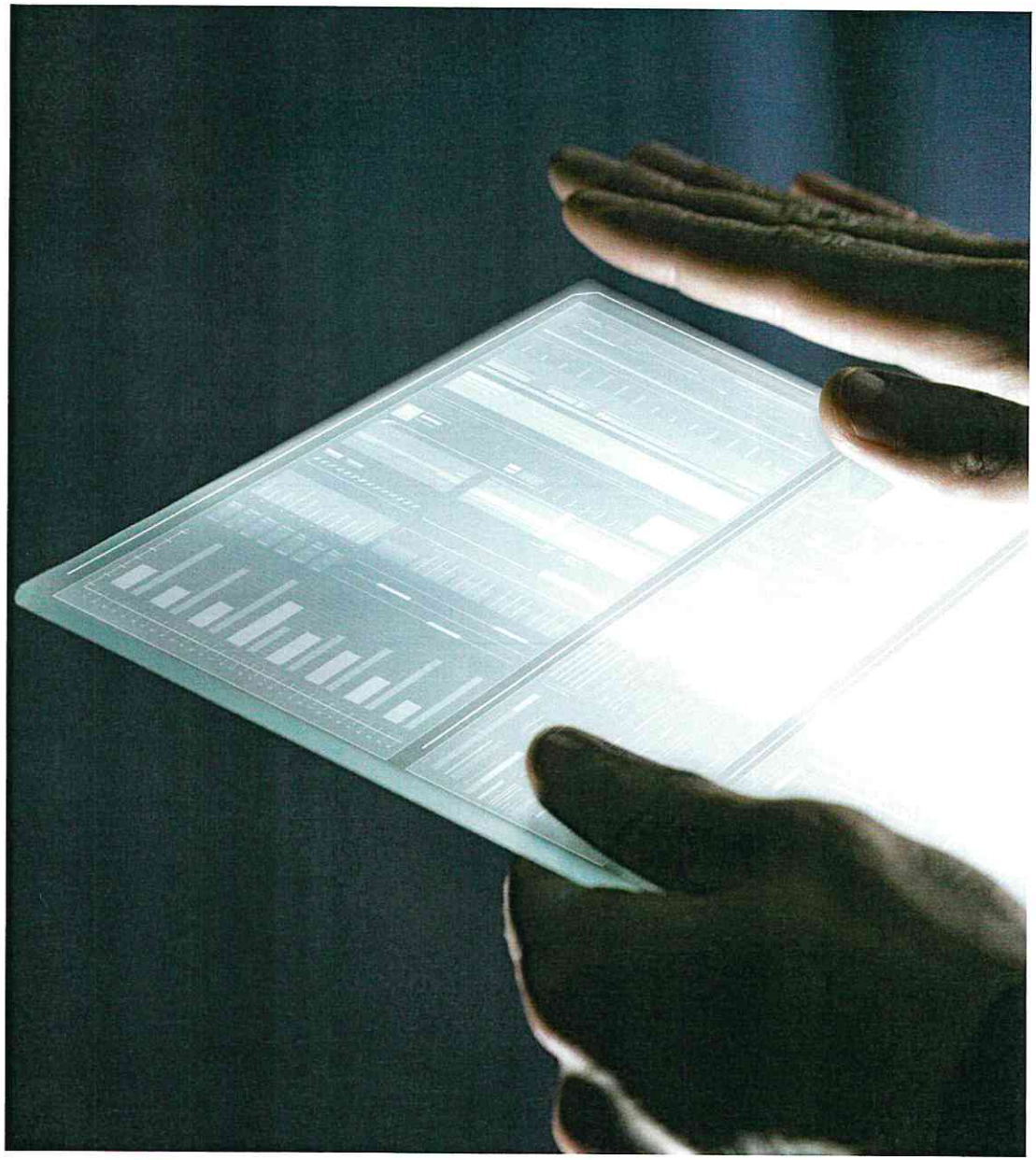
County specific analysis

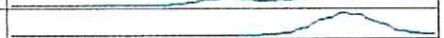


County Analysis Summary

Source ?

Clarity and updates on Wave titles

WIP formatting

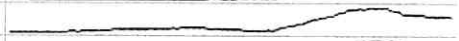
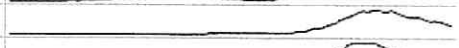
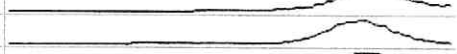
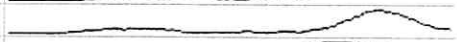
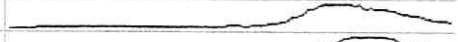
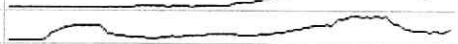
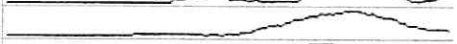
County	Border County	Major Incidence	Dublin and Surrounding Area		Wave Two Outbreak Sources		14 Day Incidence Rate (26/07 - 17/11)
Kerry		✓				...use, Community Outbreak, Nursing	
Limerick		✓				...Family, Community Outbreak, Private	
Mayo						...use, Nursing Home, School,	
Meath		✓	✓			...use, Nursing Homes, Community	
Sligo*						...use, Extended Family, ...Other Ceremony	
Westmeath*						...use, Nursing Homes, Workplace	
Wexford						...use, Social Gathering, Nursing Home	
Kilkenny*		✓				...use, Workplace, Hospital	
Carlow*		✓				...House, Workplace, Hospital	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreak	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreak	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Private House, Workplace, Nursing Homes	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplace, Residential Institutions	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	

*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR

**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Wave 1: 03/03-25/07 Wave 2: 26/07-20/11

County Analysis Summary

County	Border county	Major Incident	Dublin and surrounding area	Following national restrictions trend	Wave One – main outbreak sources	Wave Two – main outbreak sources	14 day incidence rate per 100k (26/07 – 17/11)
Kerry		✓		✓	Private Houses, Residential Institutions, Hospital	Private House, Community Outbreak, Nursing Home	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Institutions	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	

Source: Outbreak sources - CIDR, Incidence rate -based on daily cumulative case data published on GeoHive to 17 November 2020.
This data is published daily. Note: Wave one defined as 03/03-25/07; Wave 2 is 26/07-20/11
*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR
**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Summary of 14 day incidence rate per 100k

The below heatmap shows the county 14 day incidence rate per 100k over the last two months. The overall reduction in cases has levelled in the week with some counties now increasing.

| Two Weekly Incidence Rate Per 100k | Population | 20-Sep | 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | Change Last 3 Days |
|---|---|---

Summary of Restriction Ir

Fiona Source ?

...write something ???

Average Daily Impact of Restriction	29/02/2020	12/03/2020	15/03/2020	24/03/2020		27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020		19/09/2020	21/09/2020	26/09/2020	01/10/2020	07/10/2020	16/10/2020		22/10/2020
	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants closed etc.	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Construction Opened	Mandatory PUP	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown extended for Kildare	Schools + childcare opened	Schools + childcare opened (It+NI)	Level 3 Dublin	Wet Bars Opened except Dublin	Level 3 Donegal	Restrictions on Derry and Strabane	Level 3 National	Level 3 Mid National	Level 4 Donegal, Cavan,	Level 5 National
Carlow	0	0	1		-2	2	-5	1	-2	-1	0	0	2		-4		1			5			17	-7		-14
Cavan	0	0	8	18		0	-6	-3	-3	0	0	0	0		0			3		43			17		-62	-28
Clare	1	4	3		0	1	-4	2	-4	0	0	2	0		0		2			15			-5	-4		-10
Cork	2	2	3		-3	-1	1	-2	-1	0	0	0	0		0		4			10			7	-5		-14
Donegal	0	0	5	5		-2	-1	0	0	0	0	0	1		0			9		12	7	0	-2		0	-15
Dublin	3	6	11		1	-2	-4	-3	-1	0	0	0	1		2		4		2	2			4	-6		-11
Galway	1	1	2		-2	0	0	-1	-1	0	0	0	0		1		3			11			12	-15		-14
Kerry	1	5	3		4	-1	0	0	0	0	0	0	0		1		0			11			9	-10		-10
Kildare	1	2	5		3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1			8			7	-9		-12
Kilkenny	1	1	4		-3	-1	0	-3	0	0	0	0	1		0		0			6			3	-7		-7
Laois	1	0	1		0	0	-2	0	0	0	0	2	2	-2	-2	0	1			7			2	-10		-10
Leitrim	1	0	3		2	0	-1	-1	0	1	-1	0	0		4		-1			12			0	-17		-5
Limerick	1	1	5		-1	-1	-2	-1	0	0	0	1	1		2		-1			12			7	-5		-13
Longford	1	1	3		4	7	-20	-1	-1	0	0	0	0		2		2			6			5	-8		-11
Louth	1	1	3		1	0	-3	0	-1	0	0	0	1		1		2			7			12	-2		-15
Mayo	0	1	4		10	-1	-2	-2	0	0	0	0	0		0		1			7			12	-3		-12
Meath	1	2	3		8	0	-3	-1	0	0	0	0	0		1		2			24			19	-34		-22
Monaghan	0	0	3	17		0	-2	-2	-3	0	0	0	1		1			7		11			-3		-12	-13
Offaly	1	1	6		-2	2	2	-12	0	0	0	0	7	-9	-1	2	1			6			-3	-9		-8
Roscommon	0	1	1		2	6	-14	0	-2	0	0	0	1		0		5			4			4	-10		-11
Sligo	1	0	3		-4	0	-2	0	0	2	-2	0	0		0		1			17			16	-14		-17
Tipperary	1	1	5		-1	1	-5	0	-1	0	0	0	3		-4		0			4			3	0		-6
Waterford	1	3	2		-3	-1	0	0	0	0	0	0	1		1		1			6			9	-4		-10
Westmeath	2	3	7		2	3	-13	-1	-1	0	0	0	0		1		1			12			18	-15		-19
Wexford	0	0	1		-1	0	-1	0	0	0	0	0	1		0		0			13			3	-16		-9
Wicklow	1	5	5		3	-1	-3	-1	0	0	0	-1	1		1		1			2			3	-5		-6
National	1	3	6		1	-1	-3	-2	-1	0	0	0	1		1		5						6	-9		-12

Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Cavan's three LEAs follow a different path. One is being driven by outbreaks, one impacted by the border and one more aligned with the national trend

Cavan profile:

- Cavan has experienced a higher 14 day disease incidence rate per 100k during the second wave than the national average
- Part of Cavan borders with NI where different restrictions are in place

Summary analysis:

- Cavan-Belturbet LEA is the only part of Cavan with a NI border. This LEA is experiencing a higher disease incidence than the national average
- Ballyjamesduff LEA has the highest incidence rate. The timing of the acceleration of growth rate in this LEA appears to correlate with reports of celebrations and 'lock ins' for Crosserlough county final win
- Levels of private house outbreaks rose during September and October
- [redacted]
- Travel along the Belturbet by-pass fell 33% during October (Source TII Road Travel data)

Restriction impact:

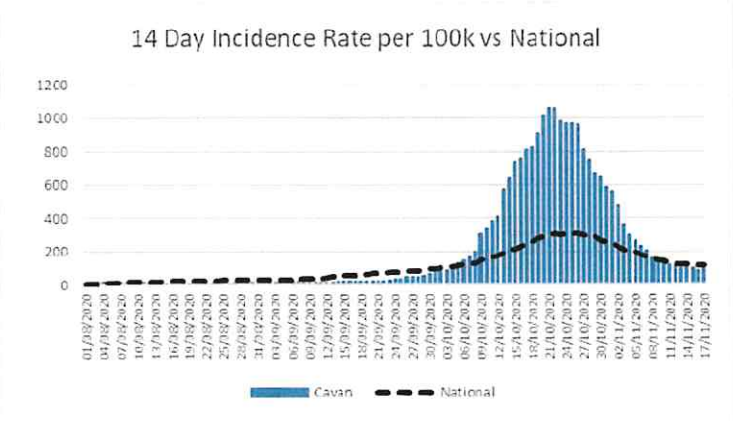
- The timing of the growth of cases appears to correlate with the events listed above and changes to restrictions in wet pubs
- Level 4 restrictions imposed for the border counties appears to have desired impact of reducing incidence level in Cavan
- Level 5 restrictions continue to drive incidence level further

Employment Summary:

- Cavan had c.47% of its workforce on PUP or TWSS (15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP (17 Nov) which is down from 9.7k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
1,272

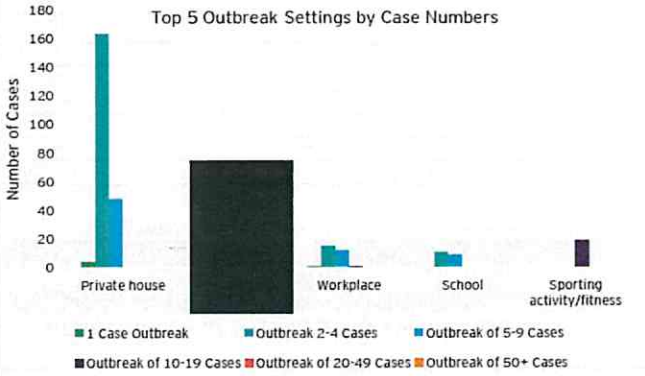
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
32%	3.6

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	215	72
[redacted]	[redacted]	[redacted]
Workplace	29	12
School	20	7
Sporting activity/fitness	19	1

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Sporting activity/fitness	04/10/2020	19
Community outbreak	07/10/2020	16
[redacted]	[redacted]	[redacted]
Private house	13/10/2020	7



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.

Meath is seeing more cases than the national average. This is influenced by proximity to Dublin and specific outbreak events

Meath profile:

- Meath has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Dublin borders including a significant commuter population

Summary analysis:

- Ratoath LEA has the highest incidence rate. The timing of the acceleration of growth rate appears to correlate with reports of celebrations for Ratoath county final win
- Level of private house outbreaks during September and October grew
- Continued outbreaks in nursing homes, one significant outbreak of 51 cases in [redacted]
- One significant community outbreak of 29 cases

Restriction impact:

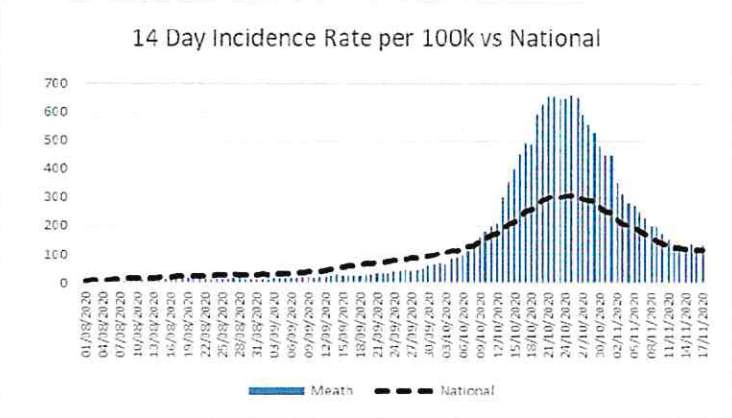
- The timing of the growth of cases appears to correlate with the events listed above and the changes to restrictions in wet pubs
- Incidence level continued to rise post initial Level 3 restrictions imposed nationally
- Level 3 (max) restrictions imposed nationally appear to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level down further

Employment summary

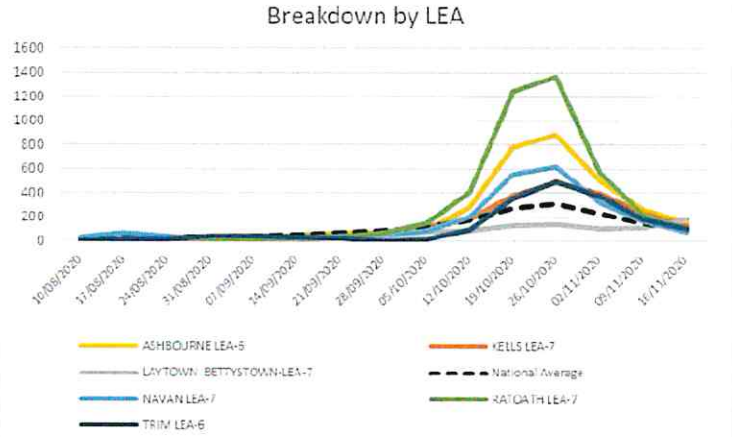
- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (13k versus 25k) levels (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,466

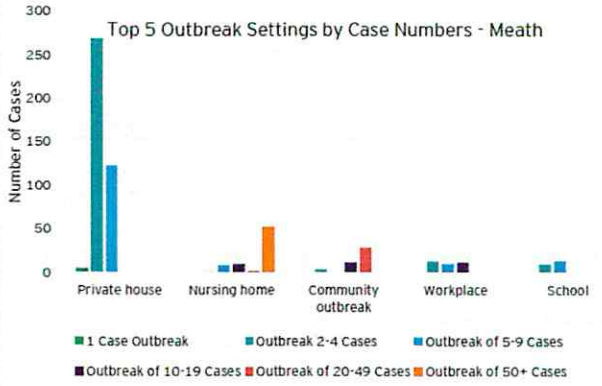
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
27%	3.3

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	397	121
Nursing home	74	9
Community outbreak	45	4
Workplace	38	18
School	25	10

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Nursing home	[redacted]	51
Community outbreak	10/10/2020	29
Community outbreak	13/10/2020	12
Workplace	19/10/2020	11
Nursing home	[redacted]	10



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.

The border is contributing to Donegal's higher rate of cases. Donegal is not seeing the benefit of recent Level 4 increases seen in other border counties

Donegal profile:

- Donegal has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Disease incidence higher and earlier versus national average, and reducing at a slower rate
- Eastern Donegal borders with NI where different restrictions are in place

Summary analysis:

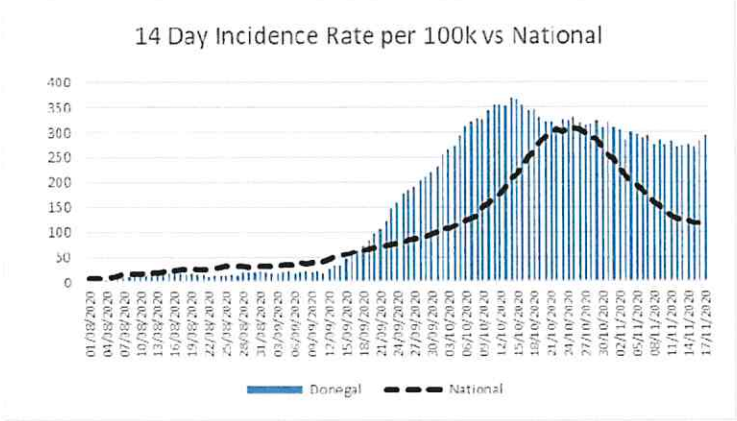
- Lifford and Stranolar LEA close to the NI border with Derry, experienced an earlier and higher disease incidence
- Other eastern parts of Donegal (Buncrana, Letterkenny and Carndonagh) have the next highest incidence rates
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted]
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November

Restriction impact:

- Disease incidence continued to rise after level 3 Donegal announcement
- Specific restrictions in NI (1/10) on bars and restaurants appeared to have had impact
- Despite level 3 max and level 5 being effective in other counties, cases in Donegal continue to decline at a far lower rate compared to national levels
- Similarly, Level 4 reduced the cases in Monaghan and Cavan, but not Donegal. Mask compliance in Donegal also reduced (against national and previous Donegal trend) with Level 4 restrictions (based on Facebook survey data)

Employment summary

- Donegal had c.49% of its workforce on PUP or TWSS (30k) at the peak in early May (EY 2019 employment estimates) . The numbers currently on PUP (17



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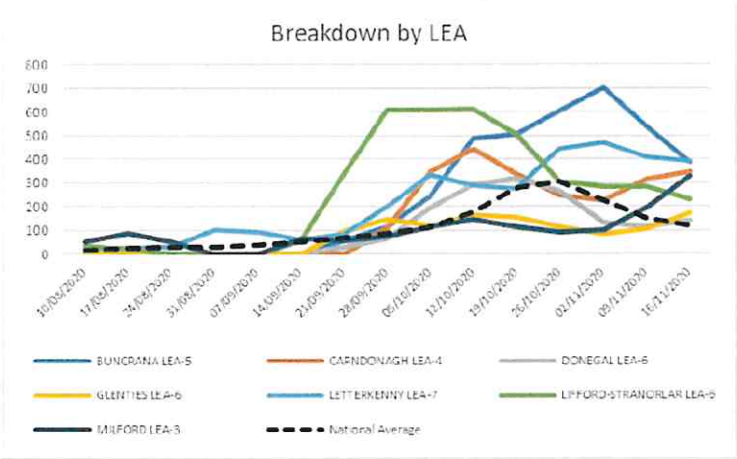

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,165

% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
62%	3.9

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	651	235
Workplace	159	28
Hospital	126	5
Extended family	118	19
Nursing home	58	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Hospital	[redacted]	99
Workplace	23/09/2020	55
Nursing home	[redacted]	49
Social gathering	24/10/2020	20
Hospital	[redacted]	17

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.

Source ?

Cork is broadly aligned with the national trend. Cork City is driving up the incidence rates across the county

Cork profile:

- Cork is broadly aligned with the national average for the 14 day disease incidence rate per 100k during second wave

Summary analysis:

- Cork City is the most impacted area, with the rest of the county following with a reduced incident rate
- Cases in Cork City South Central, the LEA containing UCC (started on 21/28 Sept for continuing/new students respectively), were twice as high as other LEAs in Cork city during mid October. This gap declines in November as the universities went online

Restriction impact:

- Cases in Cork city rose as wet pubs reopened (21 Sept). Cases around the rest of the county followed shortly after
- There were a number of GAA games in early October, which were linked with outbreaks. No matches occurred after this, with level 3 restrictions being applied around this time (6 Oct). Cases throughout Cork began to fall 10 days later

Employment summary:

- At peak, c.39% of Cork's workforce were on PUP or TWSS (96k) (EY 2019 employment estimates). Current PUP levels (17 Nov) are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

ACTION
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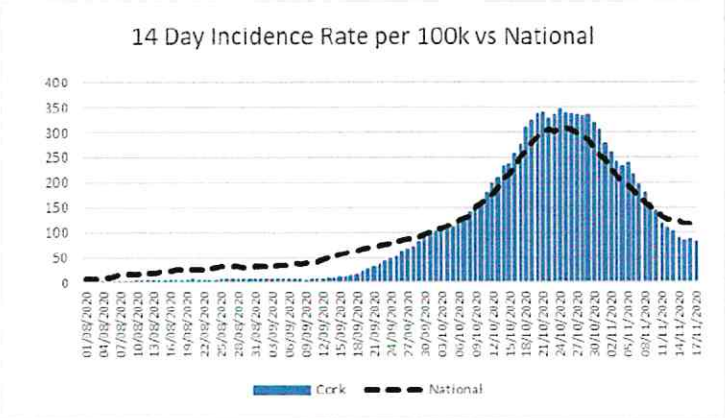


Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

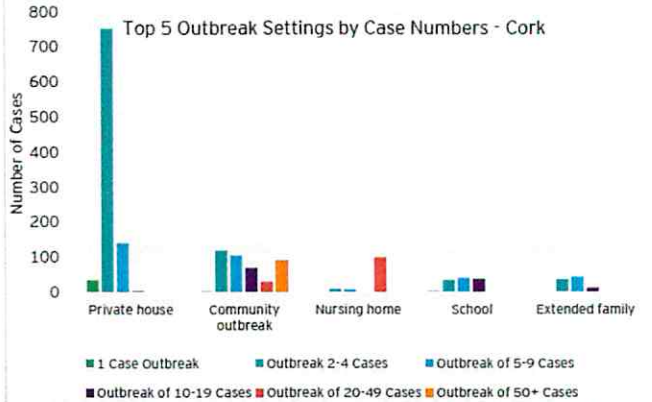
Cases	
4,492	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	3.7

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	929	354
Community outbreak	411	67
Nursing home	114	9
School	113	24
Extended family	90	22

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	26/10/2020	68
Nursing home	[redacted]	46
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	30
Community outbreak	22/09/2020	29



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.

Galway rose above the national average during the second wave, driven by Galway City Central and Connemara South LEAs

Galway profile:

- Galway experienced a higher 14 day disease incidence rate per 100k during second wave than the national average.
- It has now come back down below national average levels since early November

Summary analysis:

- Galway City Central, Connemara South and Galway City East have had the highest 14-day incidence rates throughout October
- A number of key events occurred in late September which could have contributed to this increase
- Cases within Galway City Central LEA appear to have increased in this period following students returning to NUIG from 21 September
- GAA senior championship football semi-finals and finals also occurred in the last week of September and first week of October. [redacted] had a confirmed outbreak in mid-October
- Throughout November, private household cases were responsible for 49% of outbreak cases, with the [redacted] and community outbreaks making up a large proportion of the remaining percentage

Restriction impact:

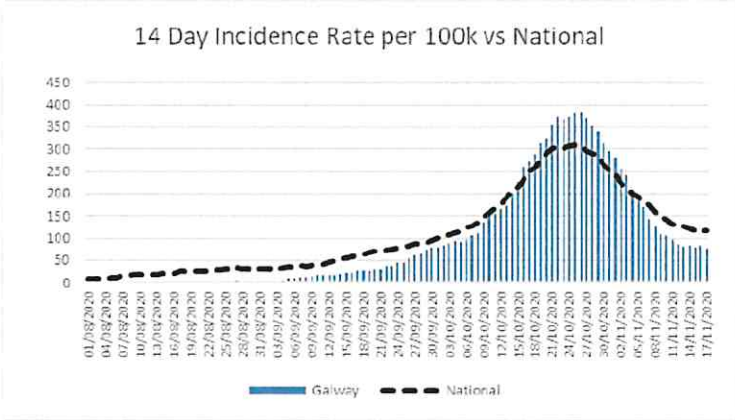
- Cases begin to decline ten days after the national level 3 lockdown came into effect (17/10), falling below national levels in November
- An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

Employment summary

- Galway had c.39% of its workforce on PUP or TWSS (49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP (17 Nov) which is down from 32.5k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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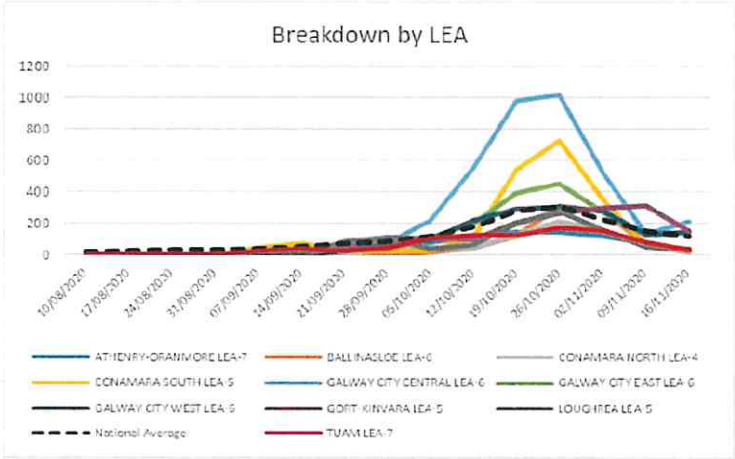


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,060

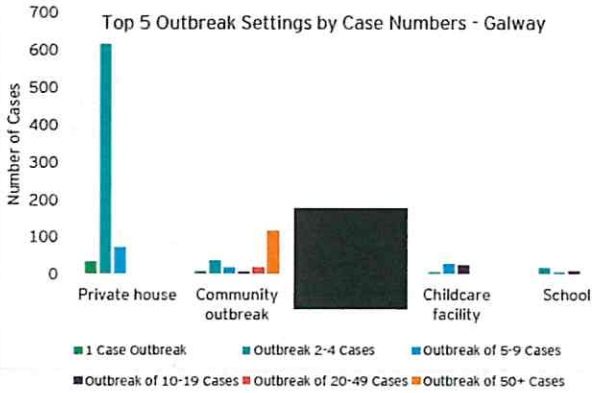
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
66%	3.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	723	293
Community outbreak	207	30
[redacted]	[redacted]	[redacted]
Childcare facility	61	8
School	37	11

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	24/09/2020	114
[redacted]	[redacted]	[redacted]
Social gathering	19/09/2020	20
Community outbreak	25/09/2020	18



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.

Dublin – local authority breakdowns over time

...write something ???

		10/08/2020	17/08/2020	24/08/2020	31/08/2020	07/09/2020	14/09/2020	21/09/2020	28/09/2020	05/10/2020	12/10/2020	19/10/2020	26/10/2020	02/11/2020	09/11/2020	16/11/2020
Dublin City	ARTANE-WHITEHALL LEA-6	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9	111.4
	BALLYFERMOT-DRIMNAGH LEA-5	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	191	143.3
	BALLYMUN-FINGLAS LEA-6	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7	221.8
	CABRA-GLASNEVIN LEA-7	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	160.3	138.1
	CLONTARF LEA-6	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	114.4	73.8
	DONAGHMEDE LEA-5	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7	89
	KIMMAGE-RATHMINES LEA-6	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188	123.5
	NORTH INNER CITY LEA-7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	121	84.9
	PEMBROKE LEA-5	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	88	59.4
	SOUTH EAST INNER CITY LEA-5	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7	133
	SOUTH WEST INNER CITY LEA-5	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1	186.6
Dun Laoghaire - Rathdown	BLACKROCK LEA-6	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2	68.2
	DUN LAOGHAIRE LEA-7	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	76.9	72.1
	DUNDRUM LEA-7	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	66.8	80.1
	GLENCULLEN-SANDYFORD LEA-7	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3	68.3
	KILLINEY-SHANKILL LEA-7	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	44.6	52.5
	STILLORGAN LEA-6	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8	101.6
Fingal	BALBRIGGAN LEA-5	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2	109.4
	BLANCHARDSTOWN-MULHUDDART LEA-5	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	266.2	147.3
	CASTLEKNOCK LEA-6	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	297	199.5	130.1	114.9
	HOWTH-MALAHIDE LEA-7	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9	92.6
	ONGAR LEA-5	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7	134
	RUSH-LUSK LEA-5	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2	43.3
	SWORDS LEA-7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	245.3	295.9	371.8	288.1	140.2
South Dublin	CLONDALKIN LEA-7	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	212.8	180.6
	FIRHOUSE-BOHERNABREENA LEA-5	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8	102.3
	LUCAN LEA-5	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6	122.7
	PALMERSTOWN-FONTHILL LEA-5	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1	165.6
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7	112.7
	TALLAGHT CENTRAL LEA-6	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	168.9	134.2
	TALLAGHT SOUTH LEA-5	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	304.5	251

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

There is a moderate correlation between areas hit hard in Wave 1 and Wave 2, with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin, Artane-Whitehall, etc. Note these areas contain many more EDs that were classified as "marginally disadvantaged" or "disadvantaged" on the Pobal HP Social Deprivation Index than areas with lower incidence rates, which contained many EDs classified as "affluent".

County view - Dublin (19/11)

average and make title consistent

Source ?

Dublin profile:

- Not surprisingly, Dublin's 14 day disease incidence rate per 100k during second wave is in line with the national average
- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire-Rathdown seeing lower overall incidence

Summary analysis:

- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Restriction analysis:

- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases
- Not opening the wet pubs does appear to have helped Dublin with the subsequent increase in cases being slower than the national average. Dublin's incidence rate rose by 2% per day on average in the 10 days after this restriction change, while the national incidence rate grew by 4.5% per day on average over the same period

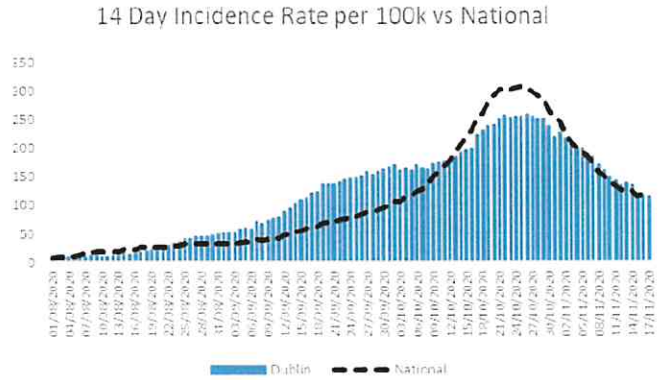
Employment summary:

- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k (17 Nov) , compared to a peak of 176k in May (CSO, DSP)

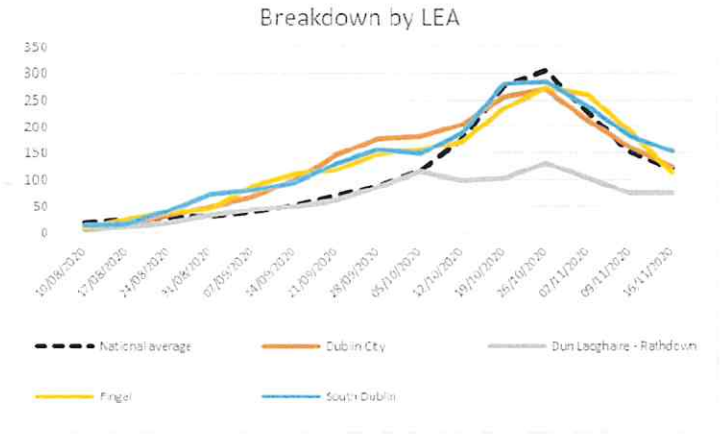
Notes

1 on disease incidence combined with the dates is not a measure of compliance or does not onsideration

ACTION
top right Trend vs tional ave here



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
12,606

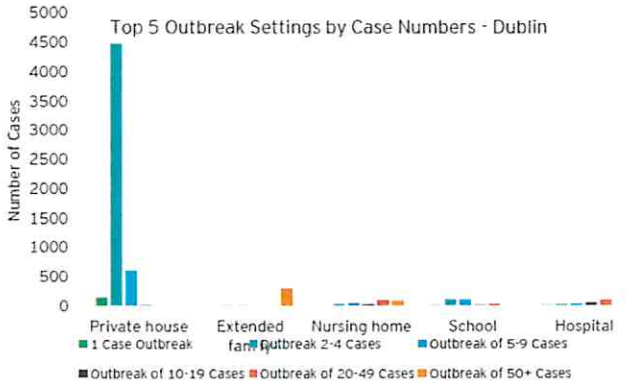
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
56%	2.9

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	5225	2075
Extended family	291	3
Nursing home	266	27
School	249	66
Hospital	192	30

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	24/09/2020	288
Nursing home	[redacted]	75
Hotel	12/09/2020	38
Childcare facility	20/10/2020	38
Residential institution	02/10/2020	30



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.

Cases in Limerick during Sept and Oct were driven by very large extended family and community outbreaks

WORK IN PROGRESS

Limerick profile:

- Limerick has experienced a higher 14 day disease [illegible]er 100k during second wave than the [illegible].
- [illegible]f the cases in Limerick not declining to the same extend in the rest of the country

Summary analysis:

- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November. Both are close to Listowel in Kerry, which experienced the highest incidence levels in that county
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others – the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

Employment summary:

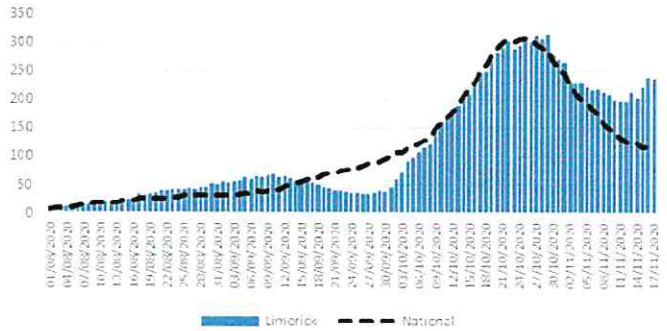
- Limerick had c.43% of its workforce on PUP or TWSS (34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The rest combine not a me aspects

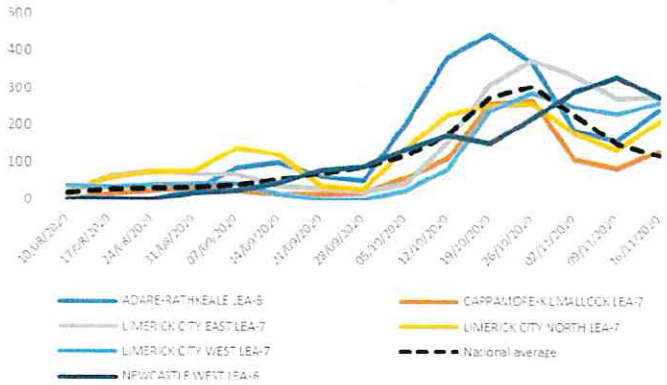
ACTION
Move top right Trend vs National ave here

14 Day Incidence Rate per 100k vs National



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Breakdown by LEA



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

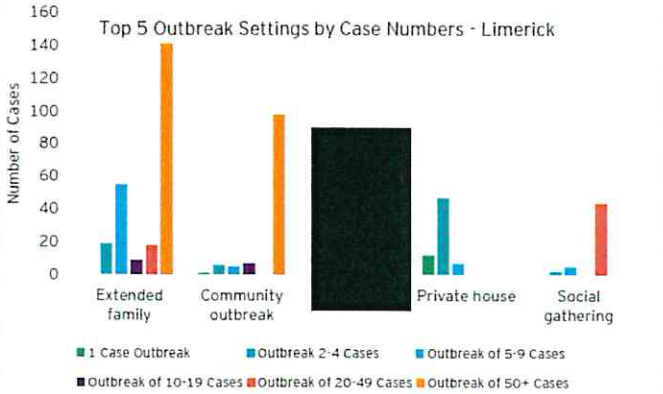
Cases	
1,771	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
39%	6.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Extended family	242	19
Community outbreak	117	8
[redacted]	[redacted]	[redacted]
Private house	66	34
Social gathering	51	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	23/09/2020	141
Community outbreak	08/10/2020	94
[redacted]	[redacted]	[redacted]
Residential institution	13/10/2020	31
Social gathering	15/10/2020	25



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.

Kerry is seeing lower cases than the nati[illegible]e, with Listowel bordering Limerick having the highest number of r[illegible]

ACTION
Make titles consistent with others

Kerry profile:

- Kerry has experienced a similar 14 day disease incidence rate per 100k during second wave to the national average. However, Listowel LEA has seen a sharp increase in its rate since early October

Summary analysis:

- North Kerry (Listowel) is most severely affected. This coincides with outbreaks southern parts of Limerick such as Newcastle West and Adare-Rathkeale, as well as Limerick city
- Killarney and Tralee LEAs are both next in terms of severity of impact, containing two major Kerry towns
- The remainder of county (further south, smaller towns) is generally less affected
- [redacted]
- Private homes account for 33.68% of all outbreak cases since Sept 1st
- Listowel's incidence levels were three times higher than the next worst-afflicted LEA. Note the small population of ~29,000 people meant 182 cases over a 2-week period prior to 26 Oct created a very high incidence rate

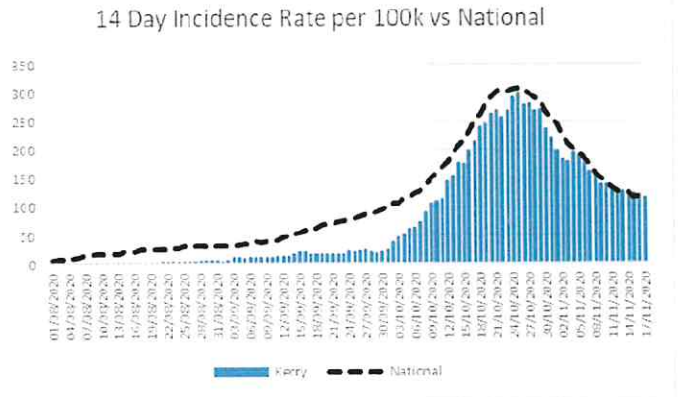
Restriction impact:

- The number of cases in Kerry started to grow around the time level 3 was introduced - two weeks later, this high growth rate had largely ceased
- Improvements have levelled off somewhat across LEAs such as Tralee, Killarney and Listowel

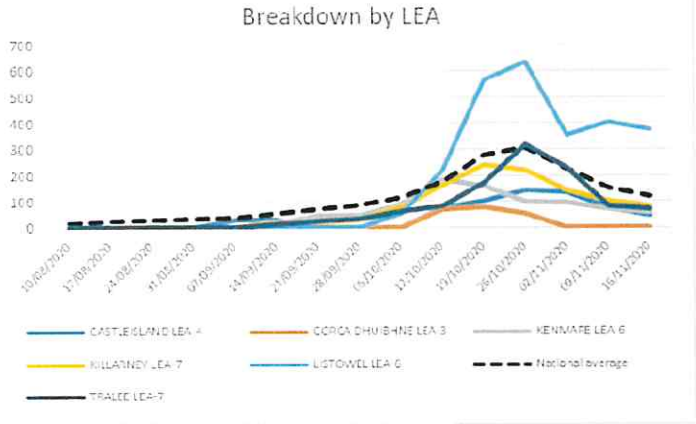
Employment summary:

- Kerry had c.49% of its workforce on PUP or TWSS (32k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, [illegible]

ACTION
Move top right Trend vs National ave here



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
963

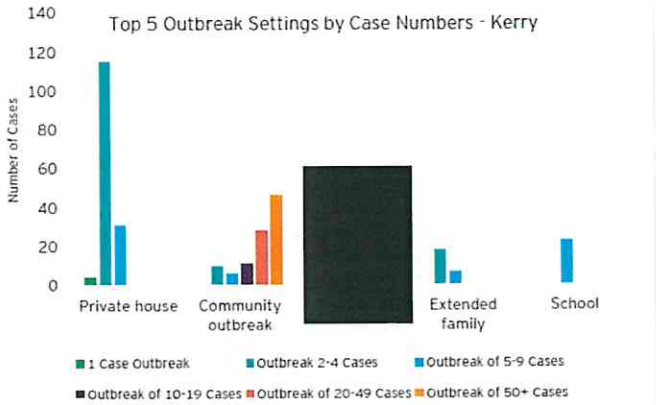
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	4.1

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	150	53
Community outbreak	101	14
[redacted]	[redacted]	[redacted]
Extended family	25	7
School	23	4

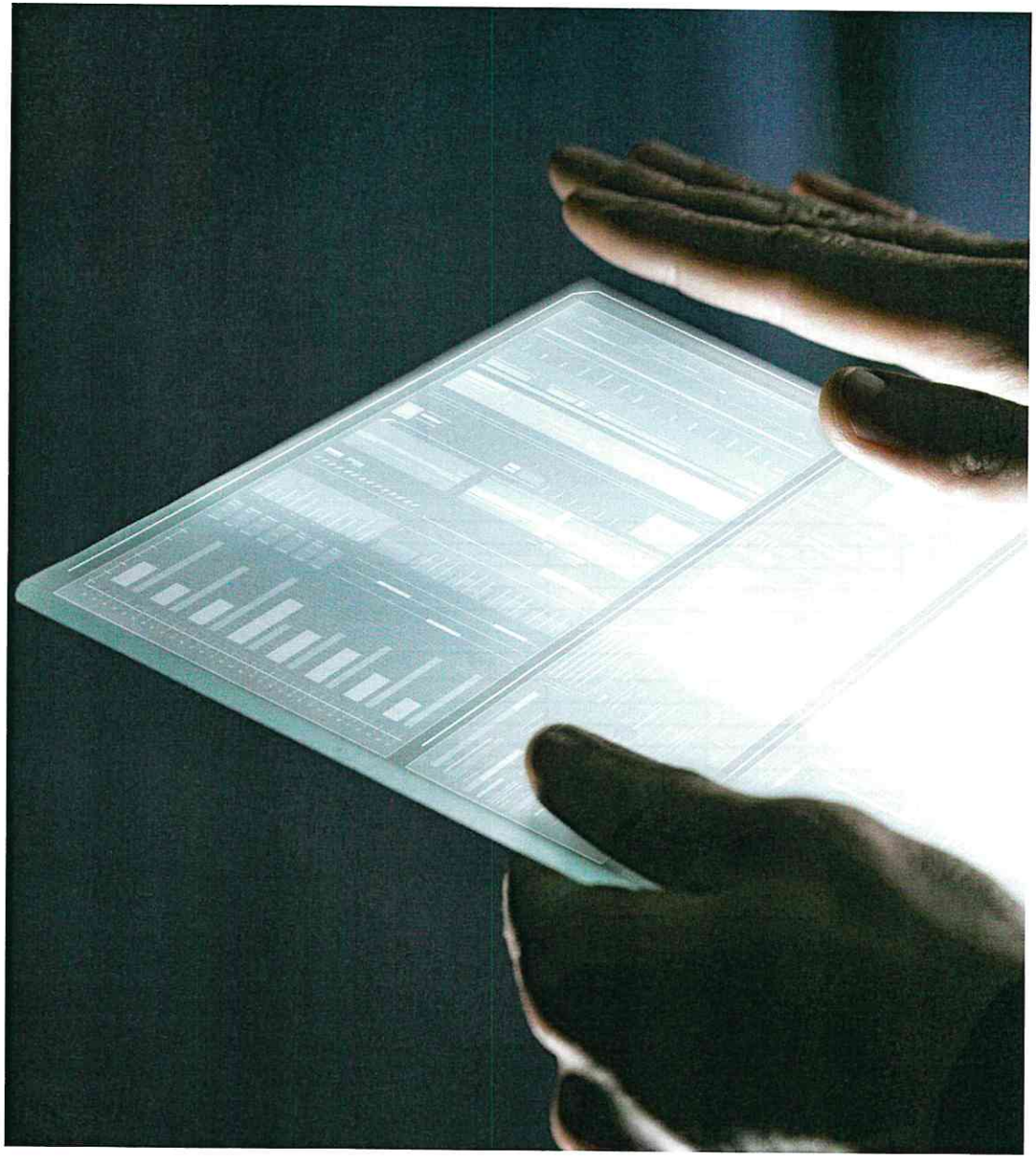
Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Community outbreak	03/09/2020	43
Community outbreak	23/10/2020	25
Religious/Other ceremony	16/10/2020	11
Restaurant / Cafe	11/09/2020	11



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.

Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties - highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

International restriction analysis

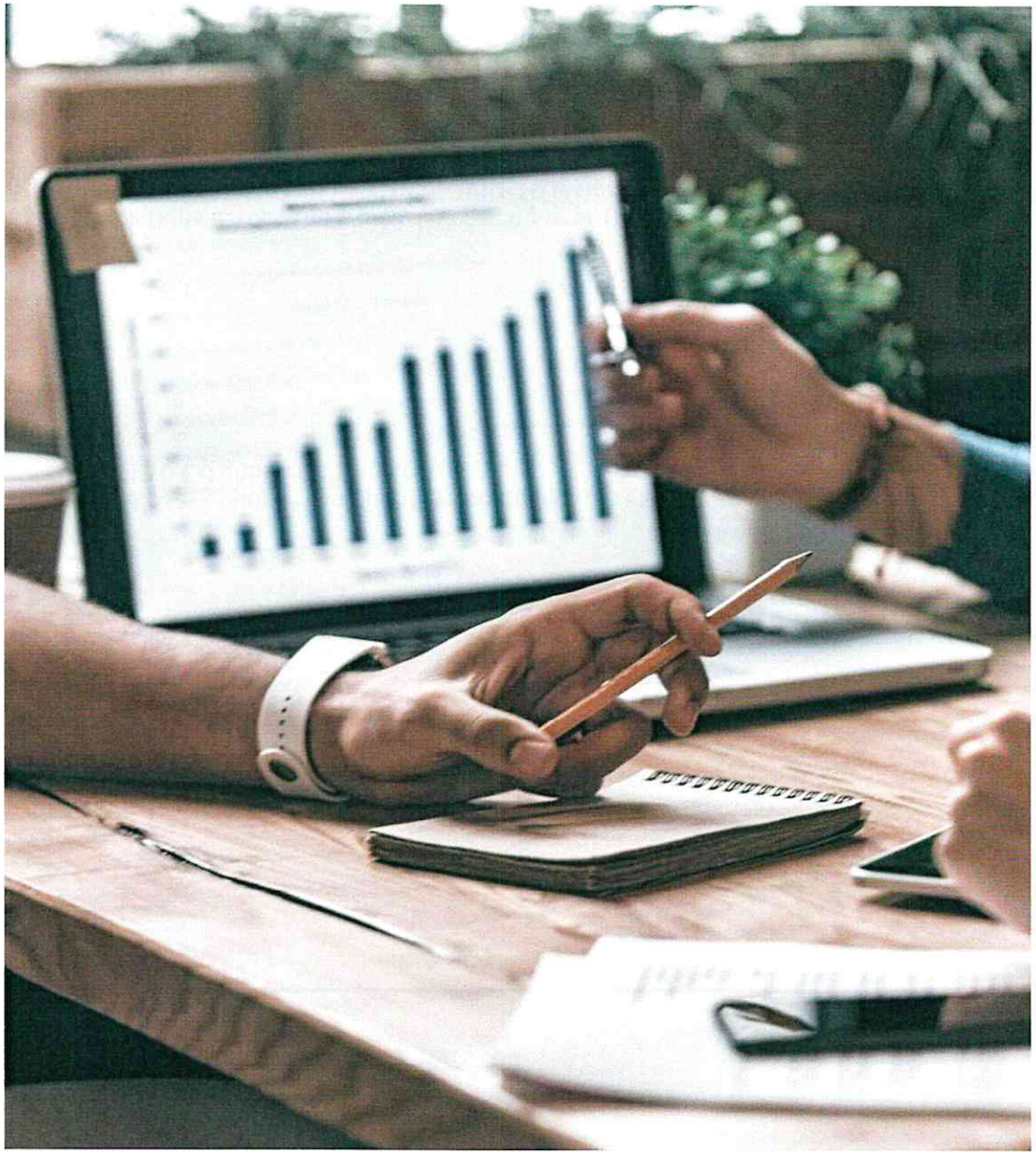
A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

International desktop research

Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular 1GC COVID-19 insights publication and with new research included today

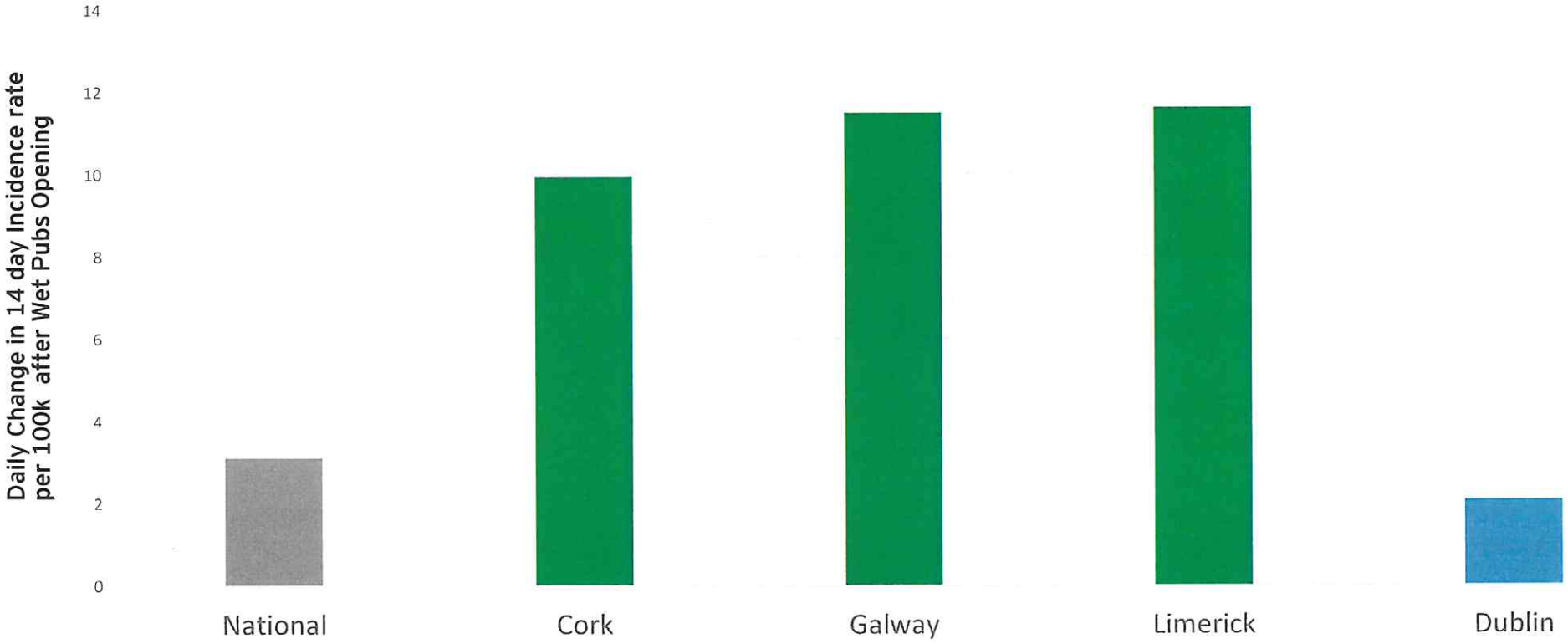
Ireland - restrictions analysis

Interactive demo showing restrictions impact analysis by county



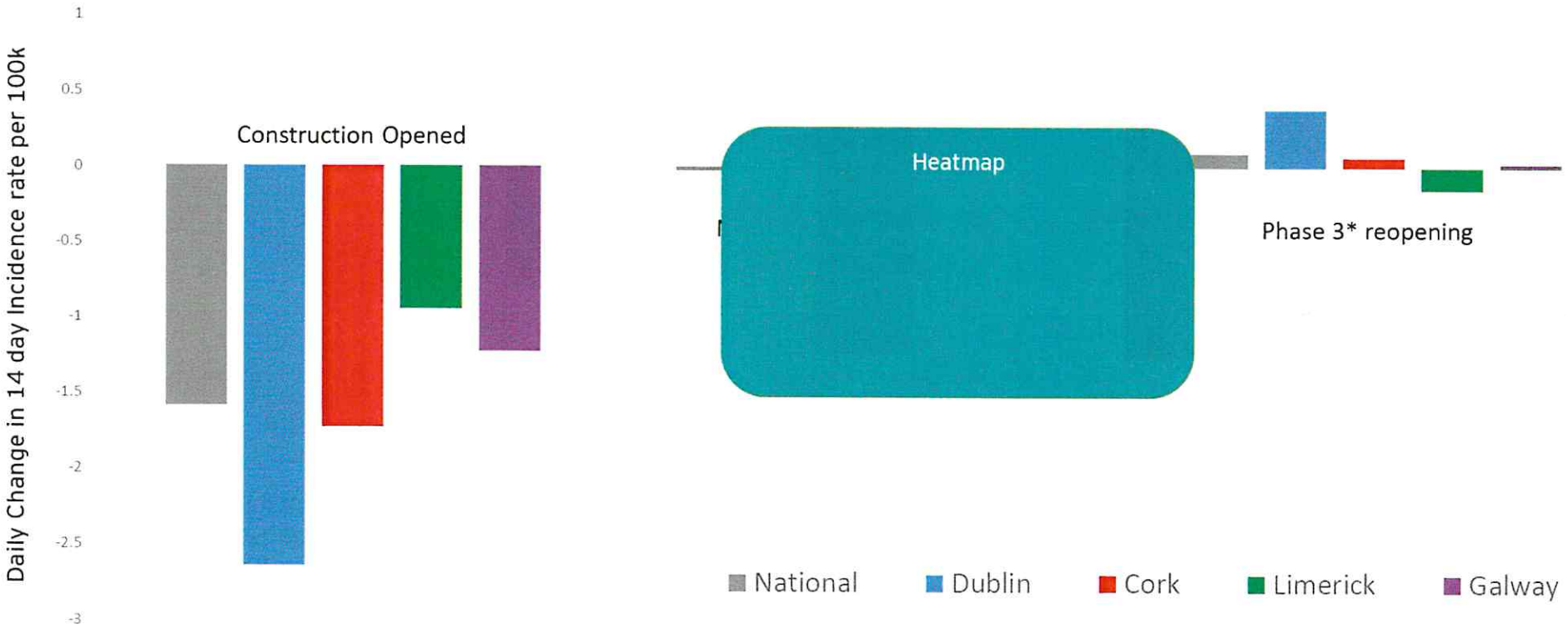
Wet Pubs opened across the country, but not Dublin, on 21 September. The increase in Dublin's cases then slowed when compared with other counties

Case growth in Dublin after the Wet Pubs opening in other counties was 33% lower than the national average and 79% to 82% lower than other counties with larger cities. Note this coincides with universities opening, which impacts Cork, Galway and Limerick



The three phases of re-opening during late May to early July did not have a significant impact on cases

The reopening of construction, non-essential retail and the wider Phase 3 changes did not appear to have a material impact on the cases nationally or in larger counties



* Phase 3 re-opening included places of worship, gyms, cinemas, theatres, leisure facilities, personal services, sports, public transport 50% capacity & face coverings), mass gatherings (50 indoors, 200 outdoors), adult education and community facilities, health and well being related services, restaurants and cafes (on site food service), hotels and other accommodation facilities, driving schools and tests

Track and Trace Free Text Analysis

The HSE Track and Trace system captures the information for each citizen being tested for C-19. This includes a contact type field, which explains the contact between citizens that the test resulted from. Contact categories are selected by the contact tracer from a drop down list, including "social", "work", etc.

There is also a free text field where the contact tracer may add further details. For example, if the category was "social" then the free text field may say "attended sports game together".

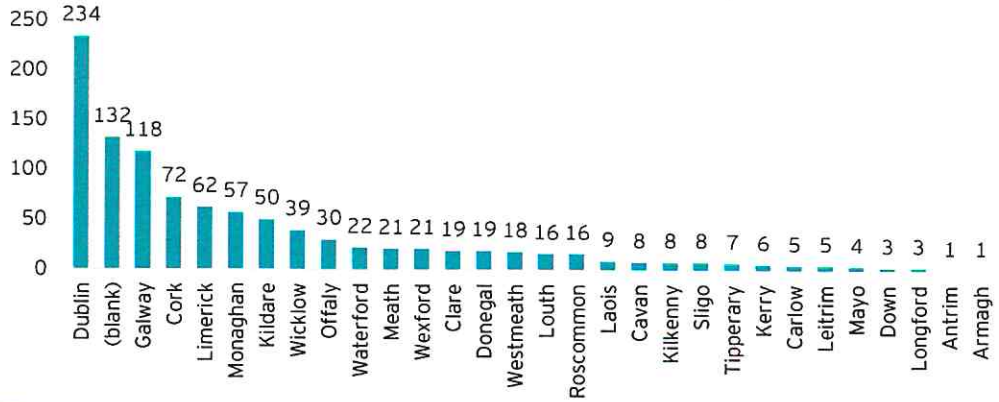
A selection of the analysis of this free text field is shown in this section. Note it is a relatively small sample of data and should be treated only as directionally informative.

Alcohol/social gatherings contacts with positive individuals

Alcohol and party-related terms mentioned 1,014 times between Mar - 10th Nov

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Contacts with positive individuals: Alcohol/Social Gathering related terms mentioned in free text (by county)



Key message: Alcohol-related events appear to be a driver in contacts generated, with relatively high numbers given data available.

Limerick: 17 contacts from confirmation party in Aug; **33 contacts** from communion party in Oct

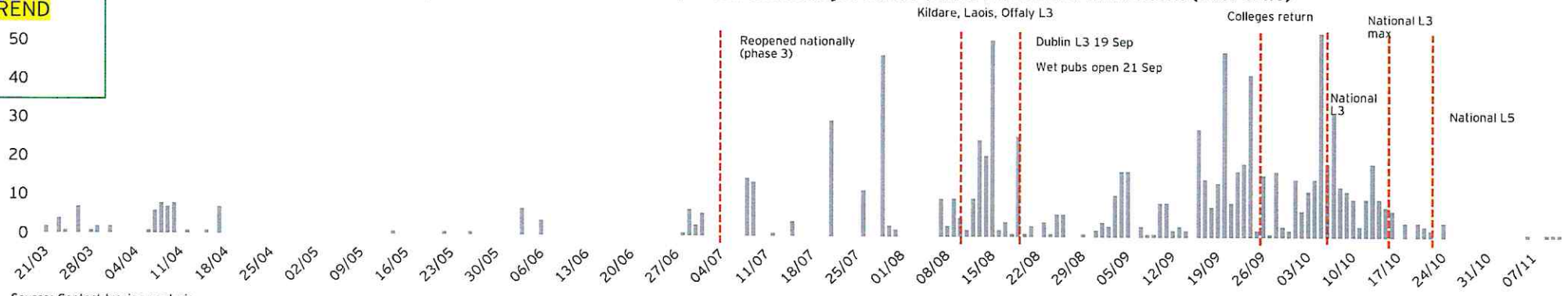
Galway: has **c.50%** smaller population than Cork but has **c.65%** more alcohol related contacts; **22 contacts** from one party in Jul; **15 contacts** from a kids' party in Sep; **31 contacts** from a party in Sep

Positivity Rate: 600 contacts made between Sep-Oct resulting in 26 positive tests giving a **positivity rate of 4.3%**

CIDR data shows that 540 positive cases occurred in the same period across 60 outbreaks for categories 'Social Gatherings' and 'Public House' compared to 80 cases in Jul-Aug **similar to large increase in contacts shown from late Sep** within Track and Trace

WIP: UPDATE MARKERS ON TREND

Contacts with positive individuals: Alcohol/Social Gatherings related terms mentioned in free text (over time)



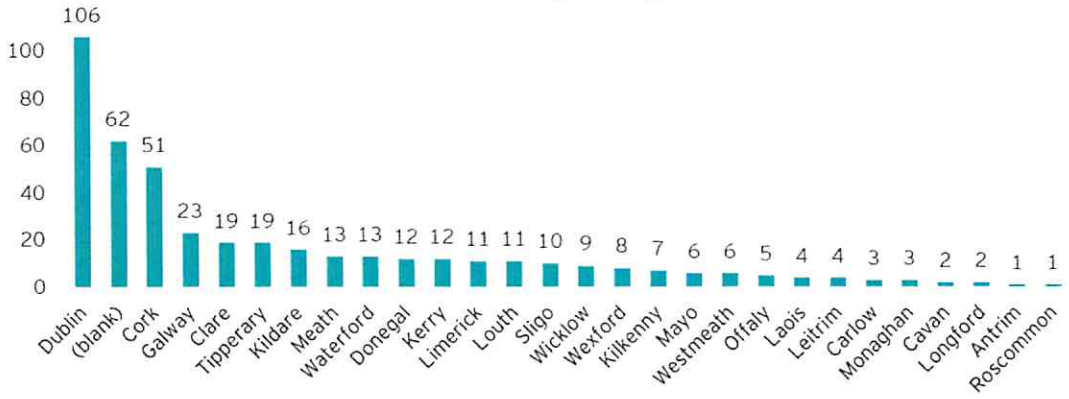
Source: Contact tracing analysis
Terms searched: alcohol', 'drink', 'party', 'celebration', 'booze', 'beer', 'wine', 'cans', 'pint'

Contacts with positive individuals generated in restaurants

Restaurants mentioned 439 times between Mar - 10th Nov

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Contacts with positive individuals: Restaurant related terms mentioned in free text (by county)



Key message: Restaurants generated contacts, however absolute levels remain relatively low given data available.

Dublin: 18 contacts relating to a coffee chain over three days in August; 5 contacts relating to Dublin restaurant over 2 days in Sep

Cork: 5 contacts relating to a restaurant chain in one day in Sep; 4 contacts relating to a fast food chain over two days in Nov

Positivity Rate: 330 contacts made between Sep-Oct resulting in 6 positive tests giving a positivity rate of 1.8%

CIDR: Shows 221 positive cases across 35 outbreaks during Sep-Oct compared to 44 positive cases in Jul-Aug largely consistent with the increase in contacts shown from mid Sep in Track and Trace

WIP: UPDATE MARKERS ON TREND

Contacts with positive individuals: Restaurant related terms mentioned in free text (over time)

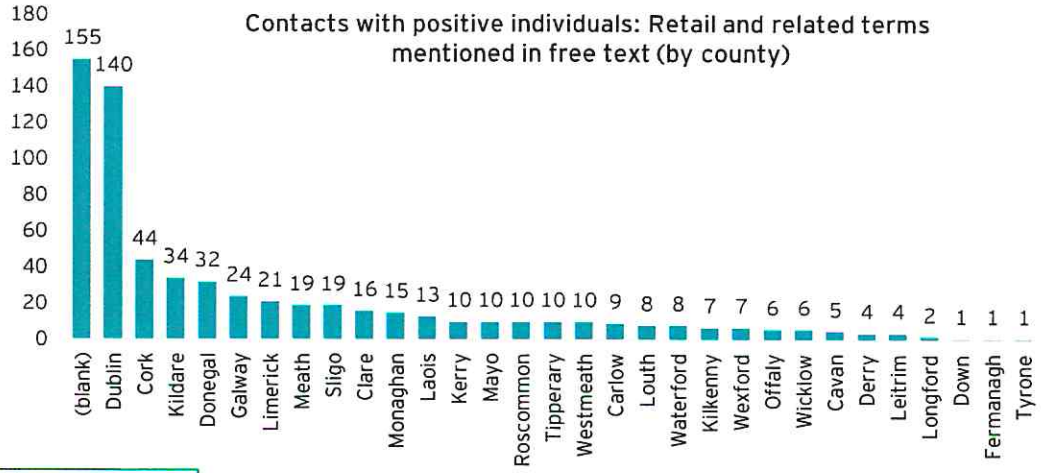
Note - there were 18 mentions before 1 July 2020

Source: Contact tracing analysis
Terms searched: Restaurant, eating out, out for a meal, and a list of all national chains in Ireland

Retail contacts with positive individuals

Retail and related terms mentioned 651 times between Mar – 12th Nov

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only



Retail store cases appear to be driving smaller number of contacts rather than large clusters

Dublin: No large clusters, largest number of contacts on a single day was 5; **5 contacts** in specific supermarket on a day in May

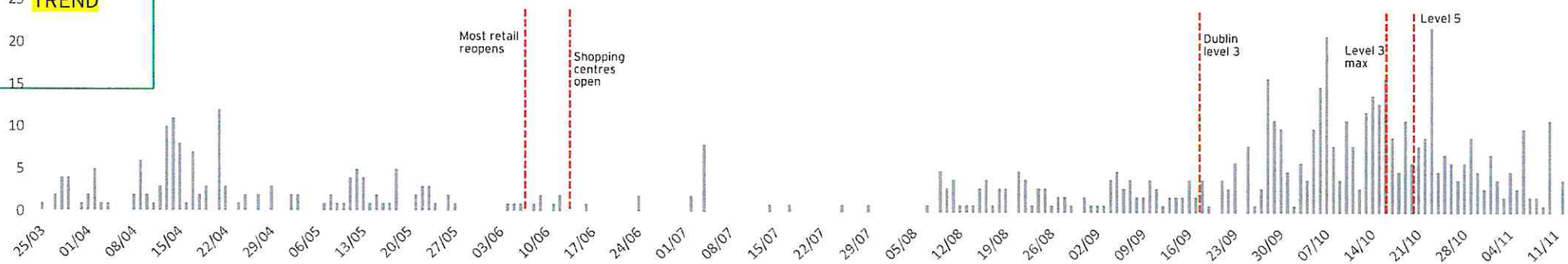
Kildare: No large clusters, largest number of contacts on a single day was 3

Cork: No large clusters largest number of contacts on a single day was 5; 5 contacts in a chain supermarket on a day in Nov

Positivity Rates: 376 contacts made between Sep-Oct resulting in 5 positive cases **giving a positivity rate of 1.3%**

CIDR: 48 positive cases across 15 outbreaks in period Sep-Oct for 'Retail outlet'. This is higher than Jul-Aug (9 cases). This largely

WIP: UPDATE MARKERS ON TREND



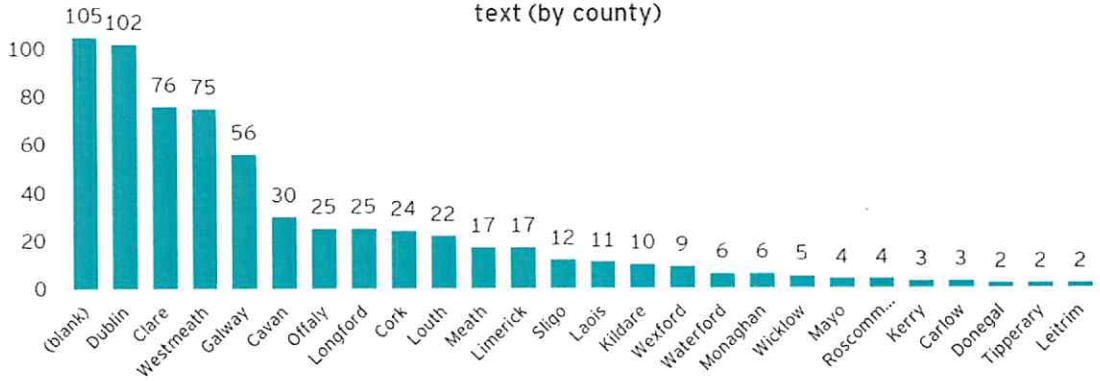
Source: Contact tracing analysis
Terms searched: shop, SuperValu,Lidl,Tesco,Aldi,Dunnes Stores,Eurospar,Iceland,Marks & Spencer, Donnybrook Fair, Joyces,Fresh, Spar,Centra,Londis,Mace,Gala,Daybreak,Costcutter,Applegreen, Newsagent

GAA-related events contacts with positive individuals

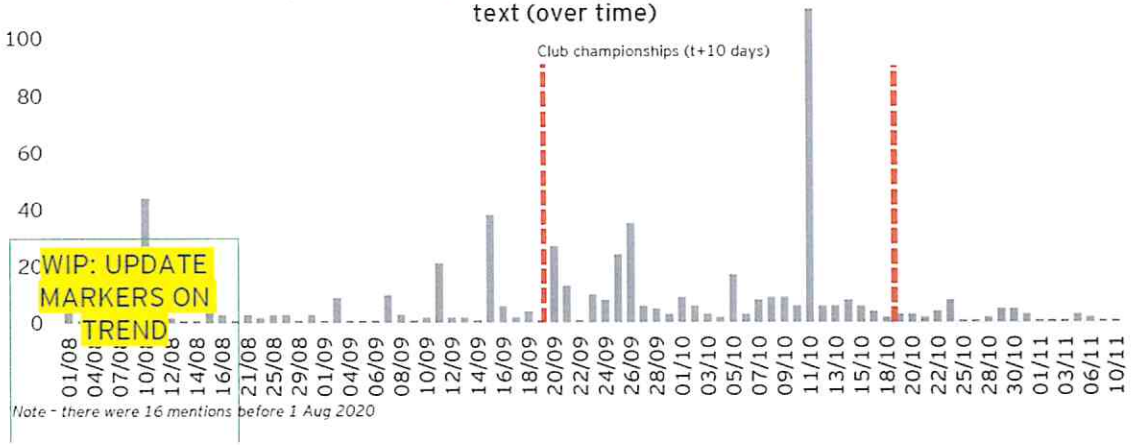
GAA-related terms mentioned 653 times between Mar – 10th Nov

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Contacts with positive individuals: GAA and related terms mentioned in free text (by county)



Contacts with positive individuals: GAA and related terms mentioned in free text (over time)



Note - there were 16 mentions before 1 Aug 2020

Source: Contact tracing analysis
Terms searched: terms 'GAA', 'Gaelic', 'County Final', 'County Championship', Hurling' and 'Football'
Football and hurling championships took place between 13 Sep and 9 Oct 2020

Key message: GAA events and celebrations appear to have generated incidences of high numbers of contacts with positive individuals. However, overall levels appear low.

Clare: 24 contacts on day in Aug for GAA Training; 33 contacts on day in Aug for GAA; *End of Jul start for club games in Clare as master fixtures committee recommended new formats*

Westmeath: 52 GAA contacts on single day in Oct; *Senior football finals occured on 27th Sep*

Galway: 34 contacts on day in Sep mentioning a specific GAA team

Dublin: 17 contacts on day in Aug mentioning a specific GAA camp; *Camps took place between 22nd Jul - 23rd Aug*

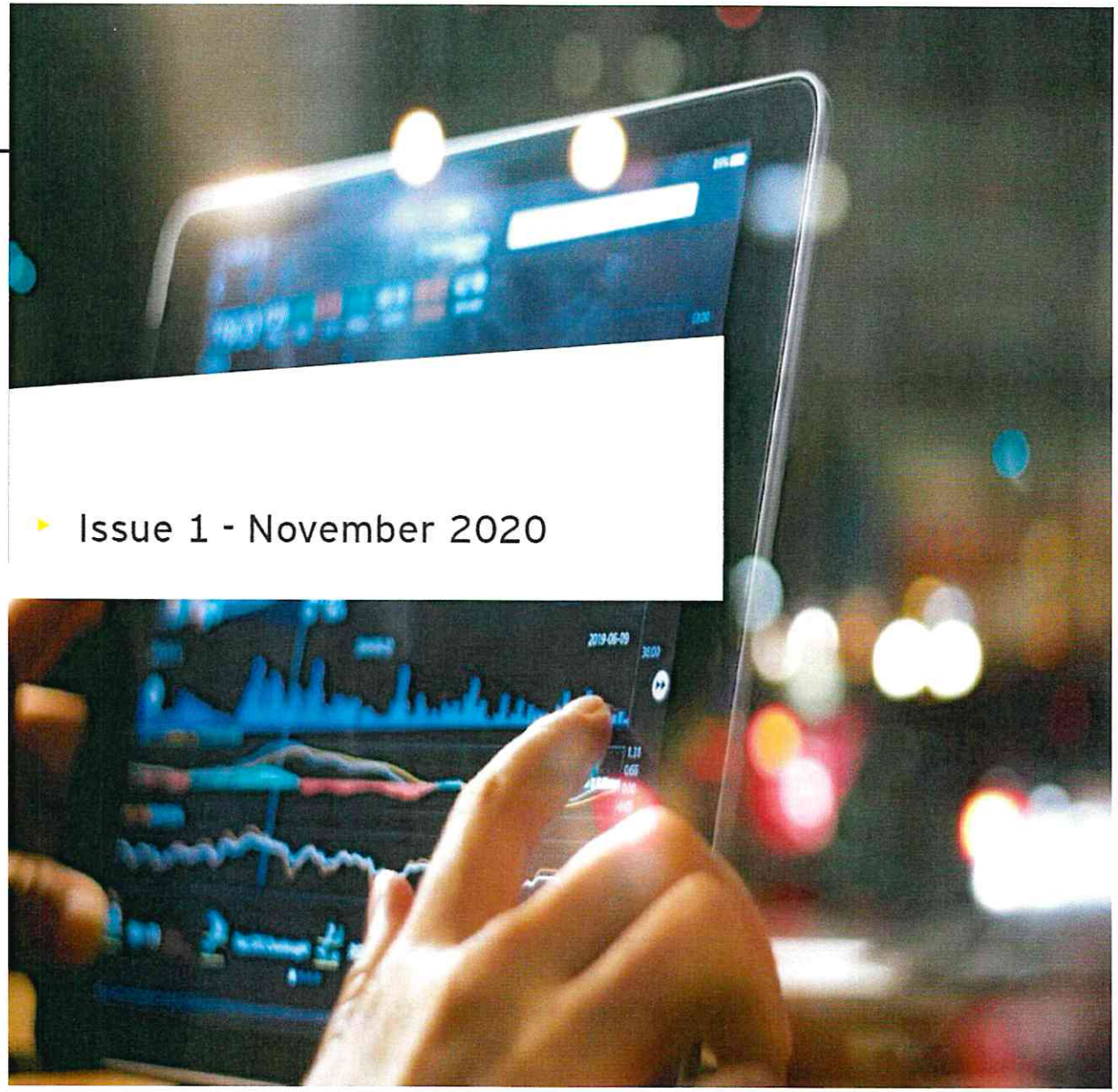
Positivity Rate: 490 contacts made between Sep-Oct resulting in 11 positive tests giving a positivity rate of 2.2%

CIDR:

International Desktop Research

Please see the associated magazine.

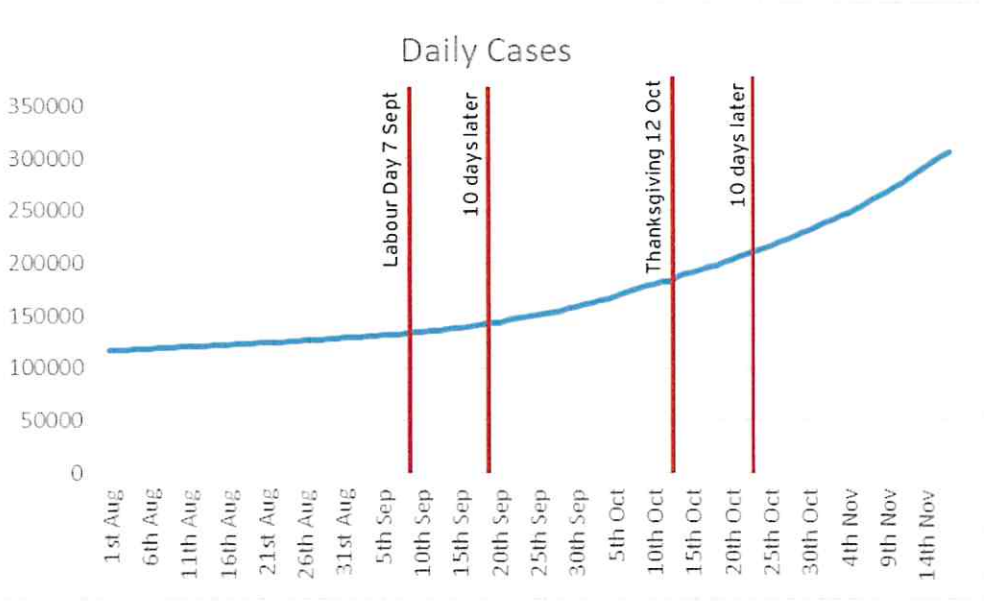
Additional examples are also shown here.



Canadian Thanksgiving: Test & Trace data and case numbers show surge in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first surge in Spring.



Key findings:

- Canada saw a surge in COVID-19 cases in the days and weeks that followed Thanksgiving, the **highest rates** since the first surge in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; **4,109 new daily cases** were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Track & Trace records show that Thanksgiving gatherings directly resulted in **viral spread**
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases **dramatically changed** after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has **doubled** from 155,000 on 28 September to over 310,000 on 18th November
- A similar **spike** is noticed on 17th September, 10 days after **Canadian Labour day** was celebrated

Source: https://health-infobase.canada.ca/covid-19/

US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

RE
TAB
SIM

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.).

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

POI ranked in decreasing order of associated additional cases that would occur if the location is opened

Full-service restaurants (inc bars)

Fitness centres

Religious organisations

Take-out restaurants

Grocery stores

Department stores

Pharmacies

Results

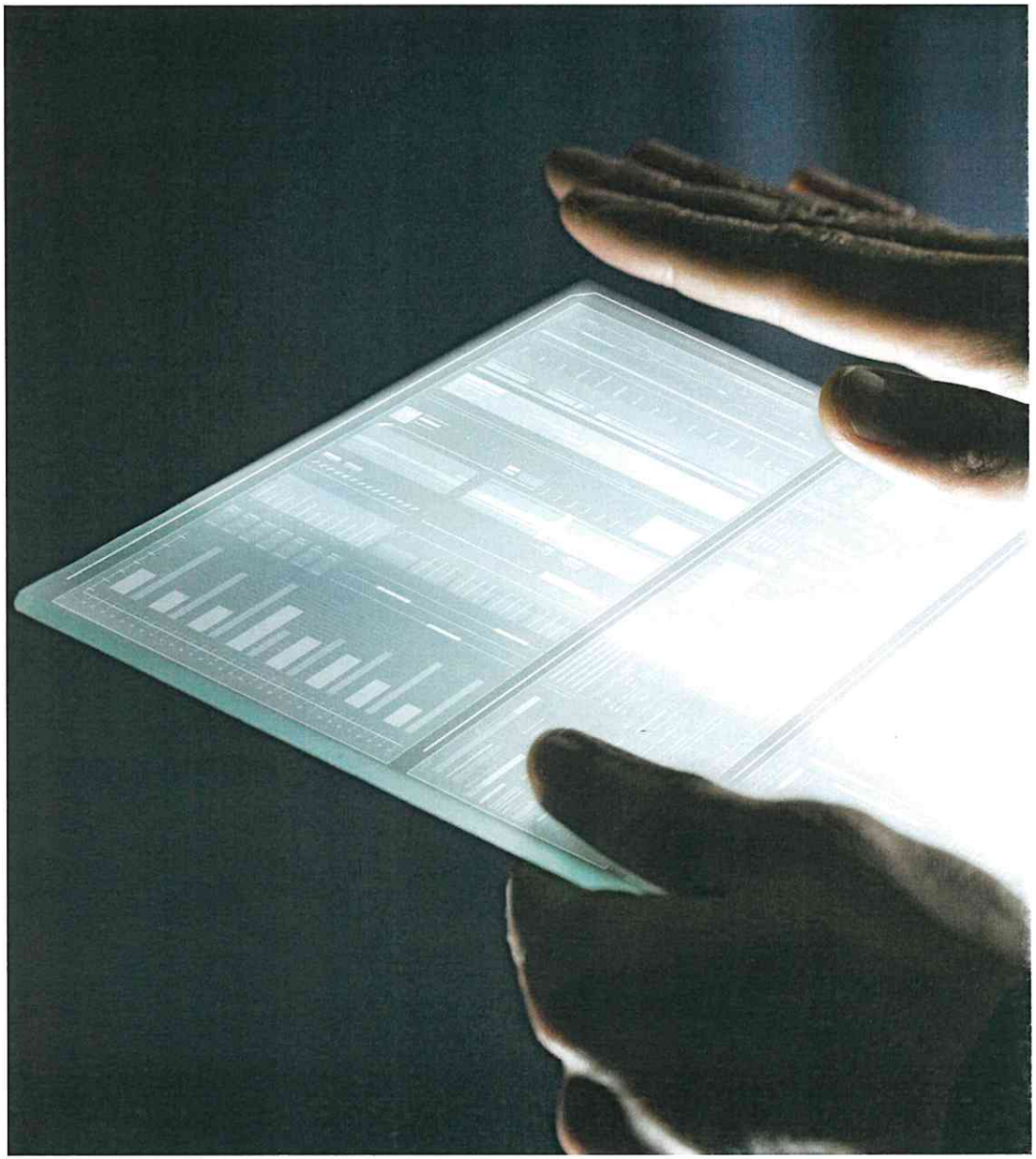
- The Stanford Mobility Network Model Simulation concluded that full-service restaurants followed by fitness centres and religious organisations led to the highest positivity rates based on number of cases per total visits to the location.
- Take-out restaurants, grocery stores, department stores and pharmacies resulted in low positivity rates.
- This pattern was seen in the 3 US cities studied.

Key findings

- The model calculates the additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location.
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy.
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10).
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more.

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html
Note: Calculation of positivity rate using cases generated as a proportion of visits generated

Roadmap for next six weeks



Approach to Christmas monitoring

We will combine a variety of data sources to monitor activity over the Christmas period

Setting	Description	Provided by NPHET (Disease Incidence)		Provided by public sector organisations (activity/compliance)				Newly generated insights (activity/compliance)	
		HSE	CIDR	TII/NTA	Survey	CSO	Gardaí	Mobile data	Payments data
Events	Indoor and outdoor (e.g. concerts, sports events, weddings, funerals)	✓	✓				TBC	✓	
Social/family gatherings	Levels of gatherings in private households	✓	✓					✓	
Retail and services	Levels of activity in retail and other services (e.g. hairdressers)	✓	✓			✓		✓	✓
Workplaces	Attendance at physical workplaces	✓	✓					✓	
Domestic transport and travel	Levels of movement around the country	✓	✓	✓		✓			
Education	Schools, childcare, adult and higher education	✓	✓						
Bars/restaurants	Activity levels in bars and restaurants	✓	✓						✓
Care homes	Residential facilities, assist living and nursing homes	✓	✓						
Sentiment/compliance	Indicators around compliance to restrictions			✓	✓		TBC	✓	
International travel	International travel levels and related disease spread	✓	✓			✓		✓	
Leisure/recreation	Gyms, pools, leisure centres	✓	✓					✓	
Accommodation services	Stays in hotels, guesthouses and B&Bs	✓	✓					✓	✓

Approach overview

- Leverage existing health data from NPHET, curate data from Government agencies and create new insights from additional data sources
- Combine all data to monitor and provide insights on effectiveness and impact of restrictions and behaviours over Christmas
- Leverage insights to inform restriction measures for future planning as well as provide "stories" to help bring to life for the public
- Aggregated and anonymised data only. No personal identifiable data

What will the next six weeks look like?

Data is anonymised and aggregated to LEA or country and by industry type. No personal identifiable information

This week W/c 16 Nov	Week 2 W/c 23/11	Week 3 W/c 30/11	Week 4 W/c 7/12	Week 5 W/c 14/12	Week 6 W/c 21/12
Proposed briefing frequency					
Weekly/ ad-hoc	Weekly / ad-hoc	Weekly / ad-hoc	Daily / ad-hoc	Daily / ad-hoc	Daily / ad-hoc
Insights delivered					
County dashboard	County dashboard	County dashboard	County dashboard	County dashboard	County dashboard
Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers
Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact
Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis
	Transport	Transport	Transport	Transport	Transport
	Facebook survey	Facebook survey	Facebook survey	Facebook survey	Facebook survey
	Spending data	Spending data	Spending data	Spending data	Spending data
		Stay at home index	Stay at home index	Stay at home index	Stay at home index
				Social distance index	Social distance index

Disease monitoring
Restrictions
Compliance
New

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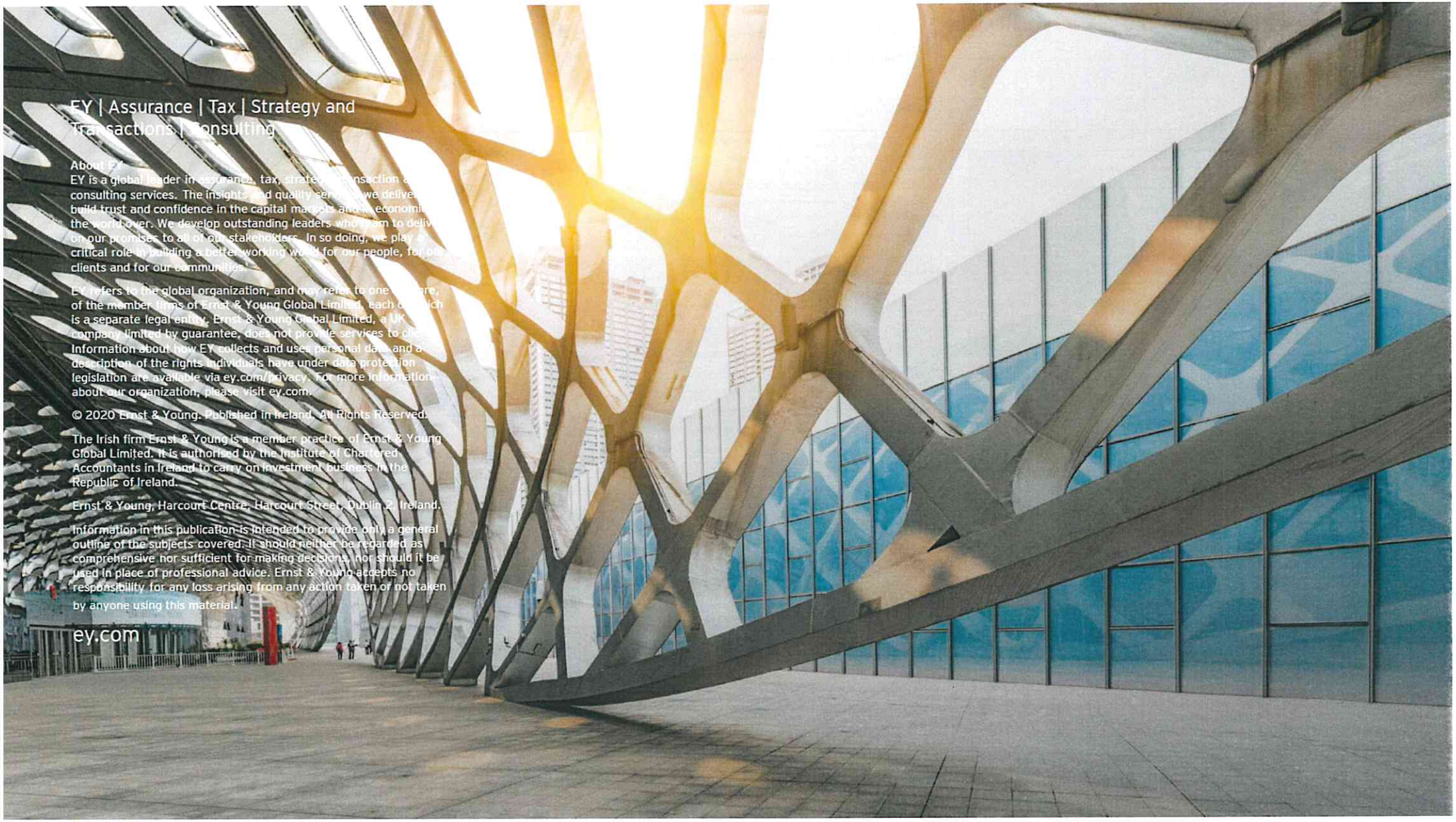

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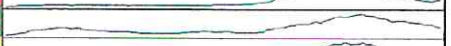
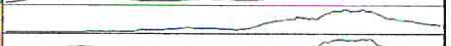
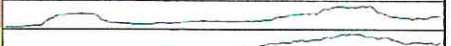
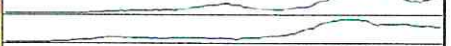
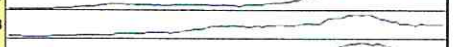
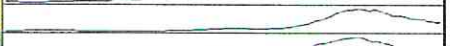
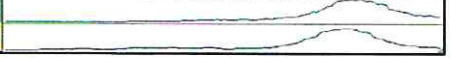
County Analysis Summary

County	Border County	Major Incidence	Dublin and Surrounding Area	Following National Restrictions Trend	Wave One Outbreak Sources	Wave Two Outbreak Sources	Change in 14 day Incidence rate (14/11-17/11)	Wave 2 Incidence rate
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	-0.14	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Instutions	0.1	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	0.06	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Insitutions	-0.08	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	0.13	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	0.01	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	-0.18	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	-0.03	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	-0.08	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	-0.1	
Kerry		✓		✓	Private Houses, Residential Insitutions Hospital	Private House, Community Outbreak, Nursing Home	-0.11	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	0.15	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	-0.09	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	0.17	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	-0.32	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	-0.02	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	0.06	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	-0.05	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	0.05	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	0.05	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	-0.09	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	-0.03	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	-0.04	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	-0.23	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	-0.33	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	-0.07	

*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR

**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Wave 1: 03/03-25/07 Wave 2: 26/07-20/11

Summary of 14 day incidence rate per 100k

UPDATE FOR NEW DATA

The below heatmap shows the county incident rate per capital over the last two months. The overall reduction in cases has levelled in the week with some counties now increasing.

| Two Weekly Incidence Rate Per 100k | 17-Sep | 18-Sep | 19-Sep | 20-Sep | 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | Change Last 3 Days |
|---|---|---

County view - Roscommon (20/11)

ACTION
Add national average and make title consistent

Total Confirmed Cases

925

Trend vs. National

ACTION
Add trend vs national

Roscommon profile:

- Roscommon experienced a lower 14 day disease incidence rate per 100k during second wave than the national average. However, this changed in recent days with Roscommon rising above the national rate in mid-November

Summary analysis:

- The main driver of outbreaks within the county since the start of November are those seeded in nursing homes - representing 64%. Private house outbreaks make up a significant portion of remaining outbreaks, at 33% of new outbreaks
- An earlier increase was seen in Athlone LEA-6 in the week following the football final held 20 September. The winning team was located in this LEA. However other events coincided with this date including the reopening of wet pubs

Restrictions impact:

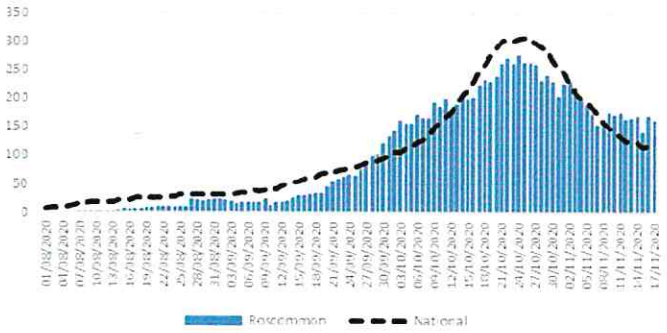
- Level 3 (max) restrictions put in place as of 16 October can be seen to align with a reduction in incidence rate ten days later
- In some instances, this reduction can be seen to accelerate again with the introduction of level 5 restrictions on 22 October (Athlone LEA-5, Roscommon LEA-6, Boyle LEA-6)

Employment summary

- Roscommon had c.37% of its workforce on PUP or TWSS (11k) at the peak in early May (EY 2019 employment estimates). There are currently 3k on PUP (17 Nov) which is down from 7k in May (CSO, DSP)

Notes
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

14 Day Incidence Rate per 100k vs National



Breakdown by LEA

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is made available publicly

Since the 1st of September

557 cases, with 68% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	194	78
Nursing home	82	5
Extended family	30	5
[redacted]	[redacted]	[redacted]
Workplace	14	8

Notable events	Date	No. of cases
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Extended family	09/10/2020	18
[redacted]	[redacted]	[redacted]
Private house	14/10/2020	7

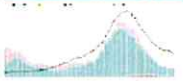
ACTION
Replace with Eve employment / econometric stuff

County View - Laois, Offaly and Kildare (17/11)

Total Confirmed Cases

6,248

Trend vs. National



Laois, Offaly and Kildare profile:

- TBC using updated graph

Summary analysis:

- Increasing case number trend emerges in July
- Outbreaks concentrated in food and meat processing plants
- Highest numbers in Offaly in Edenderry (93 of 103 cases) in two weeks preceding 17 August, with Kildare largely focused in Athy/Kildare (129/151 of 437)

Restrictions impact:

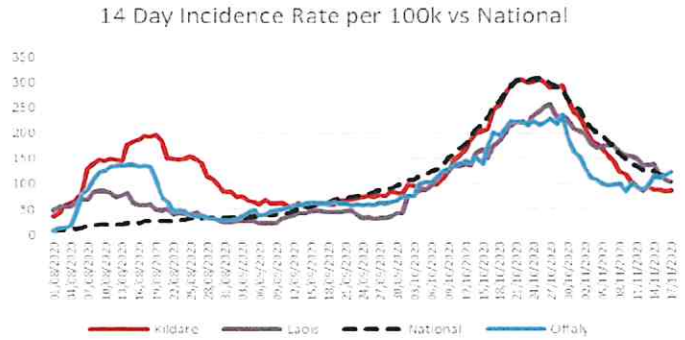
- County lockdowns for Laois, Offaly and Kildare from 8 August
- Offaly and Laois leave lockdown on 21 August and the following week cases begin to rise in Laois with minimal decrease in Offaly – note Laois had relatively few cases prior to lockdown
- Kildare lockdown extended for an additional 10 days
- Case numbers fall, however prevalence appears to shift from the south and middle of the county (Athy. Kildare Town and Newbridge) to the north of the county (Naas, Maynooth and Celbridge)
- As cases increase in North Kildare from October, a similar trajectory of case growth appears in Dublin West

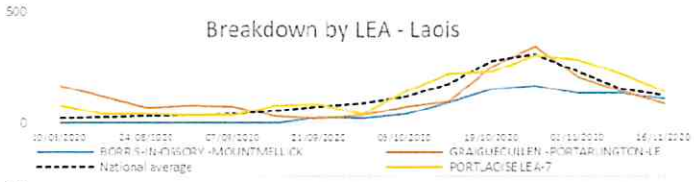
Employment summary

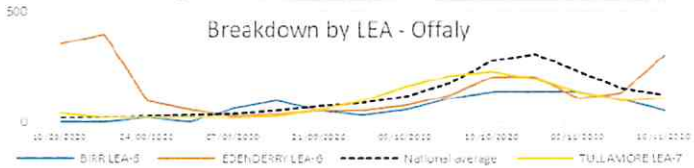
- These counties had c.40% of their combined workforce on PUP or TWSS (c.73k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain significantly lower than peak (24k versus 44k) (CSO, DSP).

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or







Since the 1st of September

2,859 cases, with 57% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	870	342
Nursing home	216	13
Hospital	162	16
School	84	23
Extended family	81	13

Notable events	Date	No. of cases
Nursing home	[redacted]	52
Hospital	[redacted]	49
Nursing home	[redacted]	46
Nursing home	[redacted]	38
Nursing home	[redacted]	38

ACTION
Replace with Eve employment / econometric stuff

County view - Waterford (20/11

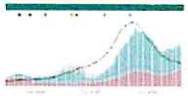
ACTION
Add national

Source ?

Total Confirmed Cases

975

Trend vs. National



Waterford profile:

- Waterford experienced a lower 14 day disease incidence rate per 100k during second wave than the national average. However, this changed in recent days with Waterford rising above the national rate in mid-November

Summary analysis:

- Cases rose in early September in Waterford City East, South and Tramore-Waterford City West. There was a meat factory outbreak around this time resulting in 50 cases
- Workplace outbreaks have been prominent in Waterford, making up 30% of outbreak-related cases in November, with the largest resulting in 24 cases
- Private households make up another 63% of outbreak-related cases during this period
- Outbreaks in September and October were both driven by cases occurring in Waterford city. Unlike other counties, these do not seem to spread throughout Waterford to the same degree, with LEAs outside Waterford City maintaining lower cases compared to national levels

Restrictions impact:

- Cases stabilised in the ten days after Level 3 restrictions came into effect
- While falling steadily throughout November, cases began to rise again towards the middle of the month

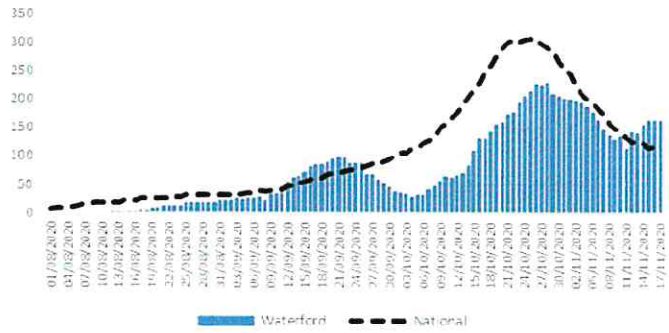
ACTION
Move top right Trend vs National ave here

UP or

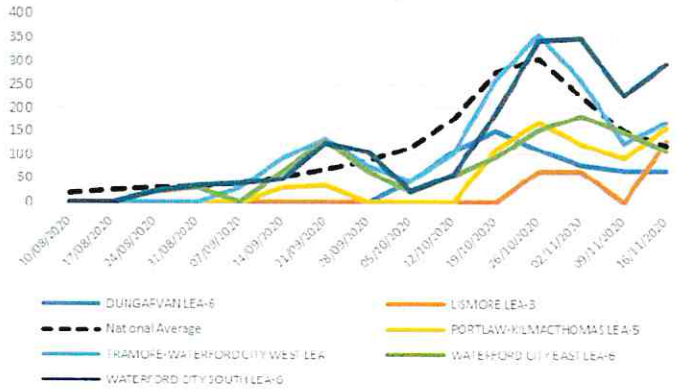
urrently 8k on
ay (CSO,

Notes
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

14 Day Incidence Rate per 100k vs National



Breakdown by LEA



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is made available publicly

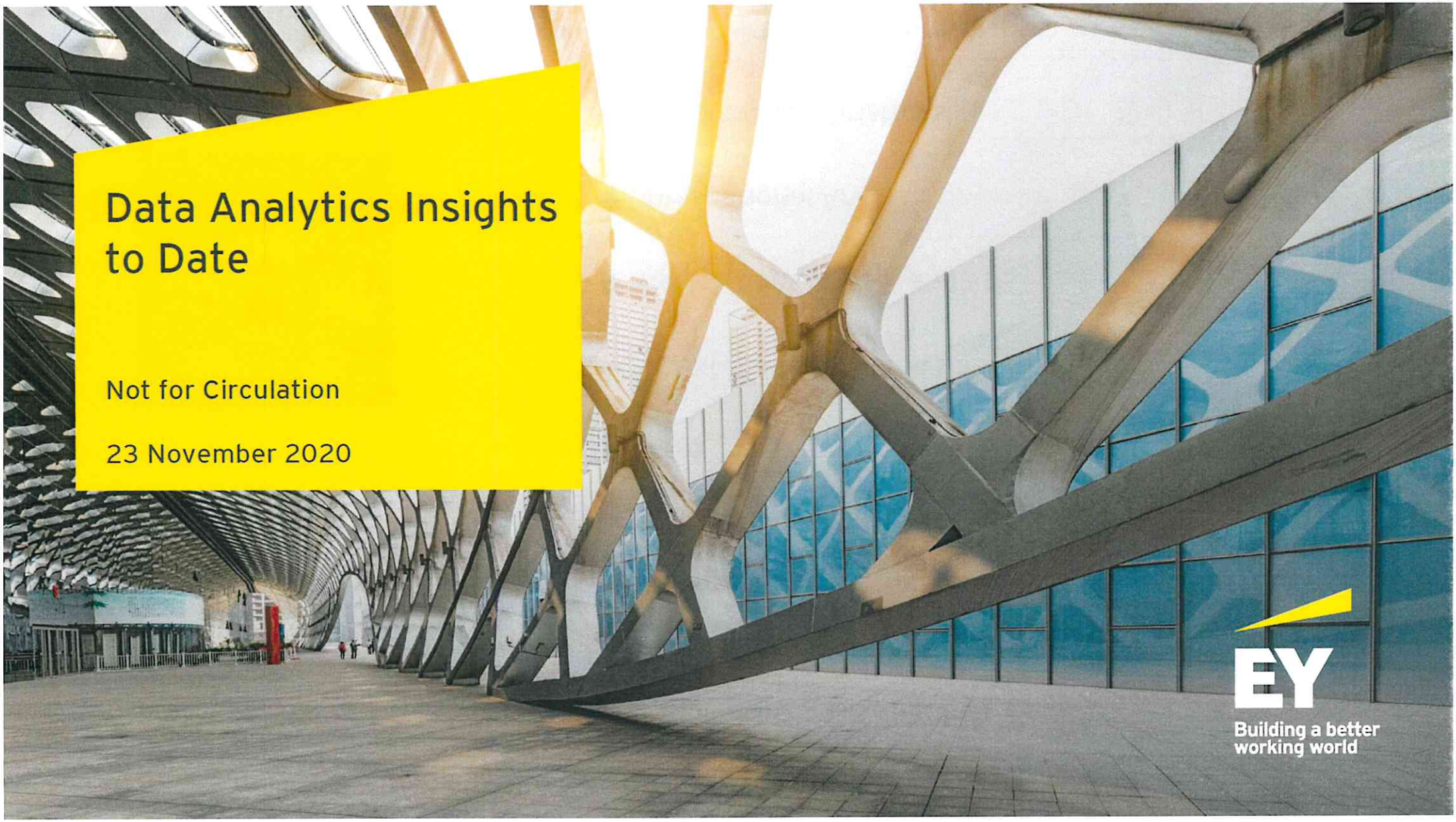
Since the 1st of September

777 cases, with 63% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	329	135
Workplace	84	8
Community outbreak	20	2
Other	12	2
Extended family	11	3

Notable events	Date	No. of cases
Workplace	04/09/2020	49
Workplace	03/11/2020	21
Community outbreak	02/10/2020	16
Private house	09/09/2020	10
Other	28/10/2020	9

ACTION
Replace with Eve employment / econometric stuff


Data Analytics Insights to Date
Not for Circulation
23 November 2020
EY
Building a better working world

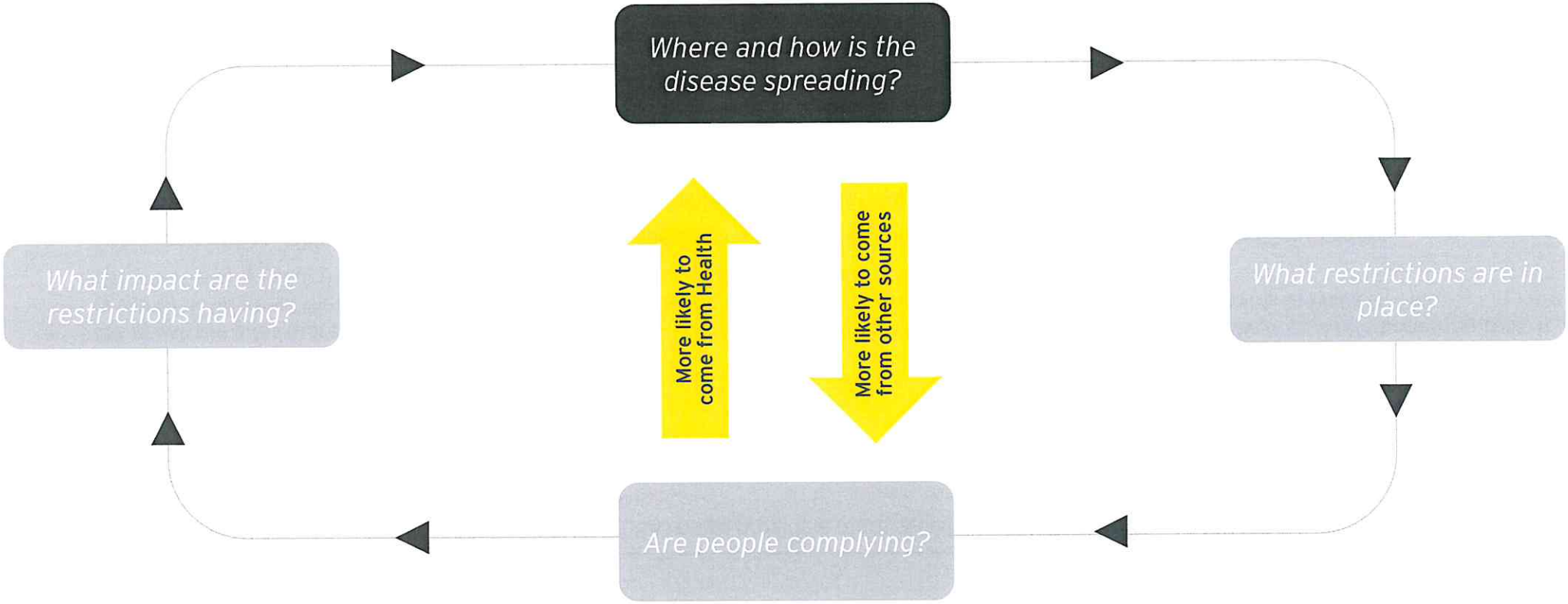
Update - Week 6

Agenda

- Intro
- County Specific Analysis
- Restrictions Impact analysis
- International Analysis
- Roadmap to Christmas

Answering four key questions to support government decision making

Helping improve visibility and decision making by combining and analysing data across government



Summary of initial findings

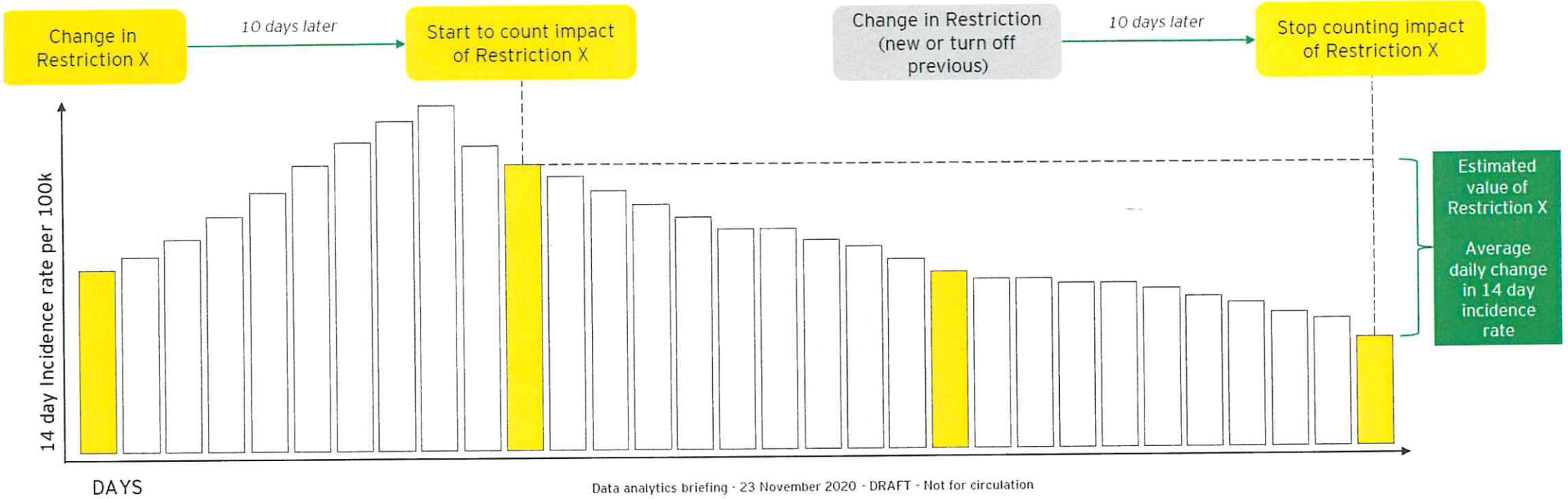
- Extending county analysis to Local Electoral Areas (LEA) helps provide a more specific understanding of what is happening in each county. These profiles can broadly be categorised as follows:
    1. Significant known outbreak event(s)
    2. Proximity to the border
    3. Following the national profile
    4. Proximity to and scale of Dublin
- We now have a far more expansive testing regime. This means that it is difficult to directly compare Wave 1 and Wave 2. While accepting that, it is worth noting that there was a shift in outbreaks from being led by Nursing Homes in Wave 1 to Private Households in Wave 2. This contributes to a reduction of 15 years in the median age of cases from Wave 1 to Wave 2 (Source: CSO)
- Social gatherings, citizen congregations, alcohol and specific local events all appeared to have contributed to Wave 2 outbreaks
- Level 3 appears to have only started to reduce actual cases following the introduction of further household restrictions (Level 3 Max) from mid-October
- Wet pubs opened in all counties except Dublin in late September. There was an accelerated increase in the 14 day disease incidence rate per 100k 10 days later in most counties. This increase was not seen to the same extent in Dublin
- The LEAs containing University College Cork (UCC) and National University of Ireland Galway (NUIG) both saw higher case increases than the rest of their county when the universities opened. This difference was reduced when the universities went online. Wet pubs also opened in both cities on the same week that universities opened
- The northern counties, and especially LEAs on the border, do appear to be impacted by proximity to the border. Donegal is not seeing significant reductions with Level 4 that was seen in other border counties. The introduction of Level 4 in Donegal coincided with a reduction in mask wearing (facebook survey data), which goes against national trends
- The reopening of construction, non-essential retail and the wider Phase 3 changes during the summer do not appear to have had a material impact on the 14 day disease incidence rate per 100k nationally or in larger counties

Source: Median Age June 5th: 48 (CSO COVID-19 Deaths and Cases Series 4) - https://www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries4/
Median Age for week ending 30th October: 33 (CSO COVID-19 Deaths and Cases Series 15) - https://www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries15/

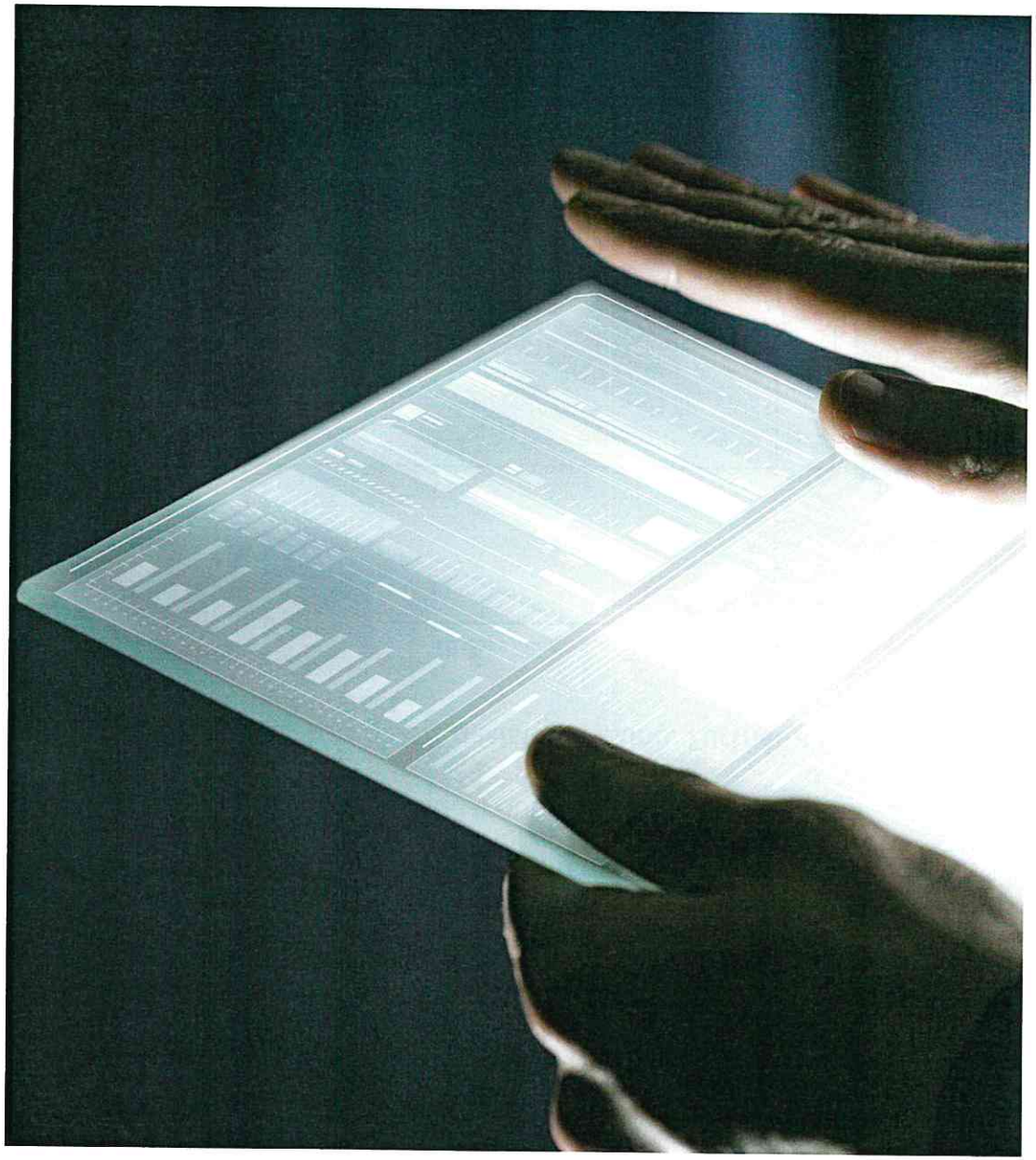
Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There have been relatively few changes in restrictions, which generally combine more than one change at a time, therefore hiding the unit value per restriction. There is also a time lag between a restriction change and the impact being seen. However, it is also clearly important that restrictions decisions are made with the maximum understanding of the impact. Hence, we have used the below methodology to initially quantify the impact of changes in restrictions. This calculation has been applied across counties. The outputs should be seen as directionally useful, rather than precise statistical outputs. It should be noted that this does not measure compliance or behavioural aspects related to restrictions.

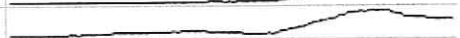
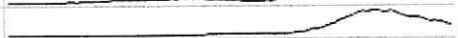
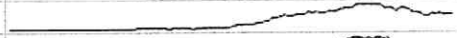
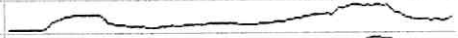
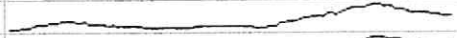
They are also presented alongside international academic research to provide a broad view to support decision-making. Further analysis has commenced to enhance the measurement of correlation between restrictions and their impact.



County specific analysis



County Analysis Summary

County	Border county	Known outbreaks	Dublin and surrounding area	Following national restrictions trend	Wave One – main outbreak sources	Wave Two – main outbreak sources	14 day incidence rate per 100k (26/07 – 17/11)
Kerry		✓		✓	Private Houses, Residential Institutions, Hospital	Private House, Community Outbreak, Nursing Home	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	
Longford*		✓			Workplace, Nursing Home, Hospital	Private House, Nursing Home, Workplace	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Institutions	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	

Source: Outbreak sources – CIDR, Incidence rate –based on daily cumulative case data published on GeoHive to 17 November 2020.
This data is published daily. Note: Wave one defined as 03/03-25/07; Wave 2 is 26/07-20/11
*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR
**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Summary of county-level 14 day incidence rate per 100k

The heatmap below shows the 14 day incidence rate per 100k population for each county over the last two months. The overall reduction in cases has levelled to 17/11, with some county incidence rates increasing.

| Two Weekly Incidence Rate Per 100k | Population | 20-Sep | 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | Change Last 3 Days |
|---|---|---

Summary of Restriction Impact

The below heatmap shows the average daily impact in 14 day incidence rate per 100k for each change in restrictions. Note the absolute number of weekly tests has significantly increased since Wave 1.

	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	19/09/2020	21/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Average daily change in the 14 day incidence rate per 100k	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Construction Opened	Mandatory PUP	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown lifted Laois + Offaly, Kildare extended	Schools + childcare opened	Level 3 Dublin	Wet Bars Opened except Dublin	Level 3 Donegal	Level 3 National	Level 3 Mix National	Level 4 Donegal, Cavan, Monaghan	Level 5 National
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-14
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-28
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-10
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-14
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	4	-2		0	-15
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	2	2		4	-6		-11
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-14
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-10
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-12
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-7
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		2	-10		-10
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-5
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-13
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-11
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-15
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-12
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-22
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-13
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		-3	-9		-8
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-11
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-17
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-6
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-10
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-19
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-9
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-6

Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. Measures the average daily change in the 14 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

Cavan's three LEAs follow a different path. One is being driven by outbreaks, one impacted by the border and one more aligned with the national trend

Cavan profile:

- Cavan has experienced a higher 14 day disease incidence rate per 100k during the second wave than the national average
- Part of Cavan borders with NI where different restrictions are in place

Summary analysis:

- Cavan-Belturbet LEA is the only part of Cavan with a NI border. This LEA is experiencing a higher disease incidence than the national average
- Ballyjamesduff LEA has the highest incidence rate. The timing of the acceleration of growth rate in this LEA appears to correlate with reports of celebrations and 'lock ins' for Crosserlough county final win
- Levels of private house outbreaks rose during September and October
- [redacted]
- Travel along the Belturbet by-pass fell 33% during October (Source TII Road Travel data)

Restriction impact:

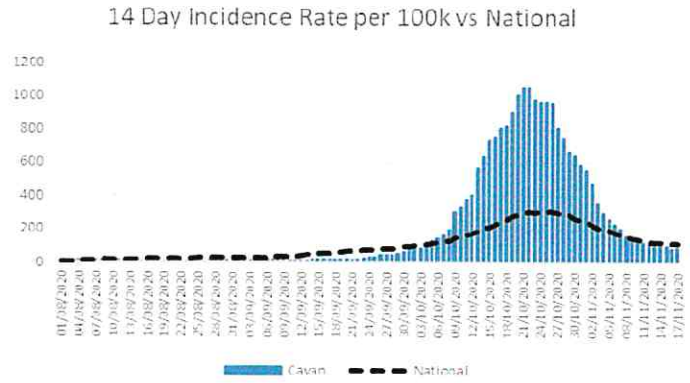
- The timing of the growth of cases appears to correlate with the events listed above and changes to restrictions in wet pubs
- Level 4 restrictions imposed for the border counties appears to have desired impact of reducing incidence level in Cavan
- Level 5 restrictions continue to drive incidence level further

Employment Summary:

- Cavan had c.47% of its workforce on PUP or TWSS (15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP (17 Nov) which is down from 9.7k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

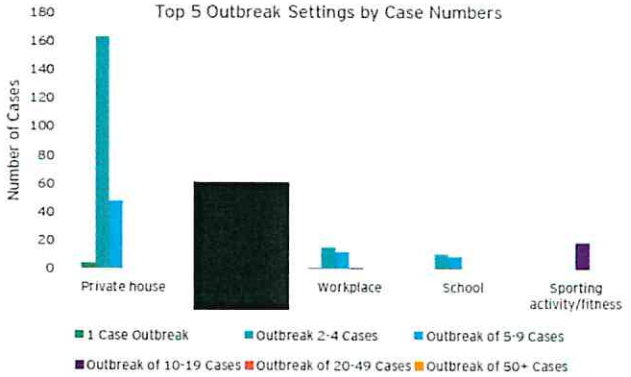
Cases	
1,272	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
32%	3.6

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	215	72
[redacted]	[redacted]	[redacted]
Workplace	29	12
School	20	7
Sporting activity/fitness	19	1

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Sporting activity/fitness	04/10/2020	19
Community outbreak	07/10/2020	16
[redacted]	[redacted]	[redacted]
Private house	13/10/2020	7



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Meath is seeing a higher incidence rate than the national average. This is influenced by proximity to Dublin and specific outbreak events

Meath profile:

- Meath has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Dublin borders including a significant commuter population

Summary analysis:

- Ratoath LEA has the highest incidence rate. The timing of the acceleration of growth rate appears to correlate with reports of celebrations for Ratoath county final win (Source: GAA.ie)
- Level of private house outbreaks during September and October grew
- Continued outbreaks in nursing homes, one significant outbreak of 51 cases [redacted]
- One significant community outbreak of 29 cases

Restriction impact:

- The timing of the growth of cases appears to correlate with the events listed above and the changes to restrictions in wet pubs
- Incidence level continued to rise post initial Level 3 restrictions imposed nationally
- Level 3 (max) restrictions imposed nationally appear to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level down further

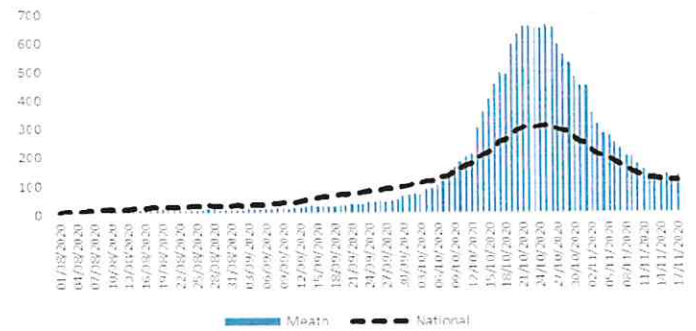
Employment summary

- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (13k versus 25k) levels (CSO, DSP)

Notes

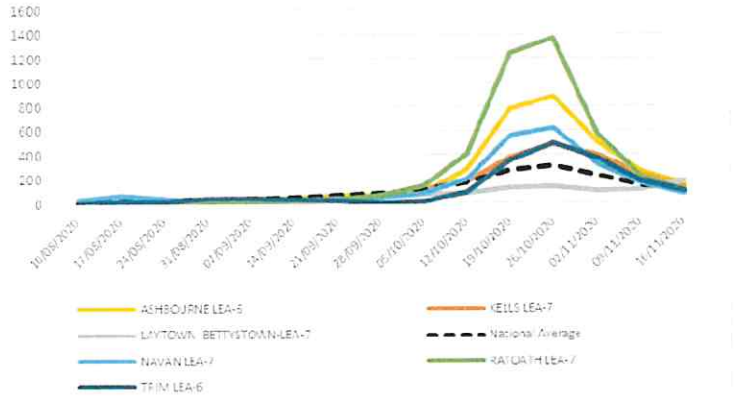
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

14 Day Incidence Rate per 100k vs National



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Breakdown by LEA



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,466

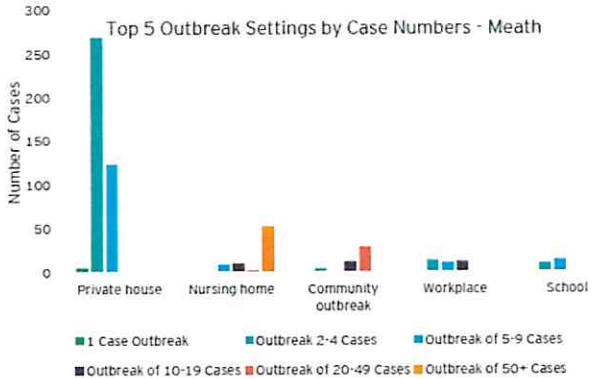
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
27%	3.3

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	397	121
Nursing home	74	9
Community outbreak	45	4
Workplace	38	18
School	25	10

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Nursing home	[redacted]	51
Community outbreak	10/10/2020	29
Community outbreak	13/10/2020	12
Workplace	19/10/2020	11
Nursing home	[redacted]	10



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

The border is contributing to Donegal's higher rate of cases. Donegal is not seeing the benefit of recent Level 4 increases seen in other border counties

Donegal profile:

- Donegal has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Disease incidence higher and earlier versus national average, and reducing at a slower rate
- Eastern Donegal borders with NI where different restrictions are in place

Summary analysis:

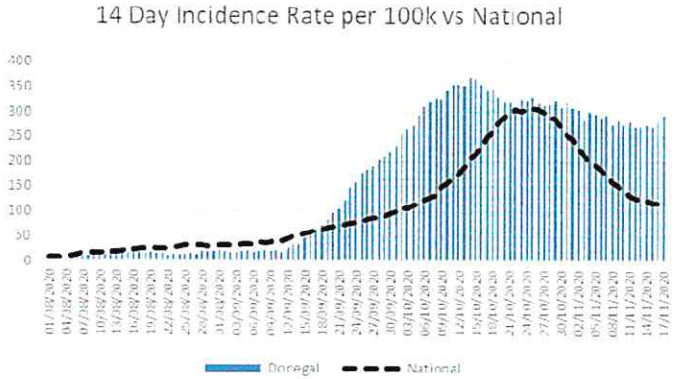
- Lifford and Stranolar LEA close to the NI border with Derry, experienced an earlier and higher disease incidence
- Other eastern parts of Donegal (Buncrana, Letterkenny and Carndonagh) have the next highest incidence rates
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted] (Source: Donegal Daily)
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November

Restriction impact:

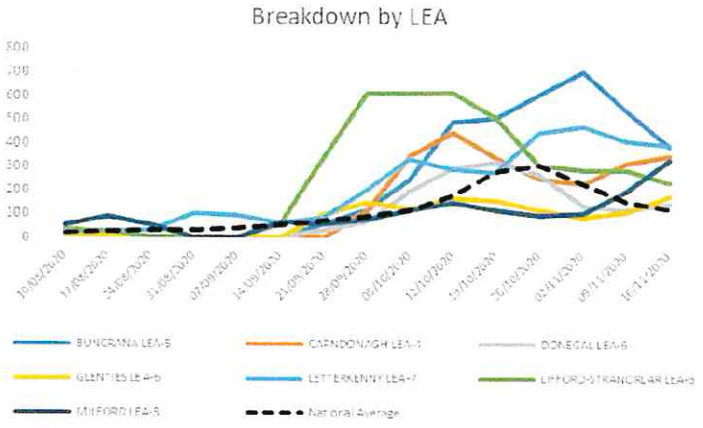
- Disease incidence continued to rise after level 3 Donegal announcement
- Specific restrictions in NI (1/10) on bars and restaurants appeared to have had impact
- Despite level 3 max and level 5 being effective in other counties, cases in Donegal continue to decline at a far lower rate compared to national levels
- Similarly, Level 4 reduced the cases in Monaghan and Cavan, but not Donegal. Mask compliance in Donegal also reduced (against national and previous Donegal trend) with Level 4 restrictions (based on Facebook survey data)

Employment summary

- Donegal had c.49% of its workforce on PUP or TWSS (30k) at the peak in early May (EY 2019 employment estimates) . The numbers currently on PUP (17 Nov) remain lower than peak (12k versus 23k) (CSO, DSP)



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,165

% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
62%	3.9

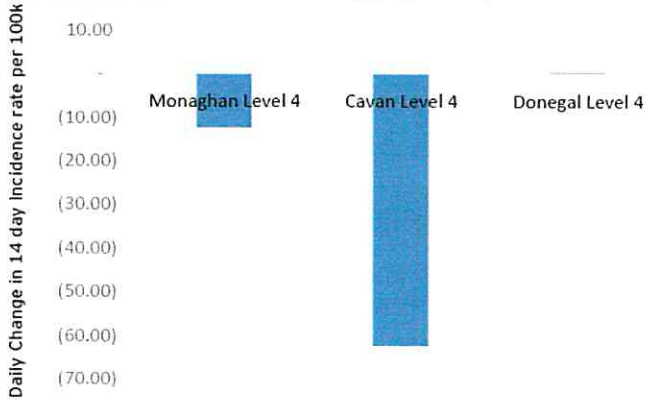
Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	651	235
Workplace	159	28
Hospital	126	5
Extended family	118	19
Nursing home	58	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Hospital	[redacted]	99
Workplace	23/09/2020	55
Nursing home	[redacted]	49
Social gathering	24/10/2020	20
Hospital	[redacted]	17

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.



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Cork is broadly aligned with the national trend. Cork City is driving up the incidence rates across the county

Cork profile:

- Cork is broadly aligned with the national average for the 14 day disease incidence rate per 100k during second wave

Summary analysis:

- Cork City is the most impacted area, with the rest of the county following with a reduced incident rate
- Cases in Cork City South Central, the LEA containing UCC (started on 21/28 Sept for continuing/new students respectively), were twice as high as other LEAs in Cork city during mid October. This gap declines in November as the universities went online

Restriction impact:

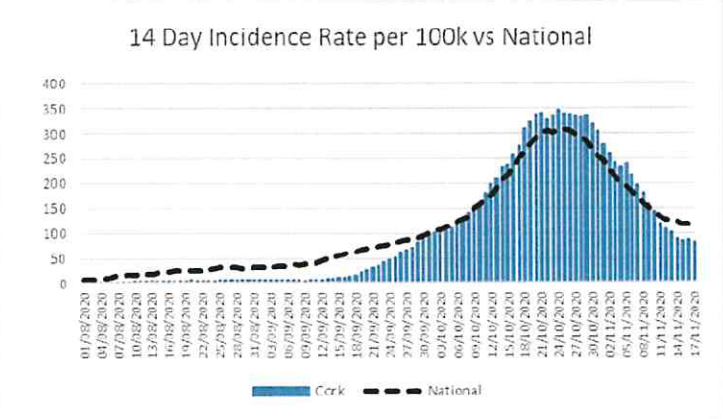
- Cases in Cork city rose as wet pubs reopened (21 Sept). Cases around the rest of the county followed shortly after
- There were a number of GAA games in early October, which were linked with outbreaks. No matches occurred after this, with level 3 restrictions being applied around this time (6 Oct). Cases throughout Cork began to fall 10 days later

Employment summary:

- At peak, c.39% of Cork's workforce were on PUP or TWSS (96k) (EY 2019 employment estimates). Current PUP levels (17 Nov) are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
4,492

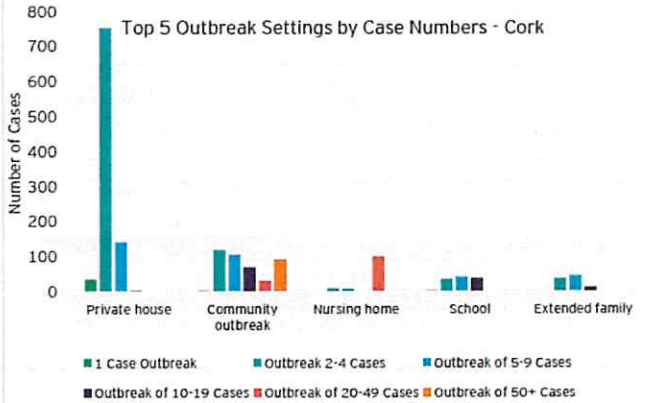
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	3.7

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	929	354
Community outbreak	411	67
Nursing home	114	9
School	113	24
Extended family	90	22

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	26/10/2020	68
Nursing home	[redacted]	46
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	30
Community outbreak	22/09/2020	29



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Galway rose above the national average during the second wave, driven by Galway City Central and Connemara South LEAs

Galway profile:

- Galway experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- It has now come back down below national average levels since early November

Summary analysis:

- Galway City Central, Connemara South and Galway City East have had the highest 14-day incidence rates throughout October
- A number of key events occurred in late September which could have contributed to this increase
- Cases within Galway City Central LEA appear to have increased in this period following students returning to NUIG from 21 September
- GAA senior championship football semi-finals and finals also occurred in the last week of September and first week of October. Connemara South, which is the home of the GAA SFC champions, had a confirmed outbreak in mid-October
- Throughout November, private household cases were responsible for 49% of outbreak cases, with the [redacted] and community outbreaks making up a large proportion of the remaining percentage

Restriction impact:

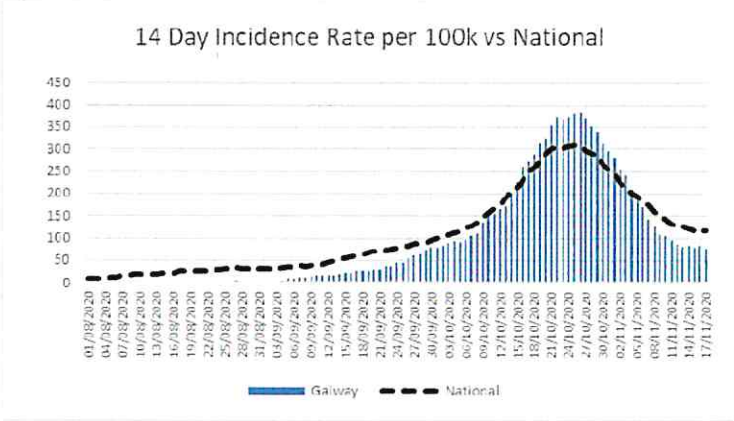
- Cases begin to decline ten days after the national level 3 lockdown came into effect (17/10), falling below national levels in November
- An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

Employment summary

- Galway had c.39% of its workforce on PUP or TWSS (49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP (17 Nov) which is down from 32.5k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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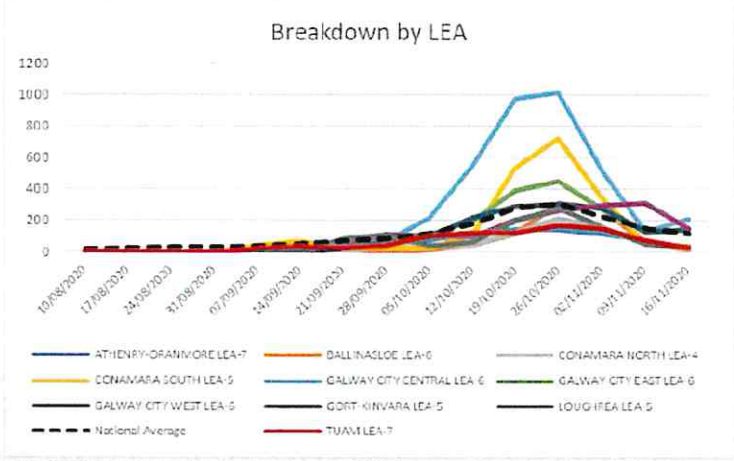


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,060

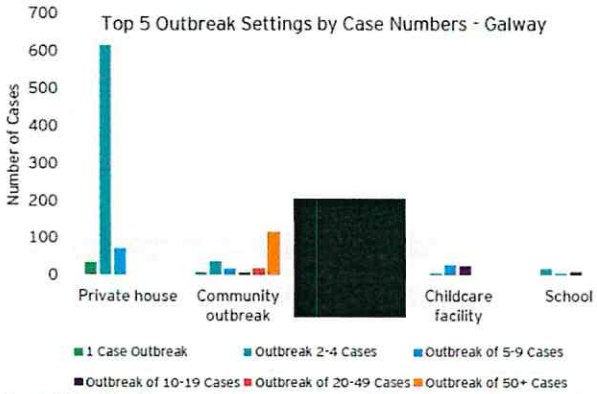
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
66%	3.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	723	293
Community outbreak	207	30
[redacted]	[redacted]	[redacted]
Childcare facility	61	8
School	37	11

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	24/09/2020	114
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Social gathering	19/09/2020	20
Community outbreak	25/09/2020	18



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Dublin – local authority breakdowns over time

The below heatmap shows the Dublin LEA 14 day incidence rate per 100k population since early August. Some areas are seeing higher incidence rates.

		10/08/2020	17/08/2020	24/08/2020	31/08/2020	07/09/2020	14/09/2020	21/09/2020	28/09/2020	05/10/2020	12/10/2020	19/10/2020	26/10/2020	02/11/2020	09/11/2020	16/11/2020
Dublin City	ARTANE-WHITEHALL LEA-6	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9	111.4
	BALLYFERMOT-DRIMNAGH LEA-5	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	191	143.3
	BALLYMUN-FINGLAS LEA-6	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7	221.8
	CABRA-GLASNEVIN LEA-7	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	160.3	138.1
	CLONTARF LEA-6	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	114.4	73.8
	DONAGHMEDE LEA-5	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7	89
	KIMMAGE-RATHMINES LEA-6	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188	123.5
	NORTH INNER CITY LEA-7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	121	84.9
	PEMBROKE LEA-5	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	88	59.4
	SOUTH EAST INNER CITY LEA-5	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7	133
	SOUTH WEST INNER CITY LEA-5	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1	186.6
Dun Laoghaire - Rathdown	BLACKROCK LEA-6	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2	68.2
	DUN LAOGHAIRE LEA-7	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	76.9	72.1
	DUNDRUM LEA-7	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	66.8	80.1
	GLENCULLEN-SANDYFORD LEA-7	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3	68.3
	KILTINEY-SHANKILL LEA-7	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	44.6	52.5
	STILLORGAN LEA-6	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8	101.6
Fingal	BALBRIGGAN LEA-5	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2	109.4
	BLANCHARDSTOWN-MULHUDDART LEA-5	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	266.2	147.3
	CASTLEKNOCK LEA-6	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	297	199.5	130.1	114.9
	HOWTH-MALAHIDE LEA-7	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9	92.6
	ONGAR LEA-5	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7	134
	RUSH-LUSK LEA-5	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2	43.3
	SWORDS LEA-7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	245.3	295.9	371.8	288.1	140.2
South Dublin	CLONDALKIN LEA-7	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	212.8	180.6
	FIRHOUSE-BOHERNABREENA LEA-5	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8	102.3
	LUCAN LEA-5	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6	122.7
	PALMERSTOWN-FONTHILL LEA-5	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1	165.6
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7	112.7
	TALLAGHT CENTRAL LEA-6	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	168.9	134.2
	TALLAGHT-SOUTH LEA-5	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	304.5	251

There appears to be a correlation between areas hit hard in Wave 1 and Wave 2 (acknowledging differences in testing criteria), with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin and Artane-Whitehall.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Dublin includes over a quarter of Ireland's population. It therefore includes many stories and strongly aligns with national case levels

Dublin profile:

- Not surprisingly, Dublin's 14 day disease incidence rate per 100k during second wave is in line with the national average
- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire-Rathdown seeing lower overall incidence

Summary analysis:

- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Restriction analysis:

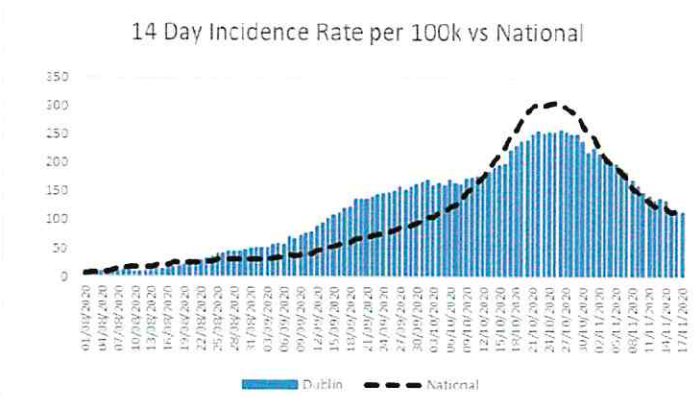
- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases
- Not opening the wet pubs does appear to have helped Dublin with the subsequent increase in cases being slower than the national average

Employment summary:

- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k (17 Nov) , compared to a peak of 176k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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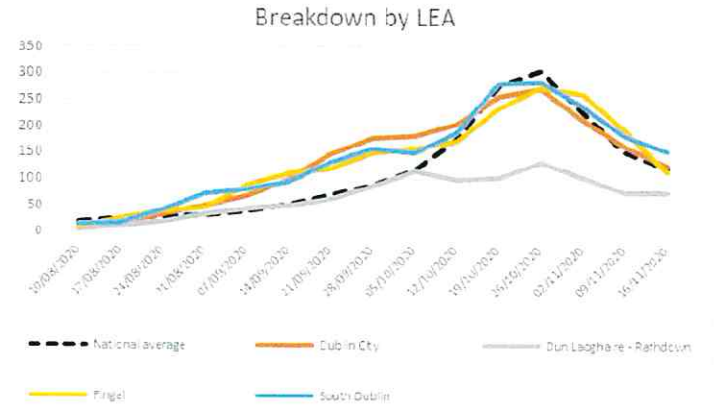


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

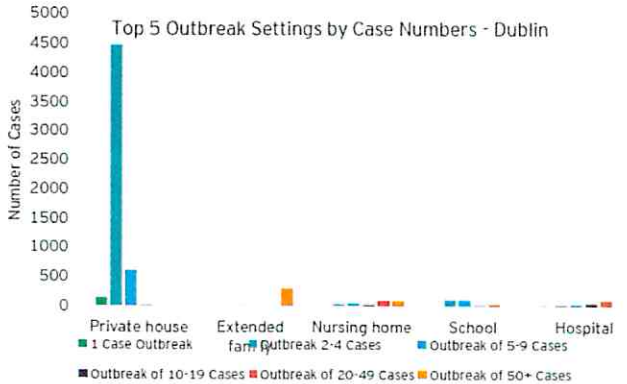
Cases	
12,606	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
56%	2.9

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	5225	2075
Extended family	291	3
Nursing home	266	27
School	249	66
Hospital	192	30

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	24/09/2020	288
Nursing home	[redacted]	75
Hotel	12/09/2020	38
Childcare facility	20/10/2020	38
Residential institution	02/10/2020	30



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Cases in Limerick during Sept and Oct were driven by very large extended family and community outbreaks

Limerick profile:

- Limerick has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average.
- This is a result of the cases in Limerick not declining to the same extend in the rest of the country

Summary analysis:

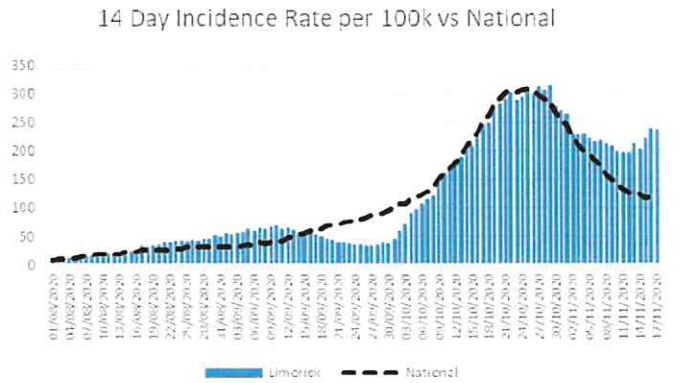
- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November. Both are close to Listowel in Kerry, which experienced the highest incidence levels in that county
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others – the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

Employment summary:

- Limerick had c.43% of its workforce on PUP or TWSS (34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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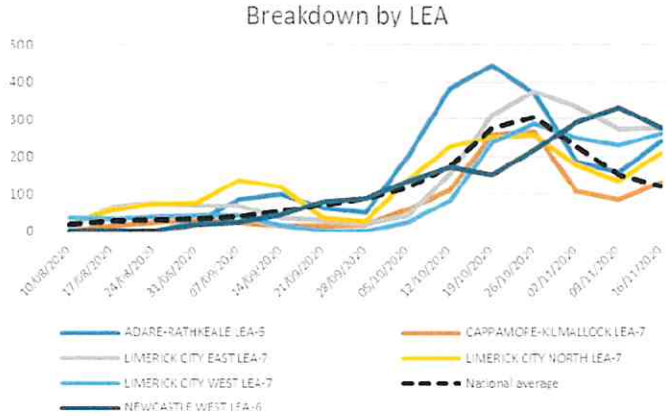


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
1,771

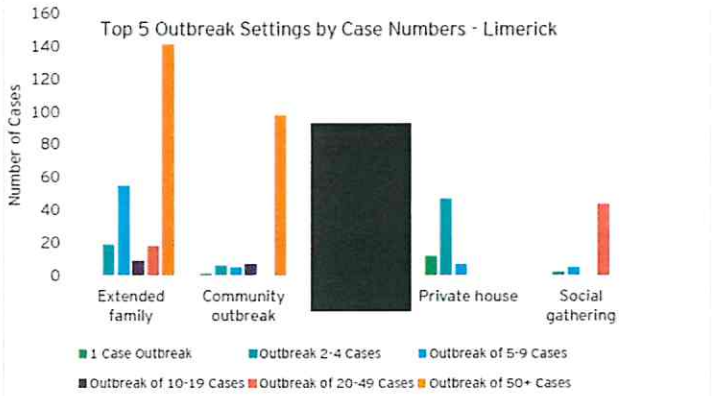
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
39%	6.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Extended family	242	19
Community outbreak	117	8
[redacted]	[redacted]	[redacted]
Private house	66	34
Social gathering	51	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	23/09/2020	141
Community outbreak	08/10/2020	94
[redacted]	[redacted]	[redacted]
Residential institution	13/10/2020	31
Social gathering	15/10/2020	25



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Kerry is seeing lower cases than the national average, with Listowel bordering Limerick having the highest number of recent cases

Kerry profile:

- Kerry has experienced a similar 14 day disease incidence rate per 100k during second wave to the national average. However, Listowel LEA has seen a sharp increase in its rate since early October

Summary analysis:

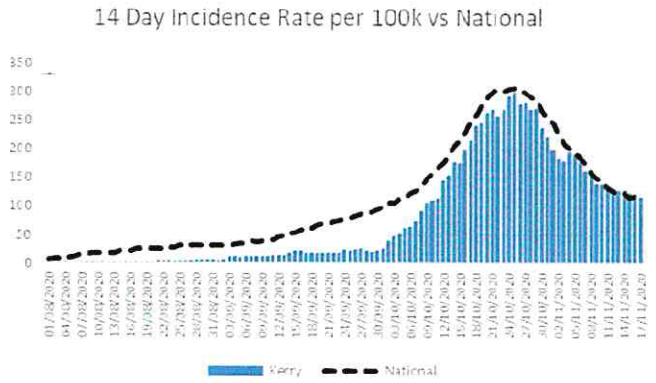
- North Kerry (Listowel) is most severely affected. This coincides with outbreaks southern parts of Limerick such as Newcastle West and Adare-Rathkeale, as well as Limerick city
- Killarney and Tralee LEAs are both next in terms of severity of impact, containing two major Kerry towns
- The remainder of county (further south, smaller towns) is generally less affected
- [redacted]
- Private homes account for 33.68% of all outbreak cases since Sept 1st
- Listowel's incidence levels were three times higher than the next worst-afflicted LEA. Note the small population of ~29,000 people meant 182 cases over a 2-week period prior to 26 Oct created a very high incidence rate

Restriction impact:

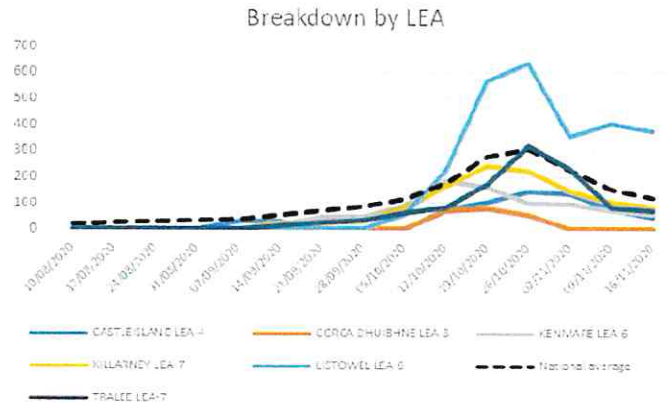
- The number of cases in Kerry started to grow around the time level 3 was introduced - two weeks later, this high growth rate had largely ceased
- Improvements have levelled off somewhat across LEAs such as Tralee, Killarney and Listowel

Employment summary:

- Kerry had c.49% of its workforce on PUP or TWSS (32k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

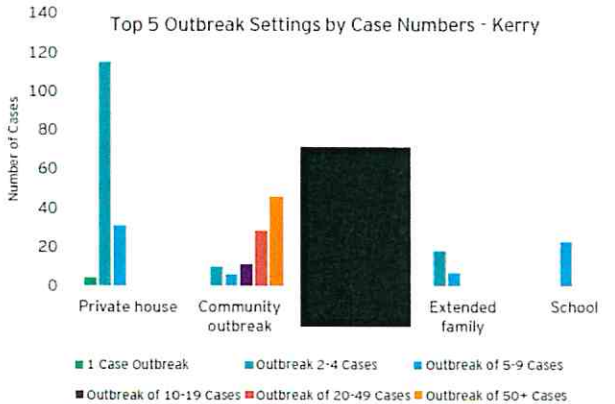
Cases	
963	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	4.1

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	150	53
Community outbreak	101	14
[redacted]	[redacted]	[redacted]
Extended family	25	7
School	23	4

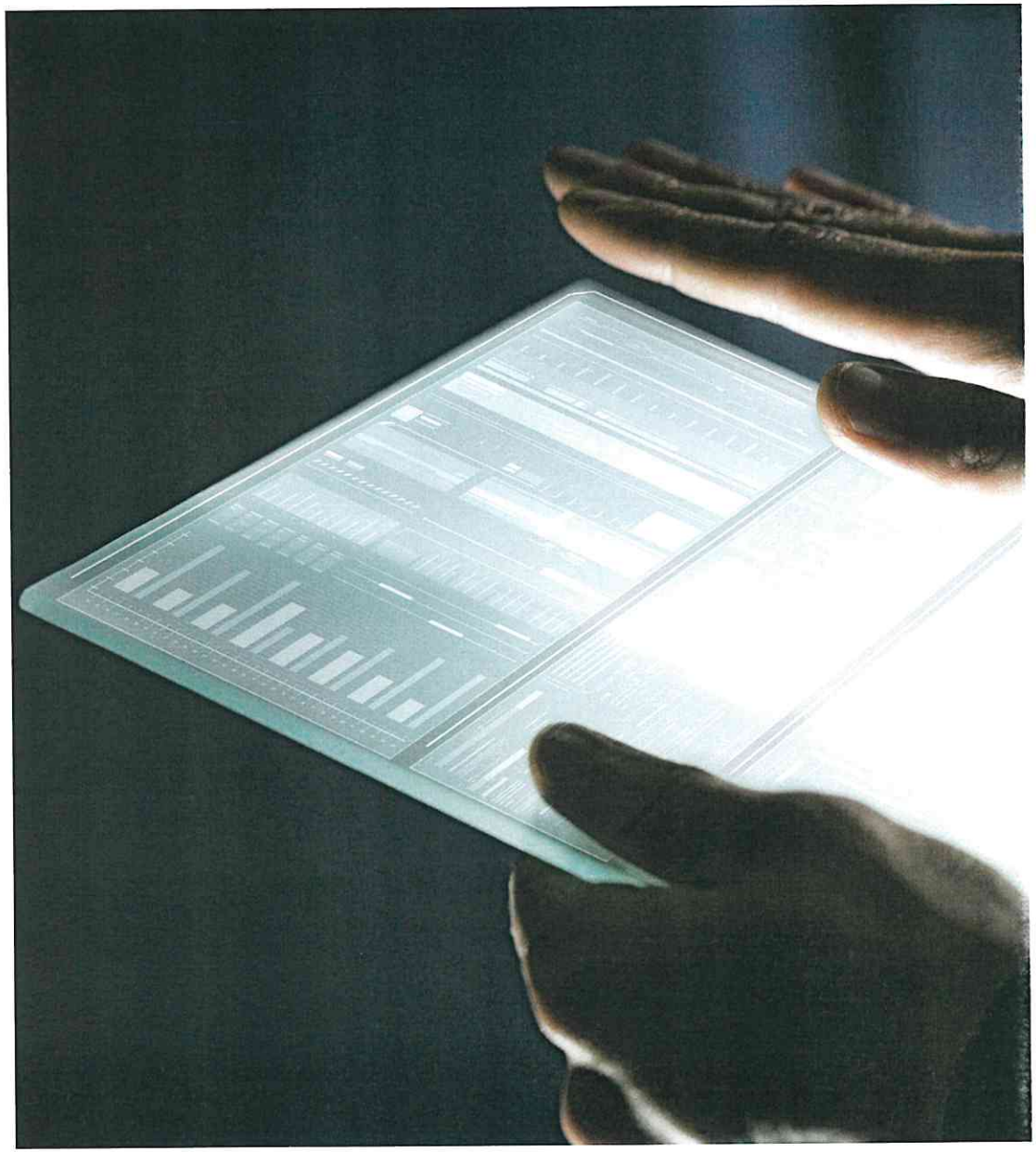
Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Community outbreak	03/09/2020	43
Community outbreak	23/10/2020	25
Religious/Other ceremony	16/10/2020	11
Restaurant / Cafe	11/09/2020	11



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties - highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

International restriction analysis

A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

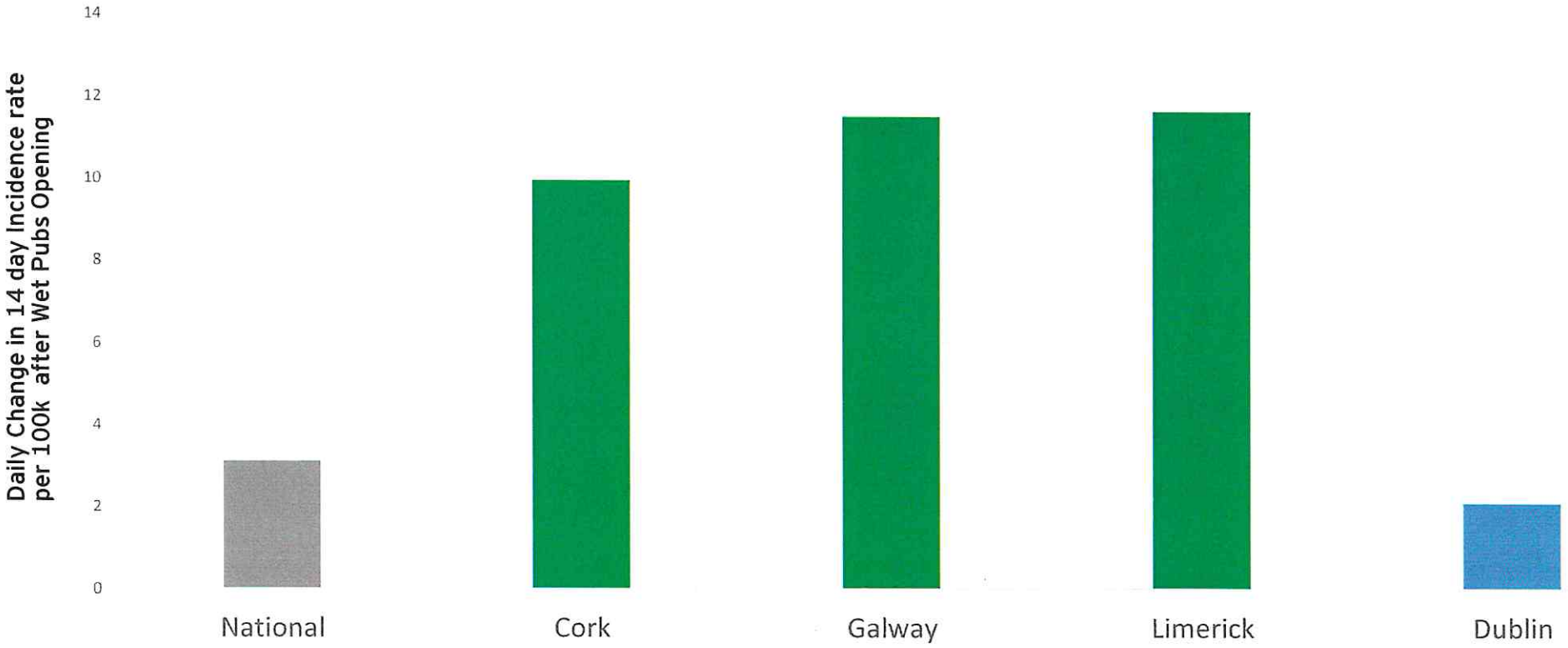
International desktop research

Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular COVID-19 insights publication and with new research included today

Ireland - restrictions analysis

Wet Pubs opened across the country, but not Dublin, on 21 September. The increase in Dublin's cases then slowed when compared with other counties

Case growth in Dublin after the Wet Pubs opening in other counties was 33% lower than the national average and 79% to 82% lower than other counties with larger cities. Note this coincides with universities opening, which impacts Cork, Galway and Limerick



The three phases of re-opening during late May to early July did not have a significant impact on cases

The reopening of construction, non-essential retail and the wider Phase 3 changes did not appear to have a material impact on the cases nationally or in larger counties

Average daily change in the 14 day incidence rate per 100k	29/02/2020 No restrictions	12/03/2020 Childcare closed, School closed	15/03/2020 Bars closed	24/03/2020 Retail, restaurants etc. closed	27/03/2020 Stay at home order (2km)	01/05/2020 Stay at home increased to 5km	15/05/2020 Construction Opened	28/05/2020 Mandatory PH	08/06/2020 Phase 2 reopening	29/06/2020 Phase 3 reopening	13/07/2020 Face masks on public transport	21/07/2020 Green List	08/08/2020 Lockdown Laois, Offaly Kildare	19/08/2020 Face masks in Shops	21/08/2020 Lockdown lifted Laois + Offaly, Kildare extended	31/08/2020 Schools + childcare opened	19/09/2020 Level 3 Dublin	21/09/2020 Wet Bars Opened except Dublin	26/09/2020 Level 3 Donegal	07/10/2020 Level 3 National	16/10/2020 Level 3 Mid-National	16/10/2020 Level 4 Donegal, Cavan, Monaghan	22/10/2020 Level 5 National
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-14
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-28
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-10
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-14
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	4	-2		0	-15
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	2	2		4	-6		-11
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-14
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-10
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-12
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-7
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		2	-10		-10
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-5
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-13
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-11
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-15
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-12
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-22
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-13
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		-3	-9		-8
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-11
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-17
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-6
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-10
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-19
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-9
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-6

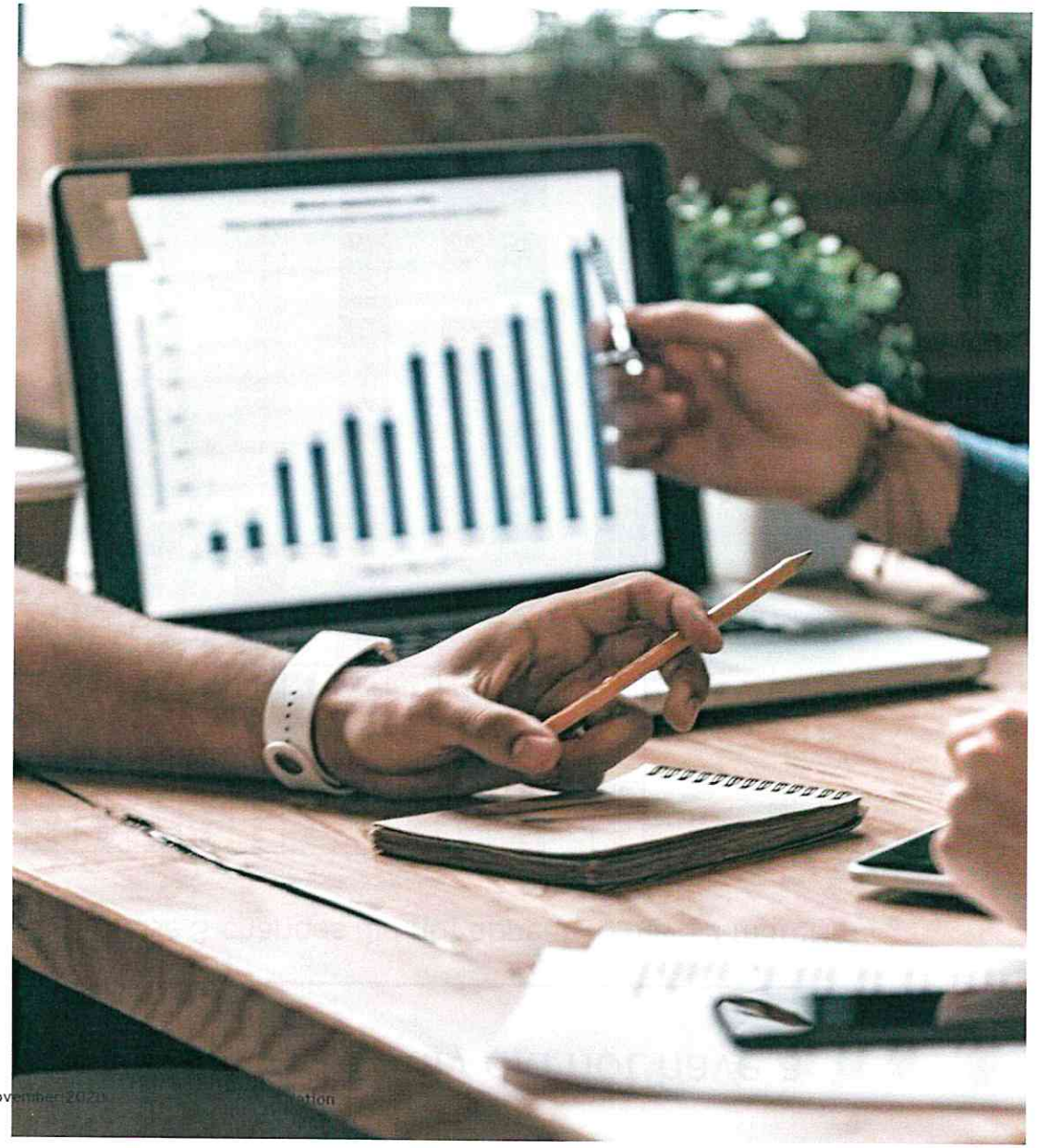
* Phase 3 re-opening included places of worship, gyms, cinemas, theatres, leisure facilities, personal services, sports, public transport 50% capacity & face coverings), mass gatherings (50 indoors, 200 outdoors), adult education and community facilities, health and well being related services, restaurants and cafes (on site food service), hotels and other accommodation facilities, driving schools and tests

Track and Trace Free Text Analysis

The HSE Track and Trace system captures the information for each citizen being tested for C-19. This includes a contact type field, which explains the contact between citizens that the test resulted from. Contact categories are selected by the contact tracer from a drop down list, including "social", "work", etc.

There is also a free text field where the contact tracer may add further details. For example, if the category was "social" then the free text field may say "attended sports game together".

A selection of the analysis of this free text field is shown in this section. Note it is a relatively small sample of data and should be treated only as directionally informative.

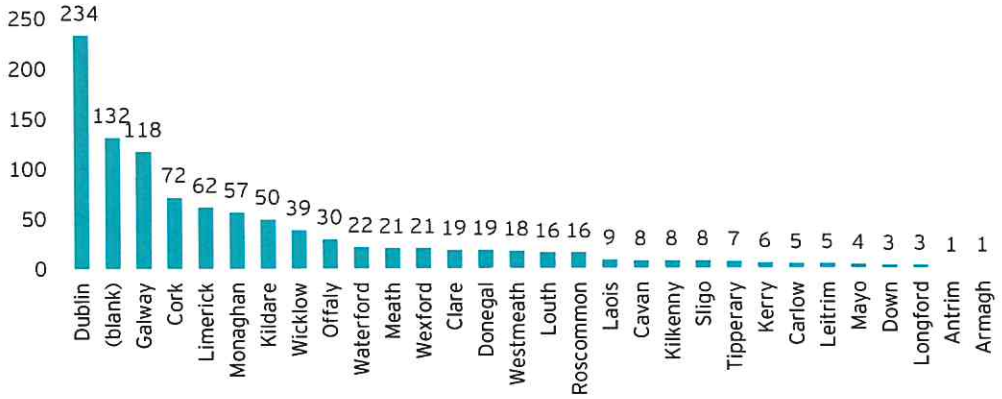


Alcohol/social gatherings contacts with positive individuals

Alcohol and party-related terms mentioned 1,014 times between Mar - 10th Nov

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Contacts with positive individuals: Alcohol/Social Gathering related terms mentioned in free text (by county)



Key message: Alcohol-related events appear to be a driver in contacts generated, with relatively high numbers given data available.

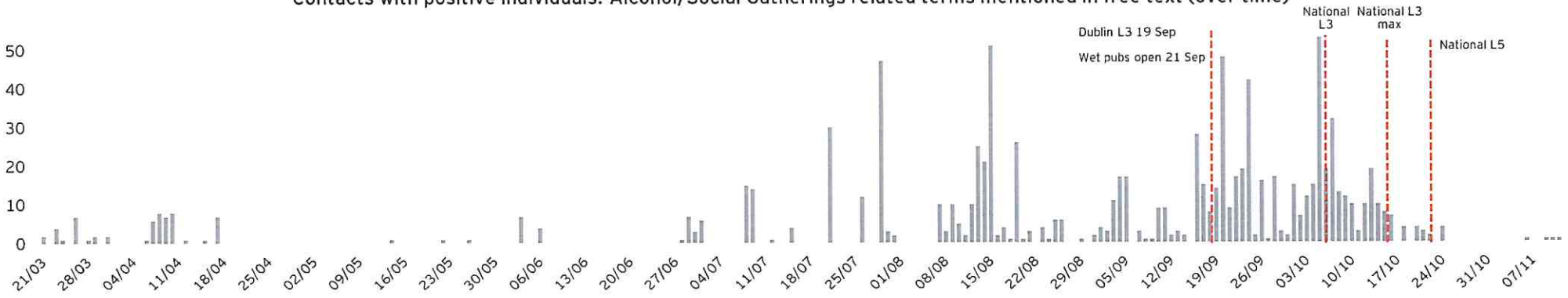
Limerick: 17 contacts from confirmation party in Aug; **33 contacts** from communion party in Oct

Galway: has **c.50%** smaller population than Cork but has **c.65%** more alcohol related contacts; **22 contacts** from one party in Jul; **15 contacts** from a kids' party in Sep; **31 contacts** from a party in Sep

Positivity Rate: Sep-Oct: 4.3% vs. 7.6% nationally. Care required as this is a small sample size

CIDR data shows that 540 positive cases occurred in the same period across 60 outbreaks for categories 'Social Gatherings' and 'Public House' compared to 80 cases in Jul-Aug **similar to large increase in contacts shown from late Sep** within Track and Trace

Contacts with positive individuals: Alcohol/Social Gatherings related terms mentioned in free text (over time)



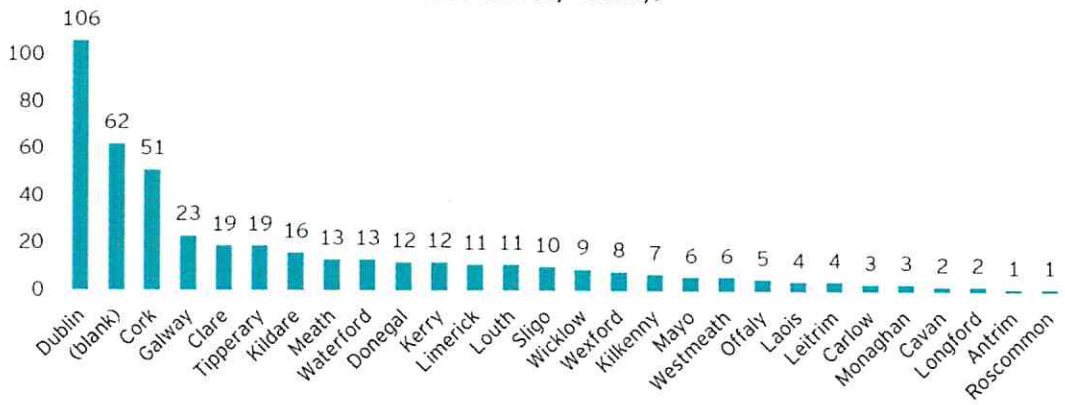
Source: Contact tracing analysis
Terms searched: alcohol', 'drink', 'party', 'celebration', 'booze', 'beer', 'wine', 'cans', 'pint'
Dates: Dublin L3 (19/09) Wet Pubs Open (21/09) National L3 (07/10) National L3 Max (16/10) National L5 (22/10)

Contacts with positive individuals generated in restaurants

Restaurants mentioned 439 times between Mar – 10th Nov

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Contacts with positive individuals: Restaurant related terms mentioned in free text (by county)



Key message: Restaurants generated contacts, however absolute levels remain relatively low given data available.

Dublin: 18 contacts relating to a coffee chain over three days in August; 5 contacts relating to Dublin restaurant over 2 days in Sep

Cork: 5 contacts relating to a restaurant chain in one day in Sep; 4 contacts relating to a fast food chain over two days in Nov

Positivity Rate: Sep-Oct 1.8% vs. 7.6% nationally. Care required as this is a small sample size

CIDR: Shows 221 positive cases across 35 outbreaks during Sep-Oct compared to 44 positive cases in Jul-Aug largely consistent with the increase in contacts shown from mid Sep in Track and Trace

Contacts with positive individuals: Restaurant related terms mentioned in free text (over time)

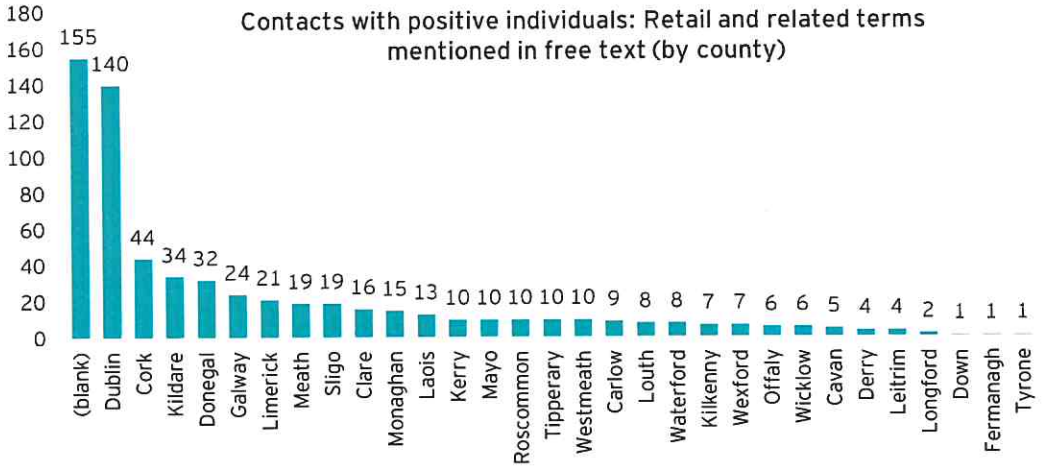
Source: Contact tracing analysis
Terms searched: Restaurant, eating out, out for a meal, and a list of all national chains in Ireland
Dates: Restaurants open (29/06) Dublin Takeaway (19/09) National Takeaway (07/10)

Note - there were 18 mentions before 1 July 2020

Retail contacts with positive individuals

Retail and related terms mentioned 651 times between Mar - 12th Nov

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only



Retail store cases appear to be driving smaller number of contacts rather than large clusters

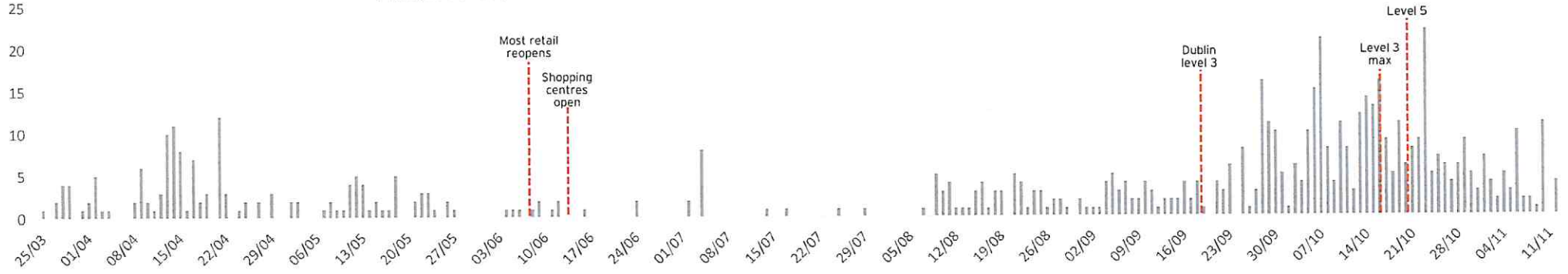
Dublin: No large clusters, largest number of contacts on a single day was 5; **5 contacts** in specific supermarket on a day in May

Kildare: No large clusters, largest number of contacts on a single day was 3

Cork: No large clusters largest number of contacts on a single day was 5; 5 contacts in a chain supermarket on a day in Nov

Positivity Rates: Sep-Oct 1.3%

CIDR: 48 positive cases across 15 outbreaks in period Sep-Oct for 'Retail outlet'. This is higher than in Jul-Aug (9 cases). This trend is largely similar to the increase in contacts in starting from Sep in track and trace contact data



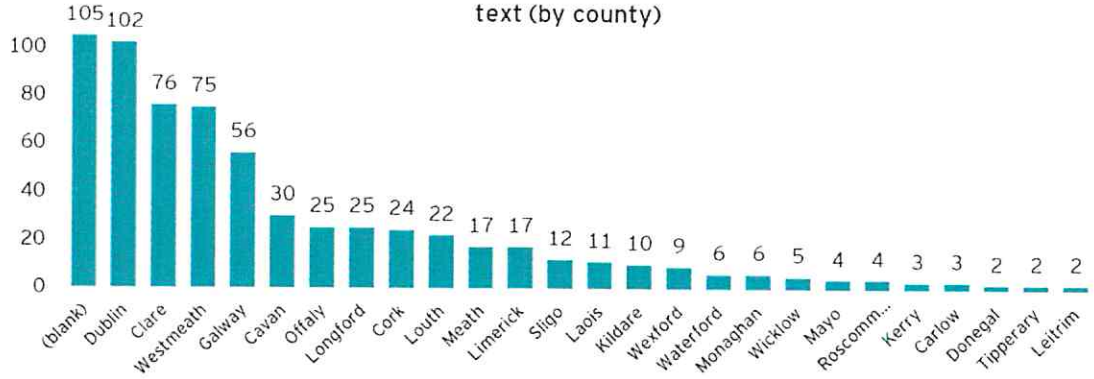
Source: Contact tracing analysis
Terms searched: shop, SuperValu,Lidl,Tesco,Aldi,Dunnes Stores,Eurospar,Iceland,Marks & Spencer, Donnybrook Fair, Joyces,Fresh, Spar,Centra,Londis,Mace,Gala,Daybreak,Costcutter,Applegreen, Newsagent
Dates: Most Retail Opens (08/06) Shopping Centres Open (15/06) Dublin L3 (19/09) National L3 Max (16/10) Level 5 (22/10)

GAA-related events contacts with positive individuals

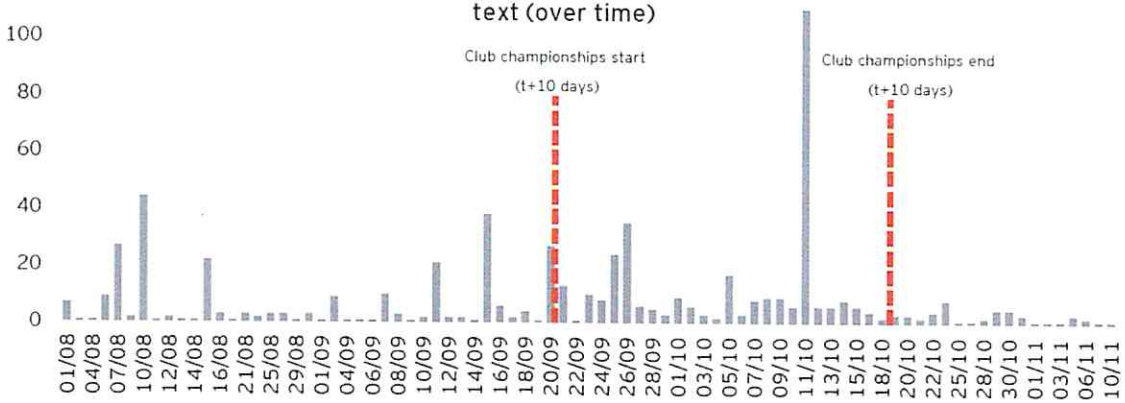
GAA-related terms mentioned 653 times between Mar - 10th Nov

Note: Analysis completed using the small available sample of track and trace free text data. Treat as directionally informative only

Contacts with positive individuals: GAA and related terms mentioned in free text (by county)



Contacts with positive individuals: GAA and related terms mentioned in free text (over time)



Note - there were 16 mentions before 1 Aug 2020

Source: Contact tracing analysis
Terms searched: terms 'GAA', 'Gaelic', 'County Final', 'County Championship', Hurling' and 'Football'
Dates: Football and hurling championships took place between 13 Sep and 9 Oct 2020

Key message: GAA events and celebrations appear to have generated incidences of high numbers of contacts with positive individuals. However, overall levels appear low.

Clare: 24 contacts on day in Aug for GAA Training; 33 contacts on day in Aug for GAA; *End of Jul start for club games in Clare as master fixtures committee recommended new formats*

Westmeath: 52 GAA contacts on single day in Oct; (*Senior football finals occurred on 27th Sep*)

Galway: 34 contacts on day in Sep mentioning a specific GAA team

Dublin: 17 contacts on day in Aug mentioning a specific GAA camp; *Camps took place between 22nd Jul - 23rd Aug*

Positivity Rate: 490 contacts made between Sep-Oct resulting in 11 positive tests (c.2.2%)

CIDR: 159 cases across 24 outbreaks between Sep-Oct in the category 'Sporting activity/fitness'. No cases are shown for this category in Jul-Aug. This shows largely the same trend as track and trace with majority of contacts occurring from Sep onwards

International Desktop Research

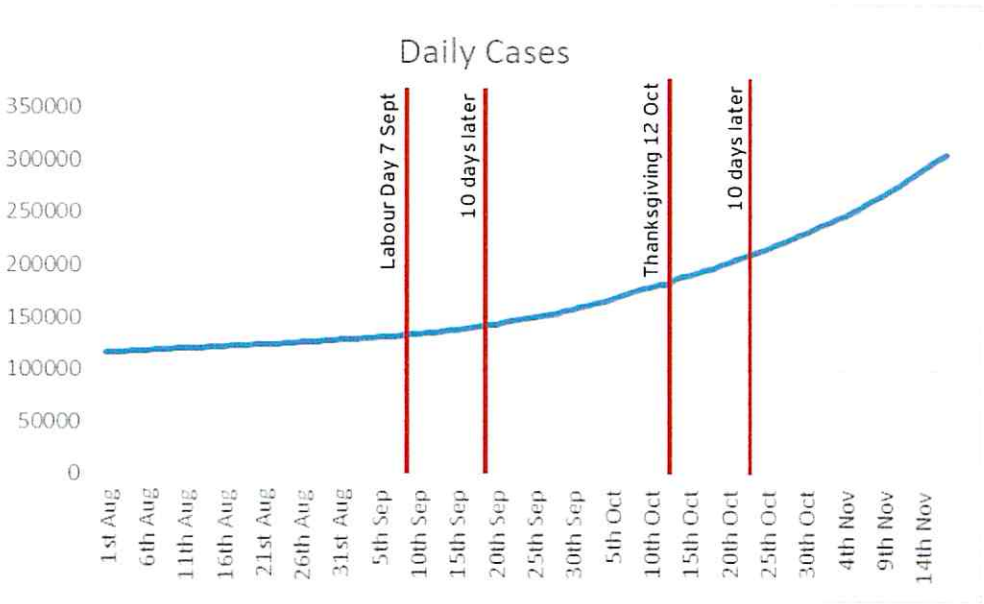
Please see the associated magazine.

Additional examples are also shown here.

Canadian Thanksgiving: Test & Trace data and case numbers show surge in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first surge in Spring.



Key findings:

- Canada saw a surge in COVID-19 cases in the days and weeks that followed Thanksgiving, the **highest rates** since the first surge in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; **4,109 new daily cases** were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Track & Trace records show that Thanksgiving gatherings directly resulted in **viral spread**
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases **dramatically changed** after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has **doubled** from 155,000 on 28 September to over 310,000 on 18th November
- A similar **spike** is noticed on 17th September, 10 days after **Canadian Labour day** was celebrated

Source: https://health-infobase.canada.ca/covid-19/

US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.).

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

POI categories ranked in decreasing order of associated additional infections that would occur if the location is opened

Full-service restaurants

Fitness centres

Religious organisations

Take-out restaurants

Grocery stores

Department stores

Pharmacies

Results

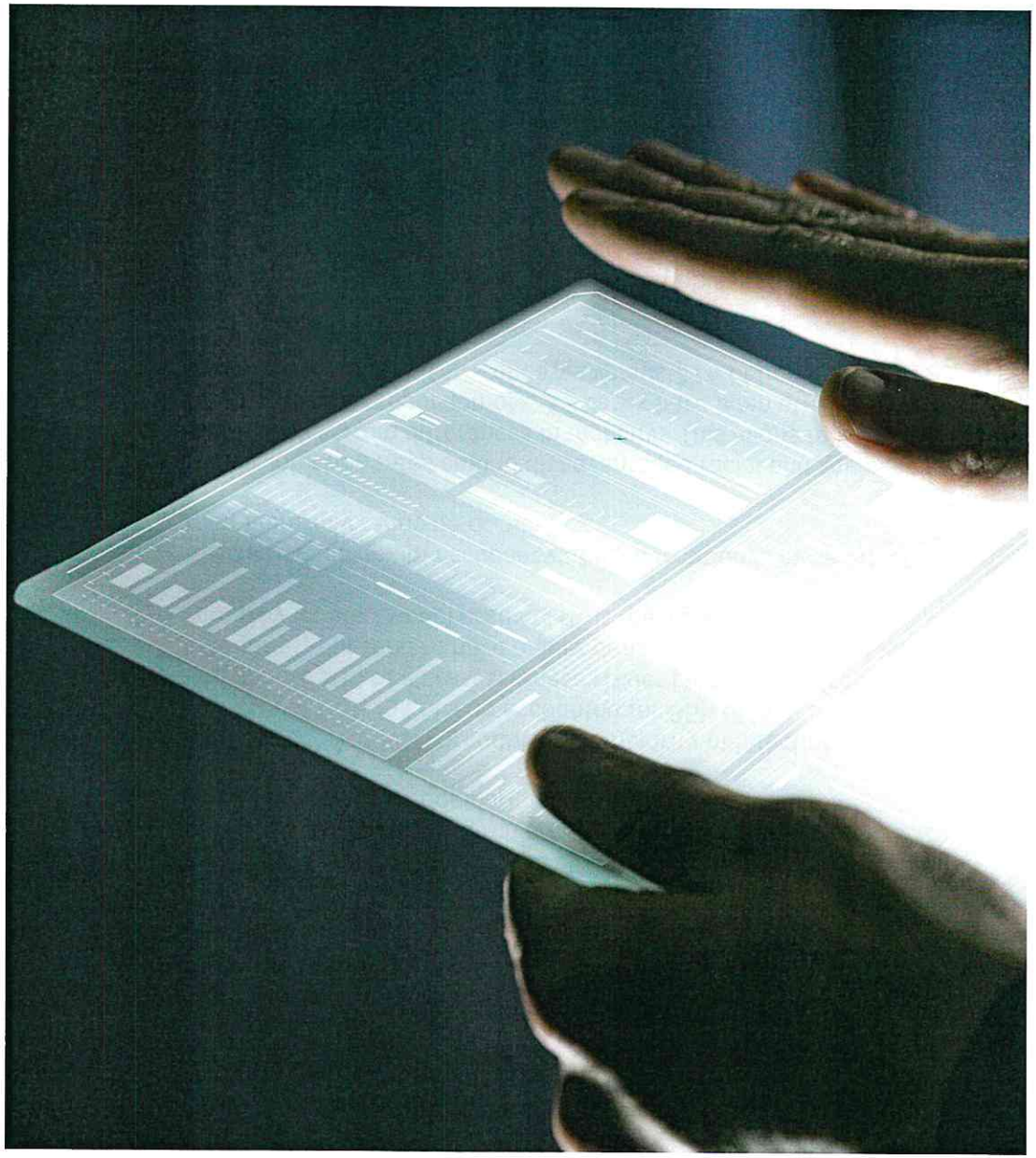
- The Stanford Mobility Network Model Simulation concluded that on average across metro areas, reopening full-service restaurants, fitness centres and religious organisations produces the largest predicted increase in infections.
- Take-out restaurants, grocery stores, department stores and pharmacies resulted in low positivity rates.
- This pattern was seen in the 3 US cities studied.

Key findings

- The model calculates the additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location.
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy.
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10).
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more.

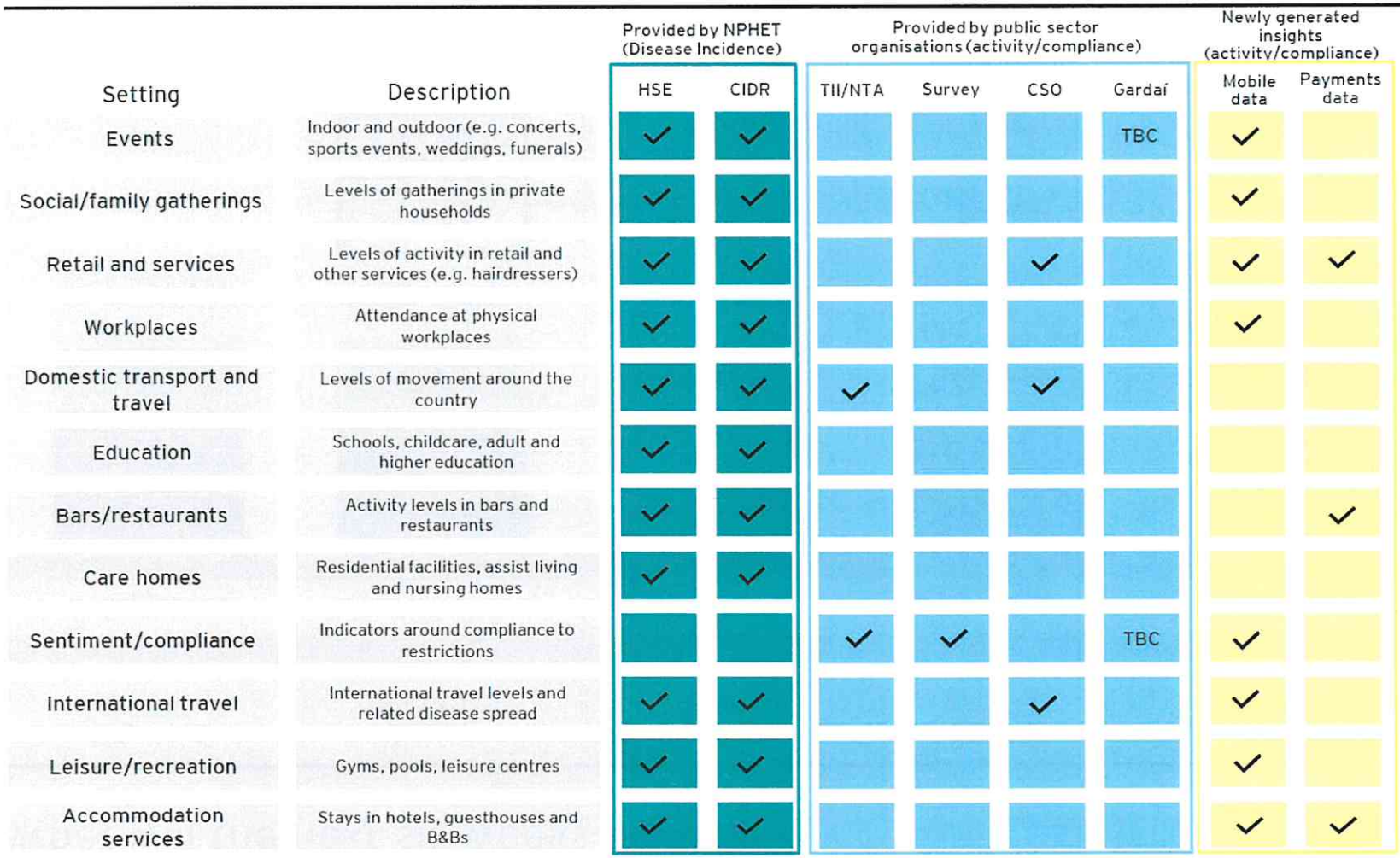
Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html
Note: Calculation of positivity rate using cases generated as a proportion of visits generated

Roadmap for next six weeks



Approach to Christmas monitoring

We will combine a variety of data sources to monitor activity over the Christmas period



Approach overview

- Leverage existing health data from NPHET, curate data from Government agencies and create new insights from additional data sources
- Support comprehensive data analysis to monitor and provide insights on the effectiveness and impact of restrictions and behaviours over Christmas
- Leverage insights to inform restriction measures for future planning as well as provide "stories" to help bring to life for the public
- Aggregated and anonymised data only. No personal identifiable data

What will the next six weeks look like?

Data is anonymised and aggregated to LEA or country and by industry type. No personal identifiable information

This week W/c 16 Nov	Week 2 W/c 23/11	Week 3 W/c 30/11	Week 4 W/c 7/12	Week 5 W/c 14/12	Week 6 W/c 21/12
Proposed briefing frequency					
Weekly/ ad-hoc	Weekly / ad-hoc	Weekly / ad-hoc	Daily / ad-hoc	Daily / ad-hoc	Daily / ad-hoc
Insights delivered					
County dashboard	County dashboard	County dashboard	County dashboard	County dashboard	County dashboard
Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers	Outbreak drivers
Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact	Restrictions impact
Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis	Ad-hoc analysis
	Transport	Transport	Transport	Transport	Transport
	Facebook survey	Facebook survey	Facebook survey	Facebook survey	Facebook survey
	Spending data	Spending data	Spending data	Spending data	Spending data
		Stay at home index	Stay at home index	Stay at home index	Stay at home index
				Social distance index	Social distance index

Disease monitoring
Restrictions
Compliance
New

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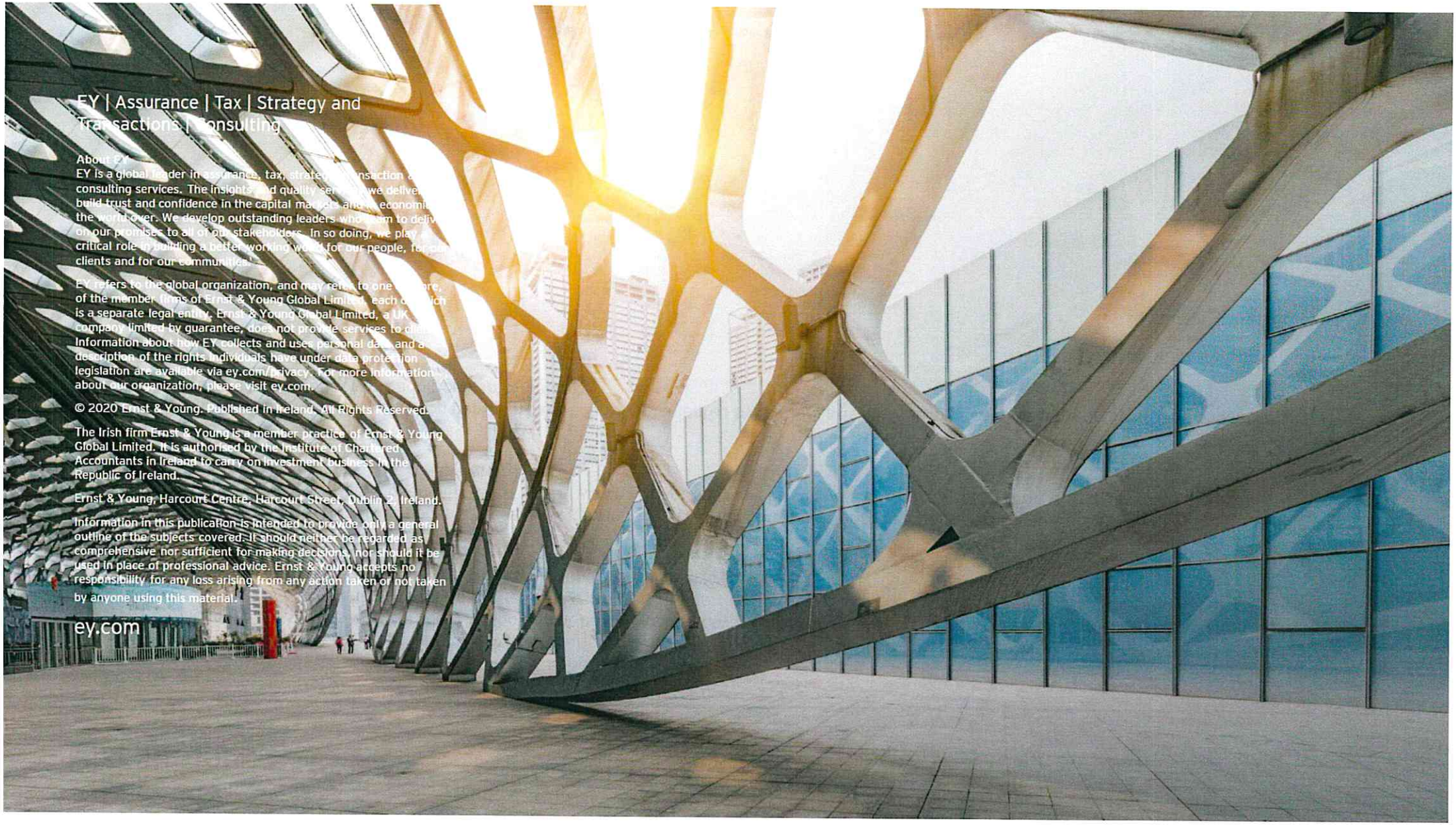
- The information in this presentation pack will have been supplemented by matters arising from any oral presentation by us, and should be considered in the light of this additional information



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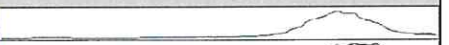
County Analysis Summary

County	Border County	Major Incidence	Dublin and Surrounding Area	Following National Restrictions Trend	Wave One Outbreak Sources	Wave Two Outbreak Sources	Change in 14 day incidence rate (14/11-17/11)	Wave 2 Incidence rate
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	-0.14	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Instutions	0.1	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	0.06	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Insitutions	-0.08	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	0.13	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	0.01	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	-0.18	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	-0.03	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	-0.08	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	-0.1	
Kerry		✓		✓	Private Houses, Residential Insitutions, Hospital	Private House, Community Outbreak, Nursing Home	-0.11	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	0.15	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	-0.09	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	0.17	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	-0.32	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	-0.02	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	0.06	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	-0.05	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	0.05	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	0.05	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	-0.09	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	-0.03	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	-0.04	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	-0.23	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	-0.33	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	-0.07	

*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR

**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Wave 1: 03/03-25/07 Wave 2: 26/07-20/11

Summary of 14 day incidence rate per 100k

UPDATE FOR NEW DATA

The below heatmap shows the county incident rate per capital over the last two months. The overall reduction in cases has levelled in the week with some counties now increasing.

| Two Weekly Incidence Rate Per 100k | 17-Sep | 18-Sep | 19-Sep | 20-Sep | 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | Change Last 3 Days |
|---|---|---

County view - Roscommon (20/11)

ACTION
Add national average and make title consistent

Total Confirmed Cases

925

Trend vs. National

ACTION
Add trend vs national

Roscommon profile:

- Roscommon experienced a lower 14 day disease incidence rate per 100k during second wave than the national average. However, this changed in recent days with Roscommon rising above the national rate in mid-November

Summary analysis:

- The main driver of outbreaks within the county since the start of November are those seeded in nursing homes – representing 64%. Private house outbreaks make up a significant portion of remaining outbreaks, at 33% of new outbreaks
- An earlier increase was seen in Athlone LEA-6 in the week following the football final held 20 September. The winning team was located in this LEA. However other events coincided with this date including the reopening of wet pubs

Restrictions impact:

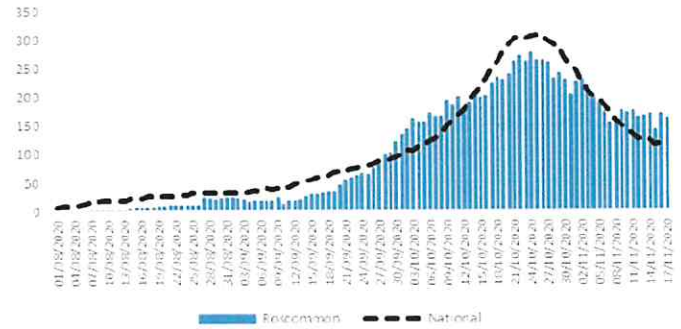
- Level 3 (max) restrictions put in place as of 16 October can be seen to align with a reduction in incidence rate ten days later
- In some instances, this reduction can be seen to accelerate again with the introduction of level 5 restrictions on 22 October (Athlone LEA-5, Roscommon LEA-6, Boyle LEA-6)

Employment summary

- Roscommon had c.37% of its workforce on PUP or TWSS (11k) at the peak in early May (EY 2019 employment estimates). There are currently 3k on PUP (17 Nov) which is down from 7k in May (CSO, DSP)

Notes
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

14 Day Incidence Rate per 100k vs National



Breakdown by LEA

Since the 1st of September

557 cases, with 68% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	194	78
Nursing home	82	5
Extended family	30	5
[redacted]	[redacted]	[redacted]
Workplace	14	8

Notable events	Date	No. of cases
Nursing home	[redacted]	66
[redacted]	[redacted]	[redacted]
Extended family	09/10/2020	18
Nursing home	[redacted]	12
Private house	14/10/2020	7

ACTION
Replace with Eve employment / econometric stuff

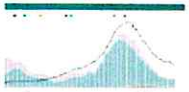
Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is made available publicly

County View - Laois, Offaly and Kildare (17/11)

Total Confirmed Cases

6,248

Trend vs. National



Laois, Offaly and Kildare profile:

- TBC using updated graph

Summary analysis:

- Increasing case number trend emerges in July
- Outbreaks concentrated in food and meat processing plants
- Highest numbers in Offaly in Edenderry (93 of 103 cases) in two weeks preceding 17 August, with Kildare largely focused in Athy/Kildare (129/151 of 437)

Restrictions impact:

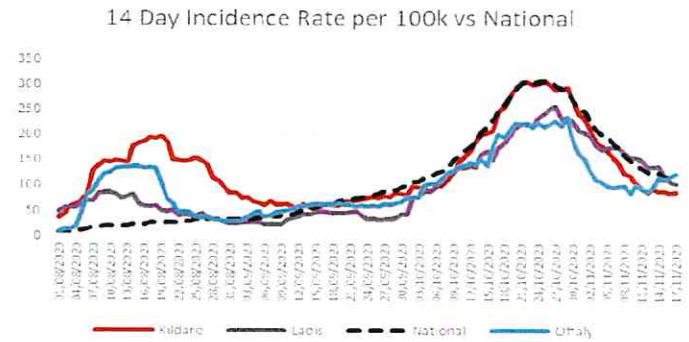
- County lockdowns for Laois, Offaly and Kildare from 8 August
- Offaly and Laois leave lockdown on 21 August and the following week cases begin to rise in Laois with minimal decrease in Offaly – note Laois had relatively few cases prior to lockdown
- Kildare lockdown extended for an additional 10 days
- Case numbers fall, however prevalence appears to shift from the south and middle of the county (Athy. Kildare Town and Newbridge) to the north of the county (Naas, Maynooth and Celbridge)
- As cases increase in North Kildare from October, a similar trajectory of case growth appears in Dublin West

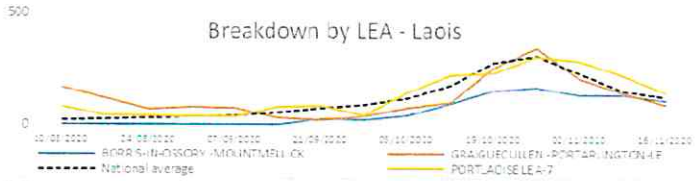
Employment summary

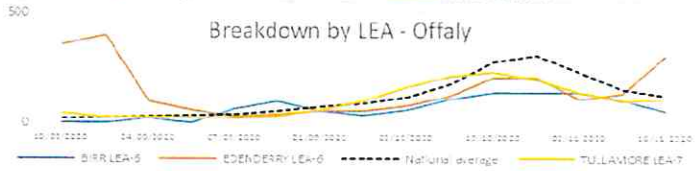
- These counties had c.40% of their combined workforce on PUP or TWSS (c.73k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain significantly lower than peak (24k versus 44k) (CSO, DSP).

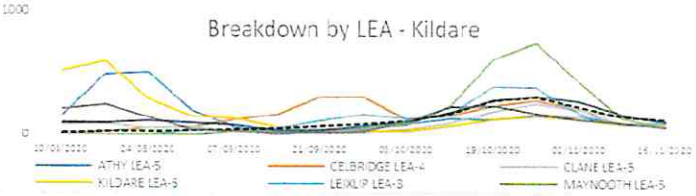
Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or









Since the 1st of September

2,859 cases, with 57% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	870	342
Nursing home	216	13
Hospital	162	16
School	84	23
Extended family	81	13

Notable events	Date	No. of cases
Nursing home	[redacted]	52
Hospital	[redacted]	49
Nursing home	[redacted]	46
Nursing home	[redacted]	38
Nursing home	[redacted]	38

ACTION
Replace with Eve employment / econometric stuff

County view - Waterford (20/11

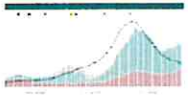
ACTION
Add national

Source ?

Total Confirmed Cases

975

Trend vs. National



Waterford profile:

- Waterford experienced a lower 14 day disease incidence rate per 100k during second wave than the national average. However, this changed in recent days with Waterford rising above the national rate in mid-November

Summary analysis:

- Cases rose in early September in Waterford City East, South and Tramore-Waterford City West. There was a meat factory outbreak around this time resulting in 50 cases
- Workplace outbreaks have been prominent in Waterford, making up 30% of outbreak-related cases in November, with the largest resulting in 24 cases
- Private households make up another 63% of outbreak-related cases during this period
- Outbreaks in September and October were both driven by cases occurring in Waterford city. Unlike other counties, these do not seem to spread throughout Waterford to the same degree, with LEAs outside Waterford City maintaining lower cases compared to national levels

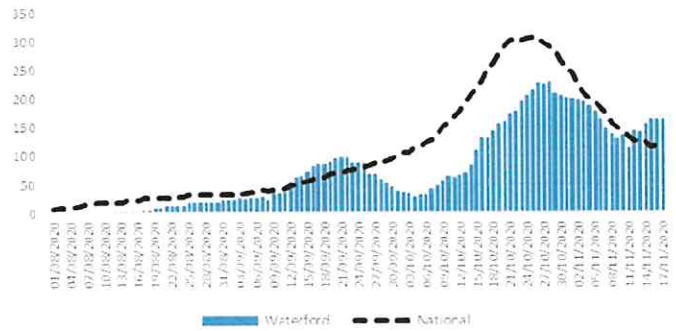
Restrictions impact:

- Cases stabilised in the ten days after Level 3 restrictions came into effect
- While falling steadily throughout November, cases began to rise again towards the middle of the month

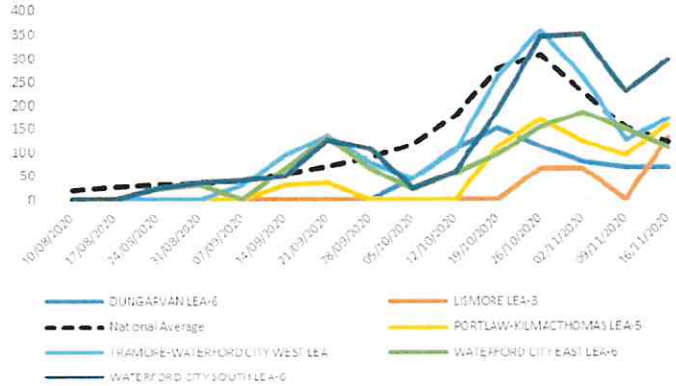
ACTION
Move top right Trend vs National ave here

Notes
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

14 Day Incidence Rate per 100k vs National



Breakdown by LEA



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is made available publicly

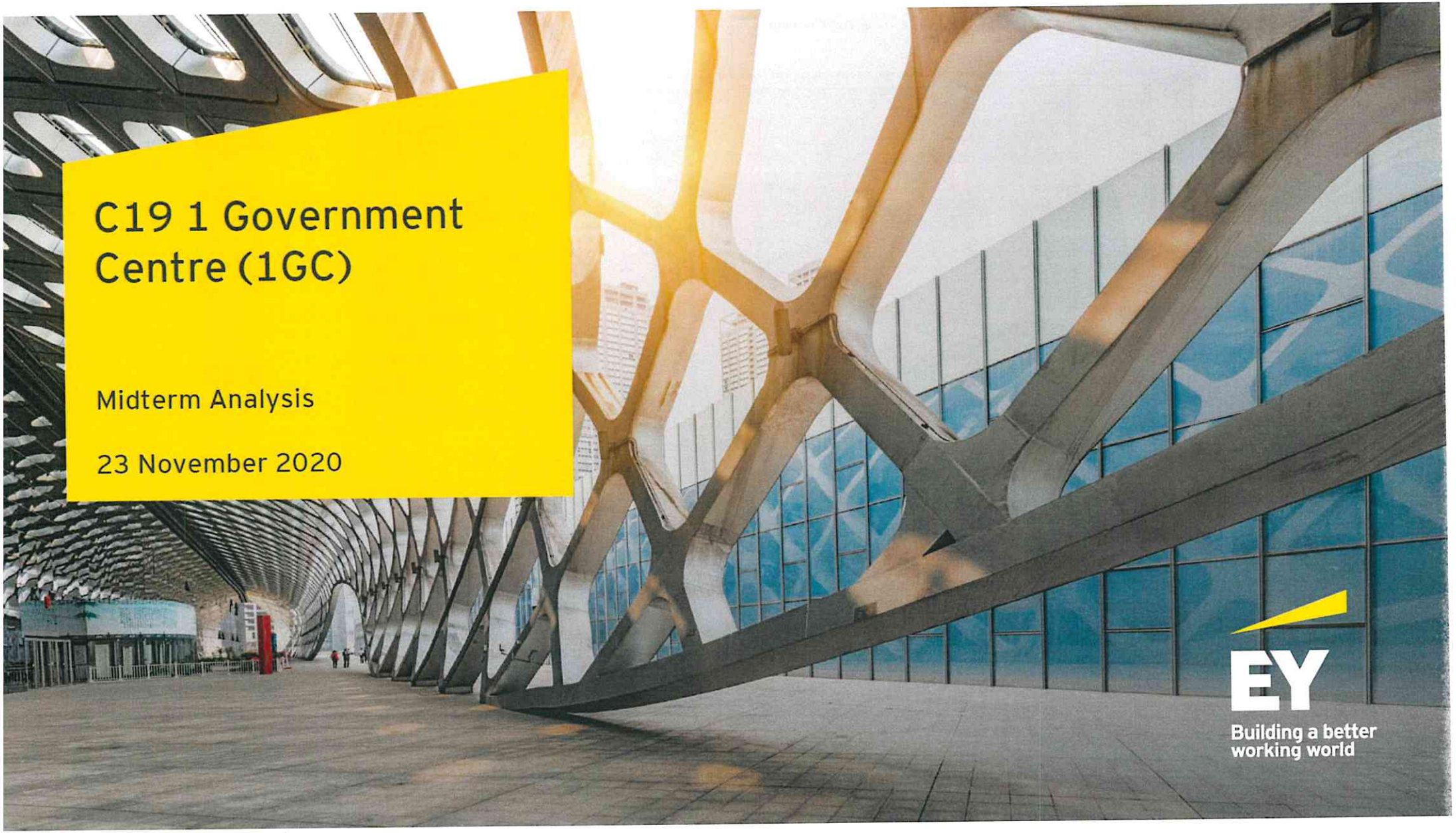
Since the 1st of September

777 cases, with 63% linked to outbreaks

Top 5 Settings	No. of Cases	No. of Outbreaks
Private house	329	135
Workplace	84	8
Community outbreak	20	2
Other	12	2
Extended family	11	3

Notable events	Date	No. of cases
Workplace	04/09/2020	49
Workplace	03/11/2020	21
Community outbreak	02/10/2020	16
Private house	09/09/2020	10
Other	28/10/2020	9

ACTION
Replace with Eve employment / econometric stuff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Restrictions Impact Overview

The below heatmap shows the average daily impact in 14 day incidence rate per 100k for each change in restrictions. Schools went on midterm break on 26/10/2020, which is just 4 days after the start of Level 5 on 22/10/2020. It is therefore difficult to differentiate between the impact of Level 5 and any impact schools closing for midterm had. The reopening of schools on 02/11/2020 is included in the below restrictions impact analysis where the time period of schools reopening coincides with a reduction in the decrease in 14 day incidence rates across most counties.

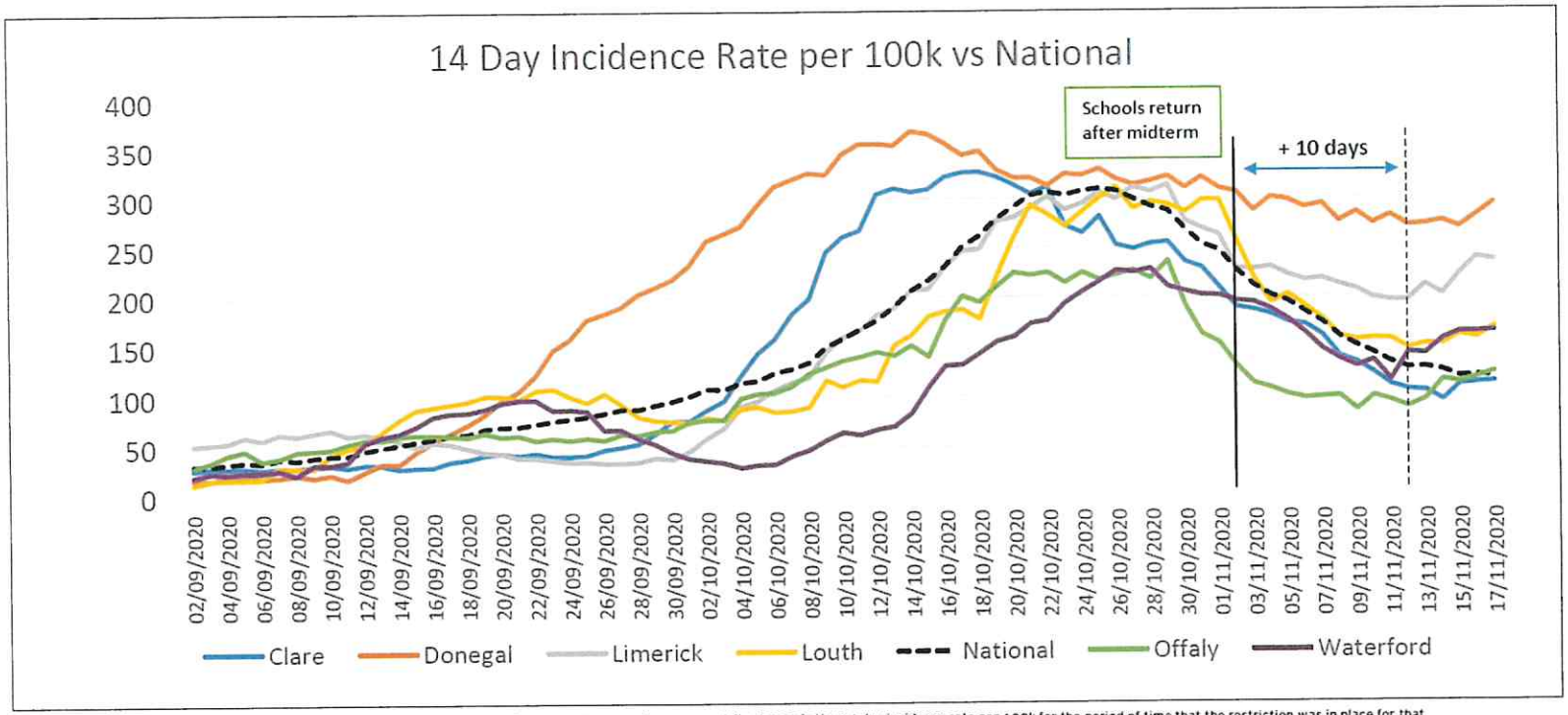
The drivers behind this trend is explored further in the following slides.

Average daily change in the 14 day incidence rate per 100k	29/02/2020 No restrictions	12/03/2020 Childcare closed, School Closed	15/03/2020 Bars closed	24/03/2020 Retail, restaurants etc closed	27/03/2020 Stay at home order (2km)	01/05/2020 Stay at home increased to 5km	15/05/2020 Construction Opened	28/05/2020 Mandatory PUP	08/06/2020 Phase 2 reopening	29/06/2020 Phase 3 reopening	13/07/2020 Face masks on public transport	21/07/2020 Green List	08/08/2020 Lockdown Laois, Offaly Kildare	19/08/2020 Face masks in shops	21/08/2020 Lockdown lifted Laois + Offaly	31/08/2020 Schools + childcare opened	19/09/2020 Level 3 Dublin	21/09/2020 Wet Bars Opened except Dublin	26/09/2020 Level 3 Donegal	07/10/2020 Level 3 National	16/10/2020 Level 3 Max National	16/10/2020 Level 4 Donegal, Cavan,	22/10/2020 Level 5 National Schools	02/11/2020 opened after midterm
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-17	-5
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-46	-3
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-6	1
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	0		0		4		10		7	-5		-14	-4
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		0		9		12	4	-2		0	-3	4
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		2		4	2	2		4	-6		-8	-3
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		3		11		12	-15		-17	-1
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		11		9	-10		-6	-2
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		8		7	-9		-12	0
Laois	1	0	1	0	0	-2	0	0	0	0	0	2	-2	-2	0	1		6		3	-7		-1	-2
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		7		8	-7		-5	-5
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		0	-17		-4	3
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		12		7	-5		-6	7
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		6		5	-8		-9	-2
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-2		-13	3
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		7		12	-3		-8	-5
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		24		19	-34		-27	-1
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		11		-3		-12	-14	-2
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		6		2	-10		-9	6
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		4		4	-10		-9	0
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		17		16	-14		-16	-8
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		4		3	0		-2	-2
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		6		9	-4		-8	4
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	0		1		1		12		18	-15		-19	-3
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		13		3	-16		-11	-1
																		2		3	-5		-3	0

Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. Measures the average daily change in the 14 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

14 Day Incidence Rate Overview

The graph below shows the 14 day incidence rate for the counties highlighted in the previous slide as showing an increase in the 14 day incidence rate since the reopening of schools after the midterm break. While the above counties show some upward trend in the days following 12/11/2020 (10 days after the reopening of schools), there is no definitive link to schools being the main driver. This is further illustrated by select counties in the subsequent slides.



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. Measures the average daily change in the 14 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

Private House Outbreak Analysis

The below diagram shows the number of cases due to private house outbreaks resulting from the week before, during and after mid-term. (Please see below details of the dates applied). The week of midterm didn't see an increase in private house outbreaks. Donegal saw a small increase in cases due to private house outbreaks over the midterm break but private house outbreaks don't appear to explain the upward trend.

Number of cases due to Private House Outbreaks	Cavan	Clare	Cork	Donegal	Dublin	Galway	Kerry	Kildare	Kilkenny	Laois	Limerick	Longford	Louth	Mayo	Meath	Monaghan	Roscommon	Sligo	Tipperary	Waterford	Wexford	Wicklow	National
Week Before (29/10 - 4/11)	5	0	73	50	503	68	7	46	57	16		37	11	49	42		22	21	19	49	28	33	1143
Week Of (5/11 - 11/11)		0	11	71	295	29		20	52	39		25	0	36		8	16	13	16	29	7	11	684
Week After (12/11 - 18/11)	0		6	45	199	31	0	29	16	17		16	0	20			13	9	14	18	5	6	454

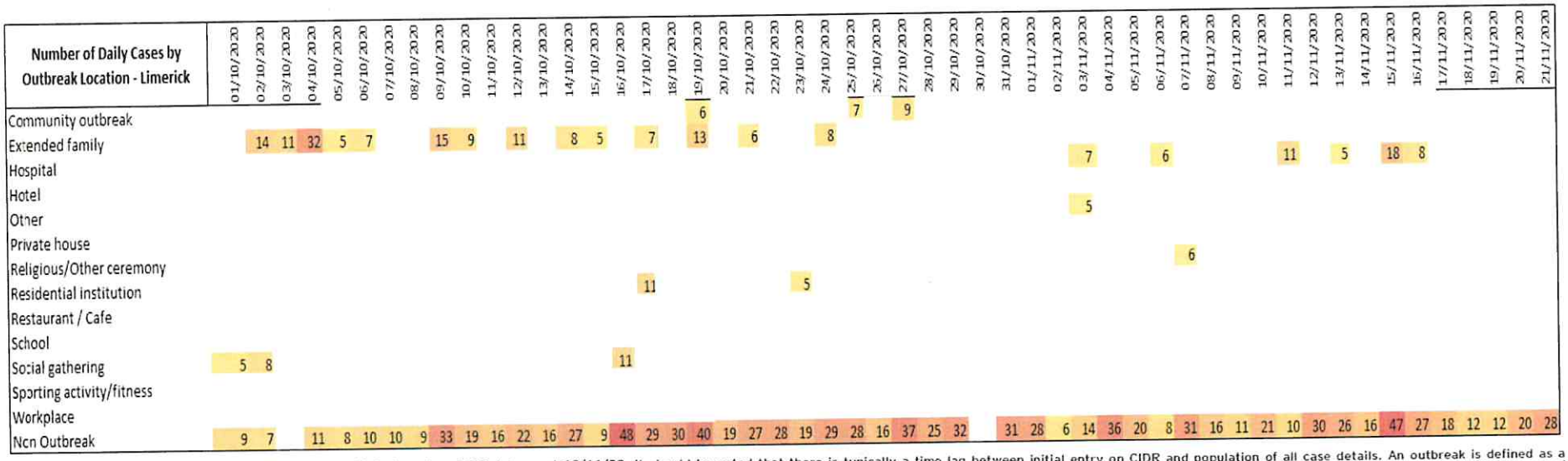
Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Note that:

- The week of midterm occurred from 26/10/2020 to 1/11/2020
- The number of days it takes to impact on private household activity is assumed to be 10
- The impact of the week of midterm is therefore from 5/11/2020 to 11/11/2020
- The impact of the week before midterm is from 29/10/2020 to 4/11/2020
- The impact of the week after midterm is from 12/11/2020 to 18/11/2020

Limerick: Large hospital and community outbreak drive the increase in incidence rate

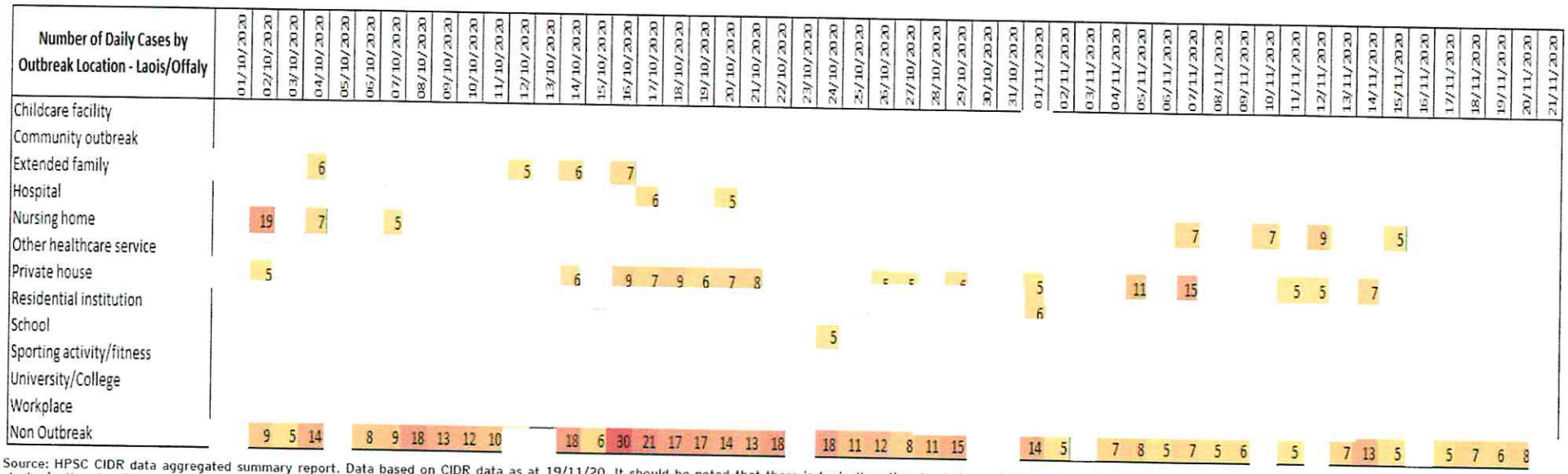
- Of all cases since 19th October, 271 cases had non-missing outbreak locations. This means, in Limerick's case, data on approximately one quarter of all cases can be used to triangulate the cause of recent trends. Note the increase since 10th Nov
- Of 271 cases where outbreak location was recorded, 82 of these were recorded as happening in hospital. Note there was a major hospital outbreak of 117 outbreaks which spilled over to neighboring counties. All of these outbreak related cases occurred in November
- Of 271 cases where outbreak location was recorded, 80 were instances of community outbreak. This remained generally steady throughout November with a slight decrease up to the 18th
- Overall, this does not point towards schools being a major driver following midterm



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Offaly: Private house outbreaks and nursing homes driving incidence rates. A number of school outbreaks but spread across the time period

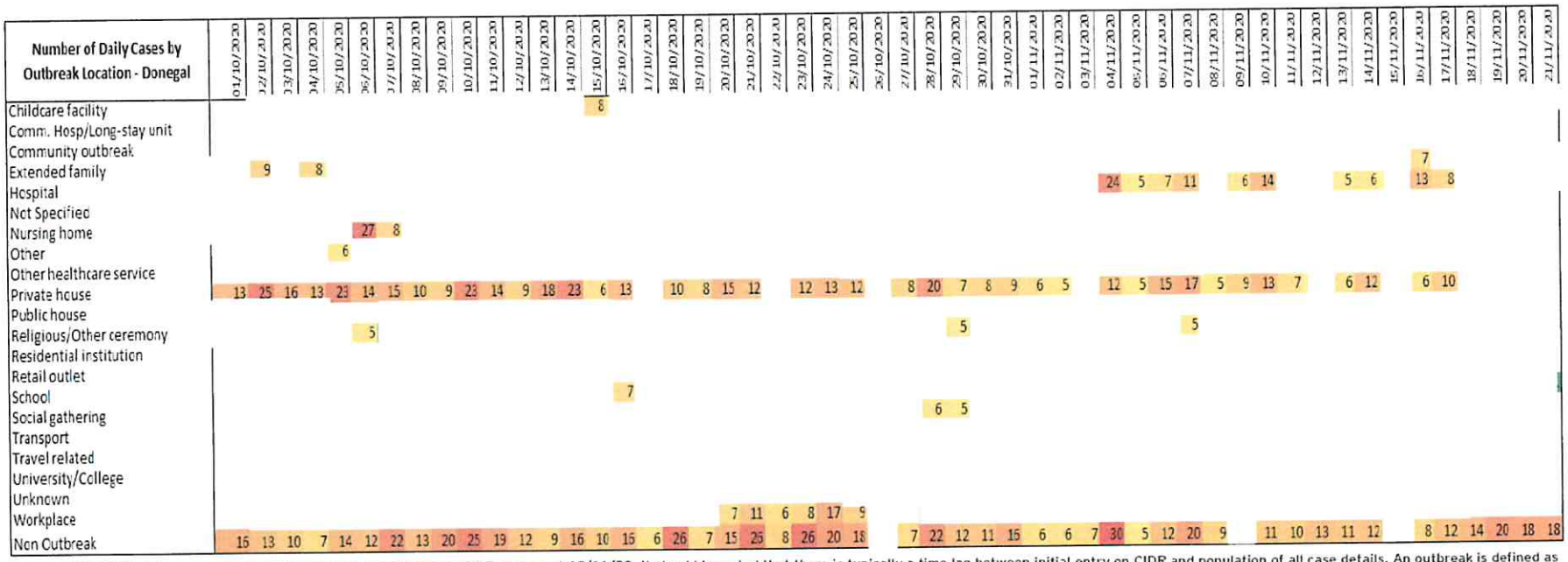
- Offaly and Laois are both reported together in CIDR, so cannot identify from this data which county the outbreak is in
- Non-outbreak sources leveled off from 6th Nov, 11 days after mid term, similar to what was observed on a national level
- Private home outbreak cases increased slightly in the timeline linked to midterm, with daily outbreak cases increasing from 1-5 to a number of days where 10+ cases were detected
- Nursing home cases increased due to a single major outbreak, rather than a large number of smaller outbreaks
- Outbreak cases associated with schools are generally spaced out, arguably peaking during the first two weeks of level three and then largely dropping off moving into level five with one further case detected in early November



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Donegal: Rise in November primarily driven by a major hospital outbreak

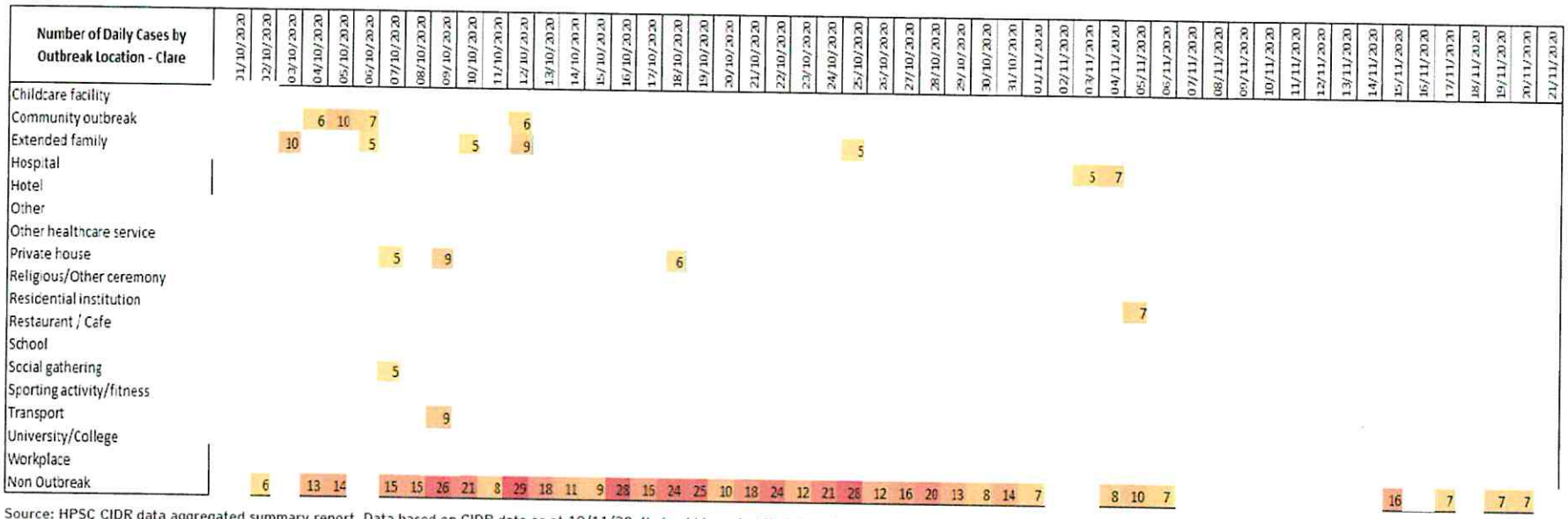
- Despite cases rising again in mid-November, cases related to outbreaks remained low compared to earlier in the month
- Private house outbreaks were the main source of cases in Donegal throughout October, making up 54% of all outbreak-related cases. By November, this number had fallen to 39% of all outbreak-related cases, with considerably fewer private house cases/day occurring in this month
- From early November, hospitals became the dominant source of outbreak cases, moving from just 1% of total outbreak cases in October to 34% in November. One 98 case outbreak made up the vast majority of these instances, and thus a considerable proportion of the total number of cases in Donegal for this month



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Clare: Two hospital outbreaks the primary reason behind increased incidence rate

- Cases in Clare fell at a similar rate to the national average, but on 15/11, cases rose somewhat, before stabilizing
- Private house outbreaks were the main source of outbreak-related cases throughout October, making up over 60% of all outbreak-related cases
- However, from early November, hospitals became the dominant source of outbreak cases, moving from just 1% of total outbreak cases in October to 70% in November. This was driven by 2 major outbreaks (17 cases and 9 cases total)
- It must be noted that the relatively small number of outbreak cases seen in Clare, both in October and November, likely contributed to the large swing in which outbreak types resulted in the most cases each month



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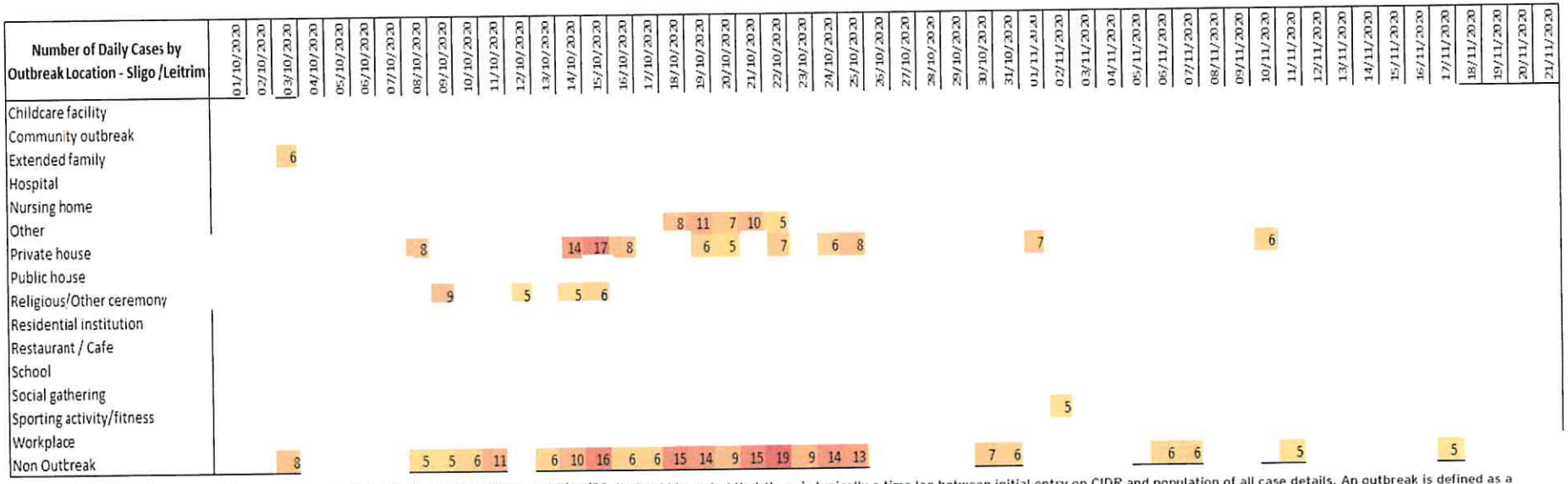
Leitrim: A rise in cases primarily driven by private household outbreaks

- In CIDR, Leitrim is paired with Sligo, which did not experience a rise at this time
- CIDR data shows a decline in outbreak-related cases in late October, well before the impact of mid-term could be seen
- Cases in Leitrim, which had been falling in early November, began to rise again from 11/11 (10 days after the mid-term break ended).
- Private households remain a prominent source of outbreak-related cases throughout both October and November (change in % mainly came from major drop-off in outbreaks classified as "other")
- Note: Combined with Sligo in CIDR



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition)(HPSC)

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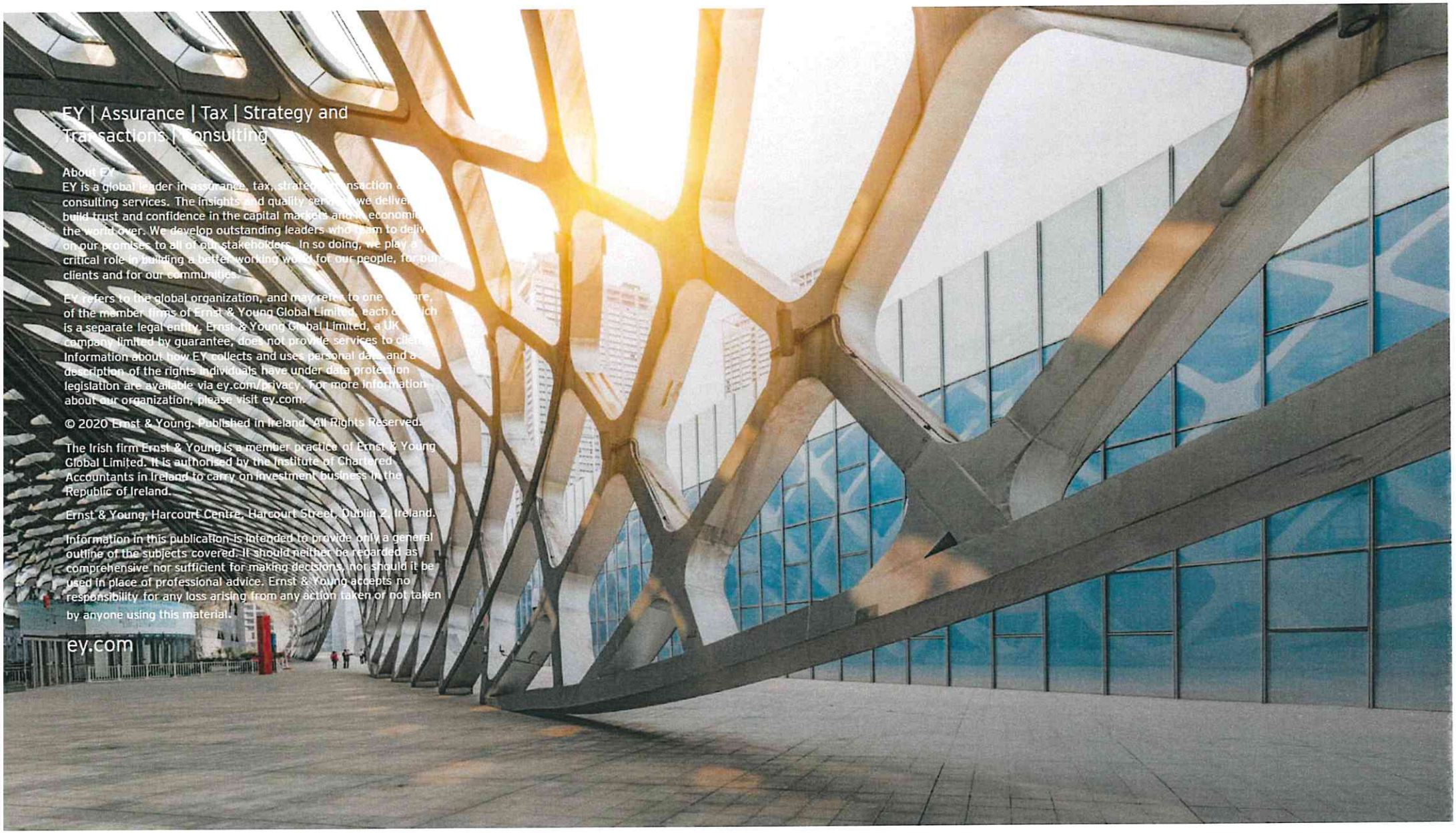

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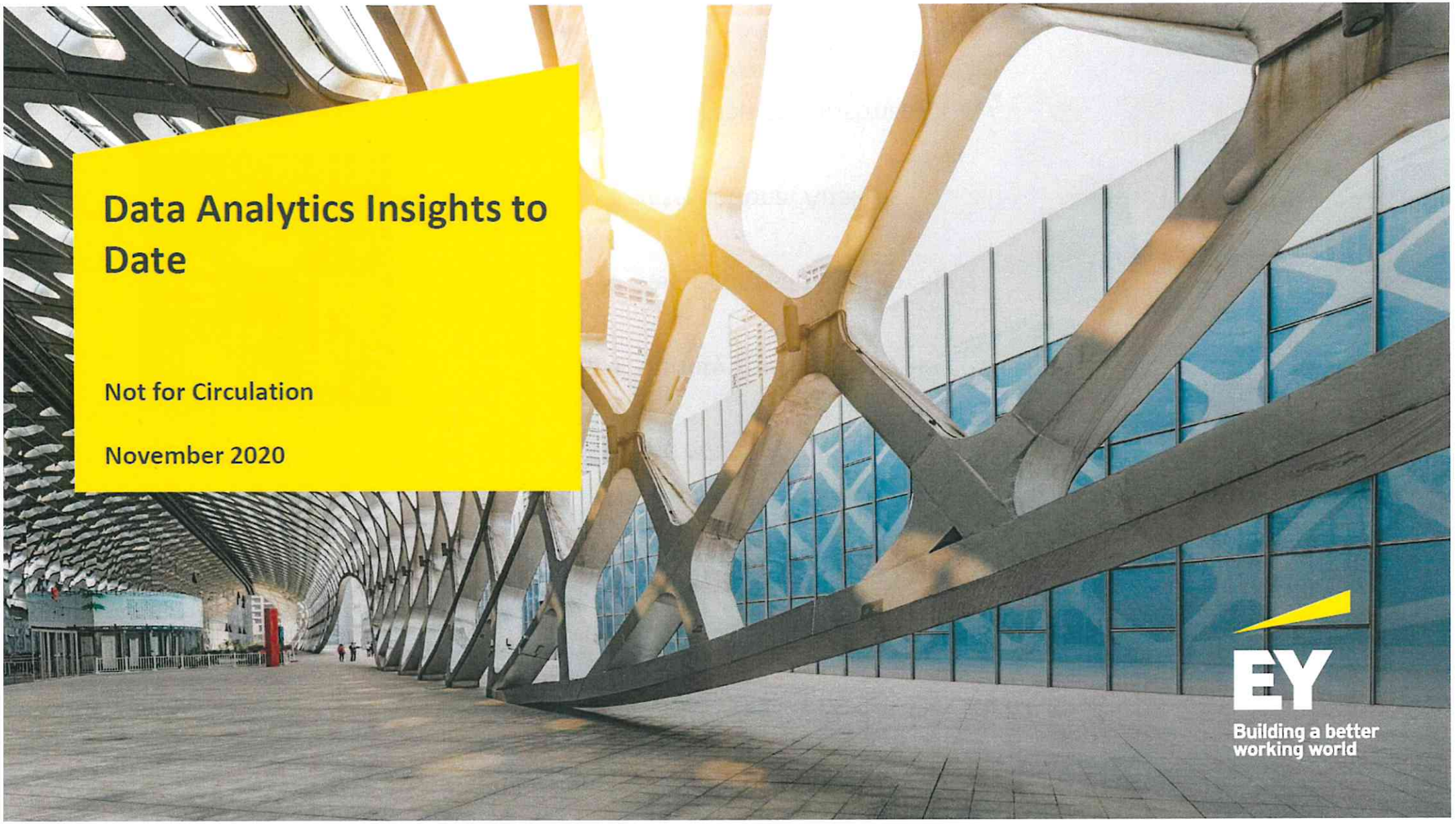
Data Analytics Insights to Date
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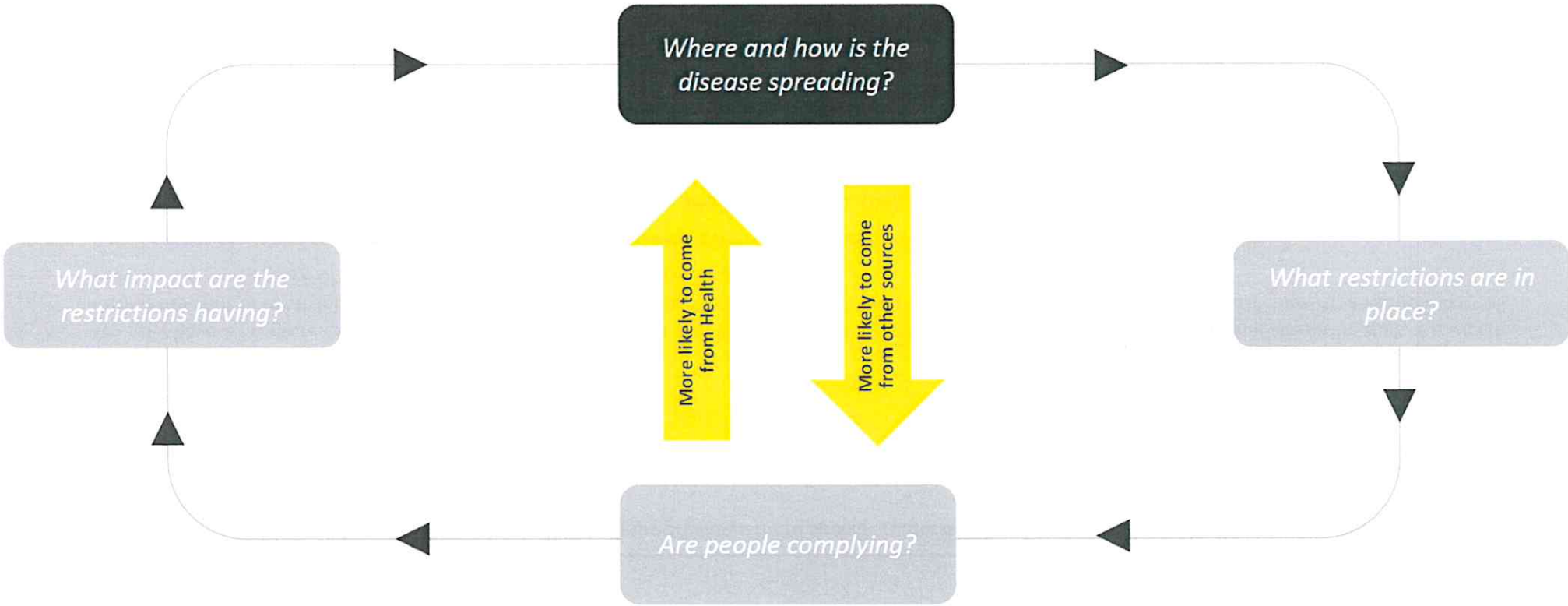
Update – Week 6

Agenda

- Introduction
- County Specific Analysis
- Restrictions Impact Analysis
- International Analysis
- Roadmap to Christmas

Answering four key questions to support government decision making

Helping improve visibility and decision making by combining and analysing data across government

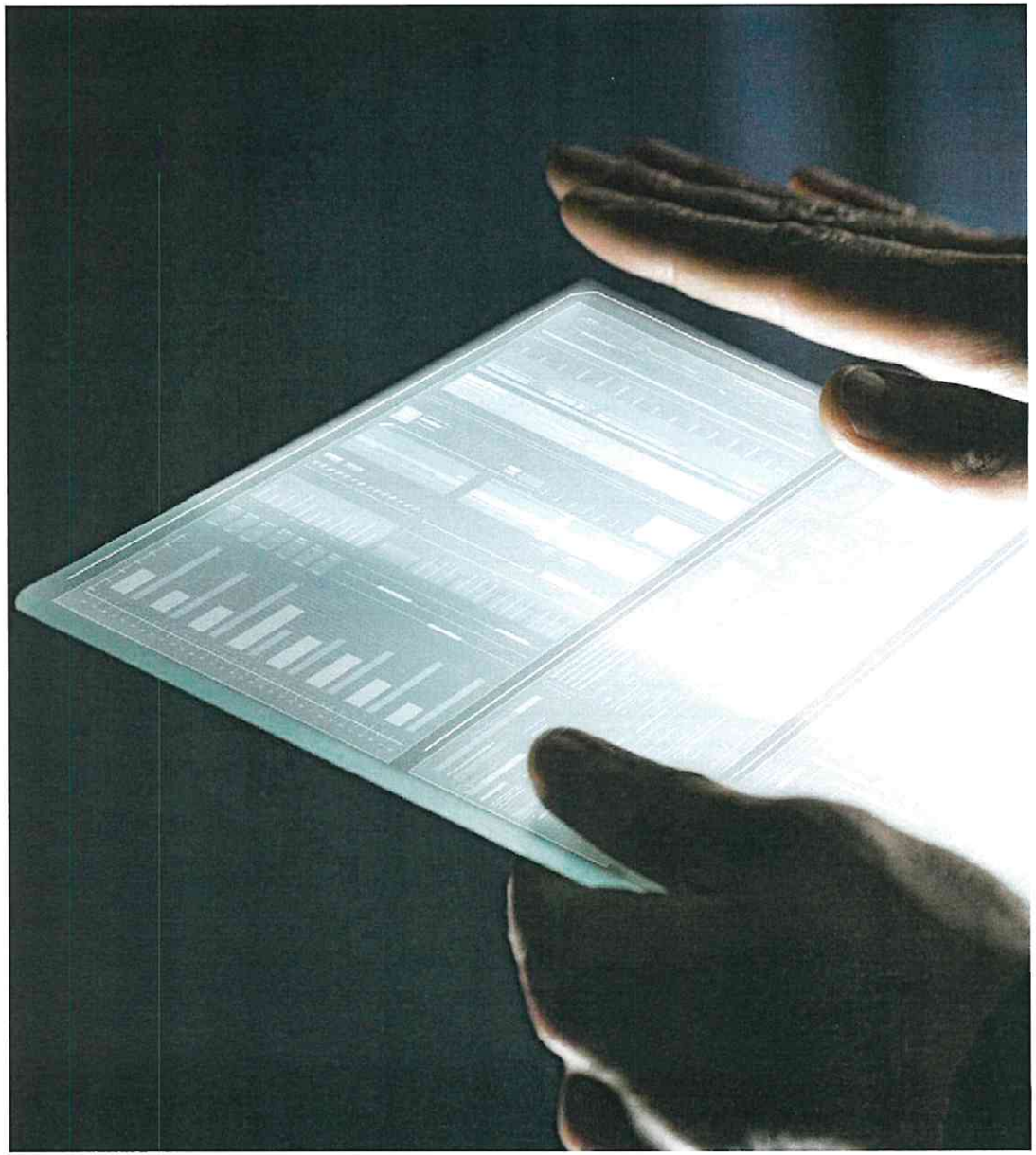


Summary of initial findings

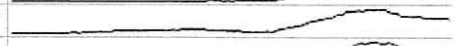
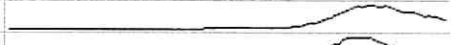
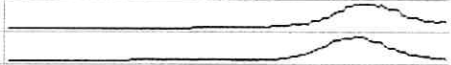
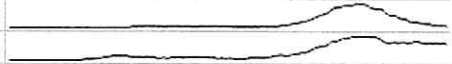
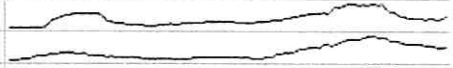
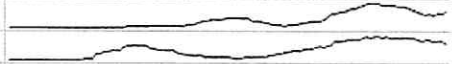
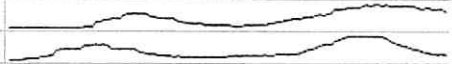
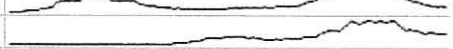
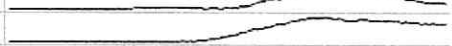
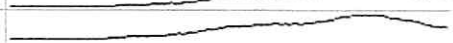
- Extending county analysis to Local Electoral Areas (LEA) helps provide a more specific understanding of what is happening in each county. These profiles can broadly be categorised as follows:
    1. Significant known outbreak event(s)
    2. Proximity to the border
    3. Following the national profile
    4. Proximity to and scale of Dublin
- We now have a far more expansive testing regime. This means that it is difficult to directly compare Wave 1 and Wave 2. While accepting that, it is worth noting the shift in recorded outbreaks from being led by Nursing Homes in Wave 1 to Private Households in Wave 2. This contributes to a reduction of 15 years in the median age of identified cases from Wave 1 to Wave 2 (Source: CSO)
- Social gatherings, citizen congregations, alcohol and specific local events all appeared to have contributed to Wave 2 outbreaks
- The introduction of Level 3 nationally did not reduce the 14 day incidence rate per 100k for majority of counties. The introduction of further household restrictions (Level 3 Max) from mid-October drove a reduction across most counties
- Wet pubs opened in all counties except Dublin in late September. The 14 day disease incidence rate per 100k started to increase ten days later in most counties. This increase was not seen to the same extent in Dublin. Note this also coincided with universities opening for some counties
- The LEAs containing University College Cork (UCC) and National University of Ireland Galway (NUIG) both saw higher increases than the rest of their county when the universities opened. This difference was reduced when the universities went online. Wet pubs also opened in both cities on the same week that universities opened
- The northern counties, and especially LEAs on the border, do appear to be impacted by proximity to the border. Donegal is not seeing significant reductions with Level 4 that was seen in other border counties. The introduction of Level 4 in Donegal coincided with a reduction in mask wearing (Facebook survey data), which goes against national trends
- The reopening of construction, non-essential retail and the wider Phase 3 changes during the summer do not appear to have had a material impact on the 14 day disease incidence rate per 100k nationally or in larger counties. It should however be noted that the disease rate was low at this time

Source Median Age June 5th 48 (CSO COVID-19 Deaths and Cases Series 4) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries4/
Median Age for week ending 30th October 33 (CSO COVID-19 Deaths and Cases Series 15) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries15/

County specific analysis



County Analysis Summary

County	Border county	Known outbreaks	Dublin and surrounding area	Following national restrictions trend	Wave One – main outbreak sources	Wave Two – main outbreak sources	14 day incidence rate per 100k (26/07 – 17/11)
Kerry		✓		✓	Private Houses, Residential Institutions, Hospital	Private House, Community Outbreak, Nursing Home	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Institutions	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	

Source Outbreak sources – CIDR, Incidence rate –based on daily cumulative case data published on GeoHive to 17 November 2020.
This data is published daily. Note Wave one defined as 03/03-25/07; Wave 2 is 26/07-20/11
*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR
**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Summary of county-level 14 day incidence rate per 100k

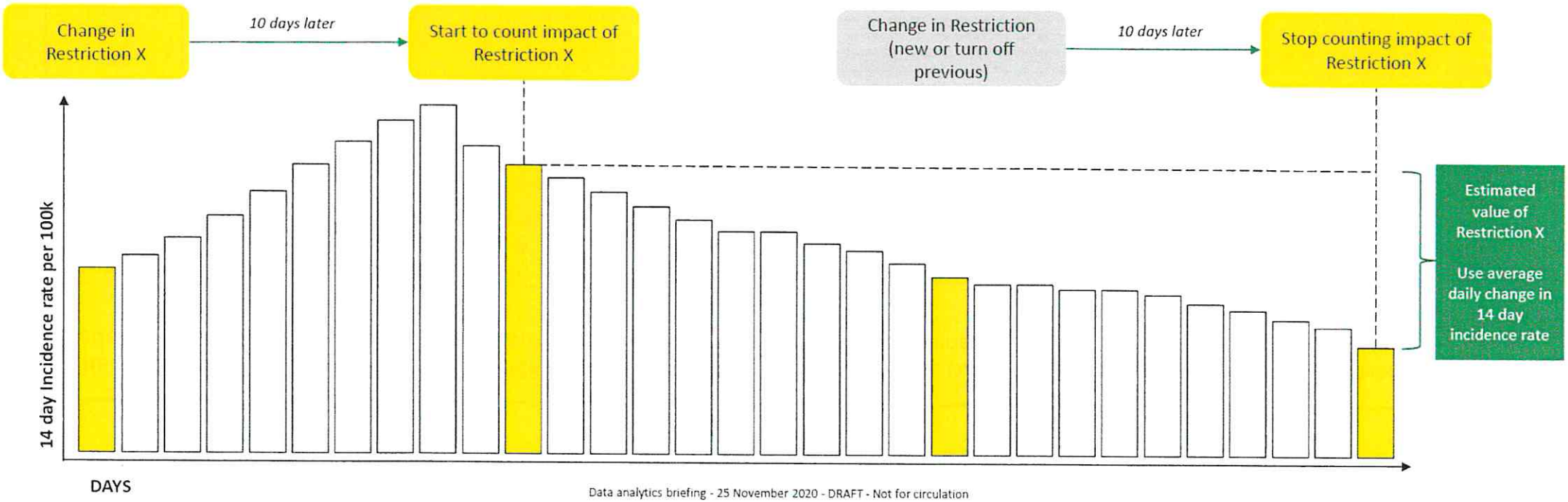
The heatmap below shows the 14 day incidence rate per 100k population for each county over the last two months. The overall reduction in cases has levelled to 17/11, with some county incidence rates increasing.

| Two Weekly Incidence Rate Per 100k | Population | 20-Sep | 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | Change Last 3 Days |
|---|---|---

Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There have been relatively few changes in restrictions, which generally combine more than one change at a time, therefore hiding the unit value per restriction. There is also a time lag between a restriction change and the impact being seen, and the incidence rate can clearly be impacted by significant outbreaks. We have used the below methodology to initially quantify the impact of changes in restrictions. This calculation has been applied across counties. The outputs should be seen as directionally useful, rather than precise statistical outputs. It should be noted that this does not measure compliance or behavioural aspects related to restrictions.

They are also presented alongside international academic research to provide a broad view to support decision-making. Further analysis has commenced to enhance the measurement of correlation between restrictions and their impact.



Summary of Restriction Impact

The below heatmap shows the average daily change in 14 day incidence rate per 100k for the time period that each change in restriction was in place. The impact is calculated using the approach described in Slide 8. Note the absolute number of weekly tests has significantly increased since Wave 1.

	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	19/09/2020	21/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Average daily change in the 14 day incidence rate per 100k	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Construction Opened	Mandatory HI	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown lifted Laois + Offaly, Kildare extended	Schools + childcare opened	Level 3 Dublin	Wet bars Opened except Dublin	Level 3 Donegal	Level 3 National	Level 3 Mix National	Level 4 Donegal, Cavan, Monaghan	Level 5 National
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-14
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-28
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-10
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-14
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	4	-2		0	-15
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	2	2		4	-6		-11
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-14
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-10
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-12
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-7
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		2	-10		-10
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-5
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-13
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-11
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-15
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-12
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-22
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-13
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		-3	-9		-8
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-11
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-17
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-6
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-10
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-19
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-9
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-6

Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. Measures the average daily change in the 14 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

Cavan's three LEAs follow a different path. One is being driven by outbreaks, one impacted by the border and one more aligned with the national trend

Cavan profile:

- Cavan has experienced a higher 14 day disease incidence rate per 100k during the second wave than the national average
- Part of Cavan borders with NI where different restrictions are in place

Summary analysis:

- Cavan-Belturbet LEA is the only part of Cavan with a NI border. This LEA is experiencing a higher disease incidence than the national average
- Ballyjamesduff LEA had the highest incidence rate throughout October. The timing of the acceleration of growth rate in this LEA appears to correlate with the GAA county final (winners are in this LEA)
- Levels of private house outbreaks rose during September and October
- [redacted]
- Travel along the N03 between Belturbet and George Mitchell Bridge at the NI Border fell 33% during October (Source TII Road Travel data)

Restriction impact:

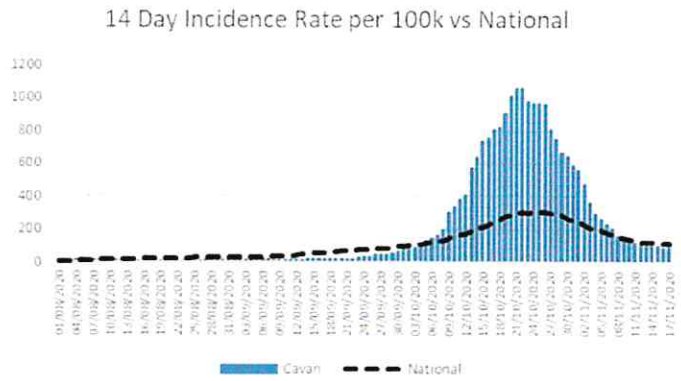
- The timing of the growth of cases appears to correlate with the events listed above and changes to restrictions in wet pubs
- Level 4 restrictions imposed for the border counties appears to have desired impact of reducing incidence level in Cavan
- Level 5 restrictions continue to drive incidence level further

Employment Summary:

- Cavan had c.47% of its workforce on PUP or TWSS (c.15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP (17 Nov) which is down from 9.7k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

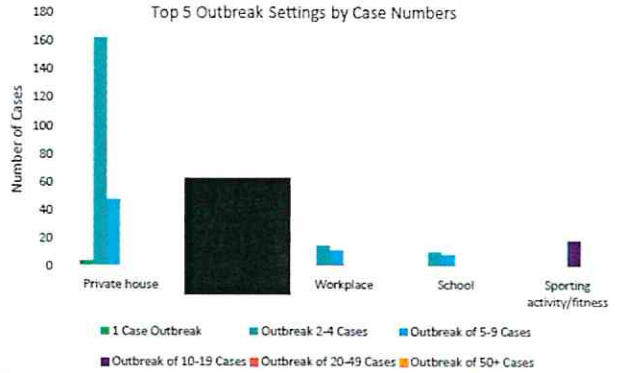
Cases	
1,272	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
32%	3.6

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	215	72
[redacted]	[redacted]	[redacted]
Workplace	29	12
School	20	7
Sporting activity/fitness	19	1

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Sporting activity/fitness	04/10/2020	19
Community outbreak	07/10/2020	16
[redacted]	[redacted]	[redacted]
Private house	13/10/2020	7



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Meath is seeing a higher incidence rate than the national average. This is influenced by proximity to Dublin and specific outbreak events

Meath profile:

- Meath has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Dublin borders including a significant commuter population

Summary analysis:

- Level of private house outbreaks during September and October grew
- Continued outbreaks in nursing homes, one significant outbreak of 51 cases in [redacted]
- One significant community outbreak of 29 cases
- Ratoath LEA has the highest incidence rate. The timing of this acceleration of growth rate appears to correlate with GAA county final win (Source: GAA.ie)

Restriction impact:

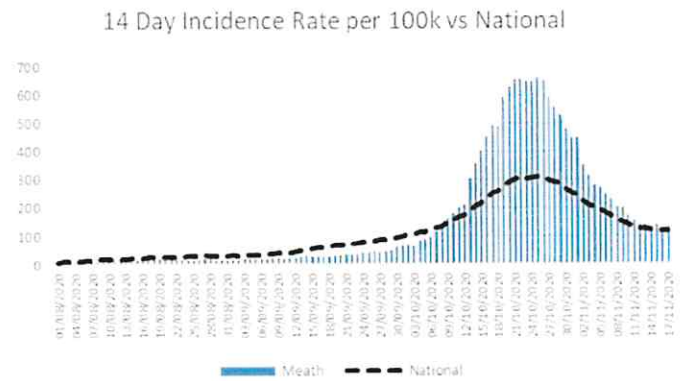
- The timing of the growth of cases appears to correlate with the events listed above and the changes to restrictions in wet pubs
- Incidence level continued to rise post initial Level 3 restrictions imposed nationally
- Level 3 (max) restrictions imposed nationally appear to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level down further

Employment summary:

- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (13k versus 25k) levels (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,466

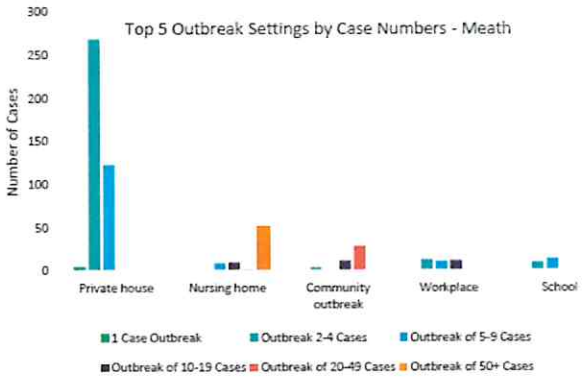
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
27%	3.3

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	397	121
Nursing home	74	9
Community outbreak	45	4
Workplace	38	18
School	25	10

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Nursing home	[redacted]	51
Community outbreak	10/10/2020	29
Community outbreak	13/10/2020	12
Workplace	19/10/2020	11
Nursing home	[redacted]	10



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

The border is contributing to Donegal's higher rate of cases. Donegal is not seeing the benefit of recent Level 4 increases seen in other border counties

Donegal profile:

- Donegal has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Disease incidence higher and earlier versus national average, and reducing at a slower rate
- Eastern Donegal borders with NI where different restrictions are in place

Summary analysis:

- Lifford and Stranolar LEA close to the NI border with Derry, experienced an earlier and higher disease incidence
- Other eastern parts of Donegal (Buncrana, Letterkenny and Carndonagh) have the next highest incidence rates
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted] (Source: Donegal Daily)
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November

Restriction impact:

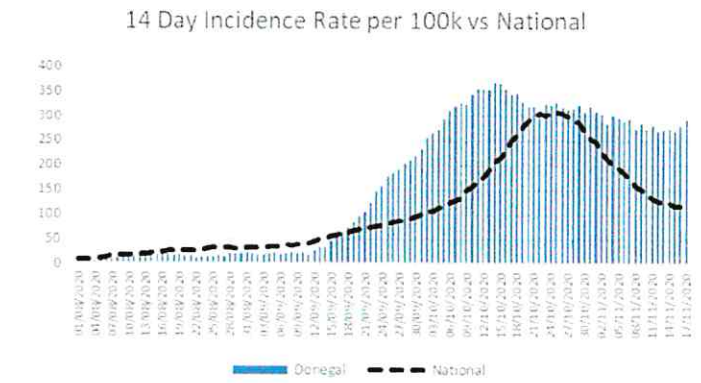
- Disease incidence continued to rise after level 3 Donegal announcement
- Specific restrictions in NI (1/10) on bars and restaurants appeared to have helped reduce rate in Donegal
- Despite level 3 max and level 5 being effective in other counties, cases in Donegal fell at a lower rate compared to national levels
- Similarly, Level 4 reduced the cases in Monaghan and Cavan, but not Donegal. Mask compliance in Donegal also reduced (against national and previous Donegal trend) with Level 4 restrictions (Facebook survey data)

Employment summary:

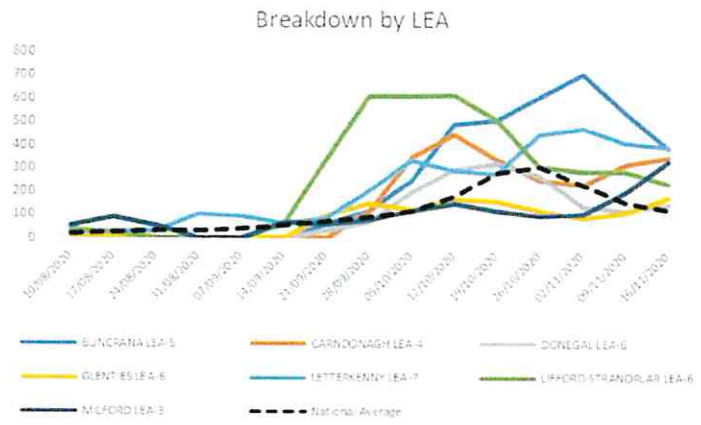
- Donegal had c.49% of its workforce on PUP or TWSS (c 30k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (12k versus 23k) (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases	
2,165	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
62%	3.9

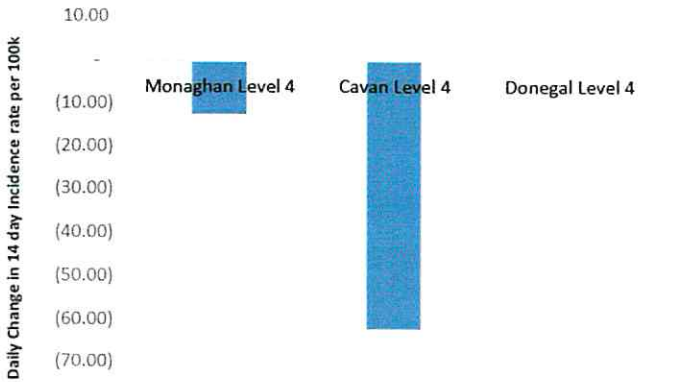
Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	651	235
Workplace	159	28
Hospital	126	5
Extended family	118	19
Nursing home	58	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Hospital	[redacted]	99
Workplace	23/09/2020	55
Nursing home	[redacted]	49
Social gathering	24/10/2020	20
Hospital	[redacted]	17

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.



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Cork is broadly aligned with the national trend. Cork City is driving up the incidence rates across the county

Cork profile:

- Cork is broadly aligned with the national average for the 14 day disease incidence rate per 100k during second wave

Summary analysis:

- Cork City is the most impacted area, with the rest of the county following with a reduced incident rate
- Cases in Cork City South Central, the LEA containing UCC (started returning on 21 Sept), were twice as high as other LEAs in Cork city during mid October. This gap declines in November as the universities went online

Restriction impact:

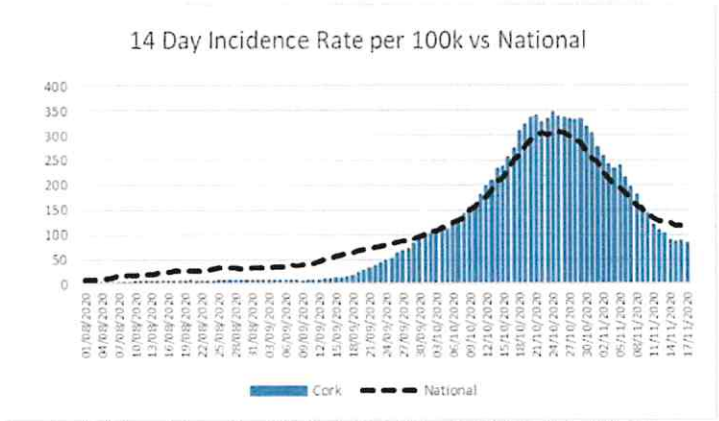
- Cases in Cork city rose as wet pubs reopened (21 Sept). Cases around the rest of the county followed shortly after
- There were a number of GAA games in early October, which were linked with outbreaks. No matches occurred after this, with level 3 restrictions being applied around this time (6 Oct). Cases throughout Cork began to fall 10 days later

Employment summary:

- At peak, c 39% of Cork's workforce were on PUP or TWSS (c 96k) (EY 2019 employment estimates). Current PUP levels (17 Nov) are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
4,492

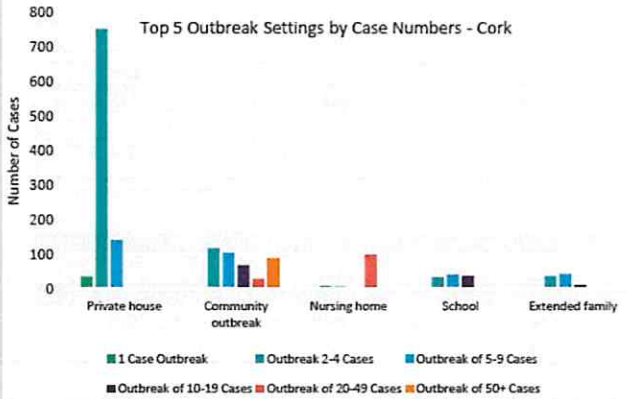
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	3.7

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	929	354
Community outbreak	411	67
Nursing home	114	9
School	113	24
Extended family	90	22

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	26/10/2020	68
Nursing home	[redacted]	46
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	30
Community outbreak	22/09/2020	29



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Galway rose above the national average during the second wave, driven by Galway City Central and Connemara South LEAs

Galway profile:

- Galway experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- It has now come back down below national average levels since early November

Summary analysis:

- Galway City Central, Connemara South and Galway City East have had the highest 14-day incidence rates throughout October
- A number of key events occurred in late September which could have contributed to this increase
- Cases within Galway City Central LEA appear to have increased in this period following students returning to NUIG from 21 September
- GAA senior championship football semi-finals and finals also occurred in the last week of September and first week of October. Connemara South had a confirmed outbreak in mid-October
- Throughout November, private household cases were responsible for 49% of outbreak cases, with [redacted] and community outbreaks making up a large proportion of the remaining percentage

Restriction impact:

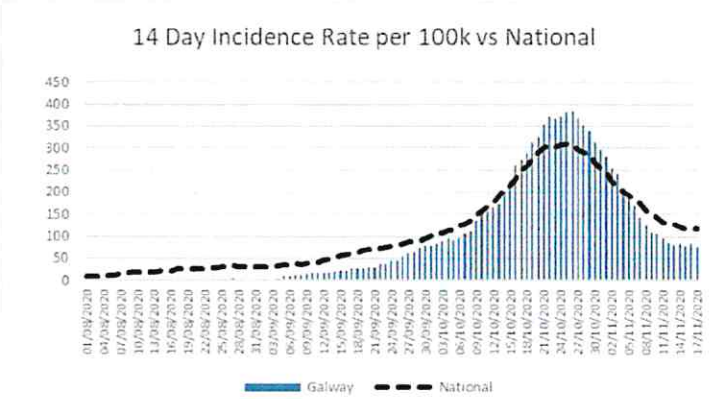
- Cases begin to decline ten days after the national level 3 lockdown came into effect (17/10), falling below national levels in November
- An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

Employment summary:

- Galway had c.39% of its workforce on PUP or TWSS (c.49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP (17 Nov) which is down from 32.5k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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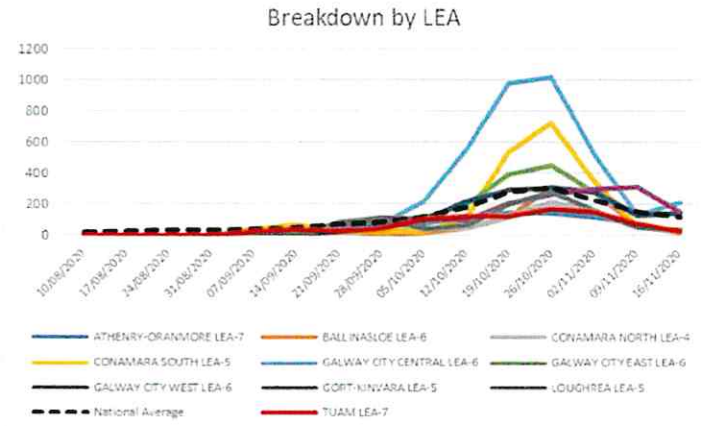


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,060

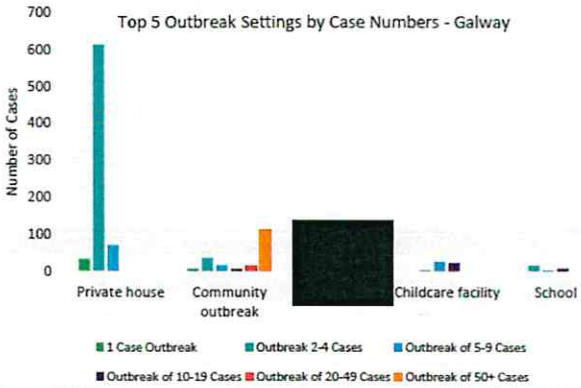
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
66%	3.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	723	293
Community outbreak	207	30
[redacted]	[redacted]	[redacted]
Childcare facility	61	8
School	37	11

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	24/09/2020	114
[redacted]	[redacted]	[redacted]
Social gathering	19/09/2020	20
Community outbreak	25/09/2020	18



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Dublin – local authority breakdowns over time

The below heatmap shows the Dublin LEA 14 day incidence rate per 100k population since early August. Some areas are seeing higher incidence rates.

		10/08/2020	17/08/2020	24/08/2020	31/08/2020	07/09/2020	14/09/2020	21/09/2020	28/09/2020	05/10/2020	12/10/2020	19/10/2020	26/10/2020	02/11/2020	09/11/2020	16/11/2020
Dublin City	ARTANE-WHITEHALL LEA-6	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9	111.4
	BALLYFERMOT-DRIMNAGH LEA-5	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	191	143.3
	BALLYMUN-FINGLAS LEA-6	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7	221.8
	CABRA GLASNEVIN LEA-7	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	160.3	138.1
	CLONTARF LEA-6	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	114.4	73.8
	DONAGHMEDE LEA-5	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7	89
	KIMMAGE-RATHMINES LEA-6	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188	123.5
	NORTH INNER CITY LEA-7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	121	84.9
	PEMBROKE LEA-5	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	88	59.4
	SOUTH EAST INNER CITY LEA-5	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7	133
	SOUTH WEST INNER CITY LEA-5	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1	186.6
Dun Laoghaire - Rathdown	BLACKROCK LEA-6	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2	68.2
	DUN LAOGHAIRE LEA-7	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	76.9	72.1
	DUNDRUM LEA-7	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	66.8	80.1
	GLENCULLEN-SANDYFORD LEA-7	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3	68.3
	KILLINEY-SHANKILL LEA-7	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	44.6	52.5
	STILLORGAN LEA-6	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8	101.6
Fingal	BALBRIGGAN LEA-5	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2	109.4
	BLANCHARDSTOWN-MULHUDDART LEA-5	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	266.2	147.3
	CASTLEKNOCK LEA-6	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	297	199.5	130.1	114.9
	HOWTH-MALAHIDE LEA-7	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9	92.6
	ONGAR LEA-5	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7	134
	RUSH-LUSK LEA-5	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2	43.3
	SWORDS LEA-7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	245.3	295.9	371.8	288.1	140.2
South Dublin	CLONDALKIN LEA-7	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	212.8	180.6
	FIRHOUSE-BOHERNABREENA LEA-5	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8	102.3
	LUCAN LEA-5	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6	122.7
	PALMERSTOWN-FONTHILL LEA-5	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1	165.6
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7	112.7
	TALLAGHT CENTRAL LEA-6	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	168.9	134.2
	TALLAGHT SOUTH LEA-5	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	304.5	251

There appears to be a correlation between areas hit hard in Wave 1 and Wave 2 (acknowledging differences in testing criteria), with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin and Artane-Whitehall.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Dublin includes over a quarter of Ireland's population. It therefore includes many stories and strongly aligns with national case levels

Dublin profile:

- Not surprisingly, Dublin's 14 day disease incidence rate per 100k during second wave is in line with the national average
- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire–Rathdown seeing lower overall incidence

Summary analysis:

- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Restriction analysis:

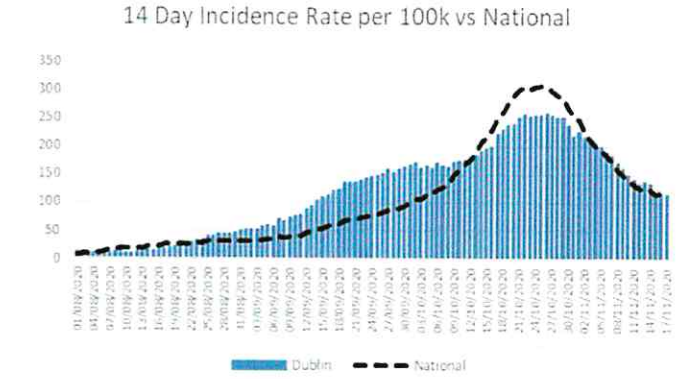
- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases
- Not opening the wet pubs does appear to have helped Dublin with the subsequent increase in cases being slower than the national average

Employment summary:

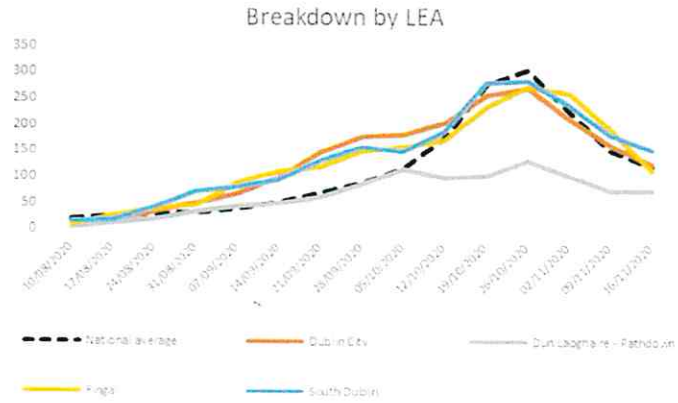
- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k (17 Nov) , compared to a peak of 176k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

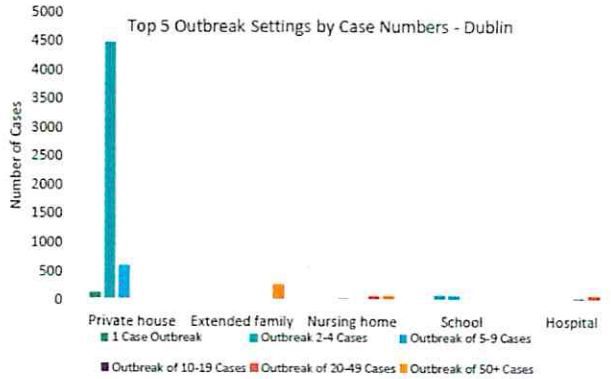
Cases	
12,606	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
56%	2.9

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	5225	2075
Extended family	291	3
Nursing home	266	27
School	249	66
Hospital	192	30

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	24/09/2020	288
Nursing home	[redacted]	75
Hotel	12/09/2020	38
Childcare facility	20/10/2020	38
Residential institution	02/10/2020	30



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Cases in Limerick during Sept and Oct were driven by very large extended family and community outbreaks

Limerick profile:

- Limerick has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average.
- This is a result of the cases in Limerick not declining to the same extend in the rest of the country

Summary analysis:

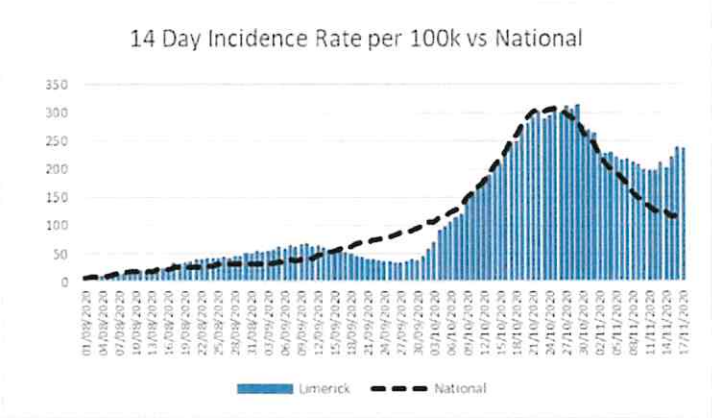
- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November.
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others – the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

Employment summary:

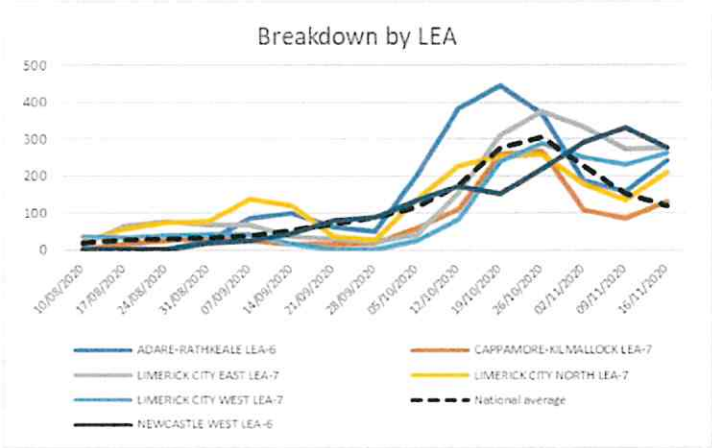
- Limerick had c.43% of its workforce on PUP or TWSS (c.34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
1,771

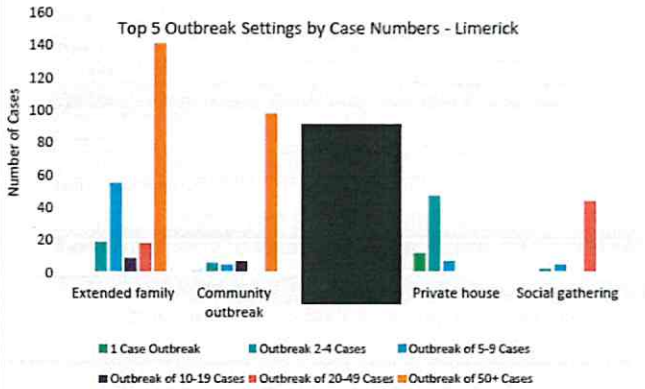
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
39%	6.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Extended family	242	19
Community outbreak	117	8
[redacted]	[redacted]	[redacted]
Private house	66	34
Social gathering	51	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	23/09/2020	141
Community outbreak	08/10/2020	94
[redacted]	[redacted]	[redacted]
Residential institution	13/10/2020	31
Social gathering	15/10/2020	25



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Kerry is seeing lower cases than the national average, with Listowel bordering Limerick having the highest number of recent cases

Kerry profile:

- Kerry has experienced a similar 14 day disease incidence rate per 100k during second wave to the national average. However, Listowel LEA has seen a sharp increase in its rate since early October

Summary analysis:

- North Kerry (Listowel) is most severely affected. This coincides with outbreaks southern parts of Limerick such as Newcastle West and Adare-Rathkeale, as well as Limerick city
- Killarney and Tralee LEAs are both next in terms of severity of impact, containing two major Kerry towns
- The remainder of the county (further south, smaller towns) is generally less affected
- [redacted]
- Private homes account for 33.68% of all outbreak cases since Sept 1st
- Listowel's incidence levels were three times higher than the next worst-afflicted LEA. Note the small population of ~29,000 people meant 182 cases over a 2-week period prior to 26 Oct created a very high incidence rate

Restriction impact:

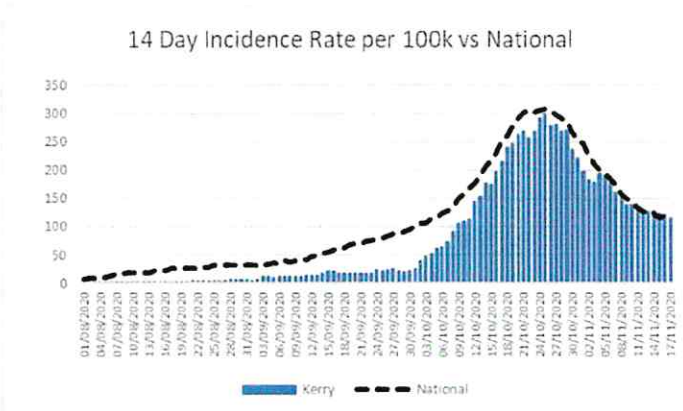
- The number of cases in Kerry started to grow around the time level 3 was introduced – two weeks later, this high growth rate had largely ceased
- Improvements have levelled off somewhat across LEAs such as Tralee, Killarney and Listowel

Employment summary:

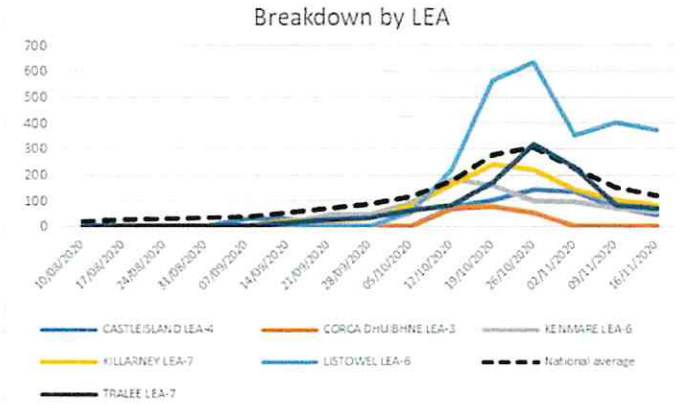
- Kerry had c.49% of its workforce on PUP or TWSS (c.32k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

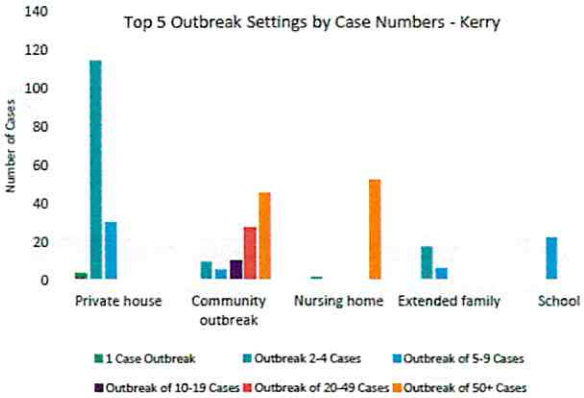
Cases	
963	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	4.1

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	150	53
Community outbreak	101	14
[redacted]		
Extended family	25	7
School	23	4

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]		
Community outbreak	03/09/2020	43
Community outbreak	23/10/2020	25
Religious/Other ceremony	16/10/2020	11
Restaurant / Cafe	11/09/2020	11



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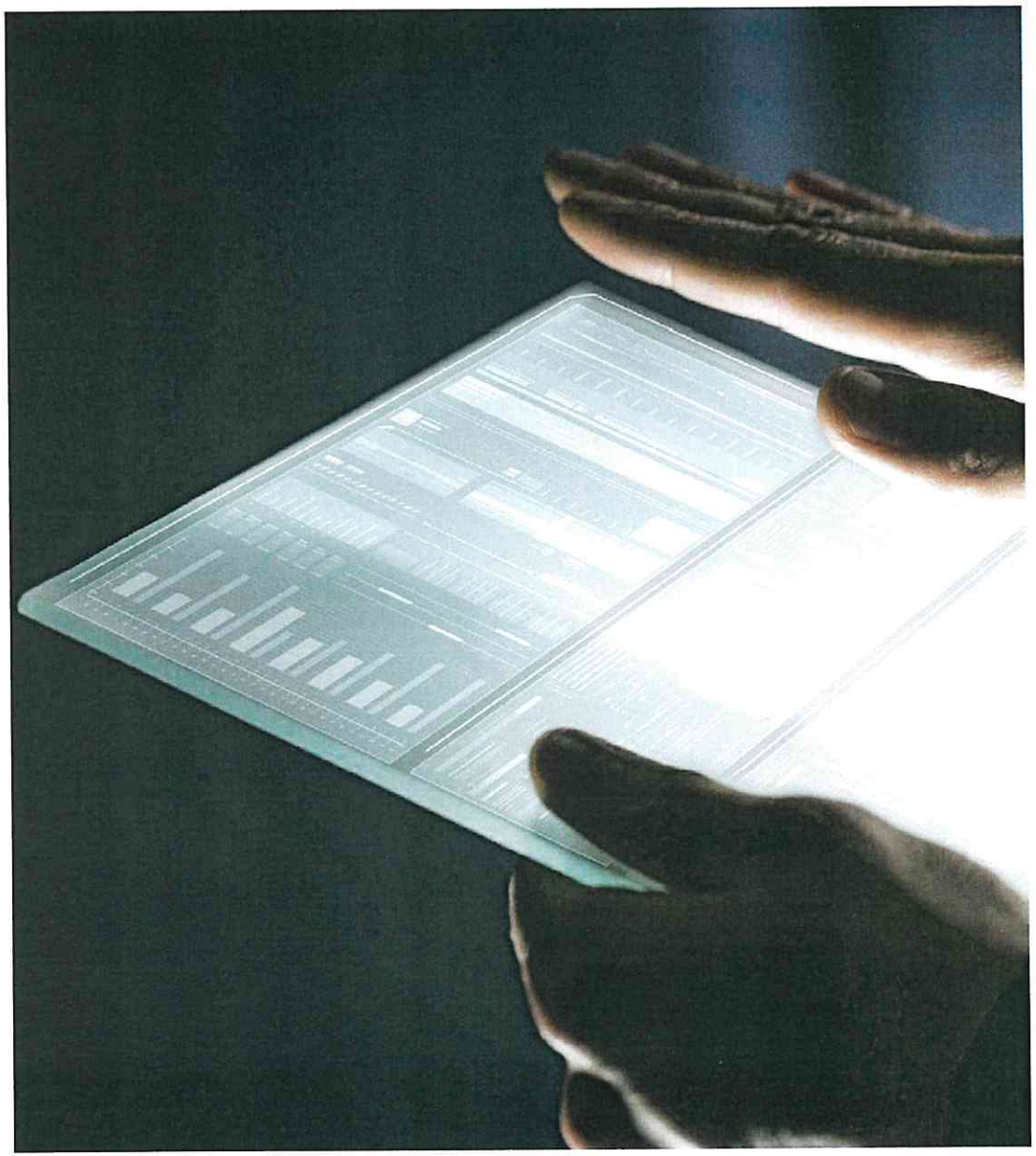
Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties – highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

International restriction analysis

A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

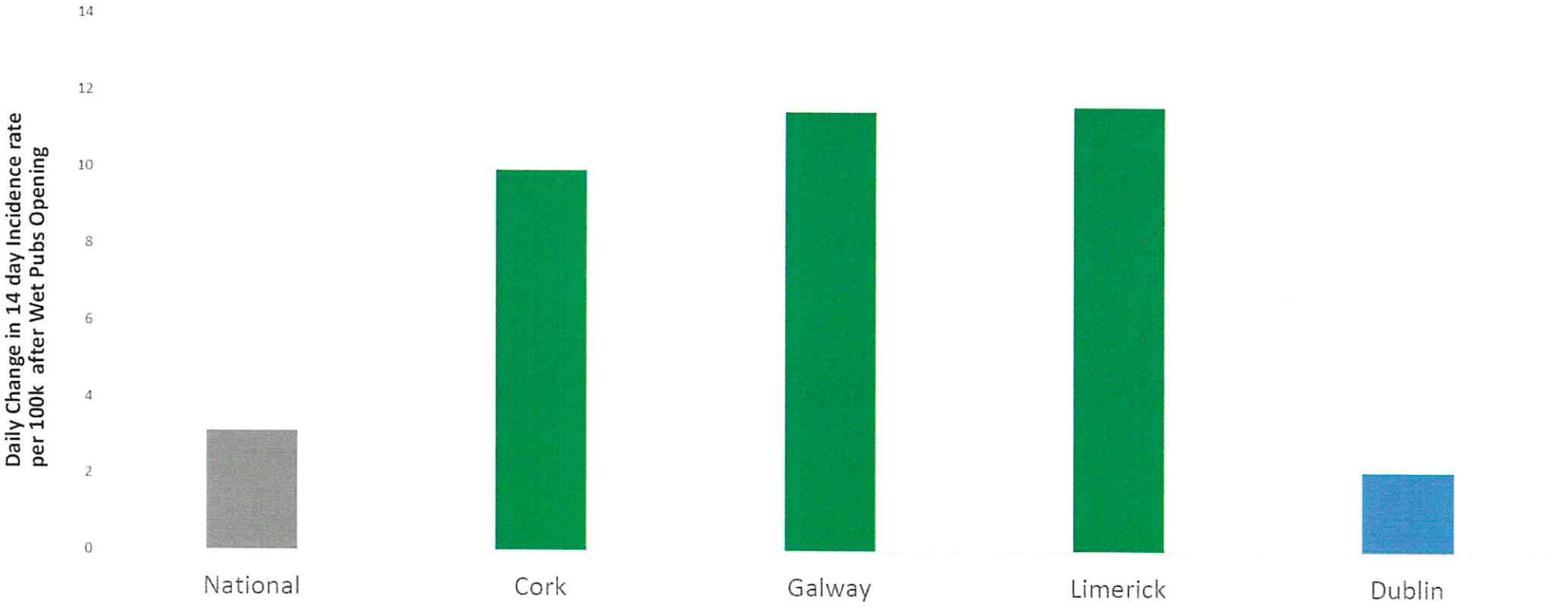
International desktop research

Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular COVID-19 insights publication and with new research included today

Ireland – restrictions analysis

Wet Pubs opened across the country, but not Dublin, on 21 September. The increase in Dublin's incidence rate then slowed when compared with other counties

The incidence rate growth in Dublin after the Wet Pubs opening in other counties was 33% lower than the national average and 79% to 82% lower than other counties with larger cities. Note this coincides with universities opening, which impacts Cork, Galway and Limerick



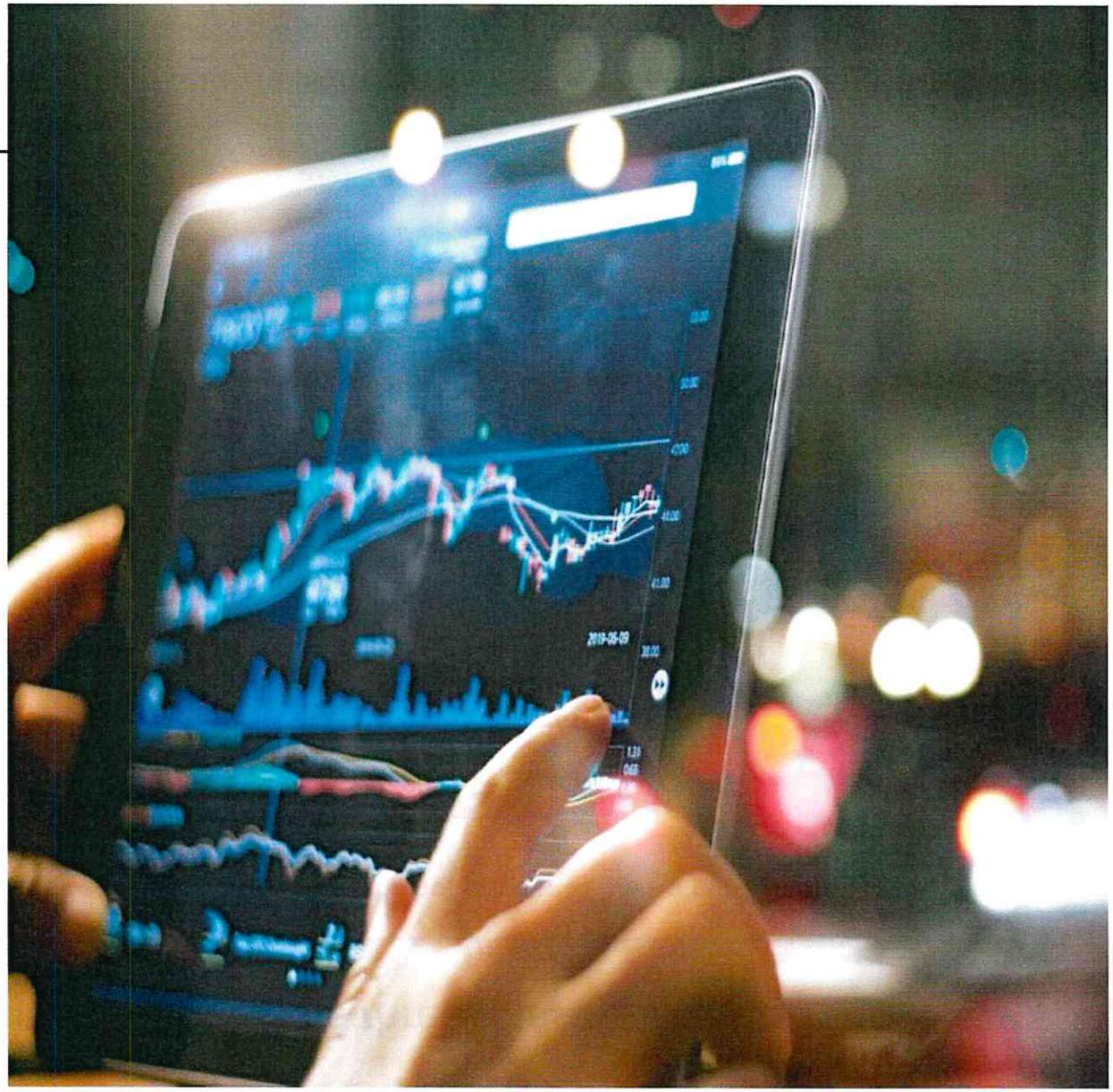
The incidence rate did not materially increase after the three phases of re-opening during late May to early July

The reopening of construction, non-essential retail and the wider Phase 3 openings did not appear to have a material impact on the cases nationally or in larger counties. Note that disease incidence rates were low at this time

	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	29/08/2020	21/08/2020	31/08/2020	19/09/2020	21/09/2020	30/09/2020	07/10/2020	16/10/2020		22/10/2020
Average daily change in the 14 day incidence rate per 100k	No restrictions	Childcare closed School Closed	Bars closed	Retail restaurants etc closed	Stay at home order (20m)	Stay at home increased to 5km	Construction Opened	Mandatory PUP	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown Ltocc Laois + Offaly, Kildare extended	Schools + childcare opened	Level 3 Dublin	We Bars Opened except Dublin	Level 3 Donegal	Level 3 National	Level 3 Mon National	Level 4 Donegal Cavan Monaghan	Level 5 National
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-14
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-28
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-10
Cork	2	2	3	-3	-1	1	2	-1	0	0	0	0		0		4		10		7	5		-14
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	4	-2		0	-15
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	2	2		4	-6		-11
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-14
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-10
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-12
Kilkenny	1	1	4	-3	1	0	-3	0	0	0	0	1		0		0		6		3	-7		-7
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		2	-10		-10
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-5
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-13
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-11
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-15
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-12
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-22
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-13
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		-3	-9		-8
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-11
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-17
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-6
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-10
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-19
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-9
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-6

* Phase 3 re-opening included places of worship, gyms, cinemas, theatres, leisure facilities, personal services, sports, public transport 50% capacity & face coverings), mass gatherings (50 indoors, 200 outdoors), adult education and community facilities, health and well being related services, restaurants and cafes (on site food service), hotels and other accommodation facilities, driving schools and tests

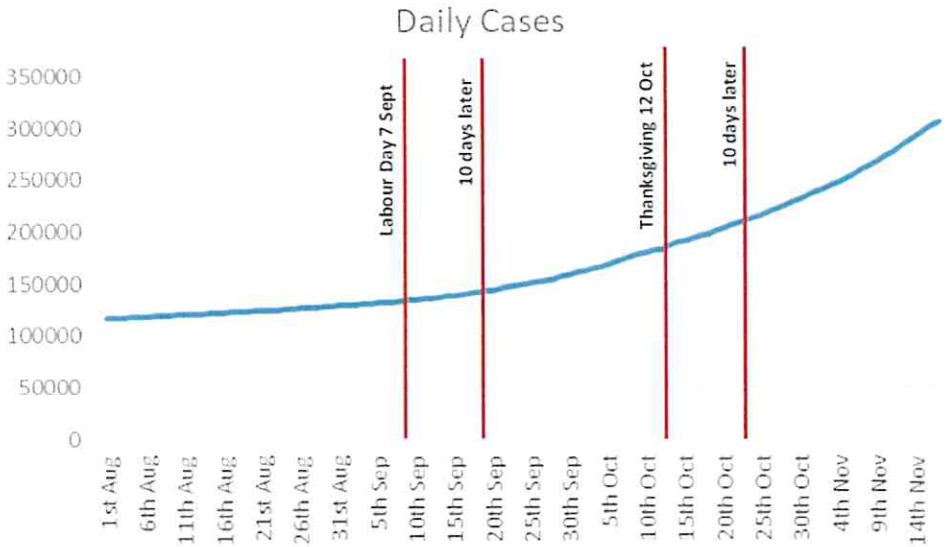
Select International Desktop Research



Canadian Thanksgiving: Testing & Tracing data and case numbers show surge in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first surge in Spring.



Key findings:

- Canada saw a surge in COVID-19 cases in the days and weeks that followed Thanksgiving, the **highest rates** since the first surge in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; **4,109 new daily cases** were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Canadian Testing and Tracing records show that Thanksgiving gatherings directly resulted in **viral spread**
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases **dramatically changed** after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has **doubled** from 155,000 on 28 September to over 310,000 on 18th November
- A similar **spike** is noticed on 17th September, 10 days after **Canadian Labour day** was celebrated

Source: https://health-infobase.canada.ca/covid-19/
https://www.thestar.com/news/canada/2020/09/23/want-be-gathering-for-thanksgiving-trudeau-says-covid-19-second-wave-underway.html

US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.)

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

POI categories ranked in decreasing order of associated additional infections that would occur if the location is opened

Full-service restaurants

Fitness centres

Religious organisations

Take-out restaurants

Grocery stores

Department stores

Pharmacies

Results

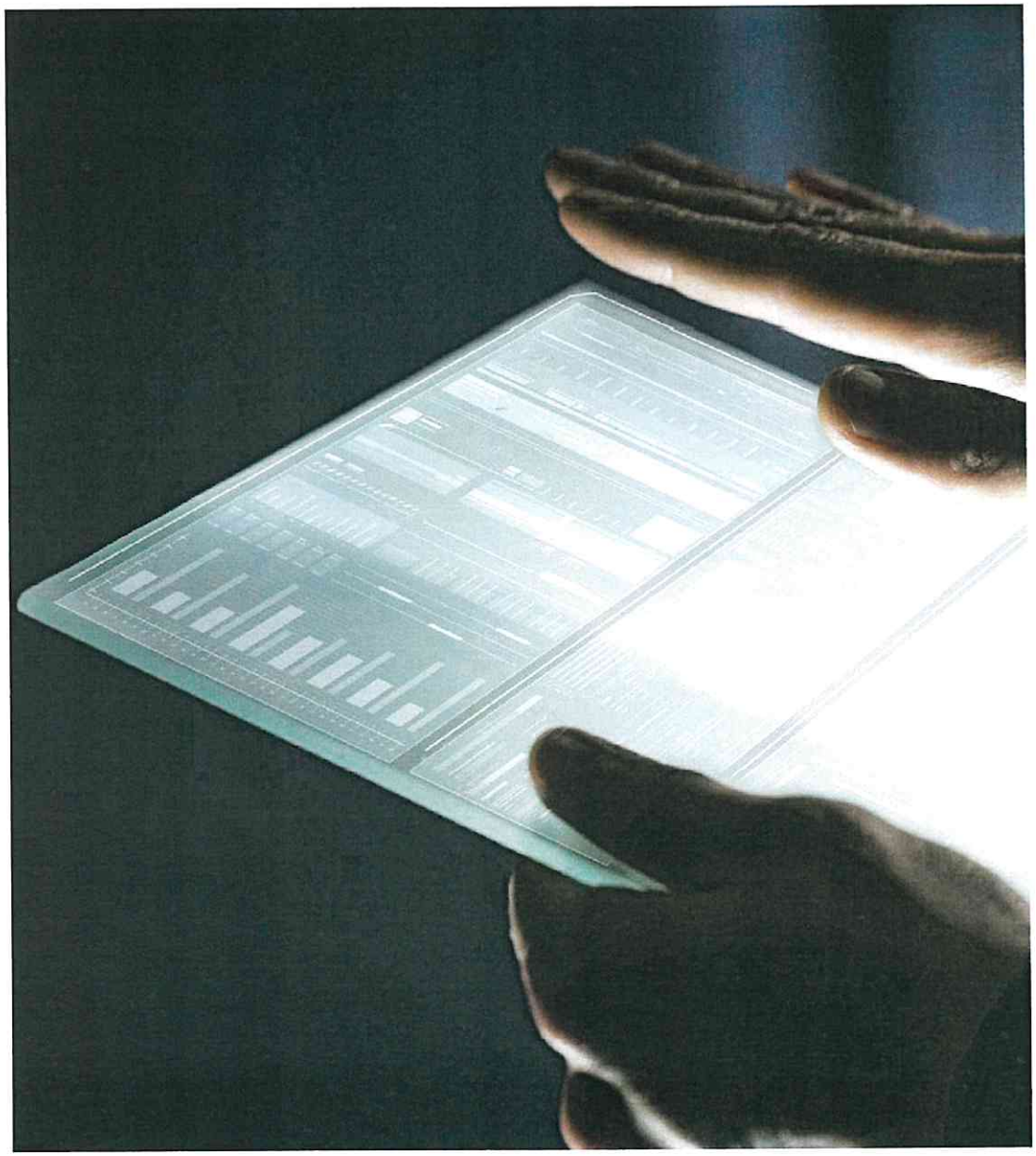
- The Stanford Mobility Network Model Simulation concluded that on average across metro areas, reopening full-service restaurants, fitness centres and religious organisations produces the largest predicted increase in infections.
- Take-out restaurants, grocery stores, department stores and pharmacies resulted in low positivity rates.
- This pattern was seen in the 3 US cities studied.

Key findings

- The model calculates the additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location.
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy.
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10).
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more.

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html

Roadmap for next six weeks



Approach to Christmas monitoring

We will combine a variety of data sources to monitor activity over the Christmas period

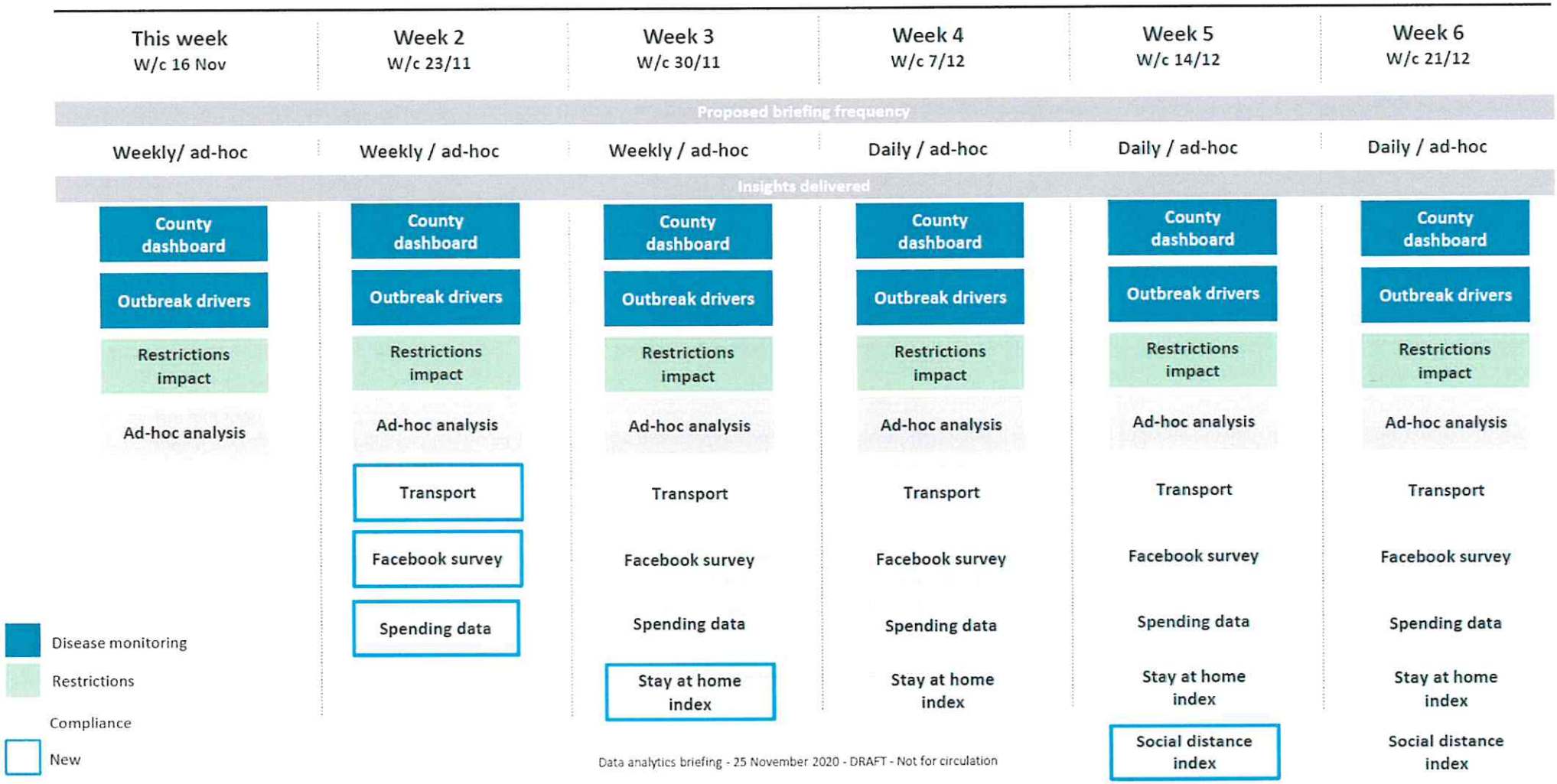
Setting	Description	Provided by NPHET (Disease Incidence)		Provided by public sector organisations (activity/compliance)				Newly generated insights (activity/compliance)	
		HSE	CIDR	TII/NTA	Survey	CSO	Gardaí	Mobility data	Payments data
Events	Indoor and outdoor (e.g. concerts, sports events, weddings, funerals)	✓	✓				TBC	✓	
Social/family gatherings	Levels of gatherings in private households	✓	✓					✓	
Retail and services	Levels of activity in retail and other services (e.g. hairdressers)	✓	✓			✓		✓	✓
Workplaces	Attendance at physical workplaces	✓	✓					✓	
Domestic transport and travel	Levels of movement around the country	✓	✓	✓		✓			
Education	Schools, childcare, adult and higher education	✓	✓						
Bars/restaurants	Activity levels in bars and restaurants	✓	✓						✓
Care homes	Residential facilities, assist living and nursing homes	✓	✓						
Sentiment/compliance	Indicators around compliance to restrictions			✓	✓		TBC	✓	
International travel	International travel levels and related disease spread	✓	✓			✓		✓	
Leisure/recreation	Gyms, pools, leisure centres	✓	✓					✓	
Accommodation services	Stays in hotels, guesthouses and B&Bs	✓	✓					✓	✓

Approach overview

- Leverage existing health data from NPHET, curate data from Government agencies and create new insights from additional data sources
- Support comprehensive data analysis to monitor and provide insights on the effectiveness and impact of restrictions and behaviours over Christmas
- Leverage insights to inform restriction measures for future planning as well as provide "stories" to help bring to life for the public
- Aggregated and anonymised data only. No personal identifiable data

What will the next six weeks look like?

Data is anonymised and aggregated to LEA or country and by industry type.
No personal identifiable information



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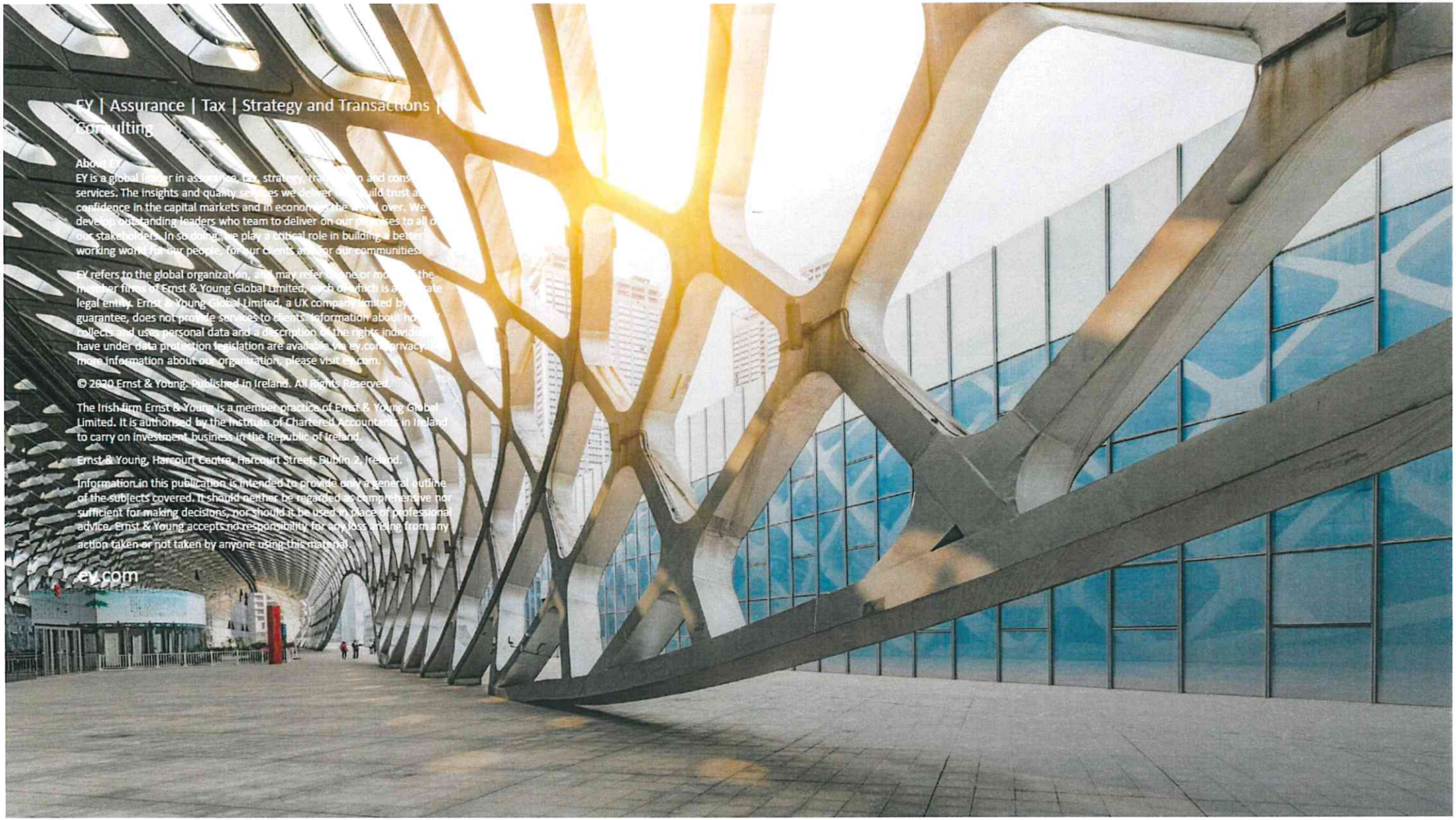
- The information in this presentation pack will have been supplemented by matters arising from any oral presentation by us, and should be considered in the light of this additional information



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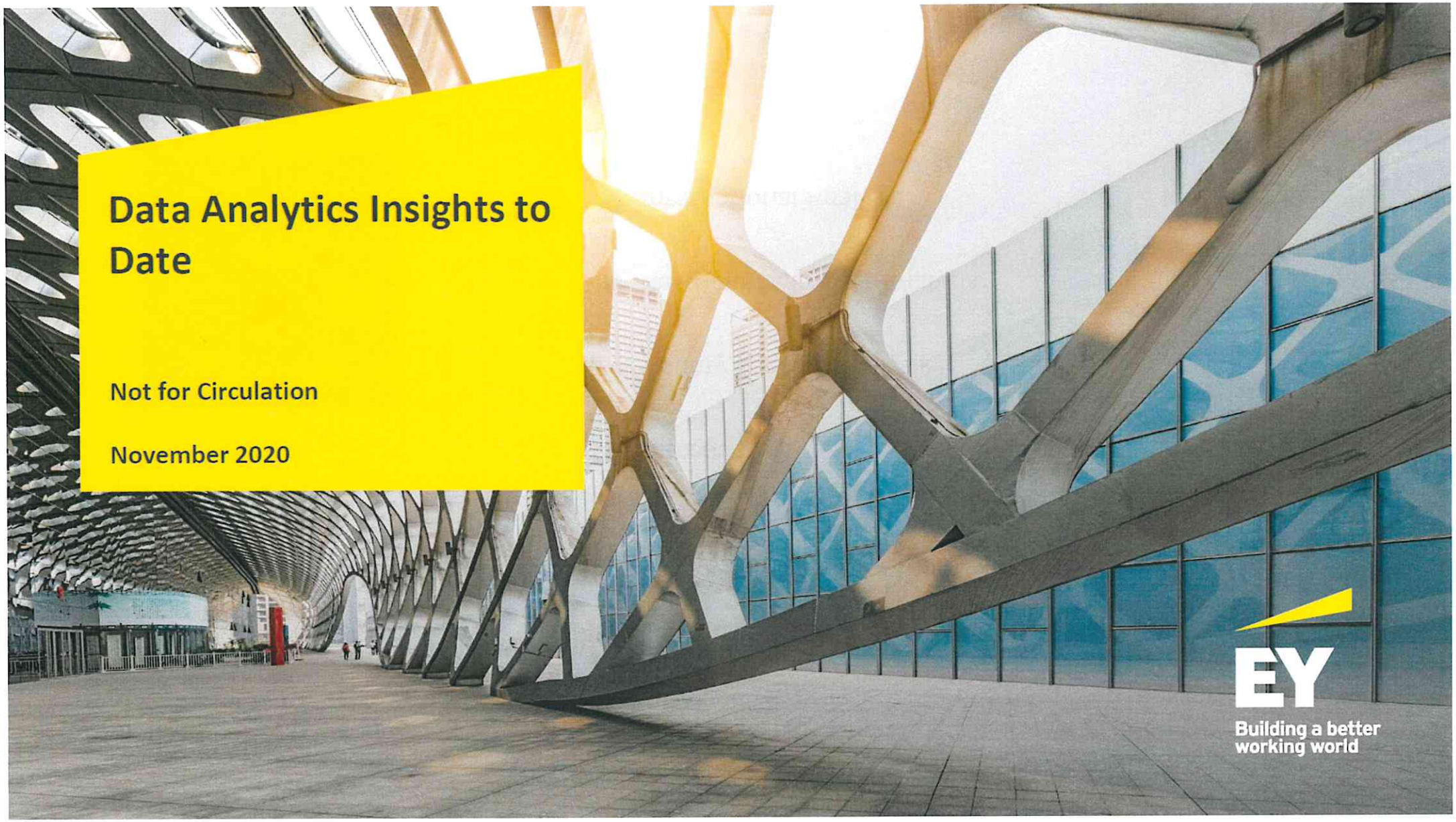

Data Analytics Insights to Date
Not for Circulation
November 2020
EY
Building a better working world

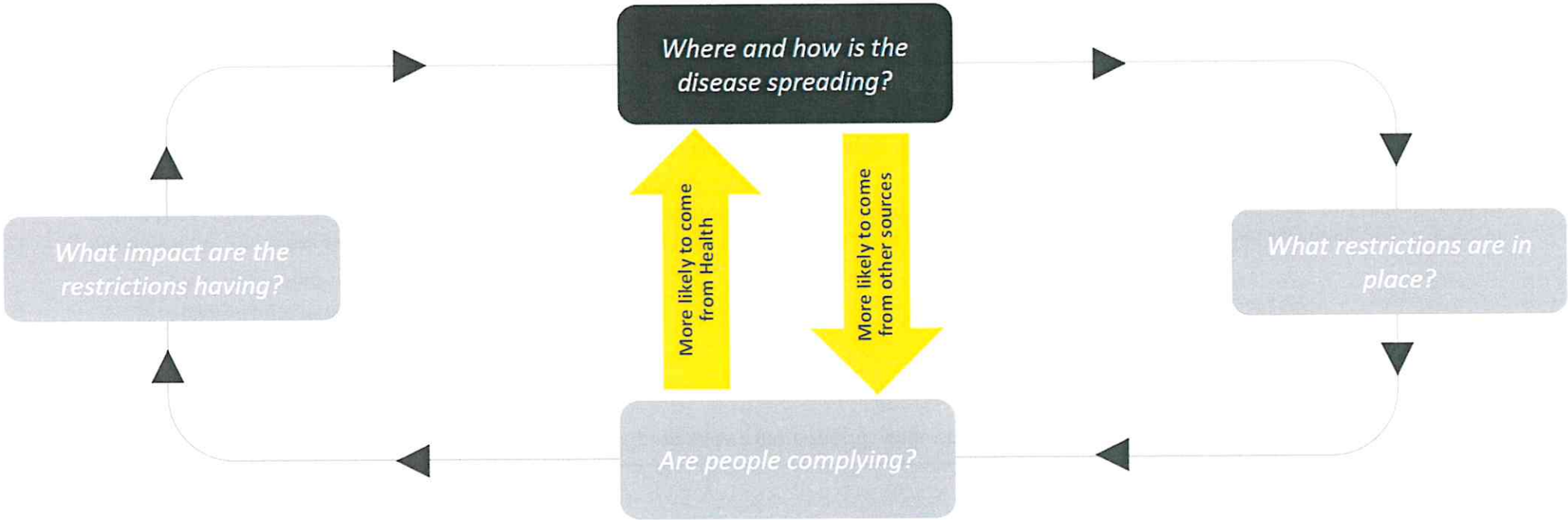
Update – Week 6

Agenda

- Introduction
- County Specific Analysis
- Restrictions Impact Analysis
- International Analysis

Providing data analysis to support Government decision making

EY Data Analytics team was engaged to analyse certain aggregated data available to the State as part of the State's Covid 19 management strategy. EY's role was to analyse the available data and to present it back to Government officials to consider as part of its on-going deliberations and decision making with regard to Covid 19 restrictions. The focus is situating disease incidence rates in the context of other data (e.g. restriction changes) to produce insights, rather than performing epidemiology.

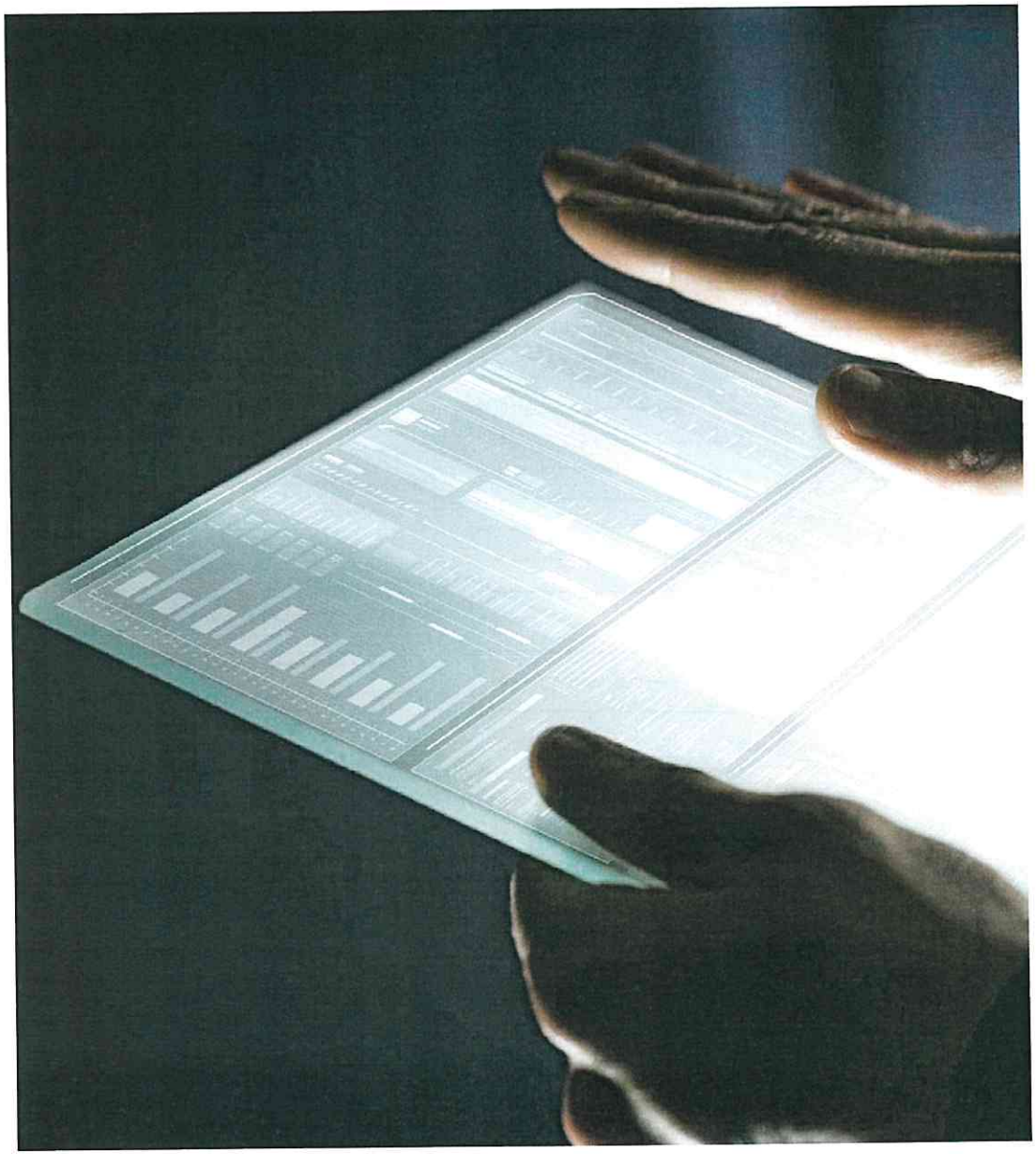


Summary of initial findings

- Extending county analysis to Local Electoral Areas (LEA) helps provide a more specific understanding of what is happening in each county. These profiles can broadly be categorised as follows:
    1. Significant known outbreak event(s)
    2. Proximity to the border
    3. Following the national profile
    4. Proximity to and scale of Dublin
- We now have a far more expansive testing regime. This means that it is difficult to directly compare Wave 1 and Wave 2. While accepting that, it is worth noting the shift in recorded outbreaks from being led by Nursing Homes in Wave 1 to Private Households in Wave 2. This contributes to a reduction of 15 years in the median age of identified cases from Wave 1 to Wave 2 (Source: CSO)
- Social gatherings, citizen congregations and specific local events all appeared to have contributed to Wave 2 outbreaks
- The introduction of Level 3 nationally did not reduce the 14 day incidence rate per 100k for majority of counties. The introduction of further household restrictions (Level 3 Max) from mid-October drove a reduction across most counties
- Wet pubs opened in all counties except Dublin in late September. This also coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in ??? number ??? counties. This increase was not seen to the same extent in Dublin
- The LEAs containing University College Cork (UCC) and National University of Ireland Galway (NUIG) both saw higher increases than the rest of their county when the universities opened. This difference was reduced when the universities went online. Wet pubs also opened in both cities on the same week that universities opened
- The northern counties, and especially LEAs on the border, do appear to be impacted by proximity to the border. Donegal is not seeing significant reductions with Level 4 that was seen in other border counties
- The reopening of construction, non-essential retail and the wider Phase 3 changes during the summer do not appear to have had a material impact on the 14 day disease incidence rate per 100k nationally or in larger counties. It should however be noted that the disease rate was low at this time

Source Median Age June 5th 48 (CSO COVID-19 Deaths and Cases Series 4) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries4/
Median Age for week ending 30th October 33 (CSO COVID-19 Deaths and Cases Series 15) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries15/

County specific analysis



County Analysis Summary

County	Border county	Known outbreaks	Dublin and surrounding area	Following national restrictions trend	Wave One – main outbreak sources	Wave Two – main outbreak sources	14 day incidence rate per 100k (26/07 – 17/11)
Kerry		✓		✓	Private Houses, Residential Institutions, Hospital	Private House, Community Outbreak, Nursing Home	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Institutions	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	

Source Outbreak sources – CIDR, Incidence rate –based on daily cumulative case data published on GeoHive to 17 November 2020.
This data is published daily. Note Wave one defined as 03/03-25/07; Wave 2 is 26/07-20/11
*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR
**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Summary of county-level 14 day incidence rate per 100k

The heatmap below shows the 14 day incidence rate per 100k population for each county over the last two months. The overall reduction in cases has levelled to 17/11, with some county incidence rates increasing.

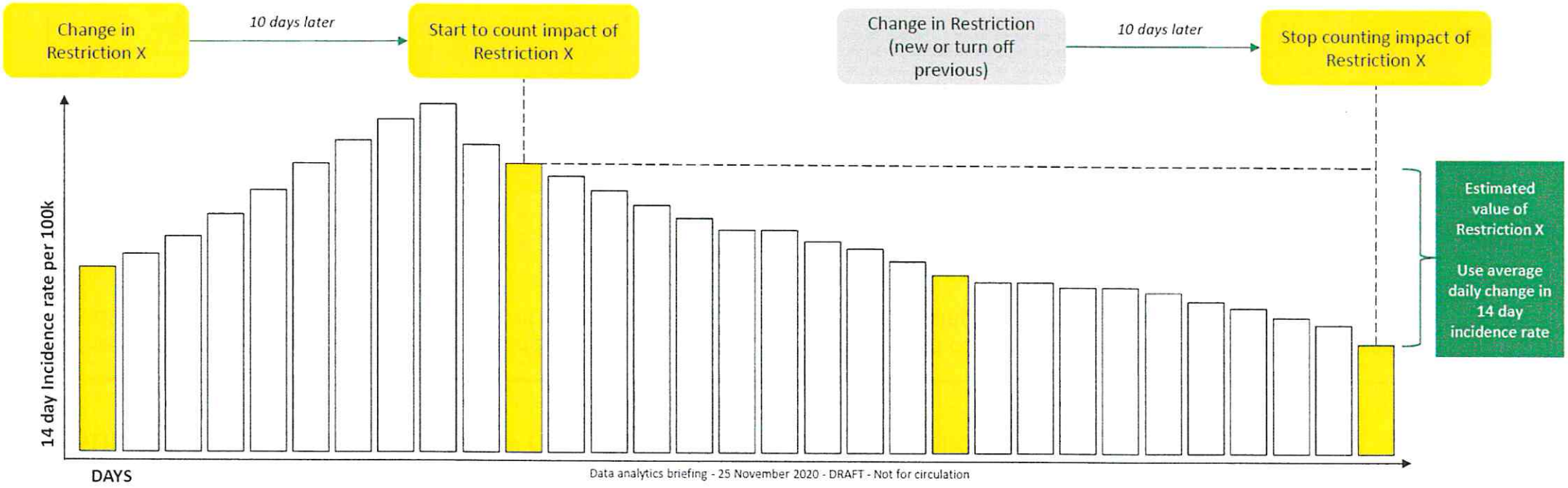
| Two Weekly Incidence Rate Per 100k | Population | 20-Sep | 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | Change Last 3 Days |
|---|---|---

Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There have been relatively few changes in restrictions, which generally combine more than one change at a time, therefore hiding the unit value per restriction. There is also a time lag between a restriction change and the impact being seen, and the incidence rate can clearly be impacted by significant outbreaks. We have used the below methodology to initially quantify the impact of changes in restrictions. This calculation has been applied across counties. The outputs should be seen as directionally useful, rather than precise statistical outputs. A sensitivity analysis has also been completed looking at a reduced 7 day and rolling average incidence rate over 3 days per 100k especially for periods where there were more frequent restriction changes.

It should be noted that this does not measure compliance or behavioural aspects related to restrictions.

They are also presented alongside international academic research to provide a broad view to support decision-making. Further analysis has commenced to enhance the measurement of correlation between restrictions and their impact.



Summary of Restriction Impact

The below heatmap shows the average daily change in 14 day incidence rate per 100k for the time period that each change in restriction was in place. The impact is calculated using the approach described in Slide 8. Note that:

1. The absolute number of weekly tests has significantly increased since Wave 1
2. The more recent restriction changes (Level 3, Level 3 Max and Level 5) happened within a 15 day period.

Average daily change in the 14 day incidence rate per 100k	29/02/2020 No restrictions	12/03/2020 Childcare closed, School Closed	15/03/2020 Bars closed	20/03/2020 Retail, restaurants etc closed	27/03/2020 Stay at home order (2km)	01/05/2020 Stay at home increased to 5km	15/05/2020 Construction Opened	28/05/2020 Mandatory HH	08/06/2020 Phase 2 reopening	29/06/2020 Phase 3 reopening	13/07/2020 Face masks on public transport	21/07/2020 Green List	08/08/2020 Lockdown Laois, Offaly Kildare	19/08/2020 Face masks in shops	21/08/2020 Lockdown lifted Laois + Offaly, Kildare extended	31/08/2020 Schools + childcare opened	19/09/2020 Level 3 Dublin	21/09/2020 Wet Bars Opened except Dublin	26/09/2020 Level 3 Donegal	07/10/2020 Level 3 National	16/10/2020 Level 3 Max National	16/10/2020 Level 4 Donegal, Cavan, Monaghan	22/10/2020 Level 5: National
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-14
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-28
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-10
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-14
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	4	-2		0	-15
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	2	2		4	-6		-11
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-14
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-10
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-12
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-7
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		2	-10		-10
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-5
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-13
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-11
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-15
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-12
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-22
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-13
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		-3	-9		-8
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-11
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-17
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-6
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-10
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-19
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-9
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-6

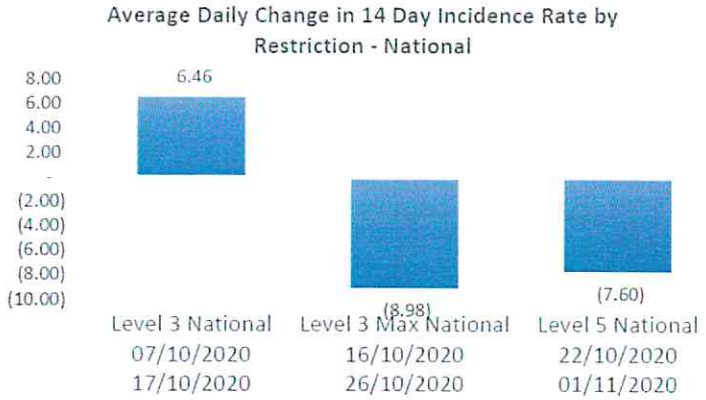
Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. Measures the average daily change in the 14 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

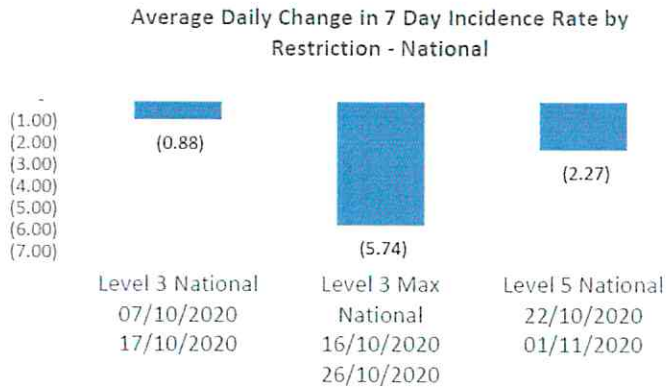
The introduction of Level 3 Max and Level 5 both coincide with a reduction incidence rates

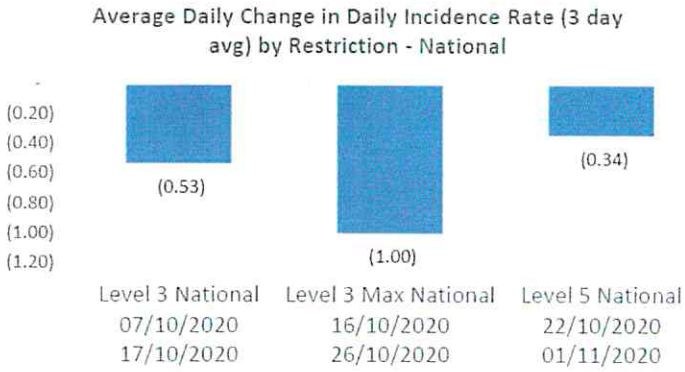
The 14 day incidence rate per 100k did not reduce for ??? Number ??? counties with the introduction of Level 3. However, it did start to reduce with the introduction of further household restrictions (Level 3 Max) and then Level 5.

These three restriction changes happened within a 15 day period, with Level 3 Max was only active for 15 days.

For completeness, this analysis has also been repeated for a 7 day and a daily incidence rate average over three days. All three are shown below and follow similar, albeit reduced, patterns.







Cavan's three LEAs follow a different path. One is being driven by outbreaks, one impacted by the border and one more aligned with the national trend

Cavan profile:

- Cavan has experienced a higher 14 day disease incidence rate per 100k during the second wave than the national average
- Part of Cavan borders with NI where different restrictions are in place

Summary analysis:

- Cavan-Belturbet LEA is the only part of Cavan with a NI border. This LEA is experiencing a higher disease incidence than the national average
- Ballyjamesduff LEA had the highest incidence rate throughout October. The timing of the acceleration of growth rate in this LEA appears to correlate with the GAA county final (winners are in this LEA)
- Levels of private house outbreaks rose during September and October
- [redacted]
- Travel along the N03 between Belturbet and George Mitchell Bridge at the NI Border fell 33% during October (Source TII Road Travel data)

Restriction impact:

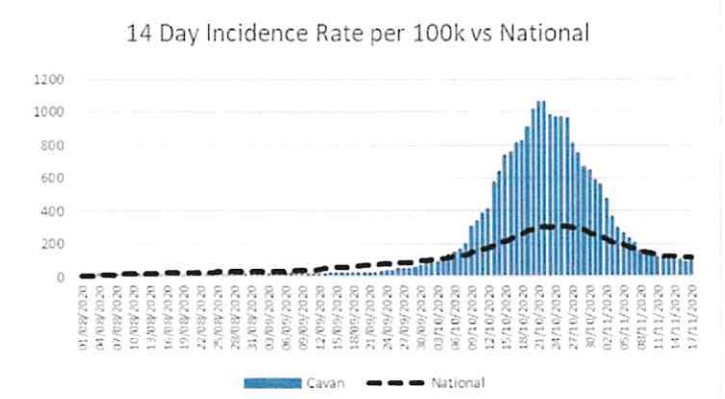
- The timing of the growth of cases appears to correlate with the events listed above and changes to restrictions in wet pubs
- Level 4 restrictions imposed for the border counties appears to have desired impact of reducing incidence level in Cavan
- Level 5 restrictions continue to drive incidence level further

Employment Summary:

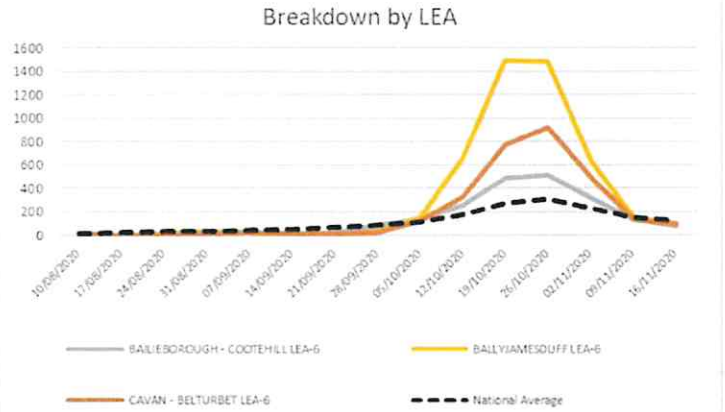
- Cavan had c.47% of its workforce on PUP or TWSS (c.15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP (17 Nov) which is down from 9.7k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
1,272

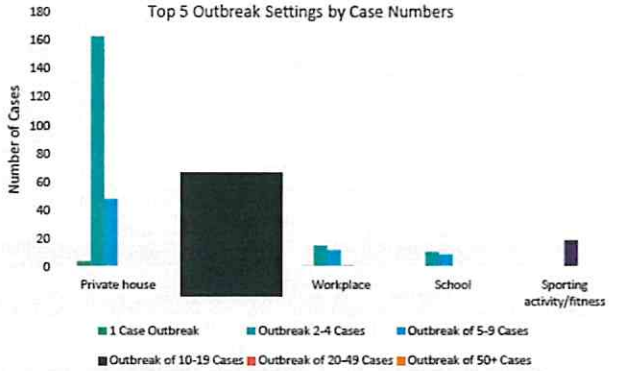
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
32%	3.6

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	215	72
[redacted]	[redacted]	[redacted]
Workplace	29	12
School	20	7
Sporting activity/fitness	19	1

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Sporting activity/fitness	04/10/2020	19
Community outbreak	07/10/2020	16
[redacted]	[redacted]	[redacted]
Private house	13/10/2020	7



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Meath is seeing a higher incidence rate than the national average. This is influenced by proximity to Dublin and specific outbreak events

Meath profile:

- Meath has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Dublin borders including a significant commuter population

Summary analysis:

- Level of private house outbreaks during September and October grew
- Continued outbreaks in nursing homes, one significant outbreak of 51 cases [redacted]
- One significant community outbreak of 29 cases
- Ratoath LEA has the highest incidence rate. The timing of this acceleration of growth rate appears to correlate with GAA county final win (Source: GAA.ie)

Restriction impact:

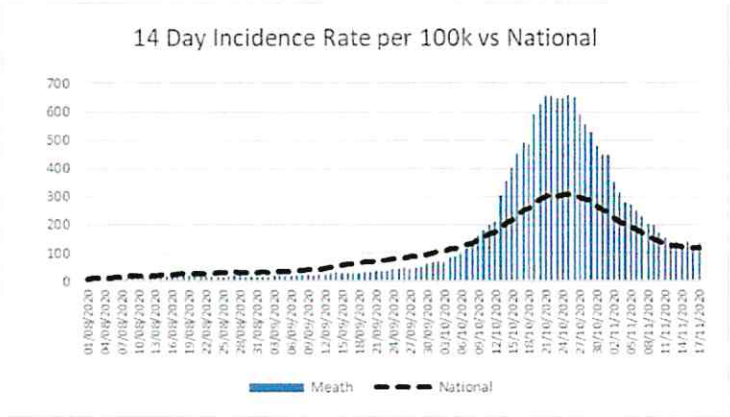
- The timing of the growth of cases appears to correlate with the events listed above and the changes to restrictions in wet pubs
- Incidence level continued to rise post initial Level 3 restrictions imposed nationally
- Level 3 (max) restrictions imposed nationally appear to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level down further

Employment summary:

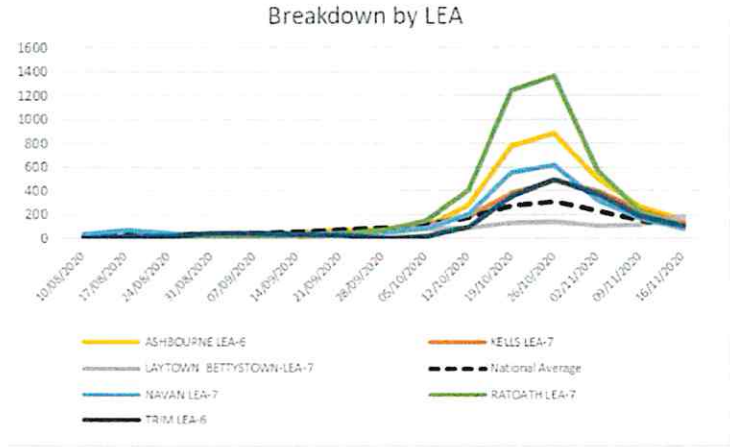
- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (13k versus 25k) levels (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

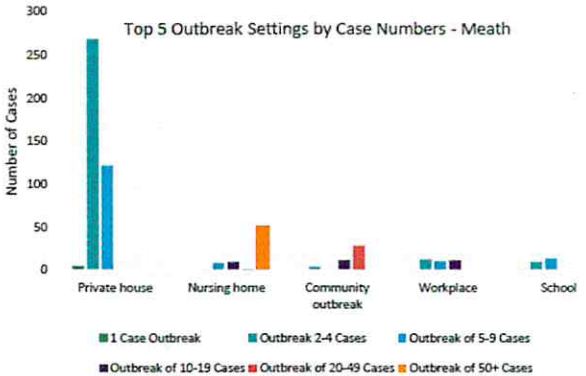
Cases	
2,466	
% of Cases Linked to Outbreak	**Avg. Cases Per Outbreak**
27%	3.3

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	397	121
Nursing home	74	9
Community outbreak	45	4
Workplace	38	18
School	25	10

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Nursing home	[redacted]	51
Community outbreak	10/10/2020	29
Community outbreak	13/10/2020	12
Workplace	19/10/2020	11
Nursing home	[redacted]	10



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The border is contributing to Donegal's higher rate of cases. Donegal is not seeing the benefit of recent Level 4 increases seen in other border counties

Donegal profile:

- Donegal has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Disease incidence higher and earlier versus national average, and reducing at a slower rate
- Eastern Donegal borders with NI where different restrictions are in place

Summary analysis:

- Lifford and Stranolar LEA close to the NI border with Derry, experienced an earlier and higher disease incidence
- Other eastern parts of Donegal (Buncrana, Letterkenny and Carndonagh) have the next highest incidence rates
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted] (Source: Donegal Daily)
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November

Restriction impact:

- Disease incidence continued to rise after level 3 Donegal announcement
- Specific restrictions in NI (1/10) on bars and restaurants appeared to have helped reduce rate in Donegal
- Despite level 3 max and level 5 being effective in other counties, cases in Donegal fell at a lower rate compared to national levels
- Similarly, Level 4 reduced the cases in Monaghan and Cavan, but not Donegal. Mask compliance in Donegal also reduced (against national and previous Donegal trend) with Level 4 restrictions (Facebook survey data)

Employment summary:

- Donegal had c.49% of its workforce on PUP or TWSS (c 30k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (12k versus 23k) (CSO, DSP)

Notes

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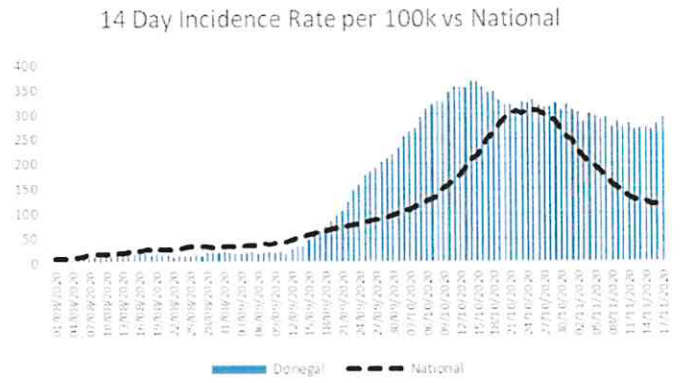

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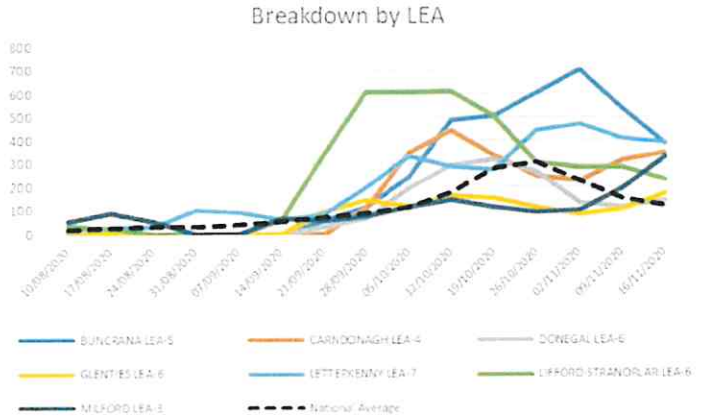


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases	
2,165	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
62%	3.9

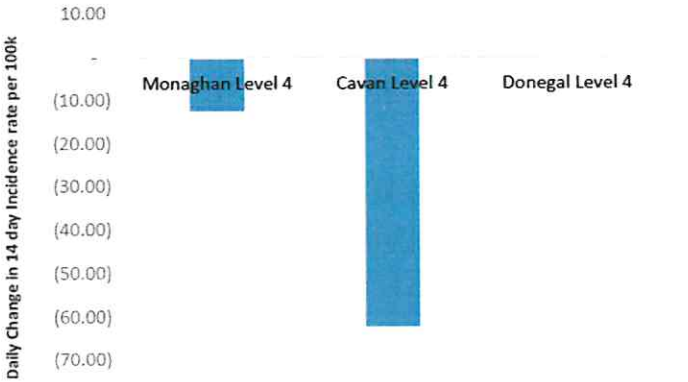
Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	651	235
Workplace	159	28
Hospital	126	5
Extended family	118	19
Nursing home	58	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Hospital	[redacted]	99
Workplace	23/09/2020	55
Nursing home	[redacted]	49
Social gathering	24/10/2020	20
Hospital	[redacted]	17

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.



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Cork is broadly aligned with the national trend. Cork City is driving up the incidence rates across the county

Cork profile:

- Cork is broadly aligned with the national average for the 14 day disease incidence rate per 100k during second wave

Summary analysis:

- Cork City is the most impacted area, with the rest of the county following with a reduced incident rate
- Cases in Cork City South Central, the LEA containing UCC (started returning on 21 Sept), were twice as high as other LEAs in Cork city during mid October. This gap declines in November as the universities went online

Restriction impact:

- Cases in Cork city rose as wet pubs reopened (21 Sept). Cases around the rest of the county followed shortly after
- There were a number of GAA games in early October, which were linked with outbreaks. No matches occurred after this, with level 3 restrictions being applied around this time (6 Oct). Cases throughout Cork began to fall 10 days later

Employment summary:

- At peak, c 39% of Cork's workforce were on PUP or TWSS (c 96k) (EY 2019 employment estimates). Current PUP levels (17 Nov) are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Notes

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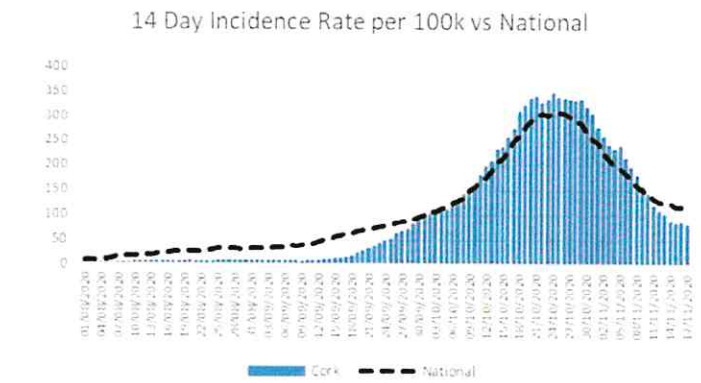


Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

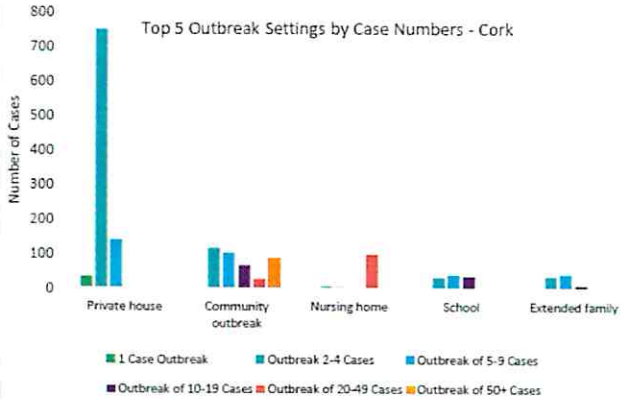
Cases	
4,492	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	3.7

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	929	354
Community outbreak	411	67
Nursing home	114	9
School	113	24
Extended family	90	22

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	26/10/2020	68
Nursing home	[redacted]	46
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	30
Community outbreak	22/09/2020	29



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Galway rose above the national average during the second wave, driven by Galway City Central and Connemara South LEAs

Galway profile:

- Galway experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- It has now come back down below national average levels since early November

Summary analysis:

- Galway City Central, Connemara South and Galway City East have had the highest 14-day incidence rates throughout October
- A number of key events occurred in late September which could have contributed to this increase
- Cases within Galway City Central LEA appear to have increased in this period following students returning to NUIG from 21 September
- GAA senior championship football semi-finals and finals also occurred in the last week of September and first week of October. Connemara South had a confirmed outbreak in mid-October
- Throughout November, private household cases were responsible for 49% of outbreak cases, with [redacted] and community outbreaks making up a large proportion of the remaining percentage

Restriction impact:

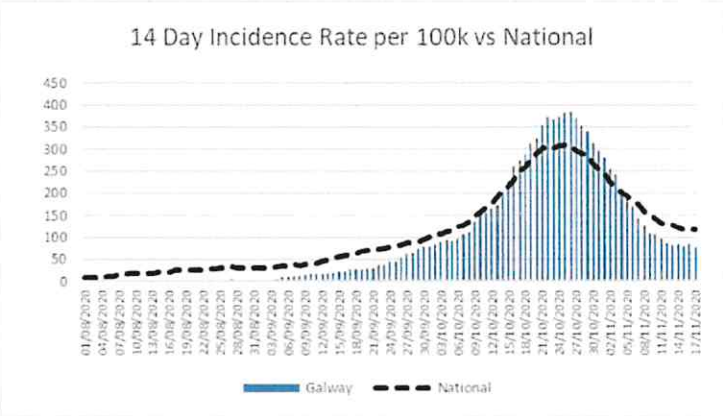
- Cases begin to decline ten days after the national level 3 lockdown came into effect (17/10), falling below national levels in November
- An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

Employment summary:

- Galway had c.39% of its workforce on PUP or TWSS (c.49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP (17 Nov) which is down from 32.5k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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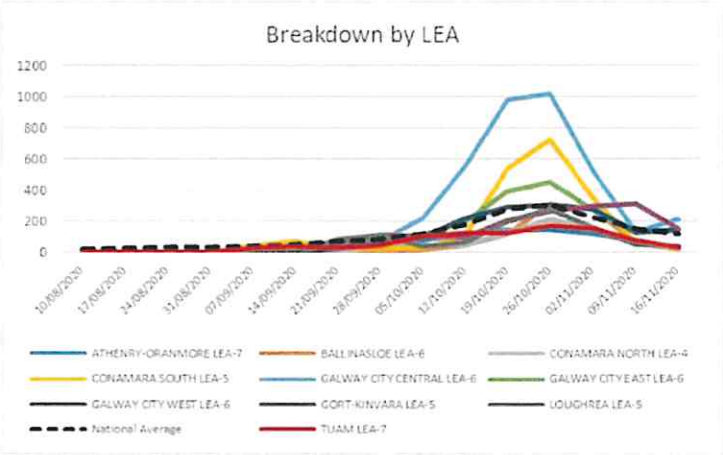


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,060

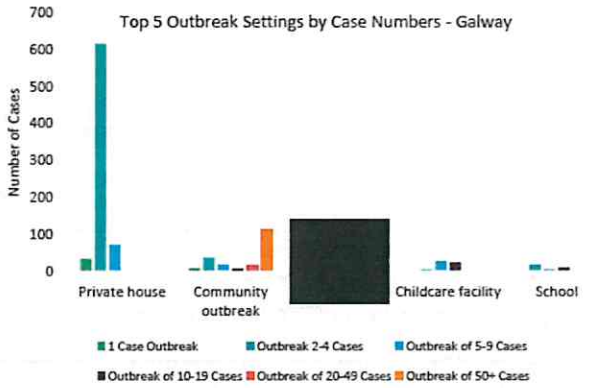
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
66%	3.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	723	293
Community outbreak	207	30
[redacted]	[redacted]	[redacted]
Childcare facility	61	8
School	37	11

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	24/09/2020	114
[redacted]	[redacted]	[redacted]
Social gathering	19/09/2020	20
Community outbreak	25/09/2020	18



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Dublin – local authority breakdowns over time

The below heatmap shows the Dublin LEA 14 day incidence rate per 100k population since early August. Some areas are seeing higher incidence rates.

		10/08/2020	17/08/2020	24/08/2020	31/08/2020	07/09/2020	14/09/2020	21/09/2020	28/09/2020	05/10/2020	12/10/2020	19/10/2020	26/10/2020	02/11/2020	09/11/2020	16/11/2020
Dublin City	ARTANE-WHITEHALL LEA-6	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9	111.4
	BALLYFERMOT-DRIMNAGH LEA-5	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	191	143.3
	BALLYMUN-FINGLAS LEA-6	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7	221.8
	CABRA GLASNEVIN LEA 7	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	160.3	138.1
	CLONTARF LEA-6	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	114.4	73.8
	DONAGHMEDE LEA-5	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7	89
	KIMMAGE-RATHMINES LEA-6	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188	123.5
	NORTH INNER CITY LEA-7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	121	84.9
	PEMBROKE LEA-5	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	88	59.4
	SOUTH EAST INNER CITY LEA-5	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7	133
	SOUTH WEST INNER CITY LEA-5	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1	186.6
Dun Laoghaire - Rathdown	BLACKROCK LEA-6	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2	68.2
	DUN LAOGHAIRE LEA-7	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	76.9	72.1
	DUNDRUM LEA-7	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	66.8	80.1
	GLENCULLEN-SANDYFORD LEA-7	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3	68.3
	KILLINEY-SHANKILL LEA-7	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	44.6	52.5
	STILLORGAN LEA-6	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8	101.6
Fingal	BALBRIGGAN LEA-5	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2	109.4
	BLANCHARDSTOWN-MULHUDDART LEA-5	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	266.2	147.3
	CASTLEKNOCK LEA-6	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	297	199.5	130.1	114.9
	HOWTH-MALAHIDE LEA-7	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9	92.6
	ONGAR LEA-5	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7	134
	RUSH-LUSK LEA-5	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2	43.3
	SWORDS LEA-7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	245.3	295.9	371.8	288.1	140.2
South Dublin	CLONDALKIN LEA-7	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	212.8	180.6
	FIRHOUSE-BOHERNABREENA LEA-5	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8	102.3
	LUCAN LEA-5	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6	122.7
	PALMERSTOWN-FONTHILL LEA-5	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1	165.6
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7	112.7
	TALLAGHT CENTRAL LEA-6	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	168.9	134.2
	TALLAGHT SOUTH LEA-5	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	304.5	251

There appears to be a correlation between areas hit hard in Wave 1 and Wave 2 (acknowledging differences in testing criteria), with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin and Artane-Whitehall.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Dublin includes over a quarter of Ireland's population. It therefore includes many stories and strongly aligns with national case levels

Dublin profile:

- Not surprisingly, Dublin's 14 day disease incidence rate per 100k during second wave is in line with the national average
- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire–Rathdown seeing lower overall incidence

Summary analysis:

- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Restriction analysis:

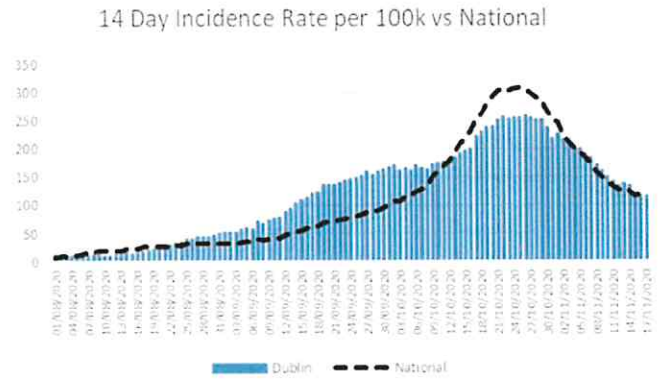
- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases
- Not opening the wet pubs does appear to have helped Dublin with the subsequent increase in cases being slower than the national average

Employment summary:

- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k (17 Nov) , compared to a peak of 176k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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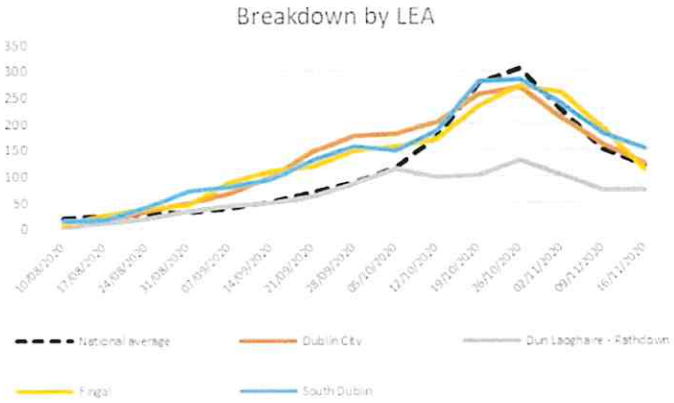


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
12,606

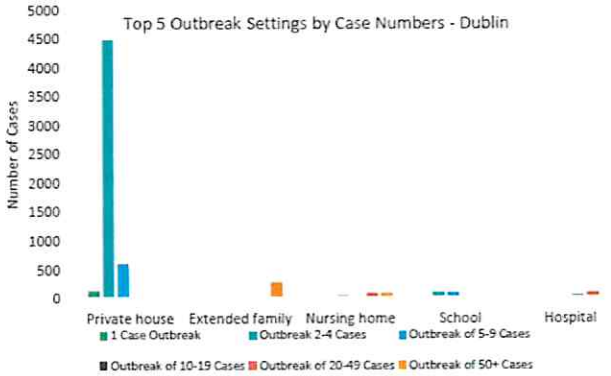
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
56%	2.9

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	5225	2075
Extended family	291	3
Nursing home	266	27
School	249	66
Hospital	192	30

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	24/09/2020	288
Nursing home	[redacted]	75
Hotel	12/09/2020	38
Childcare facility	20/10/2020	38
Residential institution	02/10/2020	30



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Cases in Limerick during Sept and Oct were driven by very large extended family and community outbreaks

Limerick profile:

- Limerick has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average.
- This is a result of the cases in Limerick not declining to the same extend in the rest of the country

Summary analysis:

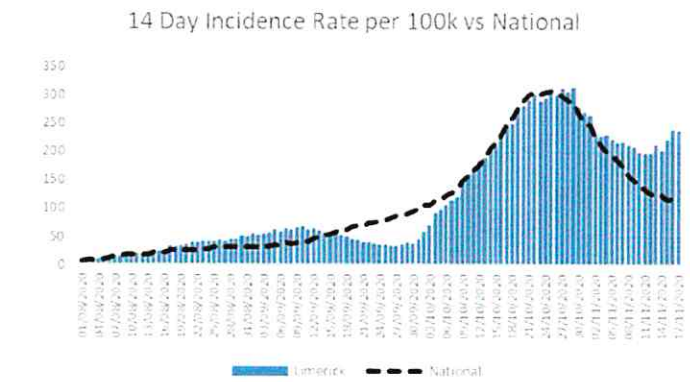
- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November.
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others – the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

Employment summary:

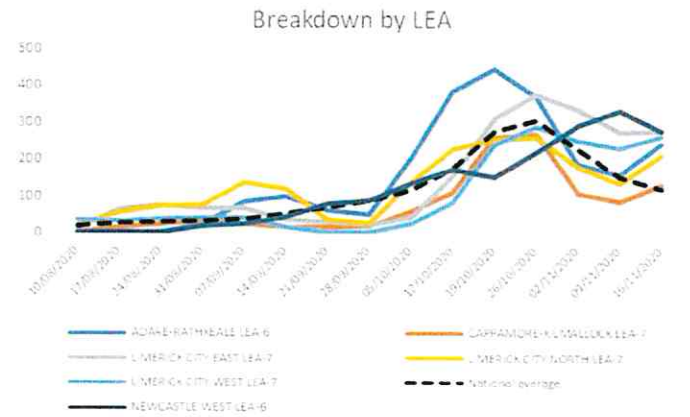
- Limerick had c.43% of its workforce on PUP or TWSS (c.34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

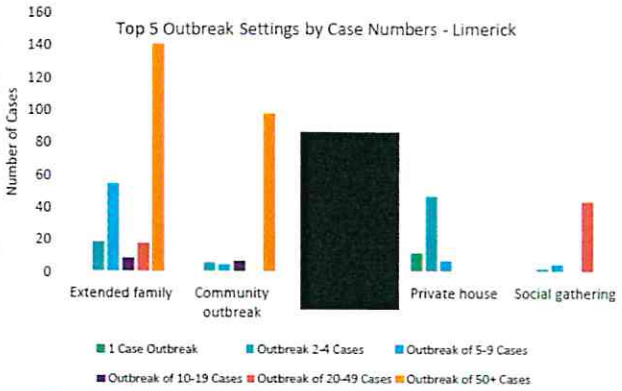
Cases	
1,771	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
39%	6.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Extended family	242	19
Community outbreak	117	8
[redacted]	[redacted]	[redacted]
Private house	66	34
Social gathering	51	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	23/09/2020	141
Community outbreak	08/10/2020	94
[redacted]	[redacted]	[redacted]
Residential institution	13/10/2020	31
Social gathering	15/10/2020	25



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Kerry is seeing lower cases than the national average, with Listowel bordering Limerick having the highest number of recent cases

Kerry profile:

- Kerry has experienced a similar 14 day disease incidence rate per 100k during second wave to the national average. However, Listowel LEA has seen a sharp increase in its rate since early October

Summary analysis:

- North Kerry (Listowel) is most severely affected. This coincides with outbreaks southern parts of Limerick such as Newcastle West and Adare-Rathkeale, as well as Limerick city
- Killarney and Tralee LEAs are both next in terms of severity of impact, containing two major Kerry towns
- The remainder of the county (further south, smaller towns) is generally less affected
- [redacted]
- Private homes account for 33.68% of all outbreak cases since Sept 1st
- Listowel's incidence levels were three times higher than the next worst-afflicted LEA. Note the small population of ~29,000 people meant 182 cases over a 2-week period prior to 26 Oct created a very high incidence rate

Restriction impact:

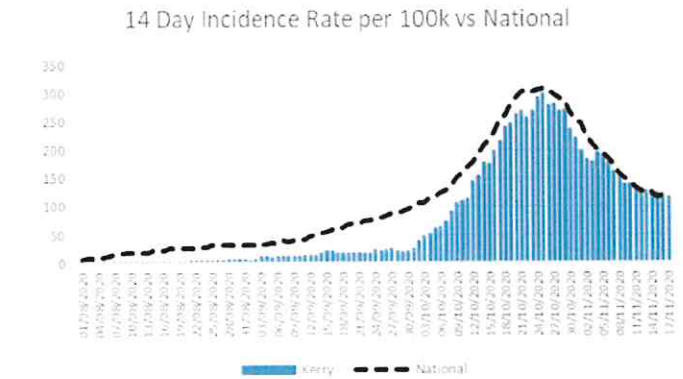
- The number of cases in Kerry started to grow around the time level 3 was introduced – two weeks later, this high growth rate had largely ceased
- Improvements have levelled off somewhat across LEAs such as Tralee, Killarney and Listowel

Employment summary:

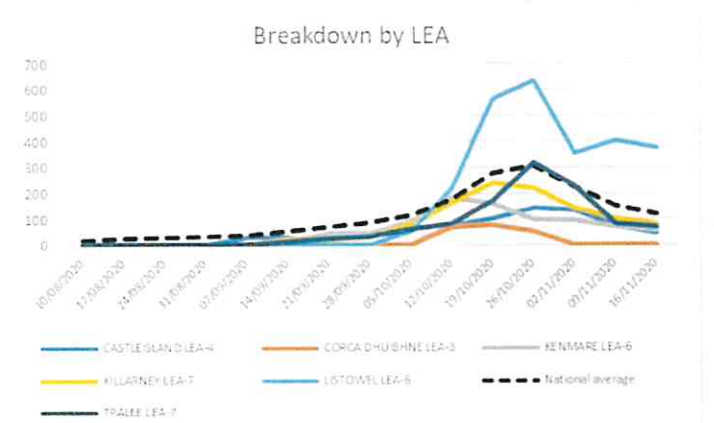
- Kerry had c.49% of its workforce on PUP or TWSS (c.32k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
963

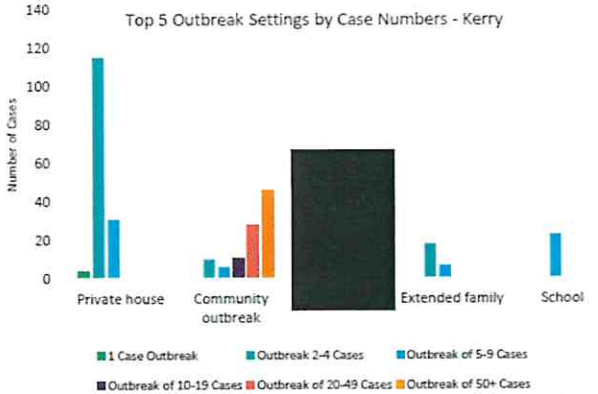
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	4.1

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	150	53
Community outbreak	101	14
[redacted]	[redacted]	[redacted]
Extended family	25	7
School	23	4

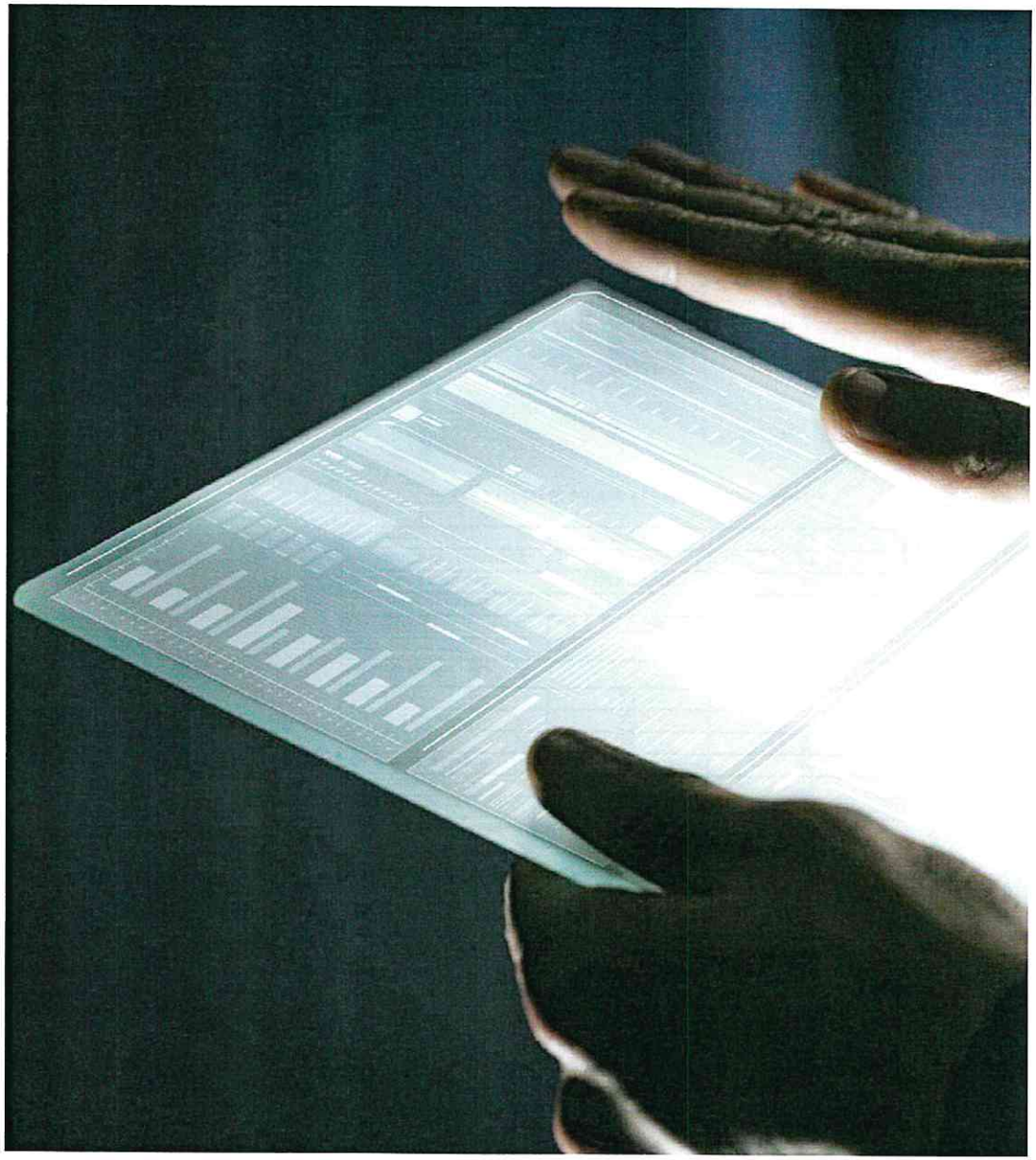
Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Community outbreak	03/09/2020	43
Community outbreak	23/10/2020	25
Religious/Other ceremony	16/10/2020	11
Restaurant / Cafe	11/09/2020	11



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties – highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

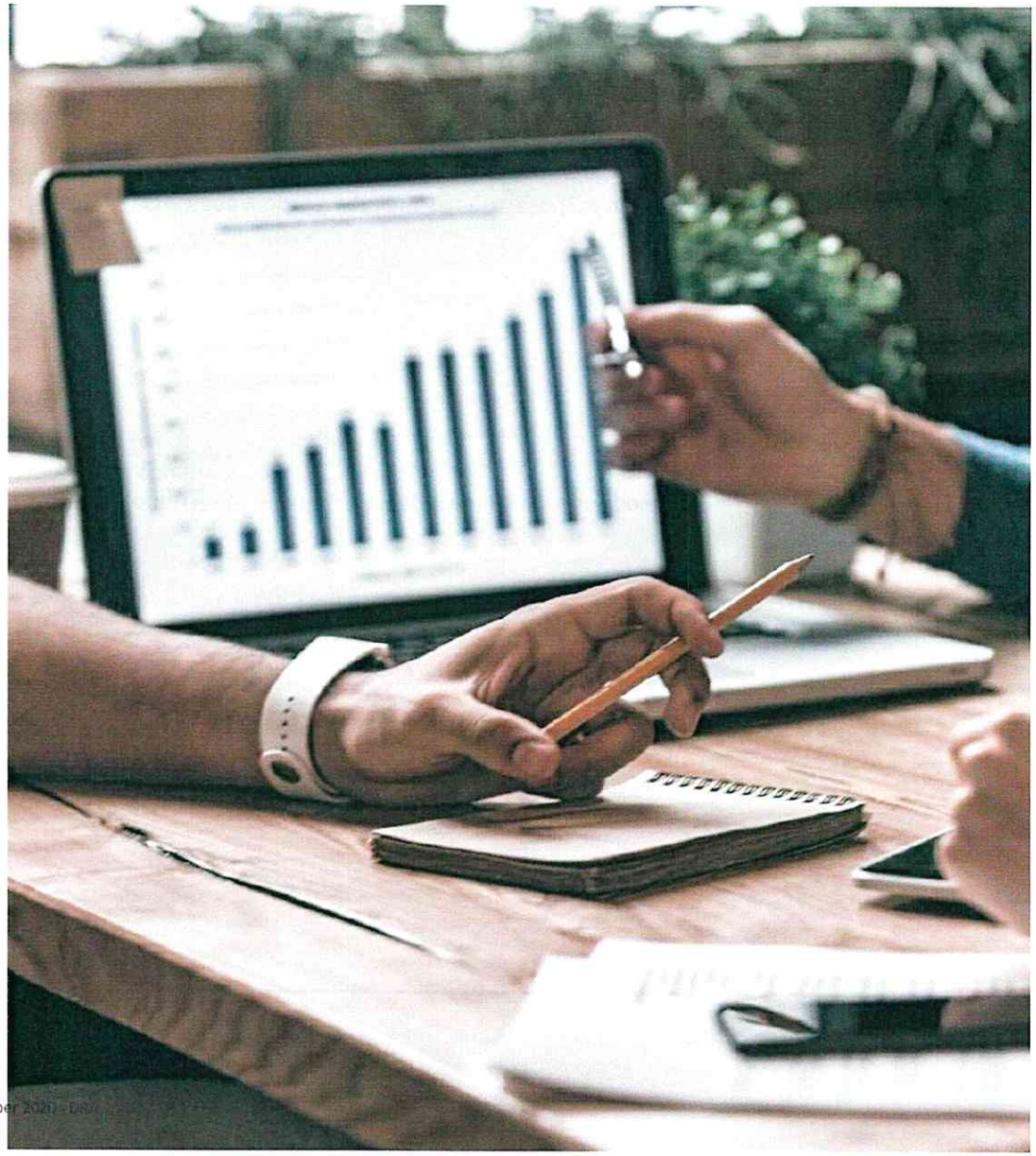
International restriction analysis

A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

International desktop research

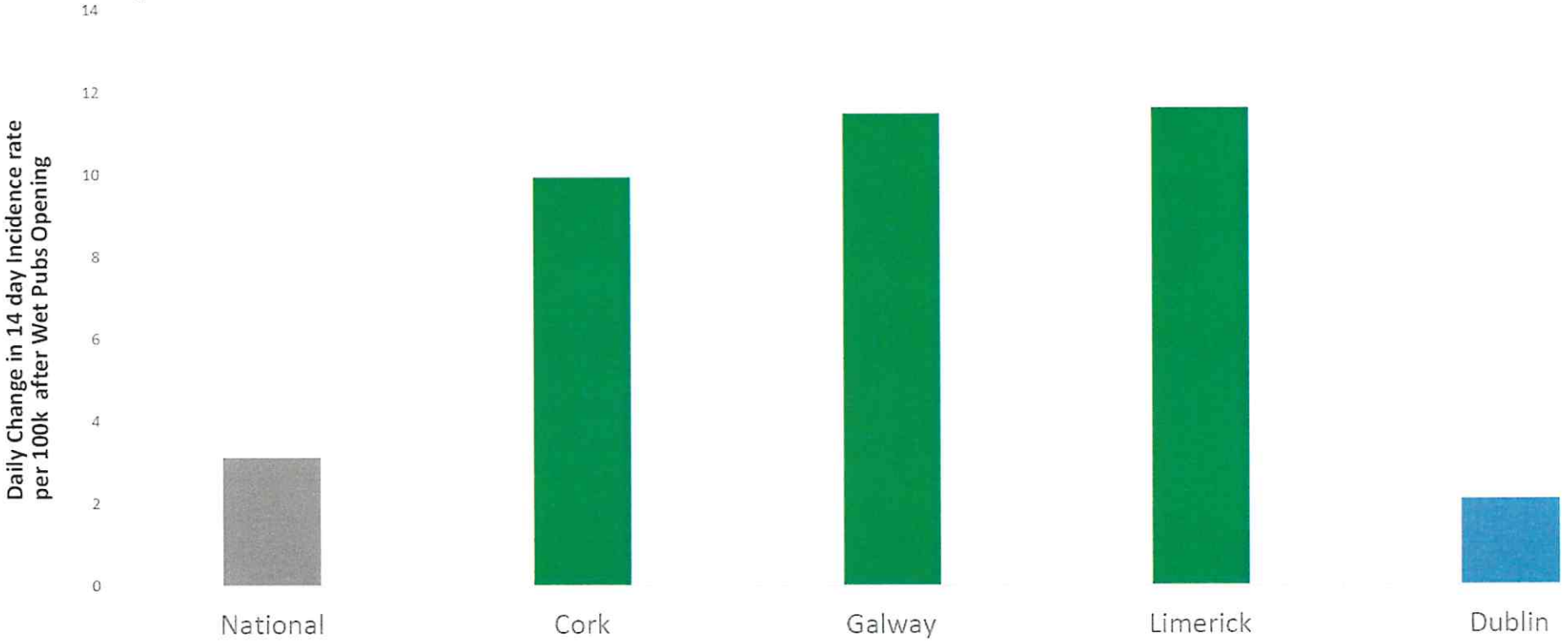
Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular COVID-19 insights publication and with new research included today

Ireland – restrictions analysis



Wet Pubs opened across the country, but not Dublin, on 21 September. The increase in Dublin's incidence rate was then lower than the national average and for larger counties

Wet pubs opened in all counties except Dublin in late September. This coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in ??? number ??? counties. The subsequent incidence rate growth in Dublin was 33% lower than the national average and 79% to 82% lower than other counties with larger cities.



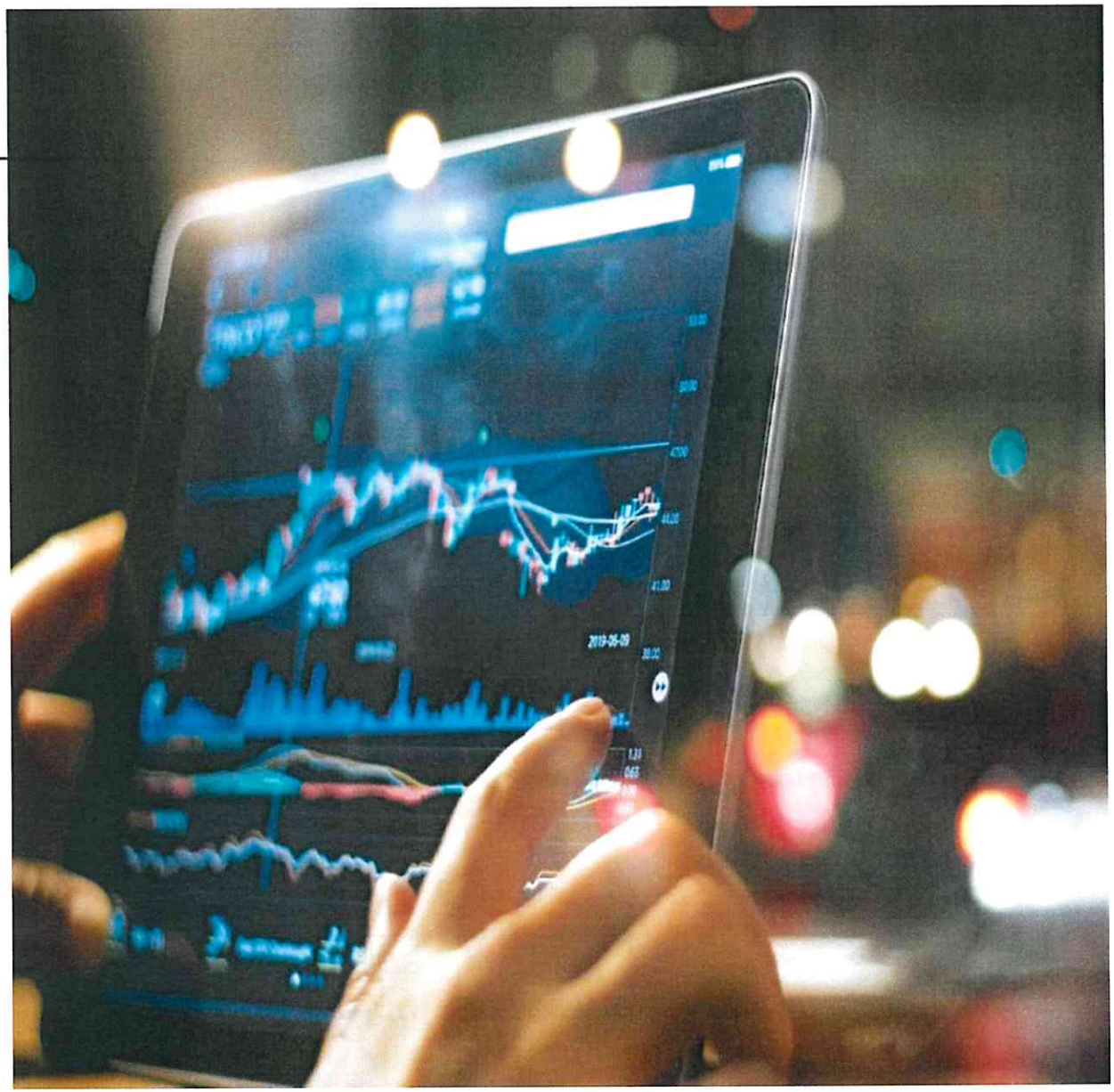
The incidence rate did not materially increase after the three phases of re-opening during late May to early July

The reopening of construction, non-essential retail and the wider Phase 3 openings did not appear to have a material impact on the cases nationally or in larger counties. Note that disease incidence rates were low at this time

	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	19/09/2020	21/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Average daily change in the 14 day incidence rate per 100k	No restrictions	Childcare closed School Closed	Bars closed	Retail restaurants etc closed	Stay at home order (20m)	Stay at home increased to 5km	Construction Opened	Mandatory PUF	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green list	Lockdown Laois Offaly Kildare	Face masks in shops	Lockdown lifted Laois + Offaly, Kildare extended	Schools + childcare opened	Level 3 Dublin	We Bars Opened except Dublin	Level 3 Donegal	Level 3 Nationa	Level 3 Max National	Level 4 Donegal Cavan Monaghan	Level 5 Nationa
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-14
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-28
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-10
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-14
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	4	-2		0	-15
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	2	2		4	-6		-11
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-14
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-10
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-12
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-7
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		2	-10		-10
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-5
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-13
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-11
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-15
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-12
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-22
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-13
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		-3	-9		-8
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-11
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-17
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-6
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-10
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-19
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-9
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-6

* Phase 3 re-opening included places of worship, gyms, cinemas, theatres, leisure facilities, personal services, sports, public transport 50% capacity & face coverings), mass gatherings (50 indoors, 200 outdoors), adult education and community facilities, health and well being related services, restaurants and cafes (on site food service), hotels and other accommodation facilities, driving schools and tests

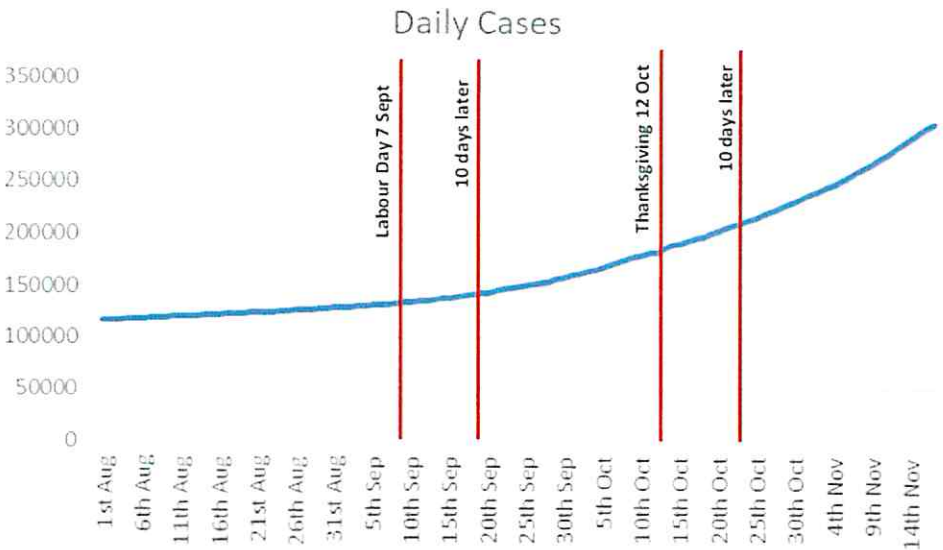
Select International Desktop Research



Canadian Thanksgiving: Testing & Tracing data and case numbers show surge in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first surge in Spring.



Key findings:

- Canada saw a surge in COVID-19 cases in the days and weeks that followed Thanksgiving, the **highest rates** since the first surge in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; **4,109 new daily cases** were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Canadian Testing and Tracing records show that Thanksgiving gatherings directly resulted in **viral spread**
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases **dramatically changed** after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has **doubled** from 155,000 on 28 September to over 310,000 on 18th November
- A similar **spike** is noticed on 17th September, 10 days after **Canadian Labour day** was celebrated

Source: https://health-infobase.canada.ca/covid-19/
https://www.thestar.com/news/canada/2020/09/23/wont-be-gathering-for-thanksgiving-trudeau-says-covid-19-second-wave-underway.html

US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.)

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

POI categories ranked in decreasing order of associated additional infections that would occur if the location is opened

Full-service restaurants

Fitness centres

Religious organisations

Take-out restaurants

Grocery stores

Department stores

Pharmacies

Results

- The Stanford Mobility Network Model Simulation concluded that on average across metro areas, reopening full-service restaurants, fitness centres and religious organisations produces the largest predicted increase in infections.
- Take-out restaurants, grocery stores, department stores and pharmacies resulted in low positivity rates.
- This pattern was seen in the 3 US cities studied.

Key findings

- The model calculates the additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location.
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy.
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10).
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more.

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html

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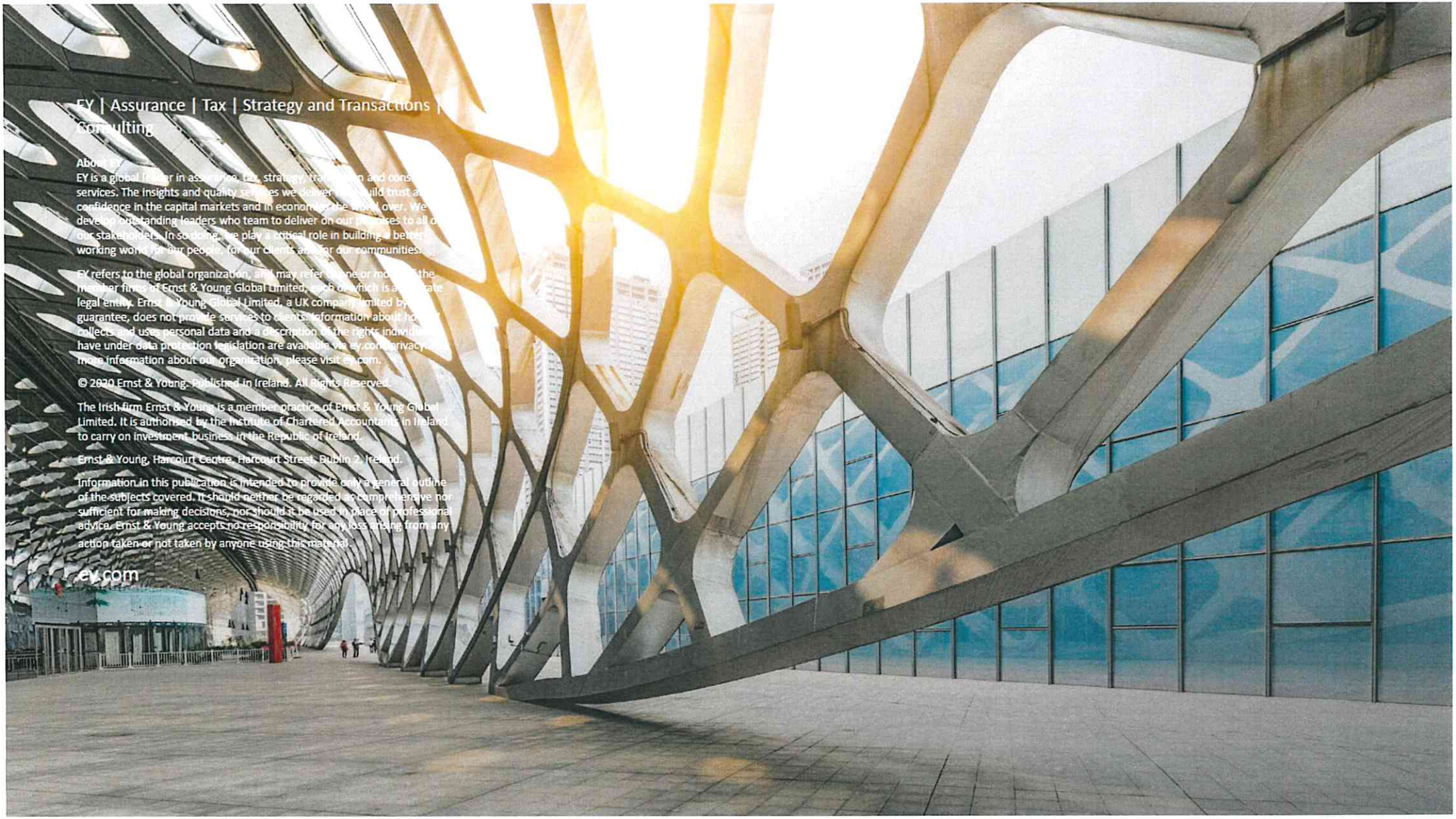

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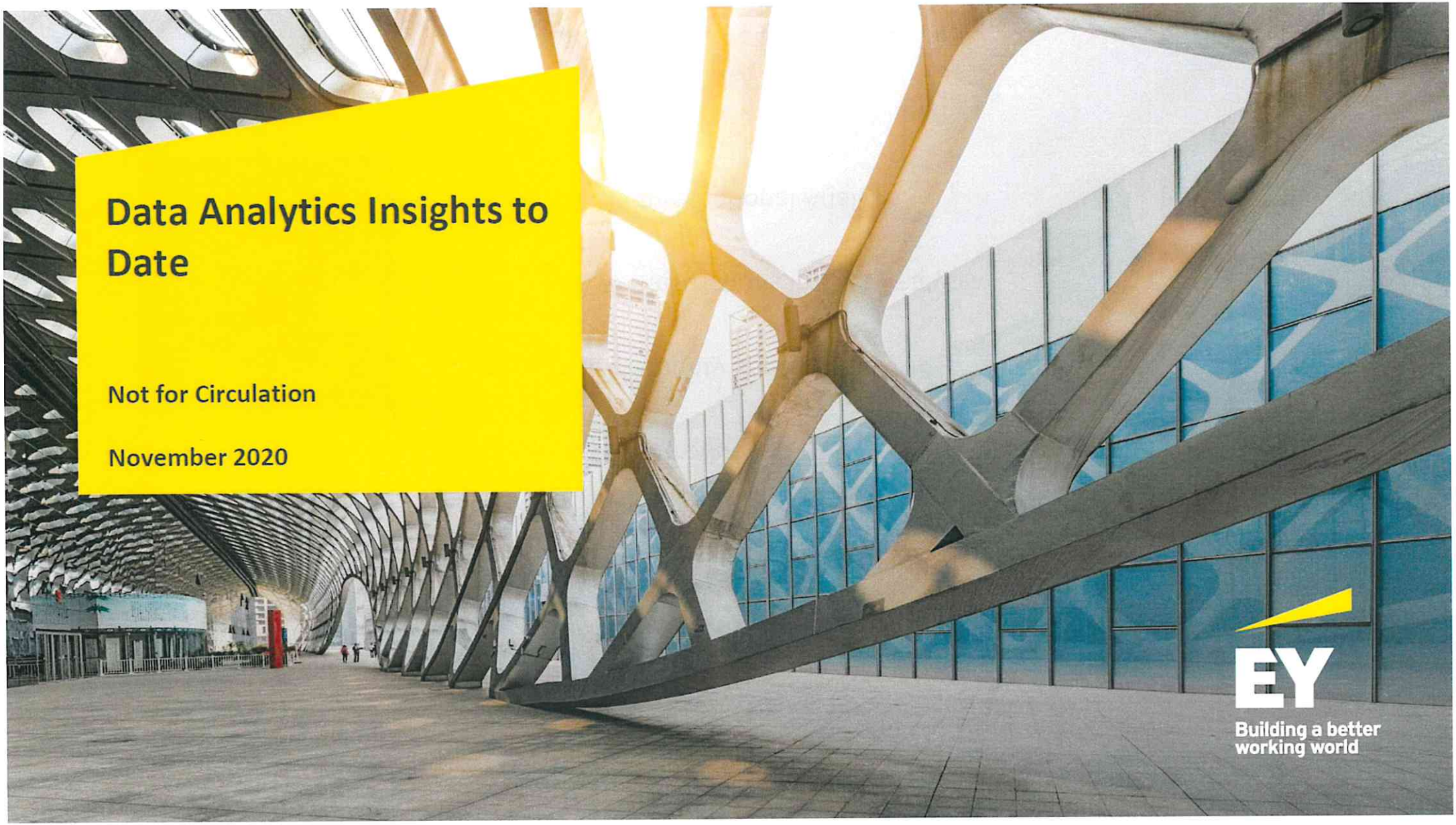
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117

Update – Week 6

Agenda

- Introduction
- County Specific Analysis
- Restrictions Impact Analysis
- International Analysis

Providing data analysis to support Government decision making

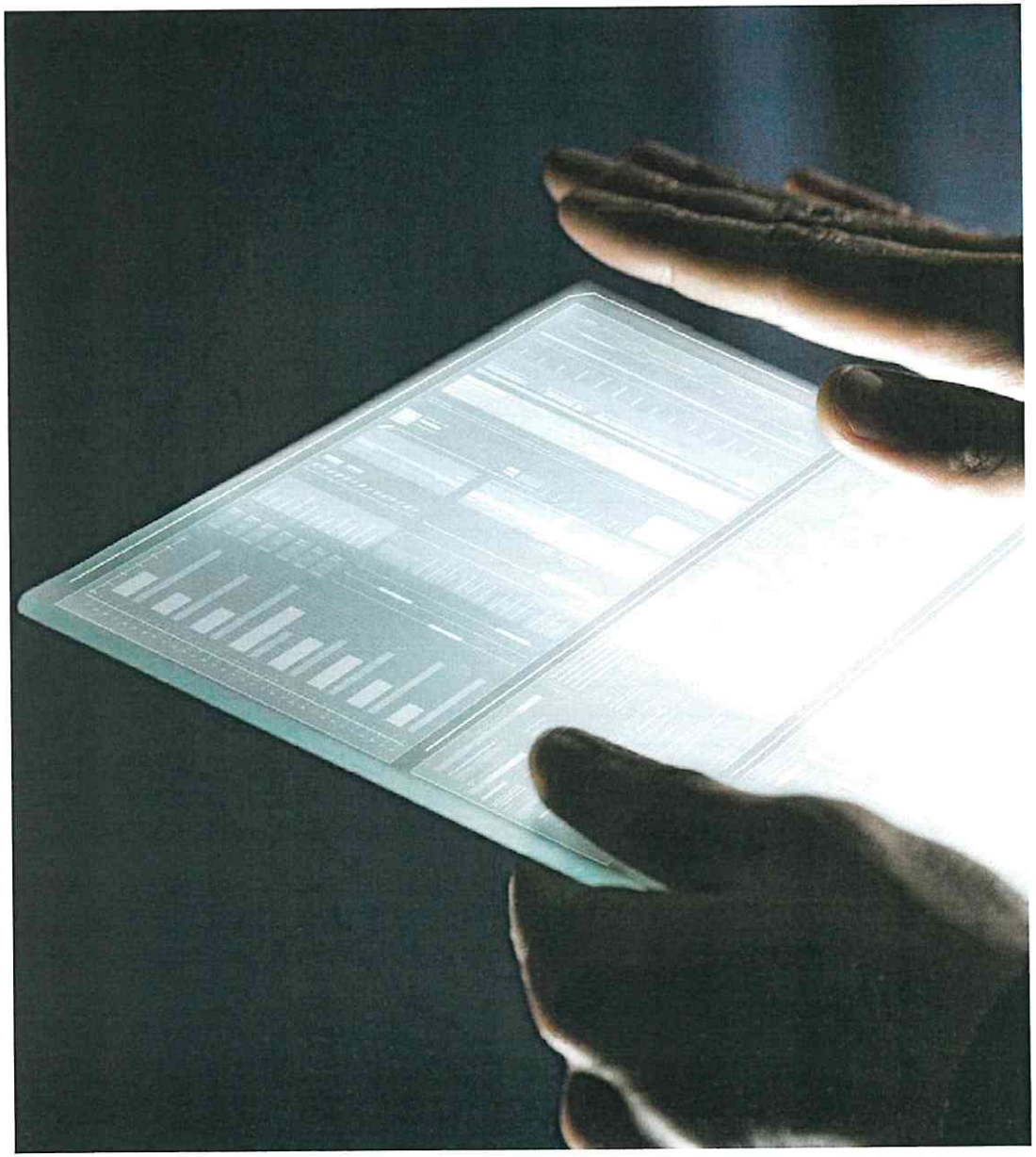
EY Data Analytics team was engaged to analyse certain aggregated data available to the State as part of the State's Covid 19 management strategy. EY's role was to analyse the available data and to present it back to Government officials to consider as part of its on-going deliberations and decision making with regard to Covid 19 restrictions. The focus is situating disease incidence rates in the context of other data (e.g. restriction changes) to produce insights, rather than performing epidemiology.

Summary of initial findings

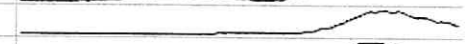
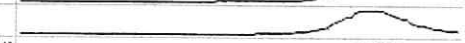
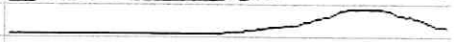
- Extending county analysis to Local Electoral Areas (LEA) helps provide a more specific understanding of what is happening in each county. These profiles can broadly be categorised as follows:
    1. Significant known outbreak event(s)
    2. Proximity to the border
    3. Following the national profile
    4. Proximity to and scale of Dublin
- We now have a far more expansive testing regime. This means that it is difficult to directly compare Wave 1 and Wave 2. While accepting that, it is worth noting the shift in recorded outbreaks from being led by Nursing Homes in Wave 1 to Private Households in Wave 2. This contributes to a reduction of 15 years in the median age of identified cases from Wave 1 to Wave 2 (Source: CSO)
- Social gatherings, citizen congregations and specific local events all appeared to have contributed to Wave 2 outbreaks
- The introduction of Level 3 nationally did not reduce the 14 day incidence rate per 100k for majority of counties. The introduction of further household restrictions (Level 3 Max) from mid-October drove a reduction across most counties
- Wet pubs opened in all counties except Dublin in late September. This also coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in in every counties. counties. This increase was not seen to the same extent in Dublin
- The LEAs containing University College Cork (UCC) and National University of Ireland Galway (NUIG) both saw higher increases than the rest of their county when the universities opened. This difference was reduced when the universities went online. Wet pubs also opened in both cities on the same week that universities opened
- The northern counties, and especially LEAs on the border, do appear to be impacted by proximity to the border. Donegal is not seeing significant reductions with Level 4 that was seen in other border counties
- The reopening of construction, non-essential retail and the wider Phase 3 changes during the summer do not appear to have had a material impact on the 14 day disease incidence rate per 100k nationally or in larger counties. It should however be noted that the disease rate was low at this time

Source Median Age June 5th 48 (CSO COVID-19 Deaths and Cases Series 4) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries4/
Median Age for week ending 30th October 33 (CSO COVID-19 Deaths and Cases Series 15) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries15/

County specific analysis



County Analysis Summary

County	Border county	Known outbreaks	Dublin and surrounding area	Following national restrictions trend	Wave One – main outbreak sources	Wave Two – main outbreak sources	14 day incidence rate per 100k (26/07 – 17/11)
Kerry		✓		✓	Private Houses, Residential Institutions, Hospital	Private House, Community Outbreak, Nursing Home	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Institutions	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	

Source Outbreak sources – CIDR, Incidence rate –based on daily cumulative case data published on GeoHive to 17 November 2020.
This data is published daily. Note Wave one defined as 03/03-25/07; Wave 2 is 26/07-20/11
*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR
**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Summary of county-level 14 day incidence rate per 100k

The heatmap below shows the 14 day incidence rate per 100k population for each county over the last two months. The overall reduction in cases has levelled to 17/11, with some county incidence rates increasing.

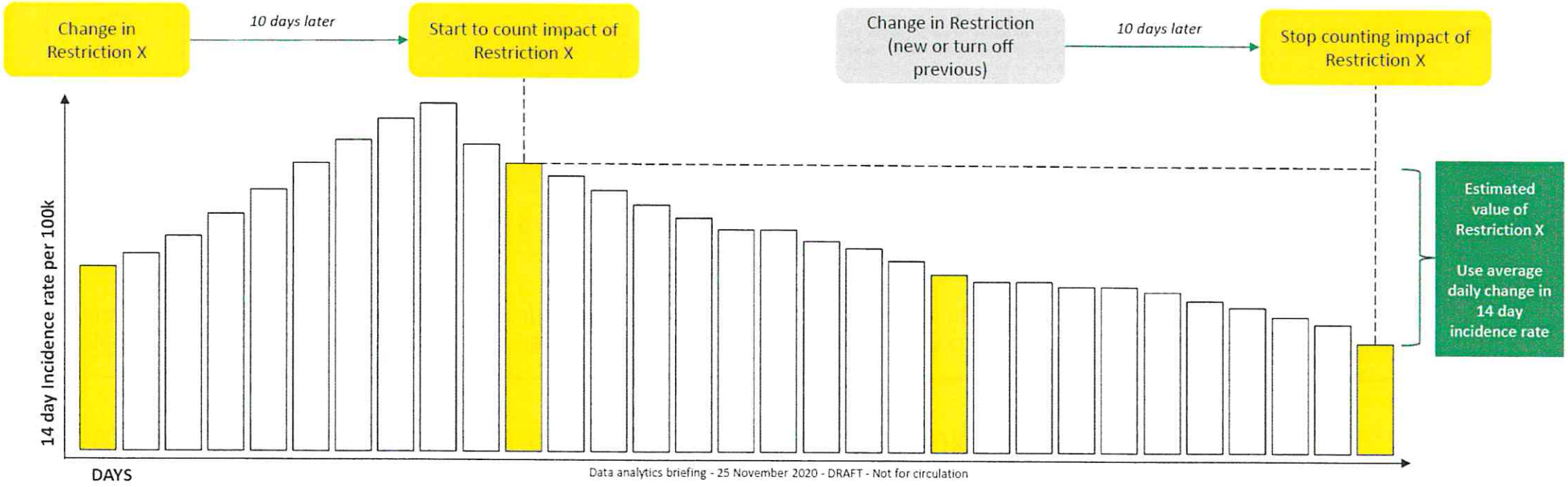
| Two Weekly Incidence Rate Per 100k | Population | 20-Sep | 21-Sep | 22-Sep | 23-Sep | 24-Sep | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | Change Last 3 Days |
|---|---|---

Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There have been relatively few changes in restrictions, which generally combine more than one change at a time, therefore hiding the unit value per restriction. There is also a time lag between a restriction change and the impact being seen, and the incidence rate can clearly be impacted by significant outbreaks. We have used the below methodology to initially quantify the impact of changes in restrictions. This calculation has been applied across counties. The outputs should be seen as directionally useful, rather than precise statistical outputs. A sensitivity analysis has also been completed looking at a reduced 7 day and rolling average incidence rate over 3 days per 100k especially for periods where there were more frequent restriction changes.

It should be noted that this does not measure compliance or behavioural aspects related to restrictions.

They are also presented alongside international academic research to provide a broad view to support decision-making. Further analysis has commenced to enhance the measurement of correlation between restrictions and their impact.



Summary of Restriction Impact

The below heatmap shows the average daily change in 14 day incidence rate per 100k for the time period that each change in restriction was in place. The impact is calculated using the approach described in Slide 8. Note that:

1. The absolute number of weekly tests has significantly increased since Wave 1
2. The more recent restriction changes (Level 3, Level 3 Max and Level 5) happened within a 15 day period.

	20/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	15/09/2020	21/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Average daily change in the 14 day incidence rate per 100k	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Construction Opened	Mandatory PH	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Lools, Offaly Kildare	Face masks in shops	Lockdown lifted Laois + Offaly, Kildare extended	Schools + childcare opened	Level 3 Dublin	Wet Bars Opened except Dublin	Level 3 Donegal	Level 3 National	Level 3 Max National	Level 4 Donegal, Cavan, Monaghan	Level 5 National
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-14
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-28
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-10
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-14
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	4	-2		0	-15
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	2	2		4	-6		-11
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-14
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-10
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-12
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-7
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		2	-10		-10
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-5
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-13
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-11
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-15
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-12
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-22
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-13
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		-3	-9		-8
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-11
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-17
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-6
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-10
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-19
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-9
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-6

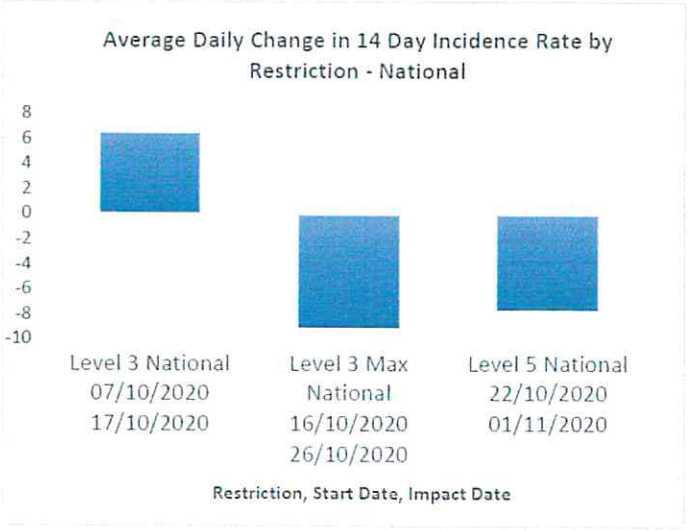
Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. Measures the average daily change in the 14 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

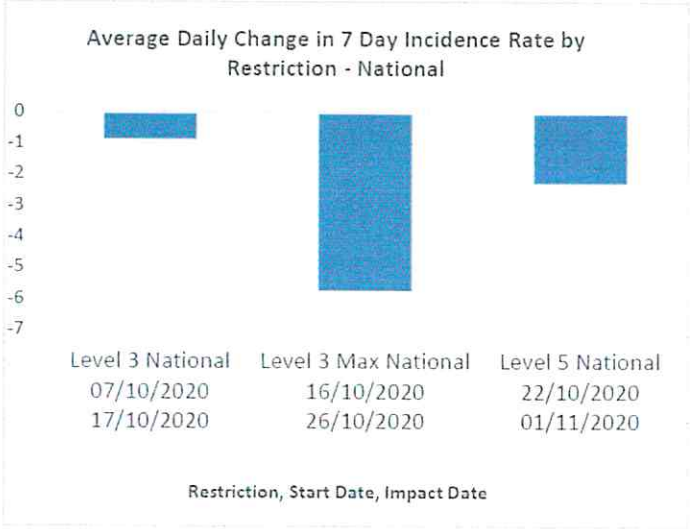
The introduction of Level 3 Max and Level 5 both coincide with a reduction incidence rates

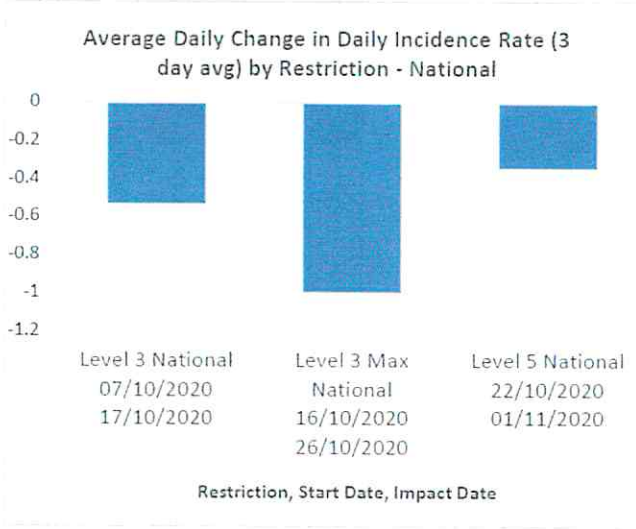
The 14 day incidence rate per 100k did not reduce for all but four counties with the introduction of Level 3. However, it did start to reduce with the introduction of further household restrictions (Level 3 Max) and then Level 5.

These three restriction changes happened within a 15 day period, with Level 3 Max was only active for 15 days.

For completeness, this analysis has also been repeated for a 7 day and a daily incidence rate average over three days. All three are shown below and follow similar, albeit reduced, patterns.







Cavan's three LEAs follow a different path. One is being driven by outbreaks, one impacted by the border and one more aligned with the national trend

Cavan profile:

- Cavan has experienced a higher 14 day disease incidence rate per 100k during the second wave than the national average
- Part of Cavan borders with NI where different restrictions are in place

Summary analysis:

- Cavan-Belturbet LEA is the only part of Cavan with a NI border. This LEA is experiencing a higher disease incidence than the national average
- Ballyjamesduff LEA had the highest incidence rate throughout October. The timing of the acceleration of growth rate in this LEA appears to correlate with the GAA county final (winners are in this LEA)
- Levels of private house outbreaks rose during September and October
- [redacted]
- Travel along the N03 between Belturbet and George Mitchell Bridge at the NI Border fell 33% during October (Source TII Road Travel data)

Restriction impact:

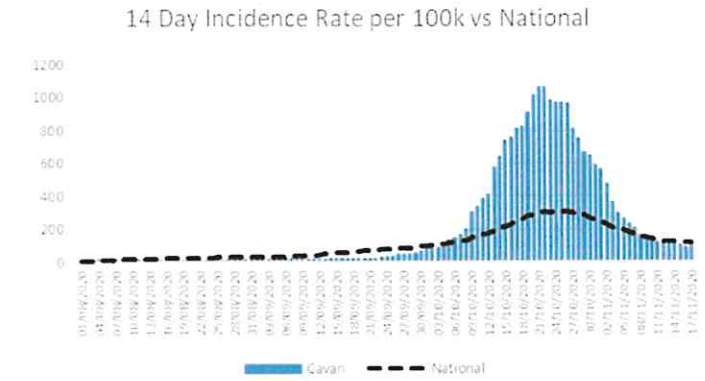
- The timing of the growth of cases appears to correlate with the events listed above and changes to restrictions in wet pubs
- Level 4 restrictions imposed for the border counties appears to have desired impact of reducing incidence level in Cavan
- Level 5 restrictions continue to drive incidence level further

Employment Summary:

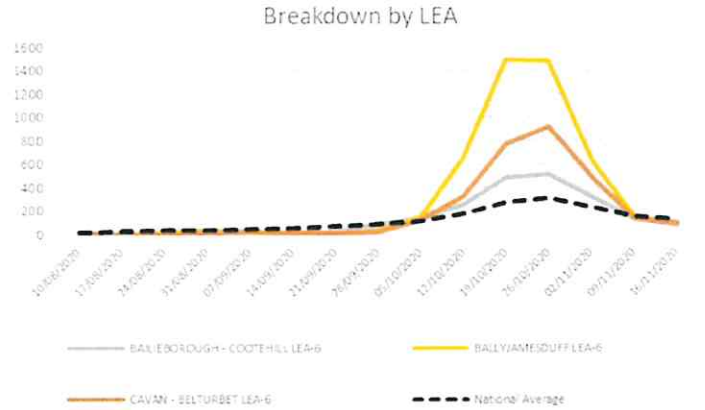
- Cavan had c.47% of its workforce on PUP or TWSS (c.15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP (17 Nov) which is down from 9.7k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

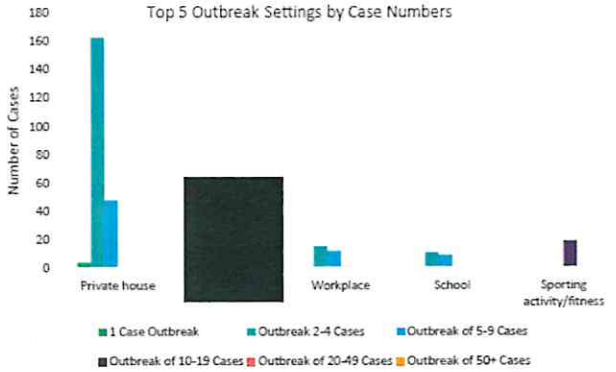
Cases	
1,272	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
32%	3.6

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	215	72
[redacted]	[redacted]	[redacted]
Workplace	29	12
School	20	7
Sporting activity/fitness	19	1

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Sporting activity/fitness	04/10/2020	19
Community outbreak	07/10/2020	16
[redacted]	[redacted]	[redacted]
Private house	13/10/2020	7



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Meath is seeing a higher incidence rate than the national average. This is influenced by proximity to Dublin and specific outbreak events

Meath profile:

- Meath has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Dublin borders including a significant commuter population

Summary analysis:

- Level of private house outbreaks during September and October grew
- Continued outbreaks in nursing homes, one significant outbreak of 51 cases in [redacted]
- One significant community outbreak of 29 cases
- Ratoath LEA has the highest incidence rate. The timing of this acceleration of growth rate appears to correlate with GAA county final win (Source: GAA.ie)

Restriction impact:

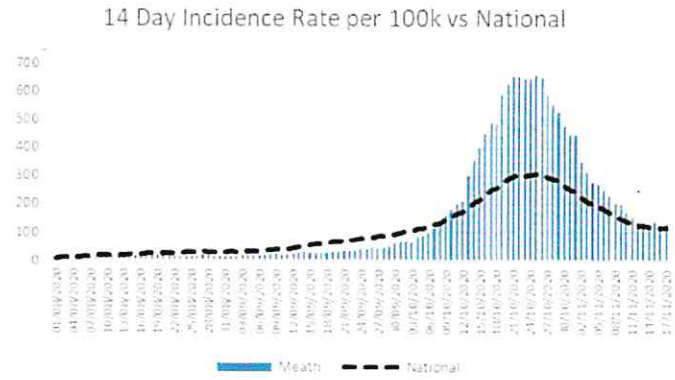
- The timing of the growth of cases appears to correlate with the events listed above and the changes to restrictions in wet pubs
- Incidence level continued to rise post initial Level 3 restrictions imposed nationally
- Level 3 (max) restrictions imposed nationally appear to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level down further

Employment summary:

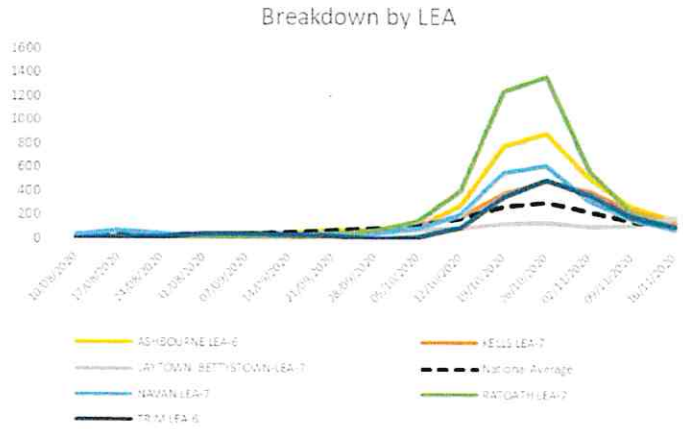
- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (13k versus 25k) levels (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

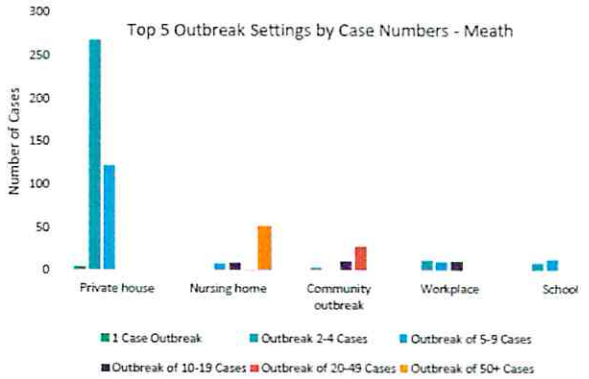
Cases	
2,466	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
27%	3.3

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	397	121
Nursing home	74	9
Community outbreak	45	4
Workplace	38	18
School	25	10

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Nursing home	[redacted]	51
Community outbreak	10/10/2020	29
Community outbreak	13/10/2020	12
Workplace	19/10/2020	11
Nursing home	[redacted]	10



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

The border is contributing to Donegal's higher rate of cases. Donegal is not seeing the benefit of recent Level 4 increases seen in other border counties

Donegal profile:

- Donegal has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Disease incidence higher and earlier versus national average, and reducing at a slower rate
- Eastern Donegal borders with NI where different restrictions are in place

Summary analysis:

- Lifford and Stranolar LEA close to the NI border with Derry, experienced an earlier and higher disease incidence
- Other eastern parts of Donegal (Buncrana, Letterkenny and Carndonagh) have the next highest incidence rates
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted] (Source: Donegal Daily)
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November

Restriction impact:

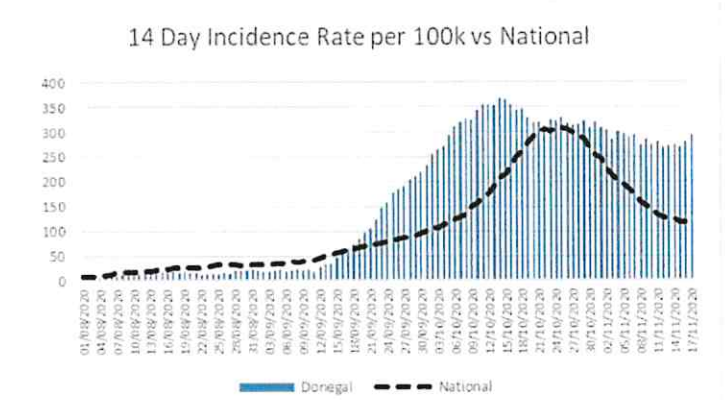
- Disease incidence continued to rise after level 3 Donegal announcement
- Specific restrictions in NI (1/10) on bars and restaurants appeared to have helped reduce rate in Donegal
- Despite level 3 max and level 5 being effective in other counties, cases in Donegal fell at a lower rate compared to national levels
- Similarly, Level 4 reduced the cases in Monaghan and Cavan, but not Donegal. Mask compliance in Donegal also reduced (against national and previous Donegal trend) with Level 4 restrictions (Facebook survey data)

Employment summary:

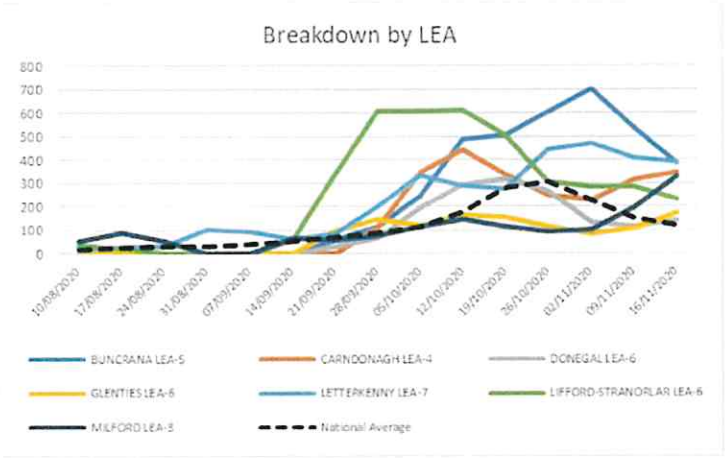
- Donegal had c.49% of its workforce on PUP or TWSS (c 30k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (12k versus 23k) (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,165

% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
62%	3.9

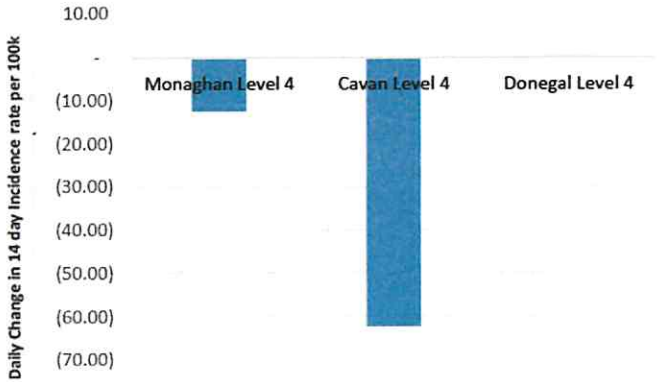
Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	651	235
Workplace	159	28
Hospital	126	5
Extended family	118	19
Nursing home	58	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Hospital	[redacted]	99
Workplace	23/09/2020	55
Nursing home	[redacted]	49
Social gathering	24/10/2020	20
Hospital	[redacted]	17

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Cork is broadly aligned with the national trend. Cork City is driving up the incidence rates across the county

Cork profile:

- Cork is broadly aligned with the national average for the 14 day disease incidence rate per 100k during second wave

Summary analysis:

- Cork City is the most impacted area, with the rest of the county following with a reduced incident rate
- Cases in Cork City South Central, the LEA containing UCC (started returning on 21 Sept), were twice as high as other LEAs in Cork city during mid October. This gap declines in November as the universities went online

Restriction impact:

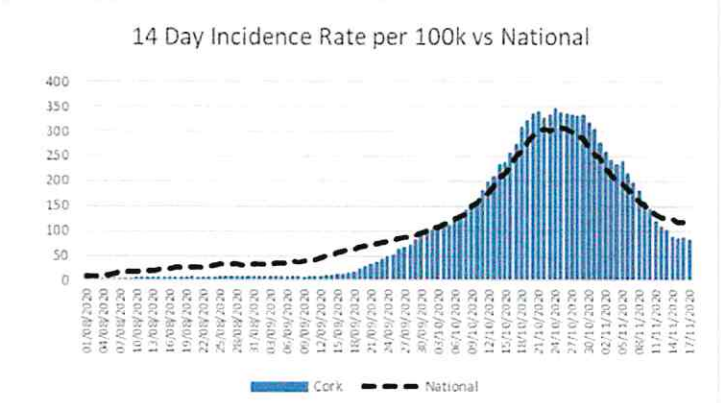
- Cases in Cork city rose as wet pubs reopened (21 Sept). Cases around the rest of the county followed shortly after
- There were a number of GAA games in early October, which were linked with outbreaks. No matches occurred after this, with level 3 restrictions being applied around this time (6 Oct). Cases throughout Cork began to fall 10 days later

Employment summary:

- At peak, c 39% of Cork's workforce were on PUP or TWSS (c 96k) (EY 2019 employment estimates). Current PUP levels (17 Nov) are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

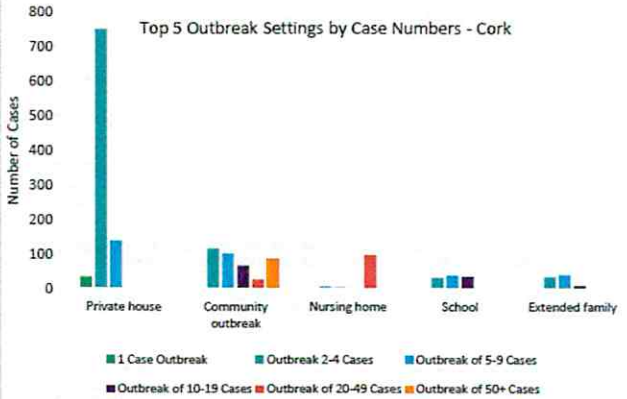
Cases	
4,492	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	3.7

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	929	354
Community outbreak	411	67
Nursing home	114	9
School	113	24
Extended family	90	22

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	26/10/2020	68
Nursing home	[redacted]	46
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	30
Community outbreak	22/09/2020	29



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Galway rose above the national average during the second wave, driven by Galway City Central and Connemara South LEAs

Galway profile:

- Galway experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- It has now come back down below national average levels since early November

Summary analysis:

- Galway City Central, Connemara South and Galway City East have had the highest 14-day incidence rates throughout October
- A number of key events occurred in late September which could have contributed to this increase
- Cases within Galway City Central LEA appear to have increased in this period following students returning to NUIG from 21 September
- GAA senior championship football semi-finals and finals also occurred in the last week of September and first week of October. Connemara South had a confirmed outbreak in mid-October
- Throughout November, private household cases were responsible for 49% of outbreak cases, with [redacted] and community outbreaks making up a large proportion of the remaining percentage

Restriction impact:

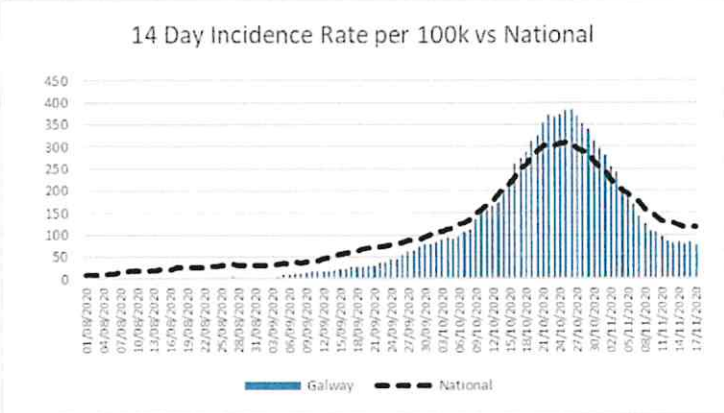
- Cases begin to decline ten days after the national level 3 lockdown came into effect (17/10), falling below national levels in November
- An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

Employment summary:

- Galway had c.39% of its workforce on PUP or TWSS (c.49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP (17 Nov) which is down from 32.5k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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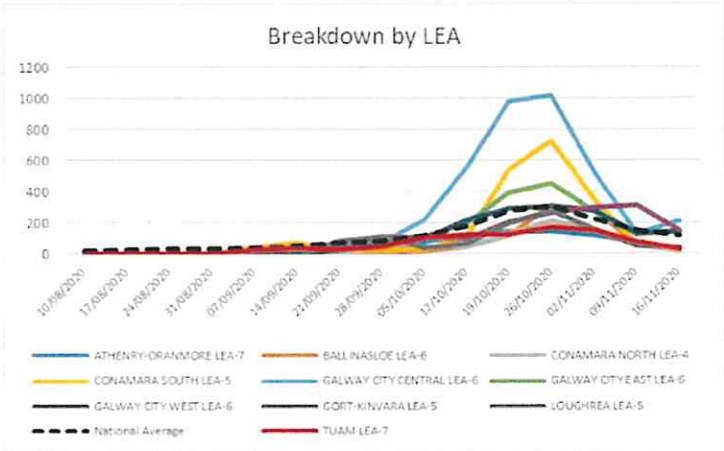


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,060

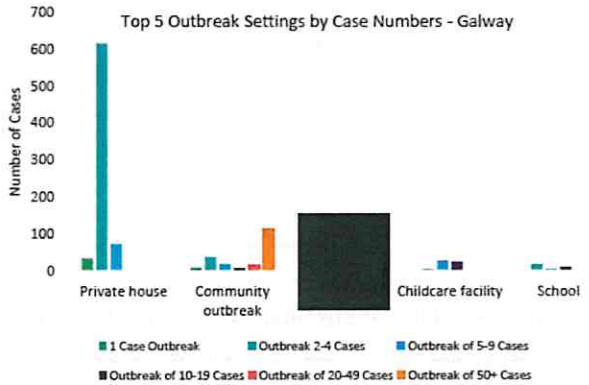
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
66%	3.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	723	293
Community outbreak	207	30
[redacted]	[redacted]	[redacted]
Childcare facility	61	8
School	37	11

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	24/09/2020	114
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Social gathering	19/09/2020	20
Community outbreak	25/09/2020	18



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Dublin – local authority breakdowns over time

The below heatmap shows the Dublin LEA 14 day incidence rate per 100k population since early August. Some areas are seeing higher incidence rates.

		10/08/2020	17/08/2020	24/08/2020	31/08/2020	07/09/2020	14/09/2020	21/09/2020	28/09/2020	05/10/2020	12/10/2020	19/10/2020	26/10/2020	02/11/2020	09/11/2020	16/11/2020
Dublin City	ARTANE-WHITEHALL LEA-6	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9	111.4
	BALLYFERMOT-DRIMNAGH LEA-5	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	191	143.3
	BALLYMUN-FINGLAS LEA-6	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7	221.8
	CABRA GLASNEVIN LEA 7	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	160.3	138.1
	CLONTARF LEA-6	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	114.4	73.8
	DONAGHMEDE LEA-5	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7	89
	KIMMAGE-RATHMINES LEA-6	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188	123.5
	NORTH INNER CITY LEA-7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	121	84.9
	PEMBROKE LEA-5	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	88	59.4
	SOUTH EAST INNER CITY LEA-5	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7	133
	SOUTH WEST INNER CITY LEA-5	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1	186.6
Dun Laoghaire - Rathdown	BLACKROCK LEA-6	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2	68.2
	DUN LAOGHAIRE LEA-7	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	76.9	72.1
	DUNDRUM LEA-7	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	66.8	80.1
	GLENCULLEN-SANDYFORD LEA-7	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3	68.3
	KILLINEY-SHANKILL LEA-7	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	44.6	52.5
	STILLORGAN LEA-6	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8	101.6
Fingal	BALBRIGGAN LEA-5	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2	109.4
	BLANCHARDSTOWN-MULHUDDART LEA-5	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	266.2	147.3
	CASTLEKNOCK LEA-6	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	297	199.5	130.1	114.9
	HOWTH-MALAHIDE LEA-7	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9	92.6
	ONGAR LEA-5	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7	134
	RUSH-LUSK LEA-5	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2	43.3
	SWORDS LEA-7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	245.3	295.9	371.8	288.1	140.2
South Dublin	CLONDALKIN LEA-7	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	212.8	180.6
	FIRHOUSE-BOHERNABREENA LEA-5	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8	102.3
	LUCAN LEA-5	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6	122.7
	PALMERSTOWN-FONTHILL LEA-5	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1	165.6
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7	112.7
	TALLAGHT CENTRAL LEA-6	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	168.9	134.2
	TALLAGHT SOUTH LEA-5	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	304.5	251

There appears to be a correlation between areas hit hard in Wave 1 and Wave 2 (acknowledging differences in testing criteria), with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin and Artane-Whitehall.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Dublin includes over a quarter of Ireland's population. It therefore includes many stories and strongly aligns with national case levels

Dublin profile:

- Not surprisingly, Dublin's 14 day disease incidence rate per 100k during second wave is in line with the national average
- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire–Rathdown seeing lower overall incidence

Summary analysis:

- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Restriction analysis:

- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases
- Not opening the wet pubs does appear to have helped Dublin with the subsequent increase in cases being slower than the national average

Employment summary:

- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k (17 Nov) , compared to a peak of 176k in May (CSO, DSP)

Notes

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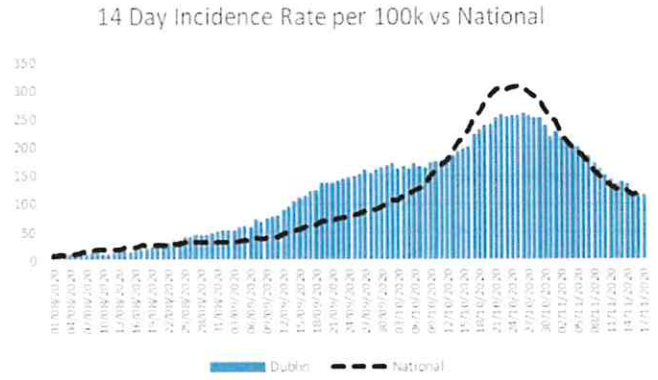

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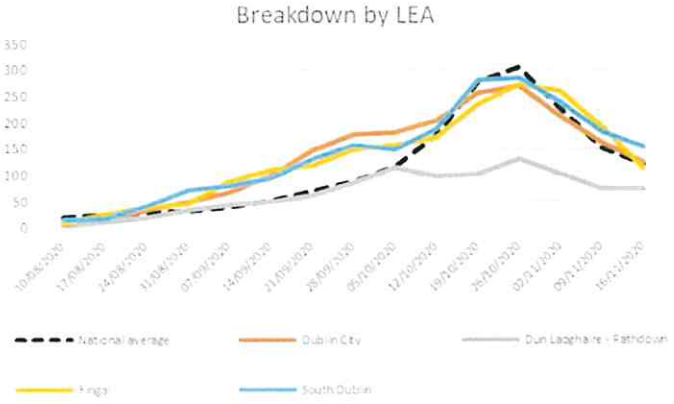


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
12,606

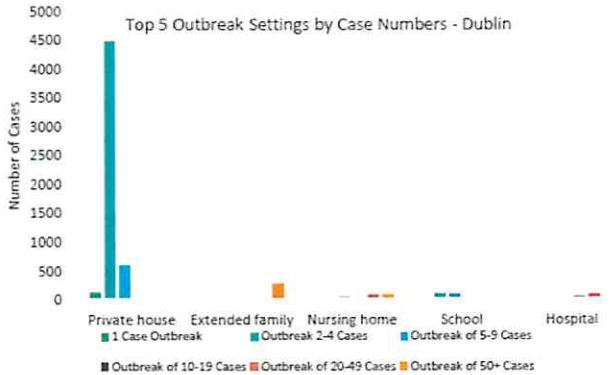
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
56%	2.9

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	5225	2075
Extended family	291	3
Nursing home	266	27
School	249	66
Hospital	192	30

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	24/09/2020	288
Nursing home	[redacted]	75
Hotel	12/09/2020	38
Childcare facility	20/10/2020	38
Residential institution	02/10/2020	30



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Cases in Limerick during Sept and Oct were driven by very large extended family and community outbreaks

Limerick profile:

- Limerick has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average.
- This is a result of the cases in Limerick not declining to the same extend in the rest of the country

Summary analysis:

- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November.
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others – the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

Employment summary:

- Limerick had c.43% of its workforce on PUP or TWSS (c.34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

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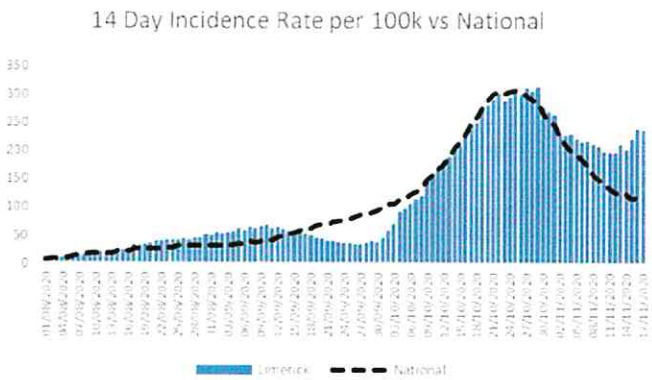


Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

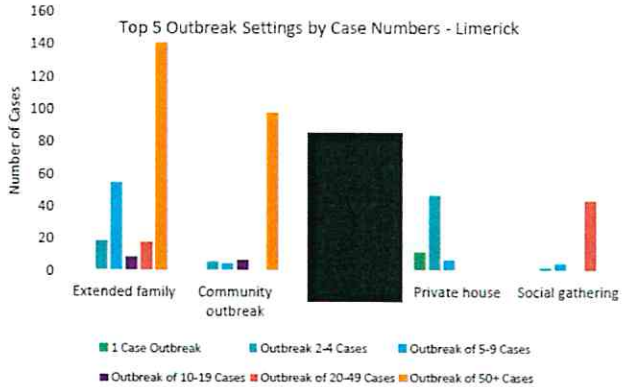
Cases	
1,771	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
39%	6.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Extended family	242	19
Community outbreak	117	8
[redacted]	[redacted]	[redacted]
Private house	66	34
Social gathering	51	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	23/09/2020	141
Community outbreak	08/10/2020	94
[redacted]	[redacted]	[redacted]
Residential institution	13/10/2020	31
Social gathering	15/10/2020	25



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Kerry is seeing lower cases than the national average, with Listowel bordering Limerick having the highest number of recent cases

Kerry profile:

- Kerry has experienced a similar 14 day disease incidence rate per 100k during second wave to the national average. However, Listowel LEA has seen a sharp increase in its rate since early October

Summary analysis:

- North Kerry (Listowel) is most severely affected. This coincides with outbreaks southern parts of Limerick such as Newcastle West and Adare-Rathkeale, as well as Limerick city
- Killarney and Tralee LEAs are both next in terms of severity of impact, containing two major Kerry towns
- The remainder of the county (further south, smaller towns) is generally less affected
- [redacted]
- Private homes account for 33.68% of all outbreak cases since Sept 1st
- Listowel's incidence levels were three times higher than the next worst-afflicted LEA. Note the small population of ~29,000 people meant 182 cases over a 2-week period prior to 26 Oct created a very high incidence rate

Restriction impact:

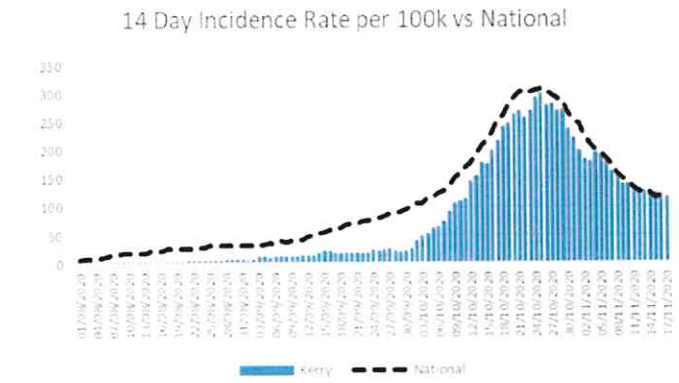
- The number of cases in Kerry started to grow around the time level 3 was introduced – two weeks later, this high growth rate had largely ceased
- Improvements have levelled off somewhat across LEAs such as Tralee, Killarney and Listowel

Employment summary:

- Kerry had c.49% of its workforce on PUP or TWSS (c.32k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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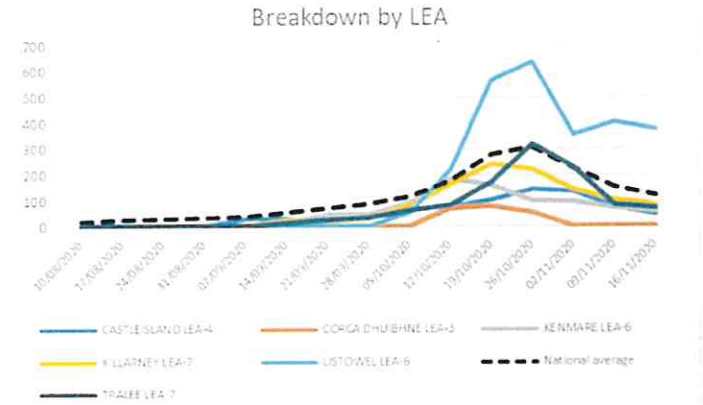


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

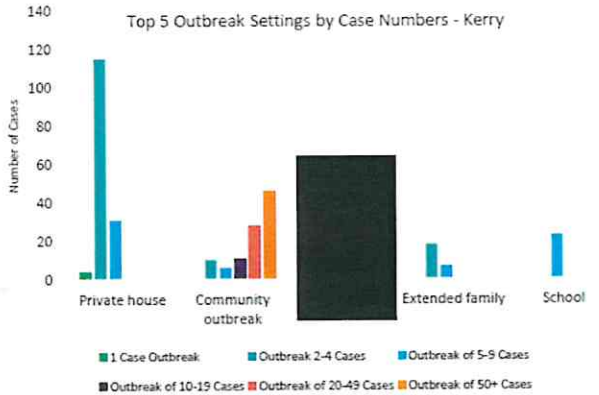
Cases	
963	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	4.1

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	150	53
Community outbreak	101	14
[redacted]	[redacted]	[redacted]
Extended family	25	7
School	23	4

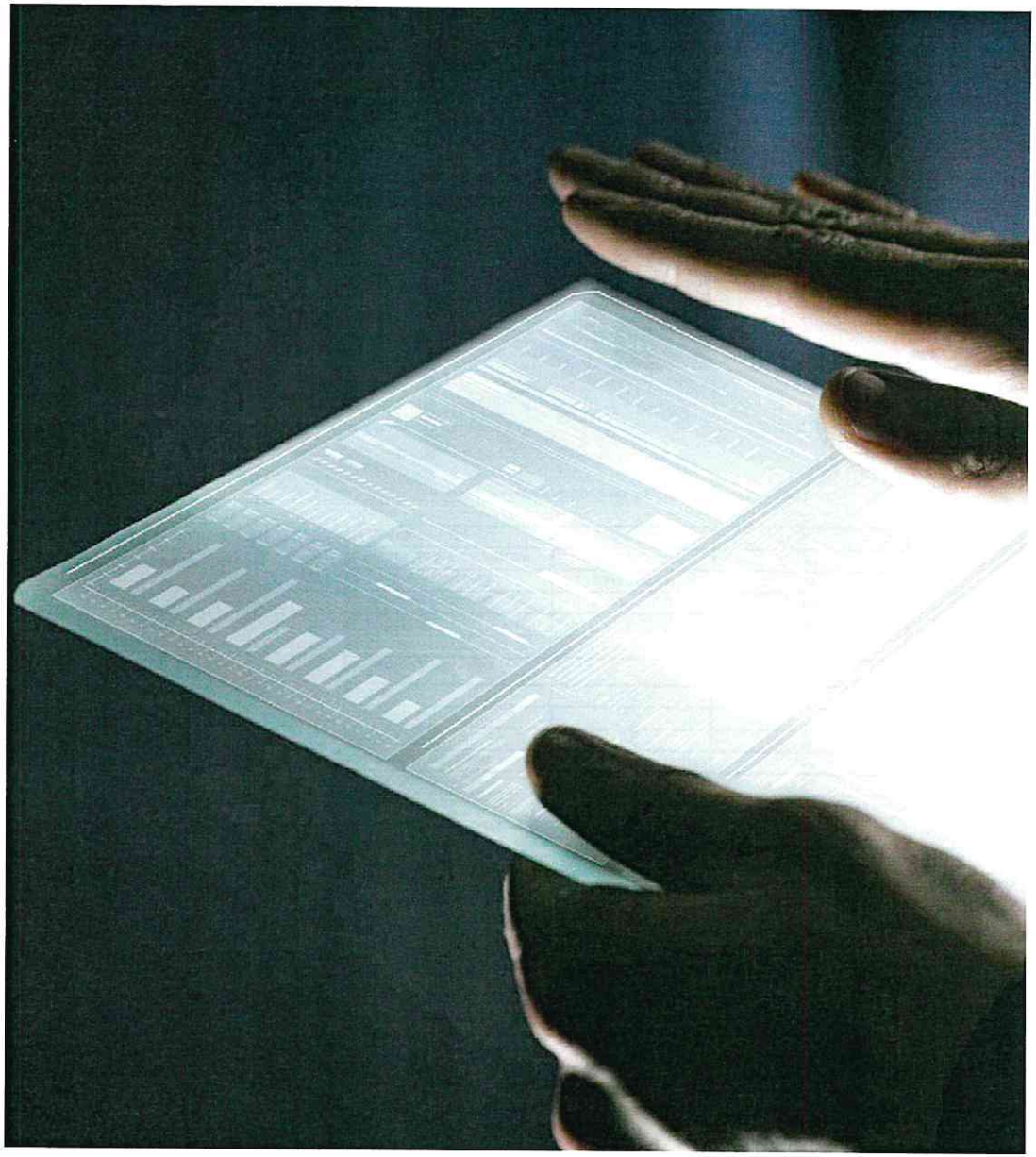
Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Community outbreak	03/09/2020	43
Community outbreak	23/10/2020	25
Religious/Other ceremony	16/10/2020	11
Restaurant / Cafe	11/09/2020	11



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties – highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

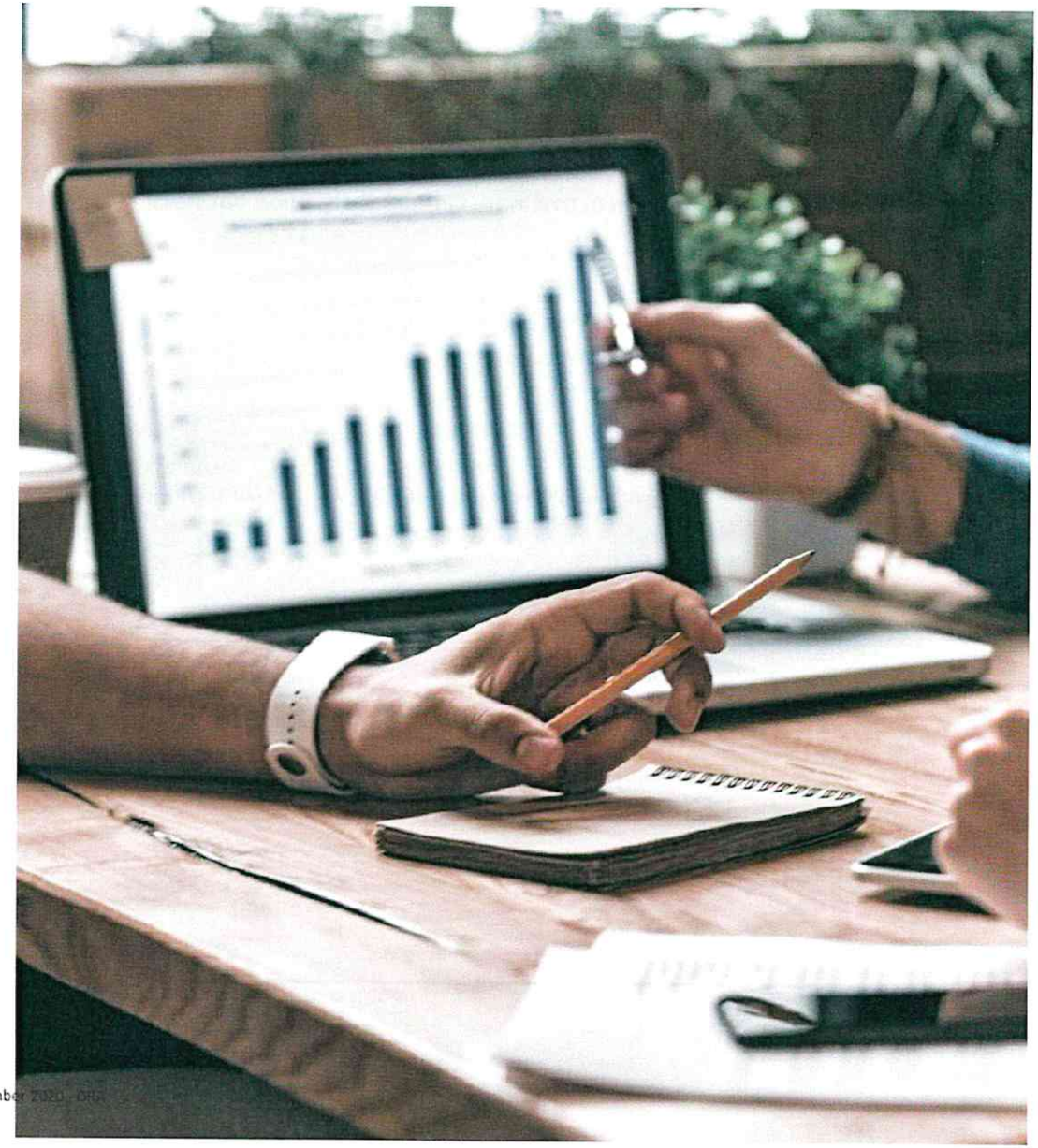
International restriction analysis

A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

International desktop research

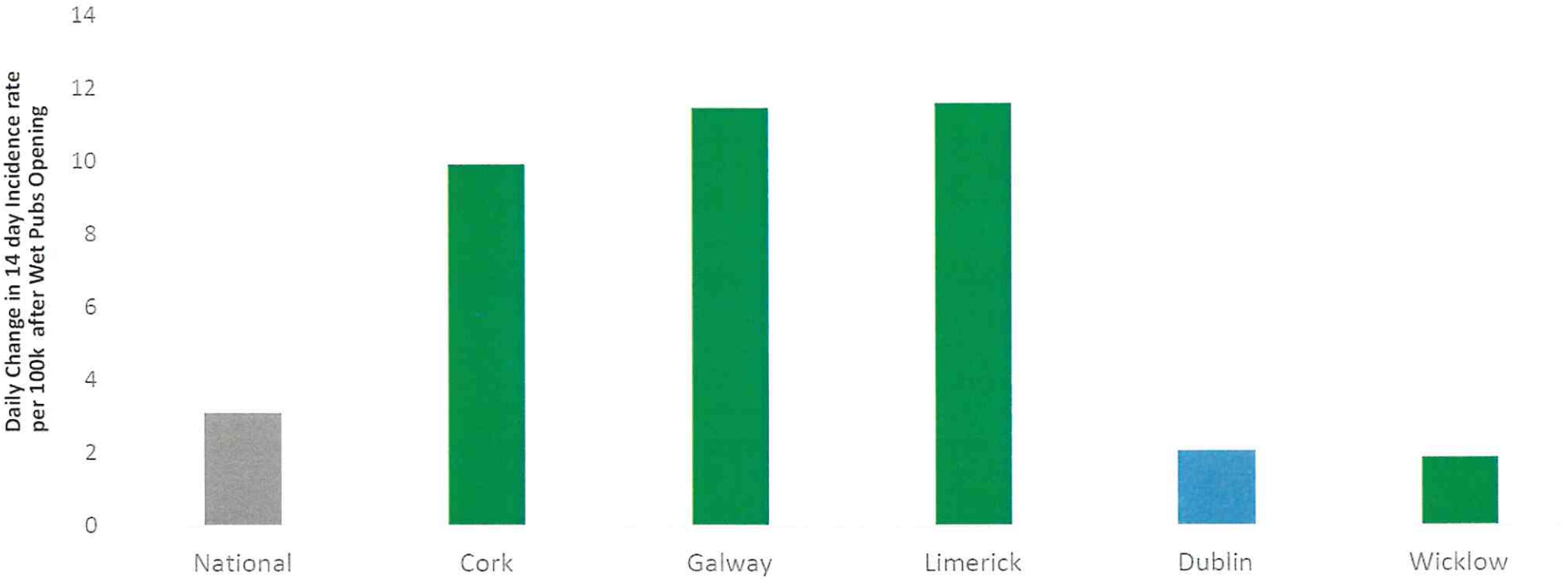
Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular COVID-19 insights publication and with new research included today

Ireland – restrictions analysis



Wet Pubs opened across the country, but not Dublin, on 21 September. The increase in Dublin's incidence rate was then lower than the national average and for larger counties

Wet pubs opened in all counties except Dublin in late September. This coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in every county. The subsequent incidence rate growth in Dublin was 33% lower than the national average and 79% to 82% lower than other counties with larger cities. Wicklow was the only county that performed better than Dublin, with a 10% lower growth rate than Dublin



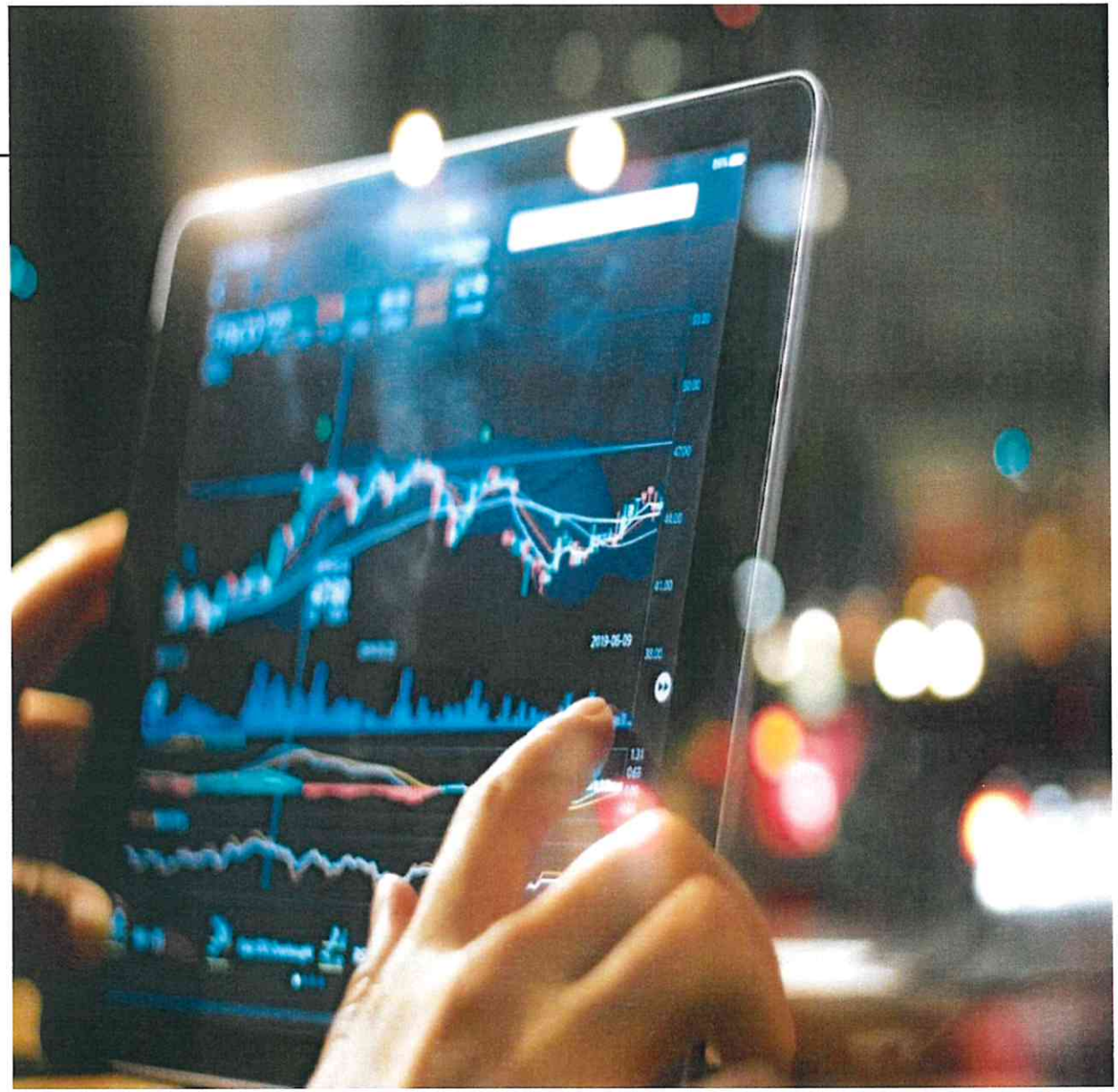
The incidence rate did not materially increase after the three phases of re-opening during late May to early July

The reopening of construction, non-essential retail and the wider Phase 3 openings did not appear to have a material impact on the cases nationally or in larger counties. Note that disease incidence rates were low at this time

	29/03/2020	12/04/2020	25/04/2020	24/03/2020	27/03/2020	01/05/2020	25/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	29/09/2020	21/09/2020	06/09/2020	07/10/2020	16/10/2020		22/10/2020
Average daily change in the 14 day incidence rate per 100k	No restrictions	Childcare closed School Closed	Bars closed	Retail restaurants etc closed	Stay at home order (7km)	Stay at home increased to 5km	Construction Opened	Mandatory PUP	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois Offaly Kildare	Face masks in shops	Lockdown Hse Laois + Offaly, Kildare intended	Schools + childcare opened	Level 3 Dublin	We Bars Opened except Dublin	Level 3 Donegal	Level 3 Nationa	Level 3 Max National	Level 4 Donegal Cavan Monaghan	Level 5 Nationa
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-14
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-28
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-10
Cork	2	2	3	3	1	1	2	1	0	0	0	0		0		4		10		7	5		14
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	4	-2		0	-15
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	2	2		4	-6		-11
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-14
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-10
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-12
Kilkenny	1	1	4	3	1	0	3	0	0	0	0	1		0		0		6		3	-7		-7
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		2	-10		-10
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-5
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-13
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-11
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-15
Mayo	0	1	4	10	1	2	2	0	0	0	0	0		0		1		7		12	3		12
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-22
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-13
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		-3	-9		-8
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-11
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-17
Tipperary	1	1	5	1	1	5	0	1	0	0	0	3		4		0		4		3	0		6
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-10
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-19
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-9
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-6

* Phase 3 re-opening included places of worship, gyms, cinemas, theatres, leisure facilities, personal services, sports, public transport 50% capacity & face coverings), mass gatherings (50 indoors, 200 outdoors), adult education and community facilities, health and well being related services, restaurants and cafes (on site food service), hotels and other accommodation facilities, driving schools and tests

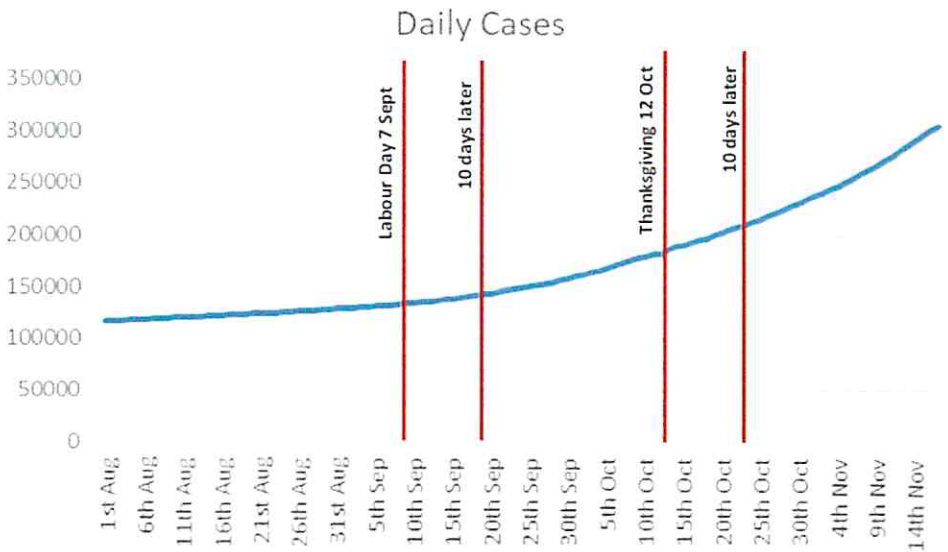
Select International Desktop Research



Canadian Thanksgiving: Testing & Tracing data and case numbers show surge in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first surge in Spring.



Key findings:

- Canada saw a surge in COVID-19 cases in the days and weeks that followed Thanksgiving, the **highest rates** since the first surge in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; **4,109 new daily cases** were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Canadian Testing and Tracing records show that Thanksgiving gatherings directly resulted in **viral spread**
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases **dramatically changed** after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has **doubled** from 155,000 on 28 September to over 310,000 on 18th November
- A similar **spike** is noticed on 17th September, 10 days after **Canadian Labour day** was celebrated

Source: https://health-infobase.canada.ca/covid-19/
https://www.thestar.com/news/canada/2020/09/23/wont-be-gathering-for-thanksgiving-trudeau-says-covid-19-second-wave-underway.html

US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.)

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

POI categories ranked in decreasing order of associated additional infections that would occur if the location is opened

Full-service restaurants

Fitness centres

Religious organisations

Take-out restaurants

Grocery stores

Department stores

Pharmacies

Results

- The Stanford Mobility Network Model Simulation concluded that on average across metro areas, reopening full-service restaurants, fitness centres and religious organisations produces the largest predicted increase in infections.
- Take-out restaurants, grocery stores, department stores and pharmacies resulted in low positivity rates.
- This pattern was seen in the 3 US cities studied.

Key findings

- The model calculates the additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location.
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy.
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10).
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more.

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html

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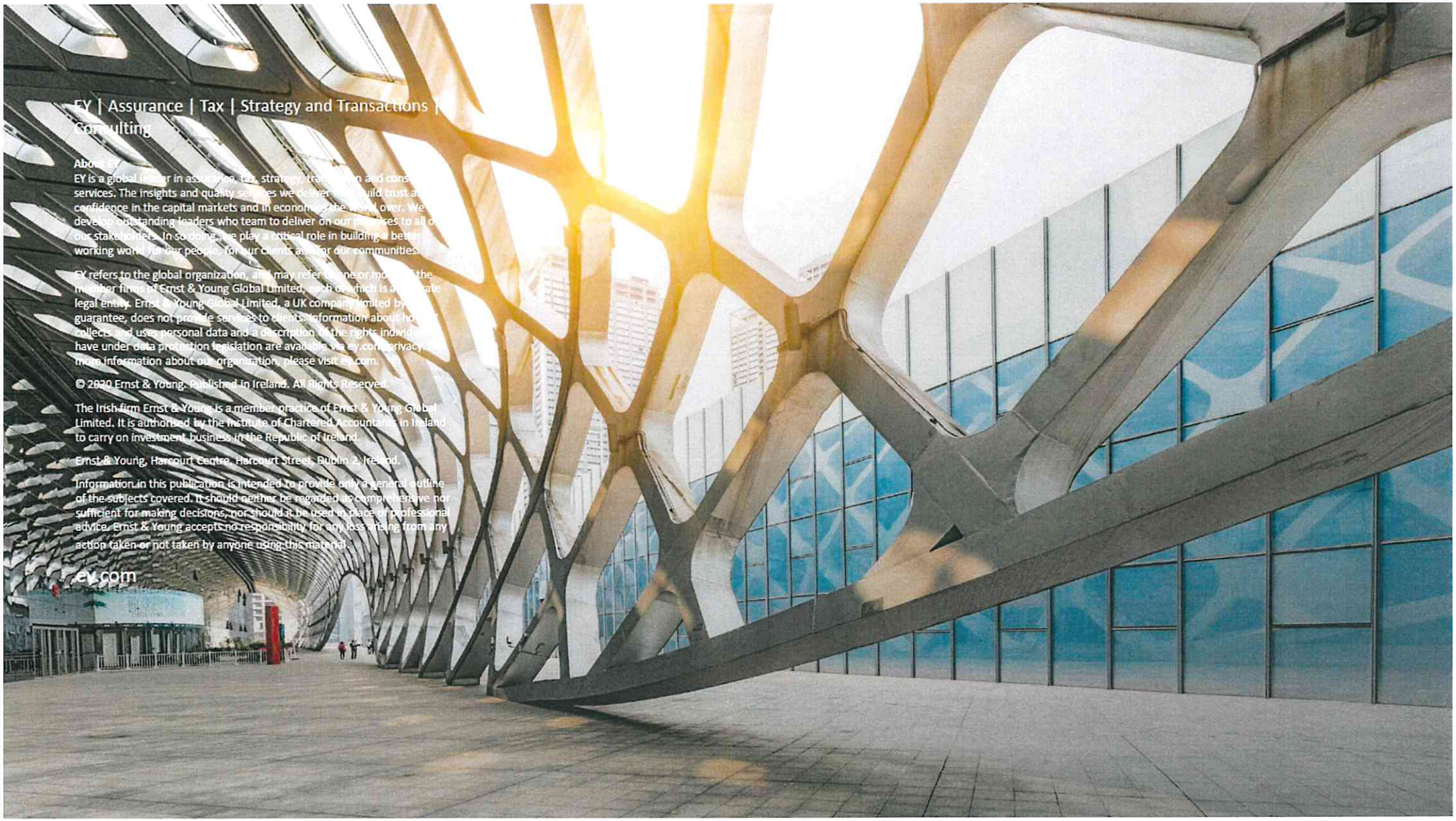

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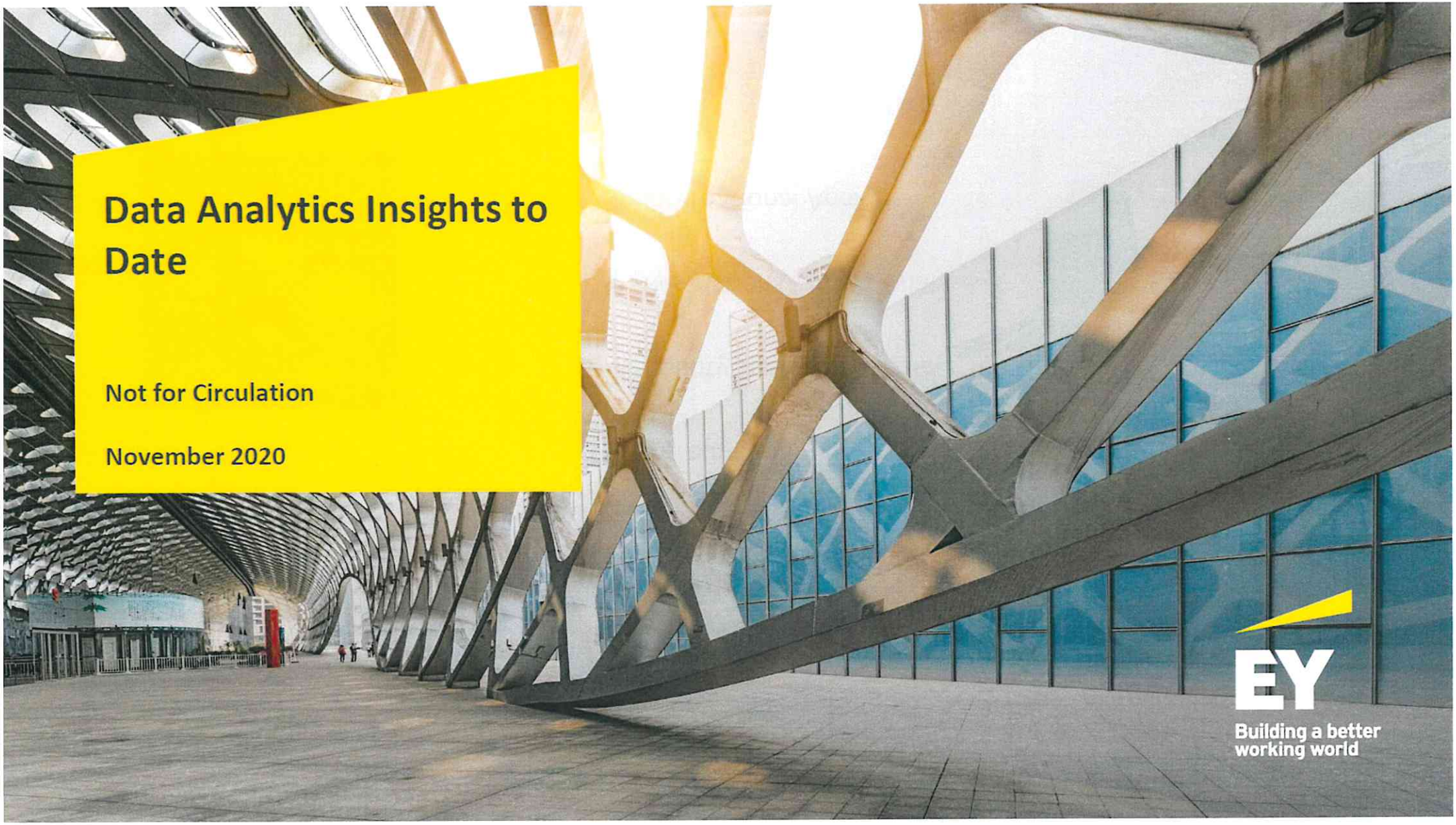

Data Analytics Insights to Date
Not for Circulation
November 2020
EY
Building a better working world

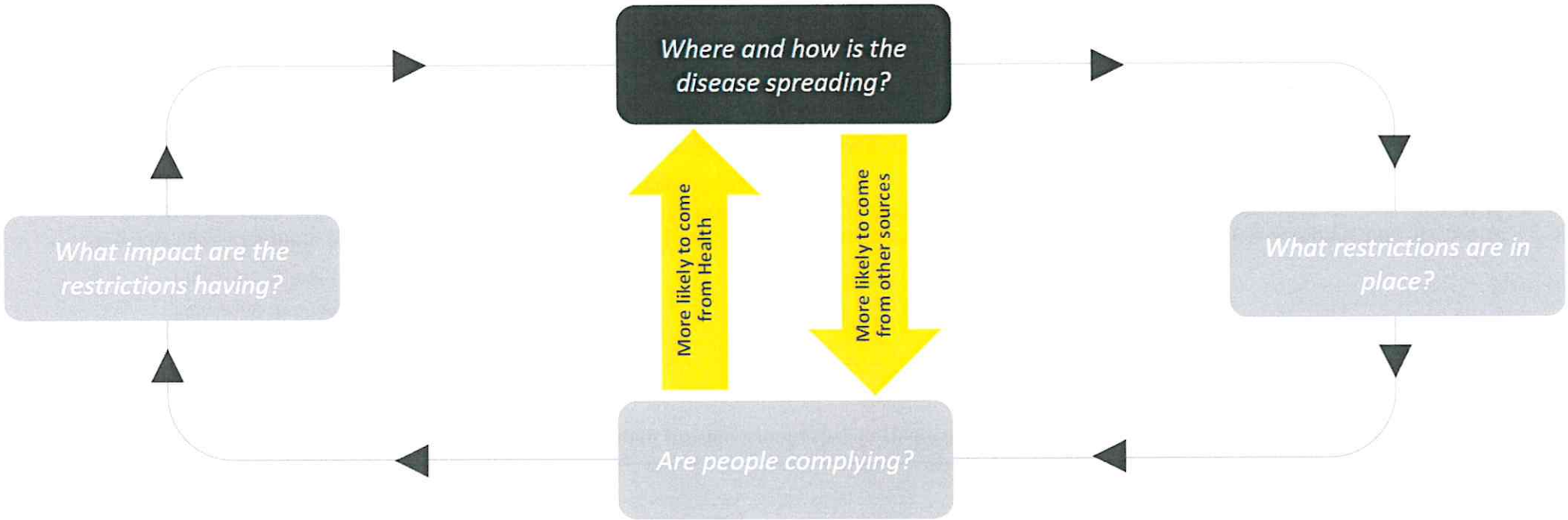
Update – Week 6

Agenda

- Introduction
- County Specific Analysis
- Restrictions Impact Analysis
- International Analysis

Providing data analysis to support Government decision making

EY Data Analytics team was engaged to analyse certain aggregated data available to the State as part of the State's Covid 19 management strategy. EY's role was to analyse the available data and to present it back to Government officials to consider as part of its on-going deliberations and decision making with regard to Covid 19 restrictions. The focus is situating disease incidence rates in the context of other data (e.g. restriction changes) to produce insights, rather than performing epidemiology.

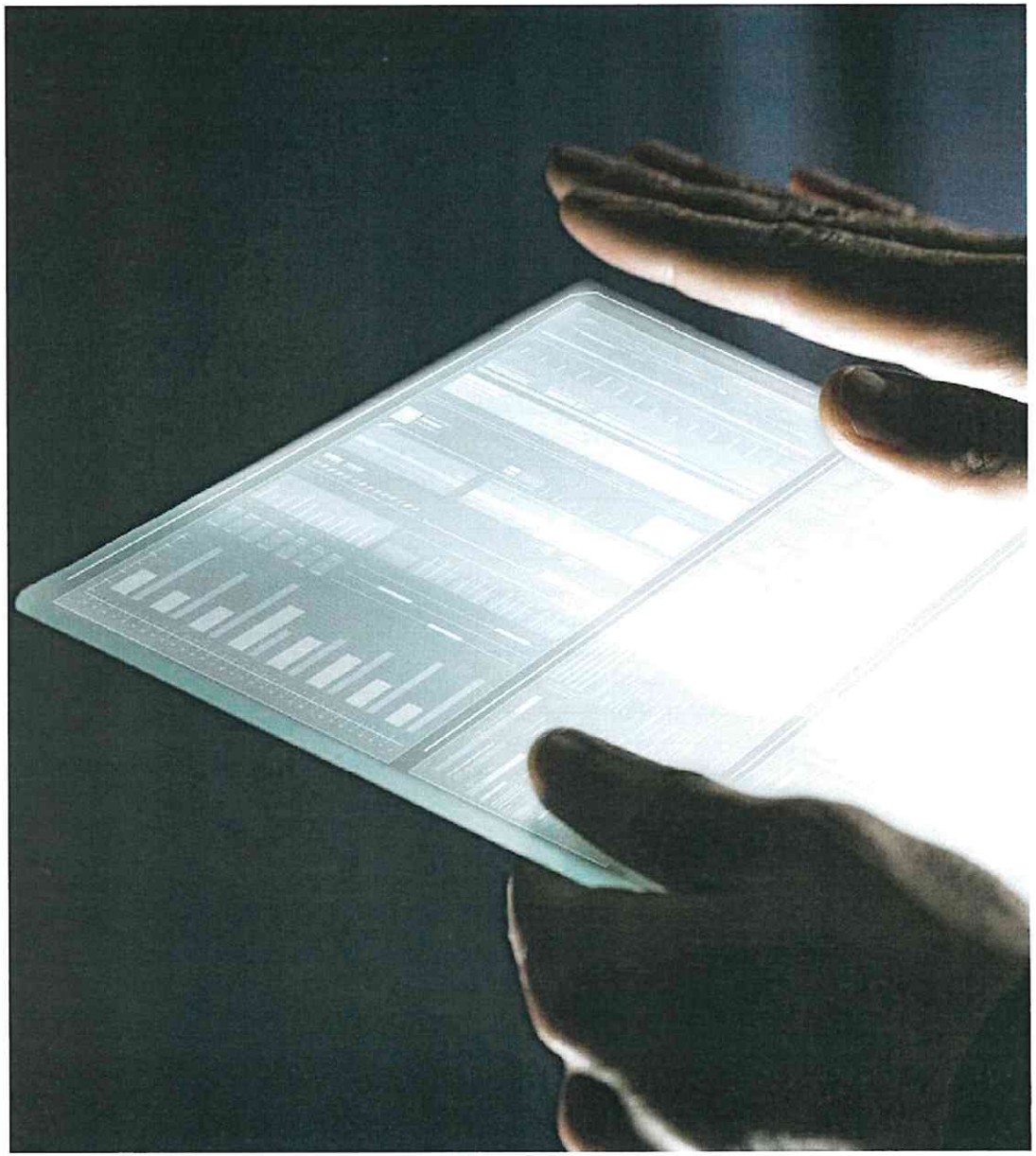


Summary of initial findings

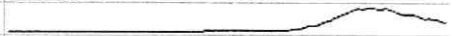
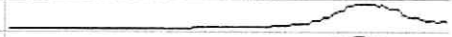
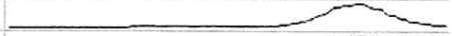
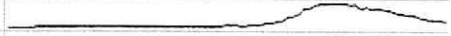
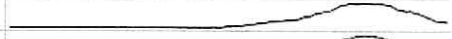
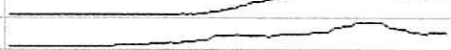
- Extending county analysis to Local Electoral Areas (LEA) helps provide a more specific understanding of what is happening in each county. These profiles can broadly be categorised as follows:
    1. Significant known outbreak event(s)
    2. Proximity to the border
    3. Following the national profile
    4. Proximity to and scale of Dublin
- We now have a far more expansive testing criteria. This means that it is difficult to directly compare Wave 1 and Wave 2. While accepting that, it is worth noting the shift in recorded outbreaks from being led by Nursing Homes in Wave 1 to Private Households in Wave 2. This contributes to a reduction of 15 years in the median age of identified cases from Wave 1 to Wave 2 (Source: CSO)
- Social gatherings, citizen congregations and specific local events all appeared to have contributed to Wave 2 outbreaks
- The introduction of Level 3 nationally did not reduce the 14 day incidence rate per 100k for majority of counties. The introduction of further household restrictions (Level 3 Max) from mid-October drove a reduction across most counties
- Wet pubs opened in all counties except Dublin in late September. This also coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in every county. This increase was not seen to the same extent in Dublin
- The LEAs containing University College Cork (UCC) and National University of Ireland Galway (NUIG) both saw higher increases than the rest of their county when the universities opened. This difference was reduced when the universities went online. Wet pubs also opened in both cities on the same week that universities opened
- The northern counties, and especially LEAs on the border, do appear to be impacted by proximity to the border. Donegal is not seeing significant reductions with Level 4 that was seen in other border counties
- The reopening of construction, non-essential retail and the wider Phase 3 changes during the summer do not appear to have had a material impact on the 14 day disease incidence rate per 100k nationally or in larger counties. It should however be noted that the disease rate was low at this time

Source Median Age June 5th 48 (CSO COVID-19 Deaths and Cases Series 4) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries4/
Median Age for week ending 30th October 33 (CSO COVID-19 Deaths and Cases Series 15) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries15/

County specific analysis



County Analysis Summary

County	Border county	Known outbreaks	Dublin and surrounding area	Following national restrictions trend	Wave One – main outbreak sources	Wave Two – main outbreak sources	14 day incidence rate per 100k (26/07 – 17/11)
Kerry		✓		✓	Private Houses, Residential Institutions, Hospital	Private House, Community Outbreak, Nursing Home	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Institutions	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	

Source Outbreak sources – CIDR, Incidence rate –based on daily cumulative case data published on GeoHive to 17 November 2020.
This data is published daily. Note Wave one defined as 03/03-25/07; Wave 2 is 26/07-20/11
*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR
**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Summary of county-level 14 day incidence rate per 100k

The heatmap below shows the 14 day incidence rate per 100k population for each county over the last two months. The overall reduction in cases has levelled to 17/11, with some county incidence rates increasing.

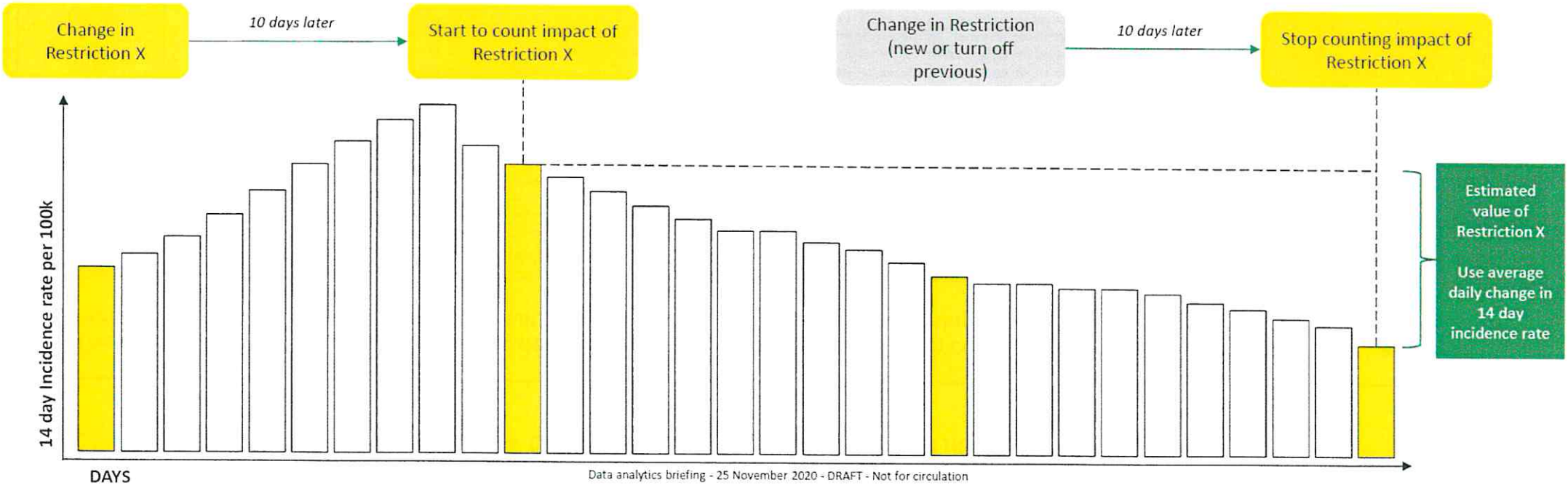
| Two Weekly Incidence Rate Per 100k | Population | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | 18-Nov | 19-Nov | 20-Nov | 21-Nov | 22-Nov | Change Last 5 Days |
|---|---|---

Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There have been relatively few changes in restrictions, which generally combine more than one change at a time, therefore hiding the unit value per restriction. There is also a time lag between a restriction change and the impact being seen, and the incidence rate can clearly be impacted by significant outbreaks. We have used the below methodology to initially quantify the impact of changes in restrictions. This calculation has been applied across counties. The outputs should be seen as directionally useful, rather than precise statistical outputs. A sensitivity analysis has also been completed looking at a reduced 7 day and rolling average incidence rate over 3 days per 100k especially for periods where there were more frequent restriction changes.

It should be noted that this does not measure compliance or behavioural aspects related to restrictions.

They are also presented alongside international academic research to provide a broad view to support decision-making. Further analysis has commenced to enhance the measurement of correlation between restrictions and their impact.



Summary of Restriction Impact

The below heatmap shows the average daily change in 14 day incidence rate per 100k per restriction. The impact is calculated using the approach described in Slide 8.

Restriction Effective Date	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	19/09/2020	22/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Restriction Estimated Start of Impact	10/03/2020	22/03/2020	25/03/2020	03/04/2020	06/04/2020	11/05/2020	25/05/2020	07/06/2020	18/06/2020	09/07/2020	23/07/2020	31/07/2020	18/08/2020	29/08/2020	31/08/2020	10/09/2020	29/09/2020	01/10/2020	06/10/2020	17/10/2020	26/10/2020		01/11/2020
Avg daily change in 14 day incidence rate per 100k	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Construction Opened	Mandatory PLF	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown lifted for Laois, Offaly, extended for Kildare	Schools + childcare opened	Level 3 Dublin	Wet Bars * Opened except Dublin	Level 3 Donegal	** Level 3 National	** Level 3 Max National	Level 4 Donegal, Cavan, Monaghan	** Level 5 National (to 22 Nov)
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-9
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-21
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-6
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-9
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	1			0	-4
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	4				-6		-5
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-10
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-6
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-7
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-2
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		8	-7		-7
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-1
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-3
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-6
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-4
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-7
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-15
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-7
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		2	-10		-2
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-3
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-12
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-2
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-2
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-13
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-6
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-1

Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. Measures the average daily change in the 14 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

Note:

The outputs should be seen as directionally useful, rather than precise statistical outputs

* The reopening of wet bars coincided with universities opening together with specific sporting events

** Care required when interpreting restriction changes in quick succession. Specifically. the more recent restriction changes (Level 3, Level 3 Max and Level 5) happened within a 15 day period

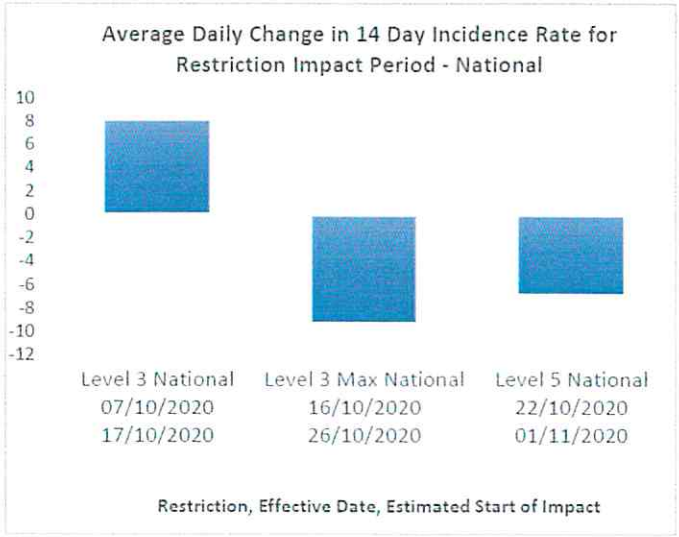
The absolute number of weekly tests has significantly increased since Wave 1

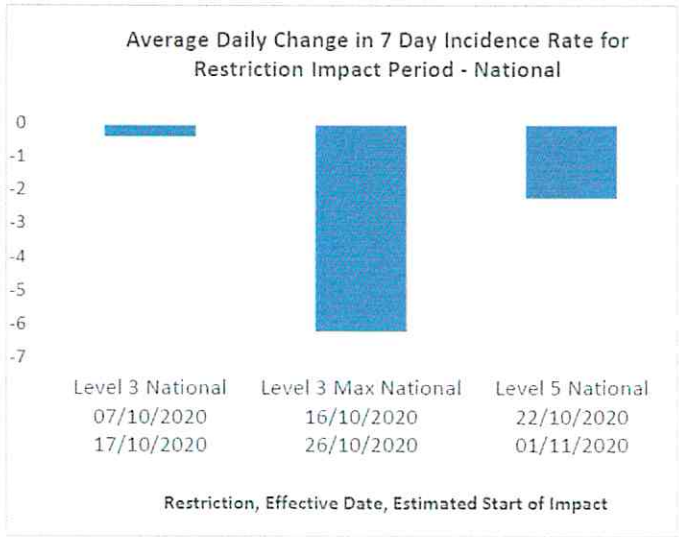
This analysis does not also consider potential behavioural changes beyond the restrictions

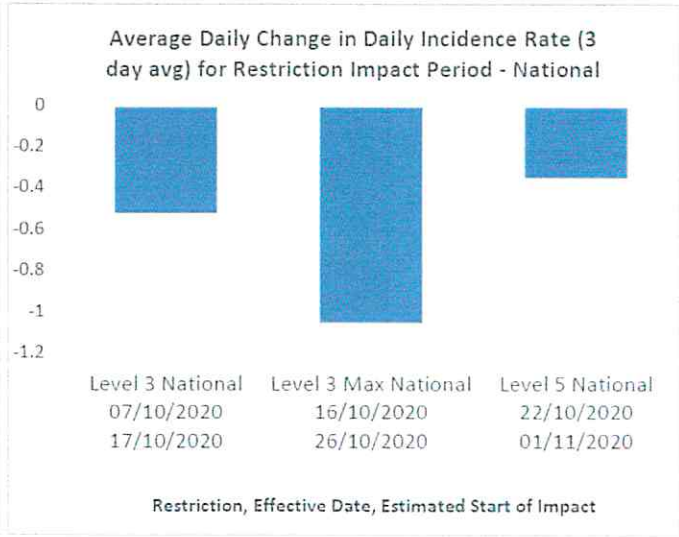
The introduction of Level 3 Max and Level 5 both coincide with a reduction incidence rates

The introduction of Level 3 saw the 14 day incidence rate per 100k decrease in four counties only. However, incidence did start to reduce in all counties with the introduction of further household restrictions (Level 3 Max) and then Level 5. These three restriction changes happened within a 15 day period, with Level 3 Max only active for 6 days.

For completeness, this analysis has also been repeated for a 7 day and a daily incidence rate average over three days. All three are shown below and follow a not identical, but very similar pattern.







Note:

- Care required when interpreting restriction changes in quick succession. This analysis does not also consider potential behavioural changes beyond the restrictions
- Each measure in the above three graphs quantify the impact over a different time period; 14 days, 7 days and 1 day respective. Hence, it is expected that the size of their impact is different. That is also why they are shown to different scales on the y axis
- National measure excludes Dublin, Donegal, Cavan and Monaghan as they were under different restriction changes
- The Level 5 reductions should be seen as additive to the reduction in Level 3 Max

Cavan's three LEAs follow a different path. One is being driven by outbreaks, one impacted by the border and one more aligned with the national trend

Cavan profile:

- Cavan has experienced a higher 14 day disease incidence rate per 100k during the second wave than the national average
- Part of Cavan borders with NI where different restrictions are in place

Summary analysis:

- Cavan-Belturbet LEA is the only part of Cavan with a NI border. This LEA is experiencing a higher disease incidence than the national average
- Ballyjamesduff LEA had the highest incidence rate throughout October. The timing of the acceleration of growth rate in this LEA appears to correlate with the GAA county final (winners are in this LEA)
- Travel along the N03 between Belturbet and George Mitchell Bridge at the NI Border fell 33% during October (Source TII Road Travel data)

Restriction impact:

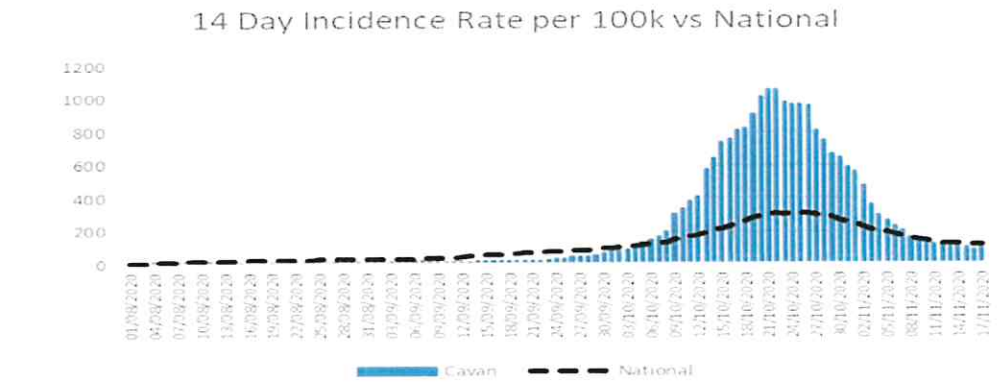
- The timing of the growth of cases appears to correlate with the events listed above and changes to restrictions in wet pubs
- Level 4 restrictions imposed for the border counties appears to have desired impact of reducing incidence level in Cavan
- Level 5 restrictions continue to drive incidence level further

Employment Summary:

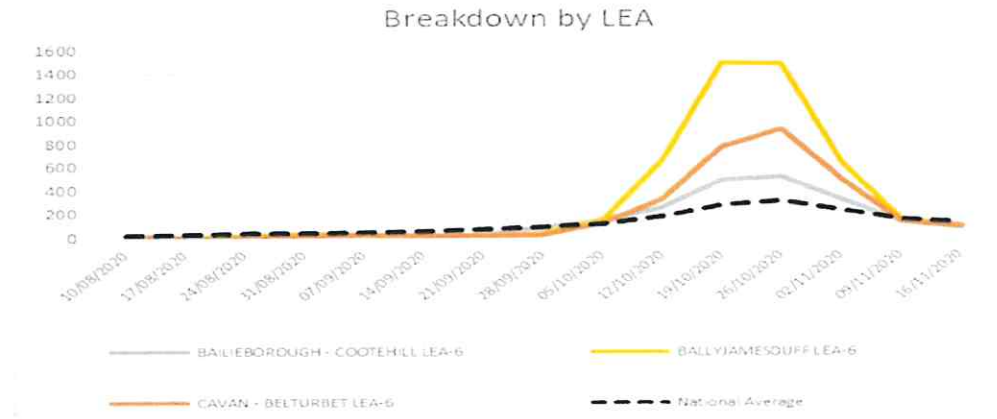
- Cavan had c.47% of its workforce on PUP or TWSS (c.15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP (17 Nov) which is down from 9.7k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Meath is seeing a higher incidence rate than the national average. This is influenced by proximity to Dublin and specific outbreak events

Meath profile:

- Meath has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Dublin borders including a significant commuter population

Summary analysis:

- Ratoath LEA has the highest incidence rate. The timing of this acceleration of growth rate appears to correlate with GAA county final win (Source: GAA.ie)

Restriction impact:

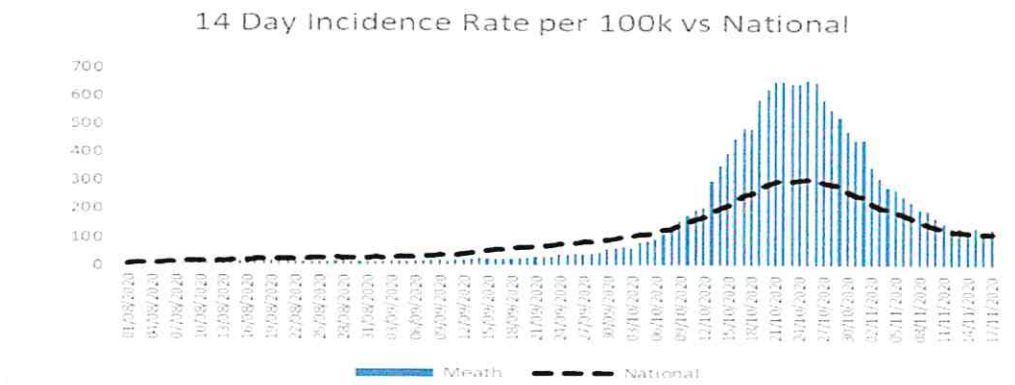
- The timing of the growth of cases appears to correlate with the events listed above and the changes to restrictions in wet pubs
- Incidence level continued to rise post initial Level 3 restrictions imposed nationally
- Level 3 (max) restrictions imposed nationally appear to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level down further

Employment summary:

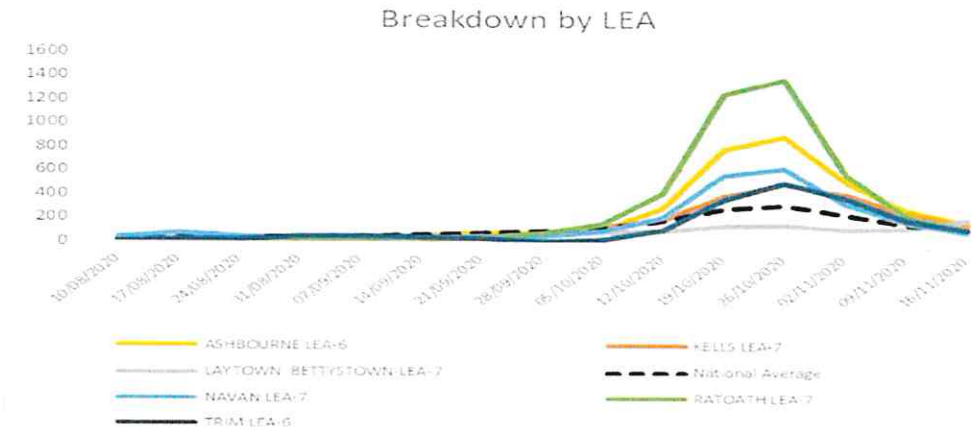
- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (13k versus 25k) levels (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

The border is contributing to Donegal's higher rate of cases. Donegal is not seeing the benefit of recent Level 4 increases seen in other border counties

Donegal profile:

- Donegal has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Disease incidence higher and earlier versus national average, and reducing at a slower rate
- Eastern Donegal borders with NI where different restrictions are in place

Summary analysis:

- Lifford and Stranolar LEA close to the NI border with Derry, experienced an earlier and higher disease incidence
- Other eastern parts of Donegal (Buncrana, Letterkenny and Carndonagh) have the next highest incidence rates
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted] (Source: Donegal Daily)
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November

Restriction impact:

- Disease incidence continued to rise after level 3 Donegal announcement
- Specific restrictions in NI (1/10) on pubs and restaurants appeared to have helped reduce rate in Donegal
- Despite level 3 max and level 5 being effective in other counties, cases in Donegal fell at a lower rate compared to national levels
- Similarly, Level 4 reduced the cases in Monaghan and Cavan, but not Donegal. Mask compliance in Donegal also reduced (against national and previous Donegal trend) with Level 4 restrictions (Facebook survey data)

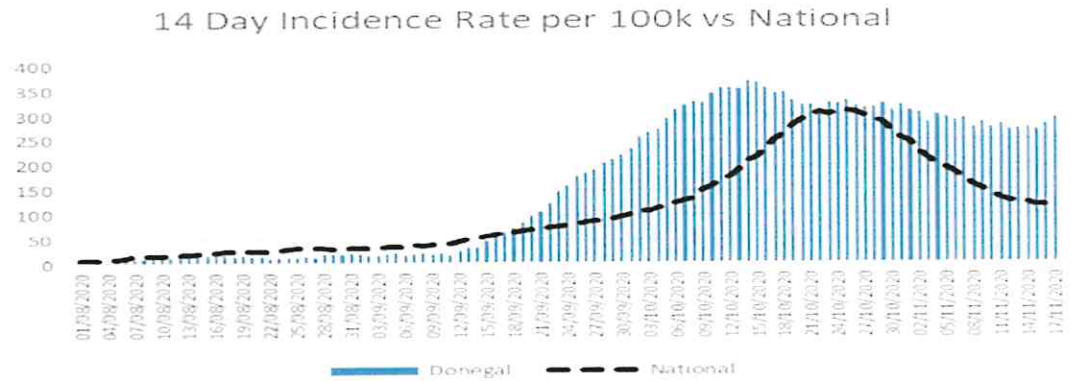
Employment summary:

- Donegal had c.49% of its workforce on PUP or TWSS (c 30k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (12k versus 23k) (CSO, DSP)

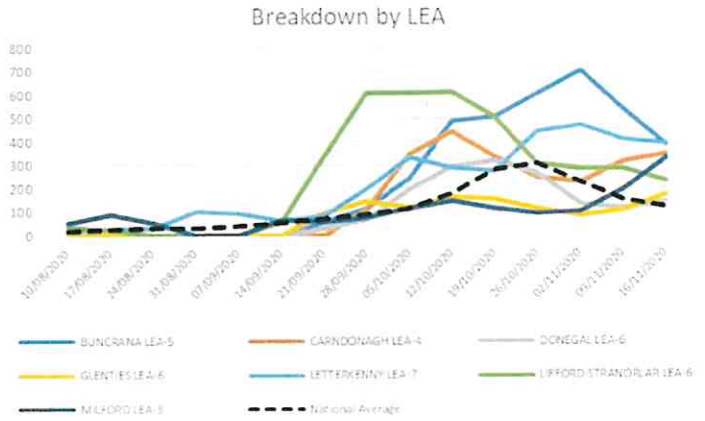
Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

The Facebook survey is a voluntary survey, managed by the University of Maryland. The mask question reads "In the last 7 days, how often did you wear a mask in public?".



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



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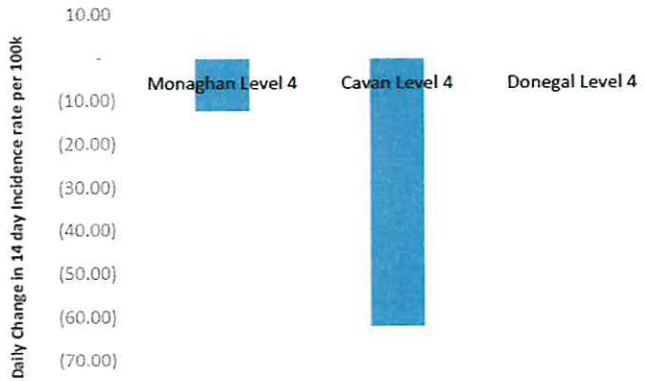


Cork is broadly aligned with the national trend. Cork City is driving up the incidence rates across the county

Cork profile:

- Cork is broadly aligned with the national average for the 14 day disease incidence rate per 100k during second wave

Summary analysis:

- Cork City is the most impacted area, with the rest of the county following with a reduced incident rate
- Cases in Cork City South Central, the LEA containing UCC (started returning on 21 Sept), were twice as high as other LEAs in Cork city during mid October. This gap declines in November as the universities went online

Restriction impact:

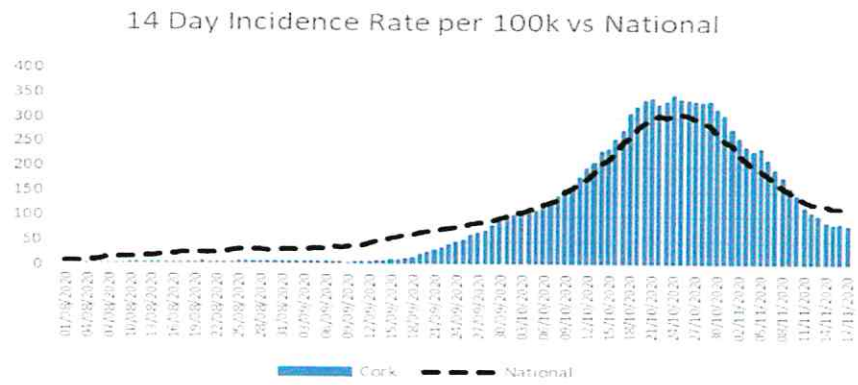
- Cases in Cork city rose as wet pubs reopened (21 Sept). Cases around the rest of the county followed shortly after
- There were a number of GAA games in early October, which coincides with rate increases. No matches occurred after this, with level 3 restrictions being applied around this time (6 Oct). Cases throughout Cork began to fall 10 days later

Employment summary:

- At peak, c.39% of Cork's workforce were on PUP or TWSS (c.96k) (EY 2019 employment estimates). Current PUP levels (17 Nov) are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Galway rose above the national average during the second wave, driven by Galway City Central and Connemara South LEAs

Galway profile:

- Galway experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- It has now come back down below national average levels since early November

Summary analysis:

- Galway City Central, Connemara South and Galway City East have had the highest 14-day incidence rates throughout October
- GAA senior championship football semi-finals and finals also occurred in the last week of September and first week of October. Connemara South rates increased 10 days later

Restriction impact:

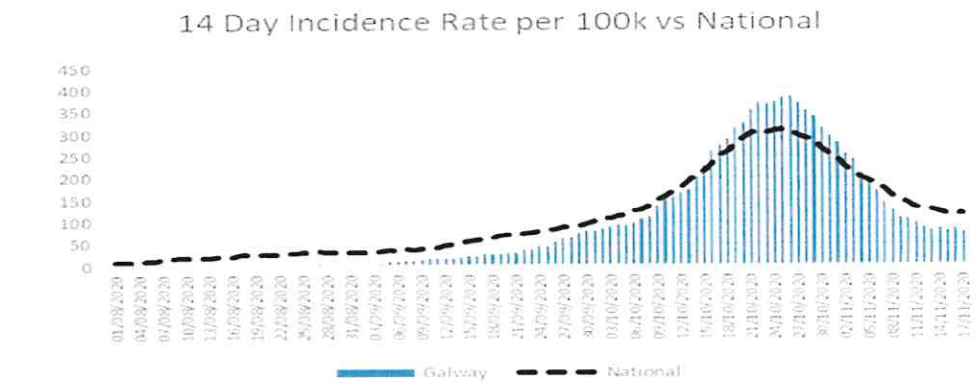
- Cases begin to decline ten days after the national level 3 lockdown came into effect (17/10), falling below national levels in November
- An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

Employment summary:

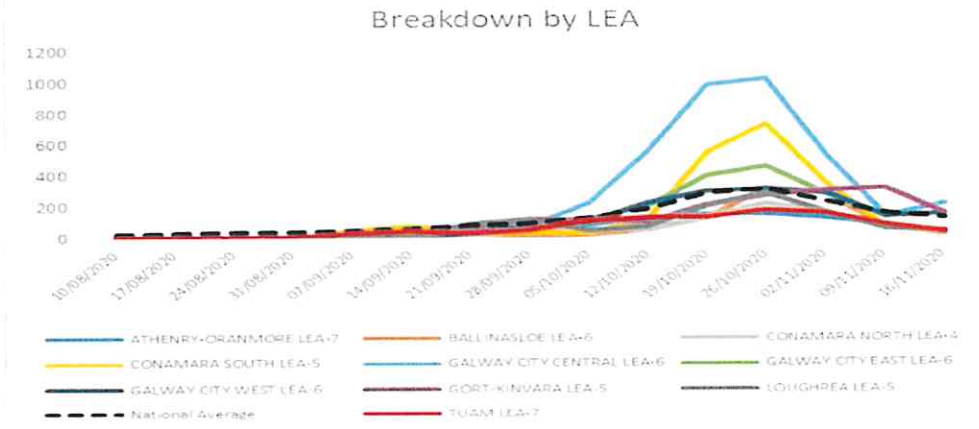
- Galway had c.39% of its workforce on PUP or TWSS (c.49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP (17 Nov) which is down from 32.5k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Dublin LEA Analysis

The below heatmap shows the Dublin LEA 14 day incidence rate per 100k population since early August. Some areas are seeing higher incidence rates.

		10/08/2020	17/08/2020	24/08/2020	31/08/2020	07/09/2020	14/09/2020	21/09/2020	28/09/2020	05/10/2020	12/10/2020	19/10/2020	26/10/2020	02/11/2020	09/11/2020	16/11/2020
Dublin City	ARTANE-WHITEHALL LEA-6	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9	111.4
	BALLYFERMOT-DRIMNAGH LEA-5	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	191	143.3
	BALLYMUN-FINGLAS LEA-6	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7	221.8
	CABRA GLASNEVIN LEA 7	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	160.3	138.1
	CLONTARF LEA-6	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	114.4	73.8
	DONAGHMEDE LEA-5	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7	89
	KIMMAGE-RATHMINES LEA-6	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188	123.5
	NORTH INNER CITY LEA-7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	121	84.9
	PEMBROKE LEA-5	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	88	59.4
	SOUTH EAST INNER CITY LEA-5	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7	133
	SOUTH WEST INNER CITY LEA-5	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1	186.6
Dun Laoghaire - Rathdown	BLACKROCK LEA-6	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2	68.2
	DUN LAOGHAIRE LEA-7	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	76.9	72.1
	DUNDRUM LEA-7	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	66.8	80.1
	GLENCULLEN-SANDYFORD LEA-7	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3	68.3
	KILLINEY-SHANKILL LEA-7	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	44.6	52.5
	STILLORGAN LEA-6	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8	101.6
Fingal	BALBRIGGAN LEA-5	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2	109.4
	BLANCHARDSTOWN-MULHUDDART LEA-5	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	266.2	147.3
	CASTLEKNOCK LEA-6	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	297	199.5	130.1	114.9
	HOWTH-MALAHIDE LEA-7	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9	92.6
	ONGAR LEA-5	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7	134
	RUSH-LUSK LEA-5	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2	43.3
	SWORDS LEA-7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	245.3	295.9	371.8	288.1	140.2
South Dublin	CLONDALKIN LEA-7	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	212.8	180.6
	FIRHOUSE-BOHERNABREENA LEA-5	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8	102.3
	LUCAN LEA-5	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6	122.7
	PALMERSTOWN-FONTHILL LEA-5	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1	165.6
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7	112.7
	TALLAGHT CENTRAL LEA-6	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	168.9	134.2
	TALLAGHT SOUTH LEA-5	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	304.5	251

There appears to be a correlation between areas hit hard in Wave 1 and Wave 2 (acknowledging differences in testing criteria), with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin and Artane-Whitehall.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Dublin includes over a quarter of Ireland's population. It therefore includes many stories and strongly aligns with national case levels

Dublin profile:

- Not surprisingly, Dublin's 14 day disease incidence rate per 100k during second wave is in line with the national average
- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire–Rathdown seeing lower overall incidence

Summary analysis:

- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Restriction analysis:

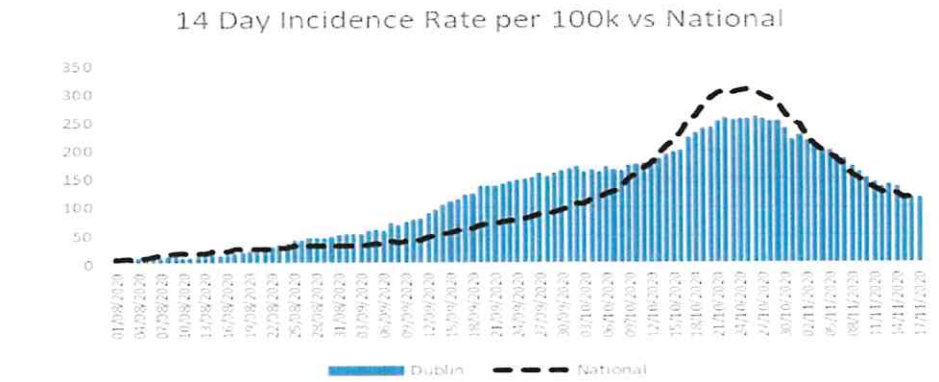
- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases
- Not opening the wet pubs does appear to have helped Dublin with the subsequent increase in cases being slower than the national average

Employment summary:

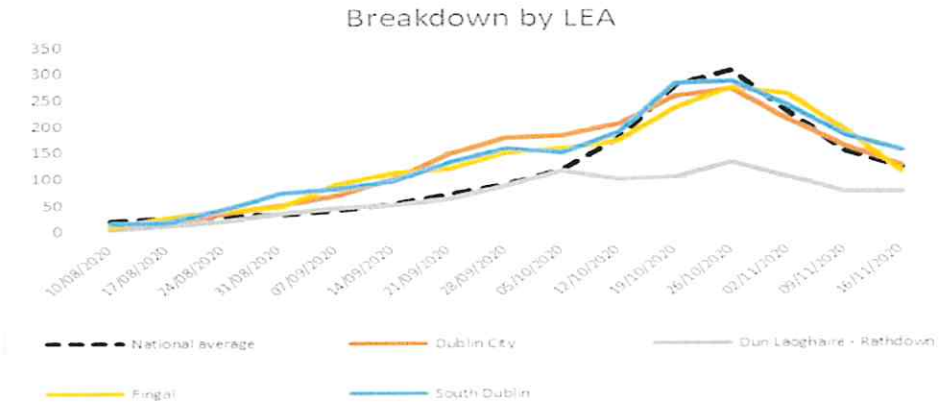
- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k (17 Nov) , compared to a peak of 176k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Cases in Limerick during Sept and Oct were driven by very large extended family and community outbreaks

Limerick profile:

- Limerick has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average.
- This is a result of the cases in Limerick not declining to the same extend in the rest of the country

Summary analysis:

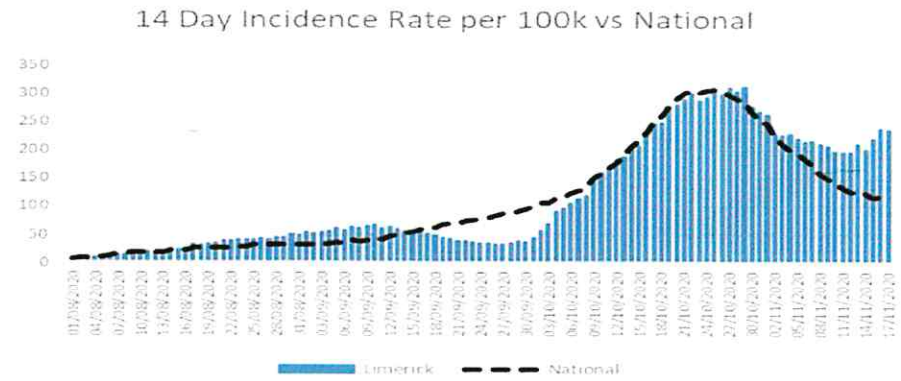
- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November.
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others – the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

Employment summary:

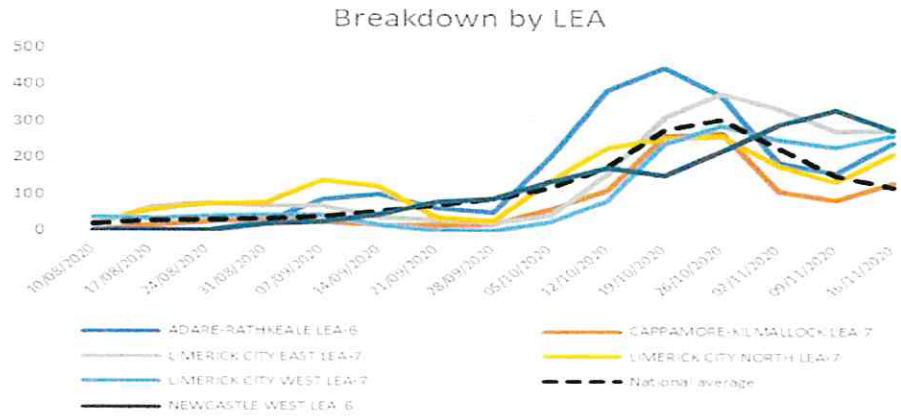
- Limerick had c.43% of its workforce on PUP or TWSS (c.34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Kerry is seeing lower cases than the national average, with Listowel bordering Limerick having the highest number of recent cases

Kerry profile:

- Kerry has experienced a similar 14 day disease incidence rate per 100k during second wave to the national average. However, Listowel LEA has seen a sharp increase in its rate since early October

Summary analysis:

- North Kerry (Listowel) is most severely affected. This coincides with increased rates in southern parts of Limerick such as Newcastle West and Adare-Rathkeale, as well as Limerick city
- Killarney and Tralee LEAs are both next in terms of severity of impact, containing two major Kerry towns
- The remainder of the county (further south, smaller towns) is generally less affected
- Listowel's incidence levels were three times higher than the next worst-afflicted LEA. Note the small population of ~29,000 people meant 182 cases over a 2-week period prior to 26 Oct created a very high incidence rate

Restriction impact:

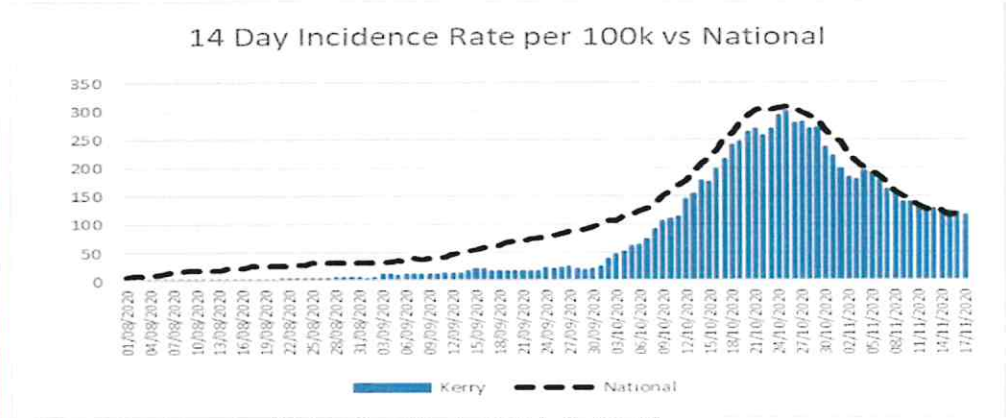
- The number of cases in Kerry started to grow around the time level 3 was introduced – two weeks later, this high growth rate had largely ceased
- Improvements have levelled off somewhat across LEAs such as Tralee, Killarney and Listowel

Employment summary:

- Kerry had c.49% of its workforce on PUP or TWSS (c.32k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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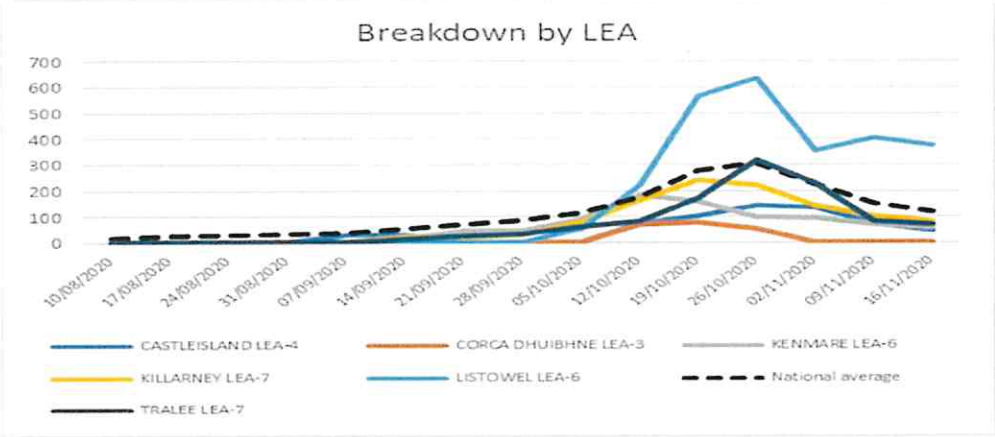
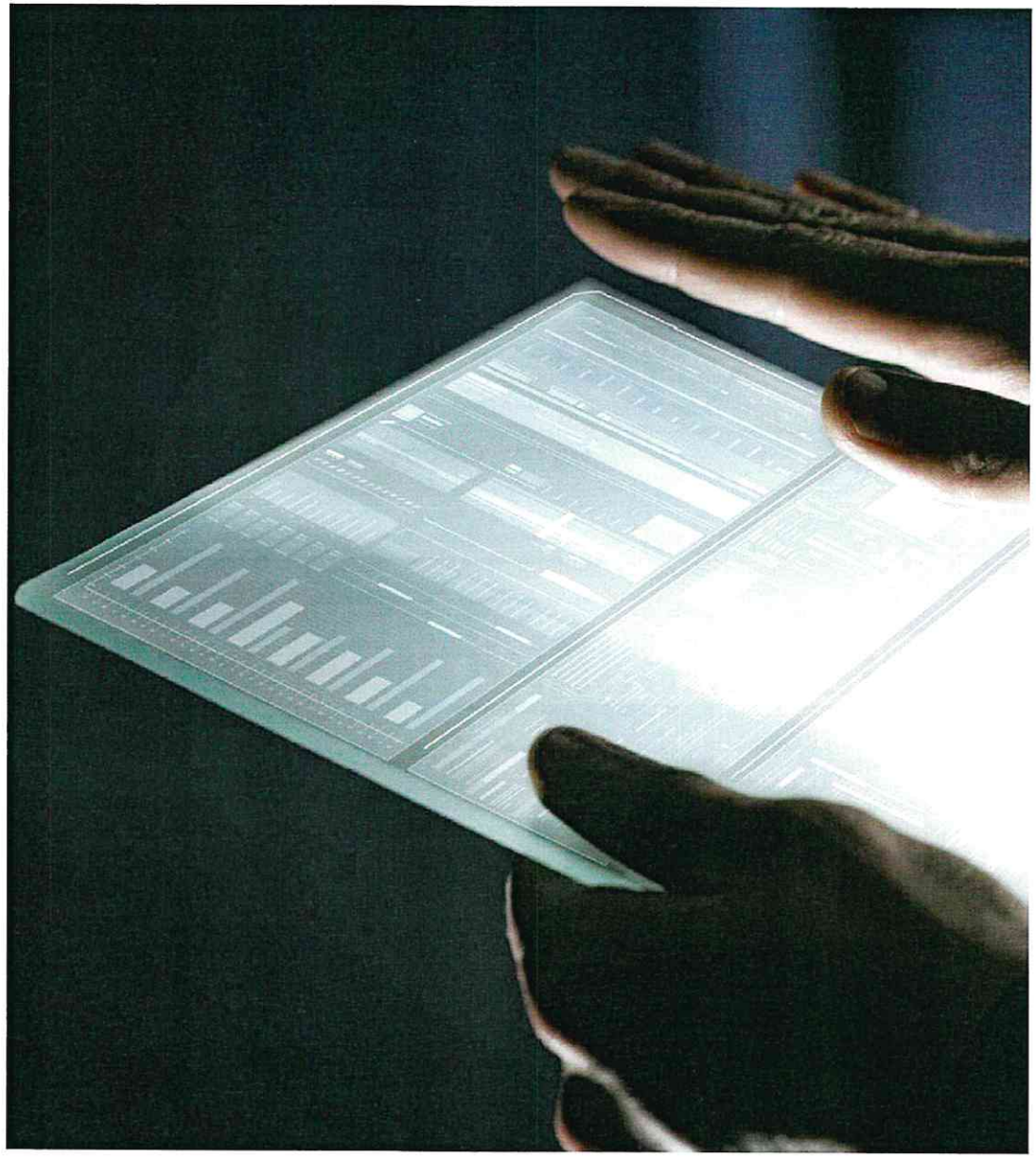


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties – highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

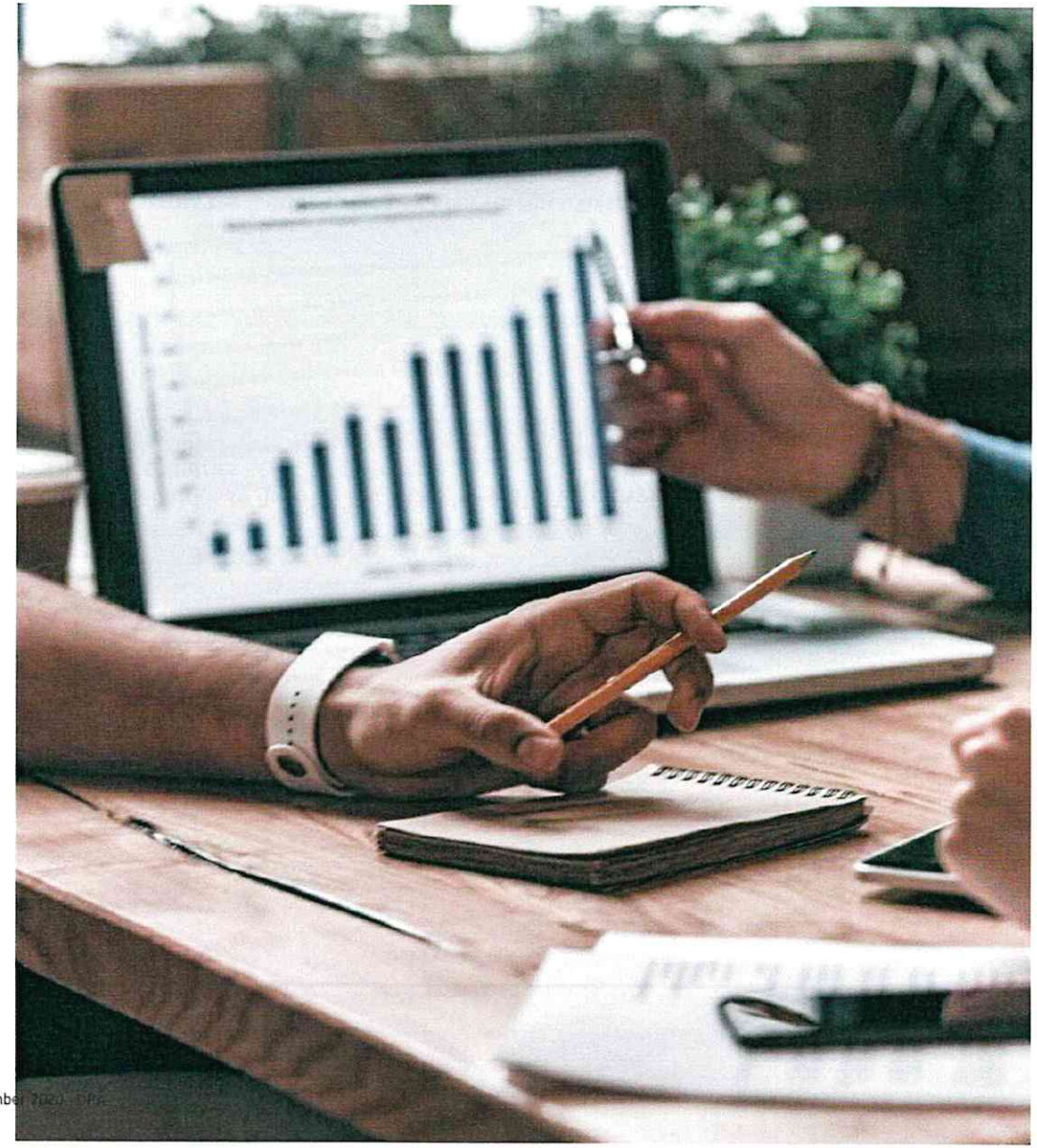
International restriction analysis

A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

International desktop research

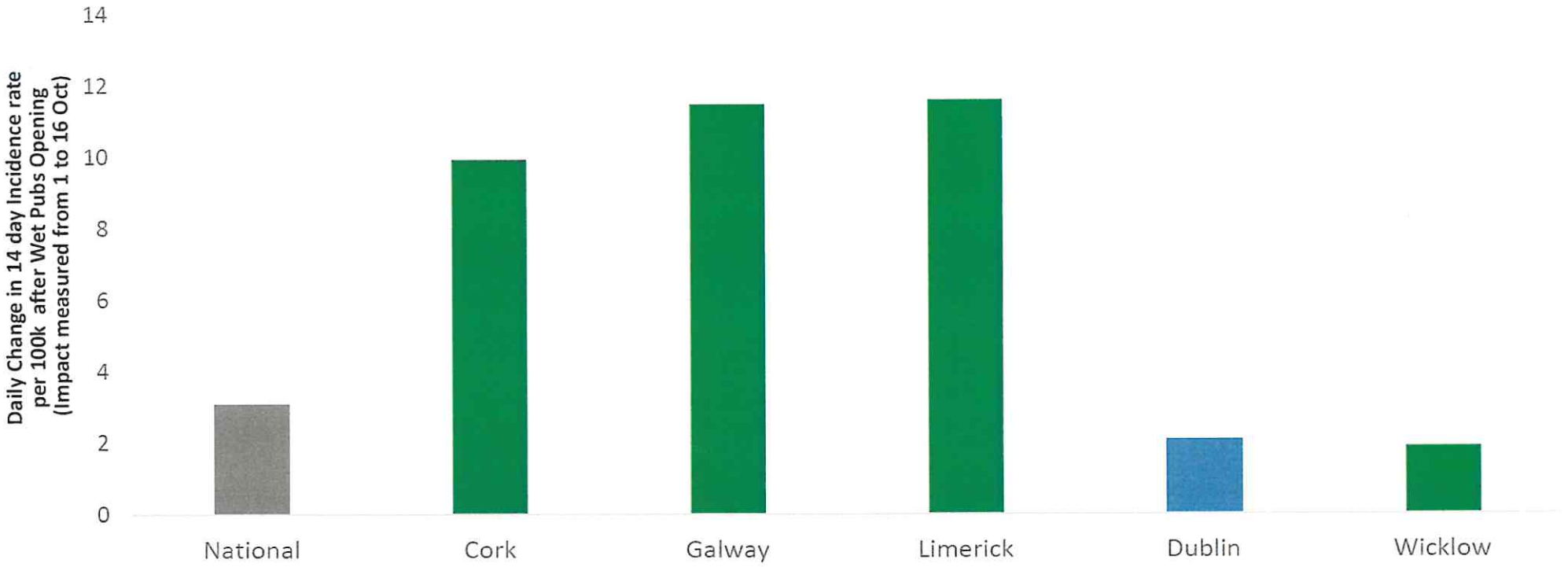
Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular COVID-19 insights publication and with new research included today

Ireland – restrictions analysis



Wet Pubs opened across the country, but not Dublin, on 21 September. The increase in Dublin's incidence rate was then lower than the national average and for larger counties

Wet pubs opened in all counties except Dublin in late September. This coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in every county. The subsequent incidence rate growth in Dublin was 33% lower than the national average and 79% to 82% lower than other counties with larger cities. Wicklow was the only county that performed better than Dublin, with a 10% lower growth rate than Dublin.



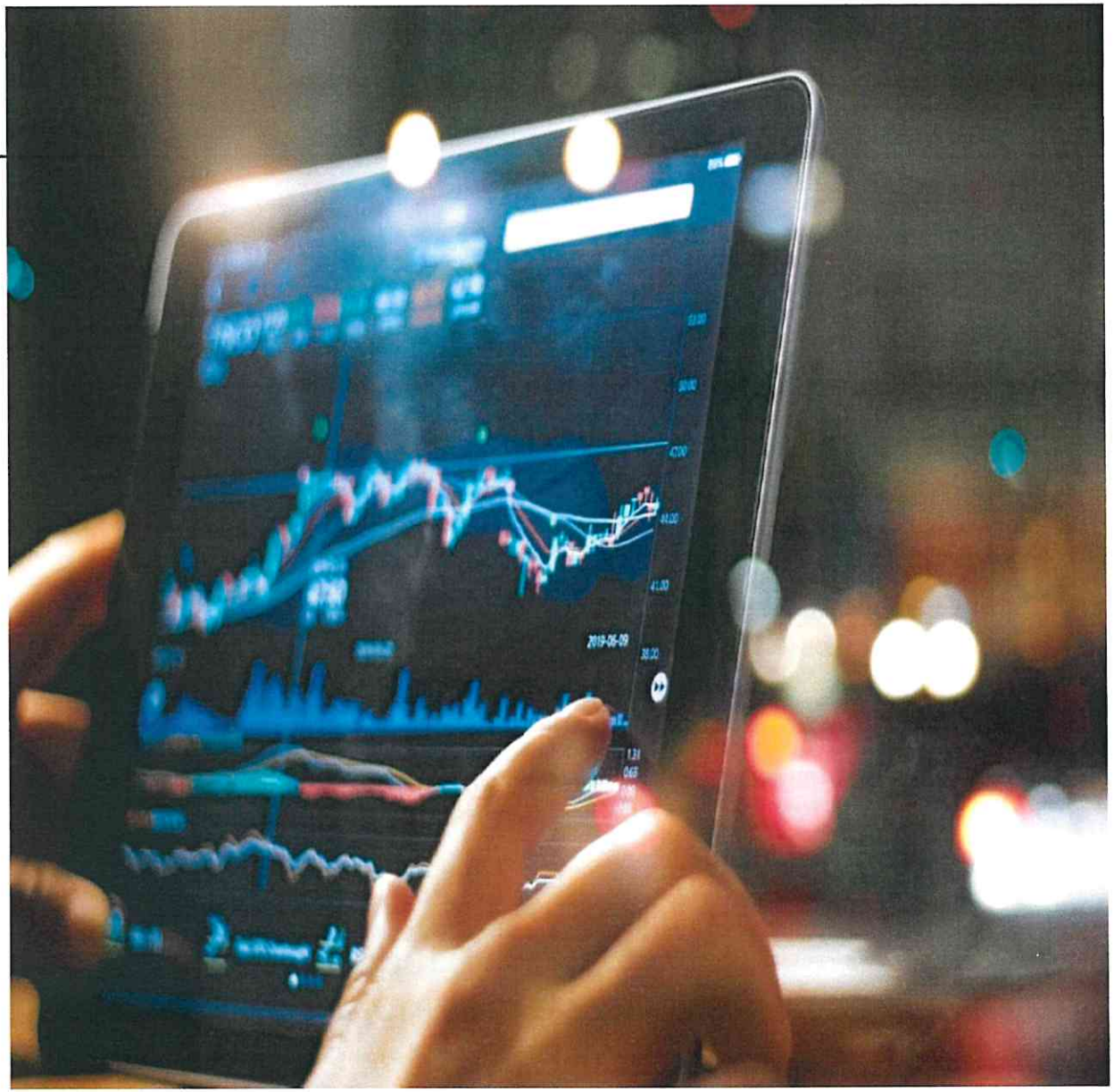
The incidence rate did not materially increase after the three phases of re-opening during late May to early July

The reopening of construction, non-essential retail and the wider Phase 3 openings did not appear to have a material impact on the cases nationally or in larger counties. Note that disease incidence rates were low at this time

Restriction Effective Date	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	19/09/2020	21/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Restriction Estimated Start of Impact	10/03/2020	22/03/2020	25/03/2020	03/04/2020	06/04/2020	11/05/2020	25/05/2020	07/06/2020	18/06/2020	09/07/2020	23/07/2020	31/07/2020	18/08/2020	29/08/2020	31/08/2020	10/09/2020	29/09/2020	01/10/2020	06/10/2020	17/10/2020	26/10/2020		01/11/2020
Avg daily change in 14 day incidence rate per 100k	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Construction Opened	Mandatory PLF	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown lifted for Laois, Offaly, extended for Kildare	Schools + childcare opened	Level 3 Dublin	Wet Bars Opened except Dublin	Level 3 Donegal	Level 3 National	Level 3 Max National	Level 4 Donegal, Cavan, Monaghan	Level 5 National (to 22 Nov)
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-9
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-21
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-6
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-9
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	1			0	-4
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	4				-6		-5
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-10
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-6
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-7
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-2
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		8	-7		-7
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-1
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-3
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-6
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-4
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-7
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-15
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-7
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		2	-10		-2
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-3
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-12
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-2
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-2
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-13
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-6
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-1

* Phase 3 re-opening included places of worship, gyms, cinemas, theatres, leisure facilities, personal services, sports, public transport 50% capacity & face coverings), mass gatherings (50 indoors, 200 outdoors), adult education and community facilities, health and well being related services, restaurants and cafes (on site food service), hotels and other accommodation facilities, driving schools and tests

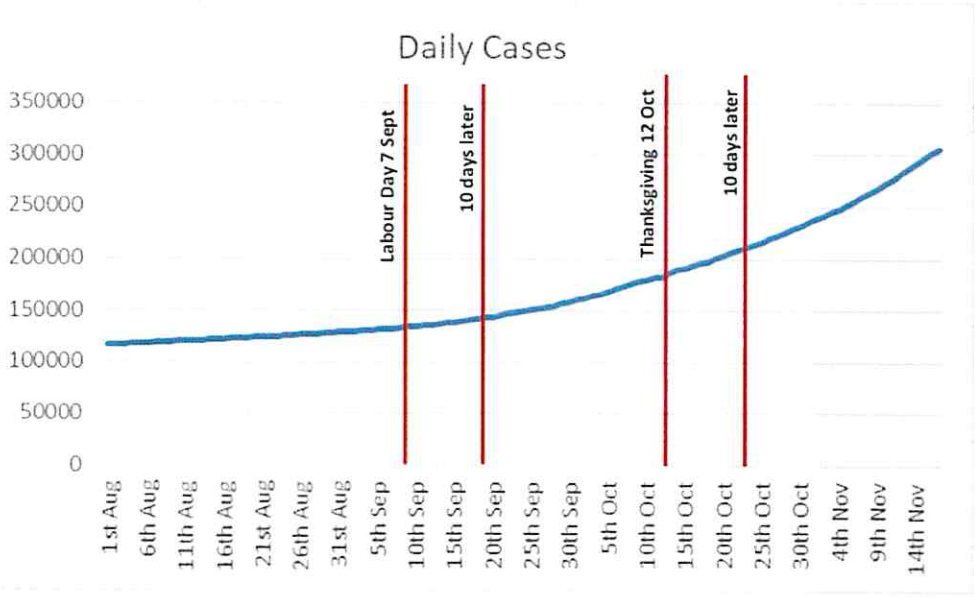
Select International Desktop Research



Canadian Thanksgiving: Testing & Tracing data and case numbers show an increase in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first wave in Spring.



Key findings:

- Canada saw an increase in COVID-19 cases in the days and weeks that followed Thanksgiving, the highest rates since the first wave in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; 4,109 new daily cases were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Canadian Testing and Tracing records show that Thanksgiving gatherings directly resulted in the increase in incidence rates
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases increased after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has doubled from 155,000 on 28 September to over 310,000 on 18th November
- A similar increase is noticed on 17th September, 10 days after Canadian Labour day was celebrated

Source: https://health-infobase.canada.ca/covid-19/
https://www.thestar.com/news/canada/2020/09/23/wont-be-gathering-for-thanksgiving-trudeau-says-covid-19-second-wave-underway.html

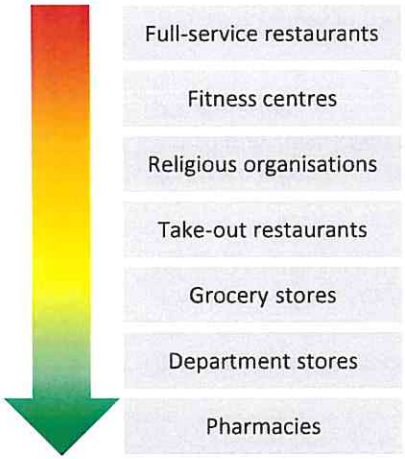
US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.)

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

POI categories ranked in decreasing order of associated additional infections that would occur if the location is opened



Results

- The Stanford Mobility Network Model Simulation concluded that on average across metro areas, reopening full-service restaurants, fitness centres and religious organisations produces the largest predicted increase in infections.
- Take-out restaurants, grocery stores, department stores and pharmacies resulted in low positivity rates.
- This pattern was seen in the 3 US cities studied.

Key findings

- The model calculates the additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location.
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at certain locations can be an effective alternative to closure
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10).
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more.

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html

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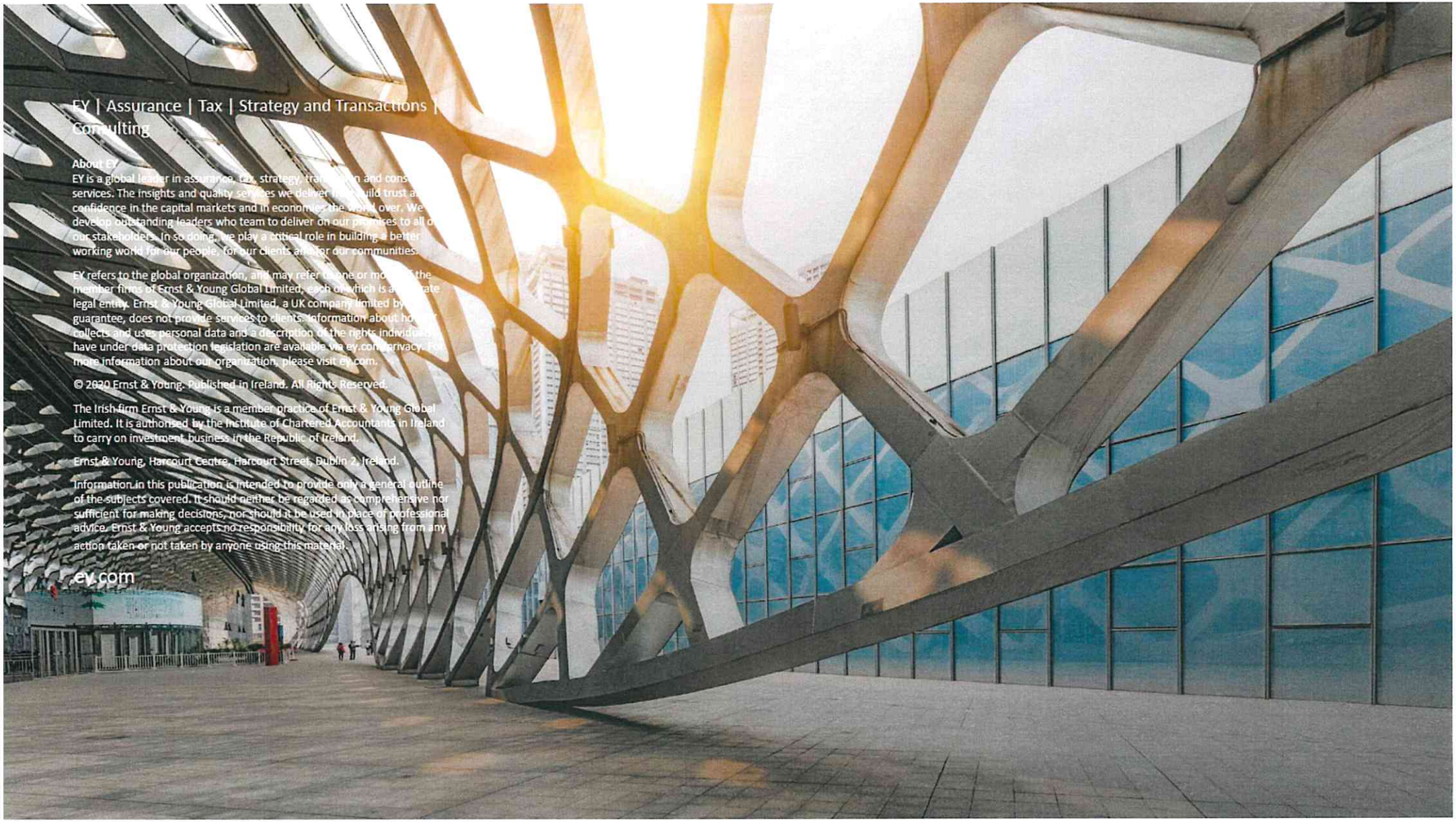

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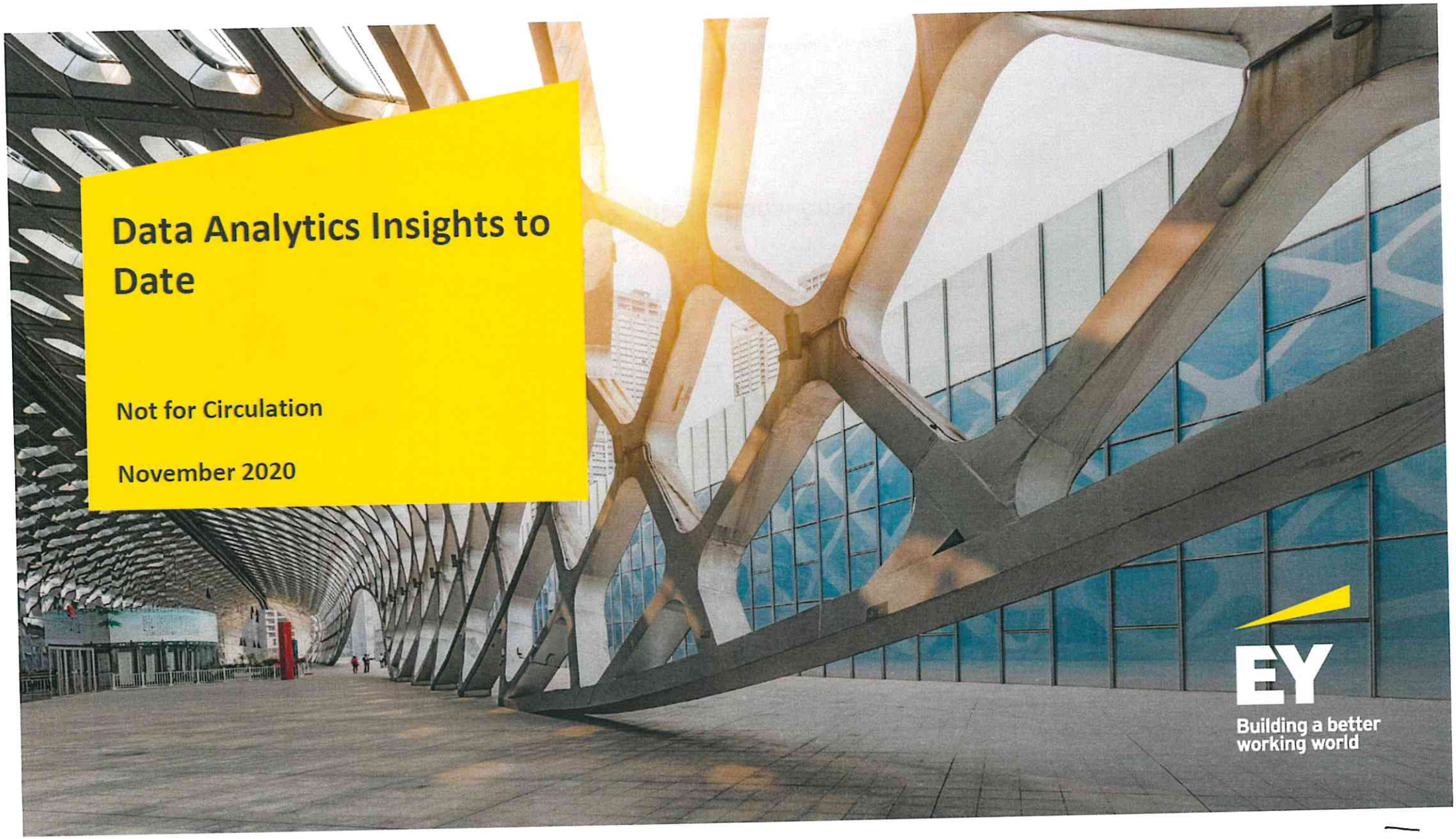

Data Analytics Insights to Date
Not for Circulation
November 2020
EY
Building a better working world

Update – Week 6

Agenda

- Introduction
- County Specific Analysis
- Restrictions Impact Analysis
- International Analysis

Providing data analysis to support Government decision making

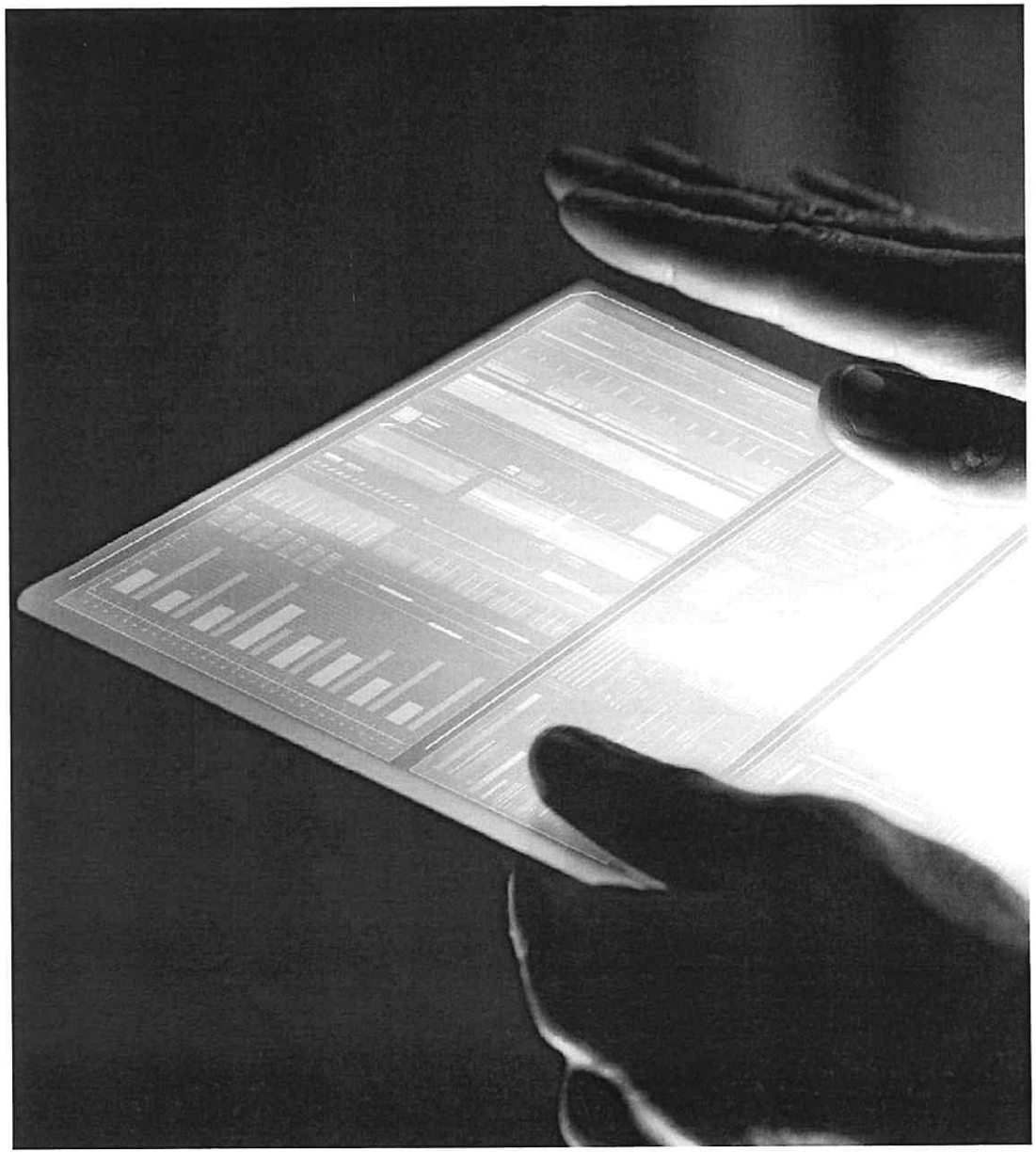
EY Data Analytics team was engaged to analyse certain aggregated data available to the State as part of the State's Covid 19 management strategy. EY's role was to analyse the available data and to present it back to Government officials to consider as part of its on-going deliberations and decision making with regard to Covid 19 restrictions. The focus is situating disease incidence rates in the context of other data (e.g. restriction changes) to produce insights, rather than performing epidemiology.

Summary of initial findings

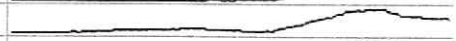
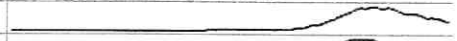
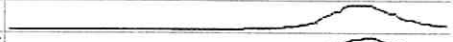
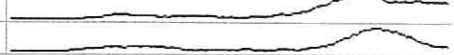
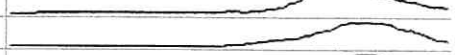
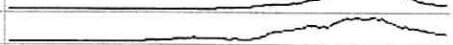
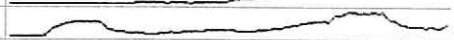
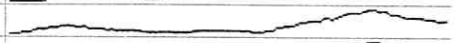
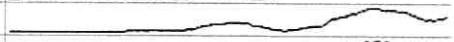
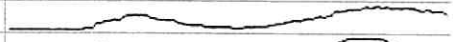
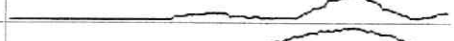
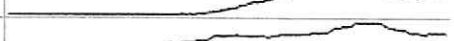
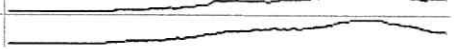
- Extending county analysis to Local Electoral Areas (LEA) helps provide a more specific understanding of what is happening in each county. These profiles can broadly be categorised as follows:
    1. Significant known outbreak event(s)
    2. Proximity to the border
    3. Following the national profile
    4. Proximity to and scale of Dublin
- We now have a far more expansive testing regime. This means that it is difficult to directly compare Wave 1 and Wave 2. While accepting that, it is worth noting the shift in recorded outbreaks from being led by Nursing Homes in Wave 1 to Private Households in Wave 2. This contributes to a reduction of 15 years in the median age of identified cases from Wave 1 to Wave 2 (Source: CSO)
- Social gatherings, citizen congregations and specific local events all appeared to have contributed to Wave 2 outbreaks
- The introduction of Level 3 nationally did not reduce the 14 day incidence rate per 100k for majority of counties. The introduction of further household restrictions (Level 3 Max) from mid-October drove a reduction across most counties
- Wet bars opened in all counties except Dublin in late September. This also coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in in every county. This increase was not seen to the same extent in Dublin
- The LEAs containing University College Cork (UCC) and National University of Ireland Galway (NUIG) both saw higher increases than the rest of their county when the universities opened. This difference was reduced when the universities went online. Wet bars also opened in both cities on the same week that universities opened
- The northern counties, and especially LEAs on the border, do appear to be impacted by proximity to the border. Donegal is not seeing significant reductions with Level 4 that was seen in other border counties
- The reopening of construction, non-essential retail and the wider Phase 3 changes during the summer do not appear to have had a material impact on the 14 day disease incidence rate per 100k nationally or in larger counties. It should however be noted that the disease rate was low at this time

Source Median Age June 5th 48 (CSO COVID-19 Deaths and Cases Series 4) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries4/
Median Age for week ending 30th October 33 (CSO COVID-19 Deaths and Cases Series 15) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries15/

County specific analysis



County Analysis Summary

County	Border county	Known outbreaks	Dublin and surrounding area	Following national restrictions trend	Wave One – main outbreak sources	Wave Two – main outbreak sources	14 day incidence rate per 100k (26/07 – 17/11)
Kerry		✓		✓	Private Houses, Residential Institutions, Hospital	Private House, Community Outbreak, Nursing Home	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Institutions	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	

Source Outbreak sources – CIDR, Incidence rate –based on daily cumulative case data published on GeoHive to 17 November 2020.
This data is published daily. Note Wave one defined as 03/03-25/07; Wave 2 is 26/07-20/11
*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR
**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Summary of county-level 14 day incidence rate per 100k

The heatmap below shows the 14 day incidence rate per 100k population for each county over the last two months. The overall reduction in cases has levelled to 17/11, with some county incidence rates increasing.

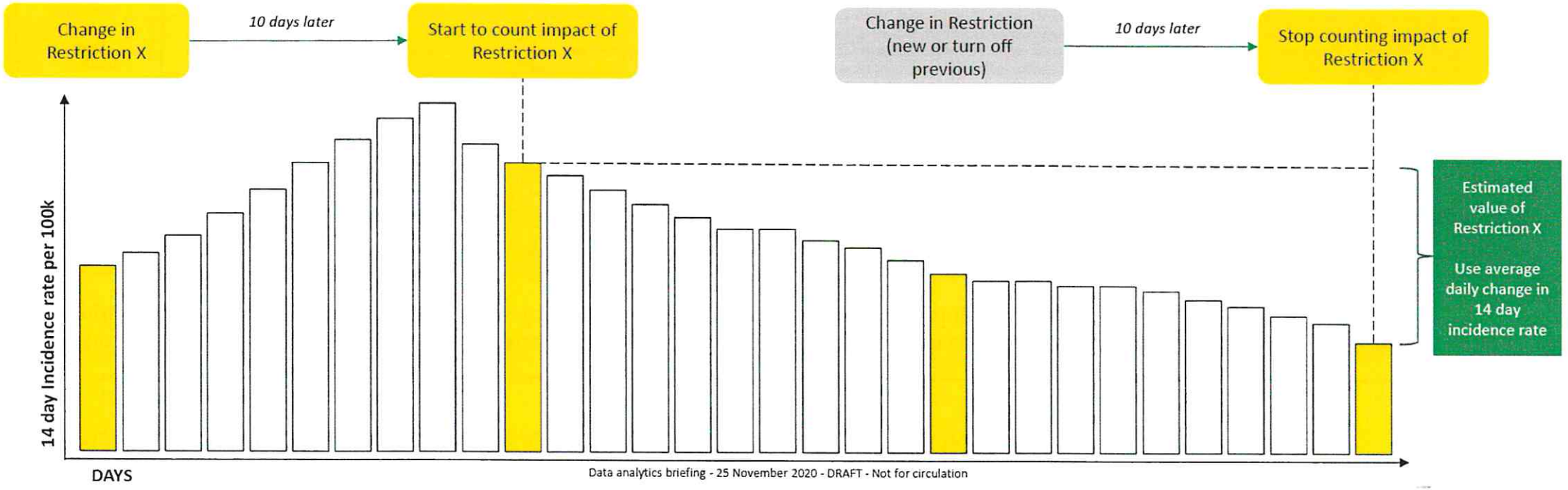
| Two Weekly Incidence Rate Per 100k | Population | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | 18-Nov | 19-Nov | 20-Nov | 21-Nov | 22-Nov | Change Last 5 Days |
|---|---|---

Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There have been relatively few changes in restrictions, which generally combine more than one change at a time, therefore hiding the unit value per restriction. There is also a time lag between a restriction change and the impact being seen, and the incidence rate can clearly be impacted by significant outbreaks. We have used the below methodology to initially quantify the impact of changes in restrictions. This calculation has been applied across counties. The outputs should be seen as directionally useful, rather than precise statistical outputs. A sensitivity analysis has also been completed looking at a reduced 7 day and rolling average incidence rate over 3 days per 100k especially for periods where there were more frequent restriction changes.

It should be noted that this does not measure compliance or behavioural aspects related to restrictions.

They are also presented alongside international academic research to provide a broad view to support decision-making. Further analysis has commenced to enhance the measurement of correlation between restrictions and their impact.



Summary of Restriction Impact

The below heatmap shows the average daily change in 14 day incidence rate per 100k per restriction. The impact is calculated using the approach described in Slide 8.

Restriction Effective Date	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	19/09/2020	21/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Restriction Estimated Start of Impact	10/03/2020	22/03/2020	25/03/2020	03/04/2020	06/04/2020	11/05/2020	25/05/2020	07/06/2020	18/06/2020	09/07/2020	23/07/2020	31/07/2020	18/08/2020	29/08/2020	31/08/2020	10/09/2020	29/09/2020	01/10/2020	06/10/2020	17/10/2020	26/10/2020		01/11/2020
Avg daily change in 14 day incidence rate per 100k	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Construction Opened	Mandatory PLF	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown lifted for Laois, Offaly, extended for Kildare	Schools + childcare opened	Level 3 Dublin	Wet Bars* Opened except Dublin	Level 3 Donegal	Level 3 National**	Level 3 Max National**	Level 4 Donegal, Cavan, Monaghan	Level 5 National (to 22 Nov)**
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-9
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-21
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-6
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-9
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	1			0	-4
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	4				-6		-5
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-10
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-6
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-7
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-2
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		8	-7		-7
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-1
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-3
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-6
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-4
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-7
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-15
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-7
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		2	-10		-2
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-3
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-12
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-2
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-2
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-13
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-6
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-1

Note:

The outputs should be seen as directionally useful, rather than precise statistical outputs

* The reopening of wet bars coincided with universities opening together with specific sporting events

** Care required when interpreting restriction changes in quick succession. Specifically. the more recent restriction changes (Level 3, Level 3 Max and Level 5) happened within a 15 day period

The absolute number of weekly tests has significantly increased since Wave 1

This analysis does not also consider potential behavioural changes beyond the restrictions

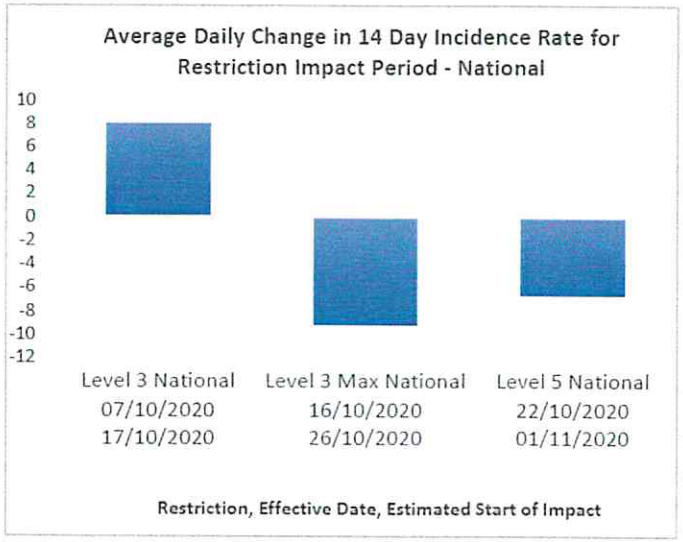
Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. Measures the average daily change in the 14 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

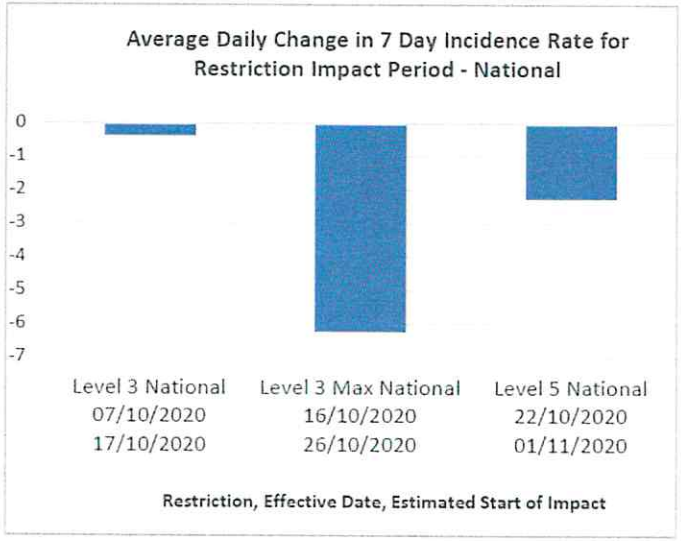
The introduction of Level 3 Max and Level 5 both coincide with a reduction incidence rates

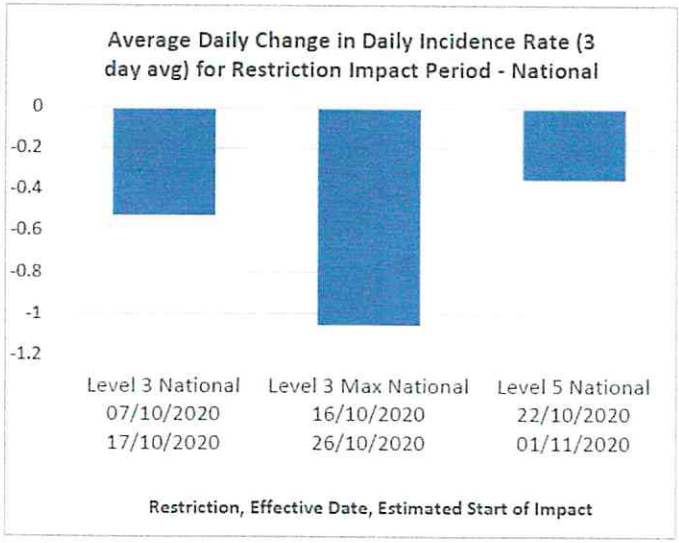
The 14 day incidence rate per 100k did not reduce for all but four counties with the introduction of Level 3. However, it did start to reduce with the introduction of further household restrictions (Level 3 Max) and then Level 5.

These three restriction changes happened within a 15 day period, with Level 3 Max was only active for 6 days.

For completeness, this analysis has also been repeated for a 7 day and a daily incidence rate average over three days. All three are shown below and follow similar, albeit reduced, patterns.







Note:

- Care required when interpreting restriction changes in quick succession. This analysis does not also consider potential behavioural changes beyond the restrictions
- Each measure in the above three graphs quantify the impact over a different time period; 14 days, 7 days and 1 day respective. Hence, it is expected that the size of their impact is different. That is also why they are shown to different scales on the y axis
- National measure excludes Dublin, Donegal, Cavan and Monaghan as they were under different restriction changes
- The Level 5 reductions should be seen as additive to the reduction in Level 3 Max.

Cavan's three LEAs follow a different path. One is being driven by outbreaks, one impacted by the border and one more aligned with the national trend

Cavan profile:

- Cavan has experienced a higher 14 day disease incidence rate per 100k during the second wave than the national average
- Part of Cavan borders with NI where different restrictions are in place

Summary analysis:

- Cavan-Belturbet LEA is the only part of Cavan with a NI border. This LEA is experiencing a higher disease incidence than the national average
- Ballyjamesduff LEA had the highest incidence rate throughout October. The timing of the acceleration of growth rate in this LEA appears to correlate with the GAA county final (winners are in this LEA)
- Levels of private house outbreaks rose during September and October
- [redacted]
- Travel along the N03 between Belturbet and George Mitchell Bridge at the NI Border fell 33% during October (Source TII Road Travel data)

Restriction impact:

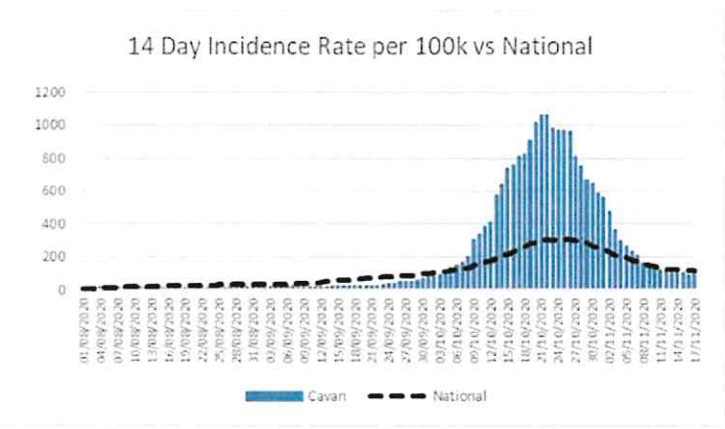
- The timing of the growth of cases appears to correlate with the events listed above and changes to restrictions in wet bars
- Level 4 restrictions imposed for the border counties appears to have desired impact of reducing incidence level in Cavan
- Level 5 restrictions continue to drive incidence level further

Employment Summary:

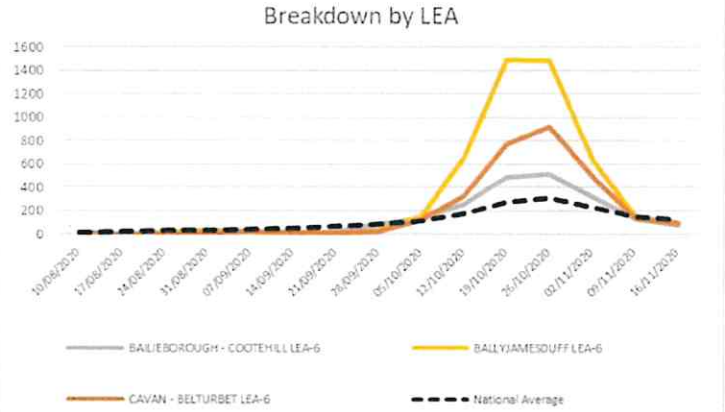
- Cavan had c.47% of its workforce on PUP or TWSS (c.15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP (17 Nov) which is down from 9.7k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
1,272

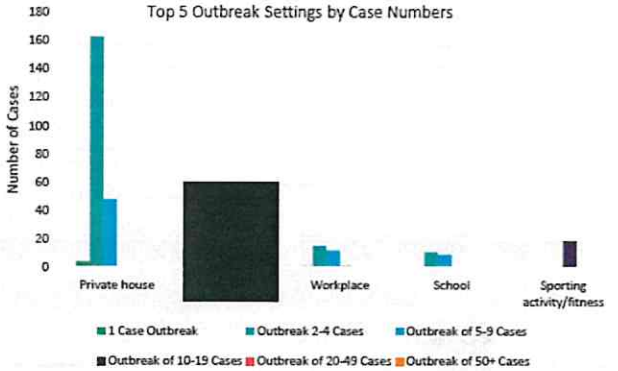
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
32%	3.6

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	215	72
[redacted]	[redacted]	[redacted]
Workplace	29	12
School	20	7
Sporting activity/fitness	19	1

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Sporting activity/fitness	04/10/2020	19
Community outbreak	07/10/2020	16
[redacted]	[redacted]	[redacted]
Private house	13/10/2020	7



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Meath is seeing a higher incidence rate than the national average. This is influenced by proximity to Dublin and specific outbreak events

Meath profile:

- Meath has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Dublin borders including a significant commuter population

Summary analysis:

- Level of private house outbreaks during September and October grew
- Continued outbreaks in nursing homes, one significant outbreak of 51 cases [redacted]
- One significant community outbreak of 29 cases
- Ratoath LEA has the highest incidence rate. The timing of this acceleration of growth rate appears to correlate with GAA county final win (Source: GAA.ie)

Restriction impact:

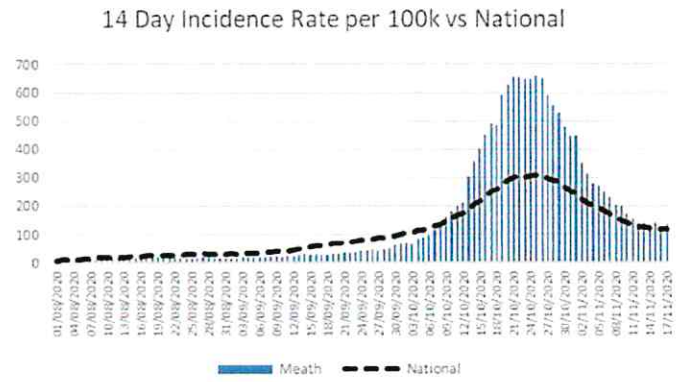
- The timing of the growth of cases appears to correlate with the events listed above and the changes to restrictions in wet bars
- Incidence level continued to rise post initial Level 3 restrictions imposed nationally
- Level 3 (max) restrictions imposed nationally appear to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level down further

Employment summary:

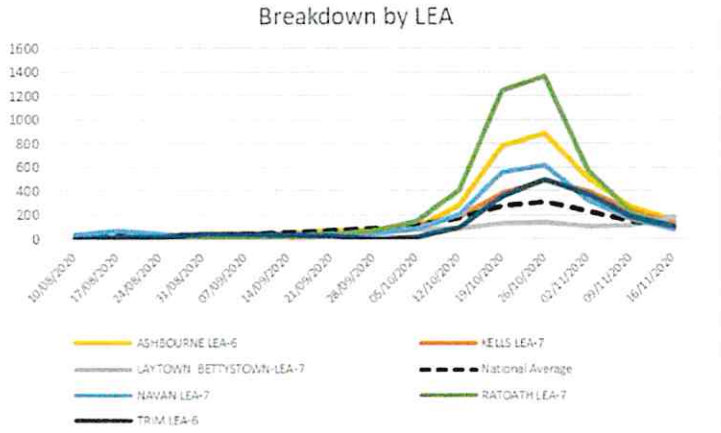
- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (13k versus 25k) levels (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,466

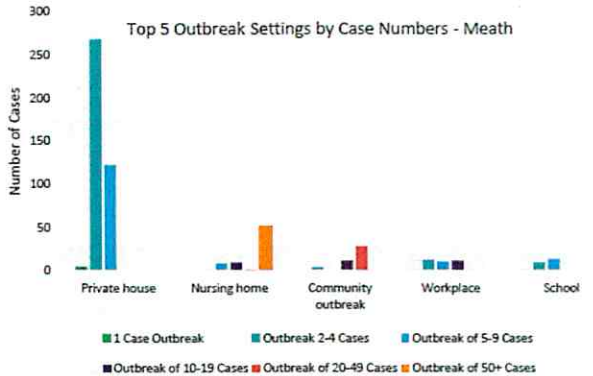
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
27%	3.3

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	397	121
Nursing home	74	9
Community outbreak	45	4
Workplace	38	18
School	25	10

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Nursing home	[redacted]	51
Community outbreak	10/10/2020	29
Community outbreak	13/10/2020	12
Workplace	19/10/2020	11
Nursing home	[redacted]	10



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) [HPSC]

The border is contributing to Donegal's higher rate of cases. Donegal is not seeing the benefit of recent Level 4 increases seen in other border counties

Donegal profile:

- Donegal has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Disease incidence higher and earlier versus national average, and reducing at a slower rate
- Eastern Donegal borders with NI where different restrictions are in place

Summary analysis:

- Lifford and Stranolar LEA close to the NI border with Derry, experienced an earlier and higher disease incidence
- Other eastern parts of Donegal (Buncrana, Letterkenny and Carndonagh) have the next highest incidence rates
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted] (Source: Donegal Daily)
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November

Restriction impact:

- Disease incidence continued to rise after level 3 Donegal announcement
- Specific restrictions in NI (1/10) on bars and restaurants appeared to have helped reduce rate in Donegal
- Despite level 3 max and level 5 being effective in other counties, cases in Donegal fell at a lower rate compared to national levels
- Similarly, Level 4 reduced the cases in Monaghan and Cavan, but not Donegal. Mask compliance in Donegal also reduced (against national and previous Donegal trend) with Level 4 restrictions (Facebook survey data)

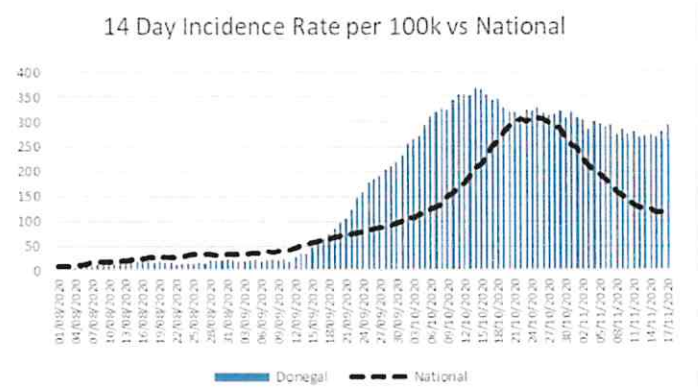
Employment summary:

- Donegal had c.49% of its workforce on PUP or TWSS (c 30k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (12k versus 23k) (CSO, DSP)

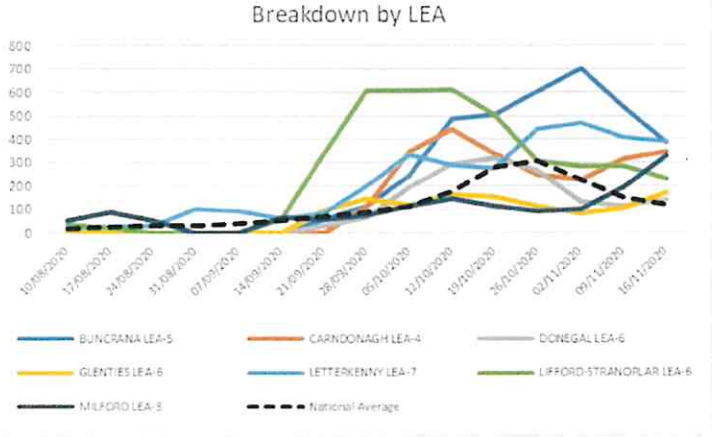
Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

The Facebook survey is a voluntary survey, managed by the University of Maryland. The mask question reads "In the last 7 days, how often did you wear a mask in public?".



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,165

% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
62%	3.9

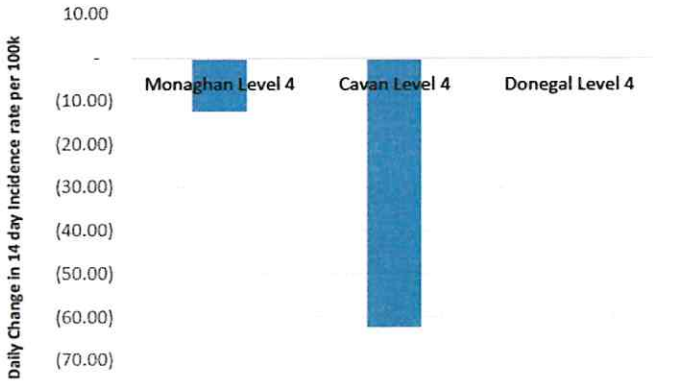
Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	651	235
Workplace	159	28
Hospital	126	5
Extended family	118	19
Nursing home	58	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Hospital	[redacted]	99
Workplace	23/09/2020	55
Nursing home	[redacted]	49
Social gathering	24/10/2020	20
Hospital	[redacted]	17

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.



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Cork is broadly aligned with the national trend. Cork City is driving up the incidence rates across the county

Cork profile:

- Cork is broadly aligned with the national average for the 14 day disease incidence rate per 100k during second wave

Summary analysis:

- Cork City is the most impacted area, with the rest of the county following with a reduced incident rate
- Cases in Cork City South Central, the LEA containing UCC (started returning on 21 Sept), were twice as high as other LEAs in Cork city during mid October. This gap declines in November as the universities went online

Restriction impact:

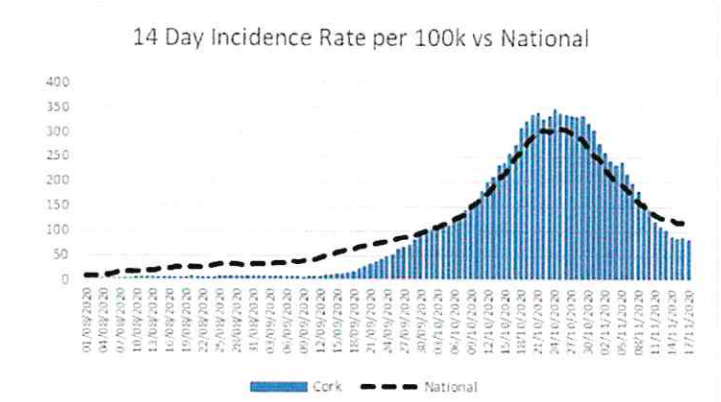
- Cases in Cork city rose as wet bars reopened (21 Sept). Cases around the rest of the county followed shortly after
- There were a number of GAA games in early October, which were linked with outbreaks. No matches occurred after this, with level 3 restrictions being applied around this time (6 Oct). Cases throughout Cork began to fall 10 days later

Employment summary:

- At peak, c 39% of Cork's workforce were on PUP or TWSS (c 96k) (EY 2019 employment estimates). Current PUP levels (17 Nov) are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

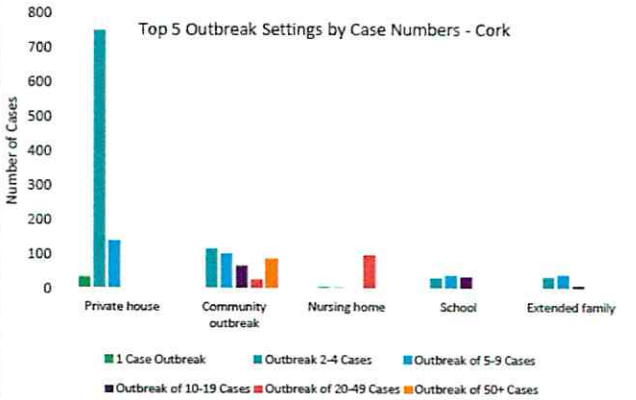
Cases	
4,492	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	3.7

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	929	354
Community outbreak	411	67
Nursing home	114	9
School	113	24
Extended family	90	22

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	26/10/2020	68
Nursing home	[redacted]	46
Restaurant / Cafe	17/09/2020	38
Nursing home	[redacted]	30
Community outbreak	22/09/2020	29



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Galway rose above the national average during the second wave, driven by Galway City Central and Connemara South LEAs

Galway profile:

- Galway experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- It has now come back down below national average levels since early November

Summary analysis:

- Galway City Central, Connemara South and Galway City East have had the highest 14-day incidence rates throughout October
- A number of key events occurred in late September which could have contributed to this increase
- Cases within Galway City Central LEA appear to have increased in this period following students returning to NUIG from 21 September
- GAA senior championship football semi-finals and finals also occurred in the last week of September and first week of October. Connemara South had a confirmed outbreak in mid-October
- Throughout November, private household cases were responsible for 49% of outbreak cases, with [redacted] and community outbreaks making up a large proportion of the remaining percentage

Restriction impact:

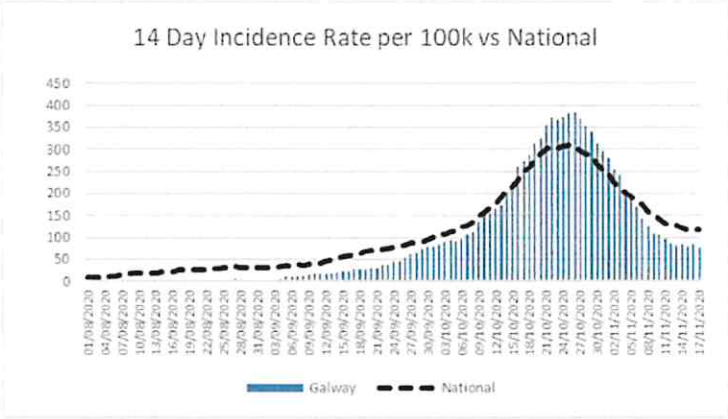
- Cases begin to decline ten days after the national level 3 lockdown came into effect (17/10), falling below national levels in November
- An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

Employment summary:

- Galway had c.39% of its workforce on PUP or TWSS (c.49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP (17 Nov) which is down from 32.5k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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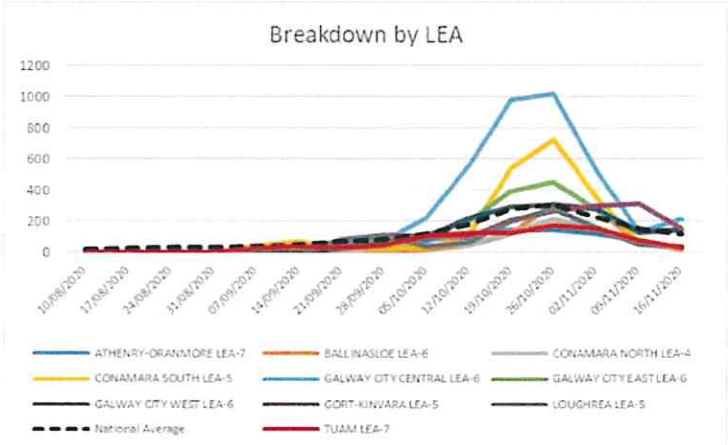


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,060

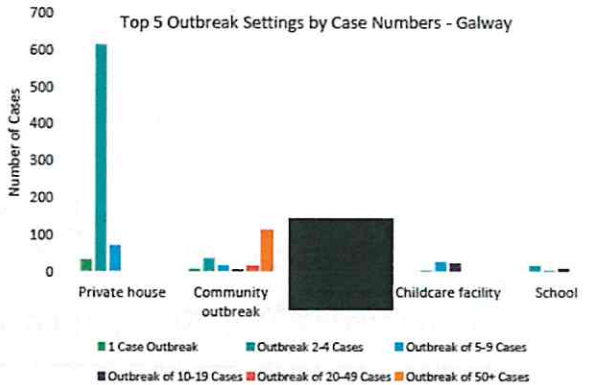
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
66%	3.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	723	293
Community outbreak	207	30
[redacted]	[redacted]	[redacted]
Childcare facility	61	8
School	37	11

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Community outbreak	24/09/2020	114
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
Social gathering	19/09/2020	20
Community outbreak	25/09/2020	18



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Dublin – local authority breakdowns over time

The below heatmap shows the Dublin LEA 14 day incidence rate per 100k population since early August. Some areas are seeing higher incidence rates.

		10/08/2020	17/08/2020	24/08/2020	31/08/2020	07/09/2020	14/09/2020	21/09/2020	28/09/2020	05/10/2020	12/10/2020	19/10/2020	26/10/2020	02/11/2020	09/11/2020	16/11/2020
Dublin City	ARTANE-WHITEHALL LEA-6	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9	111.4
	BALLYFERMOT-DRIMNAGH LEA-5	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	191	143.3
	BALLYMUN-FINGLAS LEA-6	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7	221.8
	CABRA GLASNEVIN LEA 7	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	160.3	138.1
	CLONTARF LEA-6	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	114.4	73.8
	DONAGHMEDE LEA-5	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7	89
	KIMMAGE-RATHMINES LEA-6	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188	123.5
	NORTH INNER CITY LEA-7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	121	84.9
	PEMBROKE LEA-5	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	88	59.4
	SOUTH EAST INNER CITY LEA-5	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7	133
	SOUTH WEST INNER CITY LEA-5	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1	186.6
Dun Laoghaire - Rathdown	BLACKROCK LEA-6	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2	68.2
	DUN LAOGHAIRE LEA-7	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	76.9	72.1
	DUNDRUM LEA-7	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	66.8	80.1
	GLENCULLEN-SANDYFORD LEA-7	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3	68.3
	KILLINEY-SHANKILL LEA-7	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	44.6	52.5
	STILLORGAN LEA-6	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8	101.6
Fingal	BALBRIGGAN LEA-5	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2	109.4
	BLANCHARDSTOWN-MULHUDDART LEA-5	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	266.2	147.3
	CASTLEKNOCK LEA-6	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	297	199.5	130.1	114.9
	HOWTH-MALAHIDE LEA-7	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9	92.6
	ONGAR LEA-5	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7	134
	RUSH-LUSK LEA-5	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2	43.3
	SWORDS LEA-7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	245.3	295.9	371.8	288.1	140.2
South Dublin	CLONDALKIN LEA-7	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	212.8	180.6
	FIRHOUSE-BOHERNABREENA LEA-5	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8	102.3
	LUCAN LEA-5	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6	122.7
	PALMERSTOWN-FONTHILL LEA-5	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1	165.6
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7	112.7
	TALLAGHT CENTRAL LEA-6	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	168.9	134.2
	TALLAGHT SOUTH LEA-5	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	304.5	251

There appears to be a correlation between areas hit hard in Wave 1 and Wave 2 (acknowledging differences in testing criteria), with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin and Artane-Whitehall.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Dublin includes over a quarter of Ireland's population. It therefore includes many stories and strongly aligns with national case levels

Dublin profile:

- Not surprisingly, Dublin's 14 day disease incidence rate per 100k during second wave is in line with the national average
- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire–Rathdown seeing lower overall incidence

Summary analysis:

- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Restriction analysis:

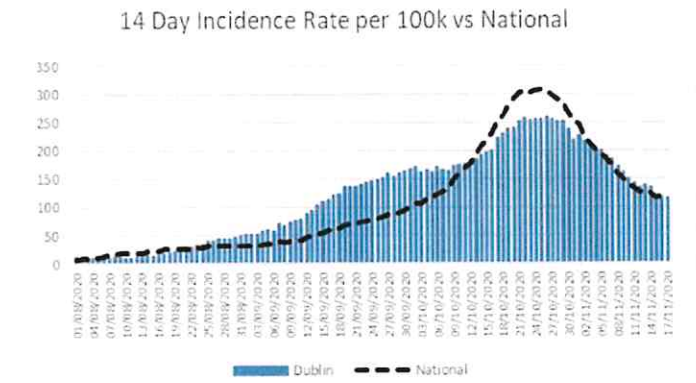
- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases
- Not opening the wet bars does appear to have helped Dublin with the subsequent increase in cases being slower than the national average

Employment summary:

- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k (17 Nov) , compared to a peak of 176k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



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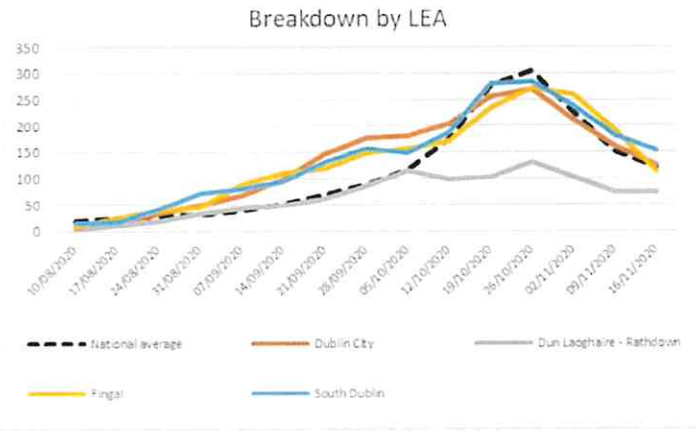


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

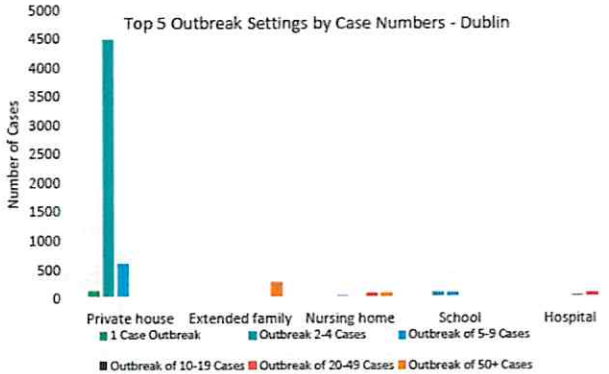
Cases	
12,606	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
56%	2.9

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	5225	2075
Extended family	291	3
Nursing home	266	27
School	249	66
Hospital	192	30

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	24/09/2020	288
Nursing home	[redacted]	75
Hotel	12/09/2020	38
Childcare facility	20/10/2020	38
Residential institution	02/10/2020	30



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Cases in Limerick during Sept and Oct were driven by very large extended family and community outbreaks

Limerick profile:

- Limerick has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average.
- This is a result of the cases in Limerick not declining to the same extend in the rest of the country

Summary analysis:

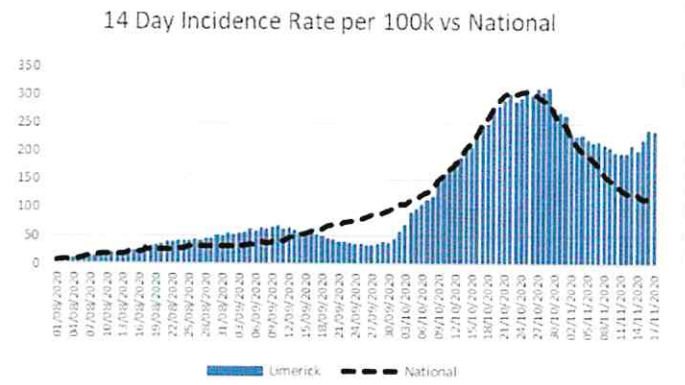
- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November.
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others – the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

Employment summary:

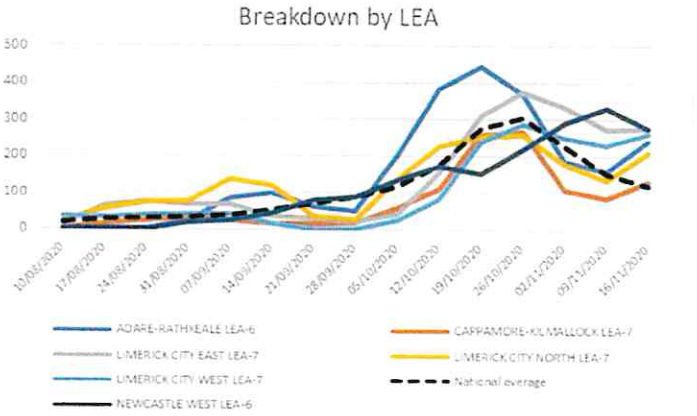
- Limerick had c.43% of its workforce on PUP or TWSS (c.34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

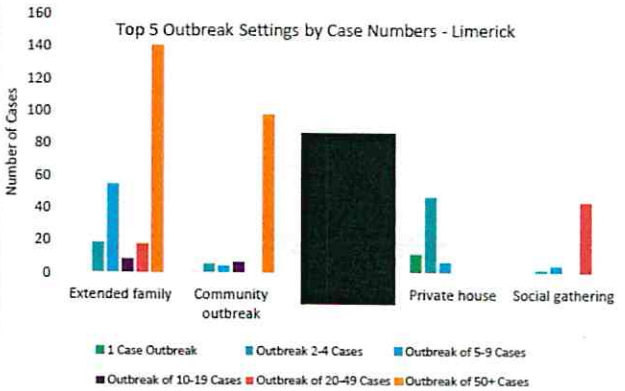
Cases	
1,771	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
39%	6.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Extended family	242	19
Community outbreak	117	8
[redacted]	[redacted]	[redacted]
Private house	66	34
Social gathering	51	5

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
Extended family	23/09/2020	141
Community outbreak	08/10/2020	94
[redacted]	[redacted]	[redacted]
Residential institution	13/10/2020	31
Social gathering	15/10/2020	25



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Kerry is seeing lower cases than the national average, with Listowel bordering Limerick having the highest number of recent cases

Kerry profile:

- Kerry has experienced a similar 14 day disease incidence rate per 100k during second wave to the national average. However, Listowel LEA has seen a sharp increase in its rate since early October

Summary analysis:

- North Kerry (Listowel) is most severely affected. This coincides with outbreaks southern parts of Limerick such as Newcastle West and Adare-Rathkeale, as well as Limerick city
- Killarney and Tralee LEAs are both next in terms of severity of impact, containing two major Kerry towns
- The remainder of the county (further south, smaller towns) is generally less affected
- [redacted]
- Private homes account for 33.68% of all outbreak cases since Sept 1st
- Listowel's incidence levels were three times higher than the next worst-afflicted LEA. Note the small population of ~29,000 people meant 182 cases over a 2-week period prior to 26 Oct created a very high incidence rate

Restriction impact:

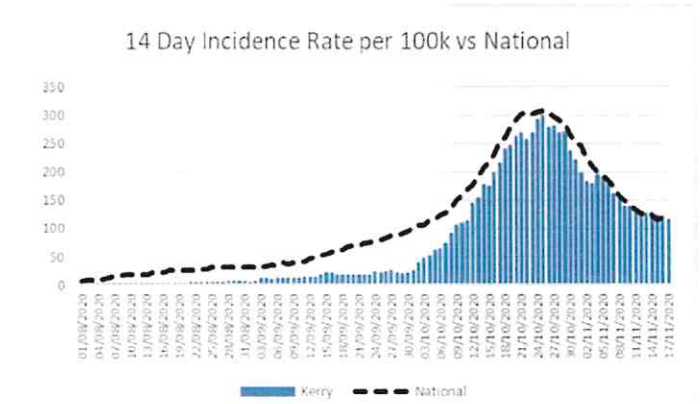
- The number of cases in Kerry started to grow around the time level 3 was introduced – two weeks later, this high growth rate had largely ceased
- Improvements have levelled off somewhat across LEAs such as Tralee, Killarney and Listowel

Employment summary:

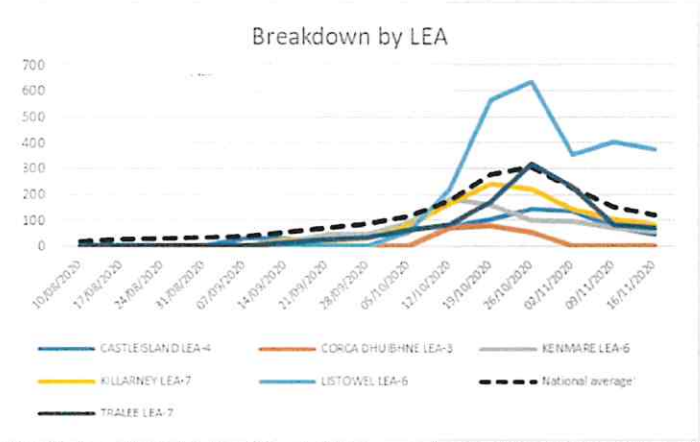
- Kerry had c.49% of its workforce on PUP or TWSS (c.32k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
963

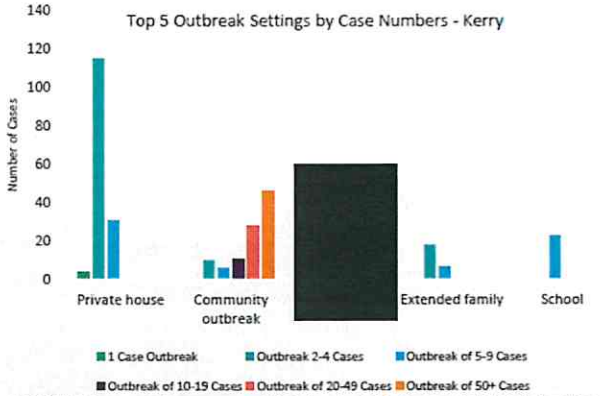
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	4.1

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	150	53
Community outbreak	101	14
[redacted]	[redacted]	[redacted]
Extended family	25	7
School	23	4

Notable Outbreaks

Outbreak Setting	Date	No. of Cases
[redacted]	[redacted]	[redacted]
Community outbreak	03/09/2020	43
Community outbreak	23/10/2020	25
Religious/Other ceremony	16/10/2020	11
Restaurant / Cafe	11/09/2020	11



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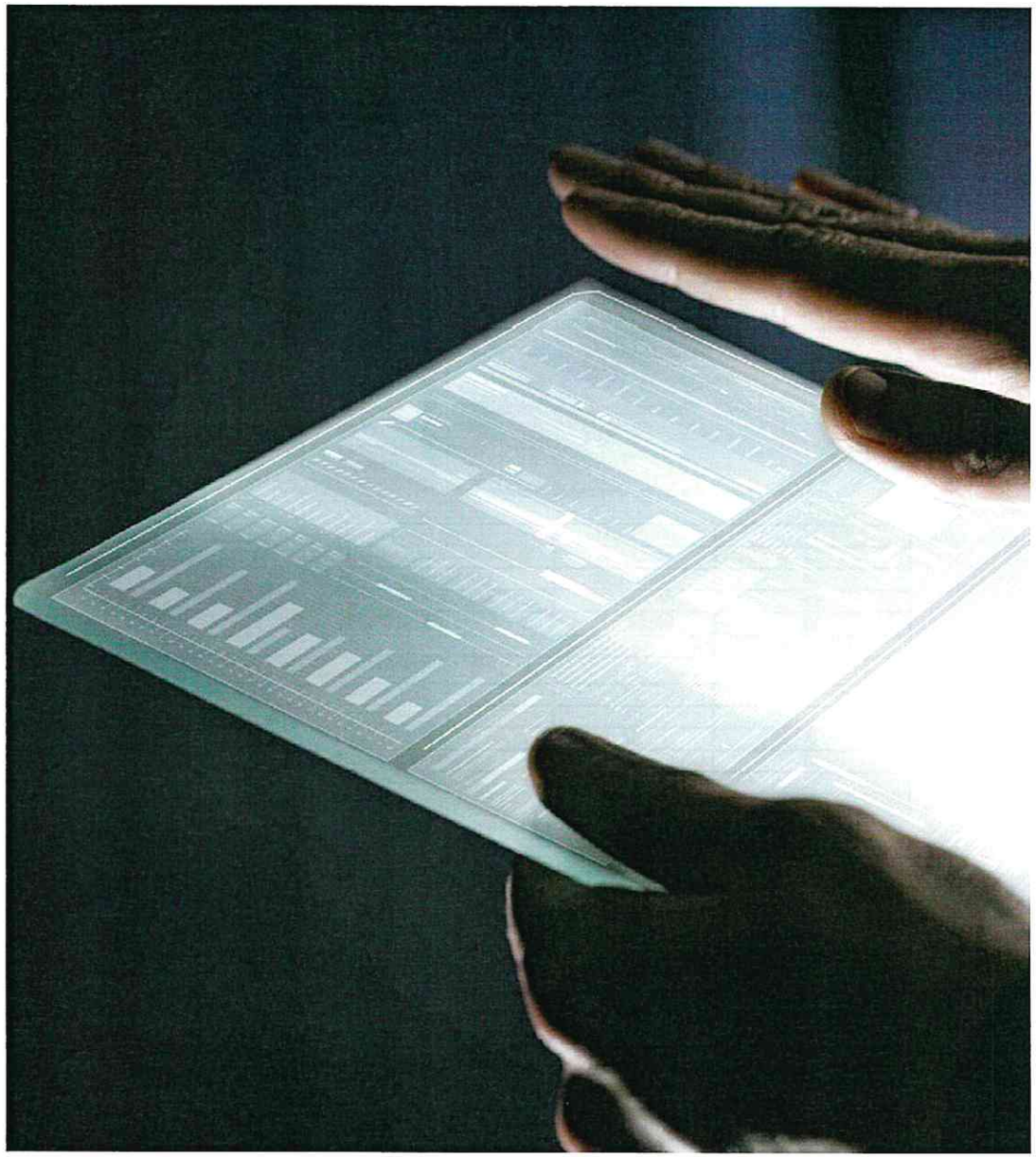
Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties – highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

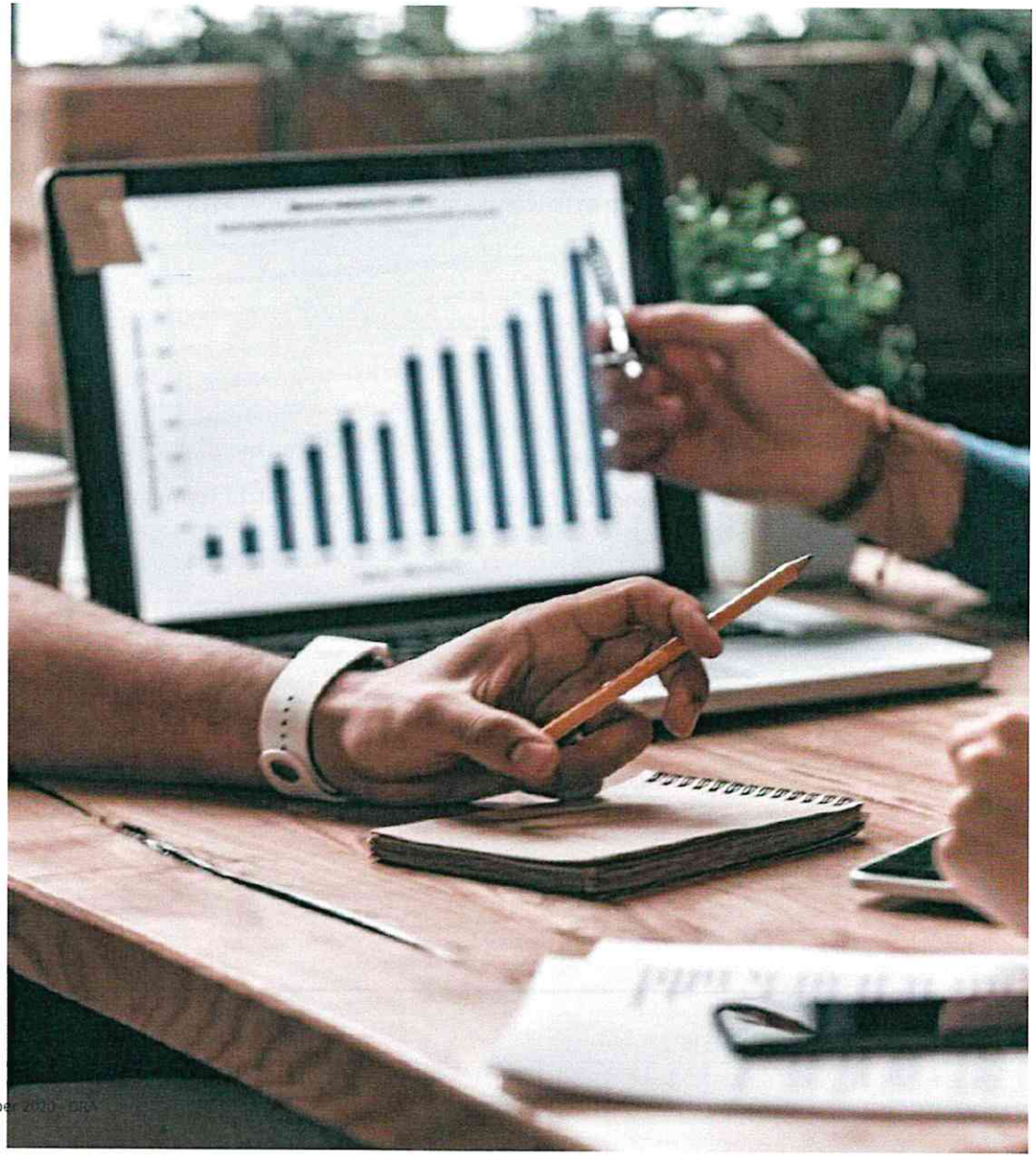
International restriction analysis

A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

International desktop research

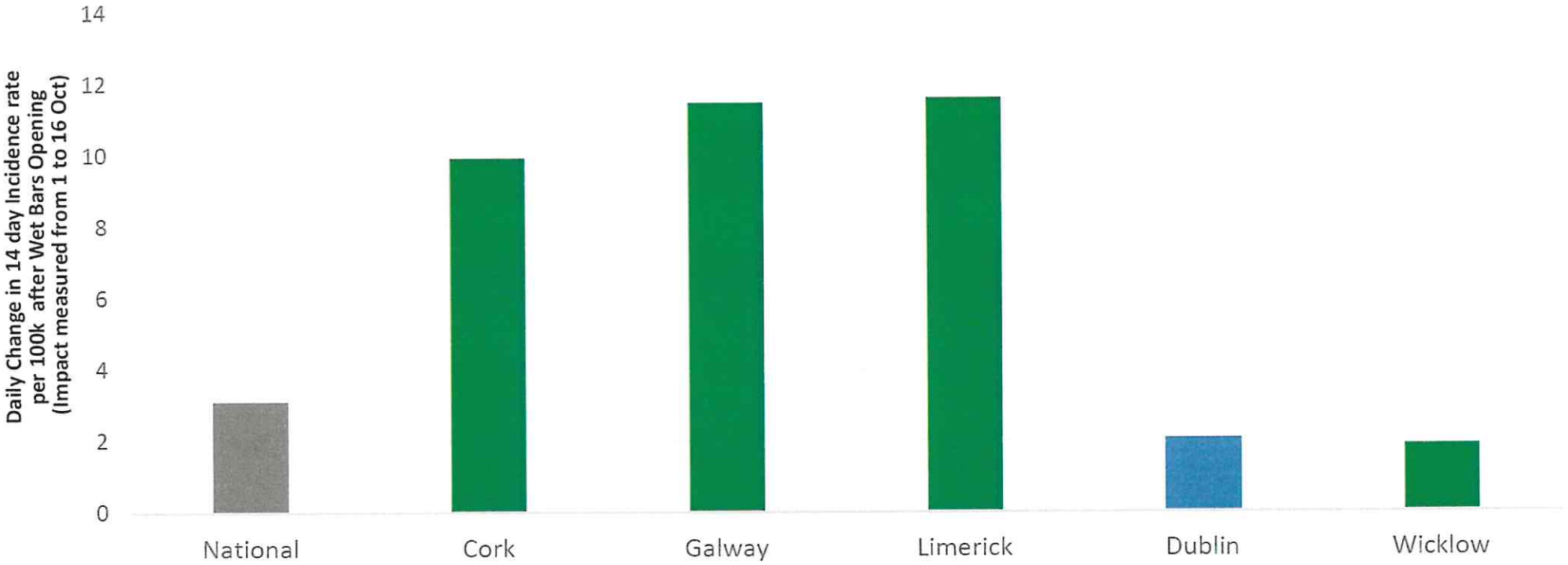
Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular COVID-19 insights publication and with new research included today

Ireland – restrictions analysis



Wet Bars opened across the country, but not Dublin, on 21 September. The increase in Dublin's incidence rate was then lower than the national average and for larger counties

Wet bars opened in all counties except Dublin in late September. This coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in every county. The subsequent incidence rate growth in Dublin was 33% lower than the national average and 79% to 82% lower than other counties with larger cities. Wicklow was the only county that performed better than Dublin, with a 10% lower growth rate than Dublin



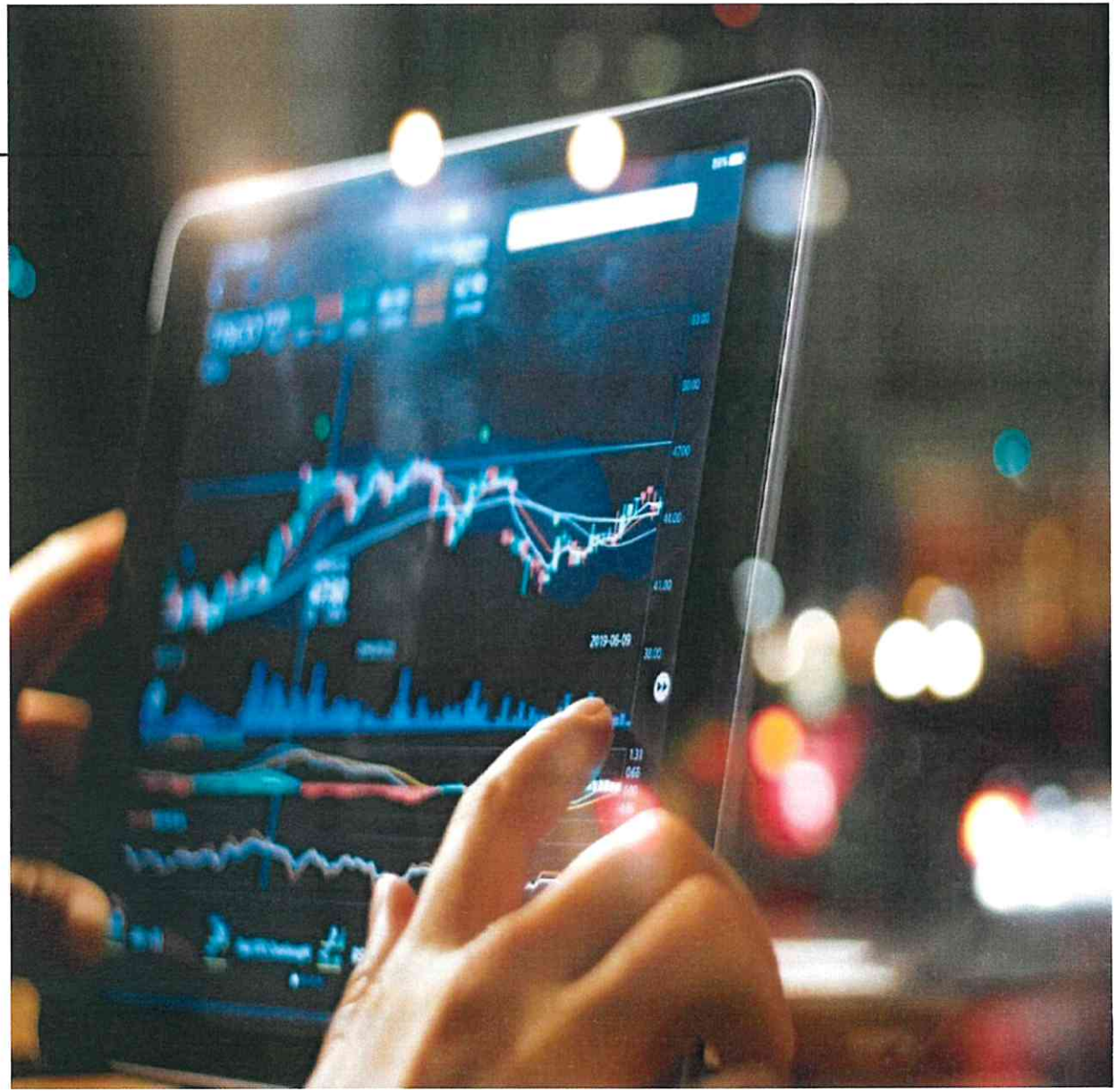
The incidence rate did not materially increase after the three phases of re-opening during late May to early July

The reopening of construction, non-essential retail and the wider Phase 3 openings did not appear to have a material impact on the cases nationally or in larger counties. Note that disease incidence rates were low at this time

Restriction Effective Date	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	19/09/2020	21/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Restriction Estimated Start of Impact	10/03/2020	22/03/2020	25/03/2020	03/04/2020	06/04/2020	11/05/2020	25/05/2020	07/06/2020	18/06/2020	09/07/2020	23/07/2020	31/07/2020	18/08/2020	29/08/2020	31/08/2020	10/09/2020	29/09/2020	01/10/2020	06/10/2020	17/10/2020	26/10/2020		01/11/2020
Avg daily change in 14 day incidence rate per 100k	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Constructio n Opened	Mandatory PUP	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown lifted for Laois, Offaly, extended for Kildare	Schools + childcare opened	Level 3 Dublin	Wet Bars Opened except Dublin	Level 3 Donegal	Level 3 National	Level 3 Max National	Level 4 Donegal, Cavan, Monaghan	Level 5 National (to 22 Nov)
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-9
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-21
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-6
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-9
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	1			0	-4
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	4				-6		-5
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-10
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-6
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-7
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-2
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		8	-7		-7
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-1
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-3
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-6
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-4
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-7
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-15
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-7
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		2	-10		-2
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-3
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-12
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-2
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-2
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-13
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-6
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-1

* Phase 3 re-opening included places of worship, gyms, cinemas, theatres, leisure facilities, personal services, sports, public transport 50% capacity & face coverings), mass gatherings (50 indoors, 200 outdoors), adult education and community facilities, health and well being related services, restaurants and cafes (on site food service), hotels and other accommodation facilities, driving schools and tests

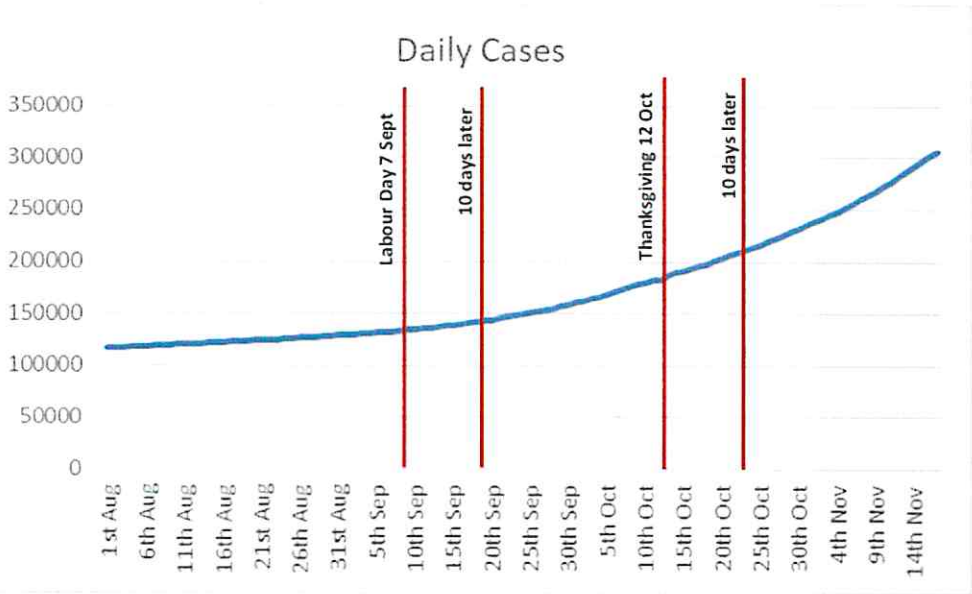
Select International Desktop Research



Canadian Thanksgiving: Testing & Tracing data and case numbers show surge in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first surge in Spring.



Key findings:

- Canada saw a surge in COVID-19 cases in the days and weeks that followed Thanksgiving, the **highest rates** since the first surge in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; **4,109 new daily cases** were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Canadian Testing and Tracing records show that Thanksgiving gatherings directly resulted in **viral spread**
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases **dramatically changed** after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has **doubled** from 155,000 on 28 September to over 310,000 on 18th November
- A similar **spike** is noticed on 17th September, 10 days after **Canadian Labour day** was celebrated

Source: https://health-infobase.canada.ca/covid-19/
https://www.thestar.com/news/canada/2020/09/23/wont-be-gathering-for-thanksgiving-trudeau-says-covid-19-second-wave-underway.html

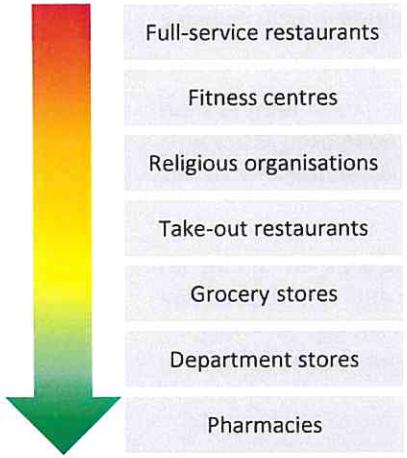
US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.)

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

POI categories ranked in decreasing order of associated additional infections that would occur if the location is opened



Results

- The Stanford Mobility Network Model Simulation concluded that on average across metro areas, reopening full-service restaurants, fitness centres and religious organisations produces the largest predicted increase in infections.
- Take-out restaurants, grocery stores, department stores and pharmacies resulted in low positivity rates.
- This pattern was seen in the 3 US cities studied.

Key findings

- The model calculates the additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location.
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy.
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10).
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more.

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html

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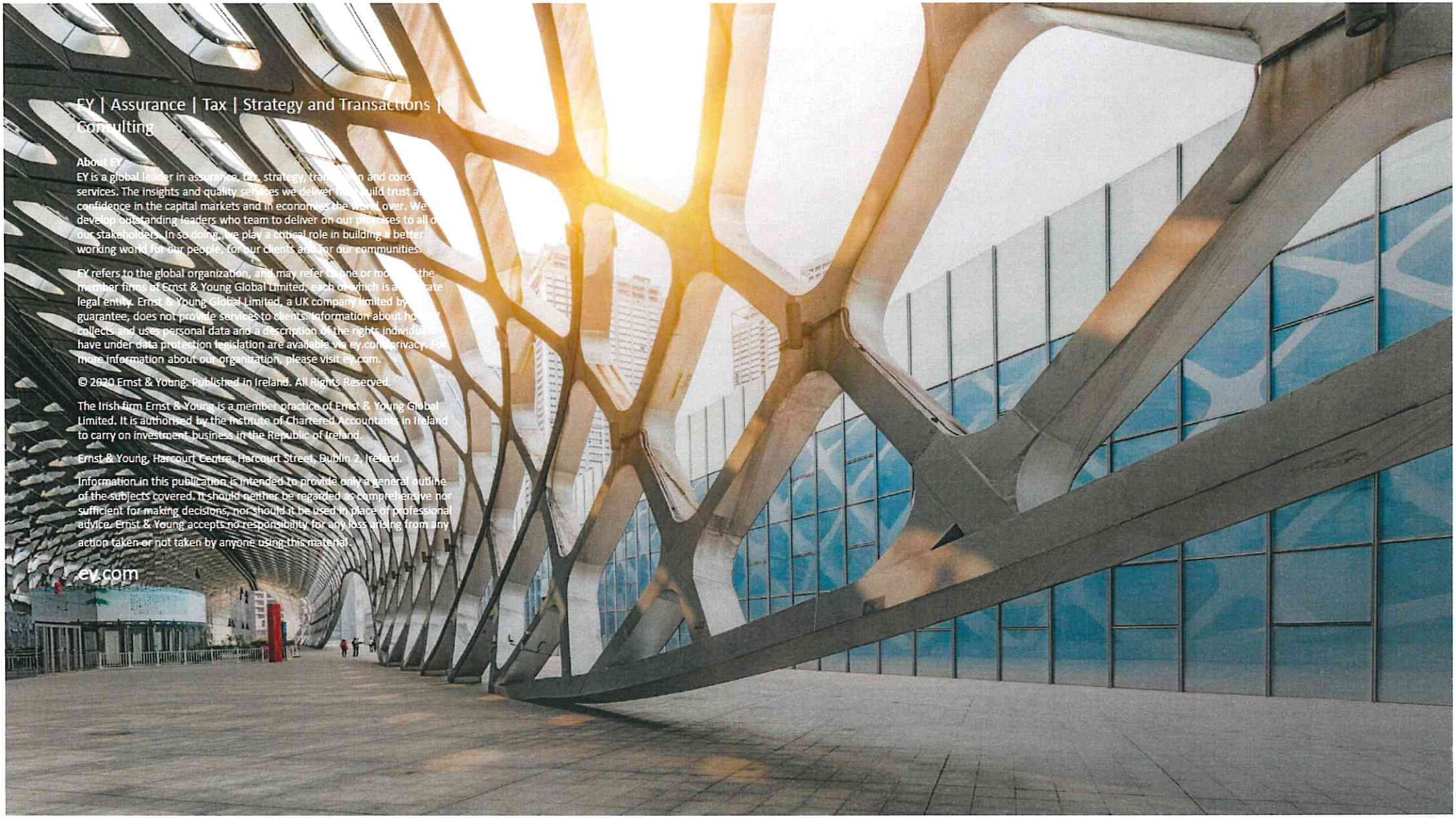

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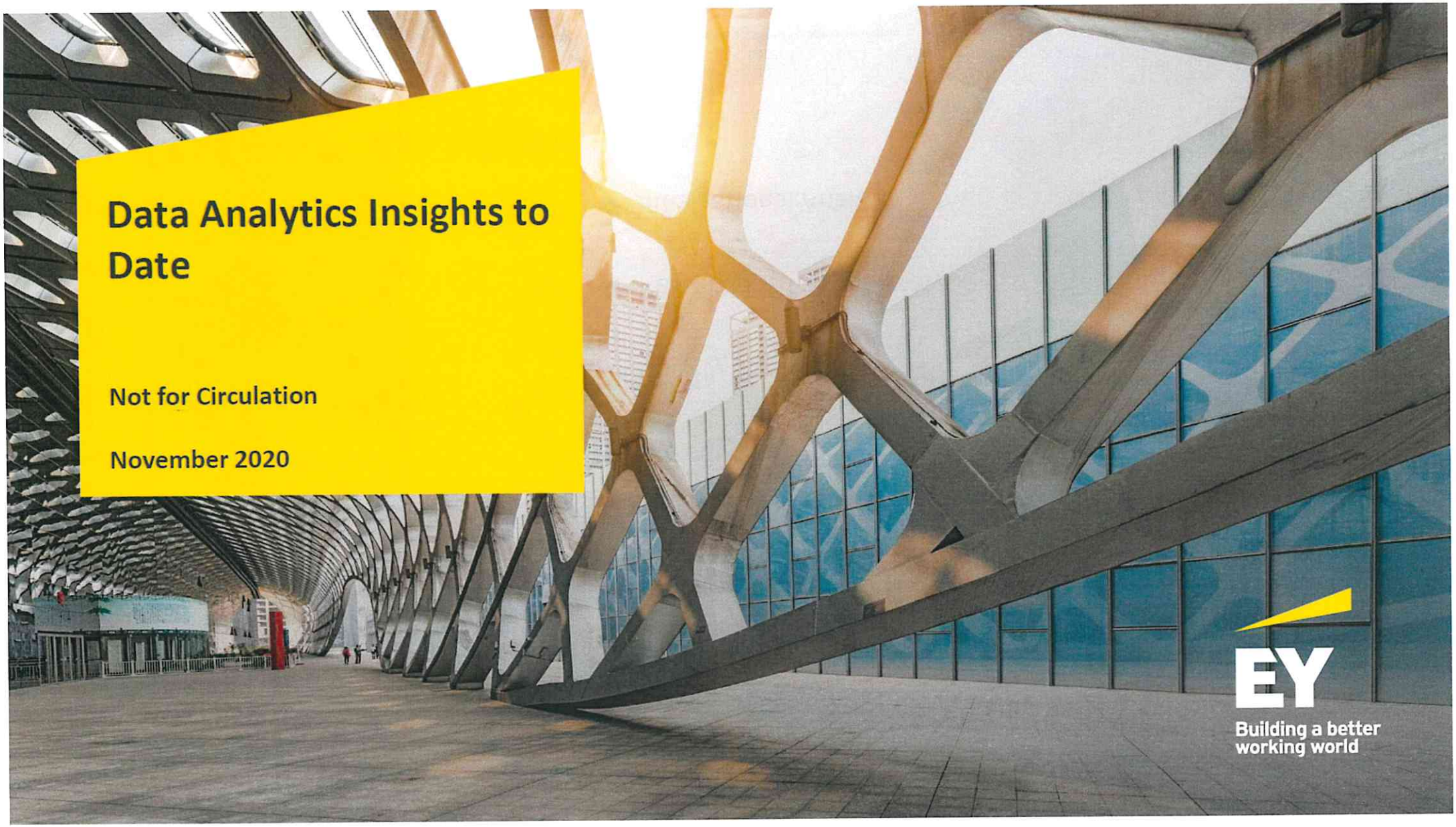

Data Analytics Insights to Date
Not for Circulation
November 2020
EY
Building a better working world

Update – Week 6

Agenda

- Introduction
- County Specific Analysis
- Restrictions Impact Analysis
- International Analysis

Providing data analysis to support Government decision making

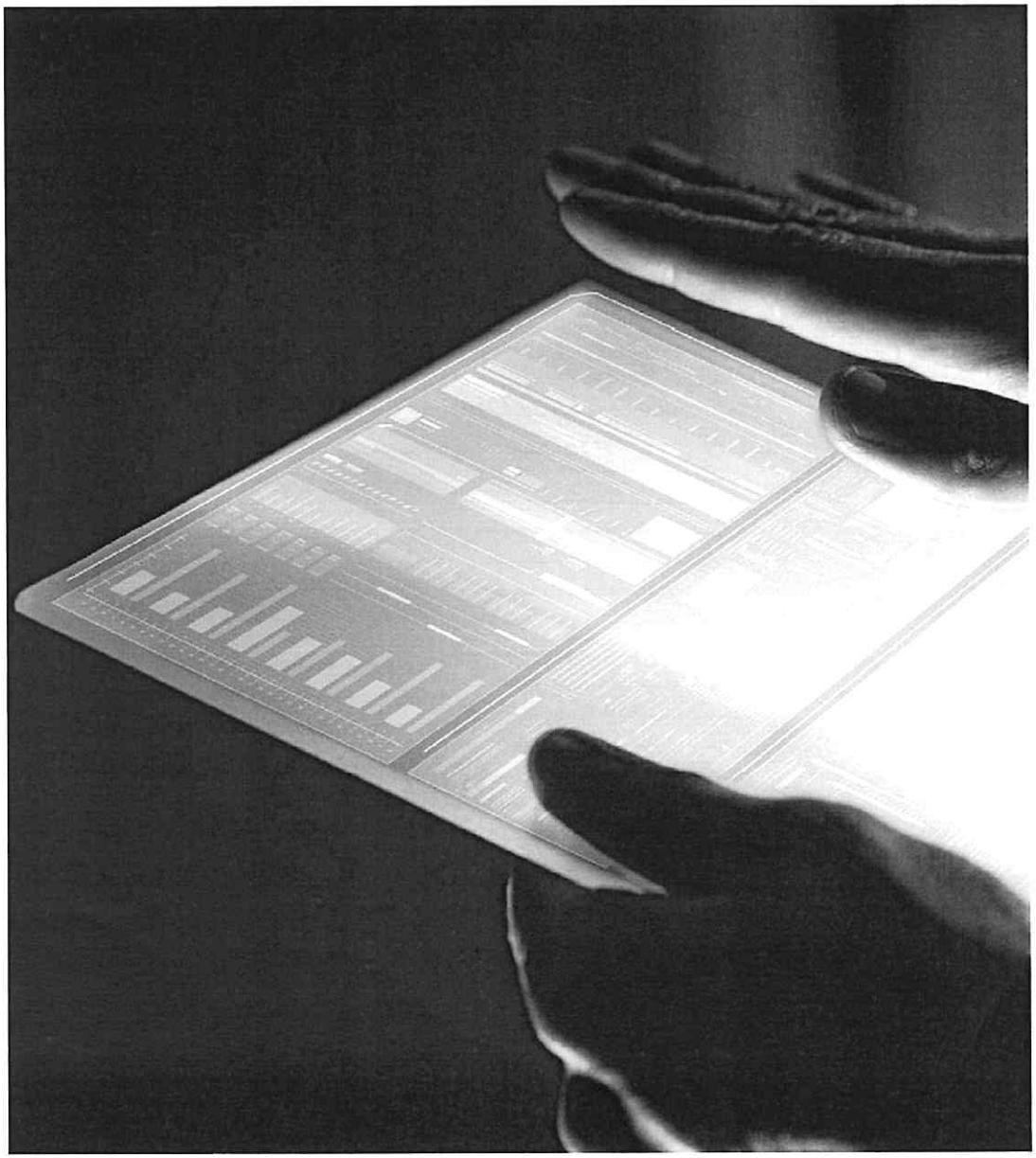
EY Data Analytics team was engaged to analyse certain aggregated data available to the State as part of the State's Covid 19 management strategy. EY's role was to analyse the available data and to present it back to Government officials to consider as part of its on-going deliberations and decision making with regard to Covid 19 restrictions. The focus is situating disease incidence rates in the context of other data (e.g. restriction changes) to produce insights, rather than performing epidemiology.

Summary of initial findings

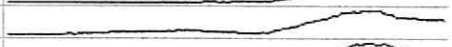
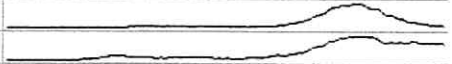
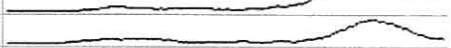
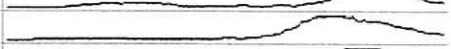
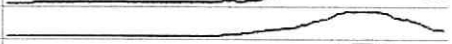
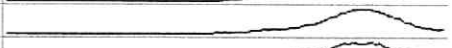
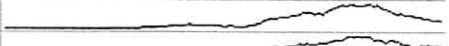
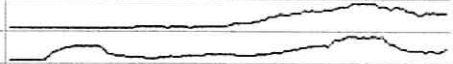
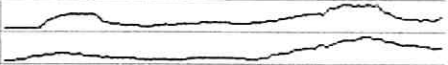
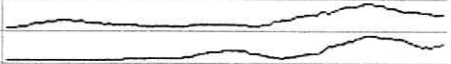
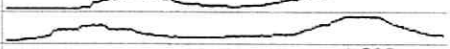
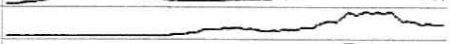
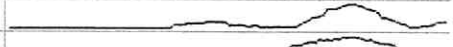
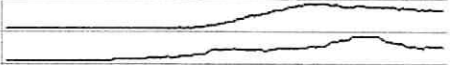
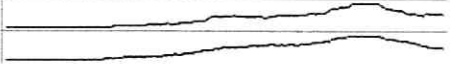
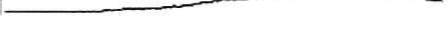
- Extending county analysis to Local Electoral Areas (LEA) helps provide a more specific understanding of what is happening in each county. These profiles can broadly be categorised as follows:
    1. Significant known outbreak event(s)
    2. Proximity to the border
    3. Following the national profile
    4. Proximity to and scale of Dublin
- We now have a far more expansive testing regime. This means that it is difficult to directly compare Wave 1 and Wave 2. While accepting that, it is worth noting the shift in recorded outbreaks from being led by Nursing Homes in Wave 1 to Private Households in Wave 2. This contributes to a reduction of 15 years in the median age of identified cases from Wave 1 to Wave 2 (Source: CSO)
- Social gatherings, citizen congregations and specific local events all appeared to have contributed to Wave 2 outbreaks
- The introduction of Level 3 nationally did not reduce the 14 day incidence rate per 100k for majority of counties. The introduction of further household restrictions (Level 3 Max) from mid-October drove a reduction across most counties
- Wet pubs opened in all counties except Dublin in late September. This also coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in in every county. This increase was not seen to the same extent in Dublin
- The LEAs containing University College Cork (UCC) and National University of Ireland Galway (NUIG) both saw higher increases than the rest of their county when the universities opened. This difference was reduced when the universities went online. Wet pubs also opened in both cities on the same week that universities opened
- The northern counties, and especially LEAs on the border, do appear to be impacted by proximity to the border. Donegal is not seeing significant reductions with Level 4 that was seen in other border counties
- The reopening of construction, non-essential retail and the wider Phase 3 changes during the summer do not appear to have had a material impact on the 14 day disease incidence rate per 100k nationally or in larger counties. It should however be noted that the disease rate was low at this time

Source Median Age June 5th 48 (CSO COVID-19 Deaths and Cases Series 4) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries4/
Median Age for week ending 30th October 33 (CSO COVID-19 Deaths and Cases Series 15) - https //www.cso.ie/en/releasesandpublications/br/b-cdc/covid-19deathsandcasesseries15/

County specific analysis



County Analysis Summary

County	Border county	Known outbreaks	Dublin and surrounding area	Following national restrictions trend	Wave One – main outbreak sources	Wave Two – main outbreak sources	14 day incidence rate per 100k (26/07 – 17/11)
Kerry		✓		✓	Private Houses, Residential Institutions, Hospital	Private House, Community Outbreak, Nursing Home	
Limerick		✓		✓	Nursing Home, Private Houses, Residential Institution	Extended Family, Community Outbreak, Private House	
Mayo				✓	Nursing Home, Hospital, Community Hospital/Long-Stay Unit	Private House, Nursing Home, School, Workplace	
Meath		✓	✓	✓	Nursing Home, Private Houses, Workplace	Private Houses, Nursing Homes, Community Outbreak	
Sligo*				✓	Nursing Home, Private House, Travel Related	Private House, Extended Family, Religious/Other Ceremony	
Westmeath*				✓	Workplace, Nursing Home, Hospital	Private House, Nursing Homes, Workplace	
Wexford				✓	Hospital, Nursing Home, Private House	Private House, Social Gathering, Nursing Home	
Kilkenny*		✓			Hospital, Private House, Community Hospital/Long-Stay Unit	Private House, Workplace, Hospital	
Carlow*		✓			Hospital, Nursing Home, Private Houses	Private House, Workplace, Hospital	
Clare		✓			Nursing Home, Private Houses, Extended Family	Private House, Extended Family, Community Outbreaks	
Cork		✓		✓	Workplace, Private Houses, Nursing Homes	Private House, Community Outbreak, Nursing Home	
Galway		✓		✓	Hospital, Nursing Home, Private Houses	Private House, Community Outbreak, Nursing Home	
Longford*		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Workplace	
Roscommon		✓			Workplace, Nursing Homes, Hospital	Private House, Nursing Home, Extended Family	
Offaly*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Laois*		✓			Workplace, Hospital, Community Hospital/Long-Stay Unit	Private House, Workplace, Nursing Home	
Waterford		✓			Workplace, Private House, Nursing Home	Private House, Workplace, Community Outbreaks	
Tipperary		✓			Workplace, Private Houses, Nursing Homes	Private House, Workplace, Nursing Home	
Kildare**		✓	✓		Nursing Home, Private Houses, Residential Institution	Priate House, Workplace, Nursing Homes	
Louth	✓	✓		✓	Nursing Home, Private House, Hospital	Private Houses, Hospitals, Residential Institutions	
Cavan	✓	✓		✓	Nursing Home, Private House, Workplace	Private Houses, Nursing Homes, School	
Leitrim*	✓				Nursing Home, Private House, Travel Related	Private Houses, Extended Family, Religious/Other Ceremony	
Monaghan	✓	✓			Nursing Home, Workplace, Residential Institution	Private Houses, Workplaces, Residential Institutions	
Donegal	✓	✓			Travel Related, Nursing Home, Community Hospital/Long-Stay Unit	Private Houses, Hospitals, Extended Family	
Wicklow**			✓	✓	Workplace, Private House, Residential Institution	Private House, Nursing Home, Workplace	
Dublin		✓	✓		Nursing Home, Private Houses, Residential Institution	Private Houses, Extended Family, Nursing Home	

Source Outbreak sources – CIDR, Incidence rate –based on daily cumulative case data published on GeoHive to 17 November 2020.
This data is published daily. Note Wave one defined as 03/03-25/07; Wave 2 is 26/07-20/11
*Carlow-Kilkenny, Laois-Offaly, Longford-Westmeath and Sligo-Leitrim are combined in CIDR
**Due to Kildare outbreak data including West-Wicklow, any outbreak cases in that area have been included with Kildare, not Wicklow

Summary of county-level 14 day incidence rate per 100k

The heatmap below shows the 14 day incidence rate per 100k population for each county over the last two months. The overall reduction in cases has levelled to 17/11, with some county incidence rates increasing.

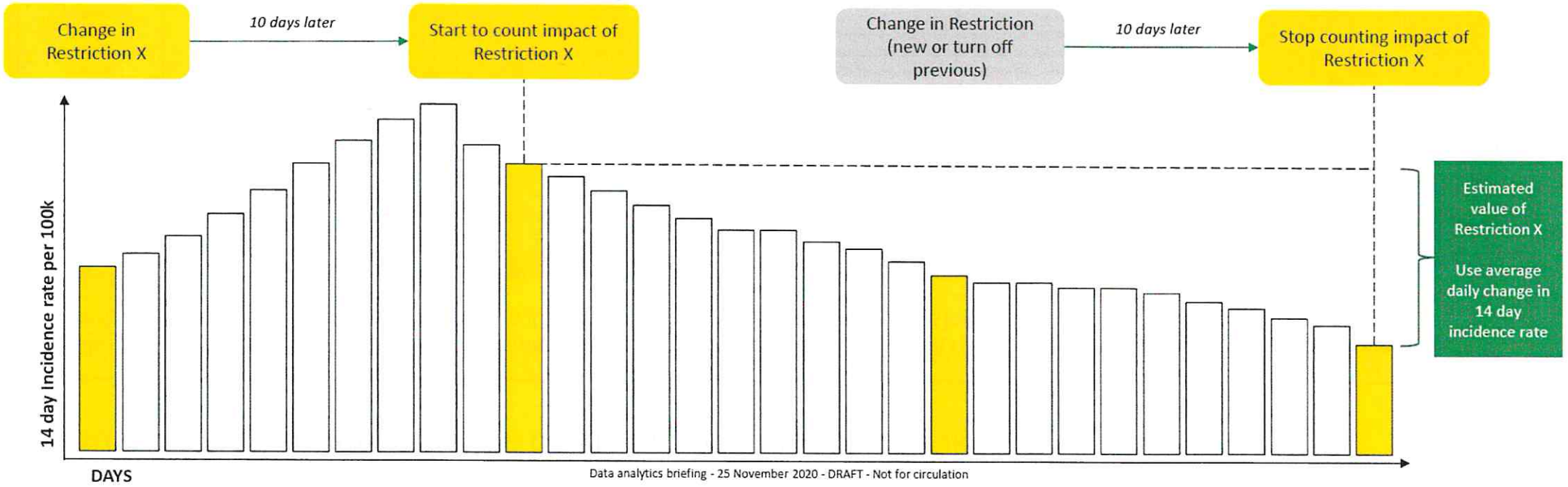
| Two Weekly Incidence Rate Per 100k | Population | 25-Sep | 26-Sep | 27-Sep | 28-Sep | 29-Sep | 30-Sep | 01-Oct | 02-Oct | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | 18-Nov | 19-Nov | 20-Nov | 21-Nov | 22-Nov | Change Last 5 Days |
|---|---|---

Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There have been relatively few changes in restrictions, which generally combine more than one change at a time, therefore hiding the unit value per restriction. There is also a time lag between a restriction change and the impact being seen, and the incidence rate can clearly be impacted by significant outbreaks. We have used the below methodology to initially quantify the impact of changes in restrictions. This calculation has been applied across counties. The outputs should be seen as directionally useful, rather than precise statistical outputs. A sensitivity analysis has also been completed looking at a reduced 7 day and rolling average incidence rate over 3 days per 100k especially for periods where there were more frequent restriction changes.

It should be noted that this does not measure compliance or behavioural aspects related to restrictions.

They are also presented alongside international academic research to provide a broad view to support decision-making. Further analysis has commenced to enhance the measurement of correlation between restrictions and their impact.



Summary of Restriction Impact

The below heatmap shows the average daily change in 14 day incidence rate per 100k per restriction. The impact is calculated using the approach described in Slide 8.

Restriction Effective Date	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	19/09/2020	21/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Restriction Estimated Start of Impact	10/03/2020	22/03/2020	25/03/2020	03/04/2020	06/04/2020	11/05/2020	25/05/2020	07/06/2020	18/06/2020	09/07/2020	23/07/2020	31/07/2020	18/08/2020	29/08/2020	31/08/2020	10/09/2020	29/09/2020	01/10/2020	06/10/2020	17/10/2020	26/10/2020		01/11/2020
Avg daily change in 14 day incidence rate per 100k	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Construction Opened	Mandatory PLF	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown lifted for Laois, Offaly, extended for Kildare	Schools + childcare opened	Level 3 Dublin	Wet Bars * Opened except Dublin	Level 3 Donegal	** Level 3 National	** Level 3 Max National	Level 4 Donegal, Cavan, Monaghan	** Level 5 National (to 22 Nov)
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-9
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-21
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-6
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-9
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	1			0	-4
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	4				-6		-5
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-10
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-6
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-7
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-2
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		8	-7		-7
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-1
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-3
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-6
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-4
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-7
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-15
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-7
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		2	-10		-2
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-3
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-12
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-2
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-2
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-13
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-6
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-1

Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. Measures the average daily change in the 14 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

Note:

The outputs should be seen as directionally useful, rather than precise statistical outputs

* The reopening of wet bars coincided with universities opening together with specific sporting events

** Care required when interpreting restriction changes in quick succession. Specifically. the more recent restriction changes (Level 3, Level 3 Max and Level 5) happened within a 15 day period

The absolute number of weekly tests has significantly increased since Wave 1

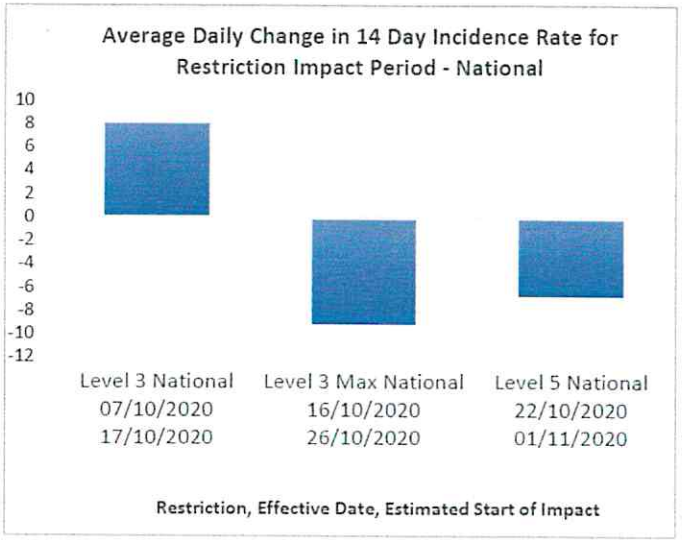
This analysis does not also consider potential behavioural changes beyond the restrictions

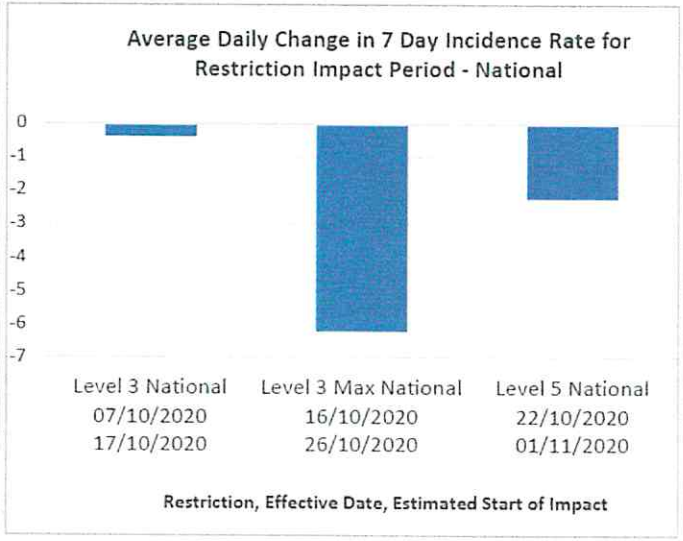
The introduction of Level 3 Max and Level 5 both coincide with a reduction incidence rates

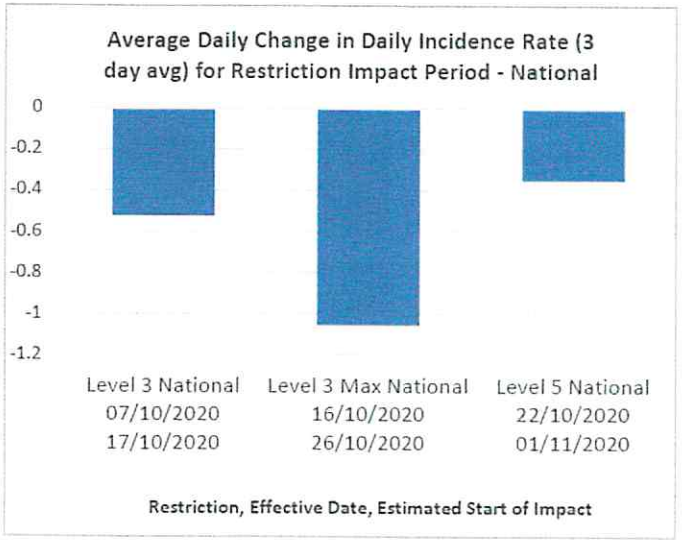
The 14 day incidence rate per 100k did not reduce for all but four counties with the introduction of Level 3. However, it did start to reduce with the introduction of further household restrictions (Level 3 Max) and then Level 5.

These three restriction changes happened within a 15 day period, with Level 3 Max was only active for 6 days.

For completeness, this analysis has also been repeated for a 7 day and a daily incidence rate average over three days. All three are shown below and follow similar, albeit reduced, patterns.







Note:

- Care required when interpreting restriction changes in quick succession. This analysis does not also consider potential behavioural changes beyond the restrictions
- Each measure in the above three graphs quantify the impact over a different time period; 14 days, 7 days and 1 day respective. Hence, it is expected that the size of their impact is different. That is also why they are shown to different scales on the y axis
- National measure excludes Dublin, Donegal, Cavan and Monaghan as they were under different restriction changes
- The Level 5 reductions should be seen as additive to the reduction in Level 3 Max

Cavan's three LEAs follow a different path. One is being driven by outbreaks, one impacted by the border and one more aligned with the national trend

Cavan profile:

- Cavan has experienced a higher 14 day disease incidence rate per 100k during the second wave than the national average
- Part of Cavan borders with NI where different restrictions are in place

Summary analysis:

- Cavan-Belturbet LEA is the only part of Cavan with a NI border. This LEA is experiencing a higher disease incidence than the national average
- Ballyjamesduff LEA had the highest incidence rate throughout October. The timing of the acceleration of growth rate in this LEA appears to correlate with the GAA county final (winners are in this LEA)
- Levels of private house outbreaks rose during September and October
- [redacted]
- Travel along the N03 between Belturbet and George Mitchell Bridge at the NI Border fell 33% during October (Source TII Road Travel data)

Restriction impact:

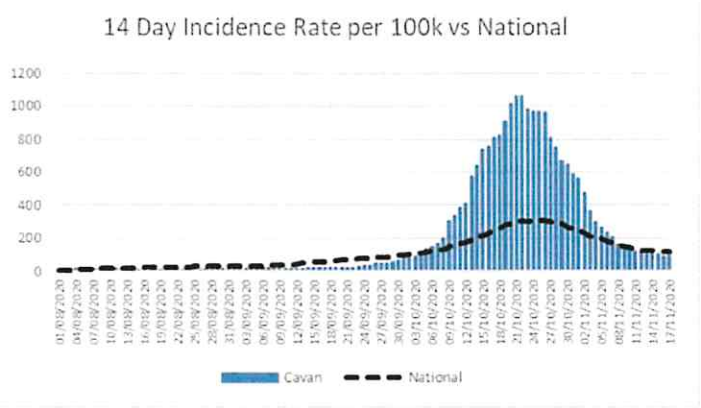
- The timing of the growth of cases appears to correlate with the events listed above and changes to restrictions in wet pubs
- Level 4 restrictions imposed for the border counties appears to have desired impact of reducing incidence level in Cavan
- Level 5 restrictions continue to drive incidence level further

Employment Summary:

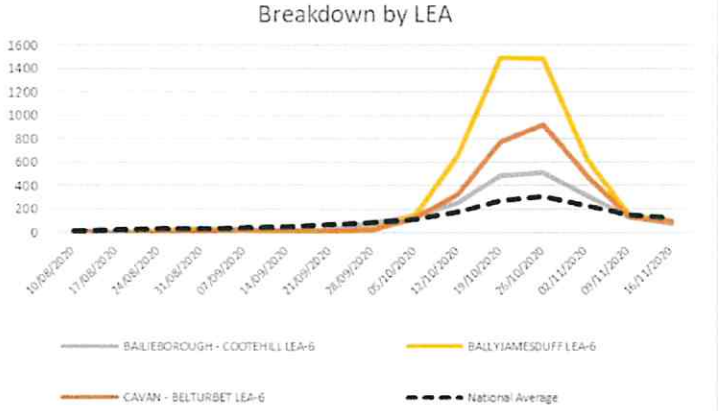
- Cavan had c.47% of its workforce on PUP or TWSS (c.15k) at the peak in early May (EY 2019 employment estimates). There are currently 4.7k on PUP (17 Nov) which is down from 9.7k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
1,272

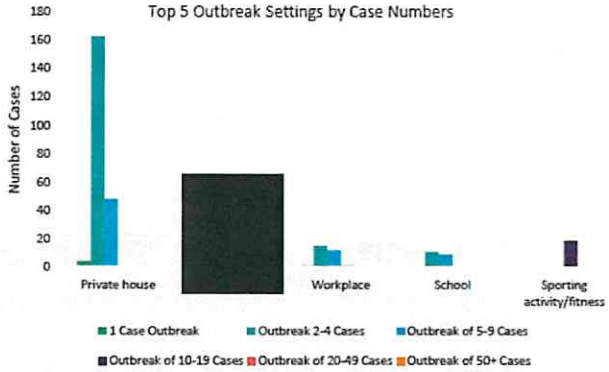
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
32%	3.6

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	215	72
[redacted]	[redacted]	[redacted]
Workplace	29	12
School	20	7
Sporting activity/fitness	19	1

Notable Outbreaks

Outbreak Setting	No. of Cases
[redacted]	[redacted]
Sporting activity/fitness	19
Community outbreak	16
[redacted]	[redacted]
Private house	7



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Meath is seeing a higher incidence rate than the national average. This is influenced by proximity to Dublin and specific outbreak events

Meath profile:

- Meath has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Dublin borders including a significant commuter population

Summary analysis:

- Level of private house outbreaks during September and October grew
- Continued outbreaks in nursing homes, one significant outbreak of 51 cases [redacted]
- One significant community outbreak of 29 cases
- Ratoath LEA has the highest incidence rate. The timing of this acceleration of growth rate appears to correlate with GAA county final win (Source: GAA.ie)

Restriction impact:

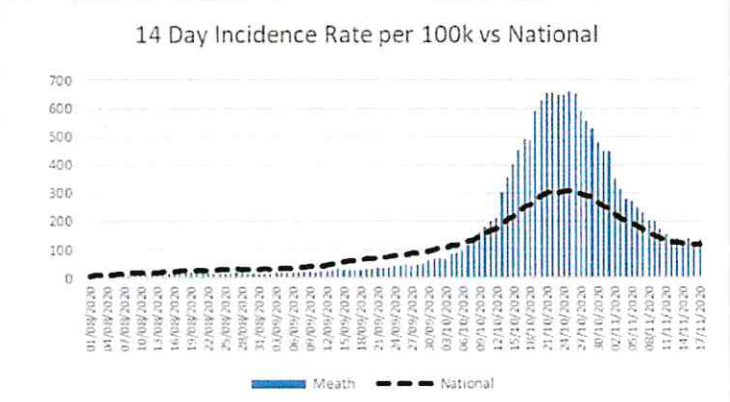
- The timing of the growth of cases appears to correlate with the events listed above and the changes to restrictions in wet pubs
- Incidence level continued to rise post initial Level 3 restrictions imposed nationally
- Level 3 (max) restrictions imposed nationally appear to have desired impact of reducing incidence levels
- Level 5 restrictions continue to drive incidence level down further

Employment summary:

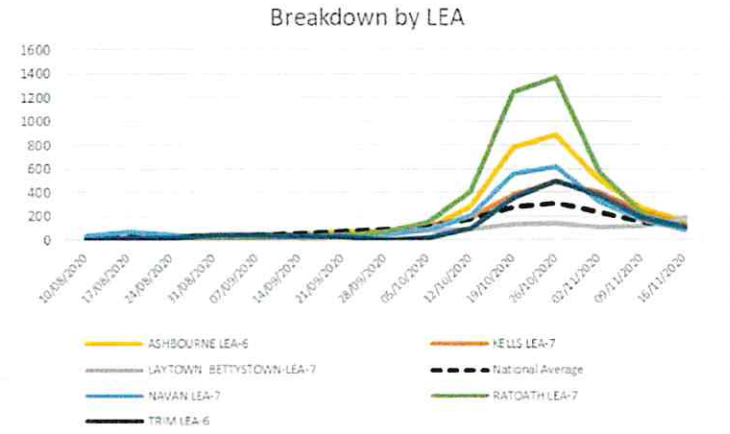
- Meath had c.42% of its workforce on PUP or TWSS (c.40k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (13k versus 25k) levels (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,466

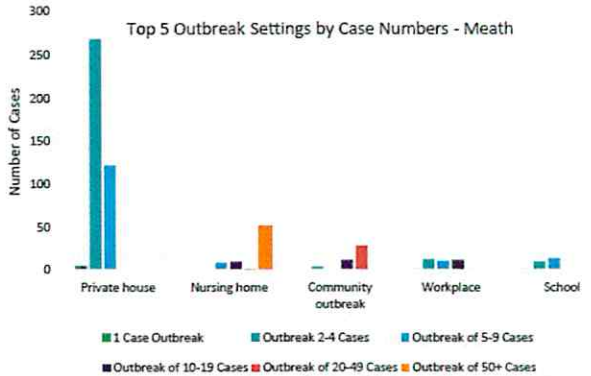
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
27%	3.3

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	397	121
Nursing home	74	9
Community outbreak	45	4
Workplace	38	18
School	25	10

Notable Outbreaks

Outbreak Setting	No. of Cases
Nursing home	51
Community outbreak	29
Community outbreak	12
Workplace	11
Nursing home	10



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) [HPSC]

The border is contributing to Donegal's higher rate of cases. Donegal is not seeing the benefit of recent Level 4 increases seen in other border counties

Donegal profile:

- Donegal has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- Disease incidence higher and earlier versus national average, and reducing at a slower rate
- Eastern Donegal borders with NI where different restrictions are in place

Summary analysis:

- Lifford and Stranolar LEA close to the NI border with Derry, experienced an earlier and higher disease incidence
- Other eastern parts of Donegal (Buncrana, Letterkenny and Carndonagh) have the next highest incidence rates
- A large hospital outbreak in [redacted] resulted in 99 cases in [redacted] (Source: Donegal Daily)
- Private Household attributable to 67% of outbreaks in the county from September to October, but only 30% in November

Restriction impact:

- Disease incidence continued to rise after level 3 Donegal announcement
- Specific restrictions in NI (1/10) on pubs and restaurants appeared to have helped reduce rate in Donegal
- Despite level 3 max and level 5 being effective in other counties, cases in Donegal fell at a lower rate compared to national levels
- Similarly, Level 4 reduced the cases in Monaghan and Cavan, but not Donegal. Mask compliance in Donegal also reduced (against national and previous Donegal trend) with Level 4 restrictions (Facebook survey data)

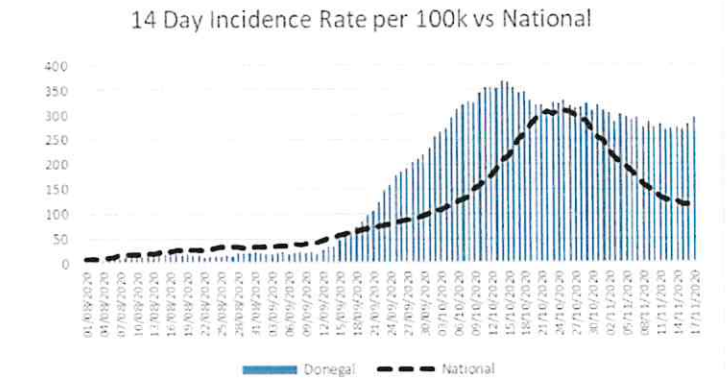
Employment summary:

- Donegal had c.49% of its workforce on PUP or TWSS (c 30k) at the peak in early May (EY 2019 employment estimates). The numbers currently on PUP (17 Nov) remain lower than peak (12k versus 23k) (CSO, DSP)

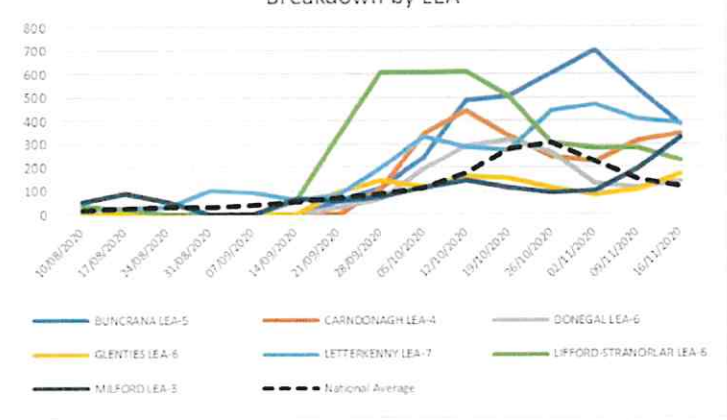
Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

The Facebook survey is a voluntary survey, managed by the University of Maryland. The mask question reads "In the last 7 days, how often did you wear a mask in public?".



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,165

% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
62%	3.9

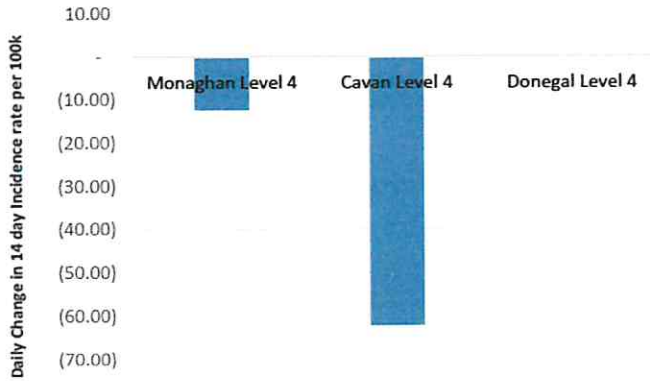
Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	651	235
Workplace	159	28
Hospital	126	5
Extended family	118	19
Nursing home	58	5

Notable Outbreaks

Outbreak Setting	No. of Cases
Hospital	99
Workplace	55
Nursing home	49
Social gathering	20
Hospital	17

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.



Cork is broadly aligned with the national trend. Cork City is driving up the incidence rates across the county

Cork profile:

- Cork is broadly aligned with the national average for the 14 day disease incidence rate per 100k during second wave

Summary analysis:

- Cork City is the most impacted area, with the rest of the county following with a reduced incident rate
- Cases in Cork City South Central, the LEA containing UCC (started returning on 21 Sept), were twice as high as other LEAs in Cork city during mid October. This gap declines in November as the universities went online

Restriction impact:

- Cases in Cork city rose as wet pubs reopened (21 Sept). Cases around the rest of the county followed shortly after
- There were a number of GAA games in early October, which were linked with outbreaks. No matches occurred after this, with level 3 restrictions being applied around this time (6 Oct). Cases throughout Cork began to fall 10 days later

Employment summary:

- At peak, c 39% of Cork's workforce were on PUP or TWSS (c 96k) (EY 2019 employment estimates). Current PUP levels (17 Nov) are lower than the previous peak (35k versus 62k in May) (CSO, DSP)

Notes

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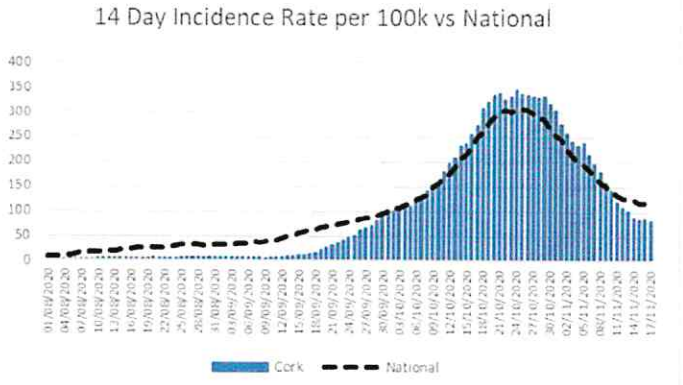


Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

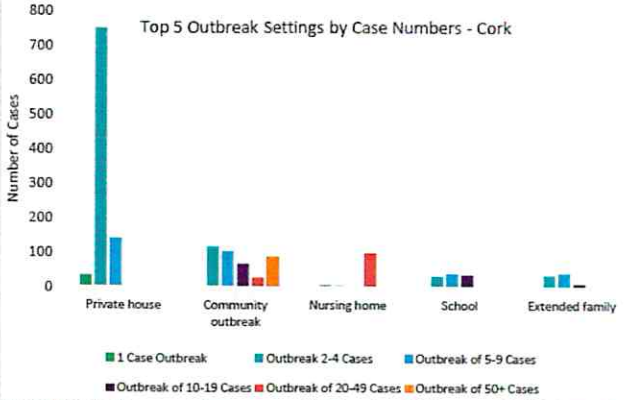
Cases	
4,492	
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	3.7

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	929	354
Community outbreak	411	67
Nursing home	114	9
School	113	24
Extended family	90	22

Notable Outbreaks

Outbreak Setting	No. of Cases
Community outbreak	68
Nursing home	46
Restaurant / Cafe	38
Nursing home	30
Community outbreak	29



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Galway rose above the national average during the second wave, driven by Galway City Central and Connemara South LEAs

Galway profile:

- Galway experienced a higher 14 day disease incidence rate per 100k during second wave than the national average
- It has now come back down below national average levels since early November

Summary analysis:

- Galway City Central, Connemara South and Galway City East have had the highest 14-day incidence rates throughout October
- A number of key events occurred in late September which could have contributed to this increase
- Cases within Galway City Central LEA appear to have increased in this period following students returning to NUIG from 21 September
- GAA senior championship football semi-finals and finals also occurred in the last week of September and first week of October. Connemara South had a confirmed outbreak in mid-October
- Throughout November, private household cases were responsible for 49% of outbreak cases, with [redacted] and community outbreaks making up a large proportion of the remaining percentage

Restriction impact:

- Cases begin to decline ten days after the national level 3 lockdown came into effect (17/10), falling below national levels in November
- An exception to this is Gort-Kinvara, which saw cases continue to rise into early November

Employment summary:

- Galway had c.39% of its workforce on PUP or TWSS (c.49k) at the peak in early May (EY 2019 employment estimates). There are currently 19.5k on PUP (17 Nov) which is down from 32.5k in May (CSO, DSP)

Notes

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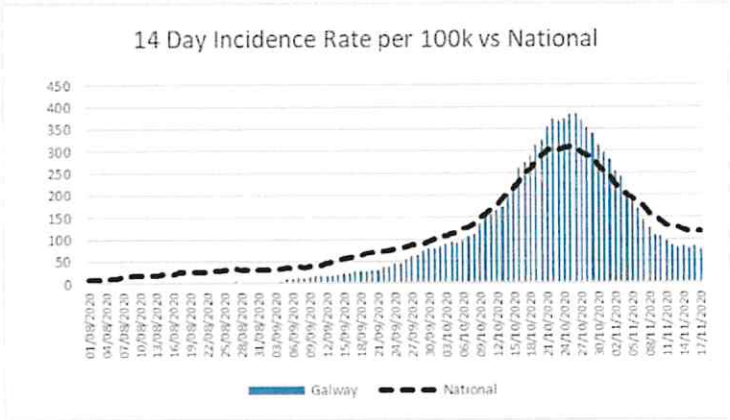

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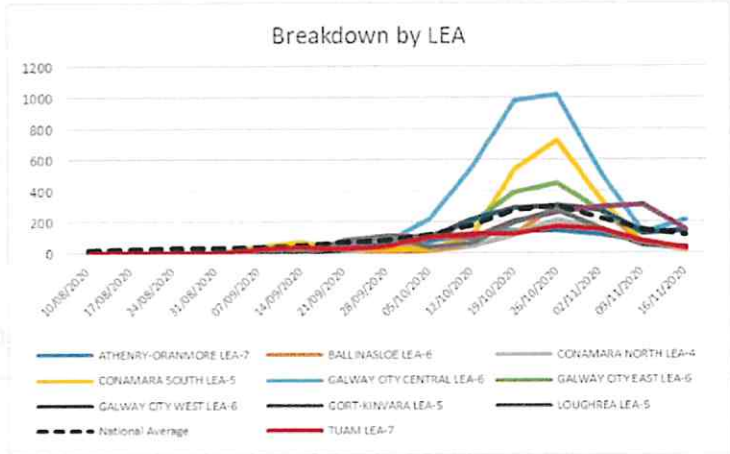


Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
2,060

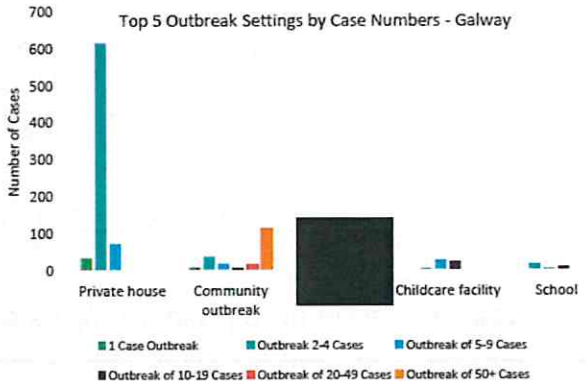
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
66%	3.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	723	293
Community outbreak	207	30
[redacted]	[redacted]	[redacted]
Childcare facility	61	8
School	37	11

Notable Outbreaks

Outbreak Setting	No. of Cases
Community outbreak	114
[redacted]	[redacted]
[redacted]	[redacted]
Social gathering	20
Community outbreak	18



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Dublin – local authority breakdowns over time

The below heatmap shows the Dublin LEA 14 day incidence rate per 100k population since early August. Some areas are seeing higher incidence rates.

		10/08/2020	17/08/2020	24/08/2020	31/08/2020	07/09/2020	14/09/2020	21/09/2020	28/09/2020	05/10/2020	12/10/2020	19/10/2020	26/10/2020	02/11/2020	09/11/2020	16/11/2020
Dublin City	ARTANE-WHITEHALL LEA-6	15.6	13.7	33.2	35.2	64.5	88	107.5	140.7	170.1	271.7	383.1	377.3	265.9	177.9	111.4
	BALLYFERMOT-DRIMNAGH LEA-5	3	3	32.6	43.4	60.8	112.9	165	184.5	245.3	310.4	321.3	332.1	277.9	191	143.3
	BALLYMUN-FINGLAS LEA-6	3	12.7	32.7	43.6	56.4	110.9	267.2	270.9	174.5	263.6	463.6	492.6	345.4	272.7	221.8
	CABRA GLASNEVIN LEA 7	13.6	22.2	30.7	44.3	52.9	85.2	126.2	134.7	146.6	191	252.3	264.3	185.8	160.3	138.1
	CLONTARF LEA-6	3	9.2	57.2	60.9	38.8	83.1	140.3	153.2	134.7	107	138.4	169.8	142.1	114.4	73.8
	DONAGHMEDE LEA-5	16.8	12	21.6	31.3	40.9	57.7	134.6	173.1	163.5	151.5	163.5	233.2	240.4	170.7	89
	KIMMAGE-RATHMINES LEA-6	3	21.5	35.8	50.1	75.2	111	162.9	282.8	306.1	250.6	245.3	211.2	223.8	188	123.5
	NORTH INNER CITY LEA-7	22	28.3	40.9	50.3	62.9	92.7	130.5	179.2	221.7	213.8	205.9	238.9	205.9	121	84.9
	PEMBROKE LEA-5	15.4	22	13.2	33	70.4	74.8	57.2	57.2	81.4	116.6	189.1	173.7	90.2	88	59.4
	SOUTH EAST INNER CITY LEA-5	3	12.3	32	46.8	91.1	113.3	130.5	169.9	169.9	145.3	187.2	209.3	160.1	120.7	133
	SOUTH WEST INNER CITY LEA-5	3	16.5	40.1	101.5	146.4	151.1	196	188.9	151.1	184.2	233.8	240.9	177.1	151.1	186.6
Dun Laoghaire - Rathdown	BLACKROCK LEA-6	3	3	3	41.5	50.4	32.6	47.4	65.2	77.1	59.3	112.7	195.7	145.3	68.2	68.2
	DUN LAOGHAIRE LEA-7	3	3	33.6	64.9	60.1	57.7	72.1	88.9	124.9	103.3	88.9	110.5	100.9	76.9	72.1
	DUNDRUM LEA-7	3	3	3	29.4	69.4	58.7	50.7	88.1	125.5	114.8	101.5	112.1	96.1	66.8	80.1
	GLENCULLEN-SANDYFORD LEA-7	3	19.1	24.6	13.7	19.1	60.1	79.2	101	122.9	98.3	76.5	87.4	106.5	98.3	68.3
	KILLINEY-SHANKILL LEA-7	3	3	3	13.1	23.6	49.9	65.6	68.3	115.5	120.8	105	107.7	70.9	44.6	52.5
	STILLORGAN LEA-6	3	3	22.9	36.1	39.3	36.1	55.7	108.2	121.3	85.2	137.7	183.6	104.9	91.8	101.6
Fingal	BALBRIGGAN LEA-5	3	19.1	16.4	52	123.1	155.9	172.3	134	76.6	95.7	158.6	191.4	227	183.2	109.4
	BLANCHARDSTOWN-MULHUDDART LEA-5	3	25.5	76.5	93.5	138.8	169.9	124.6	136	175.6	229.4	351.2	402.2	371	266.2	147.3
	CASTLEKNOCK LEA-6	10.8	43.4	54.2	43.4	95.4	110.6	104.1	125.7	143.1	162.6	253.7	297	199.5	130.1	114.9
	HOWTH-MALAHIDE LEA-7	23.2	30.3	26.7	19.6	41	65.9	110.4	147.8	153.2	165.7	204.8	235.1	217.3	163.9	92.6
	ONGAR LEA-5	3	3	36.3	67	80.9	106	147.9	175.8	223.3	256.7	281.9	307	245.6	150.7	134
	RUSH-LUSK LEA-5	3	20.2	31.7	28.8	75	86.5	98.1	150	115.4	83.6	158.6	187.5	190.3	144.2	43.3
	SWORDS LEA-7	3	27.3	33.1	31.1	85.7	109	89.5	169.4	200.5	194.7	245.3	295.9	371.8	288.1	140.2
South Dublin	CLONDALKIN LEA-7	30.1	19.3	53.7	81.7	68.8	70.9	152.6	197.8	184.9	242.9	367.6	384.8	285.9	212.8	180.6
	FIRHOUSE-BOHERNABREENA LEA-5	20.5	17.5	43.9	73.1	67.2	55.6	73.1	78.9	99.4	181.3	242.7	231	190	122.8	102.3
	LUCAN LEA-5	3	3	38.9	62.8	80.8	83.8	71.8	137.6	188.5	227.4	341.1	380	278.3	134.6	122.7
	PALMERSTOWN-FONTHILL LEA-5	3	23.7	65.7	107.8	94.6	84.1	142	184	123.6	194.6	386.5	331.3	260.3	226.1	165.6
	RATHFARNHAM-TEMPLEOGUE LEA-7	3	3	12.5	35.5	48	75.1	127.3	160.7	146.1	133.6	181.6	196.2	160.7	112.7	112.7
	TALLAGHT CENTRAL LEA-6	3	20.8	41.7	53.2	85.6	157.4	166.6	136.5	138.8	145.8	182.8	224.5	231.4	168.9	134.2
	TALLAGHT SOUTH LEA-5	36.7	28.2	36.7	93	124.1	124.1	166.4	183.3	160.7	203	290.4	267.9	279.1	304.5	251

There appears to be a correlation between areas hit hard in Wave 1 and Wave 2 (acknowledging differences in testing criteria), with areas hit hard across both waves including areas such as Blanchardstown-Mulhuddart, Ongar, Lucan, Clondalkin and Artane-Whitehall.

Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

Dublin includes over a quarter of Ireland's population. It therefore includes many stories and strongly aligns with national case levels

Dublin profile:

- Not surprisingly, Dublin's 14 day disease incidence rate per 100k during second wave is in line with the national average
- Significant differences exists within each of the four county council areas of Dublin with Dún Laoghaire–Rathdown seeing lower overall incidence

Summary analysis:

- Highest incidence rates in areas such as Lucan, Ballymun and Swords. Largest outbreaks also focused in the corresponding CCAs; Dublin North, Dublin North West, Dublin North Central
- Tallaght South is the only LEA within Dublin where cases have continued to climb in November

Restriction analysis:

- Cases in Dublin took longer to decline after Level 3, indicating Level 5 was needed here to control cases
- Not opening the wet pubs does appear to have helped Dublin with the subsequent increase in cases being slower than the national average

Employment summary:

- At peak, Dublin had c.40% of workers on either PUP or TWSS (c. 270k) (EY 2019 employment estimates). Current PUP levels are at 114k (17 Nov) , compared to a peak of 176k in May (CSO, DSP)

Notes

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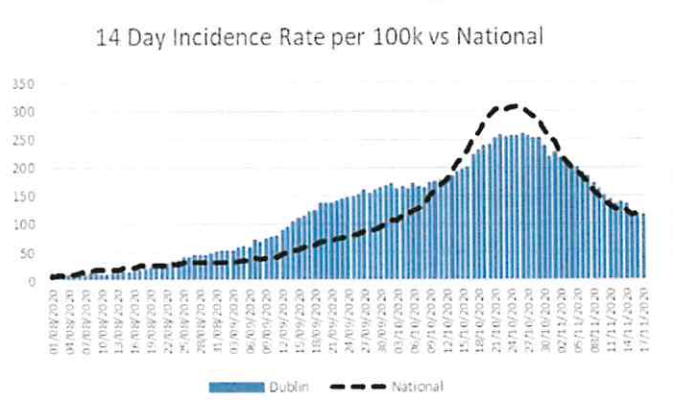

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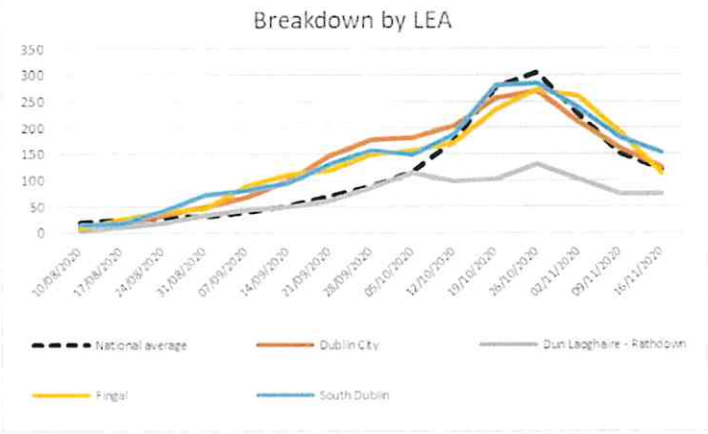

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CIDR Data: 1st of September to 19th of November

Cases
12,606

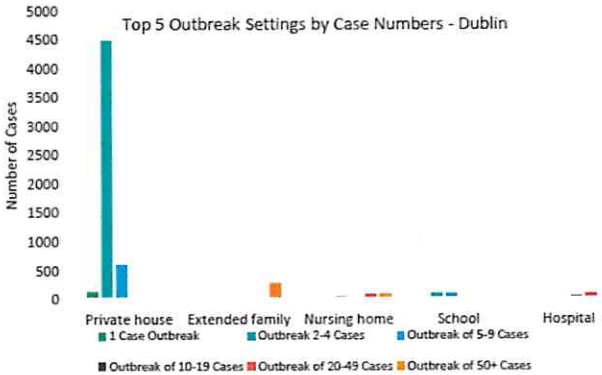
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
56%	2.9

Top 5 Outbreak Settings

Outbreak Settings	No. of Outbreaks
Private house	2075
Extended family	3
Nursing home	27
School	66
Hospital	30

Notable Outbreaks

Outbreak Setting	No. of Cases
Extended family	288
Nursing home	75
Hotel	38
Childcare facility	38
Residential institution	30



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Cases in Limerick during Sept and Oct were driven by very large extended family and community outbreaks

Limerick profile:

- Limerick has experienced a higher 14 day disease incidence rate per 100k during second wave than the national average.
- This is a result of the cases in Limerick not declining to the same extend in the rest of the country

Summary analysis:

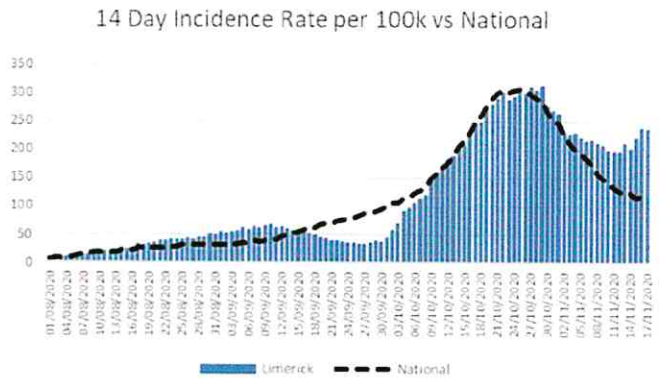
- Two southernmost LEAs were hardest hit at different points; Adare-Rathkeale during October, then Newcastle West in November.
- Limerick City East was the worst performing area within Limerick City, and within the county on 2nd November
- No region performs notably better than others – the remaining LEAs each exceed an incidence rate of 200 cases per 100k population

Employment summary:

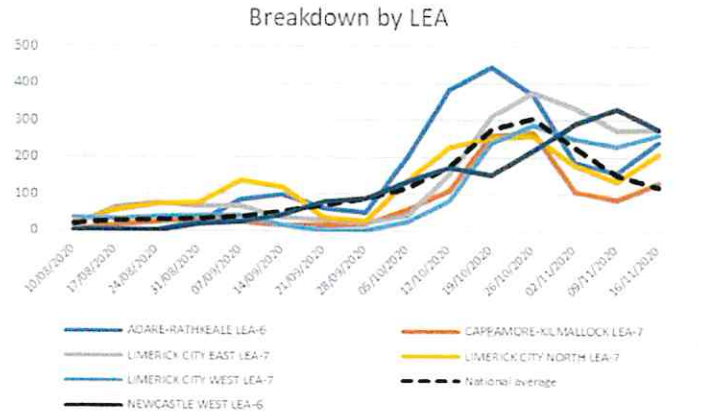
- Limerick had c.43% of its workforce on PUP or TWSS (c.34k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
1,771

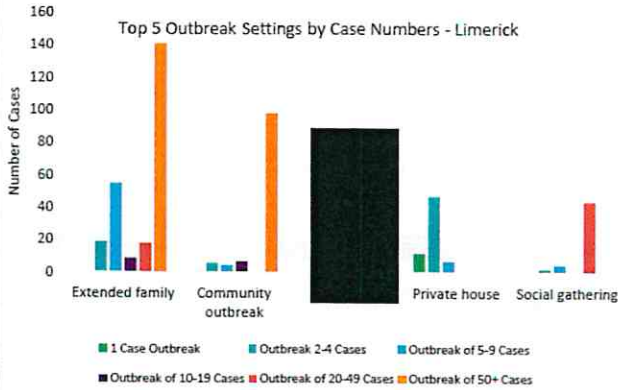
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
39%	6.4

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Extended family	242	19
Community outbreak	117	8
[redacted]	[redacted]	[redacted]
Private house	66	34
Social gathering	51	5

Notable Outbreaks

Outbreak Setting	No. of Cases
Extended family	141
Community outbreak	94
[redacted]	[redacted]
Residential institution	31
Social gathering	25



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Kerry is seeing lower cases than the national average, with Listowel bordering Limerick having the highest number of recent cases

Kerry profile:

- Kerry has experienced a similar 14 day disease incidence rate per 100k during second wave to the national average. However, Listowel LEA has seen a sharp increase in its rate since early October

Summary analysis:

- North Kerry (Listowel) is most severely affected. This coincides with outbreaks southern parts of Limerick such as Newcastle West and Adare-Rathkeale, as well as Limerick city
- Killarney and Tralee LEAs are both next in terms of severity of impact, containing two major Kerry towns
- The remainder of the county (further south, smaller towns) is generally less affected
- [redacted]
- Private homes account for 33.68% of all outbreak cases since Sept 1st
- Listowel's incidence levels were three times higher than the next worst-afflicted LEA. Note the small population of ~29,000 people meant 182 cases over a 2-week period prior to 26 Oct created a very high incidence rate

Restriction impact:

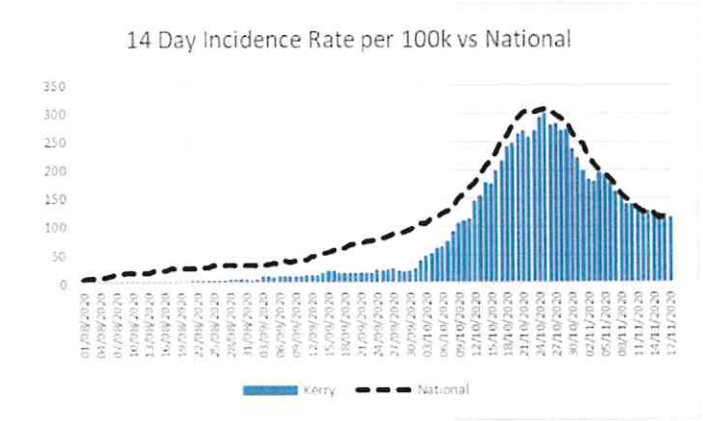
- The number of cases in Kerry started to grow around the time level 3 was introduced – two weeks later, this high growth rate had largely ceased
- Improvements have levelled off somewhat across LEAs such as Tralee, Killarney and Listowel

Employment summary:

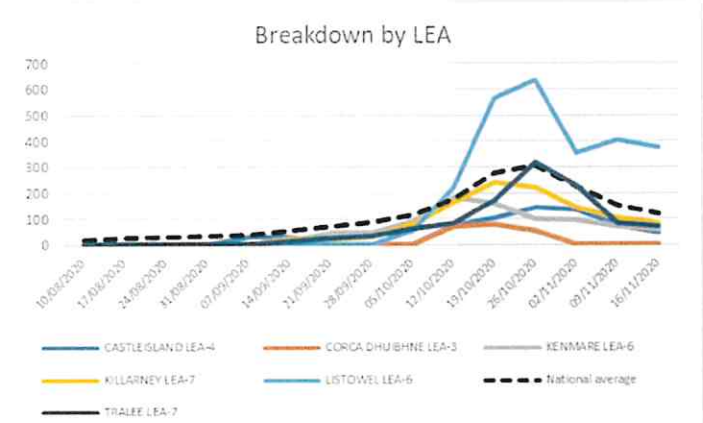
- Kerry had c.49% of its workforce on PUP or TWSS (c.32k) at the peak in early May (EY 2019 employment estimates). There are currently 14k on PUP (17 Nov) which is down from 22k in May (CSO, DSP)

Notes

The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration



Source: Based on daily cumulative case data published on GeoHive to 17 November 2020. This data is published daily.



Source: Based on weekly OpenHive data to 16 November 2020, Government Open Data initiative. This data is published weekly.

CIDR Data: 1st of September to 19th of November

Cases
963

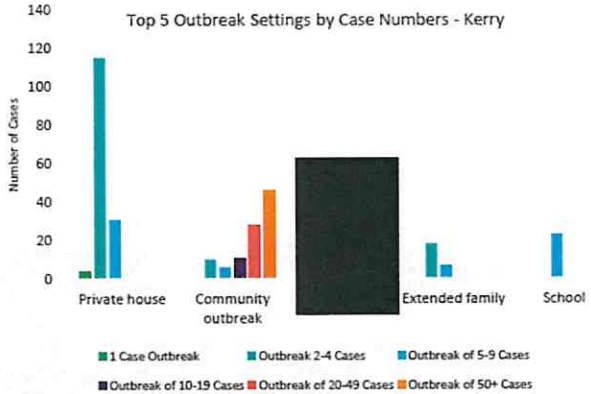
% of Cases Linked to Outbreak	Avg. Cases Per Outbreak
45%	4.1

Top 5 Outbreak Settings

Outbreak Settings	No. of Cases	No. of Outbreaks
Private house	150	53
Community outbreak	101	14
[redacted]	[redacted]	[redacted]
Extended family	25	7
School	23	4

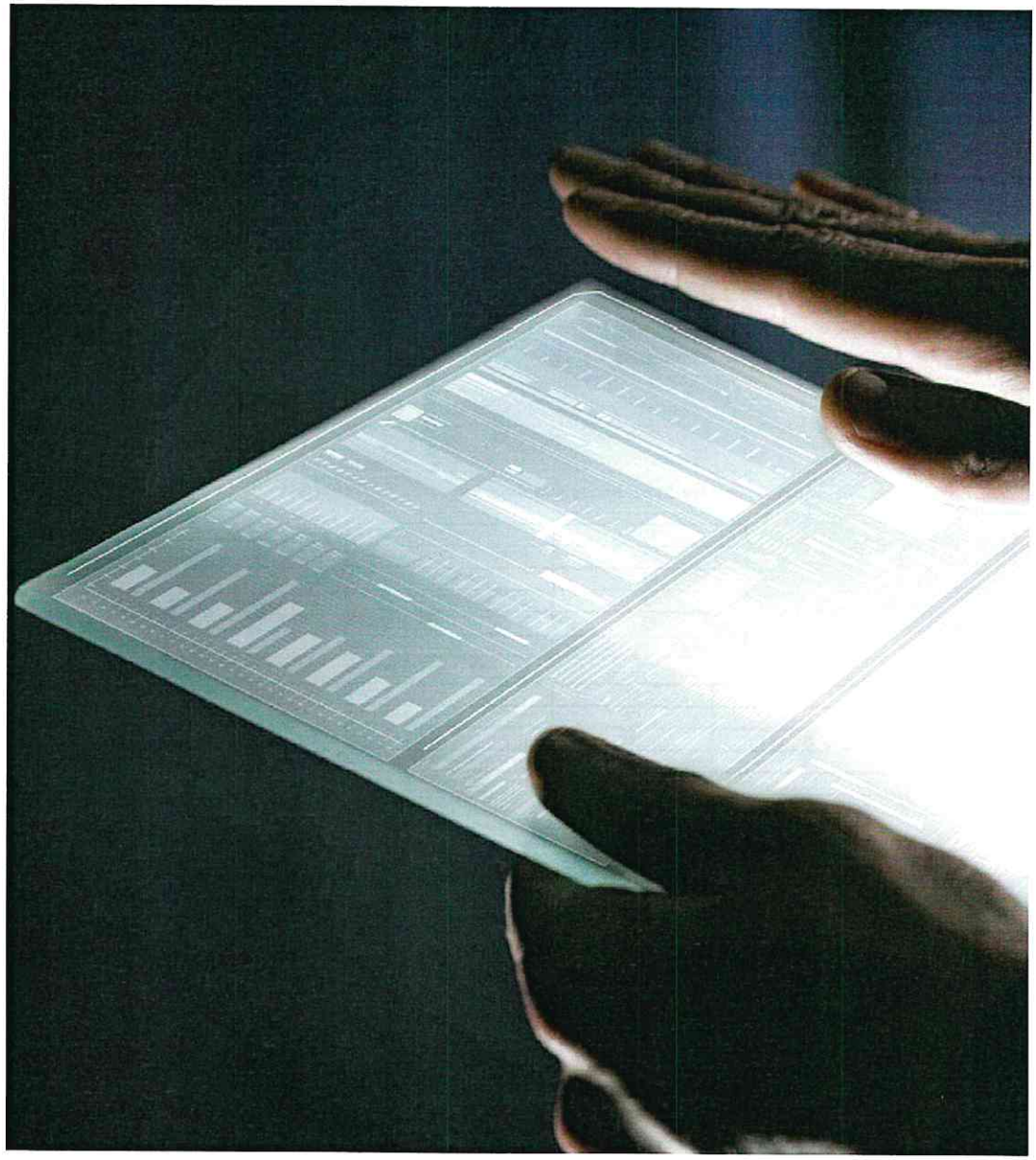
Notable Outbreaks

Outbreak Setting	No. of Cases
[redacted]	[redacted]
Community outbreak	43
Community outbreak	25
Religious/Other ceremony	11
Restaurant / Cafe	11



Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 19/11/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. An outbreak is defined as a cluster/outbreak, with two or more cases of laboratory confirmed COVID-19 infection regardless of symptom status. This includes cases with symptoms and cases who are asymptomatic OR a cluster/outbreak, with one laboratory confirmed case of COVID-19, and at least one additional case of illness with symptoms consistent with COVID-19 infection (as per the COVID-19 case definition) (HPSC)

Restrictions impact analysis



We have been looking to quantify restrictions in three ways

Ireland restriction analysis

A detailed analysis of restriction measures and impacts on incidence rates across the 26 counties – highlighting the most and least effective restrictions based on changes to incidence rates over an extended period. Expanded to include university opening and NI restrictions for border counties and presented today

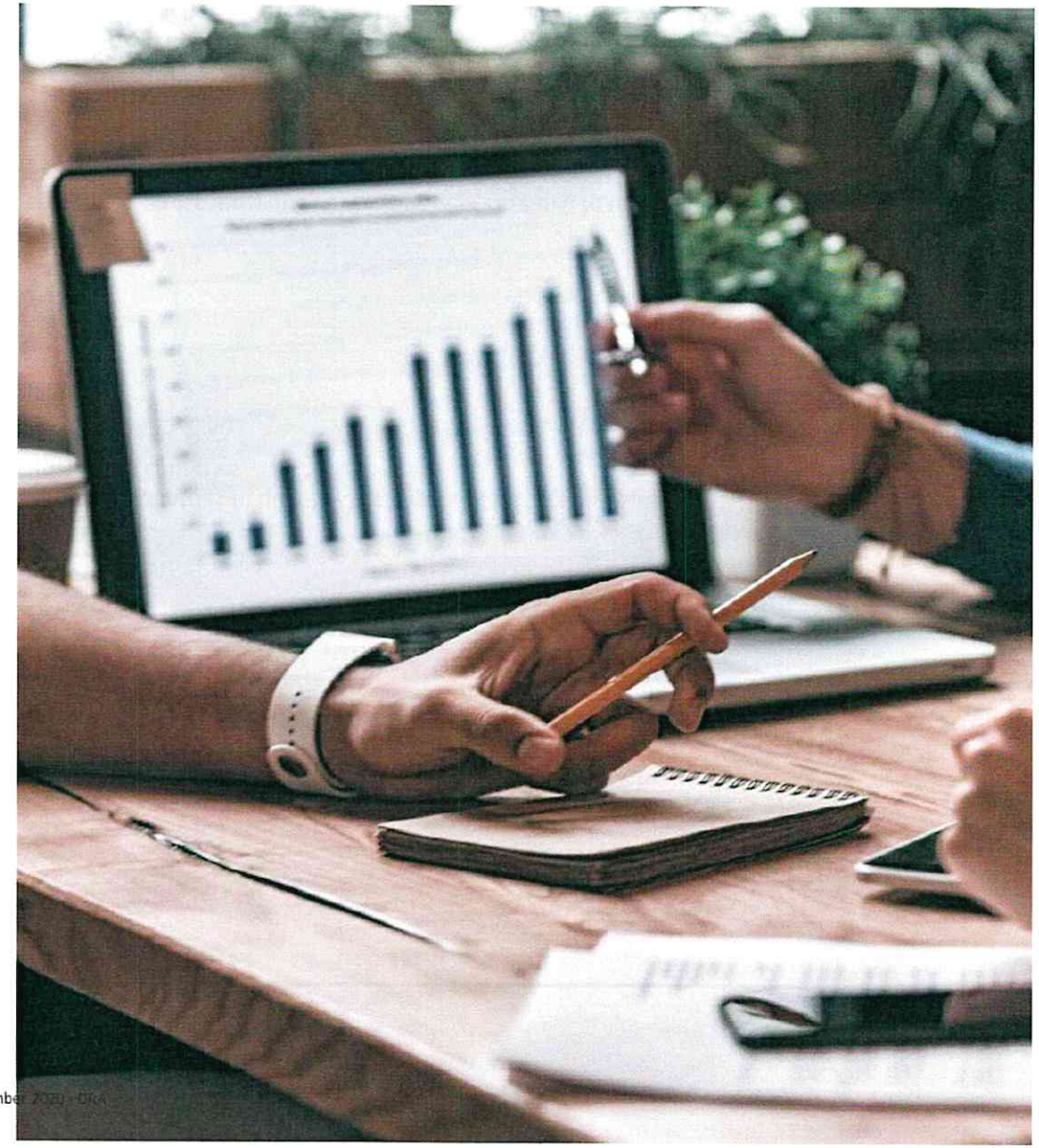
International restriction analysis

A detailed analysis of restriction measures and impacts across EU peer countries to quantify the impact of restrictions post-implementation. Currently completing detailed analysis for initial 10 EU countries

International desktop research

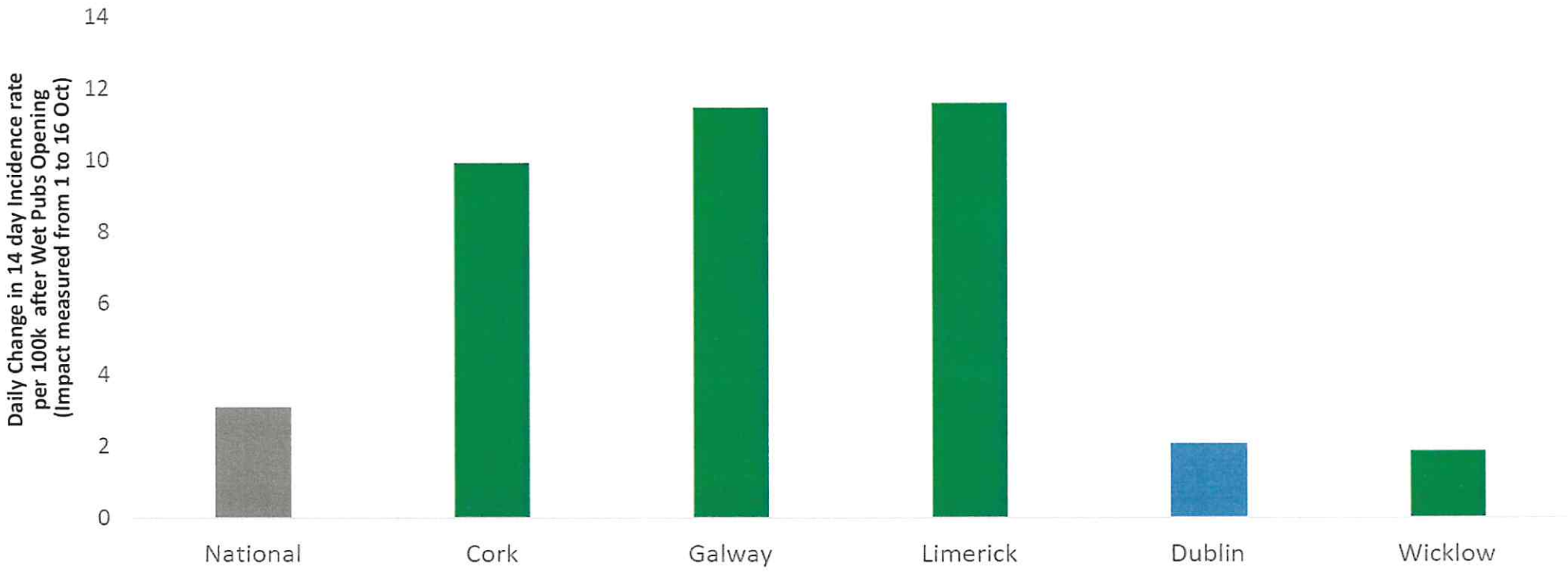
Desktop research was undertaken looking at the impacts of restrictions across the world, leveraging peer research to understand risk of certain settings and restrictions. Key points summarized in regular COVID-19 insights publication and with new research included today

Ireland – restrictions analysis



Wet Pubs opened across the country, but not Dublin, on 21 September. The increase in Dublin's incidence rate was then lower than the national average and for larger counties

Wet pubs opened in all counties except Dublin in late September. This coincided with universities opening together with specific sporting events. The 14 day disease incidence rate per 100k started to increase ten days later in every county. The subsequent incidence rate growth in Dublin was 33% lower than the national average and 79% to 82% lower than other counties with larger cities. Wicklow was the only county that performed better than Dublin, with a 10% lower growth rate than Dublin.



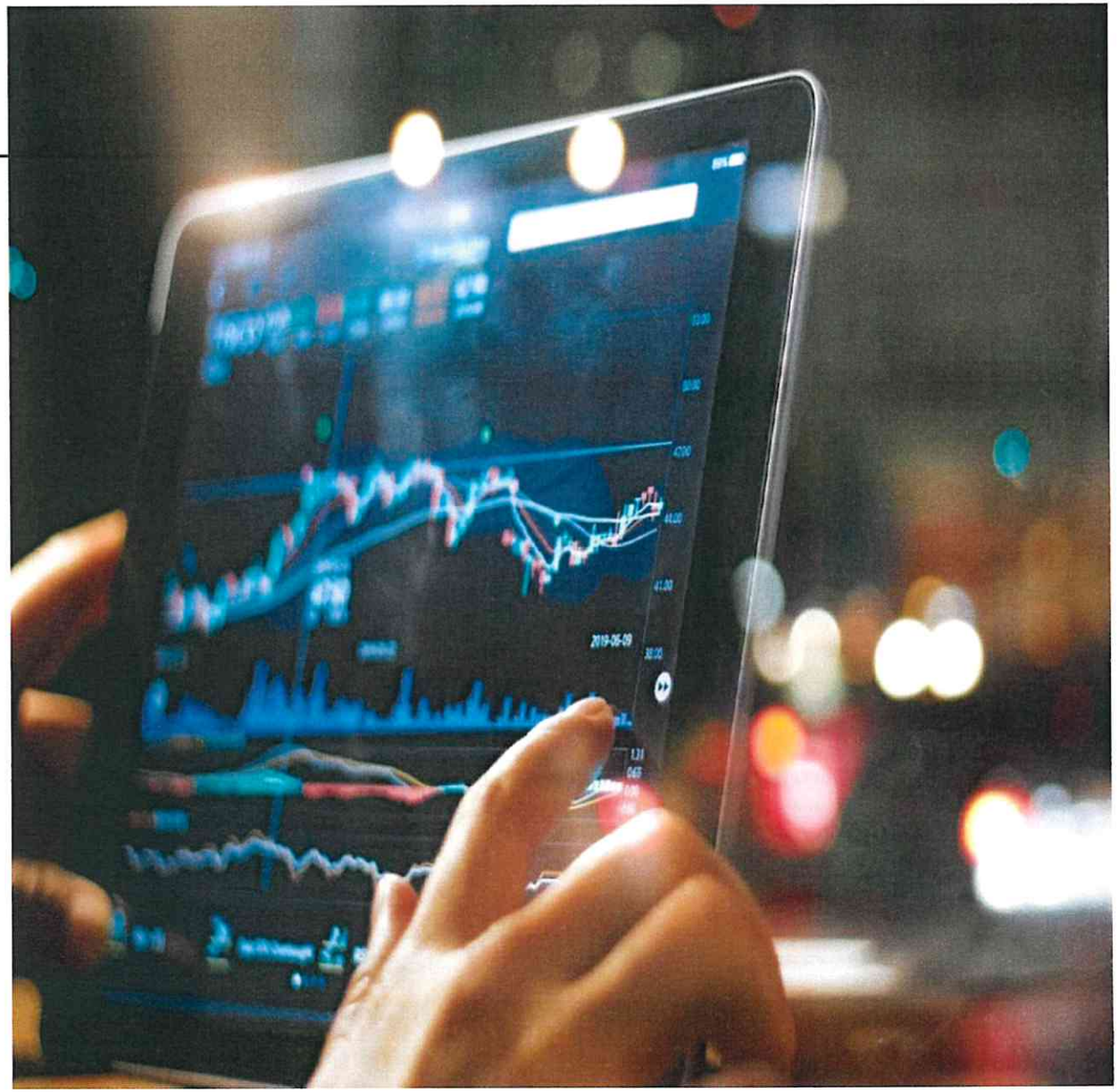
The incidence rate did not materially increase after the three phases of re-opening during late May to early July

The reopening of construction, non-essential retail and the wider Phase 3 openings did not appear to have a material impact on the cases nationally or in larger counties. Note that disease incidence rates were low at this time

Restriction Effective Date	29/02/2020	12/03/2020	15/03/2020	24/03/2020	27/03/2020	01/05/2020	15/05/2020	28/05/2020	08/06/2020	29/06/2020	13/07/2020	21/07/2020	08/08/2020	19/08/2020	21/08/2020	31/08/2020	19/09/2020	21/09/2020	26/09/2020	07/10/2020	16/10/2020		22/10/2020
Restriction Estimated Start of Impact	10/03/2020	22/03/2020	25/03/2020	03/04/2020	06/04/2020	11/05/2020	25/05/2020	07/06/2020	18/06/2020	09/07/2020	23/07/2020	31/07/2020	18/08/2020	29/08/2020	31/08/2020	10/09/2020	29/09/2020	01/10/2020	06/10/2020	17/10/2020	26/10/2020		01/11/2020
Avg daily change in 14 day incidence rate per 100k	No restrictions	Childcare closed, School Closed	Bars closed	Retail, restaurants etc closed	Stay at home order (2km)	Stay at home increased to 5km	Construction Opened	Mandatory PLF	Phase 2 reopening	Phase 3 reopening	Face masks on public transport	Green List	Lockdown Laois, Offaly Kildare	Face masks in shops	Lockdown lifted for Laois, Offaly, extended for Kildare	Schools + childcare opened	Level 3 Dublin	Wet Bars Opened except Dublin	Level 3 Donegal	Level 3 National	Level 3 Max National	Level 4 Donegal, Cavan, Monaghan	Level 5 National (to 22 Nov)
Carlow	0	0	1	-2	2	-5	1	-2	-1	0	0	2		-4		1		5		17	-7		-9
Cavan	0	0	8	18	0	-6	-3	-3	0	0	0	0		0		3		43		17		-62	-21
Clare	1	4	3	0	1	-4	2	-4	0	0	2	0		0		2		15		-5	-4		-6
Cork	2	2	3	-3	-1	1	-2	-1	0	0	0	0		0		4		10		7	-5		-9
Donegal	0	0	5	5	-2	-1	0	0	0	0	0	1		0		9		12	1			0	-4
Dublin	3	6	11	1	-2	-4	-3	-1	0	0	0	1		2		4	4				-6		-5
Galway	1	1	2	-2	0	0	-1	-1	0	0	0	0		1		3		11		12	-15		-10
Kerry	1	5	3	4	-1	0	0	0	0	0	0	0		1		0		11		9	-10		-6
Kildare	1	2	5	3	0	-4	-1	0	0	0	3	9	-7	-5	-2	1		8		7	-9		-7
Kilkenny	1	1	4	-3	-1	0	-3	0	0	0	0	1		0		0		6		3	-7		-2
Laois	1	0	1	0	0	-2	0	0	0	0	2	2	-2	-2	0	1		7		8	-7		-7
Leitrim	1	0	3	2	0	-1	-1	0	1	-1	0	0		4		-1		12		0	-17		-1
Limerick	1	1	5	-1	-1	-2	-1	0	0	0	1	1		2		-1		12		7	-5		-3
Longford	1	1	3	4	7	-20	-1	-1	0	0	0	0		2		2		6		5	-8		-6
Louth	1	1	3	1	0	-3	0	-1	0	0	0	1		1		2		7		12	-2		-4
Mayo	0	1	4	10	-1	-2	-2	0	0	0	0	0		0		1		7		12	-3		-7
Meath	1	2	3	8	0	-3	-1	0	0	0	0	0		1		2		24		19	-34		-15
Monaghan	0	0	3	17	0	-2	-2	-3	0	0	0	1		1		7		11		-3		-12	-7
Offaly	1	1	6	-2	2	2	-12	0	0	0	0	7	-9	-1	2	1		6		2	-10		-2
Roscommon	0	1	1	2	6	-14	0	-2	0	0	0	1		0		5		4		4	-10		-3
Sligo	1	0	3	-4	0	-2	0	0	2	-2	0	0		0		1		17		16	-14		-12
Tipperary	1	1	5	-1	1	-5	0	-1	0	0	0	3		-4		0		4		3	0		-2
Waterford	1	3	2	-3	-1	0	0	0	0	0	0	1		1		1		6		9	-4		-2
Westmeath	2	3	7	2	3	-13	-1	-1	0	0	0	0		1		1		12		18	-15		-13
Wexford	0	0	1	-1	0	-1	0	0	0	0	0	1		0		0		13		3	-16		-6
Wicklow	1	5	5	3	-1	-3	-1	0	0	0	-1	1		1		1		2		3	-5		-1

* Phase 3 re-opening included places of worship, gyms, cinemas, theatres, leisure facilities, personal services, sports, public transport 50% capacity & face coverings), mass gatherings (50 indoors, 200 outdoors), adult education and community facilities, health and well being related services, restaurants and cafes (on site food service), hotels and other accommodation facilities, driving schools and tests

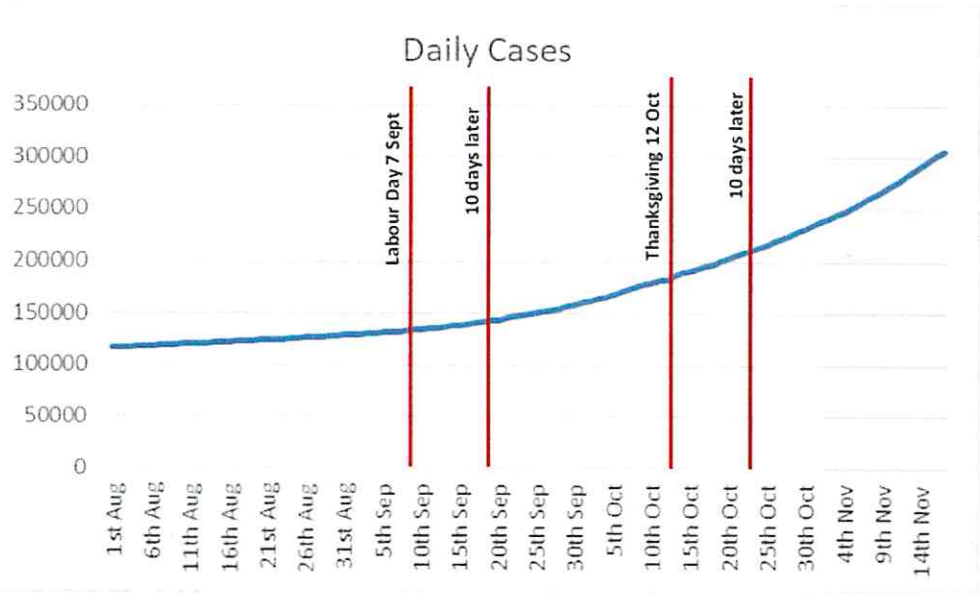
Select International Desktop Research



Canadian Thanksgiving: Testing & Tracing data and case numbers show an increase in confirmed cases post Canadian Thanksgiving on 12 October

Background

Canadian Thanksgiving took place on 12 October 2020. While Prime Minister Justin Trudeau made an informal request for Canadians to cancel gatherings to focus on 'having a shot at Christmas', post Thanksgiving saw an increase in cases with the highest rates since the first wave in Spring.



Key findings:

- Canada saw an increase in COVID-19 cases in the days and weeks that followed Thanksgiving, the highest rates since the first wave in the spring
- On October 12, the day Canada celebrated Thanksgiving, the country had recorded almost 183k total cases, according to data from the Canadian Government
- The number of total cases, which was already increasing, continued to climb; 4,109 new daily cases were recorded exactly two weeks later on 26 October. At this point, Canada's total number of cases had risen to around 220k
- Canadian Testing and Tracing records show that Thanksgiving gatherings directly resulted in the increase in incidence rates
- "Cases were indeed increasing already, but we definitely saw an increase in the rate of transmission after Thanksgiving." The percentage increase in cases increased after Thanksgiving, with a 14% increase in positive cases between 12 and 22 October
- Total number of positive cases has doubled from 155,000 on 28 September to over 310,000 on 18th November
- A similar increase is noticed on 17th September, 10 days after Canadian Labour day was celebrated

Source: https://health-infobase.canada.ca/covid-19/
https://www.thestar.com/news/canada/2020/09/23/wont-be-gathering-for-thanksgiving-trudeau-says-covid-19-second-wave-underway.html

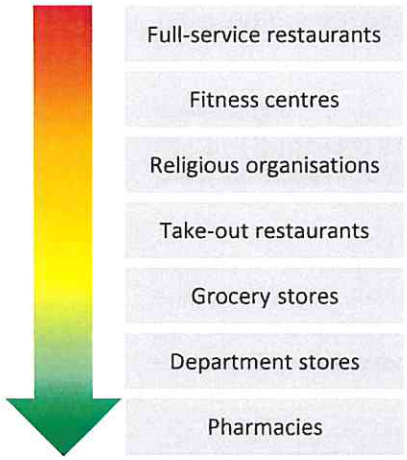
US research: Full-service restaurants, fitness centres and religious organisations generating highest risk of infection

Approach

Stanford University analysis of potential spread of C-19 in the 10 largest US metropolitan areas, using hourly mobility data across different points of interest (restaurants, gyms, stores etc.)

Calculates potential visits and infections over two months generated by the re-opening of certain locations.

POI categories ranked in decreasing order of associated additional infections that would occur if the location is opened



Results

- The Stanford Mobility Network Model Simulation concluded that on average across metro areas, reopening full-service restaurants, fitness centres and religious organisations produces the largest predicted increase in infections.
- Take-out restaurants, grocery stores, department stores and pharmacies resulted in low positivity rates.
- This pattern was seen in the 3 US cities studied.

Key findings

- The model calculates the additional cases that would occur if each location is opened, using the COVID_19 Mobility Modelling Simulation over time (between 1st March and 10th May) and the associated positivity rate of the population who visit the location.
- Small fraction of POIs accounted for majority of infections at POIs, e.g. 10% of POIs in Chicago accounted for 85% of infections at POIs and almost 60% of all cases. These riskier places come from multiple categories, but tend to have higher densities of visitors, and visitors who stay longer. Model predicts POIs are 70% of all infections.
- Restricting maximum occupancy at each location is more effective than uniformly reducing occupancy.
- Higher infection rates among disadvantaged racial and socioeconomic groups solely from differences in mobility. This aligns to Irish data where a higher proportion of C-19 cases have been attributed to disadvantaged areas (40% of cases versus 37% of population) (CSO, cases to 30/10).
- As seen in the Mobility Model, religious organisations led to high levels of cases in the US cities studied. However, it is important to note that the median church in the U.S. has 75 regular participants in worship on Sunday mornings. All but five states have congregations with more than 2,000 people in attendance on a Sunday morning. As of 2012, there were roughly 1,600 Protestant churches in the United States with a weekly attendance of 2,000 people or more.

Source: Mobility network models of COVID-19 explain inequities and inform reopening, Published November 2020, Stanford University: *COVID-19 Mobility Network Modeling*, http://covid-mobility.stanford.edu/
http://hirr.hartsem.edu/research/fastfacts/fast_facts.html

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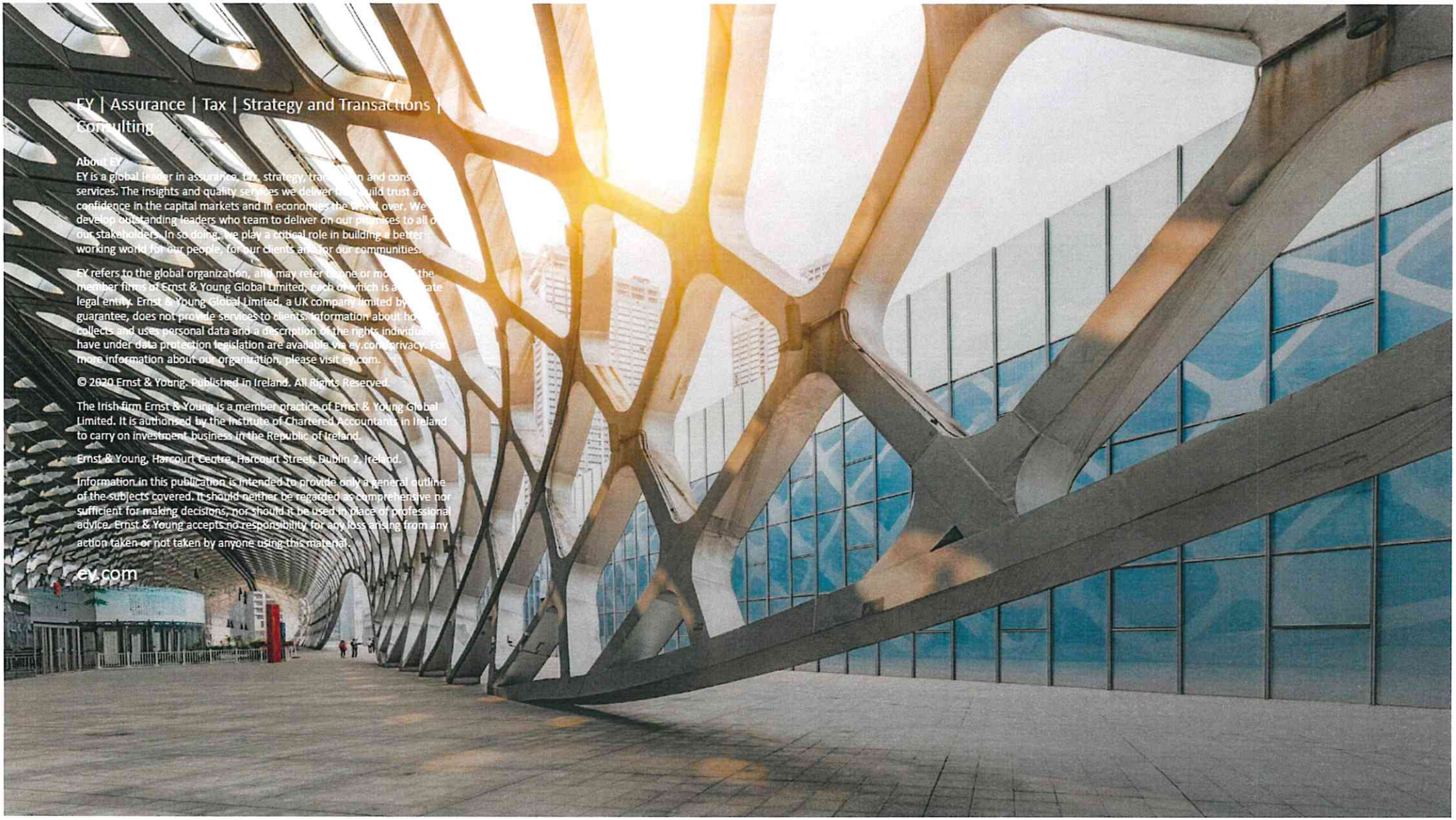

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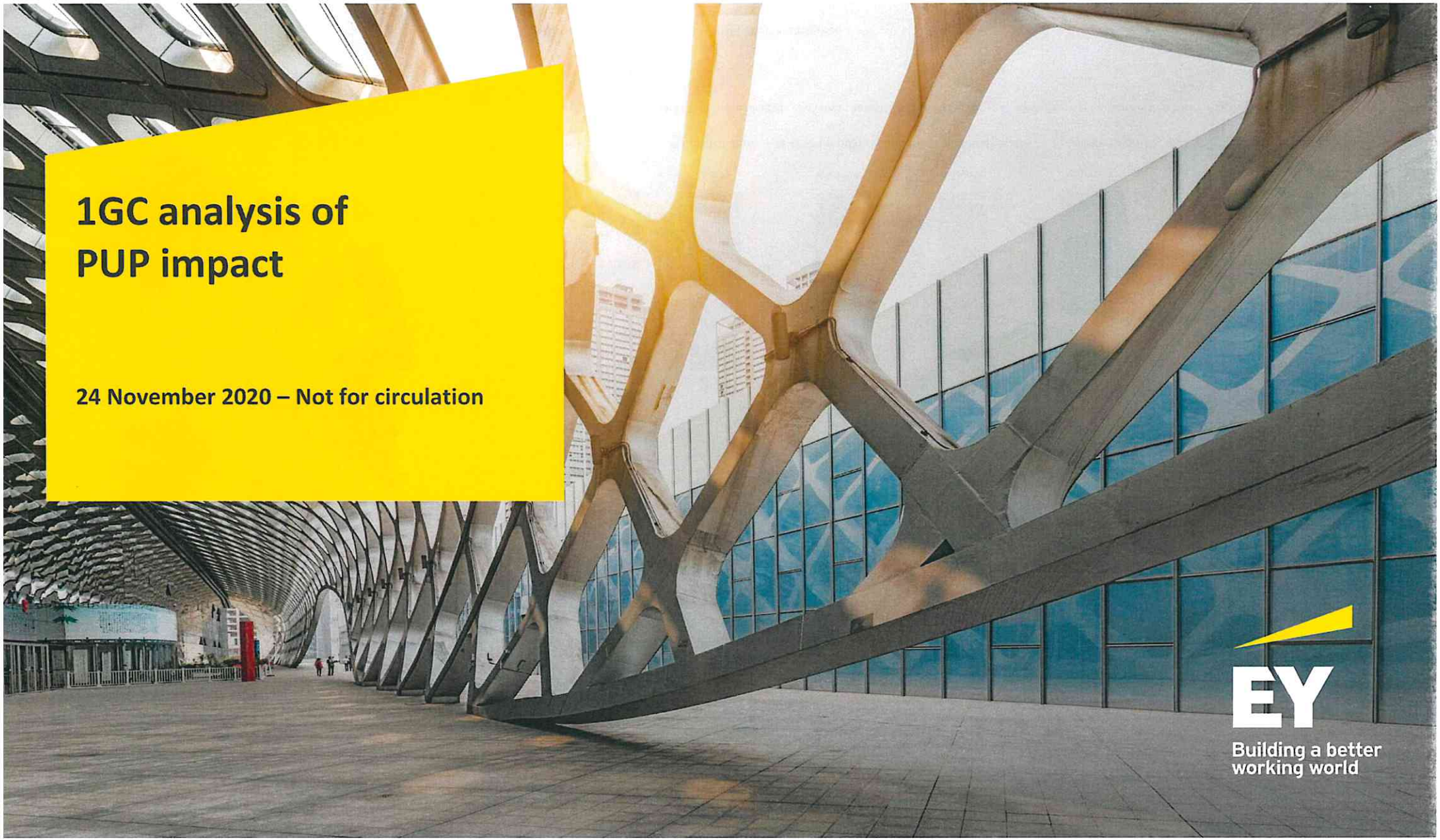
1GC analysis of
PUP impact
24 November 2020 – Not for circulation
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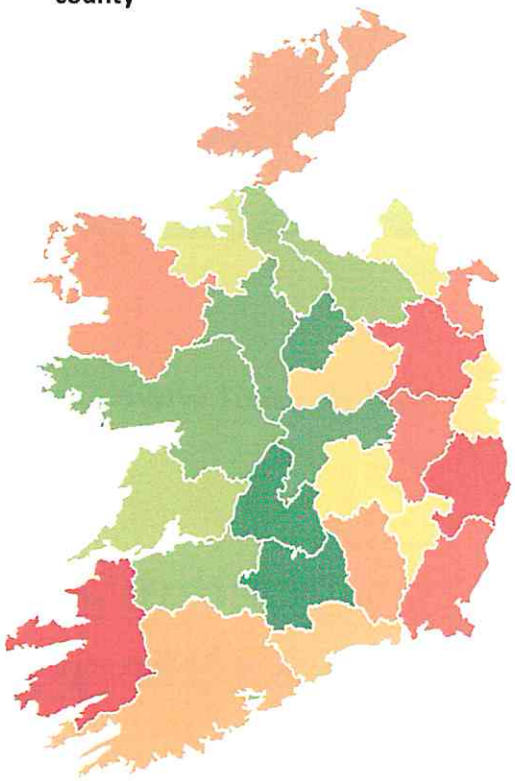
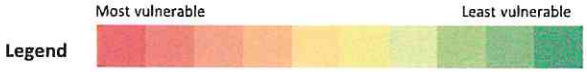
PUP analysis: Kerry, Wicklow and Meath highest concentration of employment in vulnerable sectors

COVID-19 concentration of vulnerable sectors by county



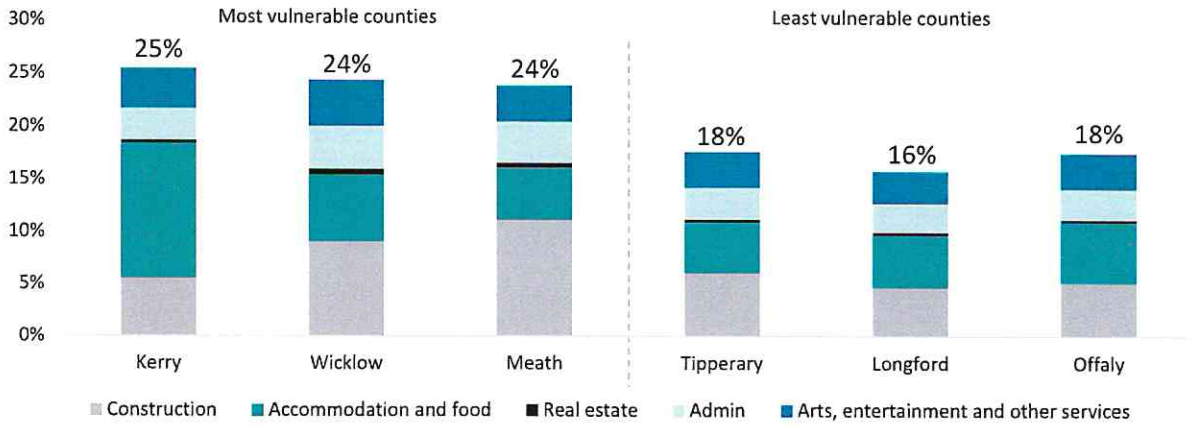
Source: EY analysis using EY 2019 local employment Census consistent estimates
Note: PUP = Pandemic Unemployment Payment



Each employment sector was rated according to its risk of Covid-19 disruption (1 = low, 5 = high). Each county was assigned a rank based on its employment shares to create a measure of Covid-19 vulnerability.

- Kerry, Wicklow, Meath, Wexford and Kildare have the highest vulnerability given their sectoral composition, which is skewed more towards hospitality and public-facing sectors
- Tipperary, Longford, Offaly and Roscommon have the lowest vulnerability rank

Vulnerable sector employment shares (2019 estimate)

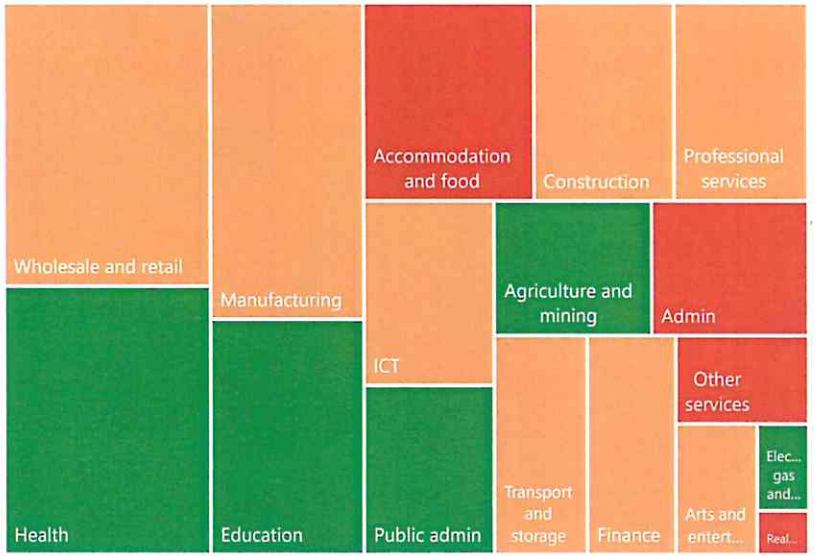


Source: EY 2019 Census consistent employment estimates. Vulnerable sectors were ranked either 4 or 5 in terms of their potential exposure to Covid-19 impacts

PUP analysis: The importance of vulnerable sectors as a source of employment

The charts below depict the proportion of employment in each of the main sectors of the economy, nationally and in Kerry.

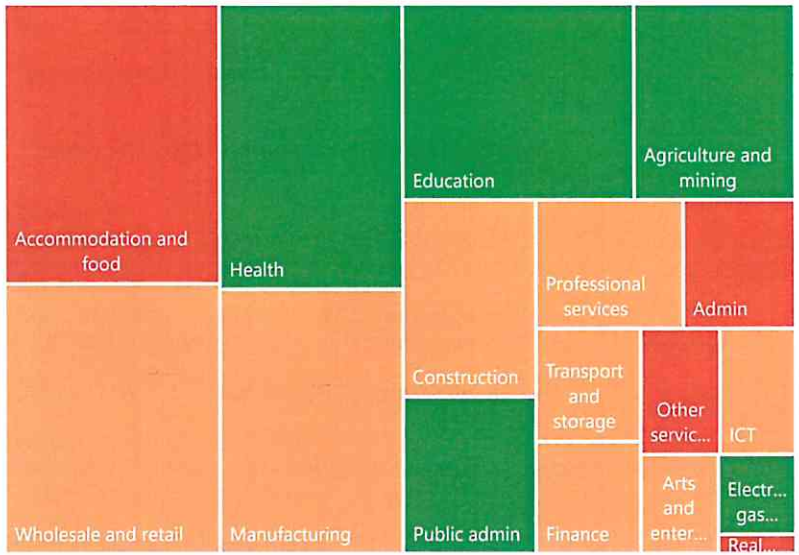
National sector employment (2019 Q4)



Source: DSP PUP recipients 24 November 2020, CSO LFS 2019 Q4 employment, EY analysis

- Vulnerable sectors are major employers across the country
- Public services offer a degree of insulation to Covid-19 labour market impacts

Kerry sector employment (2019 estimate)



Source: EY 2019 Census consistent forecasts

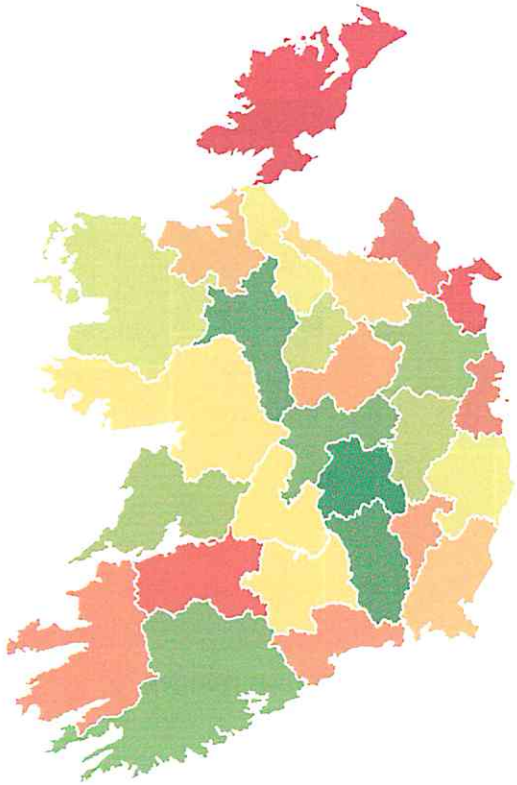
- Accommodation & food is an important employment sector nationally, but is the highest employing sector in Kerry
- Wholesale & retail and accommodation & food make up approx. 25% of total employment in Kerry

egend: shading represents share of national sectors availing of PUP

5% or under | 6% to 25% | 26% +

PUP analysis: Border counties have more PUP recipients than expected given sectoral mix

PUP payments (actual versus expected) (24 Nov)



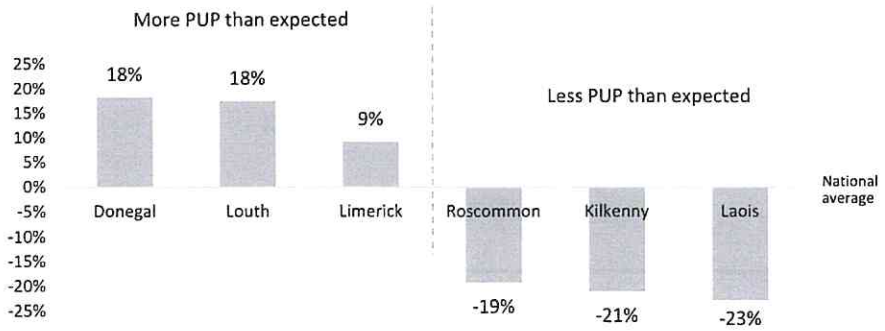
Source: DSP PUP recipients 24 Nov, EY analysis using EY 2019 Census consistent employment estimates

Legend

An expected level of PUP incidence was calculated by applying national sectoral PUP rates to the employment structure in each county. The difference between this expected PUP incidence and the actual PUP incidence shows where there are other factors explaining levels of PUP, other than sectoral composition. It is likely that this reflects specific guidelines and regulations in these counties or factors such as demographics, density etc.

- Donegal, Louth, Limerick, Monaghan and Dublin currently (24 Nov) have more people on PUP than their sectoral mix would predict
- Donegal, Dublin and Monaghan have been at higher restriction levels than the rest of the country for longer and this is reflected in their higher than expected PUP levels
- Laois, Kilkenny, Roscommon, Offaly and Cork have proportionally less than predicted
- Of the 26 counties, 12 are within five percentage points of what would be expected given their sectors. This indicates that sectoral mix is not the only determinant of PUP levels in the majority of counties
- Donegal, Louth, Limerick and Roscommon have the highest Covid-19 14-day incidence rate per 100k population (as at 23/11/20). This indicates that Covid-19 incidence levels may contribute to higher levels of PUP, but again, is not the only explanation, as Roscommon suggests

Actual PUP recipients minus expected PUP (24 Nov)



Source: DSP PUP recipients 24 Nov, EY analysis using EY 2019 Census consistent employment estimates

PUP levels increased with Level 5, but remain c.41% below previous peak

PUP % share of 2019 Q4 employment

	Peak	Today
Accommodation and food	72%	57%
Real estate	68%	46%
Other services	63%	50%
Construction	54%	14%
Admin	41%	27%
Wholesale and retail	29%	18%
Arts and entertainment	25%	21%
Professional services	18%	9%
Transport and storage	17%	9%
Manufacturing	15%	6%
Public admin	12%	5%
Finance	12%	7%
Education	11%	5%
ICT	9%	6%
Electricity, gas and water supply	9%	5%
Agriculture and mining	8%	4%
Health	8%	3%
Total	25%	15%

Source: CSO 'peak' PUP levels as at 3/5/20; DSP 'today' PUP levels as at 24/11/20; CSO 2019 Q4 employment. Note: EWSS = Employment Wage Subsidy Scheme

- PUP levels are one form of labour market disruption, people may also be on wage subsidy or unemployment benefits depending on personal circumstances and the decisions made by their employer. Currently, the wage subsidy data is not available as a weekly estimate by sector and monthly averages have overlap with PUP levels, particularly as restrictions change
- Accommodation & food, real estate and other services still have highest proportion of employees on PUP (as at 24 Nov). These sectors also have the highest proportion of those on the wage subsidy scheme (EWSS) using the latest sectoral breakdowns available (DSP October monthly average)
- The arts & entertainment sector has been effectively closed since March and PUP levels are close to their previous peak
- Construction has had the biggest fall since peak, which is reflective of construction sites remaining open under current restrictions compared to being closed earlier in the year
- Despite broadly similar restrictions across a number of sectors, the share of people on PUP is lower in all sectors, suggesting either a level of adaptation to working under current restrictions or a higher deployment of wage subsidy

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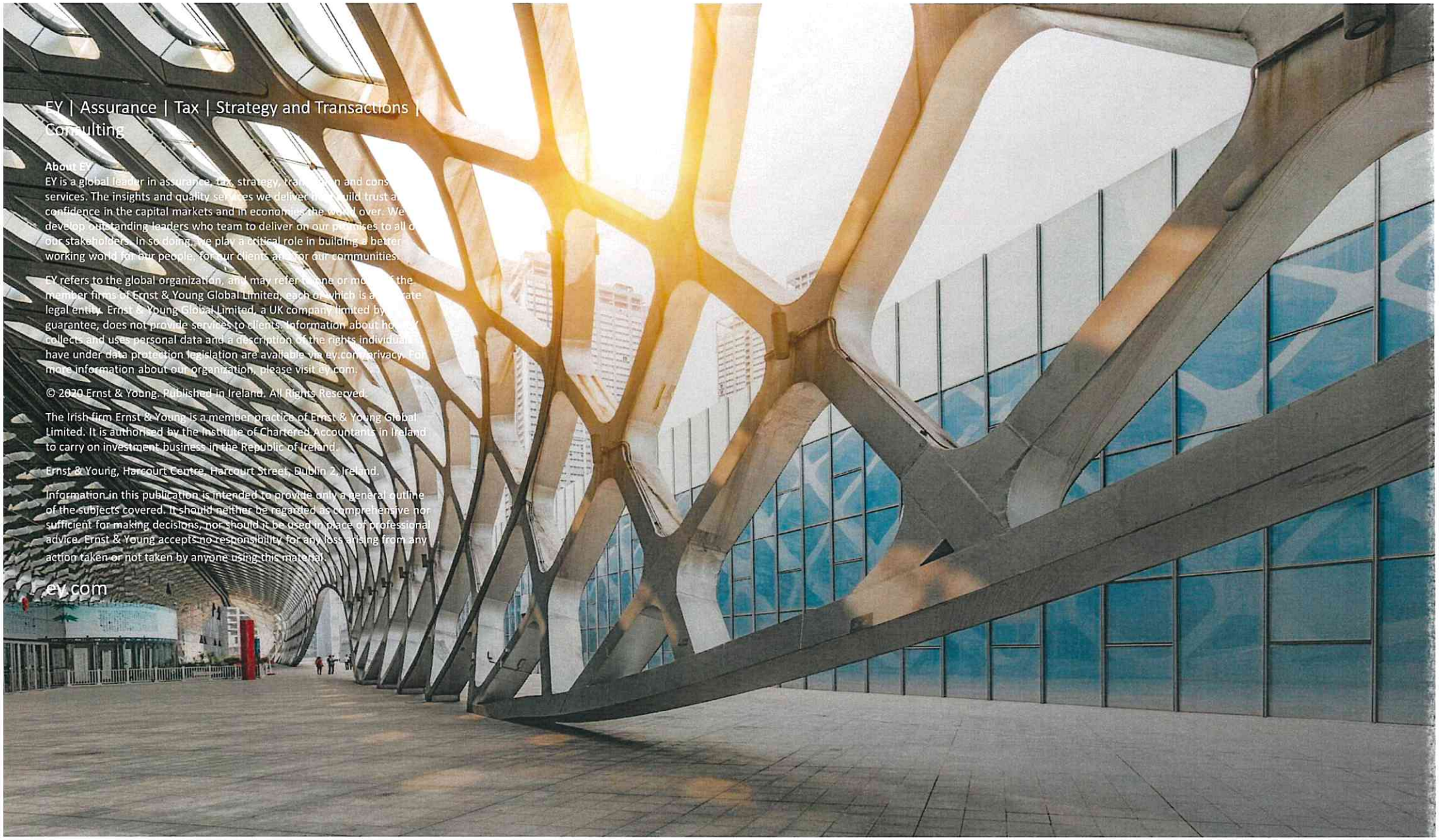

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1GC Priority Use Case Analysis (w/c 30/11)

Based on briefing sessions w/c 23/11

USE CASE	DESCRIPTION	OUTSTANDING ACTIONS	PRIORITY	DEPENDENCY	OWNER
Industrialise insights	Update and industrialise dashboards	• County dashboard • Include LEA data	High	CIDR data for outbreak analysis from HSE	Graham, Fiona, Kenny
Outbreak analysis	Undertake analysis using HSPC data	• Complete outbreak analysis using existing data	High	None	Nik, Nitin
Restrictions analysis	Create restrictions dashboard	• Create dashboard • Include additional incidence data (3, 5,7,14-day) to enhance findings • Include additional time-lags (7,10,14) for analysing incidence rate changes	High	None	Graham, Fiona
Transport dashboard	Complete transport dashboard	• Update dashboard for latest data • Compare to last year's travel pattern • Plan for Christmas monitoring	High	None	Kenny
Stay at home index	Access data through Geohive and provide initial insights	• Access existing data to create insights • Merge with disease prevalence • Get Stay at Home Index from 3 mobile (dependency)	High	Awaiting Geohive access	Rory M, John
Facebook survey analysis	Complete Facebook dashboard	• Update dashboard for latest data • Undertake initial analysis	High	None	Rory M
International research	Complete desktop research and present findings	• Retrospective analysis of Thanksgiving/ Diwali and other large events • Pubs/restaurants additional research • Other key international studies	Medium	Wait c.10-days from Thanksgiving for case data	Emma
Events	Identify a way of tracking events in Ireland to allow better monitoring of Covid outcomes	• Identify source(s) of events • Design solution to track them	Medium	None	Emma, TBC
Google mobility data	Update and track Google and Apply mobility data to identify trends at certain locations/categories	• Create dashboard • Monitor changes over time	Medium	None	Cillian B
Analysis of media/press	Track positive and negative Covid-related press sentiment and triangulate with other data sources	• TBC approach	Medium	None	TBC
Analysis of flight data	Identify and track flight and passenger information to allow monitoring over Christmas	• Identify sources of information • Design solution to track	Medium	None	Prashant, Jamie

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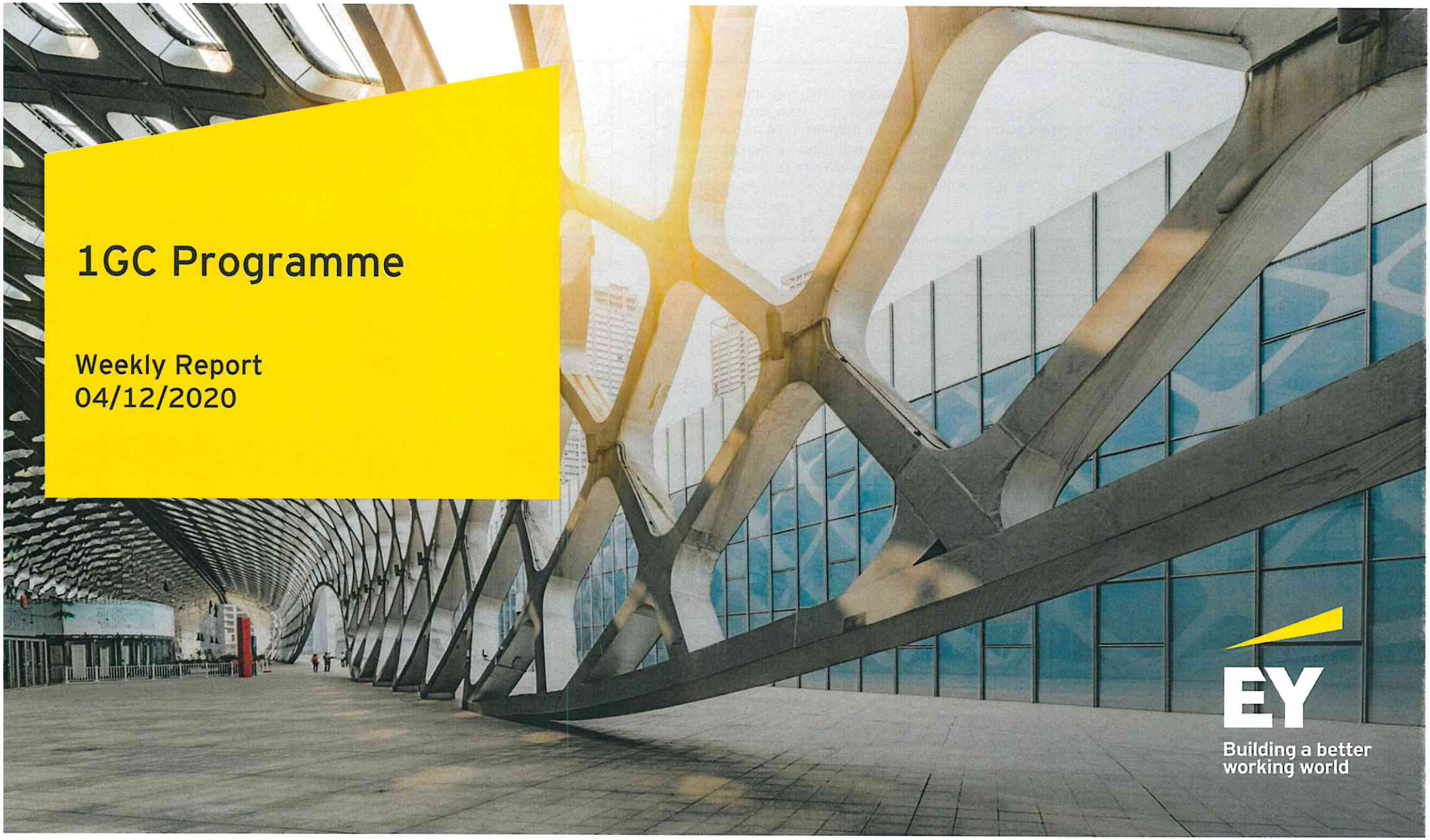
1GC Programme
Weekly Report
04/12/2020
EY
Building a better working world

151

1GC Status Report (04/12/2020)

Overall		Schedule		Scope		Cost	

Critical /at risk Warning On Track

Reason for Status (if not GREEN)

- 1GC Azure environment build progressing, detailed design and configuration in progress
- Progression on Social Distancing Index has paused pending sign off from Dept. of Health

Milestone	Status	Date Last Period	Due Date
Use Case Prioritisation (Weekly)		25/12	25/12
1GC Briefing Pack (as required)		25/12	25/12
Social Distancing Index decision		27/11	TBC
Deploy 1GC Azure Environment		11/12	11/12
Complete 1GC DPIA		11/12	11/12

Key Achievements

- Briefing session completed on 4/12, Key agenda items included agreement of restriction and compliance monitoring approach
- Received test data to validate the Development environment prior to build of Test & Production environments
- Commenced the development of Azure Data Factory pipelines in the Development Environment
- Created new mobility dashboards using data from TII/Google/Apple
- Created new dashboard focused on Dublin footfall
- Developed an events tracker and associated plan to monitor future events / activities
- Completed updated economic analysis
- Secured access to the GeoHive platform for 3 mobile mobility use cases
- Session complete on (4/12) with HSE to outline data sources to be ingested into the 1GC environment

Items for Attention

Highlights / Risks / Issues / Decisions

- Decision and sign off on proposed insight governance
- Sign off of HSE environment access agreements
- DPIA sign off (including Data & Platform Owner decisions)
- Complete phase 2 SOW

Planned Activities / Forward Look

- Complete weekly briefing on 11/12
- Complete phase 2 SOW
- Validate Development environment and all user access
- Commence Test Environment build activities
- Begin to identify the impact of Level 3 restrictions
- Incorporate 3 mobile data into exiting data insights such as County Dashboard
- Data flow options to be presented to HSE (w/e 11/12)
- 1GC Insights Briefing to IIS Director

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1GC Detailed Update

Area	Achievements	Forward Look
Governance	**Achievements** • Briefing session completed on 4/12, Key agenda items included agreement of restriction and compliance monitoring approach • Progressed HSE documentation required to secure access to 1GC Azure Environment.	**Forward Look** • Complete weekly briefing on 11/12 • Data flow options to be presented to HSE (w/e 11/12) • 1GC Insights Briefing to IIS Director • Complete phase 2 SOW
1GC Azure Build	**Achievements** • Received test data to validate the Development environment prior to build of Test & Production environments • Commenced the development of Azure Data Factory pipelines in the Development Environment	**Forward Look** • Validate Development environment and all user access • Commence Test Environment build activities
Data & Insights	**Achievements** • Created new mobility dashboards using data from TII/Google/Apple • Created new dashboard focused on Dublin footfall • Developed an events tracker and associated plan to monitor future events / activities • Completed updated economic analysis • Session complete on (4/12) with HSE to outline data sources to be ingested into the 1GC environment	**Forward Look** • Begin to identify the impact of Level 3 restrictions • Incorporate 3 mobile data into exiting data insights such as County Dashboard

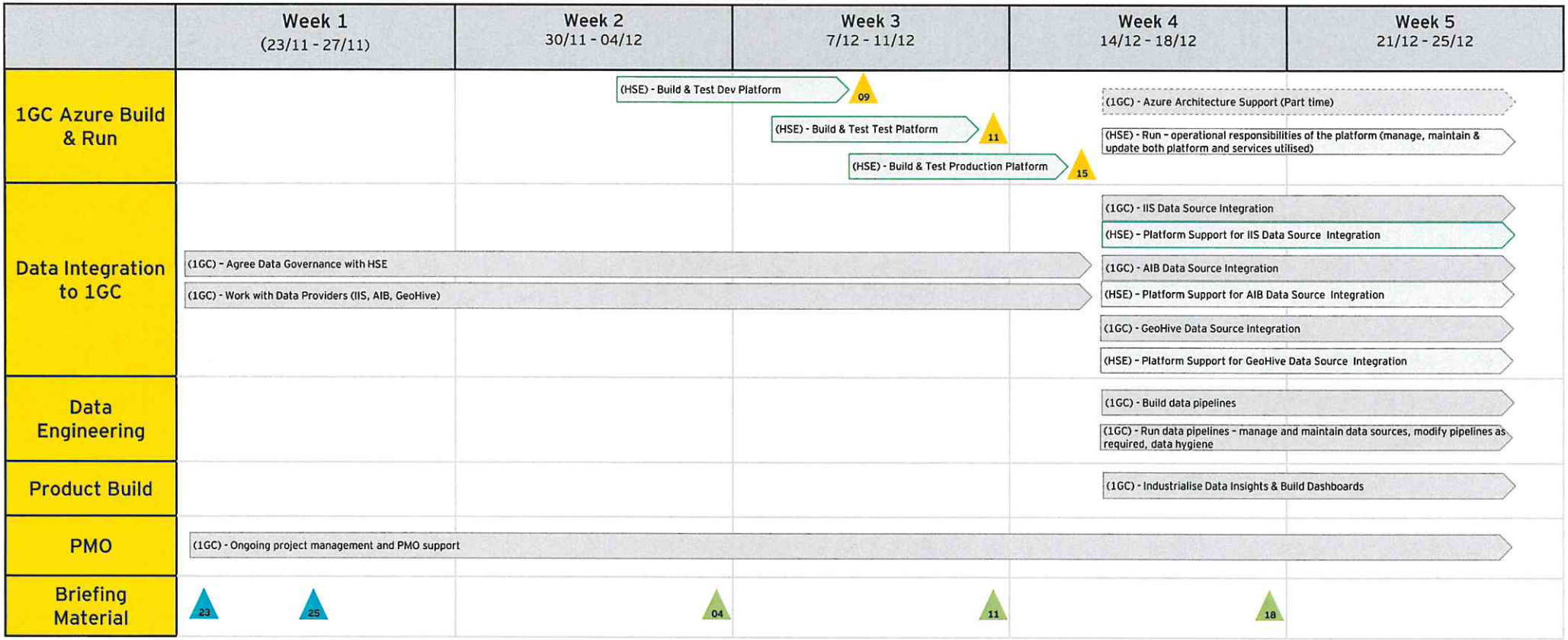
1GC Resource Tracker

Area	Team Member	Role	Last Week (Days)	Next Week Forecast (Days)
Governance	Paul Pierotti	Responsible Executive	5	5
	Emmanuel Adeleke	Programme Manager and Stakeholder Engagement Lead	5	5
	Emma O' Sullivan	Programme Office	5	5
1GC Azure Build	Nigel Foley	Delivery Lead	5	5
	Paul Browne	Cloud Engineer	4	5
Data & Insights	Cillian Leonowicz	Insight Design Lead	5	5
	Nikunj Maheshwari	Data Scientist	5	5
	Graham Catchpole	Senior Data Analyst	2.5	2.5
	Ross Morrison	Data Engineer	2	4
	Rory Murphy	Data Analyst	5	5
	Fiona Murphy	Data Scientist	5	5
	Eve Bannon	Senior Data Analyst	5	5
	John Hallahan	Op Model Design Manager	5	5
	Cillian Bisset	Data Analyst	5	5
	Nitin Goutham	Data Engineer	5	4
	Kenny Hazlett	Data Engineer	5	5
	Jamie McIlveen	Data Analyst	5	5
	Preshant Kandhare	Data Engineer	5	5
	Jason Guy	Data Protection	1	2

Key * Absence (due to sick leave etc.)

1GC Plan on a Page - Phase 2

Draft Pending Key Planning Decisions



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Data Analytics Insights
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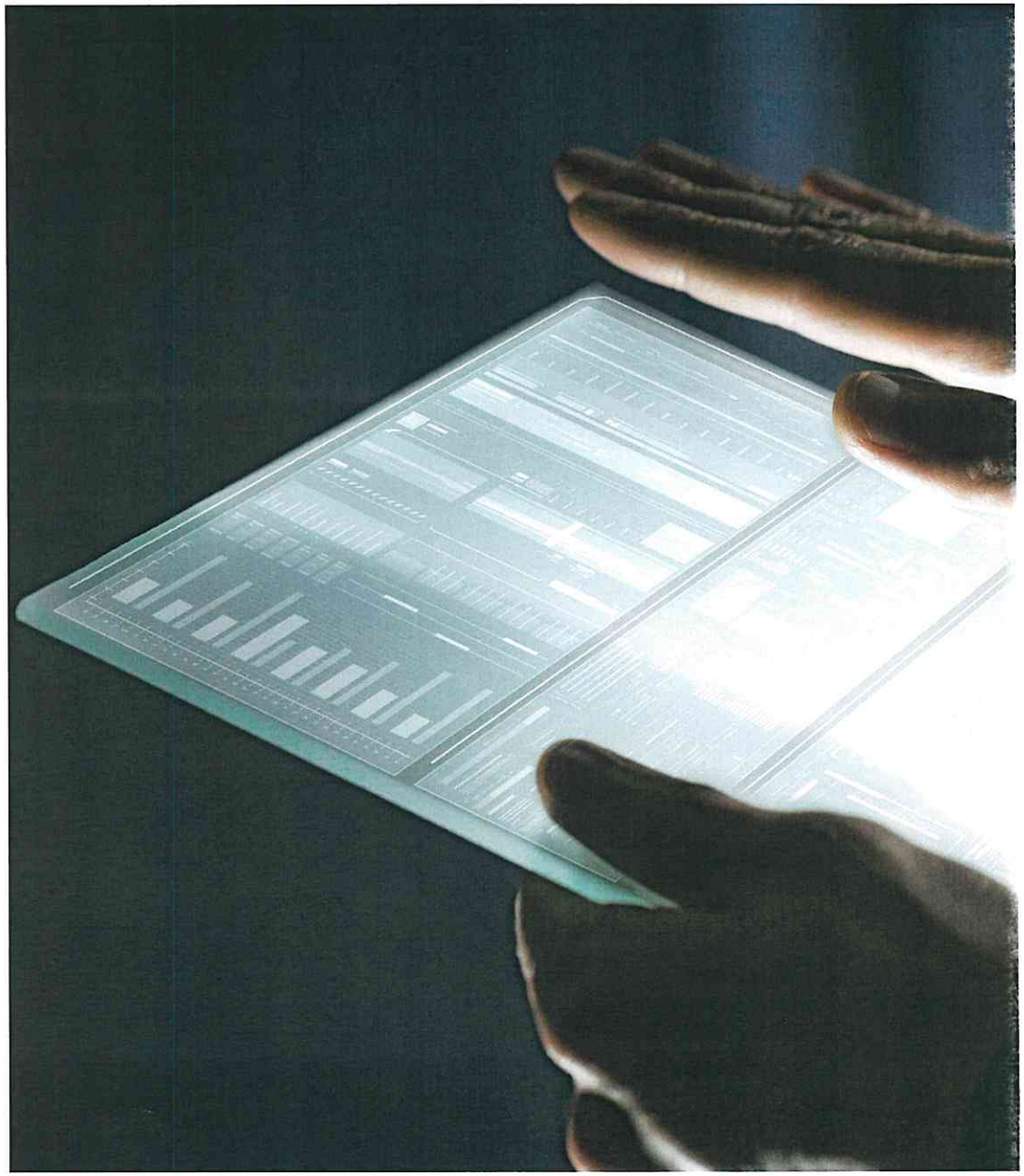
Update - Week 7

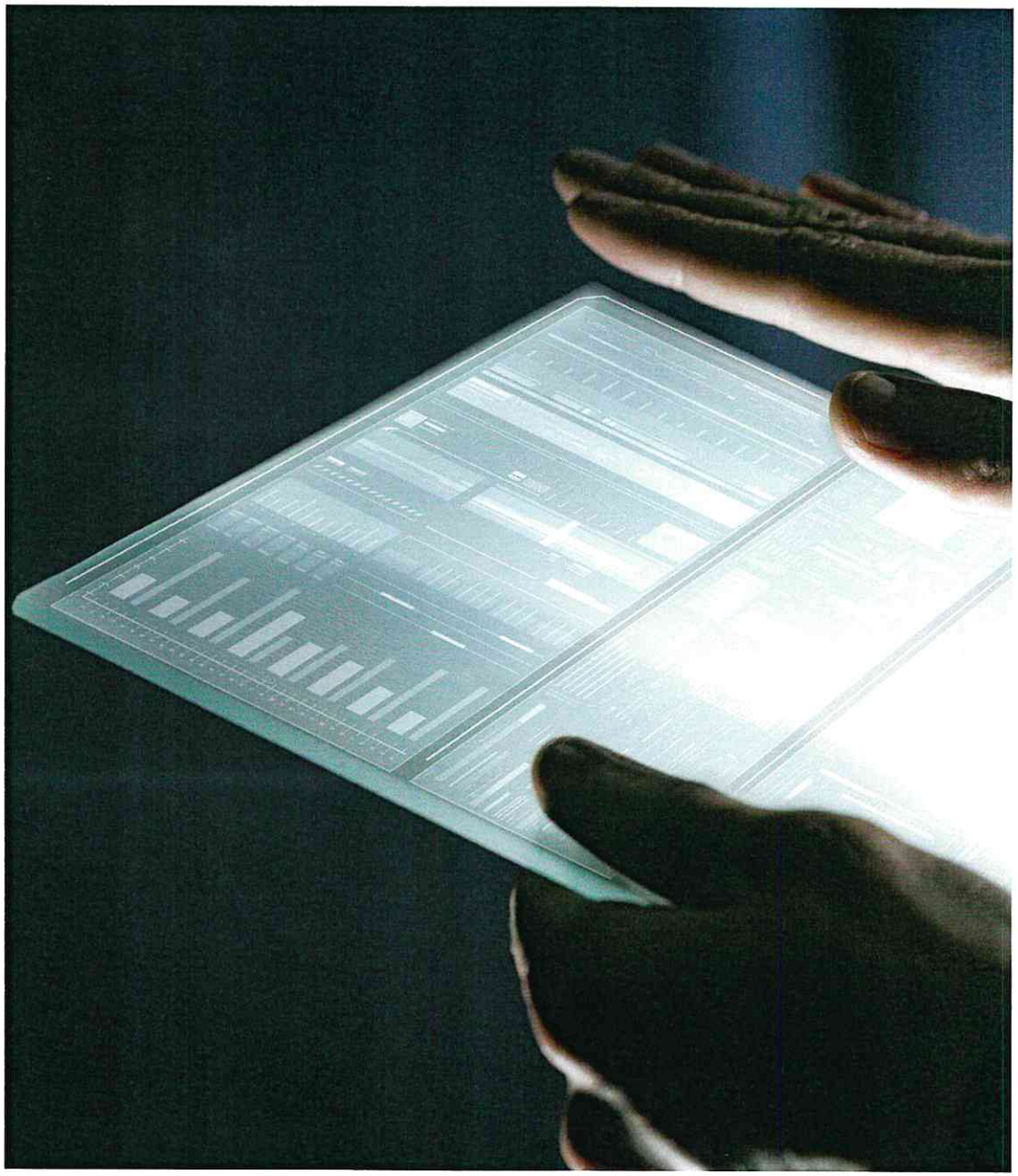
Agenda

- Feedback on last week
- Update on county analysis
- Plan for monitoring impact of restrictions
- Project updates

Feedback on last week



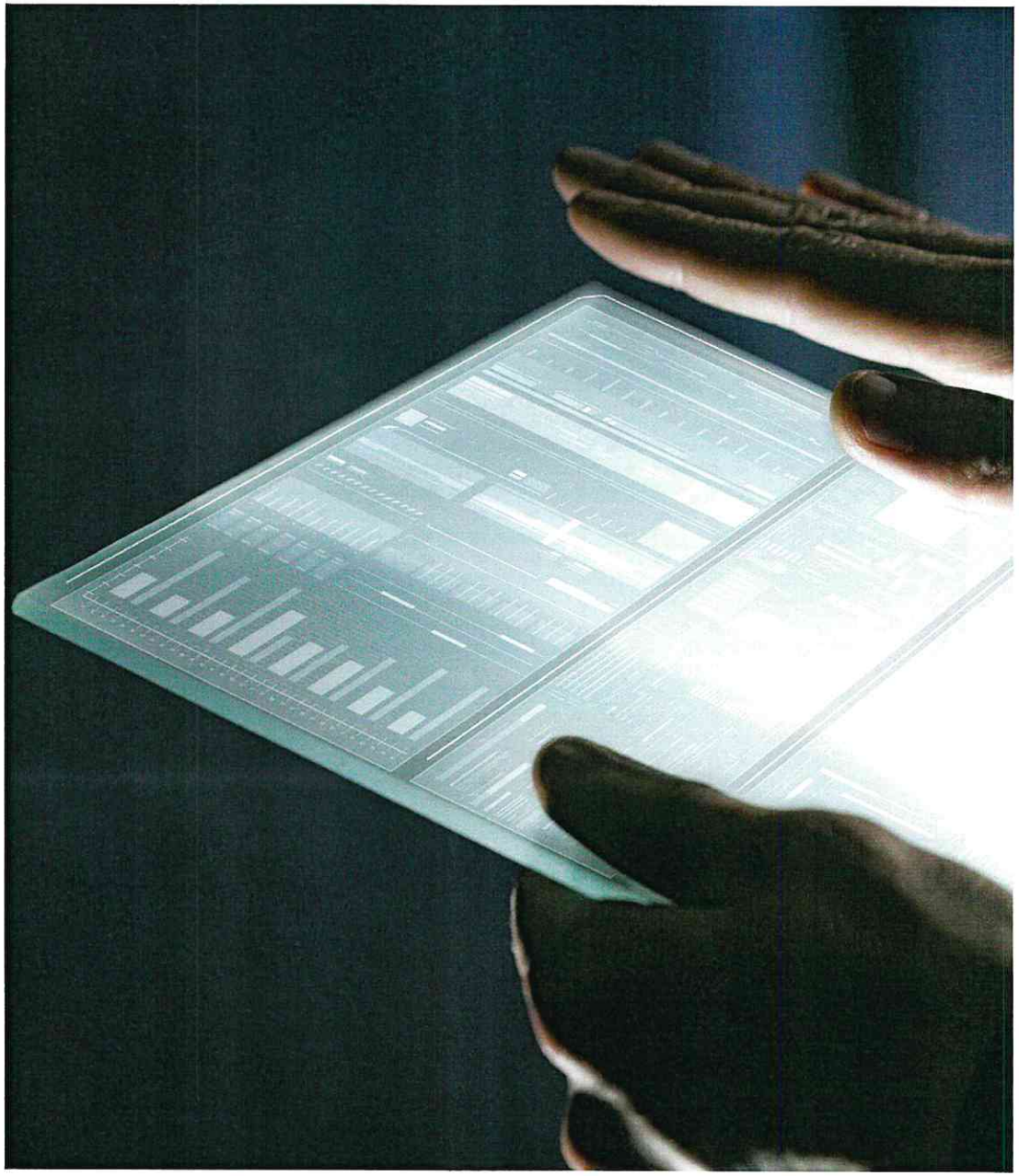
Update on analysis



14 Day Incidence Rate by County (as at 30/11/2020)

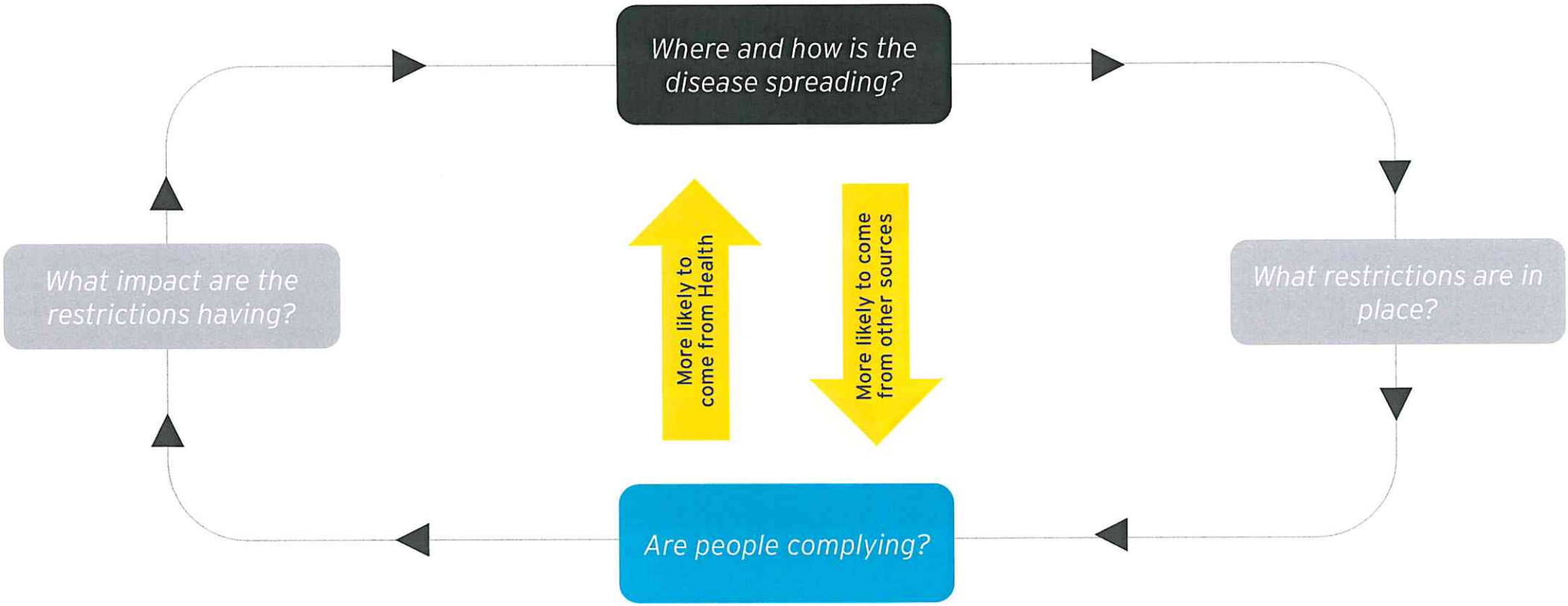
| Two Weekly Incidence Rate Per 100k | Population | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | 18-Nov | 19-Nov | 20-Nov | 21-Nov | 22-Nov | 23-Nov | 24-Nov | 25-Nov | 26-Nov | 27-Nov | 28-Nov | 29-Nov | 30-Nov | Change Last 5 Days |
|---|---|---

Plan for monitoring impact of restrictions



Answering four key questions to support government decision making

Helping improve visibility and decision making by combining and analysing data across government



Specific assets and insights informing how we are performing and identifying future risks

Identifying higher risk events

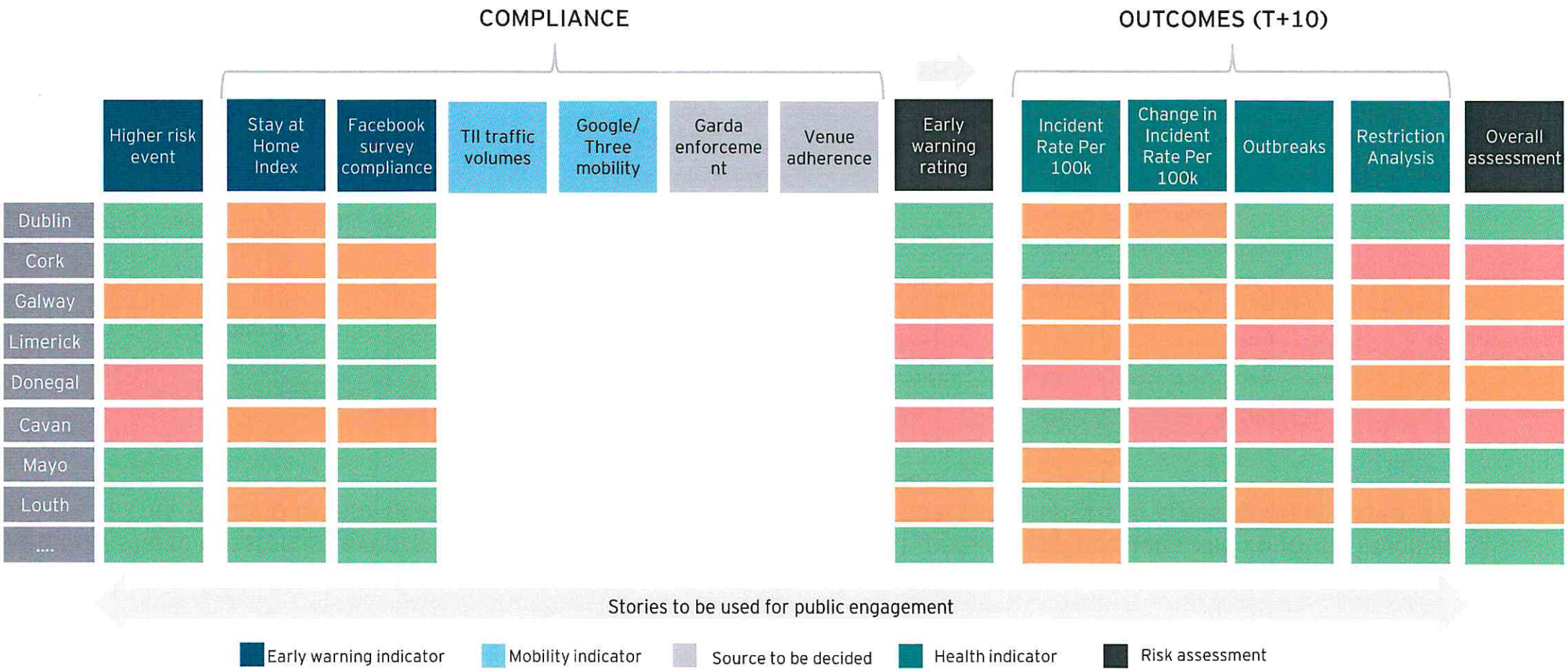
We have created an events tracker in order to identify key event types, dates, locations and counties involved. This will help to inform early warning tracking, as well as retrospective analysis in areas in which disease incidences have increased.

Key event categories	# on tracker
Community Eventbrite, Farmer's market, etc.	86
Christmas Markets, Santa's grotto events, etc.	10
Sport GAA, horse racing, rugby, etc.	76
Music Events over holiday period	3

Source: GAA, Irish Rugby, Aviva, Irish Racing, Ireland.com, Eventbrite

Upcoming events in December	Date	Locations to monitor
GAA Hurling All-Ireland Senior Championship Final	13 Dec	Croke Park, Counties involved: Limerick, Waterford
GAA Football All-Ireland Senior Championship Final	19 Dec	Croke Park, Counties involved: TBC
GAA Football All-Ireland Senior Championship Semi-Finals	5/6 Dec	Croke Park, Counties involved: Cavan v Dublin/ Mayo v Tipperary
Horse Racing Christmas festival	26-29 Dec	Leopardstown, Dublin and Limerick
International Rugby: Ireland v Scotland	5 Dec	Aviva Stadium
Local Rugby Fixtures	5, 12 Dec	Mayo, Dublin, Galway, Westmeath, travel to NI
Glow Cork	2 Dec -12 Jan	Cork
Winterval Waterford	4-23 Dec	Waterford
Dublin Castle Christmas Markets	12-22 Dec	Dublin

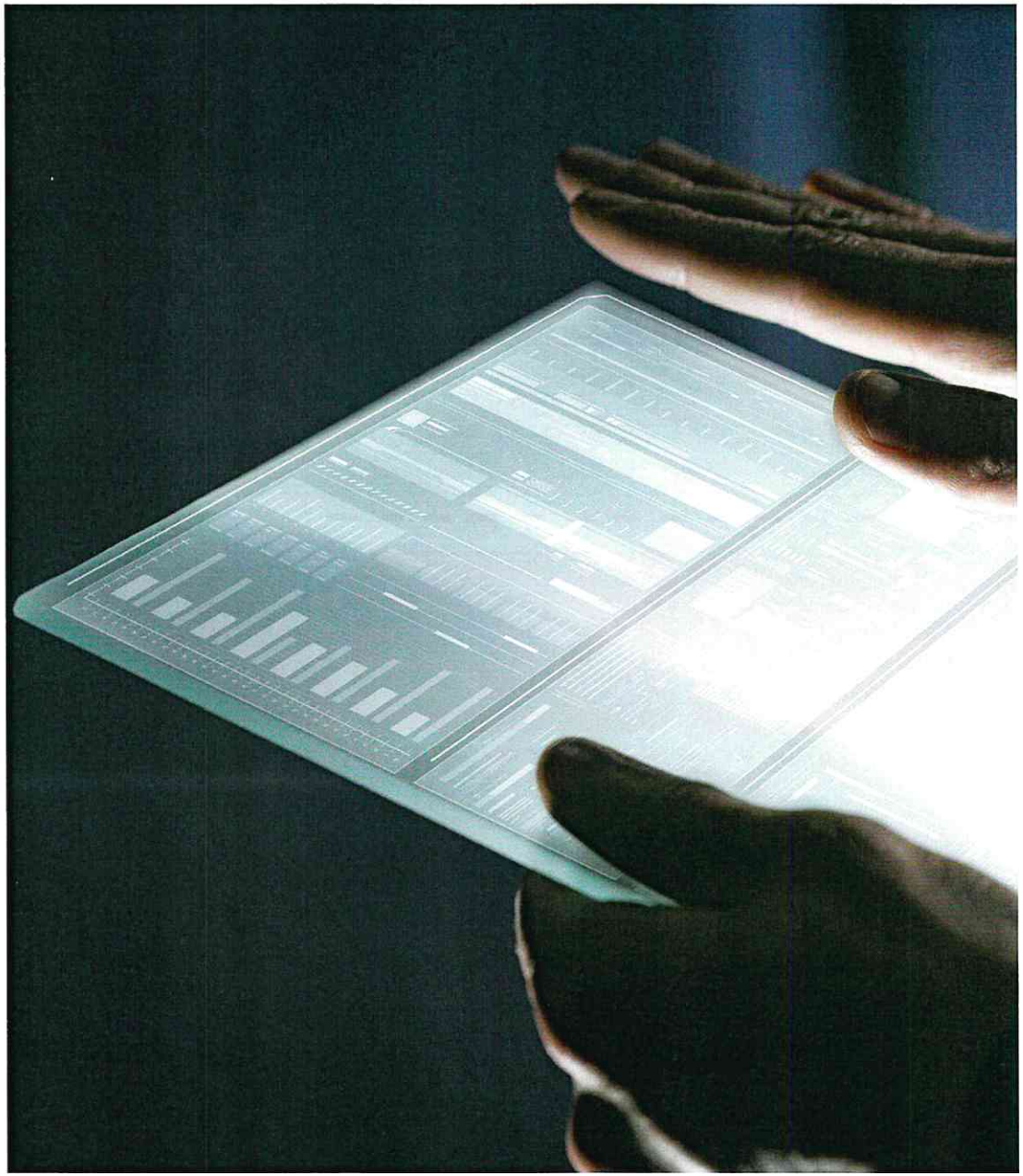
Helping to monitor ongoing performance on the run up to and during Christmas



Ensuring the right metrics to monitor ongoing compliance

Is there anything else we should be considering?

Project updates



Progress update

GOVERNANCE AND SET UP

- Delivered weekly Progress Report and Progress Update meeting today
- Issued second SOW with HSE
- Completed HSE IT Supplier Questionnaire
- Issued 1GC HSE Detailed Data Request and workshop to go though in detail
- Issued draft Data Protection Impact Assessment to HSE and awaiting feedback
- Issued 1GC HSE Insight Governance approach to HSE and awaiting feedback
- HSE stood up 1GC platform and now in detailed testing
- Confirmed access to Stay at Home Index and wider GeoHive access

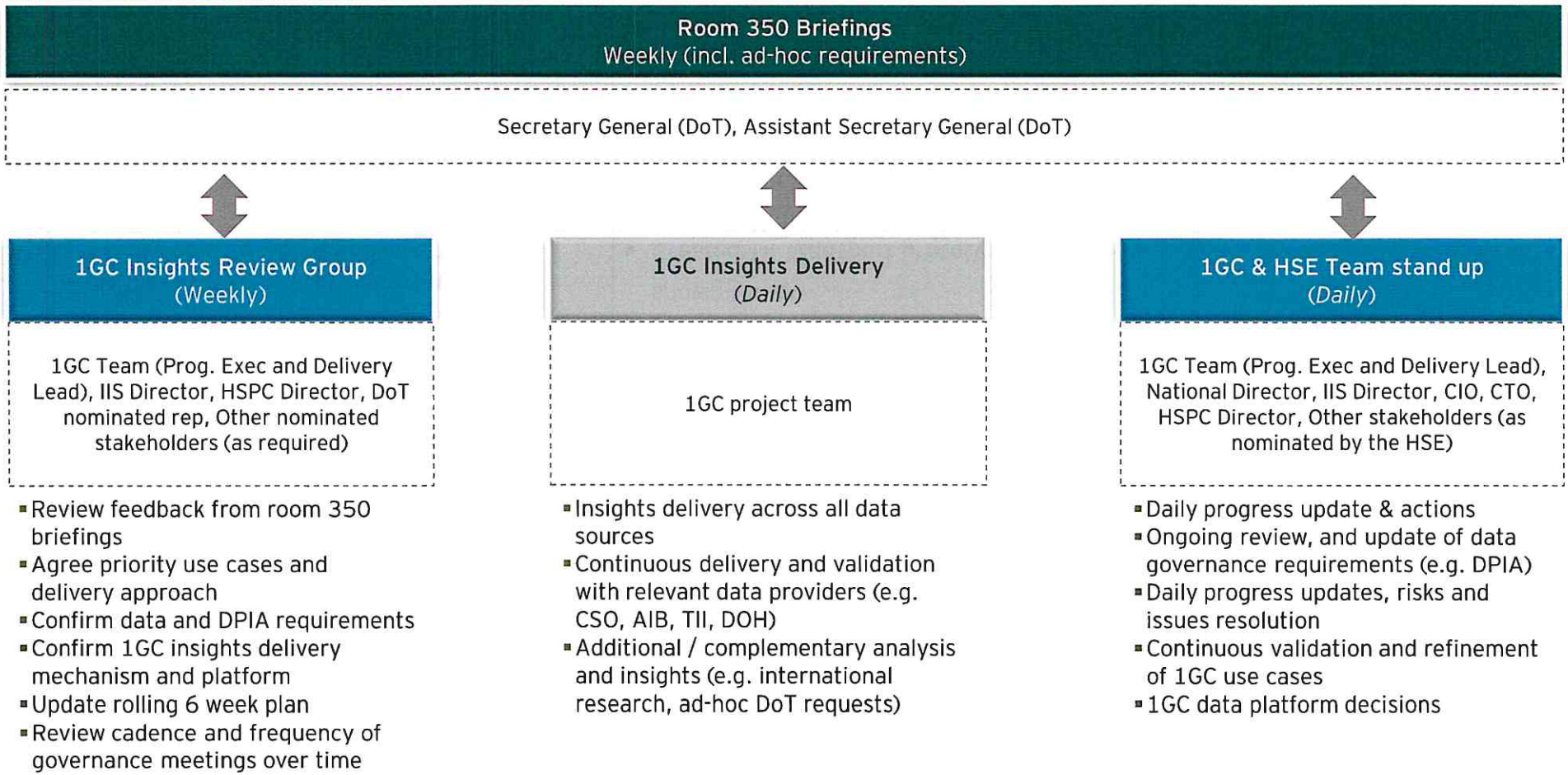
USE CASE DESIGN

- Created Google Mobility prototype for presentation today
- Created Facebook Survey prototype for presentation today
- Created Dublin Footfall prototype for presentation today
- Created Future events long list to be shown today
- Created TII Transport prototype for presentation today
- Designed Stay at Home Index prototype while awaiting data
- Awaiting AIB Payments Data

INSIGHT DEVELOPMENT

- Expanded C-19 Heatmap for 3 and 5 days changes
- Expanded Restrictions Impact tool to include 7 day and rolling 3 day average as well as for allowing changes to 10 day future view
- Expanded International Restriction Impact quantification

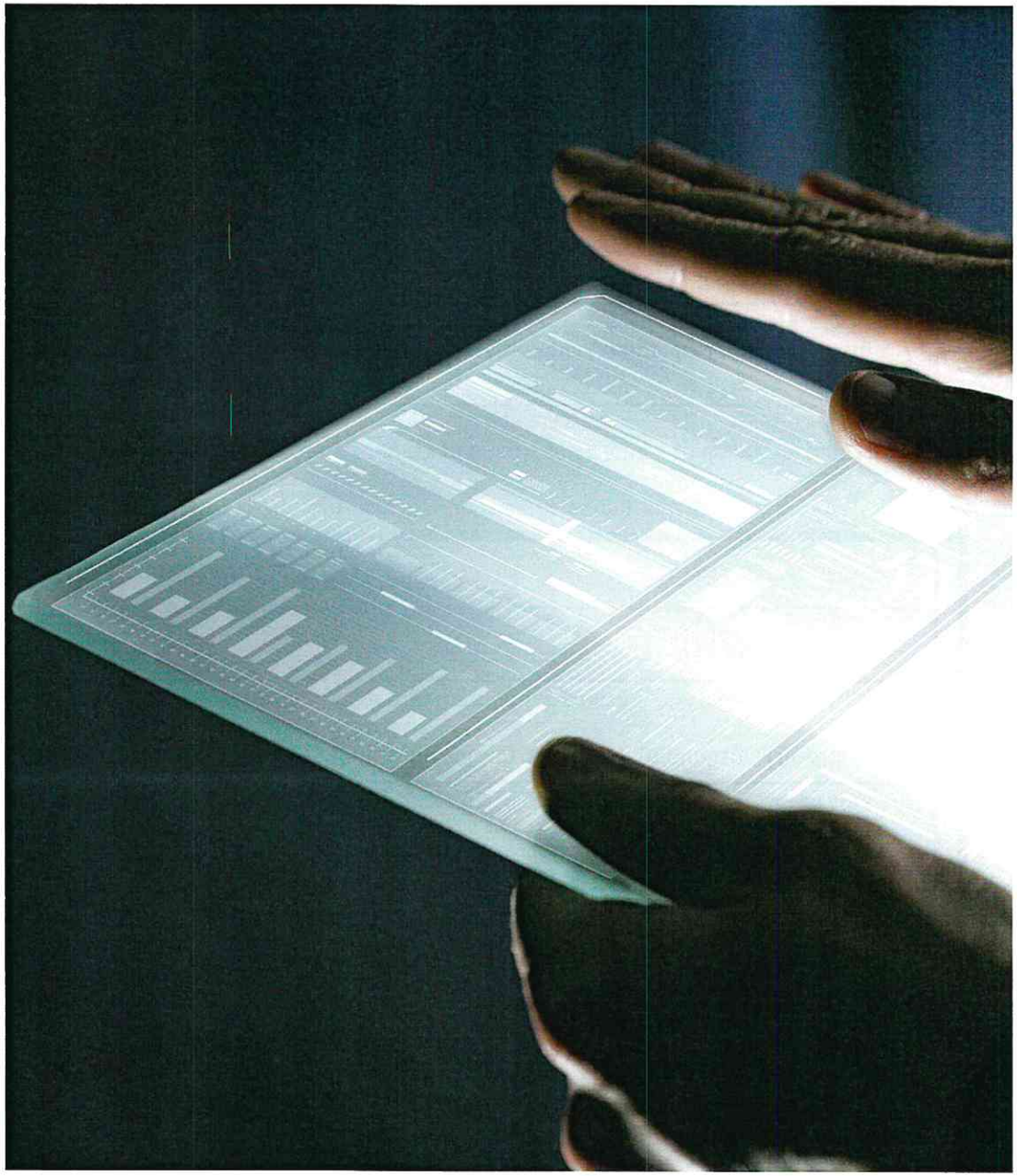
1GC Insights Delivery Governance Structure



Where we are with the key DoT and Government dependencies

REQUIREMENT	USE CASES	STATUS	DESCRIPTION
1GC Data Owner and Data Protection Impact Assessment	Many	DOT Action	▸ Clarity required on 1GC data owner organisation and responsible individual ▸ We have also created an initial Data Protection Impact Assessment and ask for guidance on whether and how to engage with the Data Protection Commissioner ▸ Note this does not include any personal identifiable data, which means it is excluded from data protection. Need to o rely on existing data sharing agreements to meet timeframe
Financial Services companies create and share payment related Use Cases	Business Compliance by Industry (Instore Online)	DOT Action	▸ AIB now completed analysis and awaiting confirmation of method to publish. They need it either to go to CBI or have a request from DOT ▸ Clarity required on Data Protection Owner and method for sharing
Align with NPHET	All Health Related	For Discussion	▸ Request to get NPHET forecasts of future disease spread to incorporate into Christmas briefings
Access to appropriate mobility data	▸ Social Distance Index	Continue Monitoring	▸ Awaiting DOT decision on Social Distance Index
Stand Up Appropriate Analytics Environment within HSE	Many	Team Priority to Resolve	▸ Detailed design now published and working though specific comments from HSE Technology. Progressing well ▸ Needs continued prioritisation and leveraging existing infrastructure to deliver within required timeframe
Government Departments to create and share specific Use Cases	Many	Team Progressing	▸ Already have access to GeoHive and CSO ▸ Confirming specific approach with various government departments, including any data governance and sharing

Appendix



5 Day Incidence Rate by County (as at 30/11/2020)

| 5 Day Incidence Rate Per 100k | Population | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | 18-Nov | 19-Nov | 20-Nov | 21-Nov | 22-Nov | 23-Nov | 24-Nov | 25-Nov | 26-Nov | 27-Nov | 28-Nov | 29-Nov | 30-Nov | Change Last 5 Days |
|---|---|---

3 Day Incidence Rate by County (as at 30/11/2020)

| 3 Day Incidence Rate Per 100k | Population | 03-Oct | 04-Oct | 05-Oct | 06-Oct | 07-Oct | 08-Oct | 09-Oct | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | 18-Nov | 19-Nov | 20-Nov | 21-Nov | 22-Nov | 23-Nov | 24-Nov | 25-Nov | 26-Nov | 27-Nov | 28-Nov | 29-Nov | 30-Nov | Change Last 5 Days |
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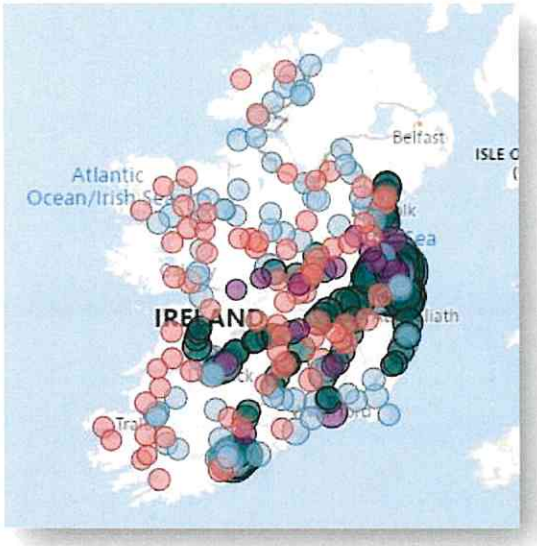
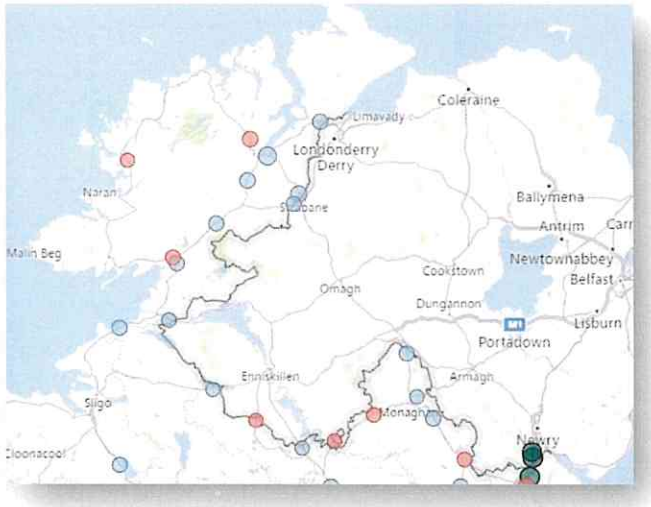
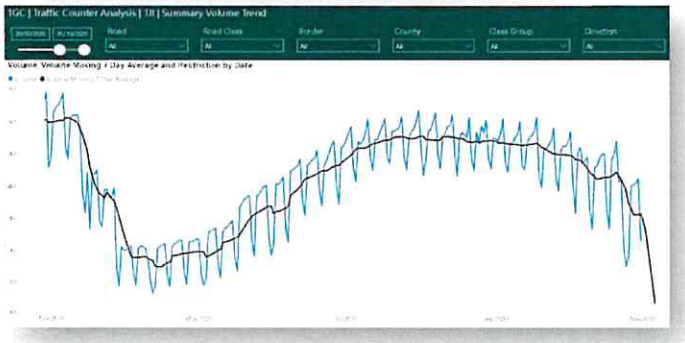
Transport dashboard detail

Transport dashboard extracts







YoY Volume % Change by Class Group

Year	2020		
Class Group	9	10	11
heavy goods vehicles	[illegible]	-3.27%	-23.71%
light goods vehicles	-0.07%	-7.75%	-28.91%
other	-15.13%	-20.70%	-38.56%
private car	-18.20%	-36.58%	-54.90%

YoY Volume % Change by Road Class

Year	2020		
Road Class	9	10	11
Motorway	-14.35%	-30.26%	-49.60%
National Primary	-19.46%	-37.98%	-54.54%
National Secondary	-8.46%	-24.34%	-43.78%
Regional	-11.73%	-16.44%	-39.90%

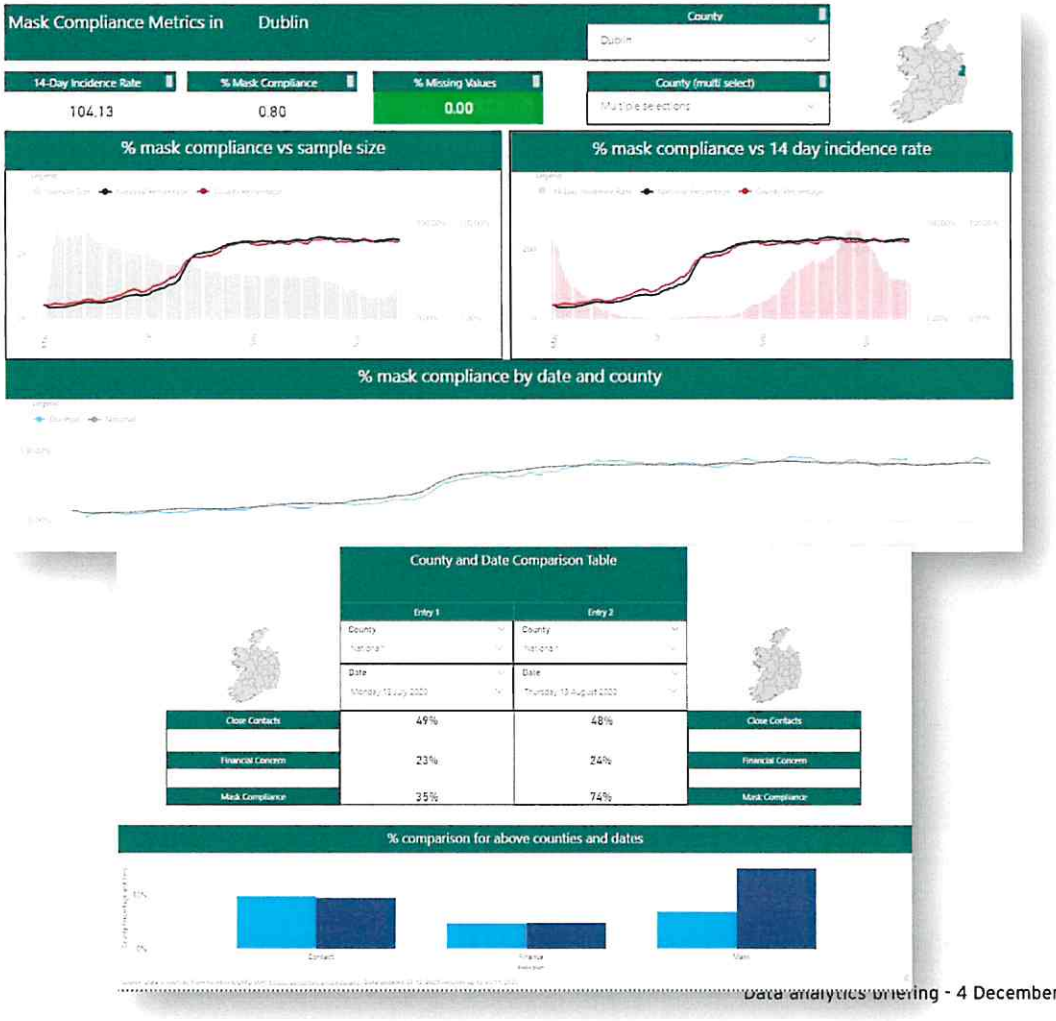
- Transport dashboard prototype built using daily TII traffic counter data and validated with TII
- Data set provides traffic volumes at a day level by road, road class, county, class group
- Initial transport insights completed – no clear correlation found between reduced traffic volumes and reductions in incidence rates within counties
- Dashboard can be updated daily (subject to TII data being published daily) and can be used for ad-hoc analysis as required going forward

Dublin City Centre footfall dashboard detail

Footfall Dashboard Extracts

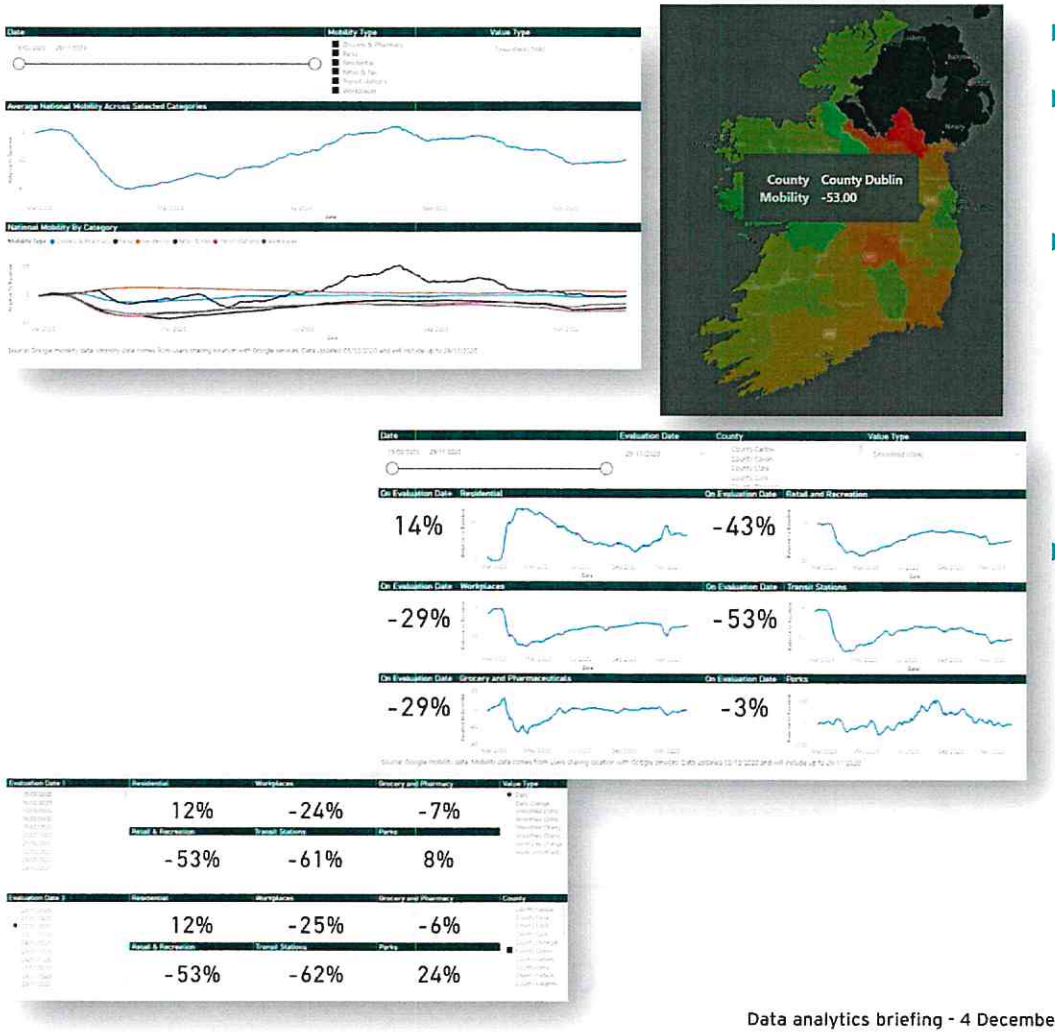
- Footfall Dashboard prototype built using daily Smart Dublin counter data
- Data set provides daily footfall volumes by street in Dublin City Centre
- Initial analysis observes Dublin City Centre Footfall and 14 Day Incidence Rate of County Dublin (provided by ECDC)
- Smart Dublin counter data updated monthly currently by Dublin City Council

Facebook survey dashboard detail



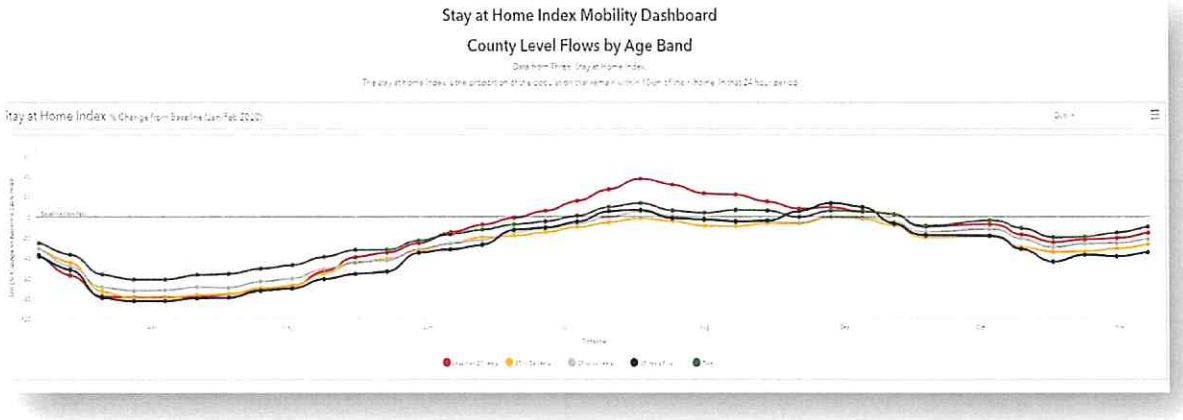
- Dashboard built using survey data facilitated by Facebook, conducted by the University of Maryland
- Focus on three key issues reported:
  1. Mask compliance
  2. Contacts outside household
  3. Financial worries
- Dashboard can be updated daily (subject to Facebook data being published daily) with a two-day lag time
- Can be used for analysis as required going forward to measure compliance with Covid-19 restrictions
- Allows for comparison of these three measures for two specific counties and/or dates to precisely determine impact of restriction changes and other key evens

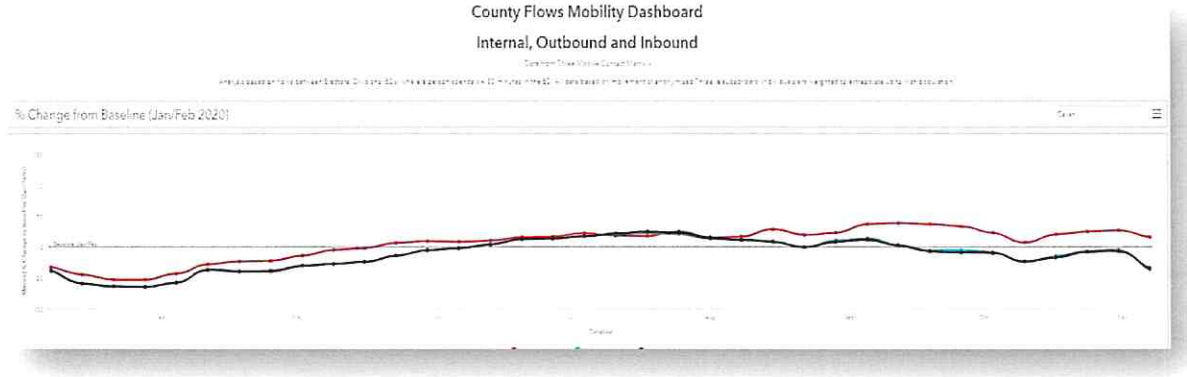
Google/Apple Mobility Dashboard detail



- Both datasets are updated daily, with a short lag
- The Apple dataset contains the number of direction requests for driving/transit/walking as a percentage relative to baseline of Jan 13th, at a national level
- The Google dataset uses the median value for that day of the week in the five week period of Jan 3rd - Feb 6th as baseline, and reports across 6 broad location types, at a national and county level
  - In some cases, Google censor data prior to release if there is relatively little in some category for some county on some date
- The dashboard enables the following analysis:
  - Examine national and county level trends across multiple mobility categories over time
  - Directly compare one of a number of mobility metrics on two different dates
  - Map mobility to examine similarities in nearby regions on a given day
  - Can filtering for specific dates to examine event impact at an aggregate level, or get a snapshot of a certain county at that point in time

Stay at home index detail





- Uses mobile data to evaluate movement throughout the country at different points in time
- Broken down into three key areas:
  1. Stay at home index: Shows proportion of population that remained within 10km of their home, broken down by age groups
  2. County level flow: Shows movement into, within and out of each county compared to levels seen in January and February
  3. Origin-destination flow: Visual display of movement into and out of a given ED
- Using this data, along with other mobility data, movement throughout the country will be examined to better understand the spread of C-19

Summary of international research

Title	Summary	Key Findings
Bloomberg Analysis, 23 Nov [1]	53 countries investigated on 10 metrics (cases, mortality, testing, vaccine, impact of restrictions, etc.)	Ireland ranked 23 overall in the resilience score out of 53 countries. Performed poorly for lockdown severity and communal mobility (ranked 52th); Ranked 9th for universal healthcare coverage, and joint 3rd for access to vaccine
Effects of human mobility restrictions on the spread of COVID-19 in Shenzhen, China: a modelling study using mobile phone data, Aug '20 [2]	Important to monitor mobility, as higher mobility is closely linked to greater C-19 spread; Even reducing mobility by a small amount helps to reduce the flow of C-19	Mobility restrictions of 20% would flattened the peak number of cases by 33% and delay to the peak number by 2 week; Restrictions specifically on symptomatic individuals and high risk regions magnified this positive effect
The role of transport accessibility within the spread of the Coronavirus pandemic in Italy [3]	Areas with lower railway accessibility had few total cases, less severe lockdown in these areas may have been just as effective	The more accessible an area is the easier it is for the virus to reach; Apply lockdowns in proportion to the transport accessibility of the areas; Greater population densities have a higher probability of contagion
A Virus That Knows No Borders? Exposure to and Restrictions of International Travel and the Global Diffusion of COVID-19 [4,5,6]	A virus only moves with its host; A country's exposure to international travel is strongly associated with higher COVID-19 mortality rates	Countries with travel restrictions in early March had mortality rates 62% lower than those that restricted travel later or not at all; Mandatory quarantines were found to be more effective than entry bans
Case studies on restaurants and bars in the USA, Japan, China [7,8,9,10]	Close contact settings with poor ventilation and large crowds tended to have more outbreaks	Layout of air conditioning units influenced infection rates in a restaurant; While doing so would reduce cases, it may not be possible for restaurants to reopen profitably at 20% capacity
Case studies on reopening gyms and dance studios in EU and South Korea (SK) [11,12,13]	Reopening gyms, when social distancing is maintained, does not appear to incur a large number of new cases, but more research is needed; Proper ventilation is essential in reducing C-19 spread	Only 487 positive cases out of 62 million gym visits across several EU countries (0.78 infections per 100,000 visits); 112 person outbreak from dance classes but none from yoga or pilates classes in the same gyms (SK)

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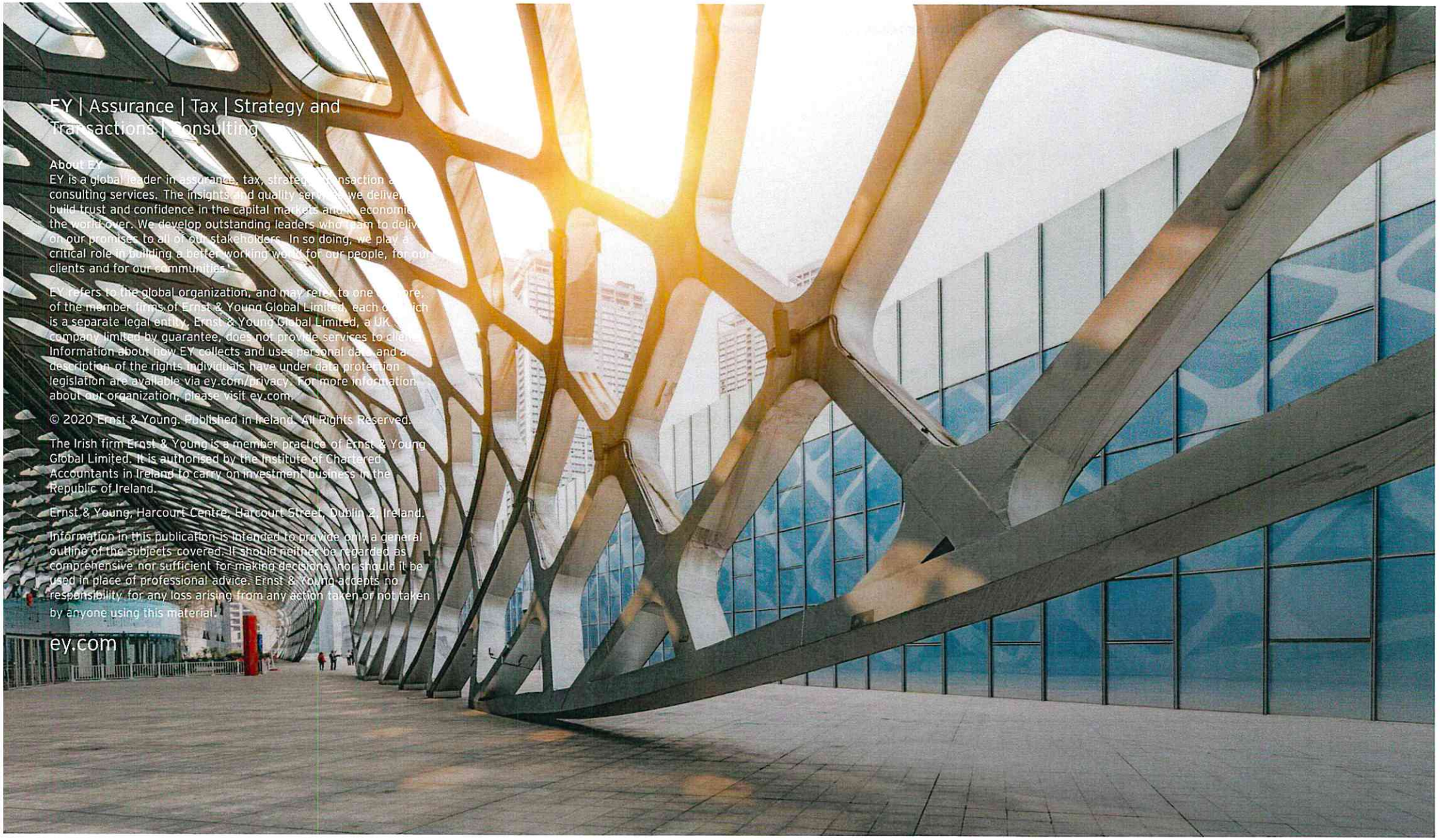

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1GC Priority Use Case Analysis (w/c 7/12)

Based on briefing session 4/12

USE CASE	DESCRIPTION	OUTSTANDING ACTIONS	PRIORITY	DEPENDENCY	OWNER	STATUS
County analysis	• County disease incidence rates	• Refresh data and provide insights	High	None	Fiona	Ongoing
LEA heatmaps	• LEA incidence rates	• Refresh data and provide insights	High	None	Fiona	Ongoing
Restrictions analysis	• Impact of restriction on incidence rates	• Refresh data and provide insights	High	None	Fiona	Ongoing
Outbreak analysis	• Source of outbreaks analysis	• Continue analysing outbreaks	High	Awaiting CIDR data access from HSE	TBC	Awaiting data
Update activity data to assist with press briefings	• Transport • Dublin footfall • Facebook • Mobility	• Update regularly and provide insights • Agree calendar of updates ahead of press briefings • Agree briefing requirements with Comms team • Test if activity linked with incidence rates	High	None	Kenny, Rory M, Fiona, Jamie, Cillian B	Ongoing
Covid app	• Close contact analysis	• Check if close contact data available from Covid app	High	Accessing data	Cillian L	Ongoing
International research	• Complete desktop research and present findings	• Produce new insights deck	High	None	Emma, Nik, John	Ongoing
Payments data	• Payments data by category and county	• Create prototype insights • Made decision about ongoing requirement • Test if activity linked with incidence rates	High	None	Rory M, Cillian B	Ongoing
Stay at home index	• Analysis of those moving outside 10km	• Access data • Generate insights • Test if mobility linked with incidence rates in counties	High	Data from CSO	John, Cillian L	Awaiting data
NTA leap card data	• Leap card usage across public transport	• Access data • Generate insights	Medium	Accessing data	TBC	Awaiting data
Events impact	• Analyse impacts of events on cases	• Continue to add to events tracker • Confirm list of events with Comms team • Test if activity linked with incidence rates	Medium	None	Eve, Fiona, Nik, Emma	Ongoing
International passengers	• Find source of incoming passengers	• Analyse if feasible • Investigate use of PLF for incoming passenger information	Medium	Source of data required	Eve, Paul	Awaiting data
County risk view	• Risk indicator per county based on key metrics	• Decide on key metrics • Generate RAG rating	Medium	None	TBC	Ongoing
Garda activity	• Garda fines	• Follow up with GS/ John • Incorporate data into analysis	Medium	Response from GS	Eve, Paul	Escalate

DRAFT - Not for circulation

Data Analytics Insights

Draft - not for circulation

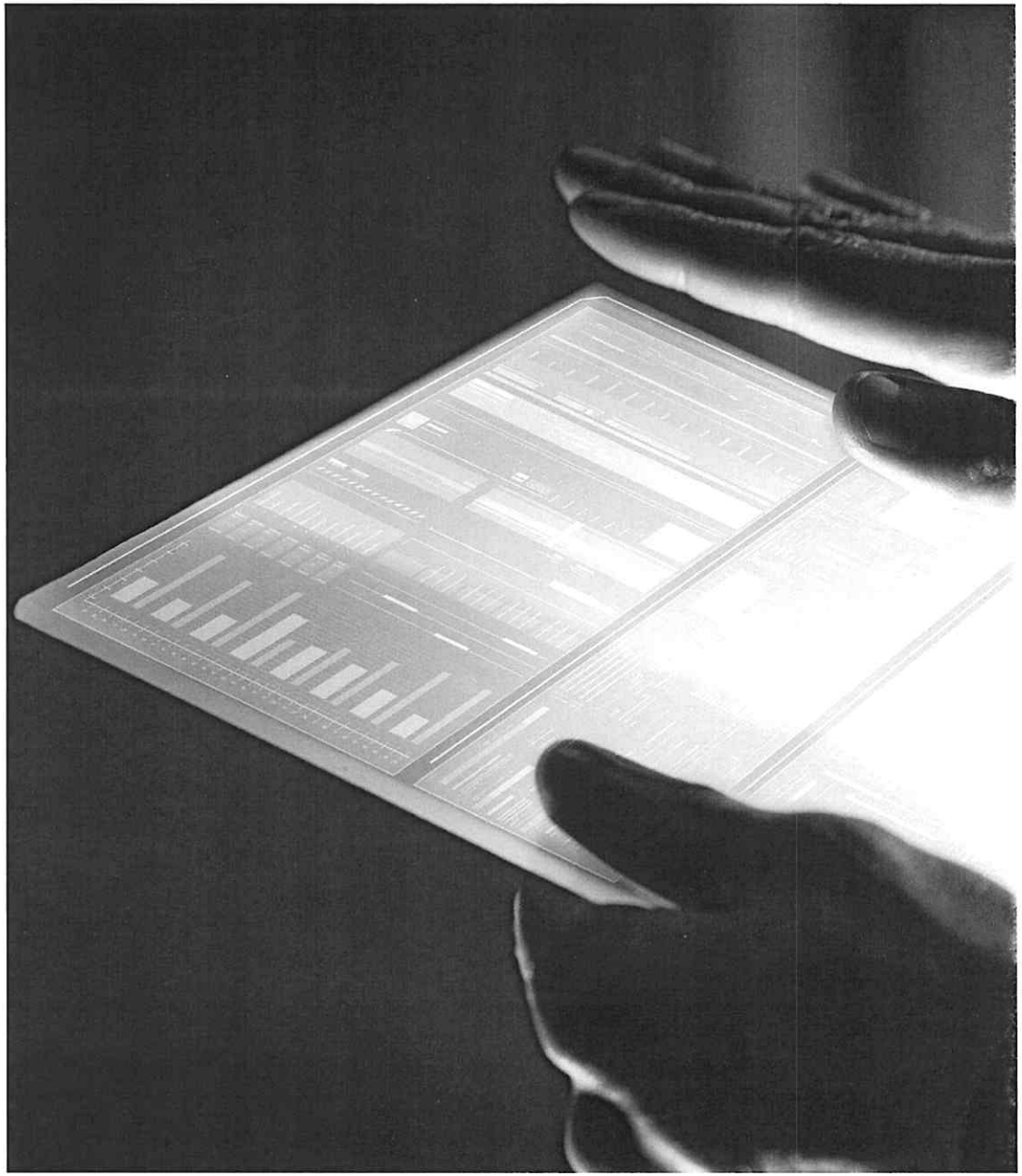
10 December 2020

Update - Week 8

Agenda

- County and outbreak analysis
- Payments data
- Data update
- Project updates

County and outbreak analysis



Increase for half of the 26 counties in 14-day incidence rates (the last 5 days)
Relatively stable national 14-day incidence rate

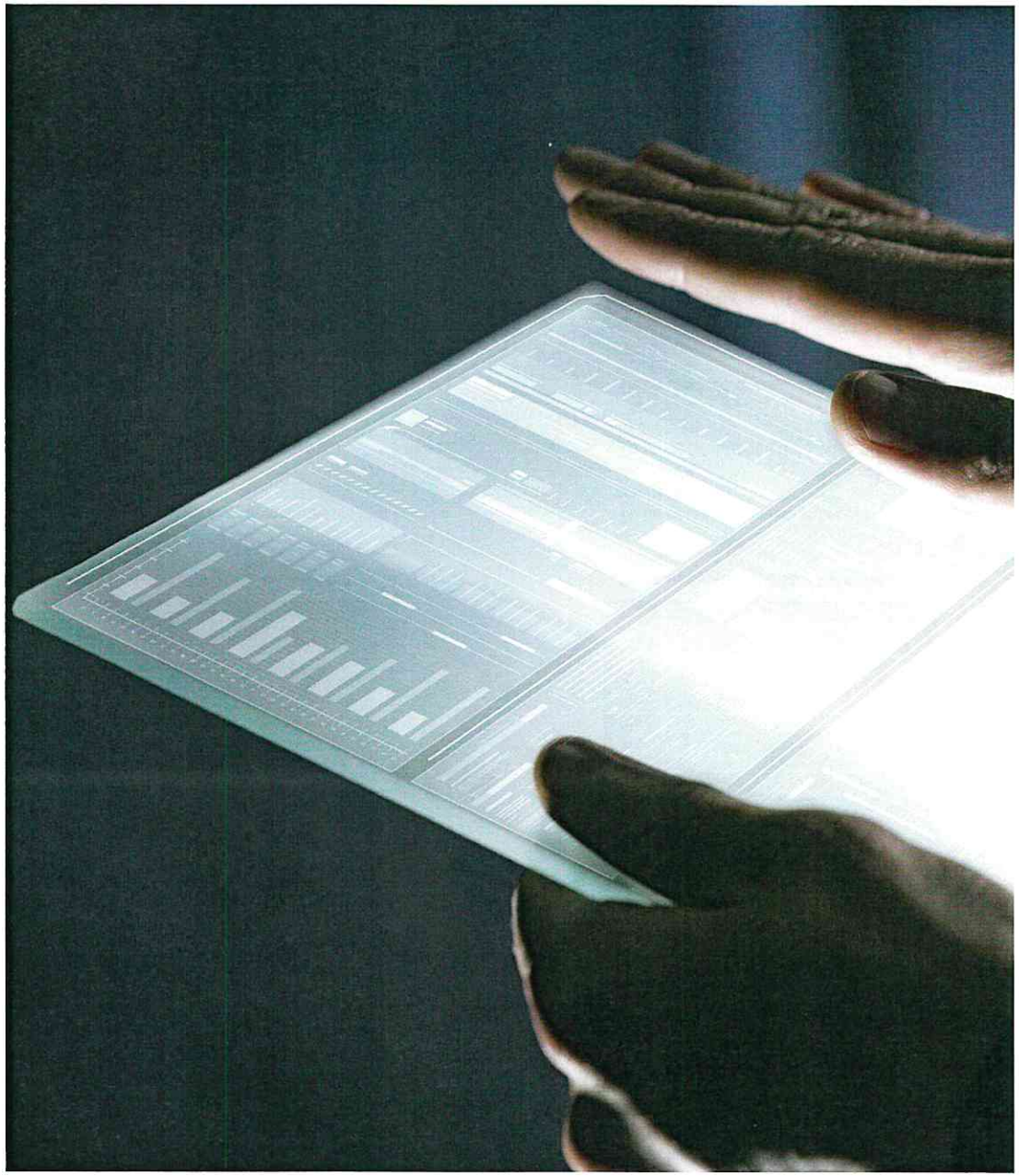
| Two Weekly Incidence Rate Per 100k | Population | 10-Oct | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | 18-Nov | 19-Nov | 20-Nov | 21-Nov | 22-Nov | 23-Nov | 24-Nov | 25-Nov | 26-Nov | 27-Nov | 28-Nov | 29-Nov | 30-Nov | 01-Dec | 02-Dec | 03-Dec | 04-Dec | 05-Dec | 06-Dec | 07-Dec | Change Last 5 Days |
|---|---|---

No identifiable impact on incidence rate between winning and losing team, with both showing a decrease 10 days after the event took place

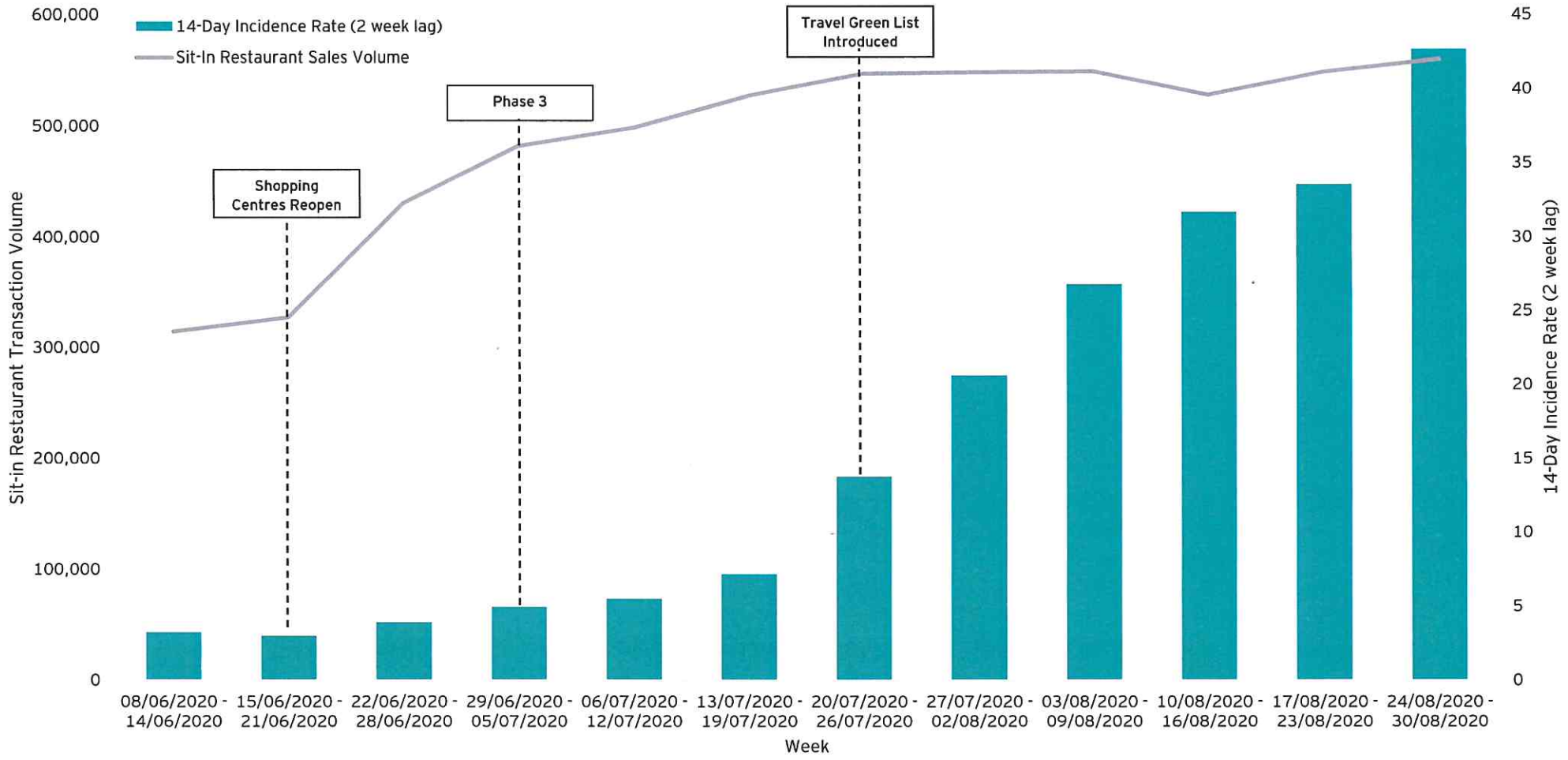
Past events	Date	Counties involved	Winning county	% change of County incidence rate between day of event and T + 10	Losing county	% change of County incidence rate between day of event and T + 10
FAI Cup Quarter Finals	20/11/2020	Louth (Dundalk) v Dublin (Bohemians)	Louth (Dundalk)	County change: -10% LEA change* (Dundalk South): -35%	Dublin (Bohemians)	County change: -14% LEA change* (Cabra-Glasnevin): -11%
GAA Hurling All-Ireland Senior Championship Quarter Final	21/11/2020	Waterford v Clare	Waterford	-54%	Clare	-48%
GAA Hurling All-Ireland Senior Championship Quarter Final	21/11/2020	Galway v Tipperary	Galway	-28%	Tipperary	-15%
Ulster GAA Football Senior Championship Final	22/11/2020	Cavan v Donegal	Cavan	-48%	Donegal	-6%
Munster GAA Football Senior Championship Final	22/11/2020	Cork v Tipperary	Tipperary	-14%	Cork	-36%
GAA Hurling All-Ireland Senior Championship Semi Final	28/11/2020	Kilkenny v Waterford	Waterford	To be updated once data becomes available	Kilkenny	To be updated once data becomes available
GAA Hurling All-Ireland Senior Championship Semi Final	29/11/2020	Limerick v Galway	Limerick	To be updated once data becomes available	Galway	To be updated once data becomes available
GAA Football All-Ireland Senior Championship Semi-Final	05/12/2020	Cavan v Dublin	Dublin	To be updated once data becomes available	Cavan	To be updated once data becomes available
GAA Football All-Ireland Senior Championship Semi-Final	06/12/2020	Mayo v Tipperary	Mayo	To be updated once data becomes available	Tipperary	To be updated once data becomes available
Upcoming events	**Date**	**Counties involved**	**Winning county**	**% change of County incidence rate between day of event and T + 10**	**Losing county**	**% change of County incidence rate between day of event and T + 10**
GAA Hurling All-Ireland Senior Championship Final	13/12/2020	Waterford v Limerick	TBC	To be updated once data becomes available	TBC	To be updated once data becomes available
GAA Football All-Ireland Senior Championship	19/12/2020	Mayo v Dublin	TBC	To be updated once data becomes available	TBC	To be updated once data becomes available

Source: GAA, FAI Cup. * LEA data collected weekly. Change calculated between 23/11 and 30/11 for the respective stadium's LEA.

Payments data

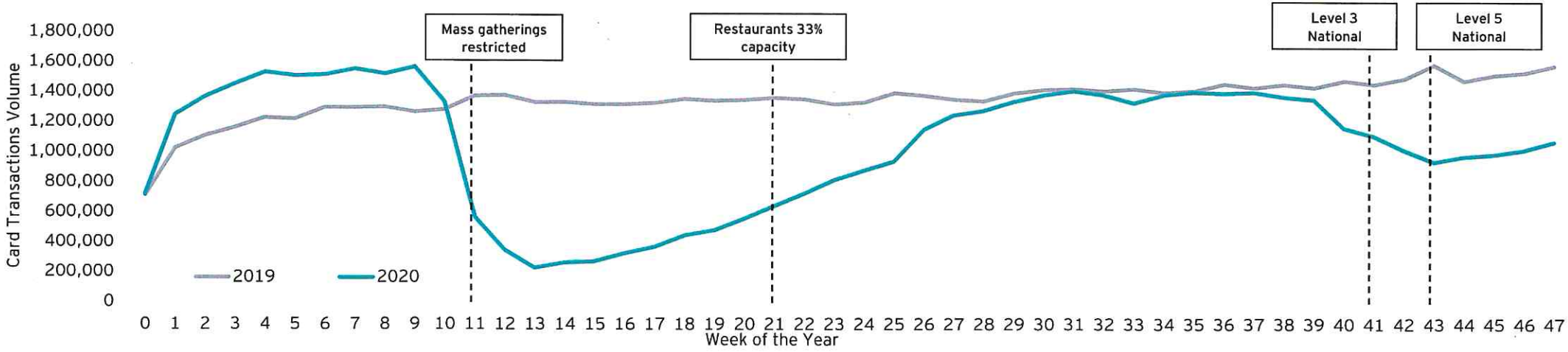


Sit-in restaurant transactions rose in early summer, while incidence rates remained low until after other restriction changes had occurred

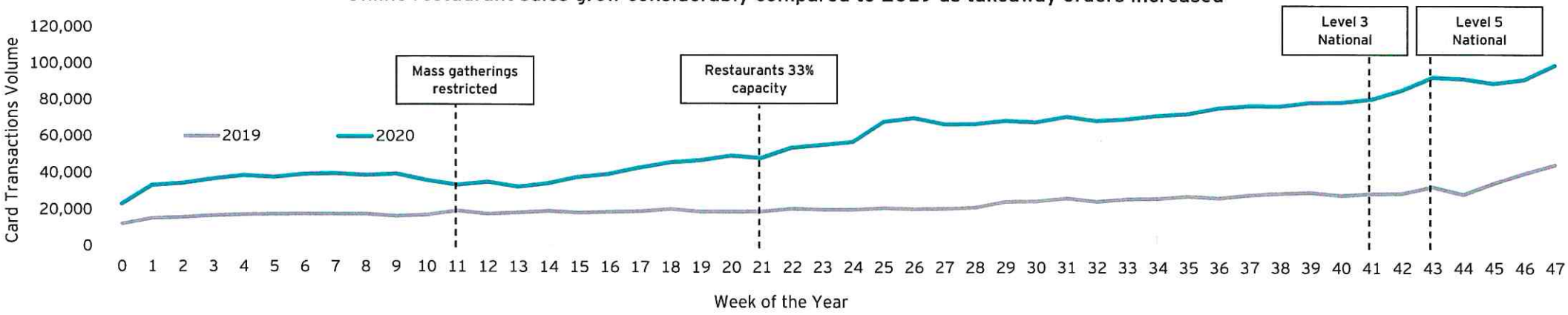


Sit-in restaurant transactions returned to 2019 levels during the summer months. Online sales rose, showing a shift towards online ordering

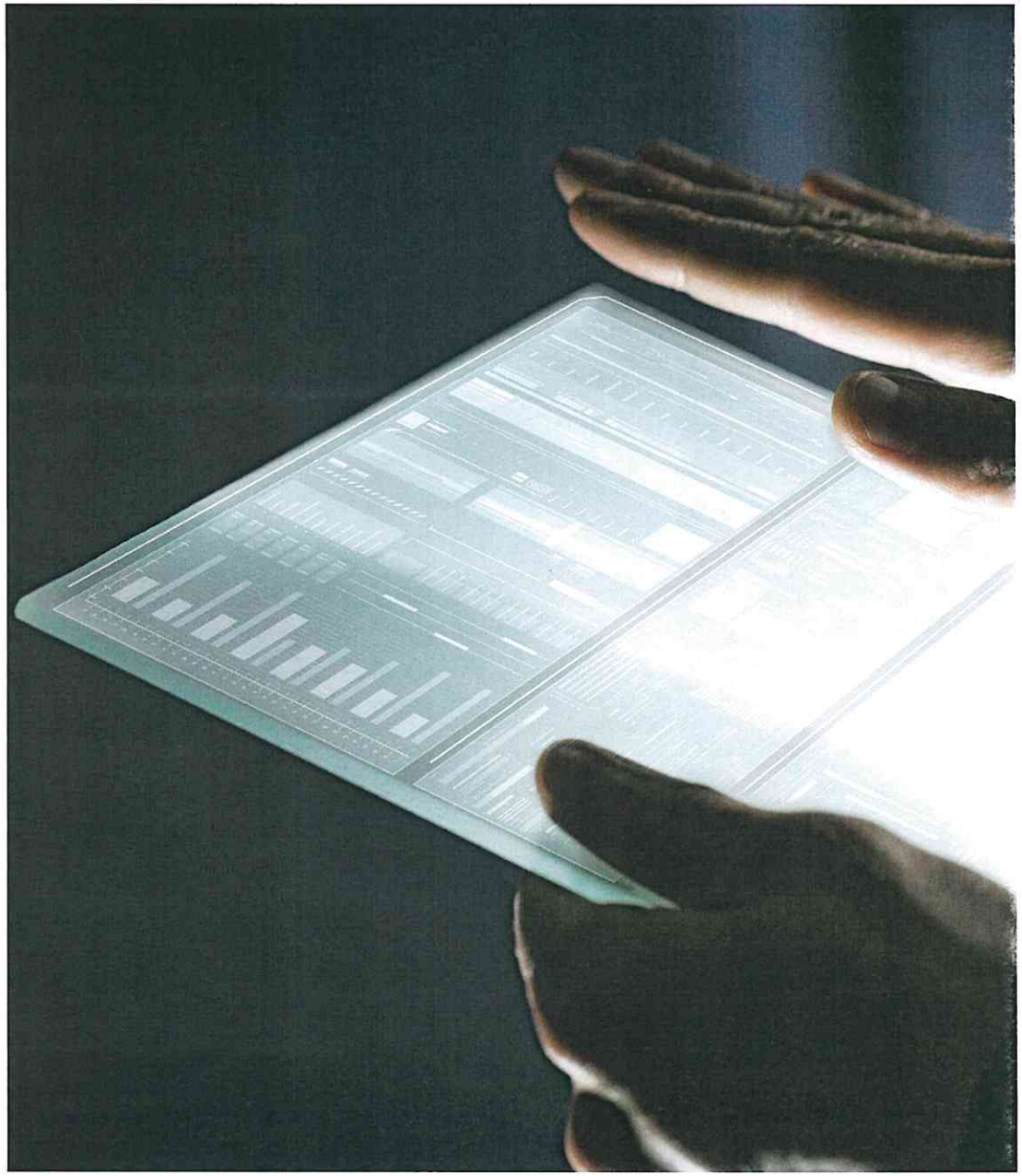
Despite a sharp fall after wave 1, sales volume rose to 2019 levels during the summer and fell less during wave 2



Online restaurant sales grew considerably compared to 2019 as takeaway orders increased



Data update



Specific assets and insights informing how we are performing and identifying future risks

Indicator	Summary	Frequency	Source	Status
Where and how is the disease spreading?				
County incidence rates	Disease incidence rates (County)	Daily	Openhive	
LEA incidence rates	Disease incidence rates (LEA)	Weekly	CSO	
Testing and tracing output	Disease transmission sources and settings	Daily	HSE	
Outbreaks	Analysis of outbreaks by setting	Daily	CIDR	
What restrictions are in place?				
Current restriction level	Current Government restrictions on place	As relevant	Govt guidelines	
Events tracker	Upcoming and past events	Daily	Online events database	
Are people complying?				
Stay at home index	Trips within and outside counties	Daily	3mobile	
Traffic data	Traffic counter data by vehicle type and road	Daily	TII	
Dublin footfall	Pedestrian counters for Dublin City Centre	Daily	DCC	
Mobility	Measure of mobility by purpose	Daily	Google, Apple	
Adherence self reporting	Survey responses on mask compliance, close contacts	Daily	Facebook survey	
Garda enforcement	Fixed fine notices for C-19 breaches	TBC	Gardaí	
Outbreaks	Analysis of outbreaks by setting	Daily	CIDR	
Leap card usage	Leap card user data	Daily	NTA	
What impact are the restrictions having?				
Restrictions analysis	Analysis of restrictions on disease incidence	Daily	Openhive	

Christmas update schedule

ASSET	M 14	T 15	W 16	T 17	F 18	M 21	T 22	W 23	T 24	F 25	M 28	T 29	W 30	T 31	F 1	M 4	T 5	W 6	T 7	F 8
County incidence 3 day lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
LEA incidence 3- day lag				✓					✓					✓						✓
Restrictions 3-day lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Transport No lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Dublin footfall No lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Stay at home index 4 day lag (TBC)				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Facebook survey 3 day lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Mobility 2-5 day lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
NTA (TBC)	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓

Press Briefing Key Statistics 10 Dec 2020

DISEASE INCIDENCE RATES

- Incidence rates nationally are broadly stable over the last five days
- Half of the 26 counties had increases in the 14-day incidence rates over the last 5 days
- 10 counties are above the national incidence rate level
- The largest increases over the last five days were seen in Leitrim, Offaly, Carlow, Laois and Kilkenny
- Clare, Kerry, Longford, Louth, Mayo, Roscommon, Wexford, Sligo, Cork and Meath are all seeing their cases decline

Source: Openhive, Data to 7 Dec

SHOPPING AND NIGHTLIFE

- Dublin City Centre had its busiest weekend since March (Total footfall)
- 2-3pm is the busiest shopping period with 9-10am still relatively quiet (Henry St and Grafton St)
- Traffic around four tracked shopping centres was c.40% busier this weekend. 8am-11am was the quietest period, but traffic volumes appeared well spread out throughout the weekend
- Nearly 80% increase in people out in Dublin City on Saturday night compared to last Saturday (8pm - 12am)

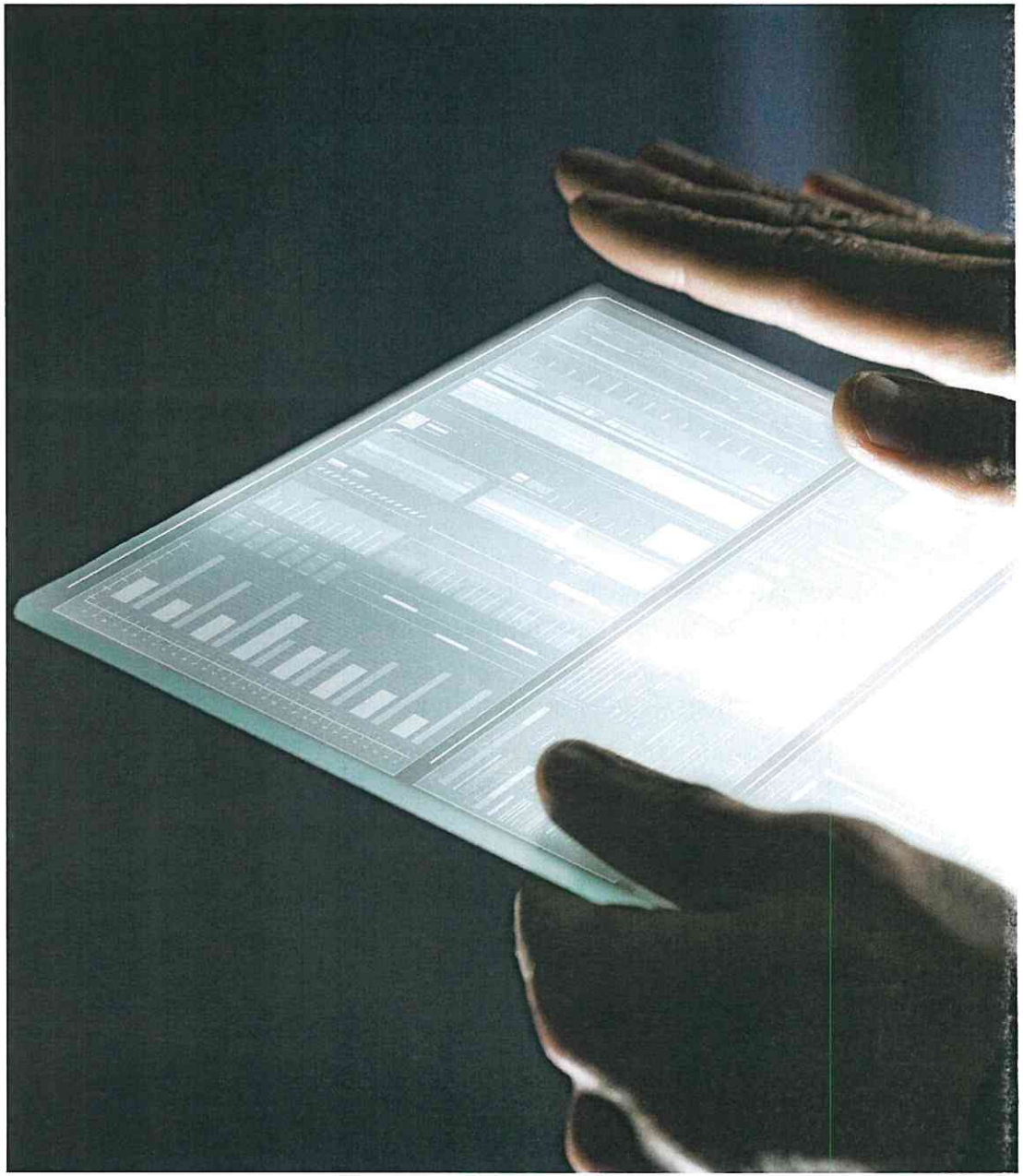
Shopping centres tracked: Kildare Village, Mahon Point, Liffey Valley, Blanchardstown for week (30/11-6/12) from 8am - 9pm; Source TII Traffic Volumes

COMPLIANCE

- Small increase in citizens meeting with contacts outside of their household this week (37%) versus last week (34%)
- Mask wearing compliance remains constant with 4 out of 5 people nationally reporting adherence

Source: Facebook Survey to 7 Dec 20

Project updates



Progress update

GOVERNANCE AND SET UP

- Delivered weekly Progress Report, Progress Update meeting today and daily HSE progress meetings
- Awaiting HSE to sign second SOW
- Series of HSE workshops to finalise and confirm detailed Azure design
- Issued draft Data Protection Impact Assessment to HSE and awaiting feedback
- Updated 1GC HSE Insight Governance approach for initial HSE feedback and now awaiting final feedback
- HSE 1GC Dev environment completing and now moving to Test environment
- Agreed interim data update approach with HSE while awaiting 1GC platform
- Awaiting DOH confirmation for Stay at Home Index detailed data

USE CASE DESIGN

- Session with DOT Press Team to confirm how we can input to them on an ongoing basis
- Issuing first set of information today
- Agreed NTA submission and awaiting first data to be issued
- Confirming HSE App data as well as available data captured for arrivals at airports
- Expanded analysis for each of the various activity dashboards. Refreshed for most recent data

INSIGHT DEVELOPMENT

- Received Banking Payments Data and with initial insights presented today
- Completed initial analysis for events last weekend and to be presented today
- Updating International Research Coffee Table to be published early next week

Where we are with the key DoT and Government dependencies

REQUIREMENT	USE CASES	STATUS	DESCRIPTION
1GC Data Owner and Data Protection Impact Assessment	Many	DOT Action	▸ Clarity required on 1GC data owner organisation and responsible individual ▸ We have also created an initial Data Protection Impact Assessment and ask for guidance on whether and how to engage with the Data Protection Commissioner ▸ Note this does not include any personal identifiable data, which means it is excluded from data protection. Need to o rely on existing data sharing agreements to meet timeframe
Align with NPHET	All Health Related	For Discussion	▸ Request to get NPHET forecasts of future disease spread to incorporate into Christmas briefings
Access to appropriate mobility data	▸ Social Distance Index ▸ Stay at Home Index	Continue Monitoring	▸ Stood down SDI team for now ▸ Awaiting DOH confirmation for access to detailed data decision on SHI
Stand Up Appropriate Analytics Environment within HSE	Many	Team Priority to Resolve	▸ Detailed design now published and working though specific comments from HSE Technology. Progressing well ▸ Needs continued prioritisation and leveraging existing infrastructure to deliver within required timeframe
Government Departments to create and share specific Use Cases	Many	Team Progressing	▸ Already have access to GeoHive and CSO ▸ Confirming specific approach with various government departments, including any data governance and sharing

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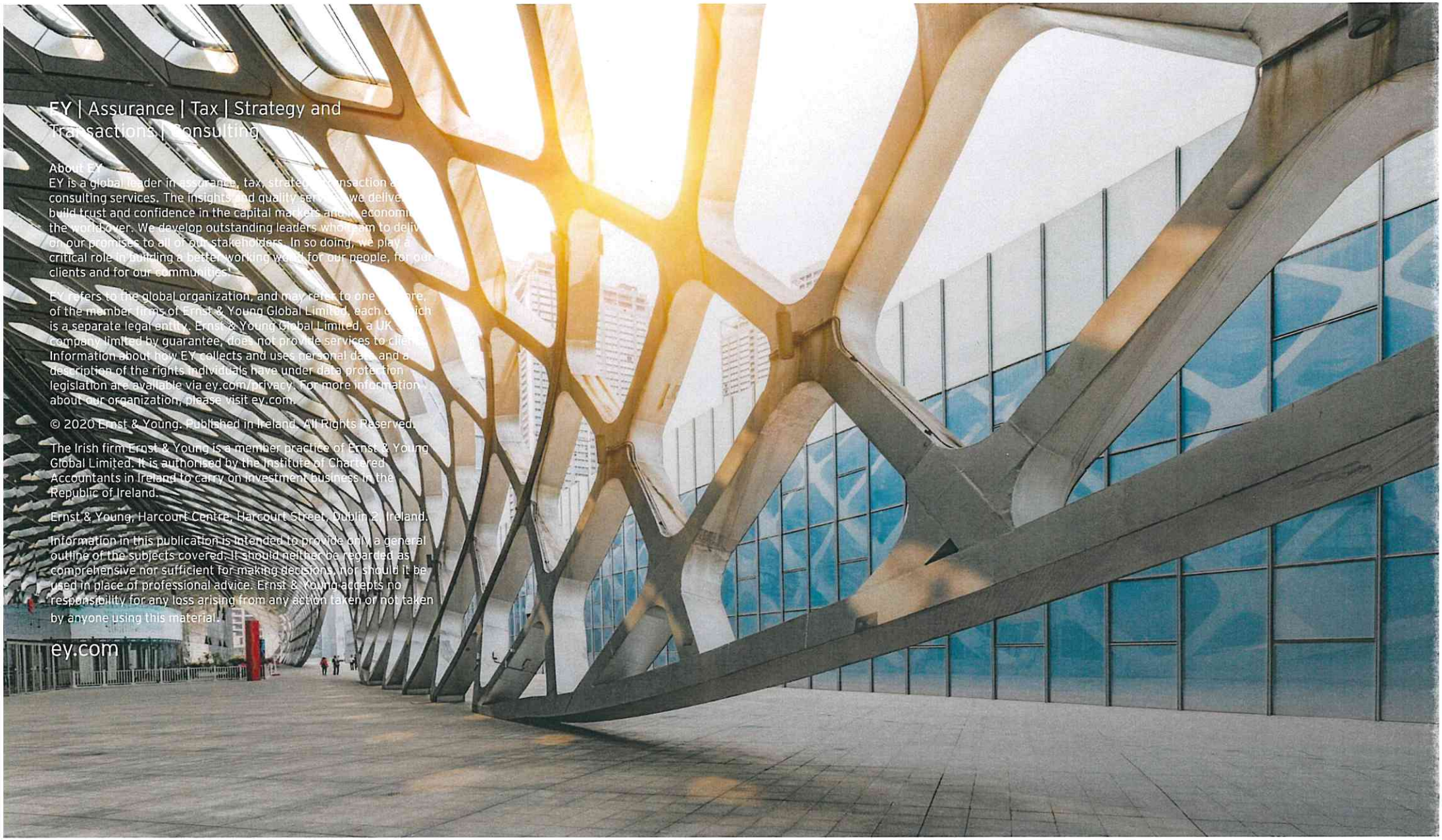

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1GC Programme
Weekly Report
11/12/2020
EY
Building a better working world

1GC Status Report (11/12/2020)

Overall		Schedule		Scope		Cost	

Critical /at risk Warning On Track

Reason for Status (if not GREEN)

- DPIA: Awaiting HSE feedback and sign off
- Azure: Pending agreement on finalised deployment dates

Milestone	Status	Date Last Period	Due Date
Use Case Prioritisation (Weekly)		25/12	25/12
1GC Briefing Pack (as required)		25/12	25/12
Social Distancing Index decision		TBC	04/12
Deploy 1GC Azure Environment		11/12	TBC
Complete 1GC DPIA		11/12	11/12

Items for Attention

Highlights / Risks / Issues / Decisions

- Decision and sign off on proposed insight governance
- DPIA sign off (including Data & Platform Owner decisions)
- HSE to sign phase 2 SOW
- Dept of Health sign off required for Stay at Home data, awaiting confirmation from Miuris O'Connor
- Azure Production environment to be deployed in January 2021 - pending final sign off

Key Achievements

- Presented briefing material to the DoT (07/12)
- Presented briefing material to the DoT (10/12)
- Presented Press briefing insights to the DoT press team (10/12)
- Delivered an updated briefing material deck to DoT (11/12)
- Presented health insights to the HSE before sharing with the DoT (10/12)
- Received payment/banking data
- Received outbreak and Track & Trace data from HSE
- Received Dublin footfall data from 'Smart Dublin'
- Created new economic dashboard using payment/banking data
- Monitored impact of recent events using Dublin footfall/Google/Apple/TII mobility data
- Drafted updated International research to be delivered next week
- Completed updated county analysis
- Drafted wireframe for 'measure your impact' website
- HSE Presentation: How non-health data will be used
- Agreed schedule with HSE to receive data (twice weekly until platform is completed)
- Deployment of the Development environment is complete (Sign off in progress)
- Review of data flow patterns by HSE technology team

Planned Activities / Forward Look

- Complete twice weekly briefings and associated Press briefing insights
- Deliver updated international research deck to DoT
- HSE to sign phase 2 SOW
- Incorporate 3 mobile data into exiting data insights such as County Dashboard
- Continue to monitor the impact of events/activities
- Incorporate NTA leap card data into existing mobility insights
- Incorporate carpark data into existing mobility insights
- Receive banking branch footfall data and incorporate into existing mobility insights
- Commence build of 'measure your impact' if given go ahead
- Receive Stay at Home Index data
- Complete sign off the Development environment
- Commence deployment of the Test environment

1GC Detailed Update

Area	Achievements	Forward Look
Governance	**Achievements** • Presented briefing material to the DoT (07/12) • Presented briefing material to the DoT (10/12) • Presented Press briefing insights to the DoT press team (10/12) • Delivered an updated briefing material deck to DoT (11/12) • Presented health insights to the HSE before sharing with the DoT (10/12)	**Forward Look** • Complete twice weekly briefings and associated Press briefing insights • Deliver updated international research deck to DoT • HSE to sign phase 2 SOW
1GC Azure Build	**Achievements** • Deployment of the Development environment is complete (Sign off in progress) • Review of data flow patterns by HSE technology team	**Forward Look** • Complete sign off the Development environment • Commence deployment of the Test environment
Data & Insights	**Achievements** • Received payment/banking data • Received outbreak and Track & Trace data from HSE • Received Dublin footfall data from 'Smart Dublin' • Created new economic dashboard using payment/banking data • Monitored impact of recent events using Dublin footfall/Google/Apple/TII mobility data • Drafted updated International research to be delivered next week • Completed updated county analysis • Drafted wireframe for 'measure your impact' website • HSE Presentation: How non-health data will be used • Agreed schedule with HSE to receive data (twice weekly until platform is completed)	**Forward Look** • Incorporate 3 mobile data into exiting data insights such as County Dashboard • Continue to monitor the impact of events/activities • Incorporate NTA leap card data into existing mobility insights • Incorporate carpark data into existing mobility insights • Receive banking branch footfall data and incorporate into existing mobility insights • Commence build of 'measure your impact' if given go ahead • Receive Stay at Home Index data

1GC Resource Tracker

Area	Team Member	Role	Last Week (Days)	Next Week Forecast (Days)
Governance	Paul Pierotti	Responsible Executive	5	5
	Emmanuel Adeleke	Programme Manager and Stakeholder Engagement Lead	3	5
	Emma O' Sullivan	Programme Office	5	5
1GC Azure Build	Nigel Foley	Delivery Lead	5	4
	Paul Browne	Cloud Engineer	5	5
	Szabolcs Bencsik	Data Engineer	0	5
Data & Insights	Cillian Leonowicz	Insight Design Lead	5	3
	Nikunj Maheshwari	Data Scientist	5	5
	Graham Catchpole	Senior Data Analyst	2.5	2.5
	Ross Morrison	Data Engineer	3*	0
	Rory Murphy	Data Analyst	5	5
	Fiona Murphy	Data Scientist	5	5
	Eve Bannon	Senior Data Analyst	5	5
	John Hallahan	Op Model Design Manager	5	5
	Cillian Bisset	Data Analyst	5	5
	Nitin Goutham	Data Engineer	3.5*	4
	Kenny Hazlett	Data Engineer	5	5
	Jamie McIlveen	Data Analyst	5	5
	Jason Guy	Data Protection	1	1

Key * Absence (due to sick leave etc.)

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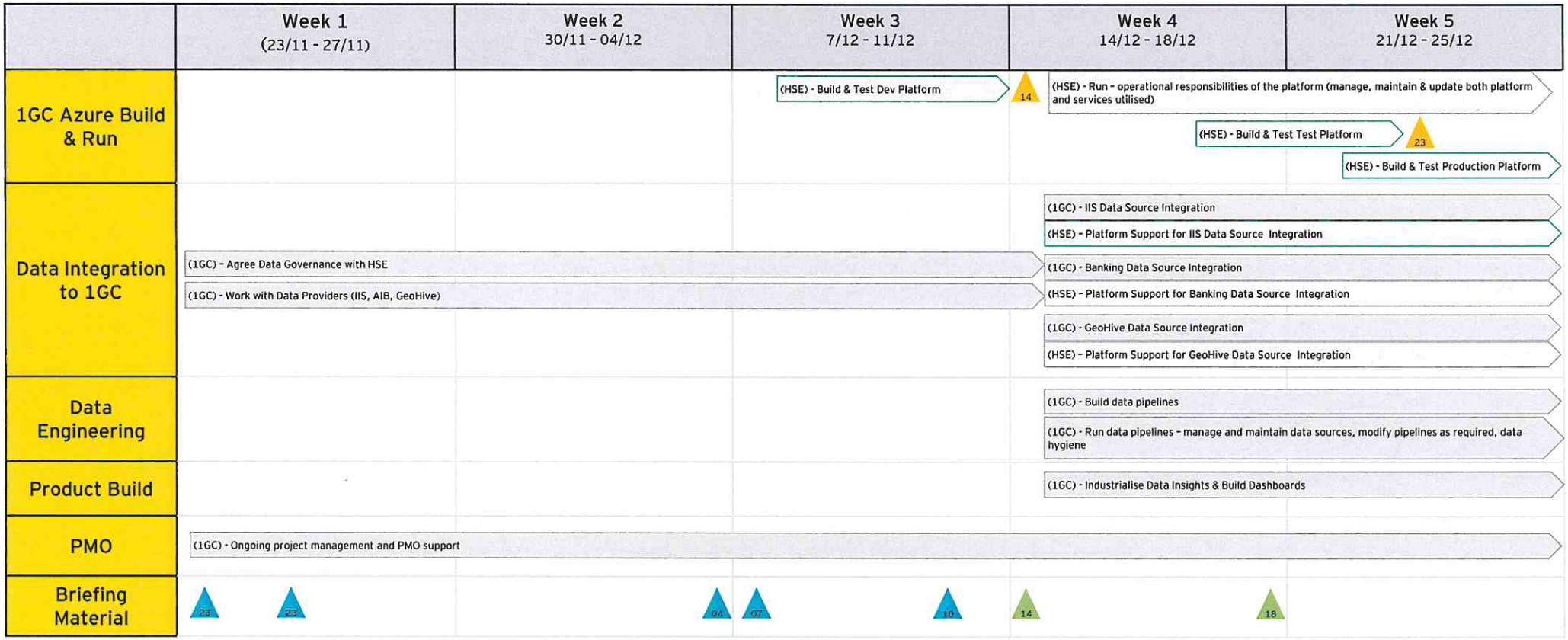
1GC Plan on a Page - Phase 2

Draft Pending Key Planning Decisions



Key

Complete | Critical Issues | At risk | On track | Planning | Replanning | 1 Implementation Milestone | 1 Critical Path Milestone | 1 Outcome Milestone | Critical Path

HSE Led Task | 1GC Led Task

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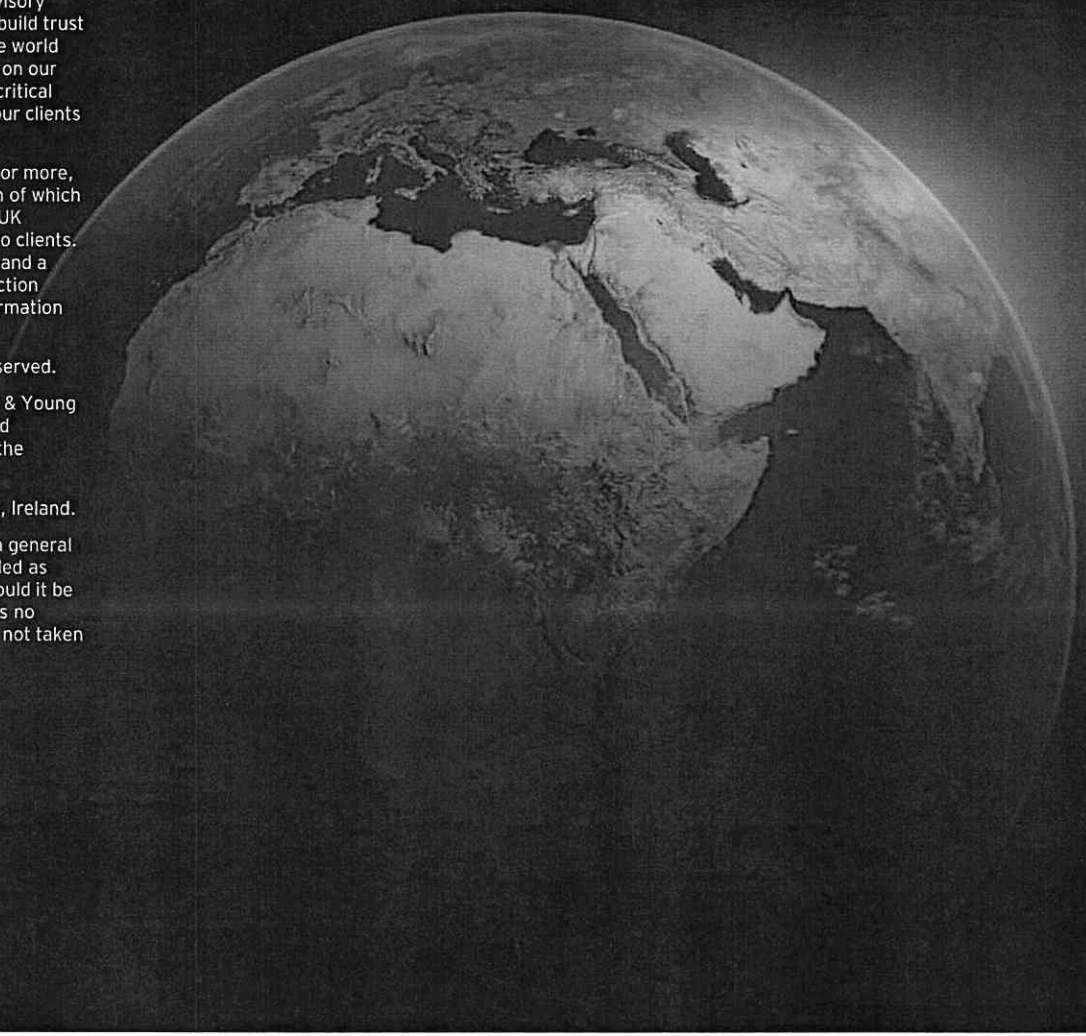

Data Analytics Insights
Draft - not for circulation
11 December 2020
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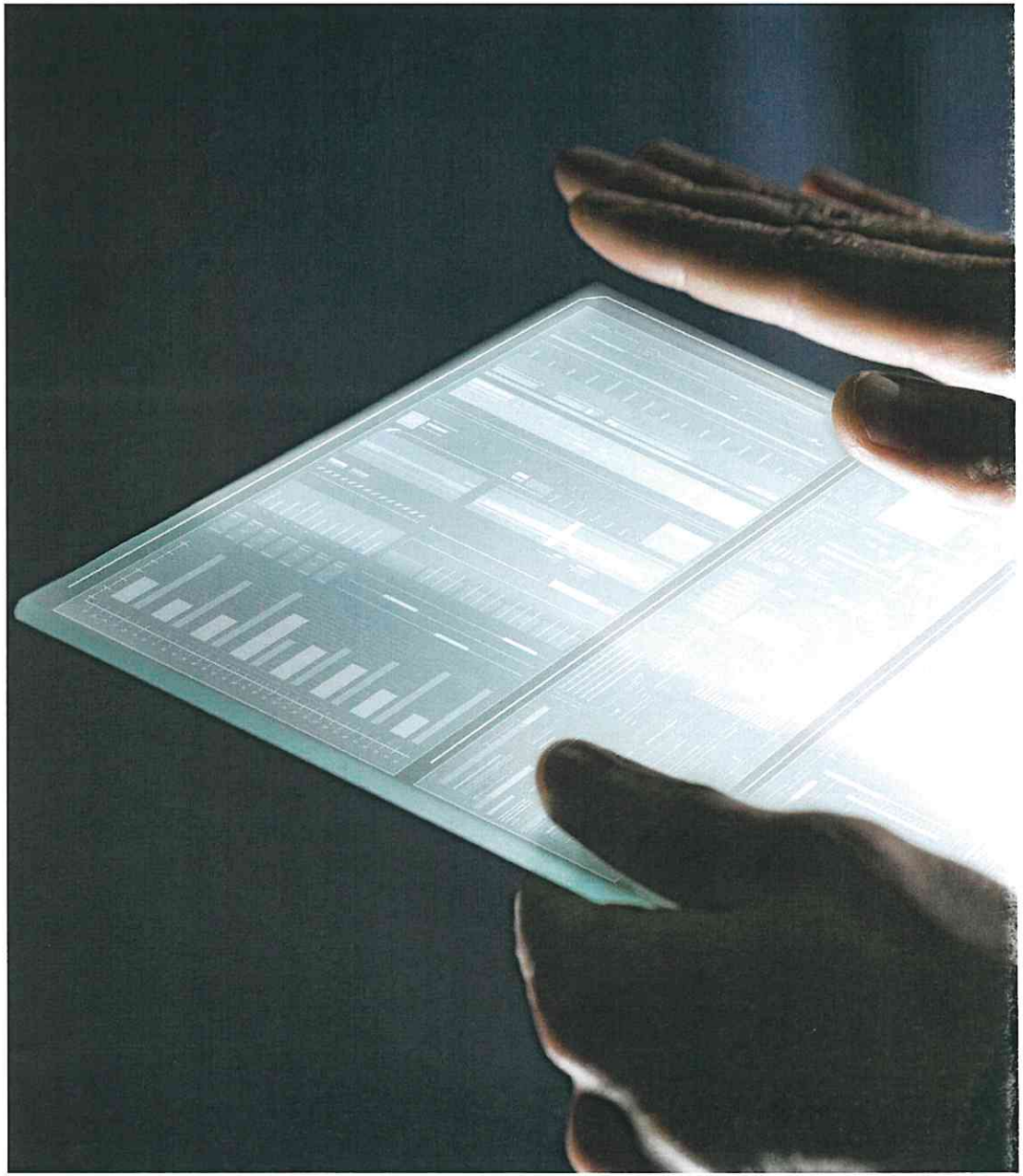
Update - Week 8

Agenda

- County and outbreak analysis
- Close contact analysis
- Payments data
- Data update
- Project updates

County and outbreak analysis



Increase for half of the 26 counties in 14-day incidence rates (the last 5 days)

Relatively stable national 14-day incidence rate

| Two Weekly Incidence Rate Per 100k | Population | 11-Oct | 12-Oct | 13-Oct | 14-Oct | 15-Oct | 16-Oct | 17-Oct | 18-Oct | 19-Oct | 20-Oct | 21-Oct | 22-Oct | 23-Oct | 24-Oct | 25-Oct | 26-Oct | 27-Oct | 28-Oct | 29-Oct | 30-Oct | 31-Oct | 01-Nov | 02-Nov | 03-Nov | 04-Nov | 05-Nov | 06-Nov | 07-Nov | 08-Nov | 09-Nov | 10-Nov | 11-Nov | 12-Nov | 13-Nov | 14-Nov | 15-Nov | 16-Nov | 17-Nov | 18-Nov | 19-Nov | 20-Nov | 21-Nov | 22-Nov | 23-Nov | 24-Nov | 25-Nov | 26-Nov | 27-Nov | 28-Nov | 29-Nov | 30-Nov | 01-Dec | 02-Dec | 03-Dec | 04-Dec | 05-Dec | 06-Dec | 07-Dec | 08-Dec | Change Last 5 Days |
|---|---|---

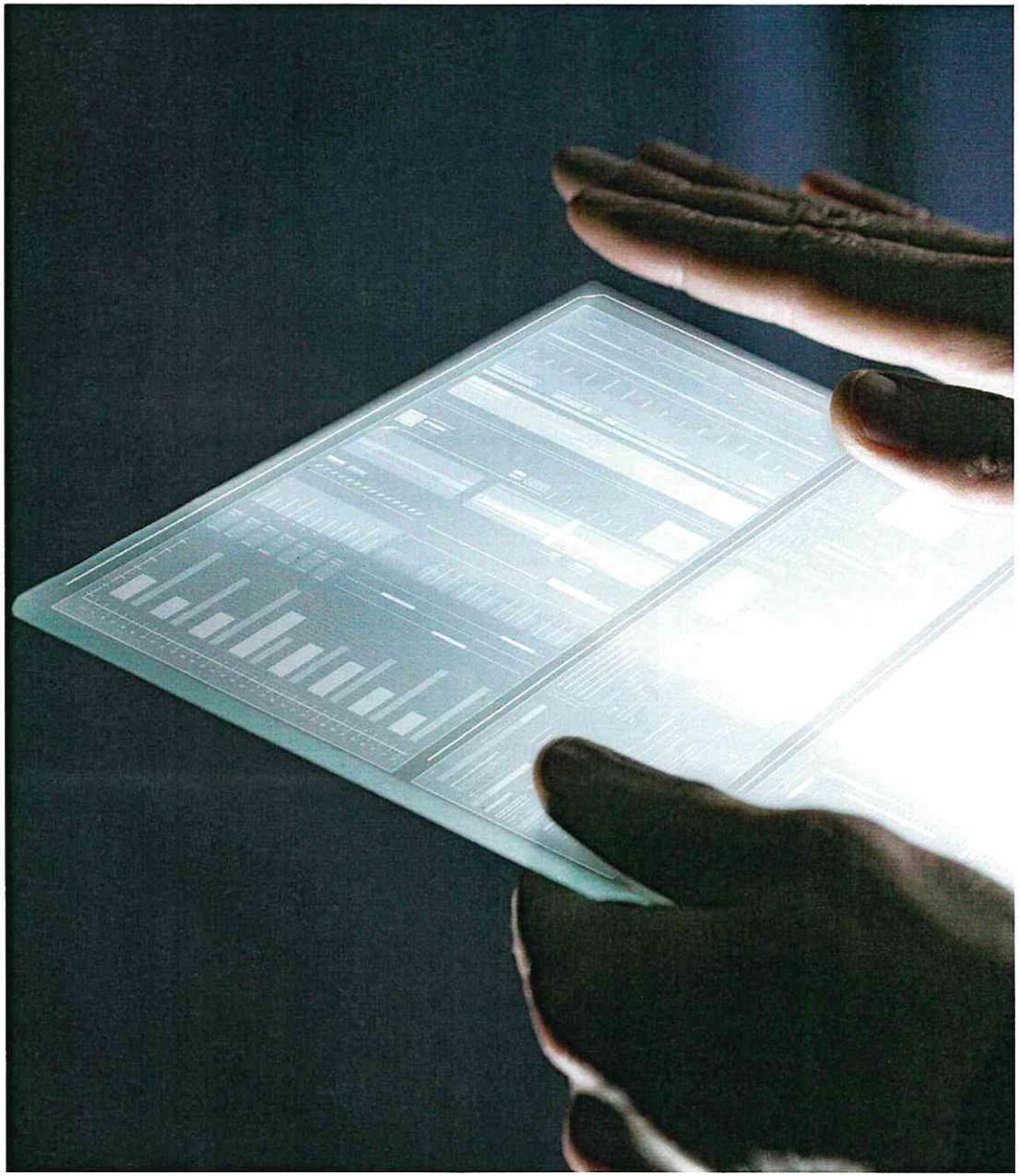
Previous larger games have show a link with incident rates spikes. However, there was no statistically significant impact on incidence rate between winning and losing team from the weekend of 20 November, with both showing a decrease 10 days after the event took place. We will continue to monitor for future games

Past events	Date	Counties involved	Winning county	% change of County incidence rate between day of event and T + 10*	Losing county	% change of County incidence rate between day of event and T + 10*	% Change in close contacts between day of event + 7 days**
FAI Cup Quarter Finals	20/11/2020	Louth (Dundalk) v Dublin (Bohemians)	Louth (Dundalk)	County change: -10% LEA change* (Dundalk South): -35%	Dublin (Bohemians)	County change: -14% LEA change* (Cabra-Glasnevin): -11%	Louth: -37% Dublin: -32%
GAA Hurling All-Ireland Senior Championship Quarter Final	21/11/2020	Waterford v Clare	Waterford	-54%	Clare	-48%	Waterford: +90% Clare: no data for 28th
GAA Hurling All-Ireland Senior Championship Quarter Final	21/11/2020	Galway v Tipperary	Galway	-28%	Tipperary	-15%	Galway: -72% Tipperary: -77%
Ulster GAA Football Senior Championship Final	22/11/2020	Cavan v Donegal	Cavan	-48%	Donegal	-6%	Cavan: +82% Donegal: -55%
Munster GAA Football Senior Championship Final	22/11/2020	Cork v Tipperary	Tipperary	-14%	Cork	-36%	Tipperary: -46% Cork: -12%
GAA Hurling All-Ireland Senior Championship Semi Final	28/11/2020	Kilkenny v Waterford	Waterford	To be updated once data becomes available	Kilkenny	To be updated once data becomes available	Kilkenny: -54% Waterford: +13%
GAA Hurling All-Ireland Senior Championship Semi Final	29/11/2020	Limerick v Galway	Limerick	To be updated once data becomes available	Galway	To be updated once data becomes available	Limerick: +93% Galway: +110%
GAA Football All-Ireland Senior Championship Semi-Final	05/12/2020	Cavan v Dublin	Dublin	To be updated once data becomes available	Cavan	To be updated once data becomes available	To be updated once data becomes available
GAA Football All-Ireland Senior Championship Semi-Final	06/12/2020	Mayo v Tipperary	Mayo	To be updated once data becomes available	Tipperary	To be updated once data becomes available	To be updated once data becomes available
Upcoming events	**Date**	**Counties involved**	**Winning county**	**% change of County incidence rate between day of event and T + 10**	**Losing county**	**% change of County incidence rate between day of event and T + 10**	**Change in close contacts**
GAA Hurling All-Ireland Senior Championship Final	13/12/2020	Waterford v Limerick	TBC	To be updated once data becomes available	TBC	To be updated once data becomes available	To be updated once data becomes available
GAA Football All-Ireland Senior Championship	19/12/2020	Mayo v Dublin	TBC	To be updated once data becomes available	TBC	To be updated once data becomes available	To be updated once data becomes available

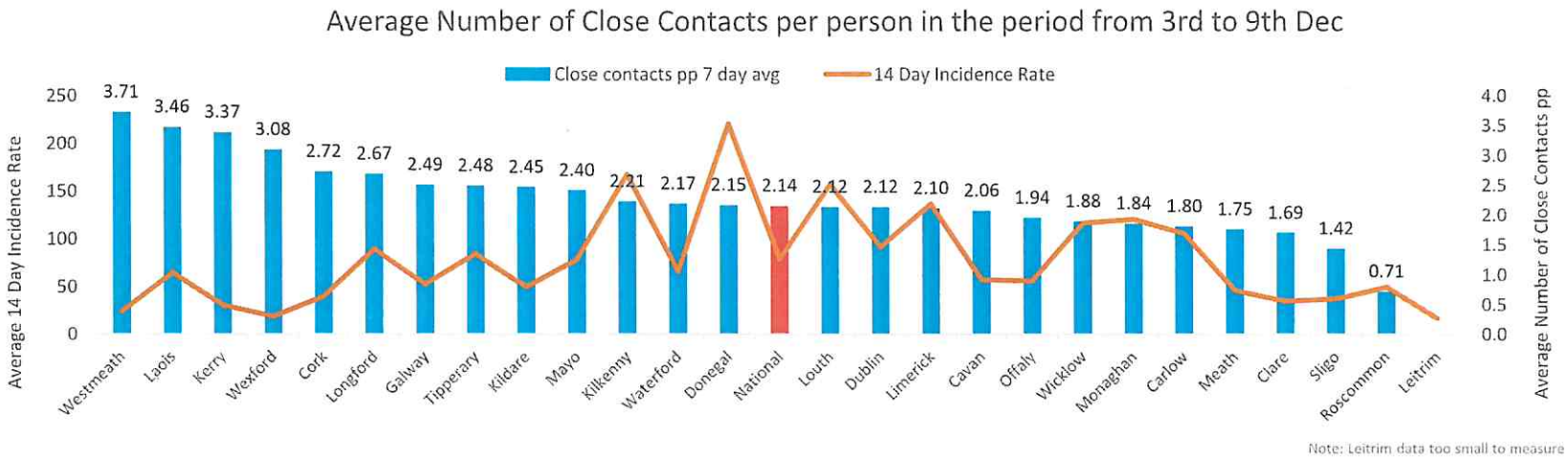
Source: LEA data collected weekly and published from HSPC on GeoHive.
Change calculated between 23/11 and 30/11 for the respective stadium's LEA

Source: HSE Test and Trace shared via HSE IIS as of 10 Dec 2020

Close contact analysis



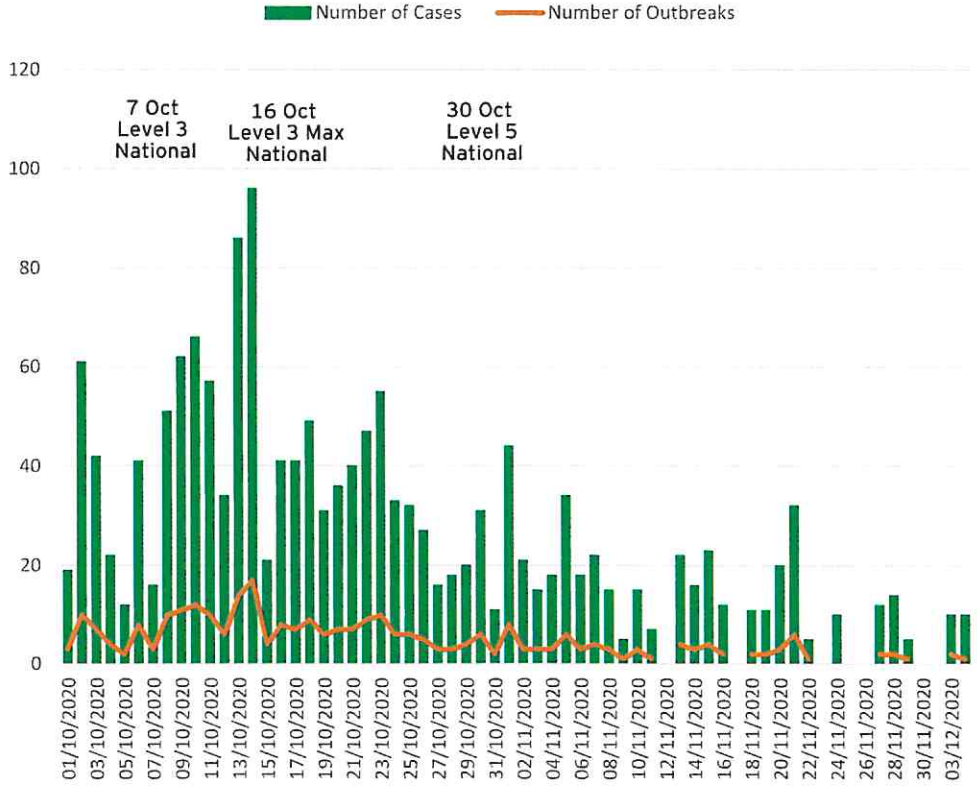
Trend in Close Contacts



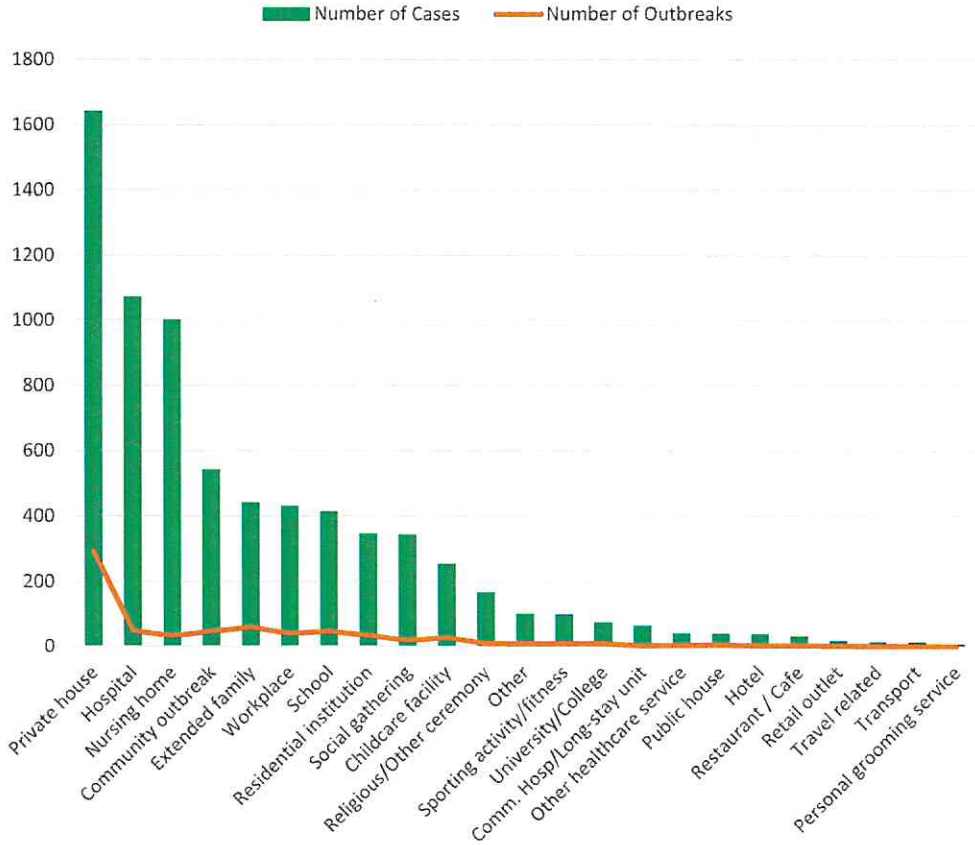
Source: HSE Test and Trace shared via IIS on 10 Dec 2020

Private Household outbreaks make up 40% of outbreaks of 5+ cases. Healthcare locations have many of the larger scale outbreaks.

Private House Outbreaks of 5 or More Cases
Number of Cases and Number of Outbreaks – over time

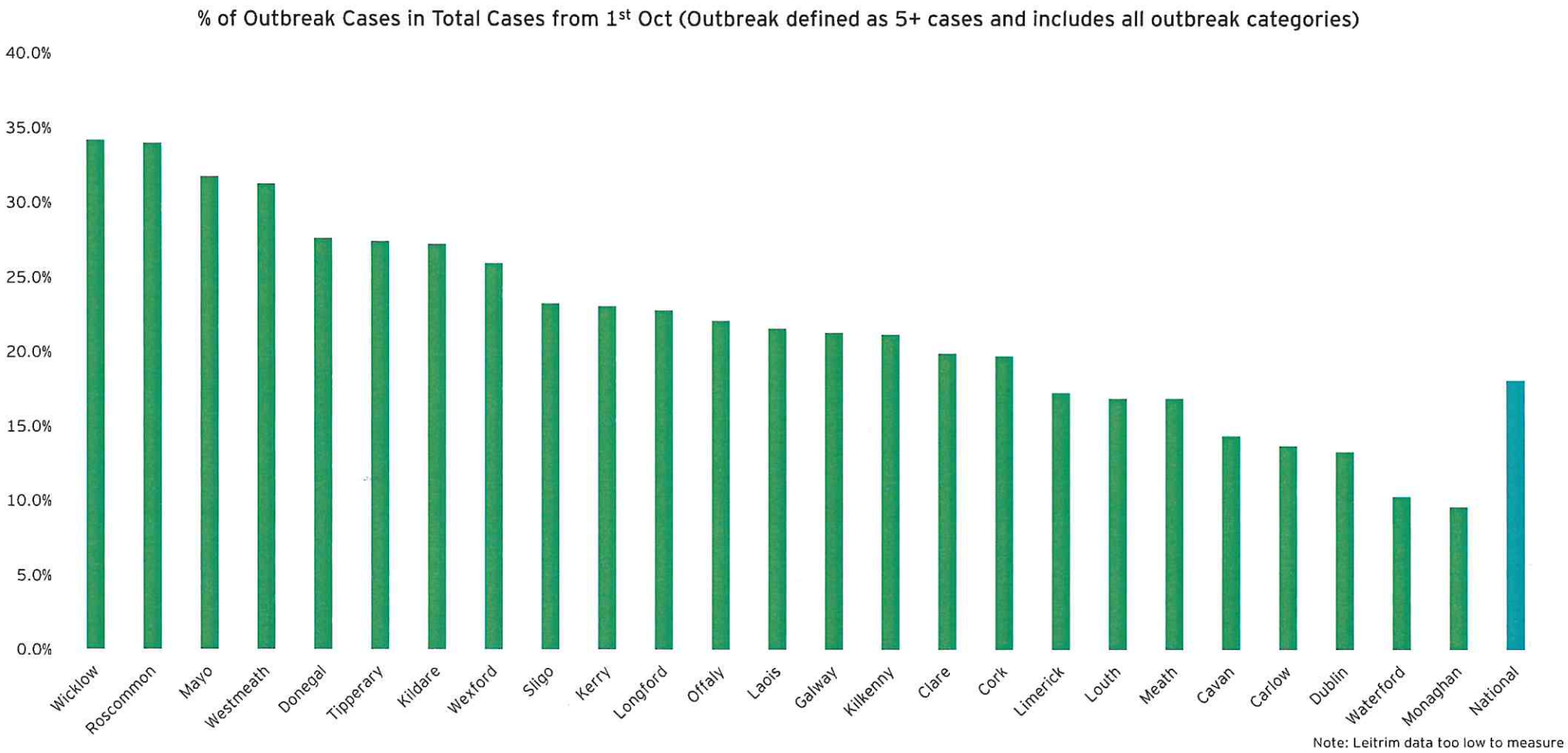


Private House Outbreaks of 5 or More Cases
Number of Cases and Number of Outbreaks – by location



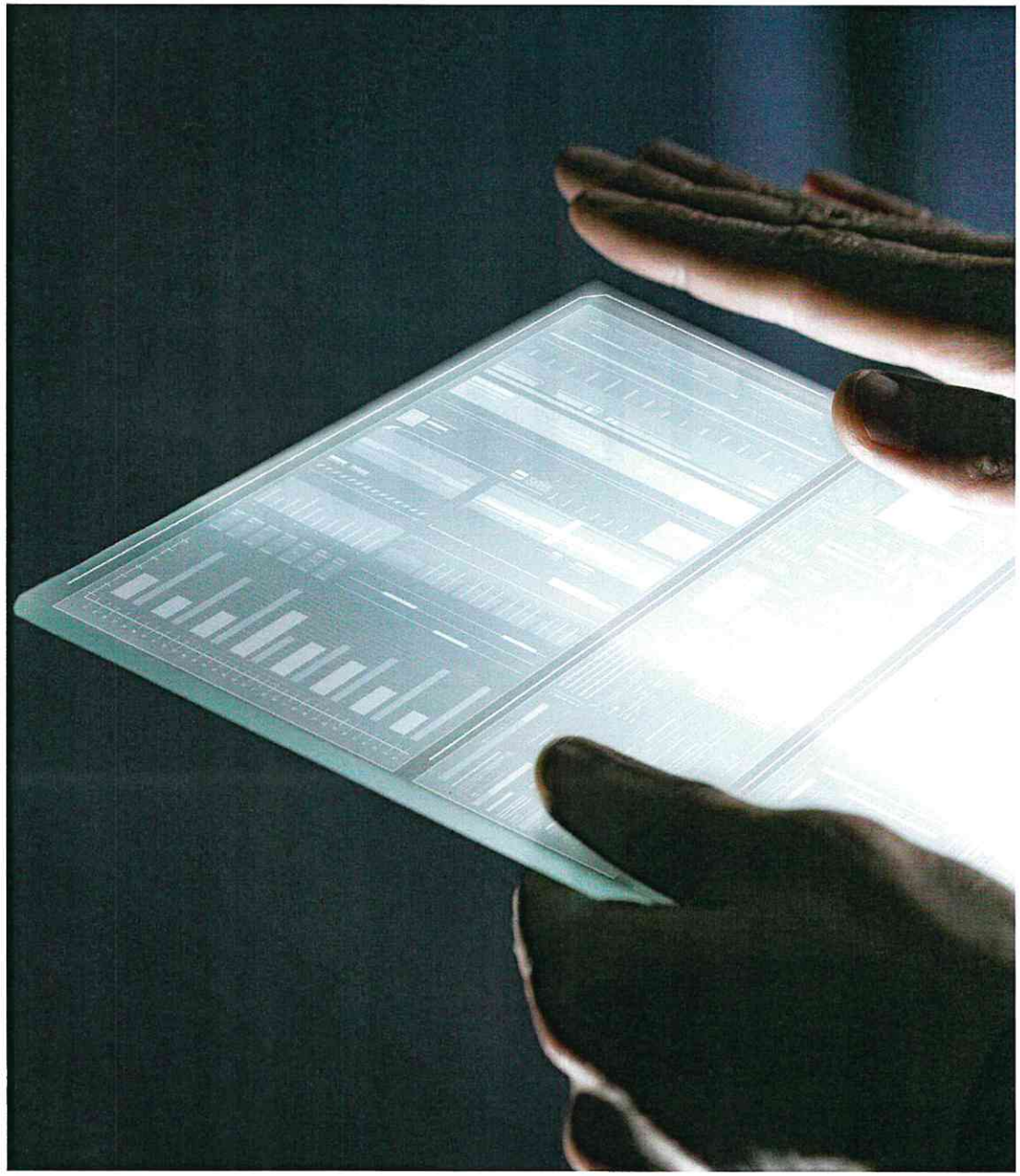
Source: HPSC CIDR Data shared via HSE IIS on 10 Dec 2020

Outbreaks of 5+ cases account for 18% of all cases nationally

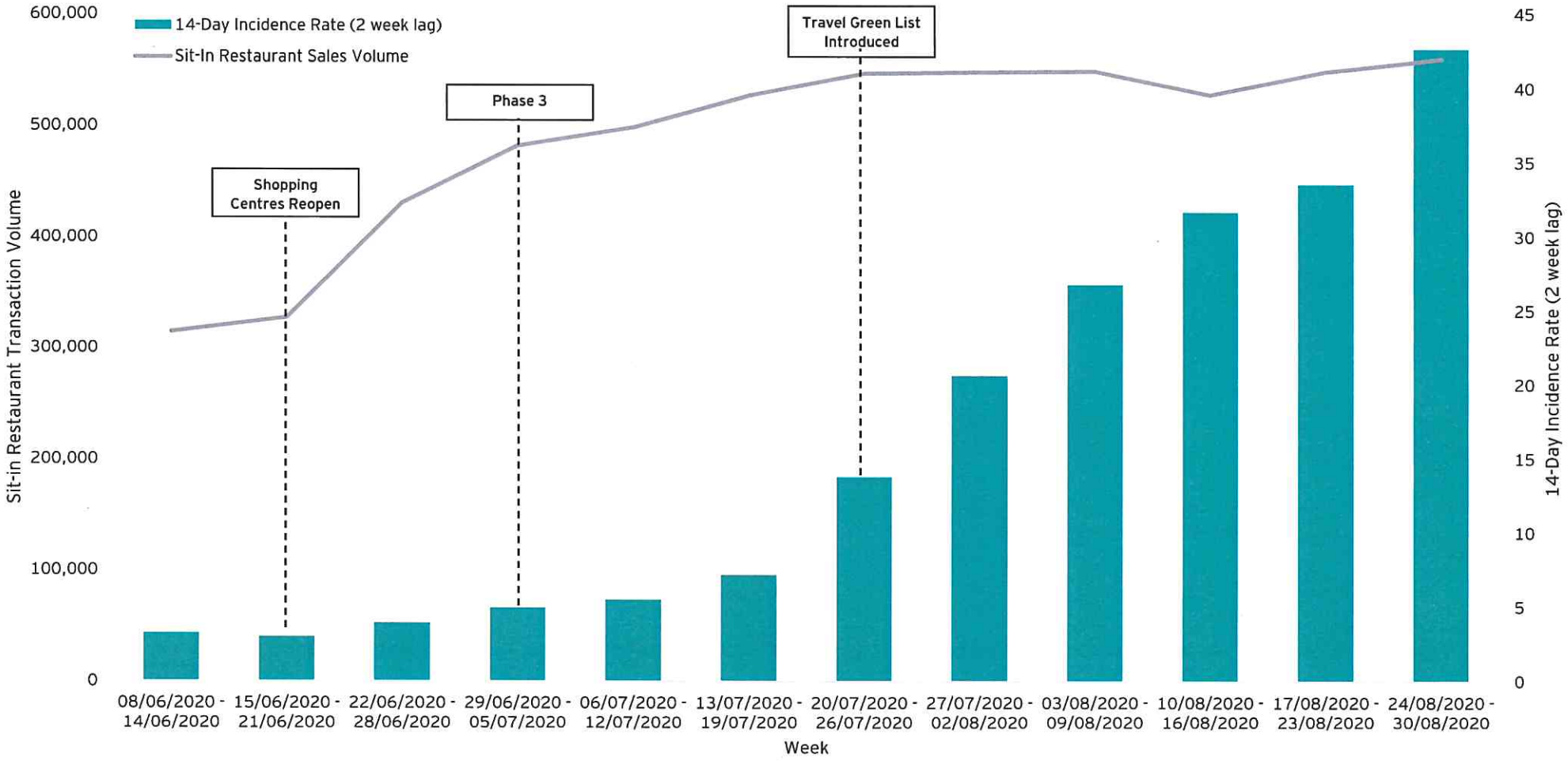


Source: HSE CIDR and Test Trace shared via HSE IIS on 10 Dec 2020

Payments data

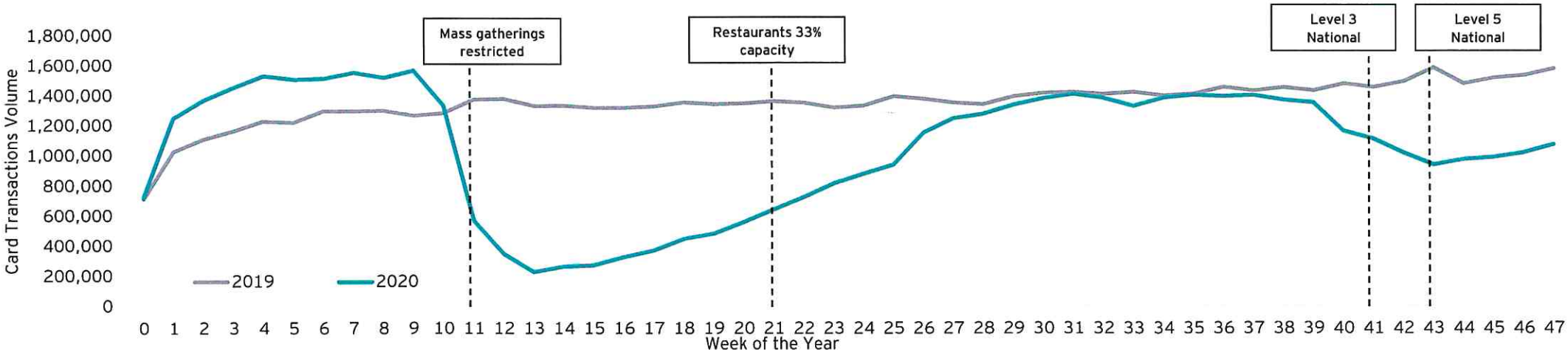


Sit-in restaurant transactions rose in early summer, while incidence rates remained low until after other restriction changes had occurred

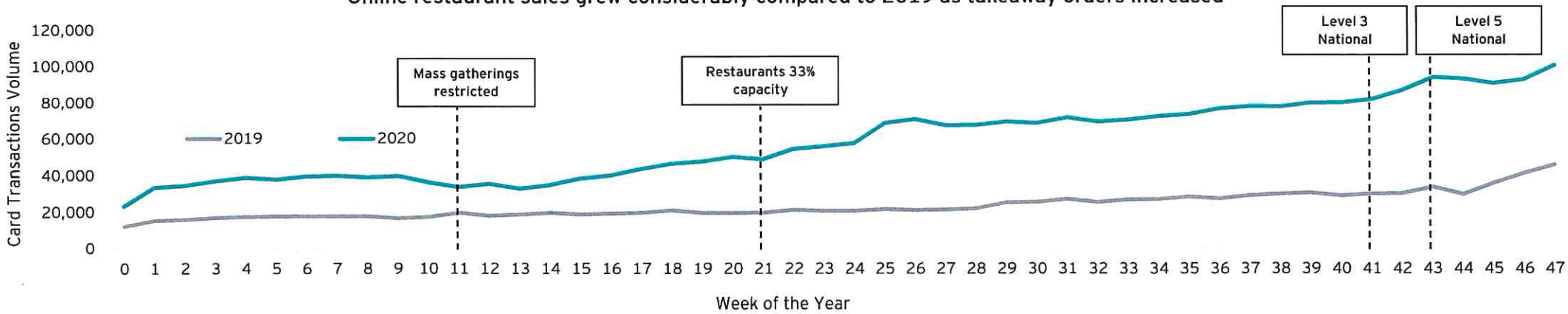


Sit-in restaurant transactions returned to 2019 levels during the summer months. Online sales rose, showing a shift towards online ordering

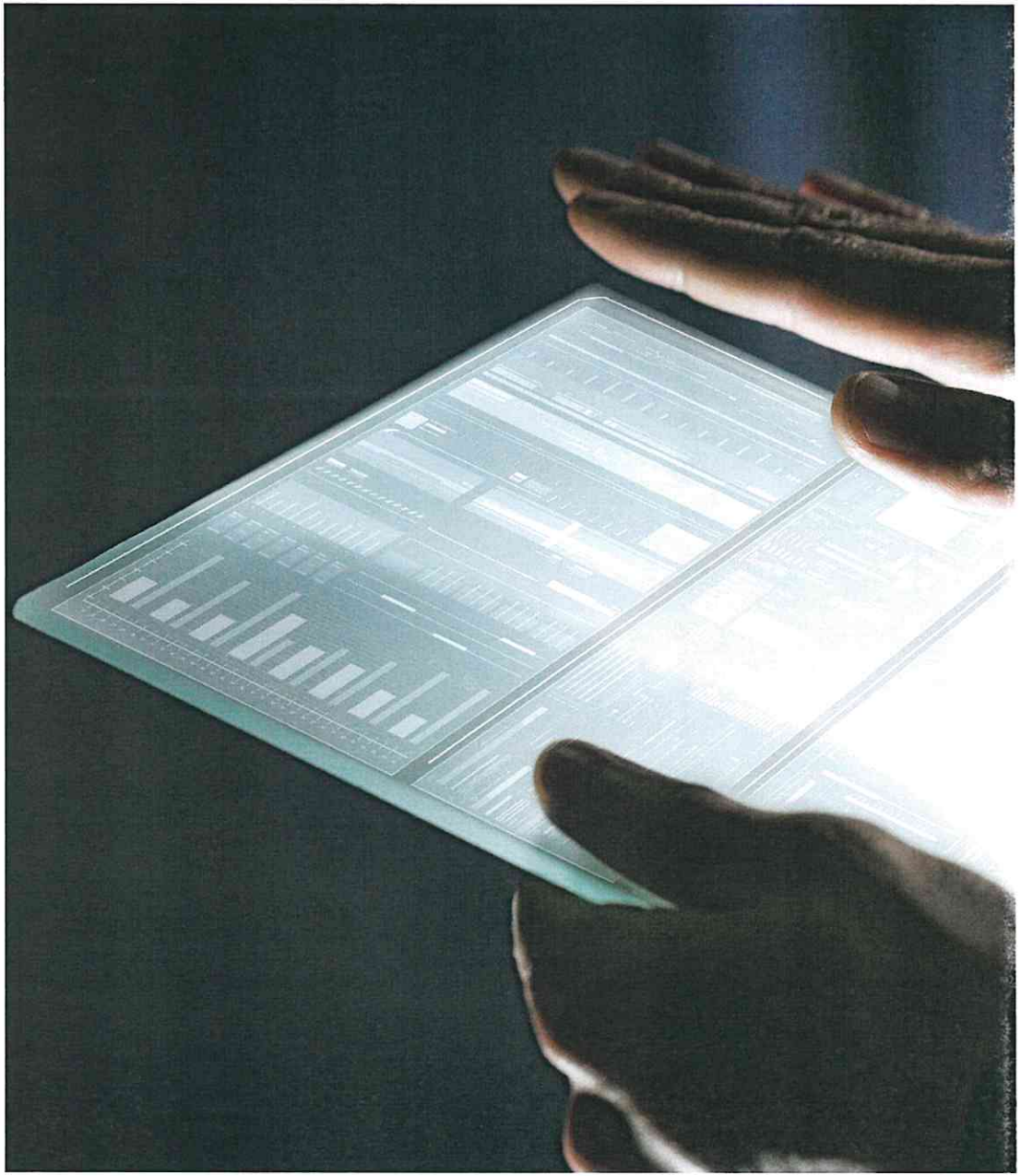
Despite a sharp fall after wave 1, sales volume rose to 2019 levels during the summer and fell less during wave 2



Online restaurant sales grew considerably compared to 2019 as takeaway orders increased



Data update



Specific assets and insights informing how we are performing and identifying future risks

Indicator	Summary	Frequency	Source	Status
Where and how is the disease spreading?				
County incidence rates	Disease incidence rates (County)	Daily	Openhive	
LEA incidence rates	Disease incidence rates (LEA)	Weekly	CSO	
Testing and tracing output	Disease transmission sources and settings	Daily	HSE	
Outbreaks	Analysis of outbreaks by setting	Daily	CIDR	
What restrictions are in place?				
Current restriction level	Current Government restrictions on place	As relevant	Govt guidelines	
Events tracker	Upcoming and past events	Daily	Online events database	
Are people complying?				
Stay at home index	Trips within and outside counties	Daily	3mobile	
Traffic data	Traffic counter data by vehicle type and road	Daily	TII	
Dublin footfall	Pedestrian counters for Dublin City Centre	Daily	DCC	
Mobility	Measure of mobility by purpose	Daily	Google, Apple	
Adherence self reporting	Survey responses on mask compliance, close contacts	Daily	Facebook survey	
Garda enforcement	Fixed fine notices for C-19 breaches	TBC	Gardaí	
Outbreaks	Analysis of outbreaks by setting	Daily	CIDR	
Leap card usage	Leap card user data	Daily	NTA	
What impact are the restrictions having?				
Restrictions analysis	Analysis of restrictions on disease incidence	Daily	Openhive	

Christmas update schedule

	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F
ASSET	14	15	16	17	18	21	22	23	24	25	28	29	30	31	1	4	5	6	7	8
County incidence 3 day lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
LEA incidence 3- day lag				✓					✓					✓						✓
Restrictions 3-day lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Transport No lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Dublin footfall No lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Stay at home index 4 day lag (TBC)				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Facebook survey 3 day lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
Mobility 2-5 day lag	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
NTA (TBC)	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓

Press Briefing Key Statistics 10 Dec 2020

DISEASE INCIDENCE RATES

- Incidence rates nationally have been broadly stable over the last five days
- Half of the 26 counties had increases in the 14-day incidence rates over the last 5 days
- 10 counties are above the national incidence rate level
- The largest increases over the last five days were seen in Leitrim, Offaly, Carlow, Laois and Kilkenny
- Clare, Kerry, Longford, Louth, Mayo, Roscommon, Wexford, Sligo, Cork and Meath are all seeing their cases decline

Source: Openhive, Data to 7 Dec

SHOPPING AND NIGHTLIFE

- Dublin City Centre had its busiest weekend since March (Total footfall)
- 2-3pm is the busiest shopping period with 9-10am still relatively quiet (Henry St and Grafton St)
- Nearly 80% increase in people out in Dublin City on Saturday night compared to last Saturday (8pm - 12am total footfall)
- Traffic around four tracked shopping centres was c.40% busier this weekend. 8am-11am was the quietest period, but traffic volumes appeared well spread out throughout the weekend

Shopping centres traffic counters tracked: Kildare Village, Mahon Point, Liffey Valley, Blanchardstown for week (30/11-6/12) from 8am - 9pm; Source TII Traffic Volumes

COMPLIANCE

- Small increase in citizens meeting with contacts outside of their household this week (37%) versus last week (34%)
- Mask wearing compliance remains constant with 4 out of 5 people nationally reporting adherence

Source: Facebook Survey to 7 Dec 20

Project updates

Progress update

GOVERNANCE AND SET UP

- Delivered weekly Progress Report, Progress Update meeting today and daily HSE progress meetings
- Awaiting HSE to sign second SOW
- Series of HSE workshops to finalise and confirm detailed Azure design
- Issued draft Data Protection Impact Assessment to HSE and awaiting feedback
- Updated 1GC HSE Insight Governance approach for initial HSE feedback and now awaiting final feedback
- HSE 1GC Dev environment completing and now moving to Test environment
- Agreed interim data update approach with HSE while awaiting 1GC platform
- Awaiting DOH confirmation for Stay at Home Index detailed data

USE CASE DESIGN

- Session with DOT Press Team to confirm how we can input to them on an ongoing basis
- Issuing first set of information today
- Agreed NTA submission and awaiting first data to be issued
- Confirming HSE App data as well as available data captured for arrivals at airports
- Expanded analysis for each of the various activity dashboards. Refreshed for most recent data

INSIGHT DEVELOPMENT

- Received Banking Payments Data and with initial insights presented today
- Completed initial analysis for events last weekend and to be presented today
- Updating International Research Coffee Table to be published early next week

Where we are with the key DoT and Government dependencies

REQUIREMENT	USE CASES	STATUS	DESCRIPTION
1GC Data Owner and Data Protection Impact Assessment	Many	DOT Action	▸ Clarity required on 1GC data owner organisation and responsible individual ▸ We have also created an initial Data Protection Impact Assessment and ask for guidance on whether and how to engage with the Data Protection Commissioner ▸ Note this does not include any personal identifiable data, which means it is excluded from data protection. Need to o rely on existing data sharing agreements to meet timeframe
Align with NPHET	All Health Related	For Discussion	▸ Request to get NPHET forecasts of future disease spread to incorporate into Christmas briefings
Access to appropriate mobility data	▸ Social Distance Index ▸ Stay at Home Index	Continue Monitoring	▸ Stood down SDI team for now ▸ Awaiting DOH confirmation for access to detailed data decision on SHI
Stand Up Appropriate Analytics Environment within HSE	Many	Team Priority to Resolve	▸ Detailed design now published and working though specific comments from HSE Technology. Progressing well ▸ Needs continued prioritisation and leveraging existing infrastructure to deliver within required timeframe
Government Departments to create and share specific Use Cases	Many	Team Progressing	▸ Already have access to GeoHive and CSO ▸ Confirming specific approach with various government departments, including any data governance and sharing

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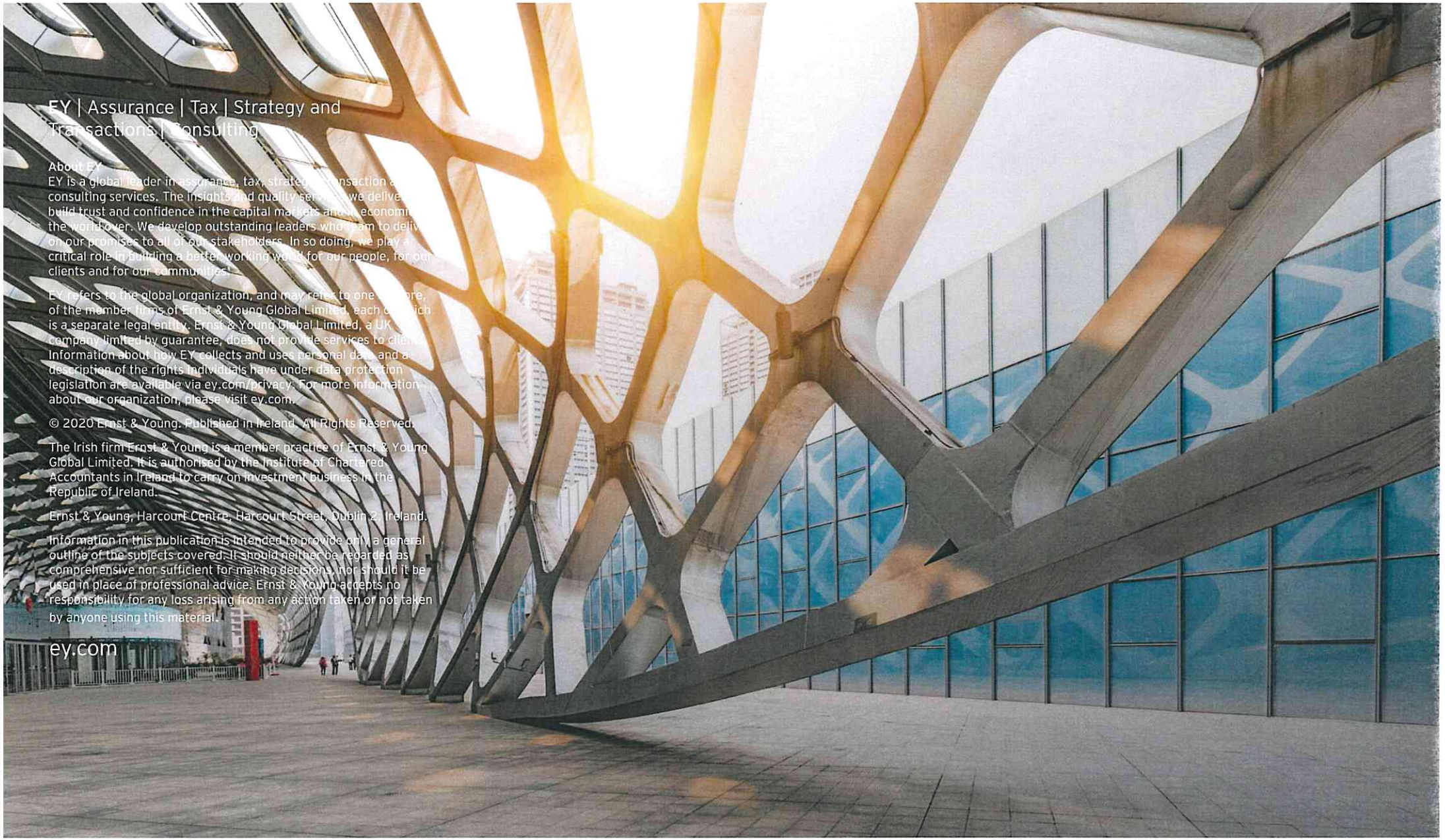

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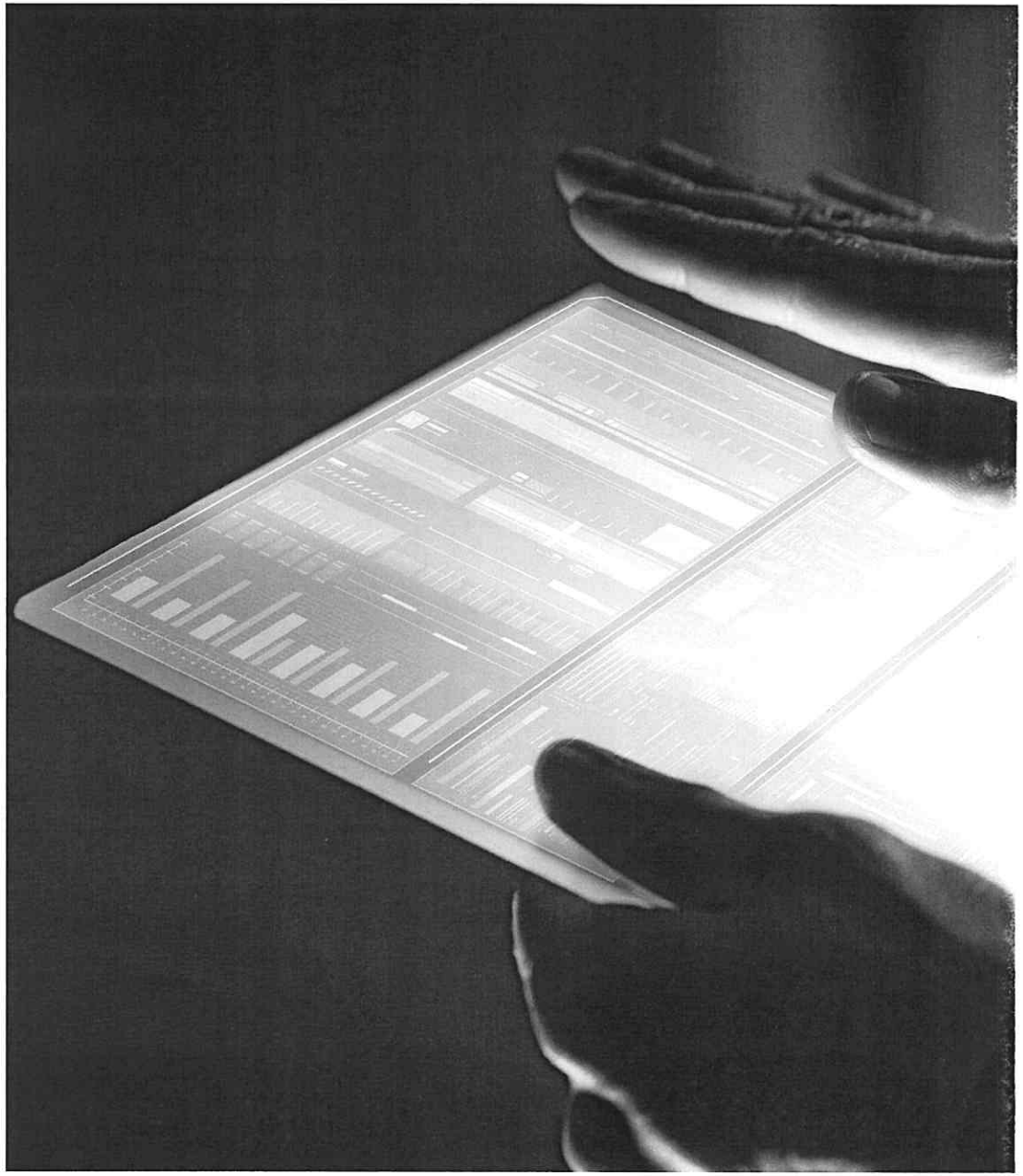
Update - Week 9

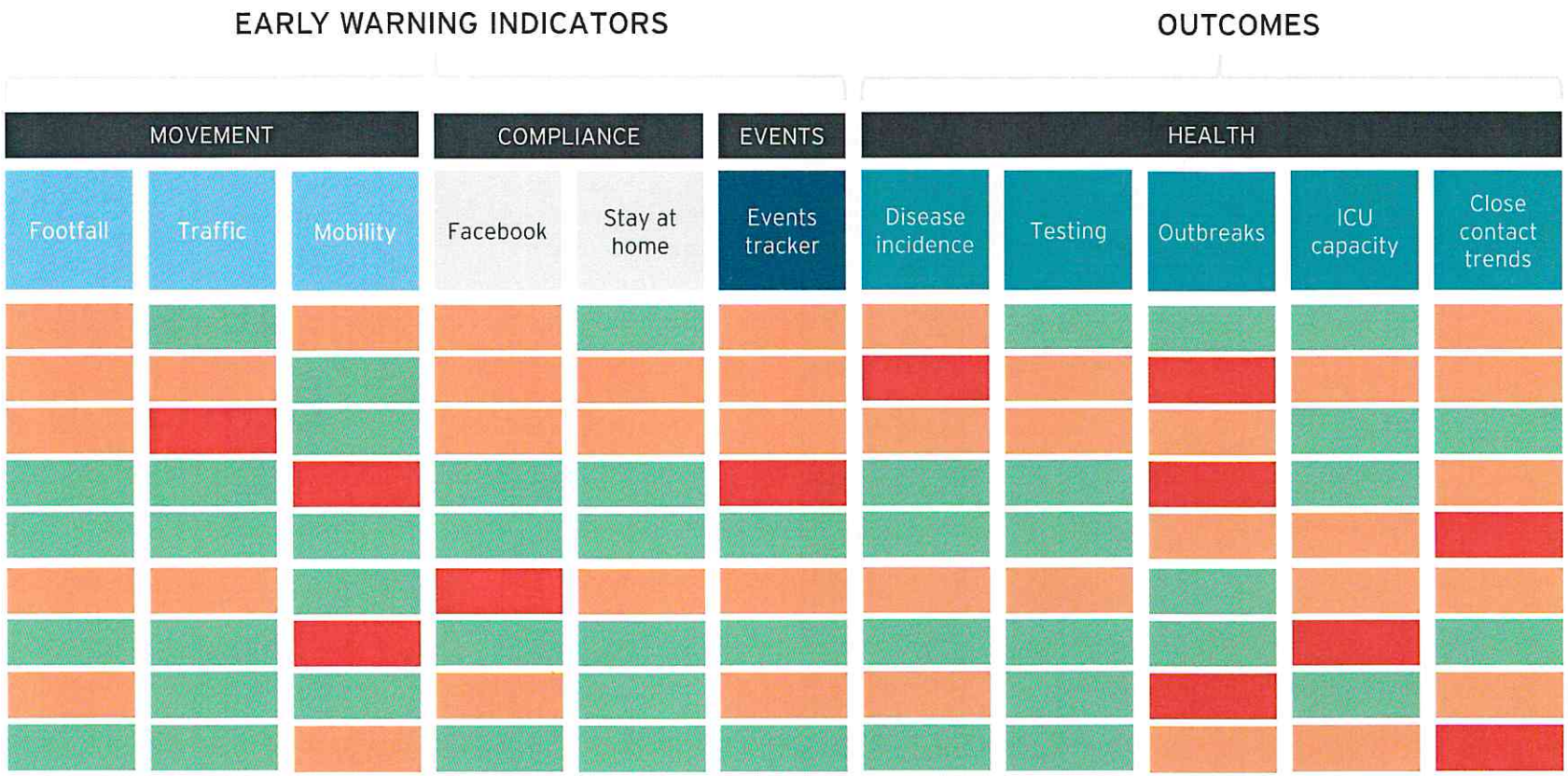
Agenda

1. Early warning indicators and updates
2. County and outbreak analysis
3. Christmas requirements
4. Detailed county view
5. Press briefing stats
6. Additional analysis

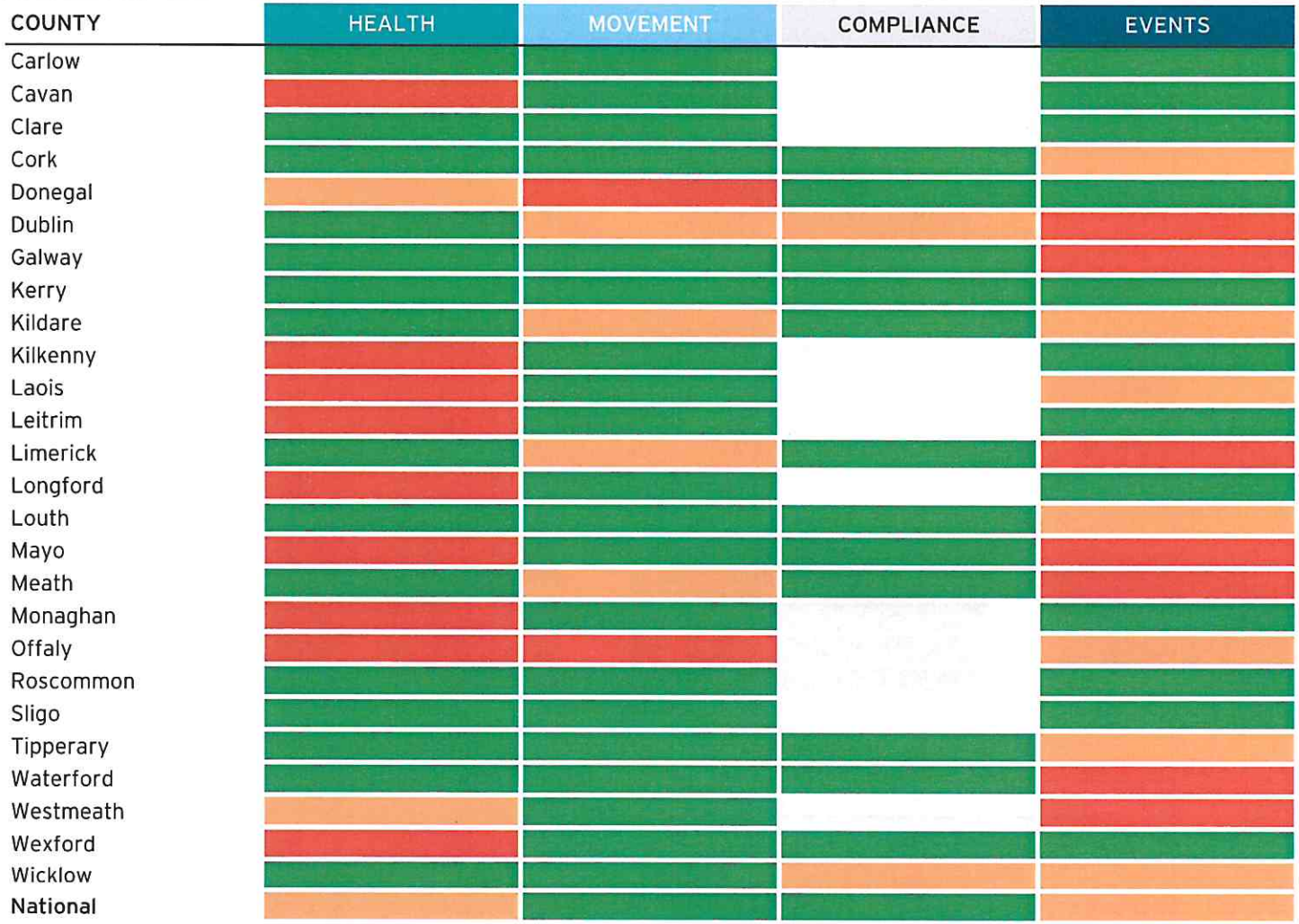
Early warning indicators and Updates



Early warning indicators – overview of approach



County early warning summary - initial results



Note

Prototype analysis uses the prevalent metric in each category for RAG colour:

Health - change in 14-day incidence rate
Movement - change in traffic volumes
Compliance - Facebook survey mask wearing
Events - # events
National - most prevalent colour for each metric

We intend to improve this by:

1. Expanding the Health metrics to include 5 day incidence rates
2. Adding new Restriction analysis as we approach enough days to quantify impact of changes
3. Assessing whether a weighting per metric can be applied to provide a summary RAG
4. Incorporating the impact of the vaccine rollout over time

Christmas update schedule requirements

	M	T	W	T	F
ASSET	14	15	16	17	18
GIS stats for press briefing		✓		✓	
Early Warning Indicator Summary					✓
1GC Room 350 briefing					✓
Ad-hoc analysis (as required)					

- GIS press briefing stats x2
- 1GC Friday briefing

	M	T	W	T	F
	21	22	23	24	25
GIS stats for press briefing		✓			
Early Warning Indicator Summary		✓	✓		
1GC Room 350 briefing			✓		
Ad-hoc analysis (as required)					

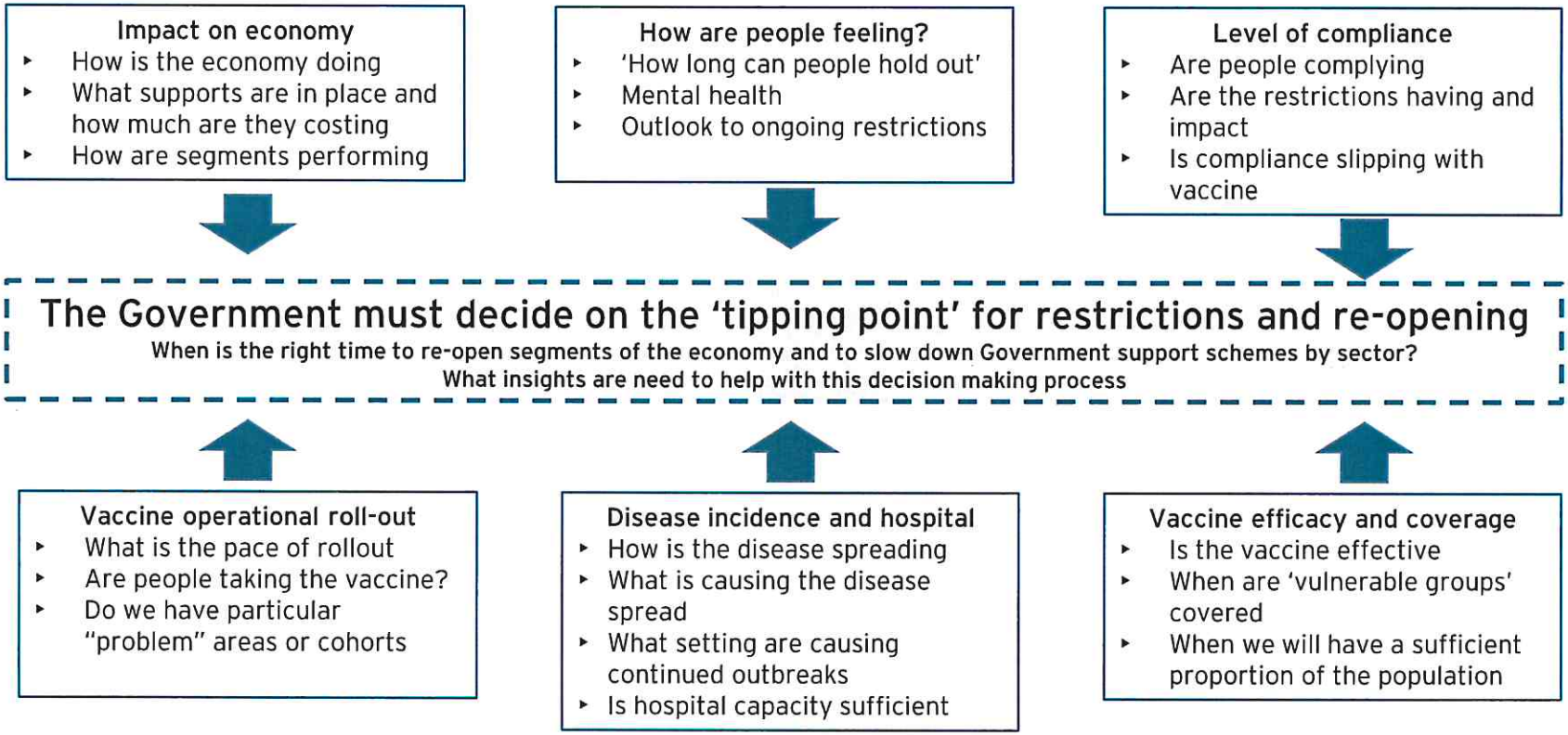
- Updated county analysis and early warning summary

	M	T	W	T	F
	28	29	30	31	1
GIS stats for press briefing		✓			
Early Warning Indicator Summary		✓	✓	✓	
1GC Room 350 briefing					
Ad-hoc analysis (as required)					

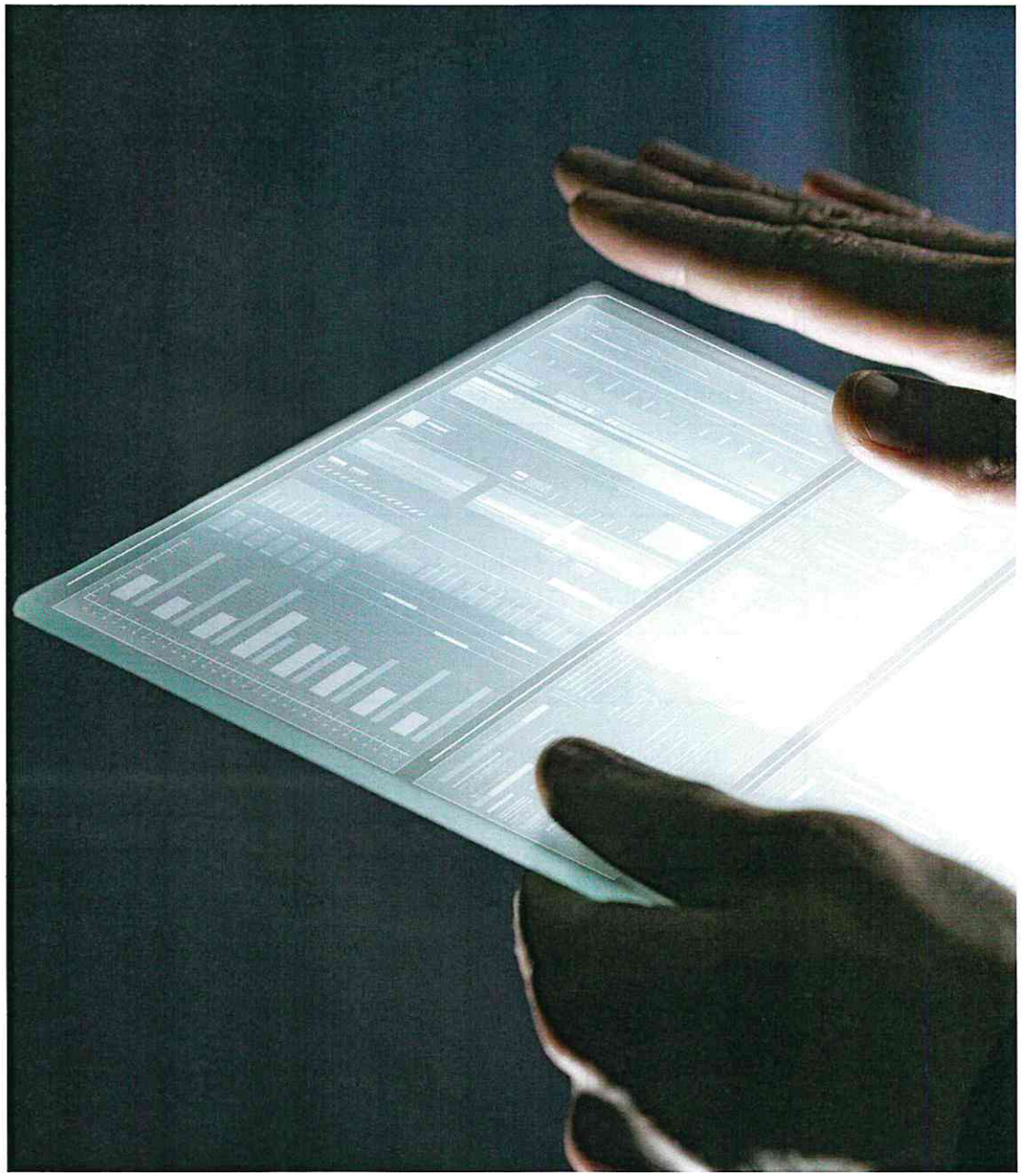
	M	T	W	T	F
	4	5	6	7	8
GIS stats for press briefing		TBC		TBC	
Early Warning Indicator Summary	✓	✓	✓	✓	✓
1GC Room 350 briefing					✓
Ad-hoc analysis (as required)					

- GIS press briefing stats as required
- Early warning summary
- 1GC Friday briefing

The Government must decide on the 'tipping point' for restrictions and re-opening



County and outbreak analysis



National 14-day incidence rate beginning to rise at a slow pace

Two Weekly Incidence Rate Per 100k	Population	04-Nov	05-Nov	06-Nov	07-Nov	08-Nov	09-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	01-Dec	02-Dec	03-Dec	04-Dec	05-Dec	06-Dec	07-Dec	08-Dec	09-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	Change Last 5 Days
Carlow	56,932	214	213	177	160	137	126	105	95	98	91	88	72	77	81	86	88	84	76	72	70	70	76	70	65	76	76	79	93	93	88	95	107	116	121	125	137	160	162	162	167	165	21%
Cavan	76,176	295	263	232	206	159	143	133	119	112	102	108	98	87	95	97	95	101	100	98	92	97	91	76	74	67	66	67	58	51	56	56	58	59	58	59	67	75	92	104	106	114	71%
Clare	118,817	181	173	171	160	139	132	122	109	104	104	93	109	111	112	104	93	91	89	86	83	80	79	74	69	71	51	53	46	42	39	35	35	35	32	32	32	35	34	31	27	23	-29%
Cork	542,868	233	239	216	195	179	158	143	119	108	102	89	83	86	82	81	73	77	78	81	81	84	82	77	76	73	68	63	59	52	49	43	38	35	35	28	27	25	23	26	25	25	-4%
Donegal	159,192	300	297	290	293	275	285	273	281	271	272	275	269	281	293	263	266	254	231	227	239	248	217	215	215	220	222	211	212	213	210	217	224	232	220	226	230	229	216	219	225	236	2%
Dublin	1,347,359	200	199	191	185	172	161	151	142	134	139	136	119	118	115	119	114	118	114	114	113	114	113	108	104	102	102	102	98	90	88	93	93	92	93	93	90	90	91	93	91	91	2%
Galway	258,058	211	187	171	144	126	109	108	97	86	83	86	80	84	78	71	66	62	62	63	65	62	54	51	46	44	50	50	45	46	50	51	51	55	56	59	60	65	61	61	54	49	-19%
Kerry	147,707	194	190	177	162	153	139	139	129	128	128	127	123	122	115	86	83	71	60	60	60	51	51	48	50	44	41	43	38	36	34	30	32	28	29	26	24	21	20	21	31	32	33%
Kildare	222,504	177	169	156	143	121	118	103	94	85	93	89	88	85	86	87	86	87	84	87	82	81	79	72	65	65	62	61	58	49	49	51	48	49	52	51	53	54	55	56	59	64	20%
Kilkenny	99,232	134	134	141	141	133	128	130	125	126	129	126	118	116	116	113	110	98	92	106	107	101	130	125	125	132	134	148	146	148	151	162	173	172	179	192	177	198	194	201	200	191	8%
Laois	84,697	170	174	175	174	163	157	155	149	136	136	137	116	107	104	99	86	83	63	59	53	53	53	58	55	51	54	55	58	54	60	65	66	66	67	64	59	76	81	103	109	112	90%
Leitrim	32,044	56	31	28	34	37	37	47	56	81	81	87	94	94	100	106	106	97	84	78	78	69	59	34	34	25	16	19	16	9	12	16	19	19	19	19	22	19	22	28	28	25	14%
Limerick	194,899	229	221	216	218	211	207	198	195	195	211	201	222	238	236	221	216	217	205	194	192	189	187	180	170	166	143	134	129	128	136	143	135	134	134	131	122	119	119	126	121	122	0%
Longford	40,873	193	166	164	157	152	142	132	127	115	115	103	103	100	100	83	88	88	81	83	83	93	91	91	81	81	86	88	91	95	91	88	91	88	91	76	81	113	120	142	132	130	61%
Louth	128,884	193	202	189	177	159	155	157	156	147	151	151	160	157	168	174	186	202	206	213	213	204	199	196	189	182	177	182	168	163	162	158	155	154	155	153	159	159	173	176	175	192	20%
Mayo	130,507	183	184	185	176	162	147	151	145	141	118	113	110	110	109	103	93	77	79	87	88	86	93	84	79	80	84	85	97	90	83	83	79	74	75	76	76	100	103	107	109	109	43%
Meath	195,044	282	272	249	232	204	201	172	154	141	140	133	139	128	134	127	131	131	126	124	118	118	108	103	98	102	85	80	68	62	48	49	45	44	46	44	49	45	52	54	54	57	16%
Monaghan	61,386	171	176	166	142	137	121	122	116	117	124	112	114	104	104	112	94	101	101	106	108	99	103	83	78	81	98	103	103	109	116	124	127	119	117	122	129	137	137	135	116	129	0%
Offaly	77,961	106	100	96	97	99	85	99	94	87	95	114	112	117	122	126	119	123	103	100	99	78	81	72	65	49	49	45	42	35	37	51	59	67	67	71	67	68	64	72	68	74	12%
Roscommon	64,544	195	189	174	153	152	175	170	175	163	166	169	141	169	161	167	161	160	166	161	133	130	122	118	121	105	96	64	60	57	53	54	50	43	50	51	53	56	50	50	50	48	-9%
Sligo	65,535	259	220	211	189	159	154	154	154	140	128	114	104	95	93	76	85	84	73	76	70	64	56	61	58	61	56	55	52	52	44	40	38	32	32	32	35	41	41	50	49	50	43%
Tipperary	159,553	132	130	128	122	117	123	118	113	117	114	101	105	110	107	106	100	97	92	86	90	85	93	92	80	87	79	79	78	75	79	86	86	88	80	79	78	77	78	82	80	71	-10%
Waterford	116,176	187	176	163	146	136	128	134	114	142	141	156	163	163	164	155	161	157	156	154	149	140	150	118	114	102	85	75	72	71	65	62	61	71	71	77	80	80	71	71	77	77	-3%
Westmeath	88,770	255	229	216	208	184	158	151	162	133	150	150	113	117	113	106	103	100	92	88	87	80	71	72	51	39	41	28	26	23	25	25	23	26	23	21	19	27	25	27	26	34	76%
Wexford	149,722	126	96	89	83	74	67	67	48	49	49	49	47	45	46	37	42	39	37	36	36	34	36	32	30	25	23	28	27	22	18	19	19	19	19	23	24	26	30	37	45	47	97%
Wicklow	142,425	106	91	88	89	82	77	89	86	84	85	85	82	86	83	78	88	91	80	84	90	77	79	78	74	85	93	91	110	109	107	116	121	121	118	112	114	112	110	97	93	93	-18%
National	4,761,865	201	195	184	173	159	150	142	133	127	128	124	117	118	117	114	111	111	106	107	106	104	102	97	93	91	88	86	84	79	77	80	79	79	79	78	78	80	80	83	82	83	7%

National 5-day incidence rate is more sensitive to the increases over the last few days

5 Day Incidence Rate Per 100k	Population	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	01-Nov	02-Nov	03-Nov	04-Nov	05-Nov	06-Nov	07-Nov	08-Nov	09-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	Change Last 5 Days
Carlow	56,932	47	44	23	30	33	28	26	21	18	21	19	28	37	33	42	44	35	28	25	12	9	12	12	14	25	33	40	56	70	56	54	56	47	40	46	54	65	60	65	76	69	26%
Cavan	76,176	43	49	35	22	24	26	22	34	45	42	41	41	34	32	38	35	38	35	28	21	25	24	21	17	16	9	11	13	16	25	29	26	29	28	28	34	38	50	62	56	58	69%
Clare	118,817	40	45	45	50	50	44	30	26	26	26	23	42	42	42	40	44	26	28	24	23	18	14	11	9	10	13	16	14	13	12	10	9	12	13	11	11	11	8	9	8	7	-38%
Cork	542,868	51	48	40	42	35	27	19	20	21	24	26	29	30	27	30	33	33	35	34	28	30	25	20	19	18	13	11	9	7	8	8	10	10	10	9	8	8	7	9	10	10	22%
Donegal	159,192	98	90	102	130	133	99	90	107	85	89	97	102	80	89	89	81	88	80	66	75	72	70	70	77	77	77	74	85	86	71	83	92	85	82	87	83	75	62	77	76	80	-4%
Dublin	1,347,359	62	63	44	51	46	43	34	38	34	40	43	45	42	41	42	41	43	46	45	37	34	34	29	29	32	34	31	31	28	27	34	37	39	40	39	30	27	29	32	33	33	7%
Galway	258,058	35	40	36	37	24	17	14	19	22	31	36	36	31	33	24	20	17	15	10	10	9	12	10	14	16	24	27	27	24	26	18	16	20	20	18	22	24	20	21	19	16	-29%
Kerry	147,707	66	65	71	79	69	39	43	31	25	24	30	24	24	24	24	20	19	17	14	13	12	11	14	14	14	14	16	14	10	10	8	6	4	6	5	5	3	5	6	19	24	400%
Kildare	222,504	40	34	28	33	28	25	25	28	25	35	34	37	35	33	34	31	28	32	29	20	20	20	13	13	18	18	18	19	18	15	17	19	19	22	22	22	19	19	22	26	28	31%
Kilkenny	99,232	56	53	57	57	54	49	51	30	28	30	28	30	36	41	40	37	37	33	44	43	42	62	61	49	53	63	54	62	63	56	66	58	71	75	84	78	86	72	75	71	69	-12%
Laois	84,697	52	63	51	63	64	64	51	48	27	28	30	24	18	19	15	12	18	18	19	18	18	19	22	25	27	25	20	19	14	21	28	28	27	31	21	13	32	40	63	70	73	464%
Leitrim	32,044	6	3	9	22	28	28	37	37	53	47	56	56	47	25	31	22	12	12	6	0	0	0	3	3	3	3	6	6	6	9	12	12	9	9	6	6	3	6	12	12	9	50%
Limerick	194,899	76	67	59	81	84	69	74	79	72	74	76	97	103	96	86	82	54	48	42	41	47	49	47	50	50	52	50	45	44	52	54	49	47	46	42	28	30	34	42	42	50	78%
Longford	40,873	49	39	37	46	46	34	34	37	29	37	37	37	32	27	17	24	22	27	29	34	39	39	39	34	34	29	29	27	32	34	24	29	27	29	24	32	61	66	86	86	78	146%
Louth	128,884	50	42	43	36	36	36	49	63	69	74	82	73	64	68	74	78	85	85	81	75	67	60	60	50	50	46	47	39	48	58	66	59	68	68	57	61	64	68	71	68	80	32%
Mayo	130,507	41	54	67	65	60	50	37	18	25	29	30	27	31	28	26	34	34	34	38	35	29	34	29	21	21	25	23	41	38	37	33	28	15	20	22	27	51	50	54	57	56	109%
Meath	195,044	69	70	62	53	46	35	31	38	42	43	39	52	46	50	56	68	53	51	36	26	18	15	18	17	23	18	19	15	19	14	17	15	12	10	14	15	18	26	31	29	27	73%
Monaghan	61,386	34	49	54	49	47	47	31	28	42	46	44	36	34	18	23	31	41	46	49	42	36	29	24	18	18	34	34	37	54	65	67	70	65	51	42	34	34	36	36	28	34	0%
Offaly	77,961	14	21	13	33	37	35	47	49	40	47	68	51	55	49	45	26	24	19	15	8	6	6	9	13	18	22	19	19	14	14	27	33	40	40	40	22	18	10	23	19	27	24%
Roscommon	64,544	85	81	46	37	29	54	46	53	60	54	45	51	79	84	87	73	65	34	29	20	15	15	12	14	17	17	20	26	23	20	23	20	12	12	14	14	19	20	17	15	15	11%
Sligo	65,535	73	61	50	50	46	32	37	40	27	29	23	24	17	24	21	32	31	29	29	26	15	12	15	11	14	17	15	15	15	15	14	12	9	6	3	8	18	20	32	34	31	300%
Tipperary	159,553	46	39	34	37	36	38	38	37	33	41	31	38	46	43	38	38	26	19	16	22	23	33	33	34	29	31	31	30	32	30	34	26	26	28	23	25	24	24	31	33	24	-5%
Waterford	116,176	45	46	49	38	37	32	40	25	59	74	80	89	102	71	59	51	43	31	28	26	19	18	22	34	33	34	28	25	16	15	20	17	26	26	31	36	40	34	33	33	25	-31%
Westmeath	88,770	79	71	37	38	34	27	30	38	28	48	56	48	51	55	35	24	25	14	9	8	8	9	8	11	9	9	8	9	7	9	9	8	9	8	5	3	12	10	14	14	23	567%
Wexford	149,722	27	22	21	22	24	12	14	11	11	11	15	15	16	13	16	15	14	15	14	11	6	7	5	5	4	5	8	9	8	8	10	5	6	7	11	12	13	16	22	27	31	161%
Wicklow	142,425	27	20	18	31	27	19	39	42	34	41	48	27	25	22	20	23	27	25	29	31	27	29	32	30	44	43	38	54	55	46	51	55	40	40	32	27	22	19	22	24	18	-36%
National	4,761,865	54	53	45	49	45	39	35	37	35	40	42	44	43	41	41	40	38	37	35	30	28	28	26	26	28	29	27	28	27	26	30	30	30	30	29	26	27	27	32	33	33	26%

Summary view of priority counties for analysis

County	Change in 14-day incidence rate over last five days (10 - 14 Dec)[1]	New cases (1 Nov - 16 Dec)[2]	Current 14-day incidence rate (14 Dec)[3]	Commentary
Cavan	+71%	+256	114	Incidence rate fell back in line with national average following large spike in October. Incidence rising again across all LEAs in recent days but average close contacts appear to be falling.
Donegal	+2%	+1,232	236	Persistently high incidence rates, with one third of cases resulting from outbreaks of 5+ cases and five hospital outbreaks. Carndonagh's incidence rate is nearly x10 the national average.
Sligo	+43%	+211	50	Responded well to Level 5 restrictions. Low incidence rates overall but rising in recent days. Donegal's higher rates does not appear to be impacting Sligo. Low numbers of outbreaks of 5+ cases.
Dublin	+2%	+4,901	91	Dublin has remained relatively stable over the last fortnight. A number of large outbreaks in hospital settings.
Kilkenny	+8%	+385	191	Trending upwards in all LEAs since end November. Recent large spikes in two LEAs, with high proportion of cases coming from outbreaks of 5+ cases, including a 104 case hospital outbreak.
Louth	+20%	+777	192	Incidence rate more than twice national average, with high rates in four of five LEAs. Three large recent outbreaks in a workplace, nursing home and hospital.
Mayo	+43%	+451	109	Claremorris LEA driving higher incidence rate - it is x8 larger than the next highest LEA. A high proportion of cases (110) coming from workplace outbreaks.

Key terminology used

Incidence rates
14-day disease incidence per 100k population in each county, calculated using daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily.

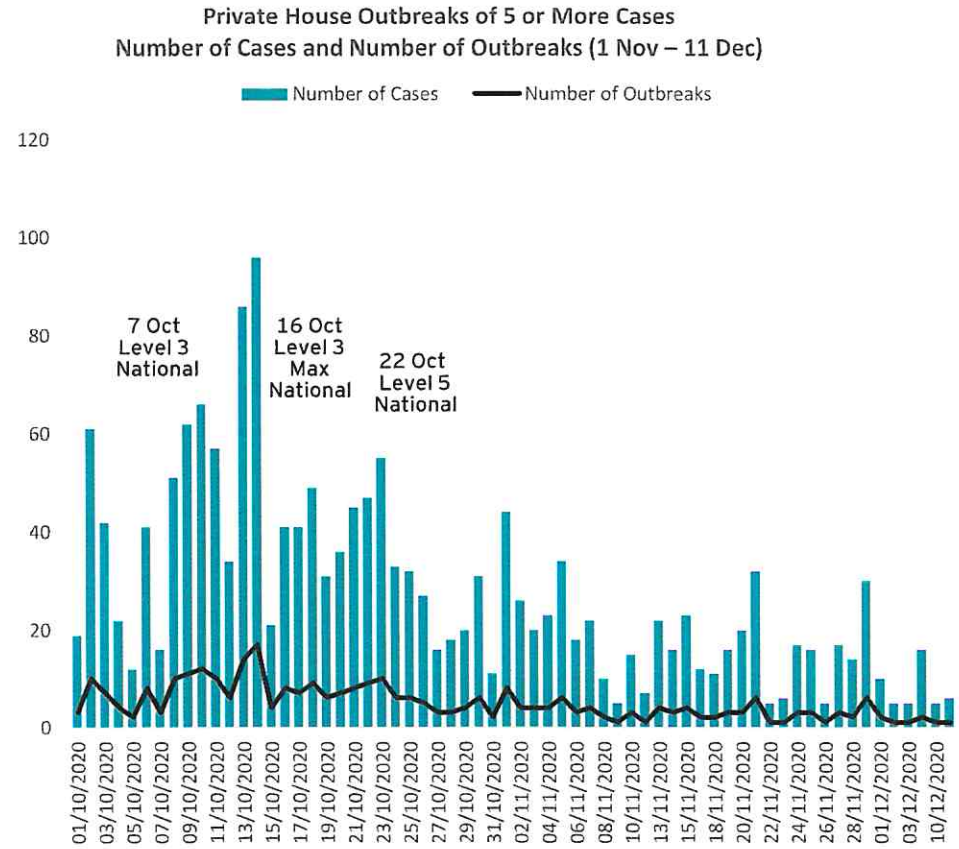
Outbreak analysis
Takes account of only outbreaks of 5+ cases using HSE Testing and Tracing; Outbreaks - HPSC CIDR data aggregated summary report. Data based on CIDR data as at 14/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details.

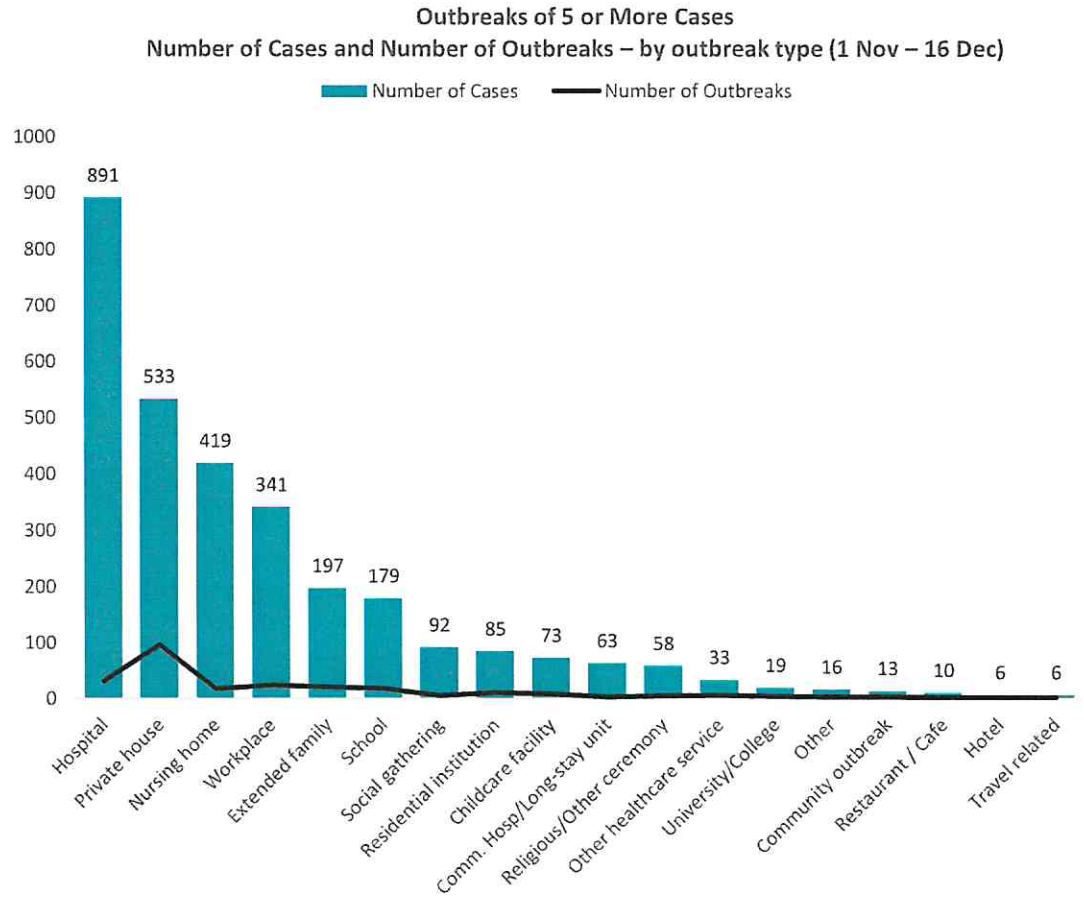
Average close contacts
7-day average number of close contacts per person confirmed positive with Covid-19 using HSE Testing and Tracing, data to 14/12/20.

LEA
Local Electoral Area

Source: 1 + 3 Based on daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily.
2: HSE Testing and Tracing as at 14/12/20

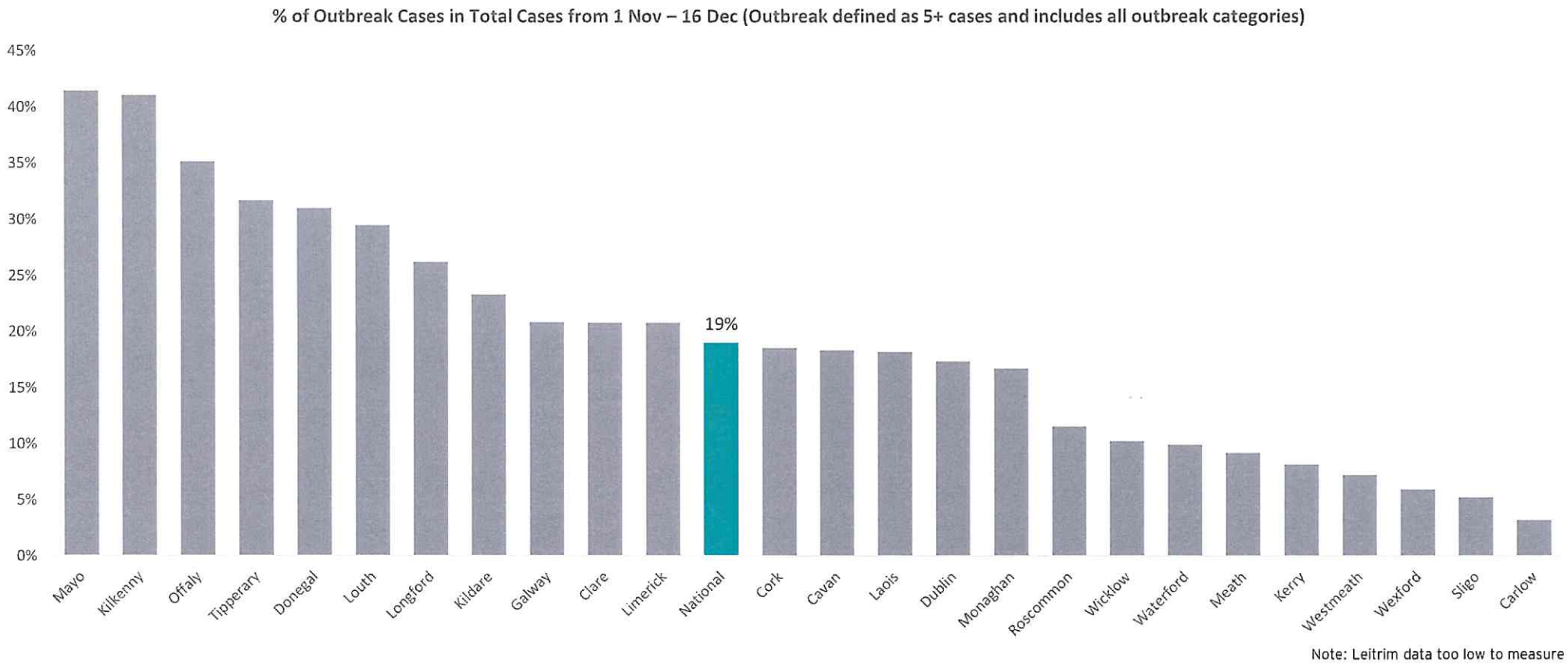
Hospital outbreaks and Private Houses make up 46% of outbreaks of 5+ cases





Source: HPSC CIDR Data shared via HSE IIS on 16 Dec 2020

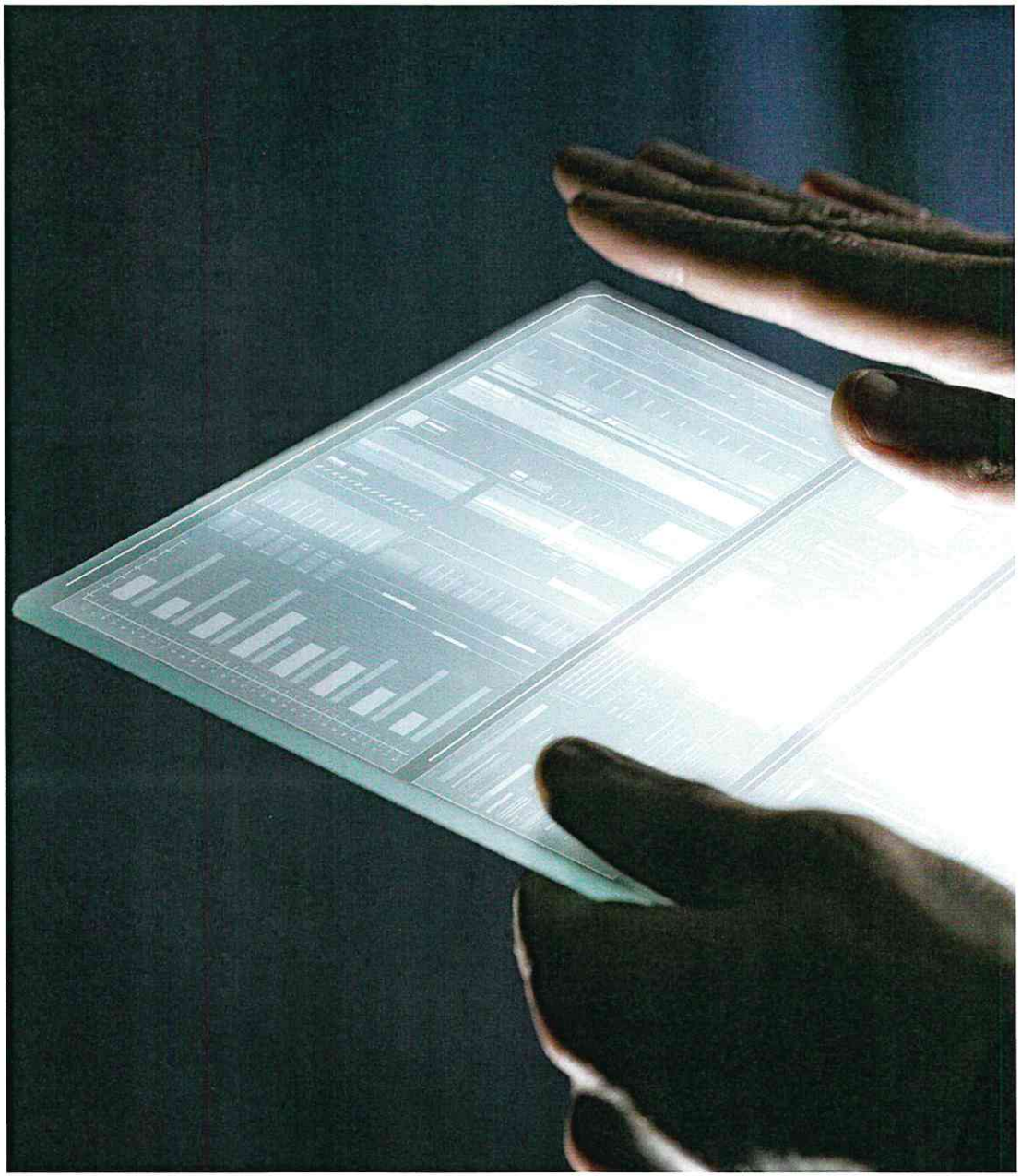
Outbreaks of 5+ cases account for 19% of all cases nationally



Note: Leitrim data too low to measure

Source: HSE CIDR and Test Trace shared via HSE IIS on 16 Dec 2020

Detailed county view



Cavan – the loosening of Level 5 restrictions saw a sharp increase in incidence rate and a brief spike in average close contacts

Summary

Cavan profile

- Having fallen throughout November, Cavan's incidence rate rose sharply from the beginning of December from 58 (1 Dec) to 114 (14 Dec)
- Incidence rates throughout December have been consistent across all three LEAs, indicating no single LEA is driving the increase

Summary analysis

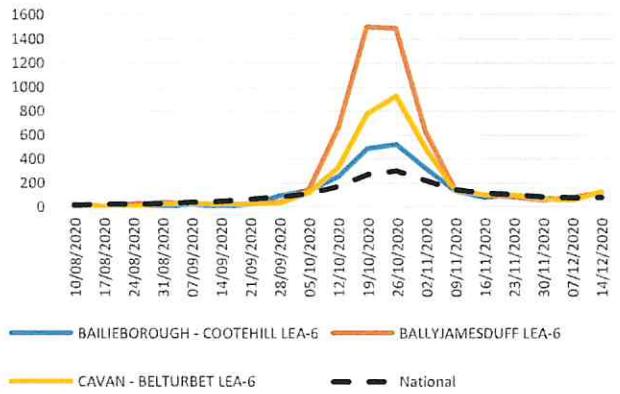
- This early December increase was c.10 days after the Ulster GAA Senior Football Championship Final which Cavan won, however, no outbreaks related to this event have been recorded
- A second, much sharper spike occurred on 8 Dec, 11 days after the announcement that Level 5 was ending on 27 Nov
- Extended family was the primary driver of outbreak-related cases in early December (outbreaks of 5+)

Restriction impact

- Level 5 restrictions were highly effective in Cavan, bringing the incidence rate from over three times the national average (22 Oct) to equal to the national average by 8 Nov
- Cavan's incidence rate is now 37% above the national average (14 Dec), but encouragingly, close contacts have fallen in recent days

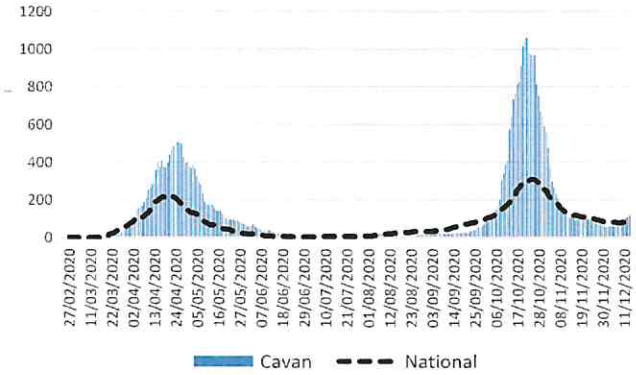
Notes
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

LEA 14 Day Incidence Rate per 100k



Source: Based on weekly OpenHive data as at 14/12/2020. Government Open Data Initiative. This data is published weekly

14 Day Incidence Rate per 100k



Source: Based on daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily. There have been different levels of Covid-19 testing and testing eligibility between wave 1 and wave 2 and therefore comparisons of incidence rates across both waves should be treated with caution

Outbreak analysis: outbreaks with 5 or more cases
CIDR data: 1 NOV to 16 DEC

Total Cases 1 Nov - 16 Dec (Track and Trace)
256

% of cases linked to outbreak of 5+	National Average	Avg. cases per outbreak of 5+	National Average
18%	19%	9.40	12.33

Settings (outbreaks of 5+)	# outbreaks (outbreaks of 5+)	# cases (outbreaks of 5+)	% of total (outbreaks of 5+)
Extended family	<5	21	45%
School	2	15	32%
Workplace	1	6	13%
Social gathering	1	5	11%

Top Outbreak Settings (outbreaks of 10+)	# cases (outbreaks of 10+)

Source: Total cases - HSE Testing and Tracing; Outbreaks - HPSC CIDR data aggregated summary report. Data based on CIDR data as at 16/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more cases

Donegal's incidence rate persistently above the national average

Summary

Donegal profile

- Donegal has experienced a higher incidence rate during the second wave than the national average
- Donegal's incidence rate has been substantially higher than the national average since the end of October. All but two LEA's are currently above national average levels (14 Dec)
- Northern Ireland (NI) has seen an increase in positive cases since 23 Nov. There have been over 6k positive cases in NI during the last 14 days (to 15 Dec), compared to c.4k in the Republic of Ireland (NI Dept. Health)

Summary analysis

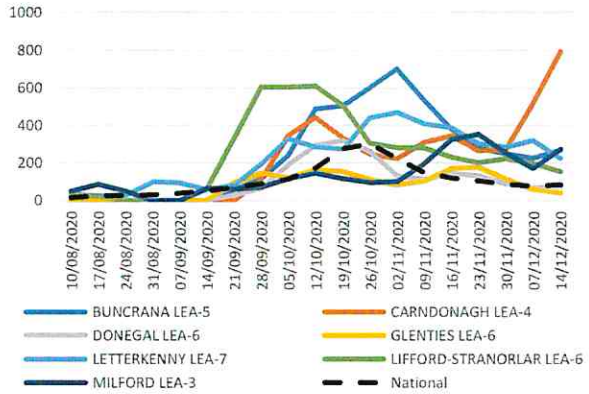
- Carndonagh LEA has the highest incidence since the end of November, currently 9.6 times the national average (14 Dec.) This LEA does not share a border with NI, as was the case with the worst performing LEA's in Oct/Nov, Buncrana and Lifford-Stranorlar
- A number of larger outbreaks of 5+ cases have occurred, accounting for one third of all cases since 1 Nov. There were five hospital outbreaks, including one with 109 cases. Extended family accounts for 18% of outbreaks (of 5+ cases)

Restriction impact

- Donegal did not see the same benefit from level 5 restrictions as seen at the national level. The incidence rate declined, however, at a slower and less substantial rate than nationally
- The incidence rate has increased in December and Donegal's rate is 2.8 times the national average at 236 (14 Dec)

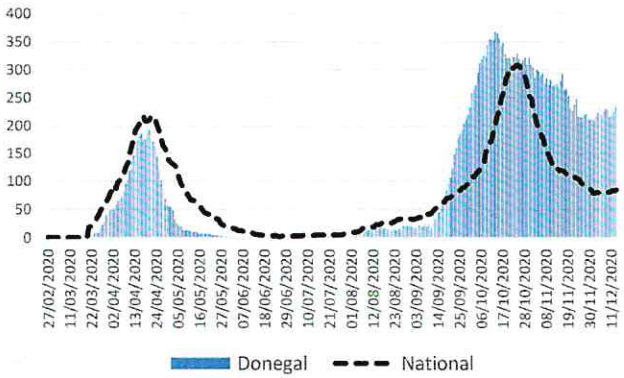
Notes
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

LEA 14 Day Incidence Rate per 100k



Source: Based on weekly OpenHive data as at 14/12/2020. Government Open Data Initiative. This data is published weekly

14 Day Incidence Rate per 100k



Source: Based on daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily. There have been different levels of Covid-19 testing and testing eligibility between wave 1 and wave 2 and therefore comparisons of incidence rates across both waves should be treated with caution

Outbreak analysis: outbreaks with 5 or more cases
CIDR data: 1 NOV to 16 DEC

Total Cases 1 Nov - 16 Dec (Track and Trace)
1232

% of cases linked to outbreak of 5+	National Average	Avg. cases per outbreak of 5+	National Average
31%	19%	11.94	12.33

Settings (outbreaks of 5+)	# outbreaks (outbreaks of 5+)	# cases (outbreaks of 5+)	% of total (outbreaks of 5+)
Hospital	5	177	46%
Extended family	7	69	18%
Private house	12	65	17%
Childcare facility	2	16	4%
School	2	16	4%

Top Outbreak Settings (outbreaks of 10+)	# cases (outbreaks of 10+)
Hospital	109
Hospital	50
Religious/Other ceremony	14

Source: Total cases - HSE Testing and Tracing; Outbreaks - HPSC CIDR data aggregated summary report. Data based on CIDR data as at 16/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more cases

Level 5 was effective in reducing cases in Sligo, while also reducing transmission from Donegal

Summary

Sligo profile

- Level 5 restrictions appear to have continued to reduced the spread of cases from Donegal to Sligo.
- Sligo's incidence rate rapidly declined during November while Donegal's fell much slower
- Cases in Sligo have remained low since early November, although a small rise has been observed in recent days

Summary analysis

- A small number of outbreaks have occurred in Sligo since 1 November
- FAI cup quarter finals win for Sligo Rovers (25 Nov) does not appear to have influenced incidence rates
- Incidence rates have been broadly consistent across all three LEAs, but a rise in Sligo-Strandhill observed in the second week in December

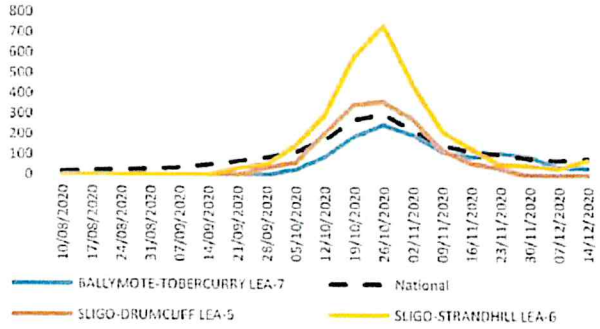
Restriction impact

- Incidence rates were 33% above the national average when Level 5 restrictions were implemented but fell to the national average within 16 days. By the end of November, Sligo's rate was 36% below the national average
- Sligo's incidence rate continued to fall in early until 9 Dec, where it has picked up in recent days. However, Sligo's incidence rate remains at just 50 compared to the national average of 83 (14 Dec)

Notes

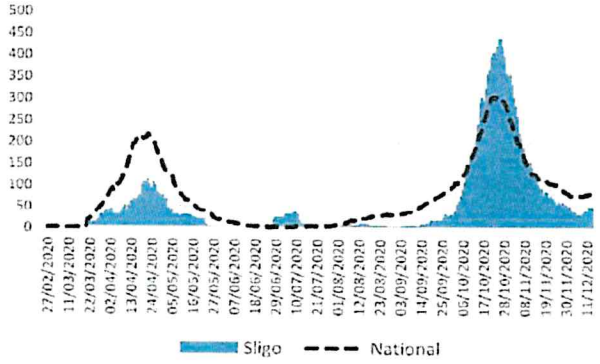
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

LEA 14 Day Incidence Rate per 100k



Source: Based on weekly OpenHive data as at 14/12/2020. Government Open Data Initiative. This data is published weekly

14 Day Incidence Rate per 100k



Source: Based on daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily. There have been different levels of Covid-19 testing and testing eligibility between wave 1 and wave 2 and therefore comparisons of incidence rates across both waves should be treated with caution

Outbreak analysis: outbreaks with 5 or more cases
CIDR data: 1 NOV to 16 DEC

Total Cases 1 Nov - 16 Dec (Track and Trace)
211

% of cases linked to outbreak of 5+	National Average	Avg. cases per outbreak of 5+	National Average
5%	19%	5.50	12.33

Settings (outbreaks of 5+)	# outbreaks (outbreaks of 5+)	# cases (outbreaks of 5+)	% of total (outbreaks of 5+)
[redacted]	1	6	55%
Extended family	<5	5	45%

Top Outbreak Settings (outbreaks of 10+)	# cases (outbreaks of 10+)

Source: Total cases - HSE Testing and Tracing; Outbreaks - HPSC CIDR data aggregated summary report. Data based on CIDR data as at 16/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more cases

Dublin's incidence rate has remained stable since Level 5 restrictions lifted. Hospital settings have resulted in a large numbers of cases

Summary

Dublin profile

- Dublin's incidence rate during the second wave was in line with the national average and continues to track to the national picture

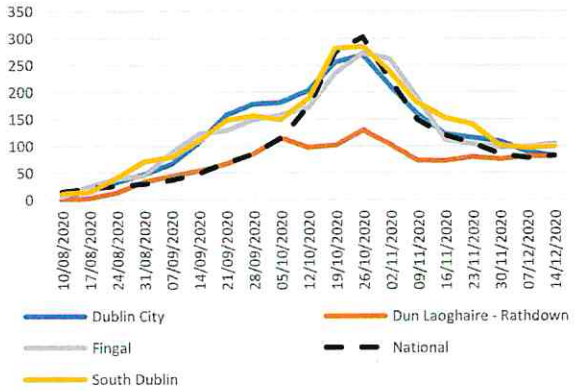
Summary analysis

- The highest incidence rates are in LEAs Balbriggan, Clondalkin, Pembroke, Tallaght South and South East Inner City (24 Nov to 14 Dec)
- Previous Leinster GAA Football Senior Championship Final (Dublin v Meath 21 Nov) and GAA Football All-Ireland Senior Championship Semi-Final (Cavan v Dublin 5 Dec) did not appear to cause a spike in cases. However, the upcoming GAA Football All-Ireland Senior Championship Final (Dublin v Mayo) will be take place on 19 December and will be monitored to see if there is any associated outbreaks
- Outbreaks in hospital and nursing home settings have resulted in 357 and 116 cases respectively. There were 39 private house outbreaks between 1 Nov and 16 Dec (25% of total outbreaks of 5+ cases)

Restriction impact

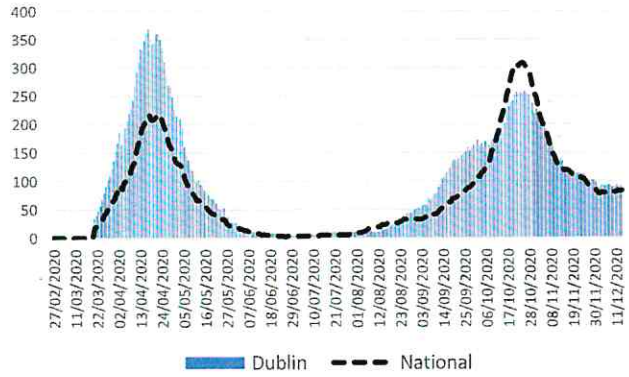
- Dublin's incidence rate has followed the national downward trend following Level 5 restrictions
- At the peak of wave 2 (25 Oct) Dublin's incidence rate was 21% below the national level. This is a contrast to wave 1 in April, where Dublin's incidence rate was far greater than the national level
- Since Level 5 has been lifted, cases have remained in line with the national level

LEA 14 Day Incidence Rate per 100k



Source: Based on weekly OpenHive data as at 14/12/2020. Government Open Data Initiative. This data is published weekly

14 Day Incidence Rate per 100k



Source: Based on daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily. There have been different levels of Covid-19 testing and testing eligibility between wave 1 and wave 2 and therefore comparisons of incidence rates across both waves should be treated with caution

Outbreak analysis: outbreaks with 5 or more cases
CIDR data: 1 NOV to 16 DEC

Total Cases 1 Nov - 16 Dec (Track and Trace)
4901

% of cases linked to outbreak of 5+	National Average	Avg. cases per outbreak of 5+	National Average
17%	19%	10.91	12.33

Settings (outbreaks of 5+)	# outbreaks (outbreaks of 5+)	# cases (outbreaks of 5+)	% of total (outbreaks of 5+)
Hospital	13	357	42%
Private house	39	212	25%
Nursing home	5	116	14%
Workplace	6	39	5%
School	4	35	4%

Top Outbreak Settings (outbreaks of 10+)	# cases (outbreaks of 10+)
Hospital	128
Nursing home	63
Hospital	41

Source: Total cases - HSE Testing and Tracing; Outbreaks - HPSC CIDR data aggregated summary report. Data based on CIDR data as at 16/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more cases

Kilkenny's high incidence rate driven by a significant hospital outbreak, with Castlecomer and Kilkenny LEAs seeing a spike in cases

Summary

Kilkenny profile

- Kilkenny's overall incidence rate has been trending upwards since the end of November and is currently over twice the national average (14 Dec)
- Three of four LEAs are above the national average incidence rate (14 Dec), with Piltown only recently falling back below national levels

Summary analysis

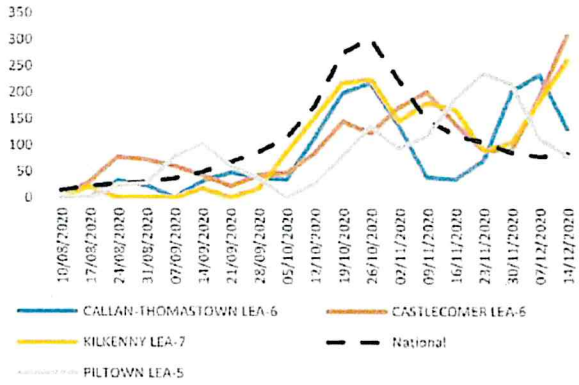
- 41% of Kilkenny's cases were linked to outbreaks of 5+ cases (compared to 19% nationally), with higher average cases per outbreak (17.6), above the national average of 12.33
- This was driven by a large hospital outbreak of 104 cases which occurred from mid-November onwards
- Kilkenny lost in a Leinster hurling semi-final on 28 Nov, but the trend in rising incidence rates appears to have started before this date

Restriction impact

- Level 5 did not have the same reduction in incidence rates in Kilkenny as in other counties. Kilkenny saw a 39% decrease in incidence rates (from 174 to 106) from 22 Oct to 22 Nov during Level 5 (compared to -65% nationally) in the month following level 5, but has since risen by 81% from 22 Nov to 13 Dec

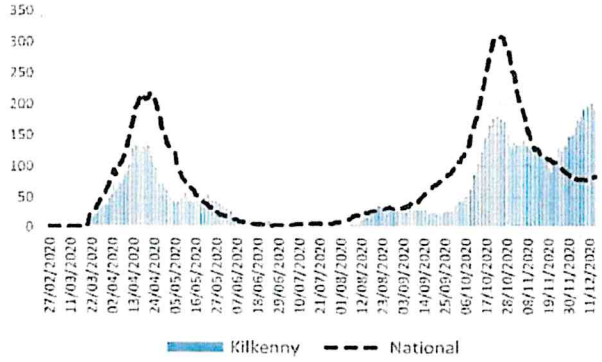
Notes
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

LEA 14 Day Incidence Rate per 100k



Source: Based on weekly OpenHive data as at 14/12/2020. Government Open Data Initiative. This data is published weekly

14 Day Incidence Rate per 100k



Source: Based on daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily. There have been different levels of Covid-19 testing and testing eligibility between wave 1 and wave 2 and therefore comparisons of incidence rates across both waves should be treated with caution

Outbreak analysis: outbreaks with 5 or more cases
CIDR data: 1 NOV to 16 DEC

Total Cases 1 Nov - 16 Dec (Track and Trace)			
385			
% of cases linked to outbreak of 5+	National Average	Avg. cases per outbreak of 5+	National Average
41%	19%	17.56	12.33

Settings (outbreaks of 5+)	# outbreaks (outbreaks of 5+)	# cases (outbreaks of 5+)	% of total (outbreaks of 5+)
[redacted]	2	113	72%
Private house	3	19	12%
Workplace	2	12	8%
[redacted]	1	9	6%
Extended family	<5	5	3%

Top Outbreak Settings (outbreaks of 10+)	# cases (outbreaks of 10+)
[redacted]	104

Source: Total cases - HSE Testing and Tracing; Outbreaks - HPSC CIDR data aggregated summary report. Data based on CIDR data as at 16/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more cases

Louth's current incidence is more than twice the national average

Summary

Louth profile

- Louth experienced a similar peak in incidence rates to the national average at the height of the second wave in October
- Louth has seen higher incidence rates since late November, and four of five LEAs are currently above the national levels (as of 14 Dec)
- Louth's northern LEAs that border NI and Louth's southern LEAs have not differed significantly in incidence rates since late November
- Louth's incidence rate is c.2 times the national average (191 vs 83 on 14 Dec)

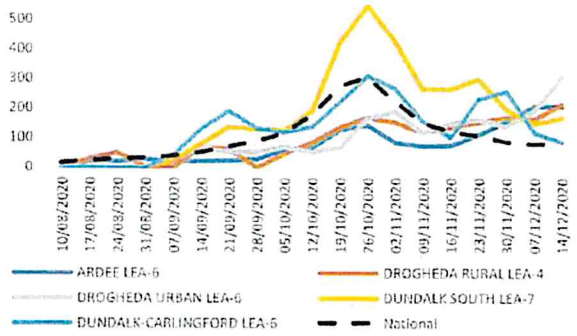
Summary analysis

- Louth experienced a rise in average close contacts above the national levels at the start of December, while numbers have fallen back in line in recent days (7 day averages to 14 Dec)
- A number of large outbreaks of 5+ cases have occurred since 1 Nov including 70 cases from workplaces, 57 cases from a nursing home, 44 cases from hospitals, and 19 cases each from a school and extended family settings
- Louth's share of cases linked to outbreaks of 5+ cases and average number of cases per outbreak of 5+ cases are higher than the national level
- Several high-profile soccer matches took place throughout November and December, with Dundalk F.C. winning the FAI cup quarter-final, semi-final and final, and playing several European games - though there has been no obvious links to recent outbreaks

Restriction impact

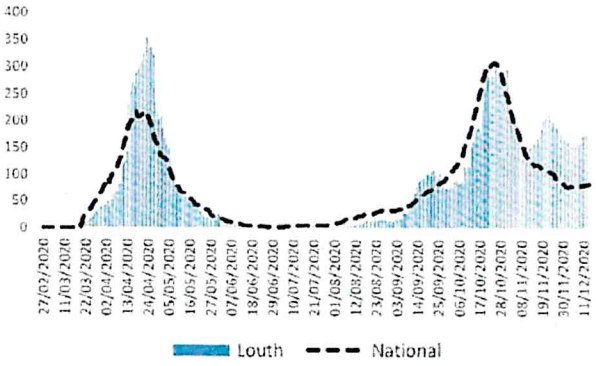
- Level 5 restrictions appeared effective in reducing incidence rates in October, however cases spiked again in November and are trending upwards since restrictions were relaxed in December

LEA 14 Day Incidence Rate per 100k



Source: Based on weekly OpenHive data as at 14/12/2020. Government Open Data Initiative. This data is published weekly

14 Day Incidence Rate per 100k



Source: Based on daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily. There have been different levels of Covid-19 testing and testing eligibility between wave 1 and wave 2 and therefore comparisons of incidence rates across both waves should be treated with caution

Outbreak analysis: outbreaks with 5 or more cases
CIDR data: 1 NOV to 16 DEC

Total Cases 1 Nov - 16 Dec (Track and Trace)			
777			
% of cases linked to outbreak of 5+	National Average	Avg. cases per outbreak of 5+	National Average
29%	19%	15.27	12.33

Settings (outbreaks of 5+)	# outbreaks (outbreaks of 5+)	# cases (outbreaks of 5+)	% of total (outbreaks of 5+)
Workplace	5	70	31%
[redacted]	1	57	25%
[redacted]	3	44	19%
School	1	19	8%
Extended family	<5	19	8%

Top Outbreak Settings (outbreaks of 10+)	# cases (outbreaks of 10+)
[redacted]	57
Workplace	35
[redacted]	33

Source: Total cases - HSE Testing and Tracing; Outbreaks - HPSC CIDR data aggregated summary report. Data based on CIDR data as at 16/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more cases

Mayo – cases in Claremorris driving recent rise in incidence rate

Summary

Mayo profile

- Claremorris appears to be the driver of this increase, with an incidence rate of 409 (14 Dec). Incidence rates in the other LEAs are below national levels, with the second highest, Westport, being eight times times lower (14 Dec) than Claremorris
- While cases remained below the national average throughout October and November, cases began to rise during the second weekend in December

Summary analysis

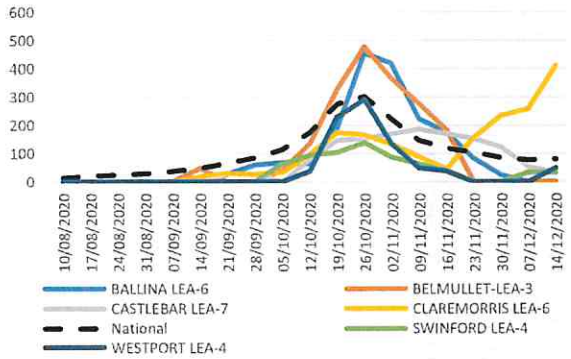
- 41% of Mayo's cases were linked to outbreaks of 5+ cases, over twice as high as the national average 19%). Two large workplace outbreaks in the end of November were responsible for 110 cases (24% of all cases since 1 Nov)
- Mayo's success in the All-Ireland Senior Football Championship, while not appearing to affect cases yet, will need to be monitored over the coming weeks

Restriction impact

- While incidence rates in Mayo rose in the weeks before Level 5 lockdown, they remained below the national average throughout October and November
- Mayo's incidence rate is now 31% above the national average (14 Dec)

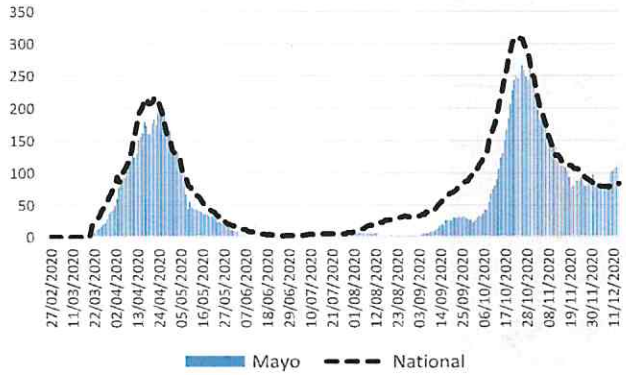
Notes
The restriction impact is based on disease incidence combined with the dates the restrictions are imposed. It is not a measure of compliance or does not take behavioural aspects into consideration

LEA 14 Day Incidence Rate per 100k



Source: Based on weekly OpenHive data as at 14/12/2020. Government Open Data Initiative. This data is published weekly

14 Day Incidence Rate per 100k



Source: Based on daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily. There have been different levels of Covid-19 testing and testing eligibility between wave 1 and wave 2 and therefore comparisons of incidence rates across both waves should be treated with caution

Outbreak analysis: outbreaks with 5 or more cases
CIDR data: 1 NOV to 16 DEC

Total Cases 1 Nov - 16 Dec (Track and Trace)
451

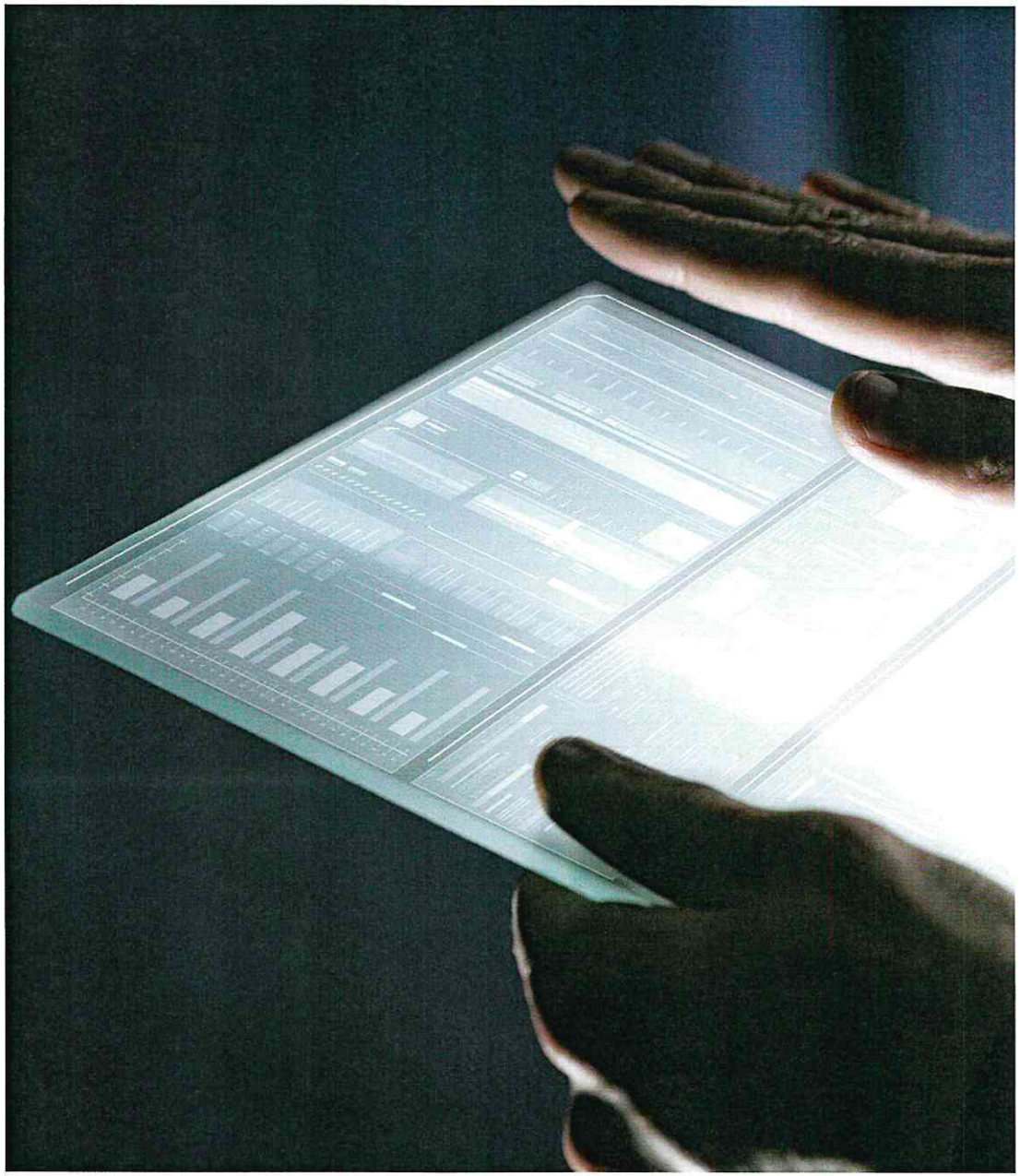
% of cases linked to outbreak of 5+	National Average	Avg. cases per outbreak of 5+	National Average
41%	19%	14.38	12.33

Settings (outbreaks of 5+)	# outbreaks (outbreaks of 5+)	# cases (outbreaks of 5+)	% of total (outbreaks of 5+)
Workplace	2	110	59%
Private house	5	28	15%
Extended family	<5	14	7%
School	2	13	7%
Community outbreak	2	13	7%

Top Outbreak Settings (outbreaks of 10+)	# cases (outbreaks of 10+)
Workplace	65
Workplace	45

Source: Total cases - HSE Testing and Tracing; Outbreaks - HPSC CIDR data aggregated summary report. Data based on CIDR data as at 16/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more cases

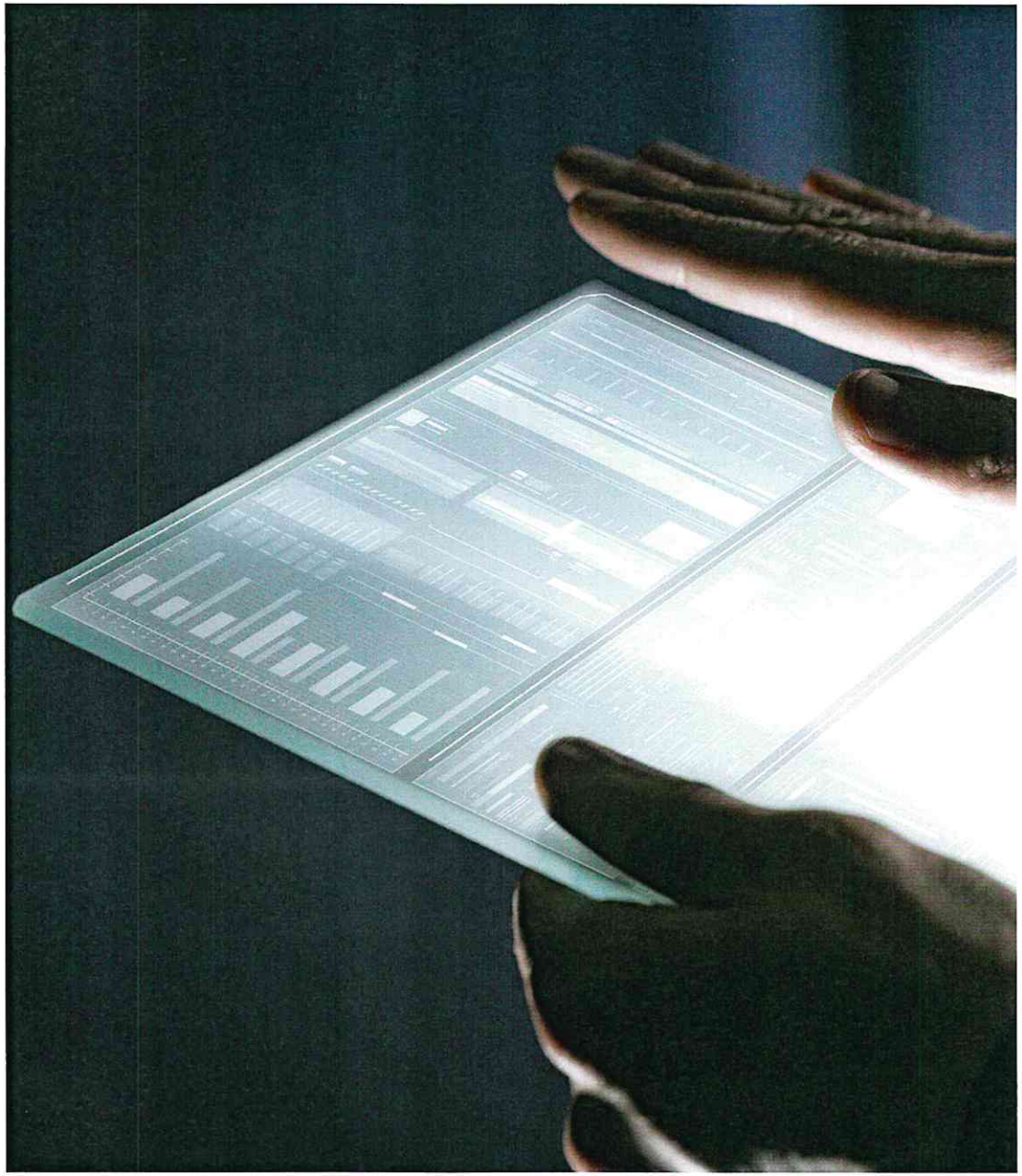
Press briefing stats



Press Briefing Key Statistics 17 Dec 2020

Metric	Key statistic	Notes	Source
Incidence rates and outbreaks	▸ The 14-day Incidence rate per 100k population has started to trend upwards, as expected, with the relaxation of Level 5 restrictions (+7% over the five days to 14 Dec)		Based on daily cumulative data from HPSC published on Geohive as at 14/12/2020. This data is published daily.
	▸ The volume of outbreaks with 5 or more cases has seen a decline over the month of November and early December. The 7-day average in early November was 7 outbreaks per day, in early December this had reduced to 2 outbreaks per day.	Excludes outbreaks of under 5 cases	HSE CIDR and Test Trace shared via HSE IIS on 16 Dec 2020
Dublin City Centre footfall	▸ Mon-Weds morning commuting times were 4% quieter than last week	All city centre counters, 14 - 16 Dec, 6am - 9am	Dublin City Council Dublin City footfall data to 16 Dec
	▸ Mon-Weds evenings were 7% busier overall than Mon-Weds last week	All city centre counters, 7pm - 12am, this week: 14 Dec - 16 Dec, last week: 7 Dec - 9 Dec	
	▸ Mon-Weds this week was relatively stable on last week (+2%) all hours	All city centre counters, all day	
Traffic volumes	▸ Traffic volumes so far this week are up c.3% compared to the week prior (Mon - Weds)	All roads; This week 14th-16th Dec; last week 7th-9th Dec)	TII traffic volumes for private cars to 16 Dec
	▸ Between the hours of 8am-8pm traffic volumes around tracked shopping centres rose c.2% compared to the previous week. Year on year the volume is down c.16%. Peak hours for traffic are between 4pm-6pm with the quietest period being 10am - Midday (Mon - Wed)	Shopping centre traffic counters; 8am 8pm: Kildare Village, Mahon Point, Liffey Valley, Blanchardstown; this week 14th-16th Dec; last week 7th - 9th Dec; same week last year 16th-18th Dec 2019; year on year comparison uses full day volumes	
	▸ Traffic counters near major airports recorded a week on week increase of c.6%; traffic volumes are down c.45% compared to the same week last year (Mon - Wed)	Airport traffic counters; Dublin, Cork, Shannon; This week 14th-16th Dec; last week 7th-9th Dec; same week last year 16th - 18th Dec 2019;	
Mobility	▸ Retail and recreation-associated mobility up 8% last week compared to the week before and is now just 17% below baseline, with transit stations increasing 7% in the same time frame, still remaining 38% below baseline.	Average mobility levels for last week: 6 Dec - 13 Dec compared to the week before: 30 Nov - 6 Dec. weekly comparison of average changes relative to baseline.	Google mobility data to 13 Dec. Baseline value is the median value on that day of the week in the 5-week period from 3 Jan - 6 Feb.
Compliance	▸ Mask compliance has remained consistently around 83% since mid November, while the level of close contacts reported (via Facebook survey) has risen from 33% of people reporting one or more close contact on 27 Nov to 40% by 14 Dec, close to levels seen in the days before Level 5 was announced	Facebook survey data as of 17/12	

Additional analysis



We are continuing to monitor recent events to identify any correlation to increases in incidence rates

Past events	Date	Counties involved	Winning county	% change of County incidence rate between day of event and T + 10*	Losing county	% change of County incidence rate between day of event and T + 10*	Avg. close contacts in county at T (Day of Event)	% Change in close contacts between day of event + 7 days**
FAI Cup Quarter Finals	20/11/2020	Louth (Dundalk) v Dublin (Bohemians)	Louth (Dundalk)	County change: -10% LEA change* (Dundalk South): -35%	Dublin (Bohemians)	County change: -14% LEA change* (Cabra-Glasnevin): -11%	Louth: 2.6 Dublin: 2.1	Louth: -37% Dublin: -32%
GAA Hurling All-Ireland Senior Championship Quarter Final	21/11/2020	Waterford v Clare	Waterford	-54%	Clare	-48%	Waterford: 1.6 Clare: 0.5	Waterford: +90% Clare: data missing for 29 Nov
GAA Hurling All-Ireland Senior Championship Quarter Final	21/11/2020	Galway v Tipperary	Galway	-28%	Tipperary	-15%	Galway: 7.8 Tipperary: 8.3	Galway: -72% Tipperary: -77%
Ulster GAA Football Senior Championship Final	22/11/2020	Cavan v Donegal	Cavan	-48%	Donegal	-6%	Cavan: 2.8 Donegal: 3.0	Cavan: +82% Donegal: -55%
Munster GAA Football Senior Championship Final	22/11/2020	Cork v Tipperary	Tipperary	-14%	Cork	-36%	Tipperary: 3.7 Cork: 2.7	Tipperary: -46% Cork: -12%
GAA Hurling All-Ireland Senior Championship Semi Final	28/11/2020	Kilkenny v Waterford	Waterford	-25%	Kilkenny	+45%	Kilkenny: 2.9 Waterford: 3.0	Kilkenny: -54% Waterford: +3%
GAA Hurling All-Ireland Senior Championship Semi Final	29/11/2020	Limerick v Galway	Limerick	-15%	Galway	+20%	Limerick: 1.1 Galway:1.3	Limerick: +92% Galway: +108%
GAA Football All-Ireland Senior Championship Semi-Final	05/12/2020	Cavan v Dublin	Dublin	-2% (T+9 days)	Cavan	+98% (T+9 days)	Dublin: 1.76 Cavan: 2.7	Dublin: -1% Cavan: -23%
GAA Football All-Ireland Senior Championship Semi-Final	06/12/2020	Mayo v Tipperary	Mayo	To be updated once data becomes available	Tipperary	To be updated once data becomes available	Mayo: 4.4 Tipperary: 2	Mayo: -58% Tipperary: 0%
GAA Hurling All-Ireland Senior Championship Final	13/12/2020	Waterford v Limerick	Limerick	To be updated once data becomes available	Waterford	To be updated once data becomes available	Limerick: 4 Waterford: 2.3	To be updated once data becomes available
Upcoming events	**Date**	**Counties involved**	**Winning county**	**% change of County incidence rate between day of event and T + 10**	**Losing county**	**% change of County incidence rate between day of event and T + 10**	**Avg. close contacts in county at T (Day of Event)**	**Change in close contacts**
GAA Football All-Ireland Senior Championship	19/12/2020	Mayo v Dublin	TBC	To be updated once data becomes available	TBC	To be updated once data becomes available	To be updated once data becomes available	To be updated once data becomes available

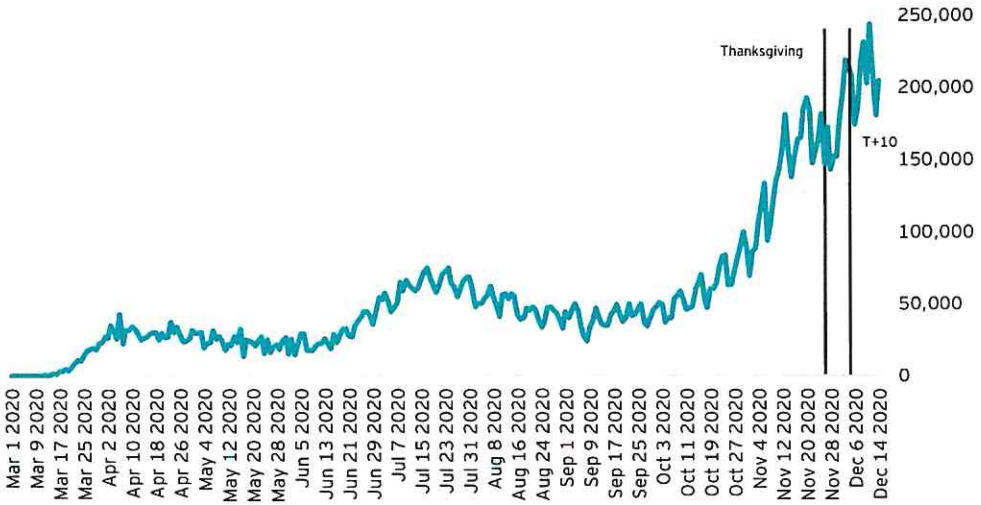
Source: LEA data collected weekly and published from HSPC on GeoHive.
*Change calculated between 23/11 and 30/11 for the respective stadium's LEA **
Source: HSE Testing and Tracing shared via HSE IIS as of 14 Dec 2020

25% increase in hospitalisations since US Thanksgiving

The first signs of a Thanksgiving Covid-19 surge are now being seen across the US with a 7-day moving average of over 200k new cases two weeks after the holiday took place (10 Dec), compared to c.163K the week before Thanksgiving (19 Nov).

The level of new cases in 50% of the 50 states are have increased since the end of November, with a new US peak of 244k new cases reached on 11 December.

US Daily Cases



Source: *Covid-19: US faces "surge upon a surge"* BMJ. December 2020. https://www.bmj.com/content/371/bmj.m4693
National: Hospitalization | The COVID Tracking Project
CDC COVID Data Tracker. December 2020.
https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/forecasts-cases.html
TSA checkpoint travel numbers for 2020 and 2019. Transportation Security Administration. December 2020.
https://www.tsa.gov/coronavirus/passenger-throughput
https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection.html#a1

Key findings:

- More than 8m Americans flew between 20-28 November (compared to 20m last year) according to the Transportation Security Administration, despite the CDC urging Americans not to travel or spend the holiday with people outside their household
- Almost every state has reported increases in new cases in the first few days of December and there has been a 25% increase in people currently hospitalised since Thanksgiving
- The national ensemble had forecast that the number of new Covid-19 deaths would be 9.5k to 19.5k new deaths and 690k to 1.7m new cases in the week ending 26 December. However, over the last several weeks, there have been more reported cases than predicted, suggesting that the current forecast may be lower than the actual cases that may occur in December
- The worst hit state is currently California where 33.3k new cases were reported on 14 December
- New cases in 25 out of 50 states have increased since 25 November
- Canada also saw an increase of 26.3k cases between 12-22 October following Canadian Thanksgiving on 12 October, compared to an increase of 20.2k cases in the ten days leading up to Thanksgiving

US Covid-19 overview

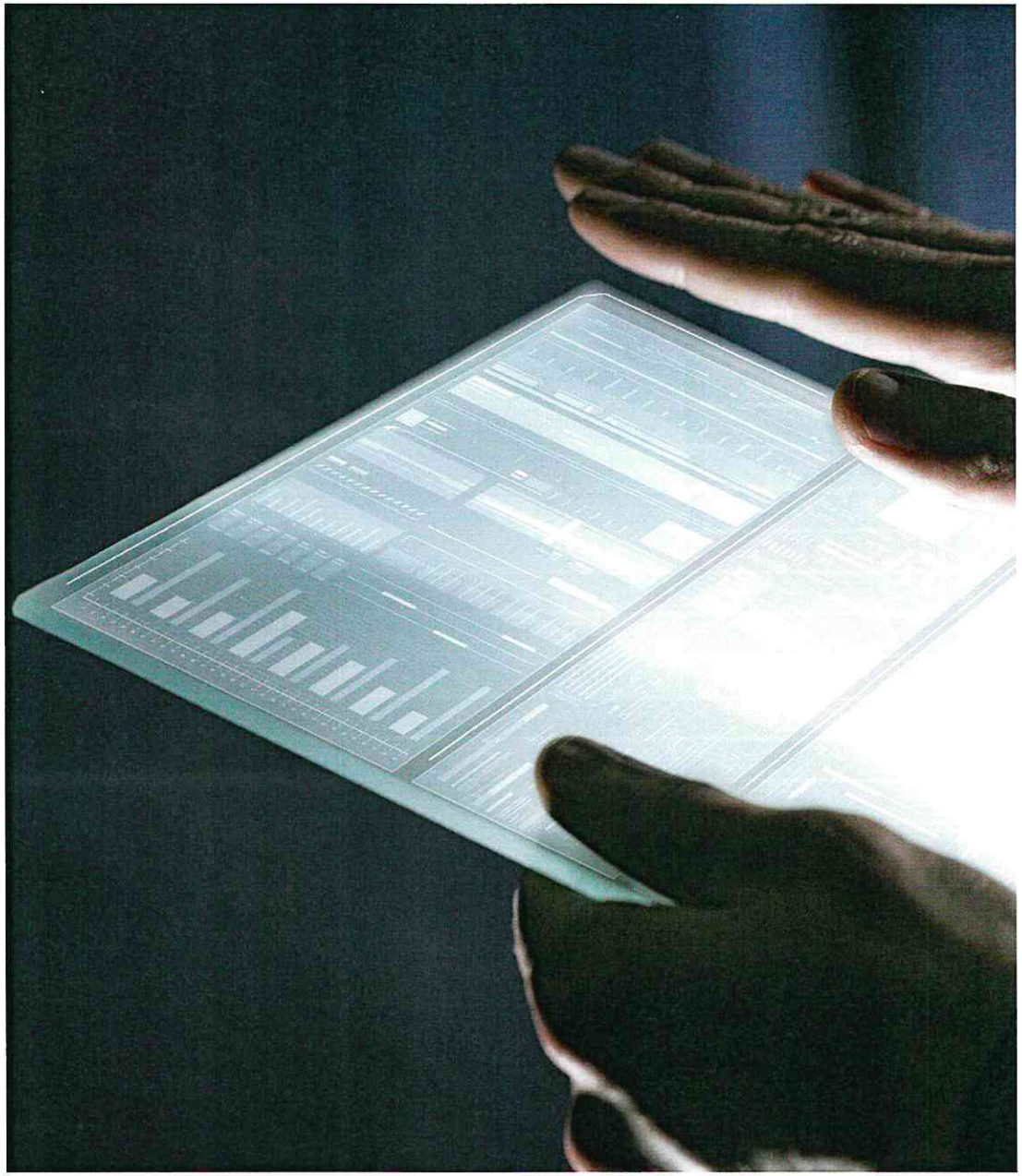
US	New cases	New deaths	Hospitalisations	ICU	Ventilator
26 Nov	128,439	1,387	90,564	18,019	5,986
16 Dec	232,258	3,448	113,090	21,936	7,778

Source: National: Hospitalization | The COVID Tracking Project, 16 December 2020

Specific assets and insights informing how we are performing and identifying future risks

Indicator	Summary	Frequency	Source	Status
Where and how is the disease spreading?				
County incidence rates	Disease incidence rates (County)	Daily	Openhive	
LEA incidence rates	Disease incidence rates (LEA)	Weekly	CSO	
Testing and tracing output	Disease transmission sources and settings	Daily	HSE	
Outbreaks	Analysis of outbreaks by setting	Daily	CIDR	
What restrictions are in place?				
Current restriction level	Current Government restrictions on place	As relevant	Govt guidelines	
Events tracker	Upcoming and past events	Daily	Online events database	
Are people complying?				
Stay at home index	Trips within and outside counties	Daily	3mobile	
Traffic data	Traffic counter data by vehicle type and road	Daily	TII	
Dublin footfall	Pedestrian counters for Dublin City Centre	Daily	DCC	
Mobility	Measure of mobility by purpose	Daily	Google, Apple	
Adherence self reporting	Survey responses on mask compliance, close contacts	Daily	Facebook survey	
Garda enforcement	Fixed fine notices for C-19 breaches	TBC	Gardaí	
Outbreaks	Analysis of outbreaks by setting	Daily	CIDR	
Leap card usage	Leap card user data	Daily	NTA	
What impact are the restrictions having?				
Restrictions analysis	Analysis of restrictions on disease incidence	Daily	Openhive	

Appendix



Early warning indicators - overview

		Metrics	Notes
HEALTH	INCIDENCE	14 Day Incidence Rate per 100k population	Absolute value - current day
		Change in 14 Day Incidence Rate per 100k in 14 Days	% change over two weeks
		7 Day Incidence Rate per 100k	Absolute value - current day
		Change in 7 Day Incidence Rate per 100k in 7 Days	% change over one week
	TESTING	Testing Positivity Rate	Absolute value on current day
		Change in Testing Positivity Rate in 7 Days	% change over one week
	OUTBREAKS	Number of Outbreaks (5+ Cases)	Absolute value on current day. There are five county buckets based on population size.
		% of Household Outbreaks	Share of outbreaks of 5+ cases that are occur in households on current day
		% of Social Outbreaks	Share of outbreaks of 5+ cases that are occur in settings: community outbreaks, Other Recreation Activities, Public House, Religious/Other Ceremonies, Restaurant/Café, Retail Outlet, Social Gathering, Sporting Activity/Fitness
	ICU CAPACITY	ICU Capacity %	Absolute value of currently occupied ICU beds in county hospitals - for counties that do no have hospitals, the nearest county hospital was chosen.
		Change in ICU Hospital Occupancy	% change over one week
	CLOSE CONTACTS	Number of Close Contacts per person last week	Absolute value of close contacts per confirmed Covid-19 case in the week prior
		Change in Number of Close Contacts per person week before last	% change over one week
MOVEMENT	FOOTFALL	Dublin Footfall - 7 day average	Absolute value of 7-day average on current day
		Change in Dublin Footfall in 7 Days	% change over one week
	TRAFFIC	Change in Traffic Volume to bench mark week	% change in county traffic volumes compared to week
		% Change in Traffic Volumes to Benchmark Week	Measured against a benchmark week and then compared to national average.
	MOBILITY	Google / Apple	Increasing or decreasing mobility relative to baseline
		Change in Google / Apple	Change in mobility compared to previous week
COMPLIANCE	FACEBOOK	Facebook Mask Compliance & Social Distancing	Reported compliance last week
		Change in Facebook Mask Compliance & Social Distancing in 7 Days	Change in reported compliance on previous week
	STAY AT HOME	Stay at Home Index	TBC
		Change in Stay at Home Index	TBC
EVENTS	EVENTS TRACKER	High Risk Events	Number of high risk events in current month (and two weeks prior)

National 7-day incidence rate

7 Day Incidence Rate Per 100k	Population	04-Nov	05-Nov	06-Nov	07-Nov	08-Nov	09-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	01-Dec	02-Dec	03-Dec	04-Dec	05-Dec	06-Dec	07-Dec	08-Dec	09-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	Change Last 5 Days
Carlow	56,932	102	123	119	139	116	133	104	79	67	58	61	54	51	47	44	23	30	33	28	26	21	18	21	19	28	37	33	42	44	35	28	25	12	9	12	12	14	25	33	40	56	357%
Cavan	76,176	375	365	290	230	179	152	147	139	98	76	75	67	49	43	49	35	22	24	26	22	34	45	42	41	41	34	32	38	35	38	35	28	21	25	24	21	17	16	9	11	13	-38%
Clare	118,817	100	82	78	97	93	82	88	82	61	61	55	40	35	40	45	45	50	50	44	30	26	26	26	23	42	42	42	40	44	26	28	24	23	18	14	11	9	10	13	16	14	31%
Cork	542,868	115	99	105	97	102	114	117	108	102	95	90	64	54	51	48	40	42	35	27	19	20	21	24	26	29	30	27	30	33	33	35	34	28	30	25	20	19	18	13	11	9	-54%
Donegal	159,192	113	122	142	143	114	114	116	107	92	106	107	81	66	98	90	102	130	133	99	90	107	85	89	97	102	80	89	89	81	88	80	66	75	72	70	70	77	77	77	74	85	23%
Dublin	1,347,359	83	80	84	83	82	83	87	85	73	68	77	66	60	62	63	44	51	46	43	34	38	34	40	43	45	42	41	42	41	43	46	45	37	34	34	29	29	32	34	31	31	5%
Galway	258,058	149	147	148	141	119	93	93	79	74	59	63	43	41	35	40	36	37	24	17	14	19	22	31	36	36	31	33	24	20	17	15	10	10	9	12	10	14	16	24	27	27	156%
Kerry	147,707	95	91	101	94	93	93	79	59	49	43	41	31	37	66	65	71	79	69	39	43	31	25	24	30	24	24	24	24	20	19	17	14	13	12	11	14	14	14	14	16	14	5%
Kildare	222,504	107	104	101	92	84	91	90	82	62	63	52	44	33	40	34	28	33	28	25	25	28	25	35	34	37	35	33	34	31	28	32	29	20	20	20	13	13	18	18	18	19	43%
Kilkenny	99,232	50	55	50	57	55	55	46	43	34	30	42	45	51	56	53	57	57	54	49	51	30	28	30	28	30	36	41	40	37	37	33	44	43	42	62	61	49	53	63	54	62	2%
Laois	84,697	97	80	86	80	77	70	74	65	55	50	63	59	51	52	63	51	63	64	64	51	48	27	28	30	24	18	19	15	12	18	18	19	18	18	19	22	25	27	25	20	19	-16%
Leitrim	32,044	81	78	72	59	47	22	9	6	3	6	9	9	6	6	3	9	22	28	28	37	37	53	47	56	56	47	25	31	22	12	12	6	0	0	0	3	3	3	3	6	6	100%
Limerick	194,899	114	105	91	100	92	97	100	94	74	82	74	61	56	76	67	59	81	84	69	74	79	72	74	76	97	103	96	86	82	54	48	42	41	47	49	47	50	50	52	50	45	-4%
Longford	40,873	117	95	83	76	86	69	73	71	73	76	66	59	42	49	39	37	46	46	34	34	37	29	37	37	37	32	27	17	24	22	27	29	34	39	39	39	34	34	29	29	27	-31%
Louth	128,884	137	151	116	96	74	94	96	99	82	87	70	64	47	50	42	43	36	36	36	49	63	69	74	82	73	64	68	74	78	85	85	81	75	67	60	60	50	50	46	47	39	-35%
Mayo	130,507	116	114	105	96	86	70	58	60	73	64	67	65	61	41	54	67	65	60	50	37	18	25	29	30	27	31	28	26	34	34	34	38	35	29	34	29	21	21	25	23	41	42%
Meath	195,044	248	260	173	156	116	130	133	133	107	107	85	72	57	69	70	62	53	46	35	31	38	42	43	39	52	46	50	56	68	53	51	36	26	18	15	18	17	23	18	19	15	-17%
Monaghan	61,386	161	156	125	116	98	85	78	67	59	52	44	46	31	34	49	54	49	47	47	31	28	42	46	44	36	34	18	23	31	41	46	49	42	36	29	24	18	18	34	34	37	53%
Offaly	77,961	82	69	65	50	56	49	51	50	51	38	38	32	14	14	21	13	33	37	35	47	49	40	47	68	51	55	49	45	26	24	19	15	8	6	6	9	13	18	22	19	19	114%
Roscommon	64,544	95	98	113	96	74	65	51	51	40	51	81	85	85	85	81	46	37	29	54	46	53	60	54	45	51	79	84	87	73	65	34	29	20	15	15	12	14	17	17	20	26	113%
Sligo	65,535	197	172	165	172	137	102	96	76	60	63	75	76	72	73	61	50	50	46	32	37	40	27	29	23	24	17	24	21	32	31	29	29	26	15	12	15	11	14	17	15	15	0%
Tipperary	159,553	40	36	45	49	47	50	52	38	43	54	51	49	53	46	39	34	37	36	38	38	37	33	41	31	38	46	43	38	38	26	19	16	22	23	33	33	34	29	31	31	30	-8%
Waterford	116,176	71	87	87	95	90	82	73	64	69	53	60	54	49	45	46	49	38	37	32	40	25	59	74	80	89	102	71	59	51	43	31	28	26	19	18	22	34	33	34	28	25	16%
Westmeath	88,770	212	193	184	116	124	108	92	104	82	64	87	96	75	79	71	37	38	34	27	30	38	28	48	56	48	51	55	35	24	25	14	9	8	8	9	8	11	9	9	8	9	14%
Wexford	149,722	100	104	80	74	70	43	51	44	37	33	35	19	17	27	22	21	22	24	12	14	11	11	11	15	15	16	13	16	15	14	15	14	11	6	7	5	5	4	5	8	9	63%
Wicklow	142,425	46	46	49	49	48	40	44	39	38	40	34	26	24	27	20	18	31	27	19	39	42	34	41	48	27	25	22	20	23	27	25	29	31	27	29	32	30	44	43	38	54	71%
National	4,761,865	79	73	71	71	61	60	58	54	54	56	53	57	59	60	60	57	55	54	50	47	44	42	40	38	37	38	39	39	36	38	42	42	41	39	39	41	42	38	41	42	44	6%

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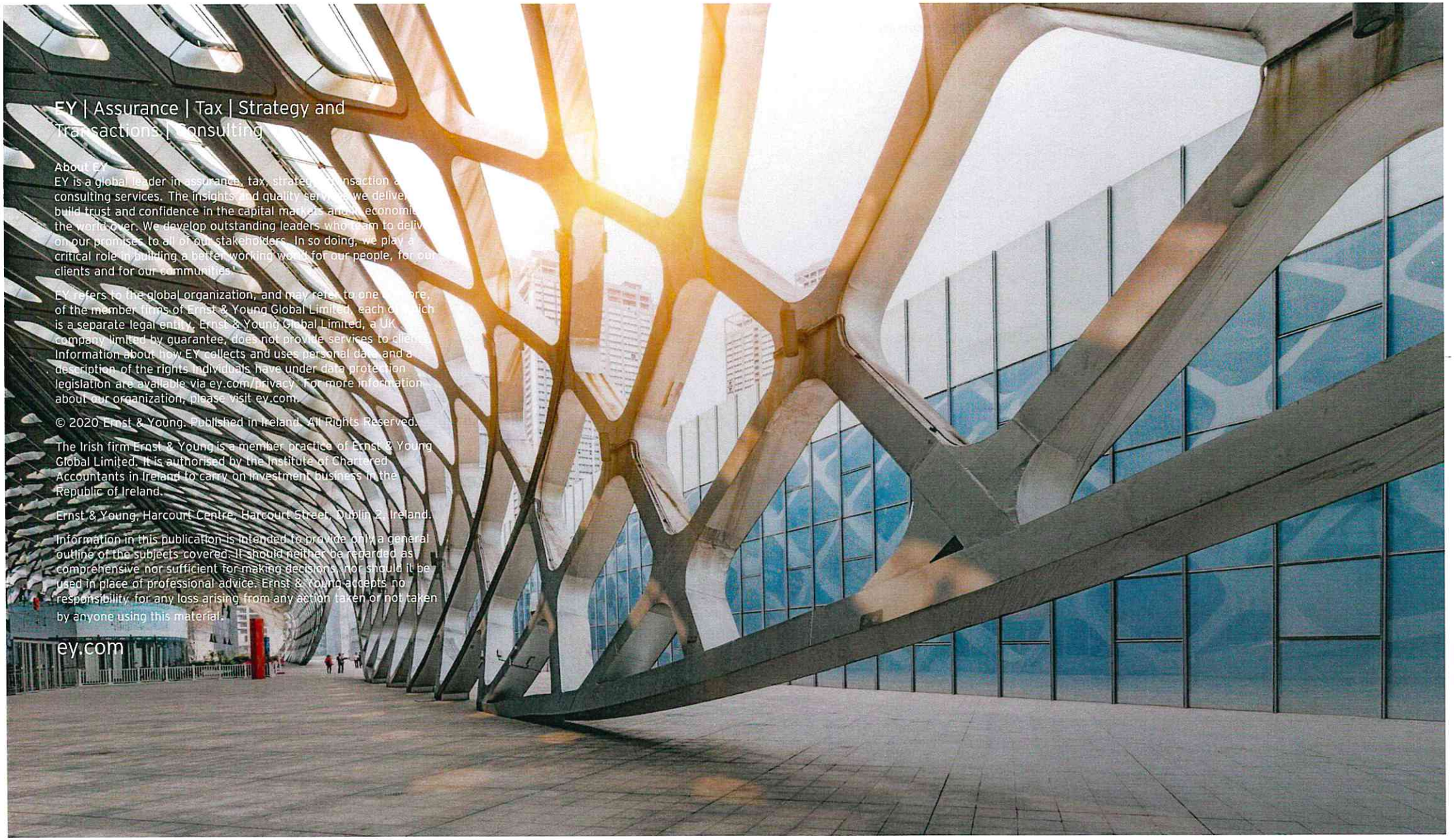

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1GC Programme

Weekly Report
18/12/2020

Building a better working world

209

1GC Status Report (18/12/2020)

Overall		Schedule		Scope		Cost	

Critical /at risk Warning On Track

Reason for Status (if not GREEN)

- DPIA: Awaiting HSE feedback and sign off
- Phase 2 SoW pending signature

Milestone	Status	Date Last Period	Due Date
Use Case Prioritisation (Weekly)		25/12	25/12
1GC Briefing Pack (as required)		25/12	25/12
Social Distancing Index decision		N/A	N/A
Deploy 1GC Azure Environment		11/12	TBC
Complete 1GC DPIA		11/12	11/12

Key Achievements

- Delivered 1GC briefing to DoT (18/12)
- Presented Press briefing insights to the DoT press team (15/12 & 17/12)
- Development environment signed off by 1GC team with HSE (16/12)
- Data pipelines from IIS environment configured (17/12)
- Commenced development of county early indicator analysis (threshold indicator)
- Updated county analysis
- Updated close contact and outbreak analysis
- Held meeting with garda to discuss breach data (16/12)

Items for Attention

Highlights / Risks / Issues / Decisions

- Decision and sign off on proposed insight governance
- DPIA sign off (including Data & Platform Owner decisions)
- HSE to sign phase 2 SOW
- Dept of Health sign off required for Stay at Home data, awaiting confirmation from Miuris O'Connor (yet to receive underlying data)

Planned Activities / Forward Look

- Refresh DoT press briefing statistics to DoT press team (22nd Dec)
- Deliver 1GC ad-hoc analysis (21st Dec) and regular briefing content (23rd Dec)
- HSE to sign phase 2 SoW
- 1GC team to draft phase 3 SoW
- Receive and commence analysis of spend data
- Industrialise data pipelines
- Assist with deployment & validation of the Test environment (Jan '21)
- Commence industrialisation of early indicator analysis
- Update county analysis
- Update close contact and outbreak analysis
- Receive Stay at Home Index data

1GC Detailed Update

Area	Achievements	Forward Look
Governance	**Achievements** • Delivered 1GC briefing to DoT (18/12) • Presented Press briefing insights to the DoT press team (15/12 & 17/12)	**Forward Look** • Refresh DoT press briefing statistics to DoT press team (22nd Dec) • Deliver 1GC briefing (23rd Dec) • HSE to sign phase 2 SoW • 1GC team to draft phase 3 SoW • Receive and commence analysis of spend data
1GC Azure Build	**Achievements** • Development environment signed off by 1GC team with HSE (16/12) • Data pipelines from IIS environment configured (17/12)	**Forward Look** • Industrialise data pipelines • Assist with deployment & validation of the Test environment (Jan '21)
Data & Insights	**Achievements** • Developed county early indicator analysis (threshold indicator) • Updated county analysis • Updated close contact and outbreak analysis • Held meeting with garda to discuss breach data (16/12)	**Forward Look** • Commence industrialisation of early indicator analysis • Update county analysis • Update close contact and outbreak analysis • Receive Stay at Home Index data

1GC Resource Tracker

Area	Team Member	Role	Last Week (Days)	Next Week Forecast (Days)
Governance	Paul Pierotti	Responsible Executive	5	3
	Emmanuel Adeleke	Programme Manager and Stakeholder Engagement Lead	5	3
	Emma O' Sullivan	Programme Office	5	3
1GC Azure Build	Nigel Foley	Delivery Lead	4	0
	Paul Browne	Cloud Engineer	5	3
	Szabolcs Bencsik	Data Engineer	5	3
Data & Insights	Cillian Leonowicz	Insight Design Lead	3	0
	Nikunj Maheshwari	Data Scientist	5	0
	Graham Catchpole	Senior Data Analyst	2.5	0
	Ross Morrison	Data Engineer	0	0
	Rory Murphy	Data Analyst	5	1
	Fiona Murphy	Data Scientist	5	3
	Eve Bannon	Senior Data Analyst	5	2
	John Hallahan	Op Model Design Manager	5	0
	Cillian Bisset	Data Analyst	5	3
	Nitin Goutham	Data Engineer	4	2
	Kenny Hazlett	Data Engineer	5	1
	Jamie McIlveen	Data Analyst	5	3
	Jason Guy	Data Protection	1	1

Key * Absence (due to sick leave etc.)

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1GC Plan on a Page - Phase 2

Draft Pending Key Planning Decisions

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Data Analytics Insights
Draft - not for circulation
18 December 2020
EY
Building a better working world

Health metrics – October and today

	Level 5 restrictions implemented – 21 Oct		Today – 15 Dec	
Metric	7-day average rate	% change over previous week	7-day average rate	% change over previous week
New daily cases	1,151	+27%	329	+24%
New daily deaths	5	+75%	4	-32%
New daily ICU cases	3	-17%	2	+7%
14-day Incidence rate*	302	+46%	85	+9%
New daily outbreaks/clusters	105	+56%	37	-31%

Source: HPSC Epidemiology of COVID-19 in Ireland daily reports, Level 5: 7-day average to 21 Oct; % change between 21 Oct 7-day average and 14 Oct 7-day average
Today: 7-day average to 15 Dec; % change between 8 Dec 7-day average and 15 Dec 7-day average
*14-day incidence rate on 21 Oct and 15 Dec based on daily cumulative data from HPSC published on Geohive, % change between 14 Oct rate and 21 Oct rate, and between 8 Dec rate and 15 Dec rate
Note: Considers all outbreaks/clusters which may be outbreaks/clusters of one or more cases

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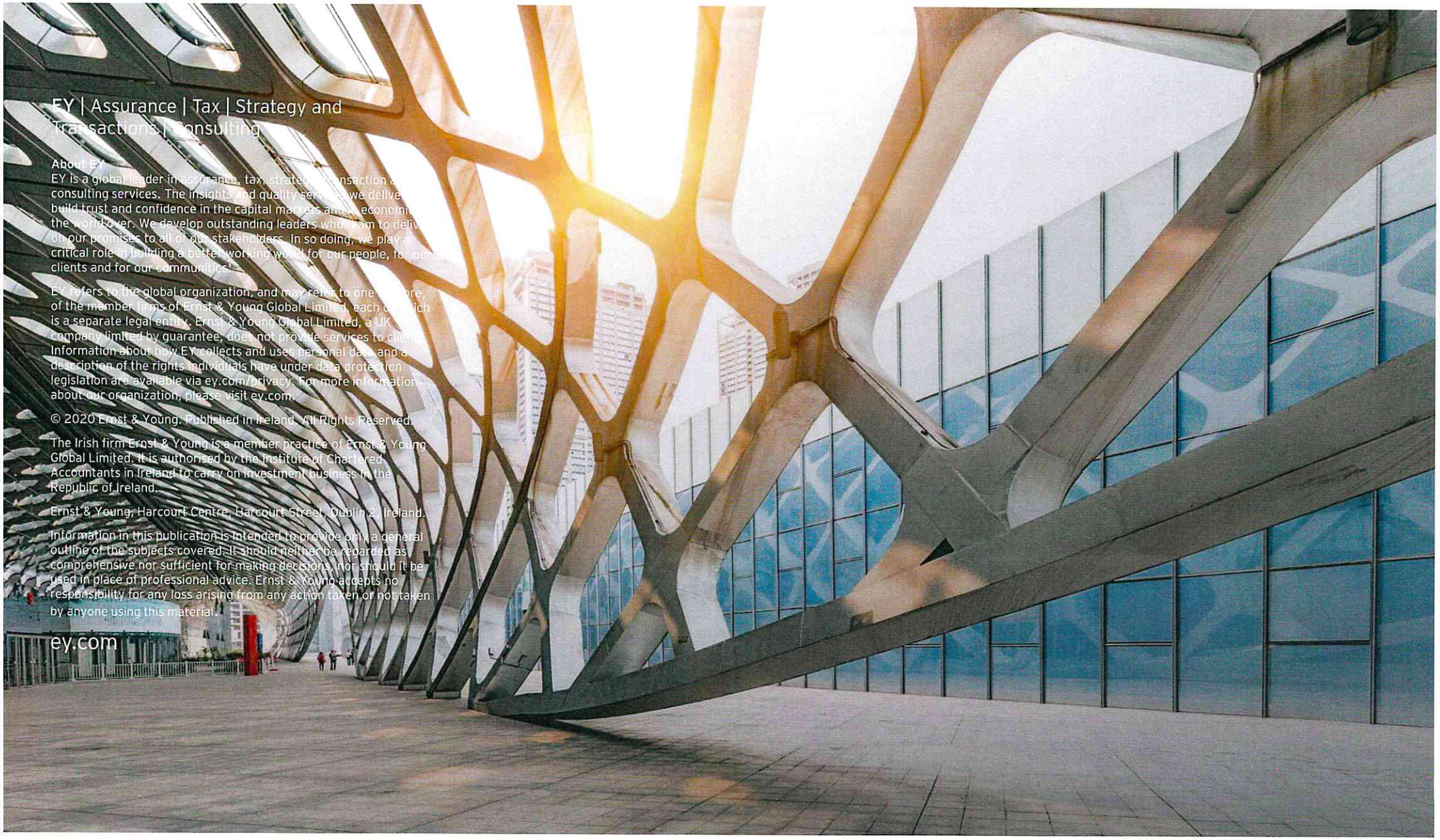

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Data Analytics Insights
Daily RAG
Not for Circulation
22 December 2020
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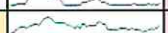
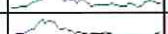
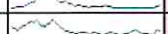
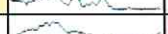
Daily RAG

	HEALTH				RESTRICTIONS	MOVEMENT		COMPLIANCE	EVENTS
County	14 Day Incidence Rate per 100k	5 Day Incidence Rate per 100k	ICU Capacity %	Graph in a cell for 5 Day Incidence Rate	Change in 5 Day Rate Since most recent change in restrictions	% Change in traffic volume to benchmark Week (28th Sep - 4th Oct)	Change in Google / Apple	Change in Facebook Mask Compliance in last 7 days (30th Nov - 6th Dec)	Number of High Risk Events (Also Weighted by Event Size)
Last Update	22/12/2020	22/12/2020	22/12/2020	From 01/10/2020 to 19/12/2020 (updated 22/10/2020)	15/12/2020	Week Ending 20th Dec	Week Ending 18th Dec vs Week Ending 11th Dec	13/12/2020	December
Carlow	191.46	82.55	66.7%		38%	9.4%	2%	NA	1
Cavan	174.60	86.64	28.6%		74%	8%	4%	NA	1
Clare	26.93	13.47	50.0%		60%	0%	4%	NA	0
Cork	51.03	35.37	72.8%		433%	5%	3%	-3%	4
Donegal	261.95	118.72	62.5%		93%	22%	1%	4%	0
Dublin	124.47	70.43	70.6%		146%	14%	4%	1%	14
Galway	53.09	19.76	55.6%		0%	3%	5%	7%	11
Kerry	108.32	81.92	36.4%		1412%	-5%	2%	-17%	1
Kildare	84.94	40.00	75.0%		112%	20%	5%	-5%	3
Kilkenny	195.50	62.48	66.7%		-13%	8%	4%	NA	2
Laois	174.74	90.91	100.0%		126%	20%	3%	NA	3
Leitrim	24.97	12.48	50.0%		100%	17%	0%	NA	0
Limerick	150.33	77.48	81.8%		125%	14%	4%	NA	3
Longford	141.90	41.59	25.0%		-37%	9%	0%	NA	0
Louth	235.87	103.19	88.9%		51%	11%	2%	13%	4
Mayo	118.00	36.78	62.5%		-26%	0%	6%	NA	3
Meath	106.64	64.60	60.0%		152%	9%	2%	1%	8
Monaghan	123.81	65.16	28.6%		82%	12%	3%	NA	0
Offaly	66.70	25.65	85.7%		150%	33%	6%	NA	5
Roscommon	48.03	20.14	75.0%		0%	7%	-7%	NA	0
Sligo	93.08	54.93	50.0%		177%	4%	3%	NA	1
Tipperary	65.81	21.31	60.0%		-13%	11%	5%	NA	3
Waterford	105.01	44.76	90.0%		30%	1%	-1%	1%	4
Westmeath	42.81	16.90	25.0%		67%	13%	6%	NA	6
Wexford	168.98	126.90	60.0%		692%	3%	2%	NA	1
Wicklow	63.89	25.98	70.6%		37%	5%	4%	-3%	4
National	111.57	58.23	69.2%		115%	11%	6%	0%	

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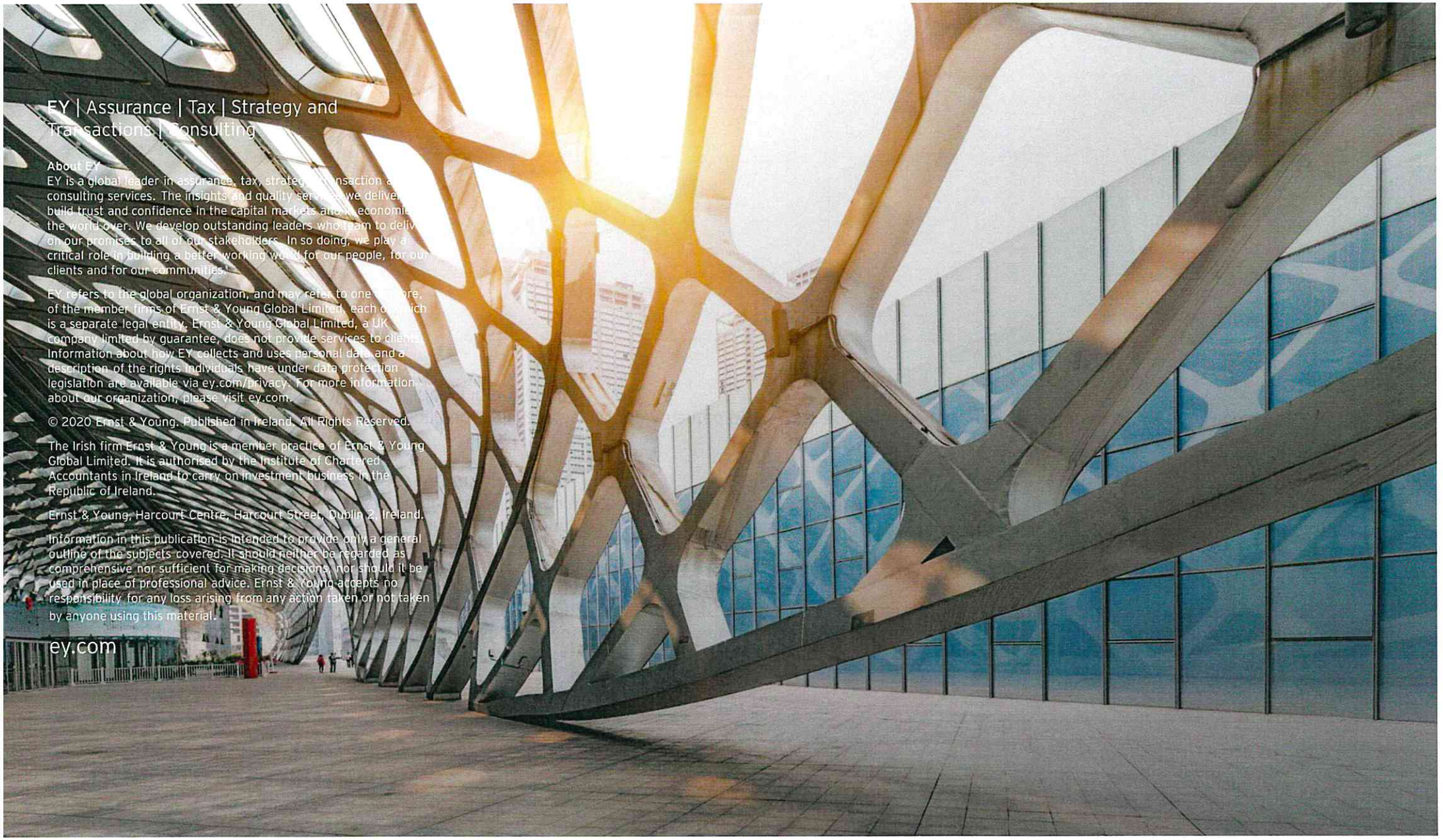

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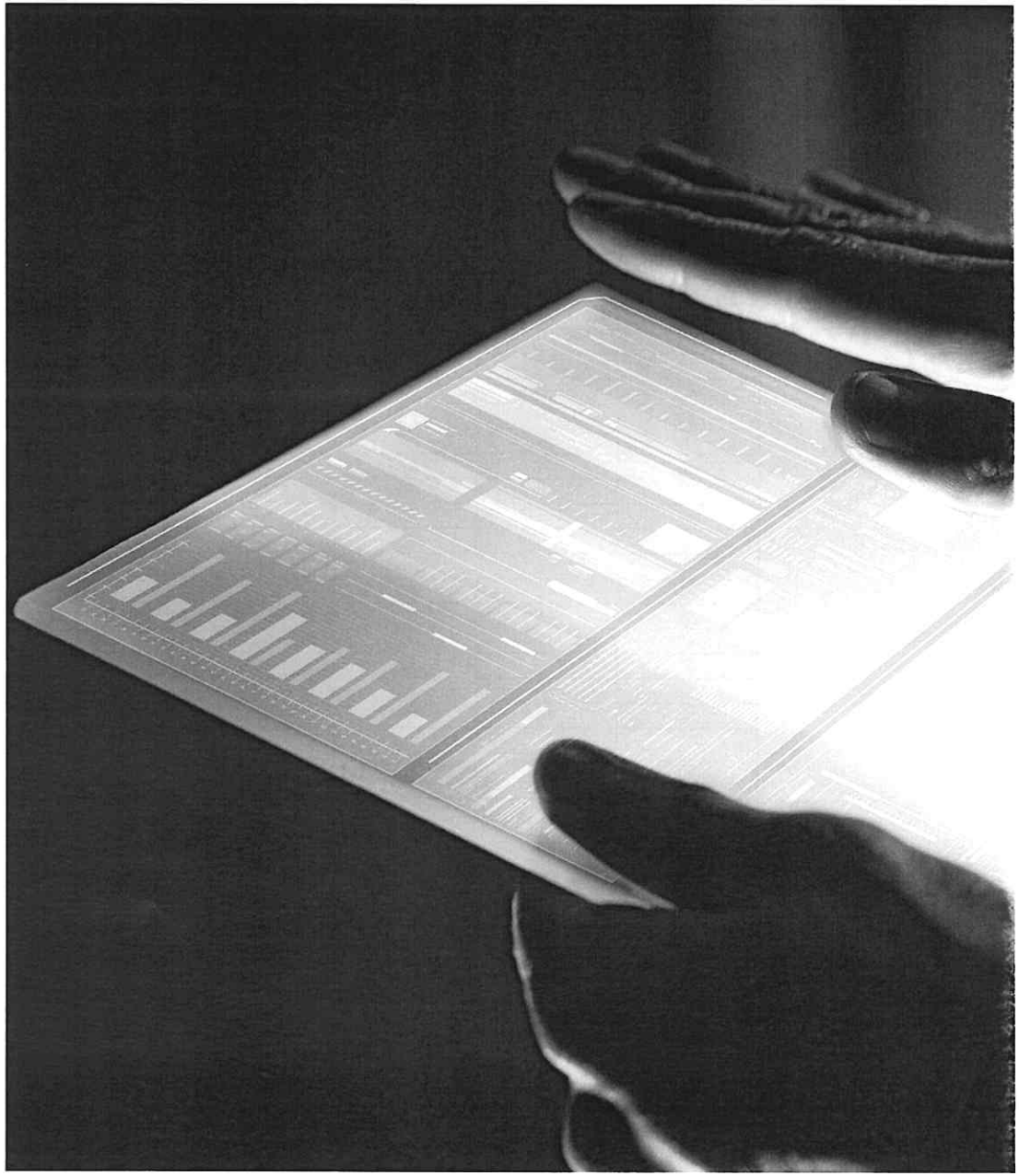
Week 10 Update

Agenda

- Early warning indicators
- Update since Leaving Level 5
- Analysis of outbreaks with 5 or more cases
- Banking payments insights
- Restrictions Impact Analysis

Early warning indicators



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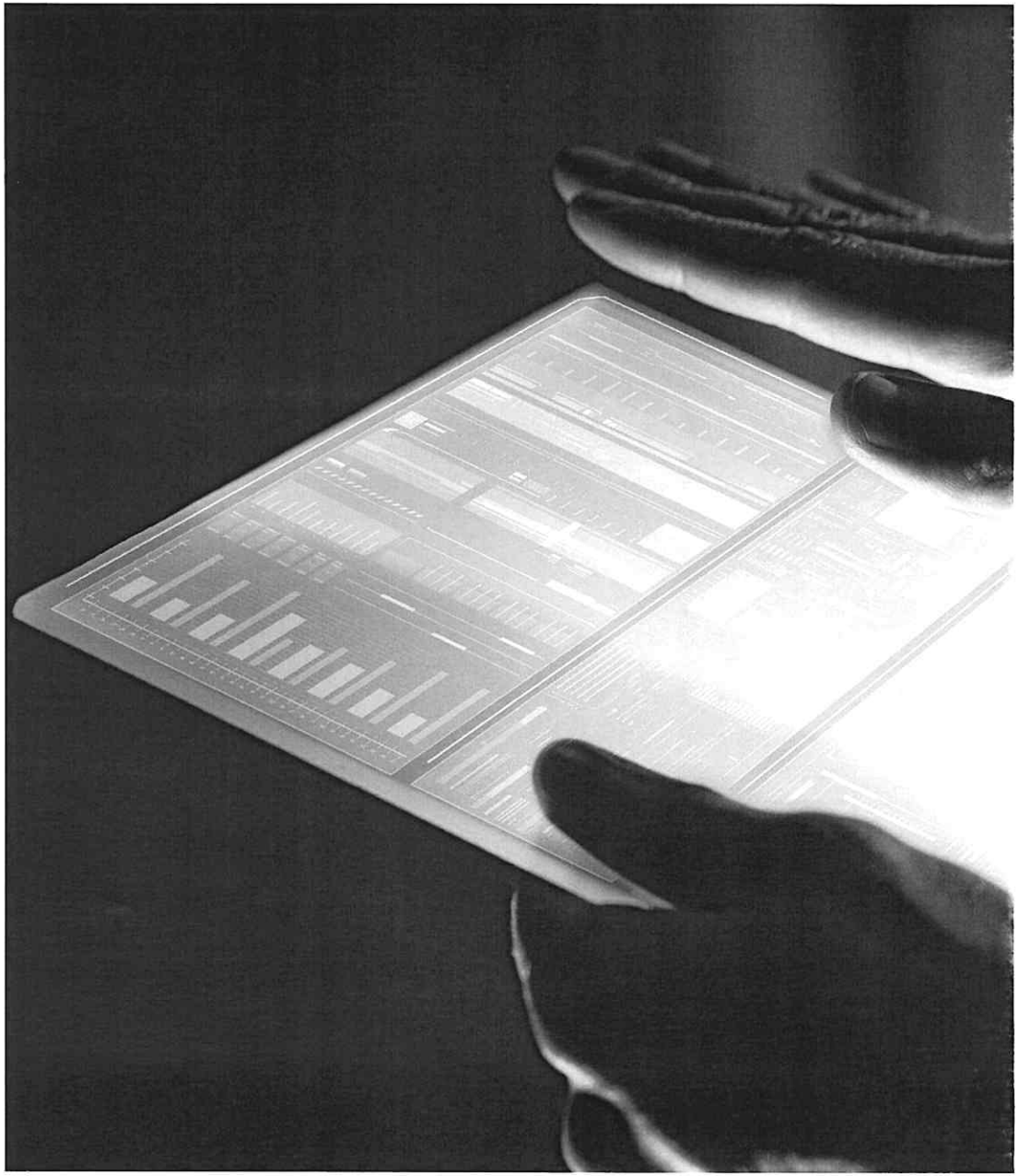
	HEALTH				RESTRICTIONS	MOVEMENT		COMPLIANCE	EVENTS
County	14 Day Incidence Rate per 100k	5 Day Incidence Rate per 100k	ICU Capacity %	Graph in a cell for 5 Day Incidence Rate	Change in 5 Day Rate Since most recent change in restrictions	% Change in traffic volume to benchmark Week (28th Sep - 4th Oct)	Change in Google / Apple	Change in Facebook Mask Compliance in last 7 days (30th Nov - 6th Dec)	Number of High Risk Events (Also Weighted by Event Size)
Last Update	23/12/2020	23/12/2020	23/12/2020	From 01/10/2020 to 20/12/2020 (updated 23/10/2020)	23/12/2020	Week Ending 20th Dec	Week Ending 18th Dec vs Week Ending 11th Dec	23/12/2020	December
Carlow	186.19	82.55	66.7%		38%	9.4%	2%	NA	1
Cavan	177.22	59.07	28.6%		18%	8%	4%	NA	1
Clare	31.98	20.20	50.0%		140%	0%	4%	NA	0
Cork	57.66	40.34	81.8%		508%	5%	3%	-4%	4
Donegal	272.63	114.96	50.0%		87%	22%	1%	6%	0
Dublin	141.98	83.50	72.1%		192%	14%	4%	2%	14
Galway	52.70	22.09	48.3%		12%	3%	5%	9%	11
Kerry	123.89	87.34	27.3%		1512%	-5%	2%	-16%	1
Kildare	90.34	42.25	75.0%		124%	20%	5%	-5%	3
Kilkenny	225.73	97.75	66.7%		37%	8%	4%	NA	2
Laois	174.74	76.74	50.0%		91%	20%	3%	NA	3
Leitrim	28.09	9.36	50.0%		50%	17%	0%	NA	0
Limerick	164.19	88.76	90.9%		158%	14%	4%	NA	3
Longford	139.46	31.81	50.0%		-52%	9%	0%	NA	0
Louth	241.30	100.87	66.7%		48%	11%	2%	11%	4
Mayo	112.64	21.45	62.5%		-57%	0%	6%	NA	3
Meath	120.49	72.80	60.0%		184%	9%	2%	0%	8
Monaghan	149.87	79.82	28.6%		123%	12%	3%	NA	0
Offaly	57.72	15.39	71.4%		50%	33%	6%	NA	5
Roscommon	55.78	24.79	62.5%		23%	7%	-7%	NA	0
Sligo	103.76	61.04	50.0%		208%	4%	3%	NA	1
Tipperary	65.81	21.94	80.0%		-10%	11%	5%	NA	3
Waterford	106.73	57.67	90.0%		68%	1%	-1%	0%	4
Westmeath	39.43	15.77	50.0%		56%	13%	6%	NA	6
Wexford	199.70	146.94	60.0%		817%	3%	2%	NA	1
Wicklow	67.40	30.19	72.1%		59%	5%	4%	-4%	4
National	121.61	64.37	69.7%		138%	11%	6%	0%	

Update since Leaving Level 5



Summary of county-level 14 day incidence rate per 100k

The heatmap below shows the 14 day incidence rate per 100k population for each county over the last 6 weeks.

Two Weekly Incidence Rate Per 100k	Population	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	01-Dec	02-Dec	03-Dec	04-Dec	05-Dec	06-Dec	07-Dec	08-Dec	09-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	19-Dec	20-Dec	Change Last 5 Days
Carlow	56,932	105	95	98	91	88	72	77	81	86	88	84	76	72	70	70	76	70	65	76	76	79	93	93	88	95	107	116	121	125	137	160	162	162	167	165	151	144	167	186	191	186	23%
Cavan	76,176	133	119	112	102	108	98	87	95	97	95	101	100	98	92	97	91	76	74	67	66	67	58	51	56	56	58	59	58	59	67	75	92	104	106	114	147	152	150	160	175	177	21%
Clare	118,817	122	109	104	104	93	109	111	112	104	93	91	89	86	83	80	79	74	69	71	51	53	46	42	39	35	35	35	32	32	32	35	34	31	27	23	24	25	26	28	27	32	36%
Cork	542,868	143	119	108	102	89	83	86	82	81	73	77	78	81	81	84	82	77	76	73	68	63	59	52	49	43	38	35	35	28	27	25	23	26	25	25	28	34	38	46	51	58	109%
Donegal	159,192	273	281	271	272	275	269	281	293	263	266	254	231	227	239	248	217	215	215	220	222	211	212	213	210	217	224	232	220	226	230	229	216	219	225	236	243	246	244	250	262	273	12%
Dublin	1,347,359	151	142	134	139	136	119	118	115	119	114	118	114	114	113	114	113	108	104	102	102	102	98	90	88	93	93	92	93	93	90	90	91	93	91	91	97	104	113	112	124	142	46%
Galway	258,058	108	97	86	83	86	80	84	78	71	66	62	62	63	65	62	54	51	46	44	50	50	45	46	50	51	51	55	56	59	60	65	61	61	54	49	51	51	48	51	53	53	4%
Kerry	147,707	139	129	128	128	127	123	122	115	86	83	71	60	60	60	51	51	48	50	44	41	43	38	36	34	30	32	28	29	26	24	21	20	21	31	32	41	58	78	91	108	124	205%
Kildare	222,504	103	94	85	93	89	88	85	86	87	86	87	84	87	82	81	79	72	65	65	62	61	58	49	49	51	48	49	52	51	53	54	55	56	59	64	67	70	78	77	85	90	34%
Kilkenny	99,232	130	125	126	129	126	118	116	116	113	110	98	92	106	107	101	130	125	125	132	134	148	146	148	151	162	173	172	179	192	177	198	194	201	200	191	199	190	193	201	196	226	14%
Laois	84,697	155	149	136	136	137	116	107	104	99	86	83	63	59	53	53	53	58	55	51	54	55	58	54	60	65	66	66	67	64	59	76	81	103	109	112	125	152	152	155	175	175	40%
Leitrim	32,044	47	56	81	81	87	94	94	100	106	106	97	84	78	78	69	59	34	34	25	16	19	16	9	12	16	19	19	19	19	22	19	22	28	28	25	28	28	25	25	25	28	0%
Limerick	194,899	198	195	195	211	201	222	238	236	221	216	217	205	194	192	189	187	180	170	166	143	134	129	128	136	143	135	134	134	131	122	119	119	126	121	122	123	129	131	122	150	164	34%
Longford	40,873	132	127	115	115	103	103	100	100	83	88	88	81	83	83	93	91	91	81	81	86	88	91	95	91	88	91	88	91	76	81	113	120	142	132	130	135	147	144	142	142	139	4%
Louth	128,884	157	156	147	151	151	160	157	168	174	186	202	206	213	213	204	199	196	189	182	177	182	168	163	162	158	155	154	155	153	159	159	173	176	175	192	209	207	223	216	236	241	16%
Mayo	130,507	151	145	141	118	113	110	110	109	103	93	77	79	87	88	86	93	84	79	80	84	85	97	90	83	83	79	74	75	76	76	100	103	107	109	109	107	114	115	113	118	113	6%
Meath	195,044	172	154	141	140	133	139	128	134	127	131	131	126	124	118	118	108	103	98	102	85	80	68	62	48	49	45	44	46	44	49	45	52	54	54	57	60	64	85	91	107	120	101%
Monaghan	61,386	122	116	117	124	112	114	104	104	112	94	101	101	106	108	99	103	83	78	81	98	103	103	109	116	124	127	119	117	122	129	137	137	135	116	129	135	134	132	121	124	150	11%
Offaly	77,961	99	94	87	95	114	112	117	122	126	119	123	103	100	99	78	81	72	65	49	49	45	42	35	37	51	59	67	67	71	67	68	64	72	68	74	82	94	90	74	67	58	-30%
Roscommon	64,544	170	175	163	166	169	141	169	161	167	161	160	166	161	133	130	122	118	121	105	96	64	60	57	53	54	50	43	50	51	53	56	50	50	50	48	43	48	50	48	48	56	29%
Sligo	65,535	154	154	140	128	114	104	95	93	76	85	84	73	76	70	64	56	61	58	61	56	55	52	52	44	40	38	32	32	32	35	41	41	50	49	50	52	52	66	72	93	104	100%
Tipperary	159,553	118	113	117	114	101	105	110	107	106	100	97	92	86	90	85	93	92	80	87	79	79	78	75	79	86	86	88	80	79	78	77	78	82	80	71	70	73	70	63	66	66	-5%
Waterford	116,176	134	114	142	141	156	163	163	164	155	161	157	156	154	149	140	150	118	114	102	85	75	72	71	65	62	61	71	71	77	80	80	71	71	77	77	75	79	87	91	105	107	43%
Westmeath	88,770	151	162	133	150	150	113	117	113	106	103	100	92	88	87	80	71	72	51	39	41	28	26	23	25	25	23	26	23	21	19	27	25	27	26	34	33	33	33	34	43	39	21%
Wexford	149,722	67	48	49	49	49	47	45	46	37	42	39	37	36	36	34	36	32	30	25	23	28	27	22	18	19	19	19	19	23	24	26	30	37	45	47	59	89	127	146	169	200	240%
Wicklow	142,425	89	86	84	85	85	82	86	83	78	88	91	80	84	90	77	79	78	74	85	93	91	110	109	107	116	121	121	118	112	114	112	110	97	93	93	77	79	72	64	64	67	-13%
National	4,761,865	142	133	127	128	124	117	118	117	114	111	111	106	107	106	104	102	97	93	91	88	86	84	79	77	80	79	79	79	78	78	80	80	83	82	83	87	93	100	101	112	122	39%

Source: Based on daily cumulative data from HPSC published on Geohive as at 23/12/2020 (data up to 20/12/2020). This data is published daily; Population: Census 2016, CSO

Summary of county-level 7 day incidence rate per 100k

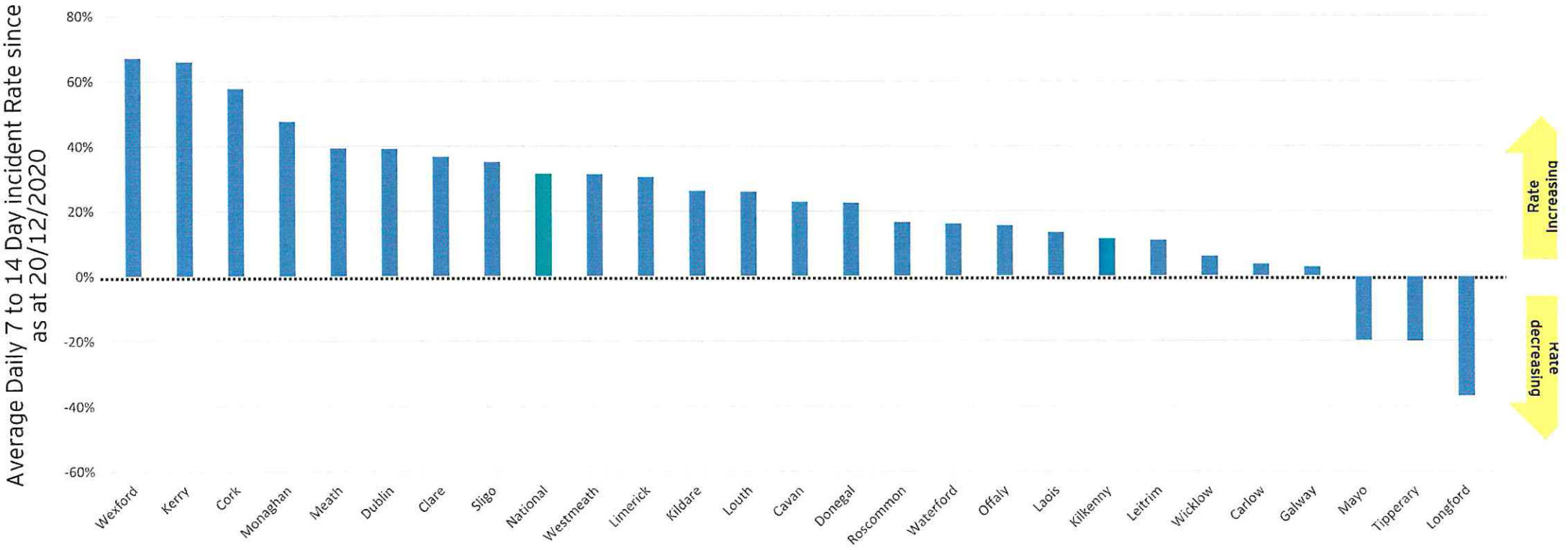
The heatmap below shows the 7 day incidence rate per 100k population for each county over the last 6 weeks.

7 Day Incidence Rate Per 100k	Population	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	01-Dec	02-Dec	03-Dec	04-Dec	05-Dec	06-Dec	07-Dec	08-Dec	09-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	19-Dec	20-Dec	Change Last 5 Days
Carlow	56,932	40	30	33	35	28	35	39	40	56	54	49	47	37	32	30	19	16	16	28	39	47	63	74	72	79	79	77	74	61	63	88	83	83	90	91	90	81	79	104	109	97	8%
Cavan	76,176	37	42	49	51	55	54	50	58	55	46	50	45	45	42	39	35	30	24	22	21	25	18	16	26	33	35	38	33	41	51	49	59	68	68	81	106	101	101	101	106	109	2%
Clare	118,817	60	51	40	39	35	52	50	52	53	52	52	55	34	34	28	26	22	17	16	18	19	19	16	17	19	19	17	13	13	16	18	15	13	10	10	10	9	8	13	14	22	117%
Cork	542,868	41	37	32	33	29	35	41	41	43	41	44	49	46	41	43	38	37	31	24	22	22	16	14	13	12	13	13	13	12	13	13	11	12	12	13	15	21	25	34	39	45	198%
Donegal	159,192	147	143	148	138	122	117	125	146	119	119	116	108	110	114	102	98	97	99	112	112	97	111	115	113	118	112	119	123	115	115	116	98	107	106	112	128	131	128	152	155	167	30%
Dublin	1,347,359	56	56	53	59	54	55	56	59	63	61	59	59	59	57	54	50	48	45	43	43	44	44	39	40	48	50	48	48	49	51	50	43	43	43	43	48	53	63	69	82	99	106%
Galway	258,058	29	31	29	35	38	41	45	48	40	36	26	24	22	19	13	15	14	19	20	27	31	32	31	35	31	31	28	25	27	29	30	30	30	26	24	24	22	18	21	23	27	13%
Kerry	147,707	81	53	53	39	35	37	39	34	32	30	32	25	23	22	18	18	18	18	19	18	21	20	18	16	12	13	10	8	6	7	5	7	8	21	24	35	51	72	83	100	103	198%
Kildare	222,504	39	35	39	46	40	48	45	47	52	47	41	43	39	36	34	27	25	24	22	23	25	24	22	24	27	26	26	27	27	31	30	28	30	33	37	41	39	48	49	55	57	40%
Kilkenny	99,232	69	56	57	46	43	44	43	47	56	52	51	48	61	63	53	74	73	74	84	73	85	93	75	79	89	90	100	95	100	103	119	106	111	100	97	99	88	75	95	85	126	28%
Laois	84,697	78	77	58	55	44	38	31	26	22	28	27	19	21	22	27	31	30	28	32	33	33	31	24	31	37	34	33	34	33	35	45	45	68	76	78	92	117	107	110	106	99	8%
Leitrim	32,044	37	47	75	66	62	66	66	62	59	31	31	22	12	12	6	0	3	3	3	3	6	9	9	9	12	16	16	12	9	12	9	9	12	12	12	19	16	16	16	12	16	-17%
Limerick	194,899	108	99	106	115	101	122	133	128	122	110	102	105	72	59	61	65	70	68	61	71	75	68	63	66	74	74	64	59	63	59	53	44	52	57	63	60	70	79	78	99	107	79%
Longford	40,873	59	49	49	54	44	49	46	42	34	39	34	37	34	37	51	56	51	46	44	51	51	39	39	39	42	46	37	39	37	42	73	78	95	95	91	98	105	71	64	46	44	-55%
Louth	128,884	68	77	81	86	97	105	106	99	97	106	116	109	108	108	105	102	91	73	73	69	74	63	61	71	85	82	85	81	90	98	88	88	94	89	110	119	109	135	128	142	152	28%
Mayo	130,507	69	58	48	37	36	36	39	40	44	45	41	43	51	49	46	48	38	38	37	32	36	51	42	44	44	42	41	39	25	34	56	58	65	67	70	81	80	59	54	53	45	-44%
Meath	195,044	59	54	56	55	49	65	66	75	73	75	75	77	59	52	44	35	28	23	24	26	28	24	27	20	26	21	18	17	19	23	25	26	34	36	39	41	42	60	65	73	84	108%
Monaghan	61,386	62	62	55	55	51	51	49	42	51	39	46	51	55	59	57	52	44	33	31	42	44	46	57	72	91	96	77	73	77	72	65	46	39	39	55	59	62	67	75	85	111	89%
Offaly	77,961	60	58	60	72	73	74	78	62	68	59	51	30	26	21	17	13	13	14	19	23	24	26	22	24	37	40	44	42	45	45	44	27	32	24	32	37	49	46	47	35	33	-10%
Roscommon	64,544	60	67	64	67	85	82	91	101	101	98	93	81	79	42	29	22	20	28	25	17	22	31	36	33	26	25	26	28	20	17	23	23	25	23	20	23	31	26	25	23	33	40%
Sligo	65,535	58	49	47	46	34	37	34	35	27	38	38	40	40	37	29	29	23	20	21	17	18	23	23	21	20	17	15	14	9	12	20	21	34	34	37	43	40	46	50	60	70	64%
Tipperary	159,553	53	49	48	56	48	55	56	53	57	53	41	44	31	33	32	36	39	39	43	48	46	46	38	40	47	43	41	34	33	40	37	31	39	39	36	37	33	33	31	27	26	-29%
Waterford	116,176	56	41	77	80	93	108	112	108	114	84	77	63	46	37	33	36	34	37	39	39	38	40	35	32	25	22	32	34	38	45	48	46	49	45	44	37	34	39	45	56	62	67%
Westmeath	88,770	46	46	42	63	65	61	70	66	60	61	37	27	27	17	14	11	11	14	12	14	11	12	11	14	11	10	12	11	9	8	14	14	17	14	23	24	25	19	20	26	26	10%
Wexford	149,722	28	15	19	17	19	19	19	18	23	23	22	18	17	17	16	13	9	8	7	7	11	11	9	9	11	12	13	8	12	15	17	19	25	33	39	47	73	110	127	144	167	257%
Wicklow	142,425	51	46	48	54	51	51	53	32	32	40	37	29	34	37	45	47	38	37	55	59	54	65	62	70	79	66	62	64	48	52	42	30	31	32	29	29	27	30	34	33	36	21%
National	4,761,865	58	54	54	56	53	57	59	60	60	57	55	54	50	47	44	42	40	38	37	38	39	39	36	38	42	42	41	39	39	41	42	38	41	42	44	48	52	58	63	70	80	66%

Source: Based on daily cumulative data from HPSC published on Geohive as at 23/12/2020 (data up to 20/12/2020). This data is published daily; Population: Census 2016, CSO

The 7 day incidence rate per 100k is 32% higher than the equivalent 14 Day incidence rate per 100k

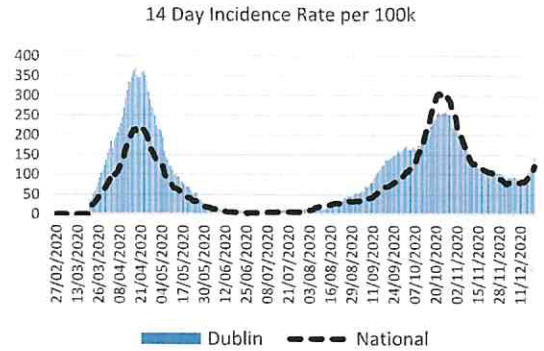
The graph below extends the 7 day incidence rate per 100k to compare it against the 14 day incidence rate per 100k. It shows 7 day incidence rate is higher in 23 counties and 32% higher nationally.



Source: Based on daily cumulative case data published on Geohive as at 23/12/2020 (data up to 20/12/2020). . This data is published daily.

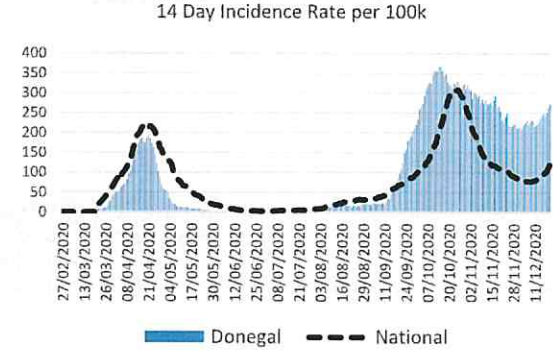
Overview of select counties experiencing increased incidence rates

Dublin's disease incidence rates are increasing rapidly
(14 day incidence rate 20 Dec: 142)



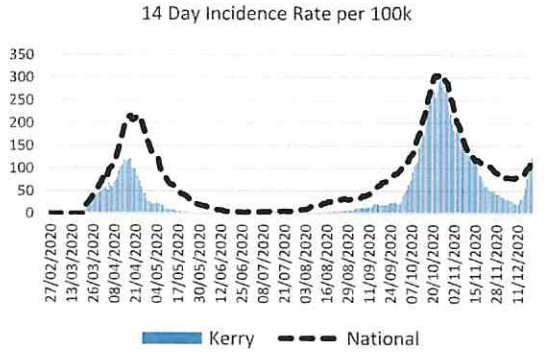
- Dublin's 14 day incidence rate rose 55% in the one-week period between 13/12 - 20/12 from 91.4 to 142, 17% above the national figure on 20/12
- Dublin's 7 day incidence rate has increased by 124% since leaving level 5 (1 Dec)
- The average daily increase in 7 day incidence since leaving level 5 is above national figure (5.6 vs 4.2)

Donegal's disease incidence rates remain stubbornly high and are now increasing
(14 day incidence rate 20 Dec: 272.6)



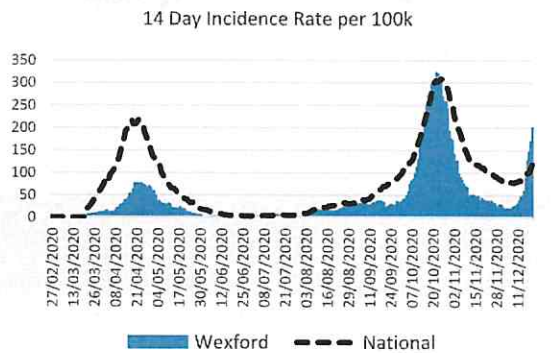
- Donegal's 14 day incidence rate rose 21% from 13/12 to 20/12, from 225 to 272.6, more than double the national figure on 20/12
- Donegal's 7 day incidence rate has experienced the 3rd highest average daily increase since leaving level 5 (6.9 cases per day), and is currently double the national 7 day incidence rate (20 Dec)

Kerry is experiencing the highest national rise in incidence rates after previously having lower case rates
(14 day incidence rate 20 Dec: c.123.9)



- Kerry's 14 day incidence rate has almost quadrupled from 13/12 to 20/12, frim 31.1 to 123.9
- This has resulted in a 7 day incidence rate that is 66% higher than the 14-day rate, the 2nd largest increase in any county
- Kerry has also experienced the 2nd highest average daily rise in its 14 day incidence rate since leaving level 5 (10.4 cases/day)

Wexford's disease prevalence rates are accelerating rapidly from a lower base last week to now above the national average
(14 day incidence rate 20 Dec: 199.7)



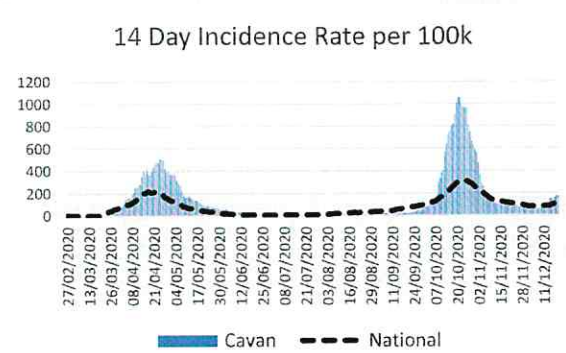
- Cases in Wexford are increasingly rapidly, with the 14 day incidence rate rising from 45% below the national average on 13/12 to 64% above by 20/12
- As a result, the 7 day incidence rate for the county is currently 67% greater than the 14 day rate
- Since leaving level 5, Wexford has experienced the highest average daily rise in its 14 day incidence rate (14.8 per day)

Source: Based on daily cumulative data from HPSC published on Geohive as at 23/12/2020 (data up to 20/12/2020). . This data is published daily. Measures the average daily change in the 7 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

Overview of select counties experiencing increased incidence rates

Cavan was hard hit in Wave 2, seeing further sharp growth in December

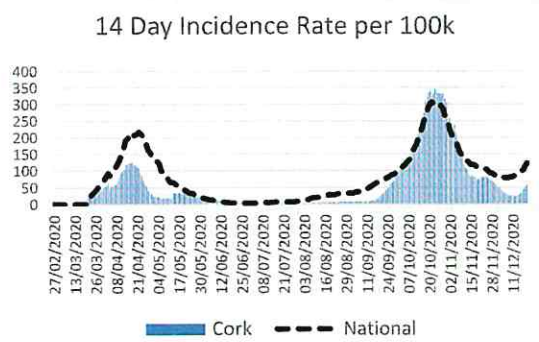
(14 day incidence rate 20 Dec: 177.2)



- Cavan's 14 day incidence rate was in line with the national picture from Nov - mid-Dec
- It has increased a further 67% in the last week (13-20 Dec), and exceeds the national 14 day incidence rate by 46% (20 Dec)
- Cavan had the 2nd highest growth in 7 day incidence rate since Level 5 was lifted, with a 493% increase (1-20 Dec)
- Cavan's 7 day incidence rate has grown 23% above the 14-day incidence rate, in line with national average (20 Dec)

Cork starting from low point but growing quickly in December

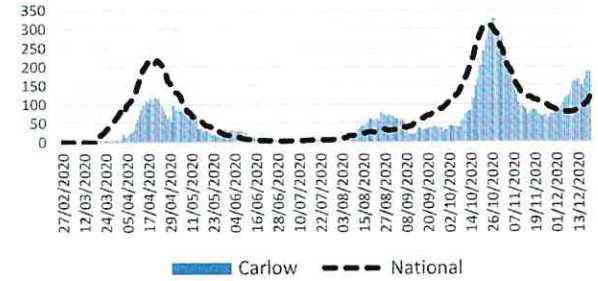
(14 day incidence rate 20 Dec: 57.7)



- 14 day incidence rates have climbed quickly during December, increasing 130% in the last week (13 - 20 Dec); however, this is starting from a low point and is currently 53% below national levels (20 Dec)
- Cork's 7 day incidence rate has grown 58% above the 14-day incidence rate, nearly double the national rate of increase

Carlow has grown steadily to exceed national figures

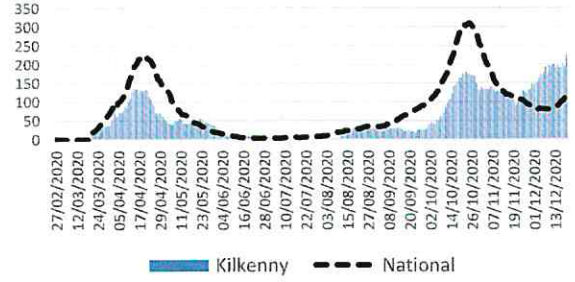
(14 day incidence rate 20 Dec: 186.2)



- Carlow's incidence rates grew quickly in early December, though the rate of increase has slowed in recent days.
- The 14 day incidence rate on 20 Dec is 12% higher than on 13 Dec, and 53% above the national figure (20 Dec)
- The 7 day incidence rate has increased by only 4% above the 14 day incidence rate in recent days (13-20 Dec)

Kilkenny is seeing significantly higher growth than national rate since mid-Nov

(14 day incidence rate 20 Dec: 225.7)

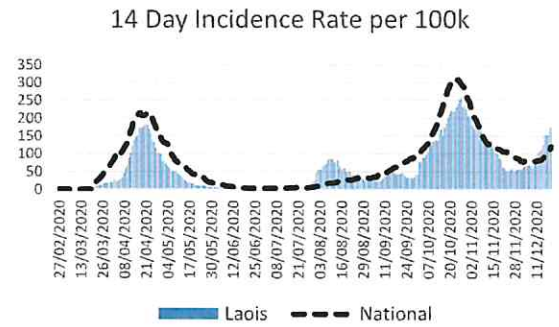


- Kilkenny has shown high growth since mid-Nov which may be linked in part to large outbreaks in hospital settings
- Kilkenny's 14 day incidence rate has increased by 13% from 199.5 on 13 Dec to 225.7 on 20 Dec
- Kilkenny had the 4th highest 14 day incidence rate in the country on 20 Dec at 225.7, which was 86% above the national average
- Kilkenny's 7 day incidence was 12% above the 14 day incidence on 20 Dec

Source: Based on daily cumulative data from HPSC published on Geohive as at 23/12/2020 (data up to 20/12/2020).. This data is published daily. Measures the average daily change in the 7 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

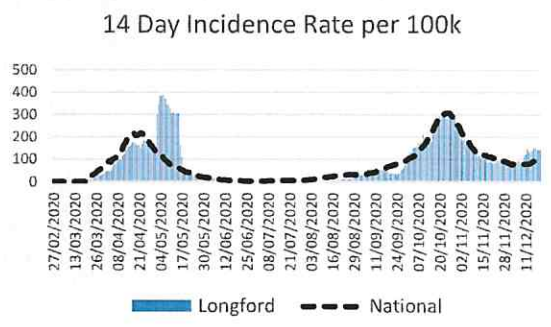
Overview of select counties experiencing increased incidence rates

Laois' disease incidence rates are increasing rapidly
(14 day incidence rate 20 Dec: 174.7)



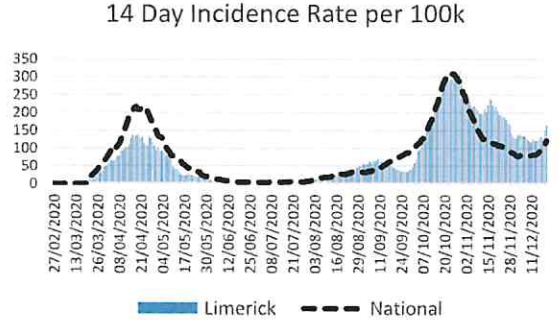
- Laois' 14 day incidence rate rose by 61% in the one-week period between 13/12 - 20/12 from 108.6 to 174.7, 44% above the national figure of 121.6 on 20/12
- Laois' 7 day incidence rate has also increased by 223% since leaving level 5, from 30.7 on 1 Dec to 99.2 on 20 Dec

Longford's disease incidence rate has remained relatively stable in the last week after increases post leaving Level 5
(14 day incidence rate 20 Dec: 139.5)



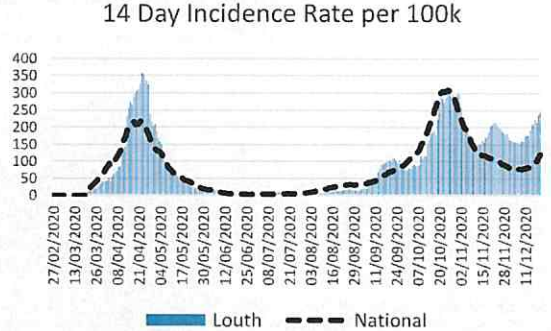
- Longford's 14 day incidence rate remained relatively stable in the one-week period between 13/12 - 20/12 from 132.1 to 139.5
- However, Longford's 14 day incidence rate is still 15% above the national figure on 20/12
- Longford's 7 day incidence rate has increased by 13% since leaving level 5, from 39.1 on 1 Dec to c.44 on 20 Dec

Limerick's disease incidence rates have increased in the last week
(14 day incidence rate 20 Dec: 164.2)



- Limerick's 14 day incidence rate increased by 36% in the one-week period between 13/12 - 20/12 from 120.6 to 164.2.
- Limerick's 14 day incidence rate is 35% above the national figure on 20/12
- Limerick's 7 day incidence rate has also increased since leaving level 5, from 68.2 on 1 Dec to 107.2 on 20 Dec

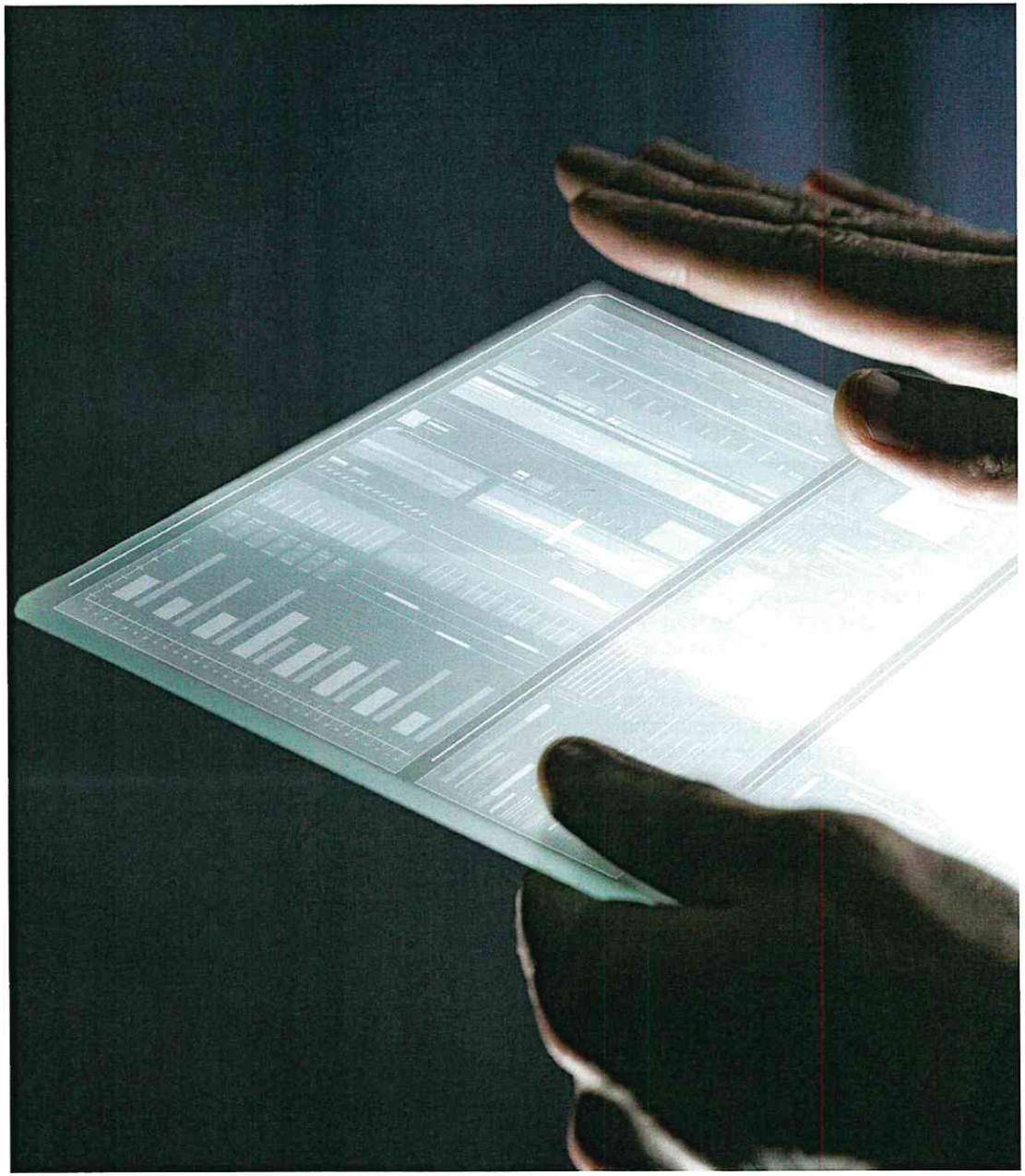
Louth's disease prevalence rates are double the national average
(14 day incidence rate 20 Dec: 241.3)



- Louth's 14 day incidence rate rose 38% in the one-week period between 13/12 - 20/12 from 174.6 to 241.3, c.double the national average on 20/12
- Louth's 7 day incidence rate has increased by 142% since leaving level 5, from 62.8 on 1 Dec to 152.1 on 20 Dec

Source: Based on daily cumulative data from HPSC published on Geohive as at 23/12/2020 (data up to 20/12/2020). This data is published daily. Measures the average daily change in the 7 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

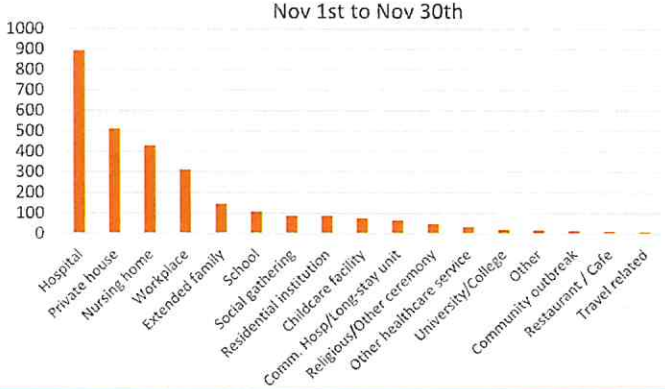
Analysis of Outbreaks with 5 or more cases



Changes in Outbreaks with 5 or more cases from November to so far in December

The biggest sources of 5+ outbreak cases have changed from Nov (Hospital and Private House) to Dec (School and Religious)

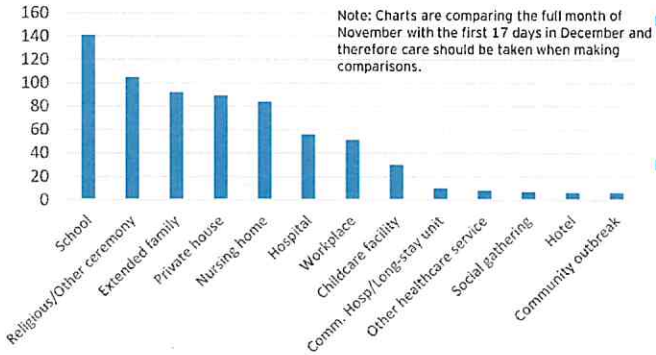
Number of Outbreak Cases by Type
Nov 1st to Nov 30th



- In November, the top 3 sources of outbreak cases (outbreaks of 5+ cases) were hospitals, private houses and nursing homes
- There were 219 new outbreaks of 5+ cases in November

Note: Charts are comparing the full month of November with the first 17 days in December and therefore care should be taken when making comparisons.

Number of Outbreak Cases by Type
Dec 1st to Dec 17th

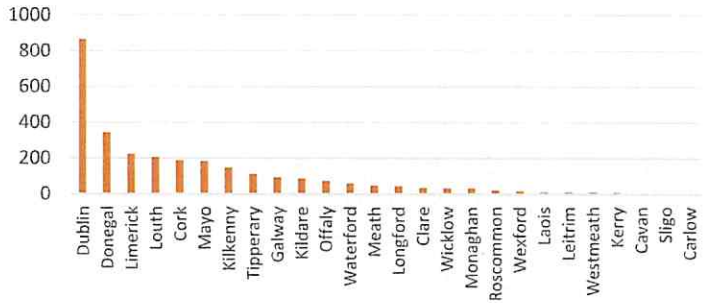


Note: Charts are comparing the full month of November with the first 17 days in December and therefore care should be taken when making comparisons.

- There have been 63 new outbreaks of 5+ cases to date in Dec (17 Dec).
- Given that overall cases are increasing, this smaller number of large outbreaks may indicate a shift towards smaller outbreaks (under 5 cases), or community transmission
- Schools, religious/other ceremonies and extended family were the larger sources of outbreak cases so far in Dec. Schools have seen a slight increase of outbreak (of 5+) related cases from 106 in Nov to 141 (1-17 Dec)

Donegal continues with high 5+ outbreak cases. Wexford, Laois and Cavan have moved into top 5 counties for 5+ outbreak cases

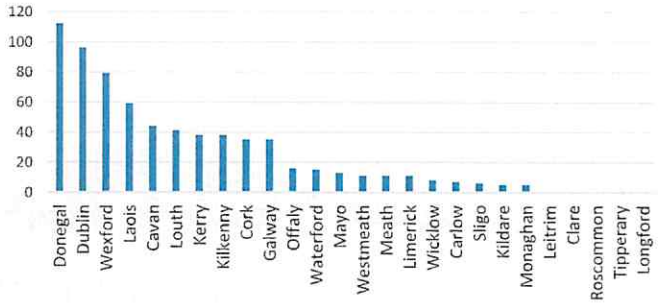
Number of Outbreak Cases by County
Nov 1st to Nov 30th



- In November, the top 5 counties for outbreak cases (outbreaks of 5+ cases) were Dublin, Donegal, Limerick, Louth and Cork

Note: Charts are comparing the full month of November with the first 17 days in December and therefore care should be taken when making comparisons.

Number of Outbreak Cases by County
Dec 1st to Dec 17th



- Since 1 Dec, the top 5 counties for outbreak cases (outbreaks of 5+ cases) are Donegal, Dublin, Wexford, Laois and Cavan
- Wexford had just 15 outbreak cases in November compared to 79 so far in December

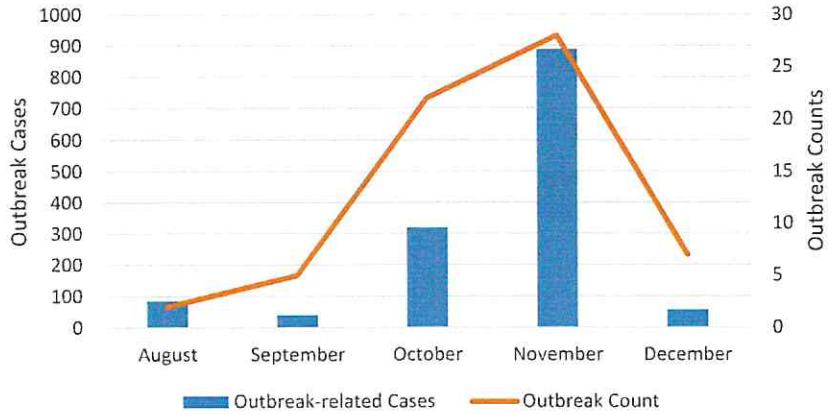
Note: Charts are comparing the full month of November with the first 17 days in December and therefore care should be taken when making comparisons.

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 22/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more case and outbreak date associated with first case date.

While hospital outbreaks of 5+ cases spiked in November, they have since fallen, with nursing homes seeing smaller outbreaks month to month

Hospital outbreaks spiked in November, with far more cases per outbreak than had been seen in previous months. However, levels in December to date have fallen substantially

Hospital Outbreaks (5+ Cases)

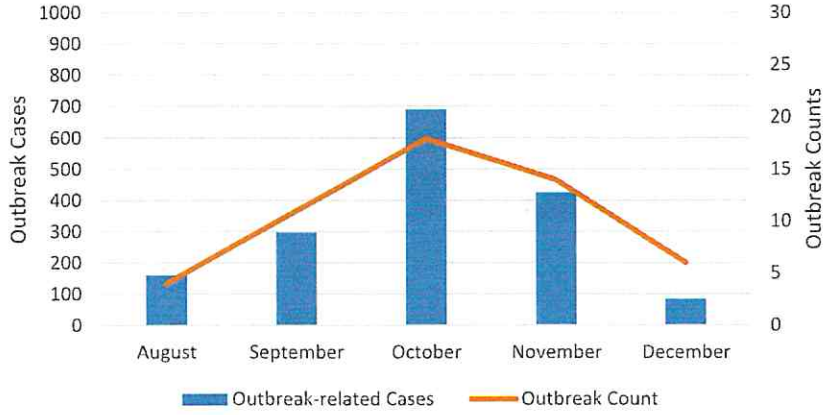


Note: Data for December is for the first 17 days and therefore care should be taken when making comparisons with full months.

- In November, hospitals saw 28 outbreaks of 5+ people leading to 890 outbreak-related cases
- However, both figures have since fallen notably so far in December (1-17 Dec). There have been 7 outbreaks yielding 56 cases up to 17 Dec
- Outbreaks are recorded on the date that the first case occurs. Since there were several large hospital outbreaks in mid/late Nov, it is possible that these outbreaks may have spilled over across both months

The cases and outbreak counts for nursing homes have both declined, meaning lower average cases per outbreak.

Nursing Home Outbreaks (5+ Cases)



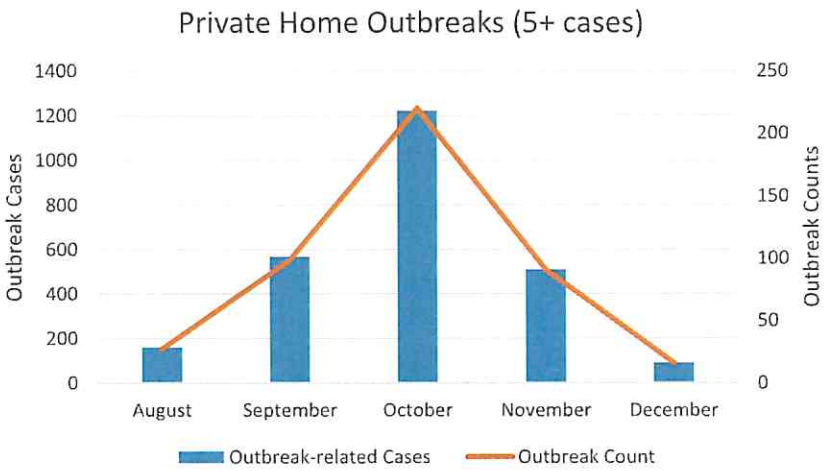
Note: Data for December is for the first 17 days and therefore care should be taken when making comparisons with full months.

- The number of outbreaks has decreased significantly since October
- The number of cases per outbreak has also decreased over time, falling from 38 in October to 27 in November and 9 in the first half of December

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 22/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more cases and outbreak date associated with first case date.

Private homes contributing much fewer outbreaks of 5+ cases, with the number of outbreaks in schools persistently low with a slight Dec increase

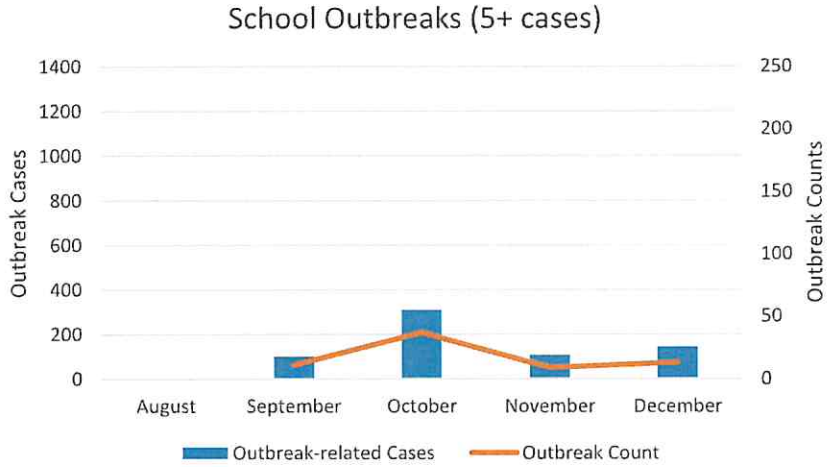
Private Home outbreaks of 5+ cases have declined significantly in Nov and Dec to date vs Oct, in both the number of cases and outbreaks.



Note: Data for December is for the first 17 days and therefore care should be taken when making comparisons with full months.

- In Nov/Dec, private home outbreaks (of 5+ cases) and outbreak-related cases dropped substantially vs Oct:
  - Outbreak cases dropped from 1219 in Oct to 509 in Nov, and have dropped further to 89 cases up to 17 Dec
  - Outbreak counts have done similar, dropping from 220 in Oct, to 91 in Nov, to 16 up to 17 Dec

Although the number of schools outbreaks (of 5+ cases) has generally been quite low, the number of cases and outbreaks in the first half of December has already exceeded November levels.

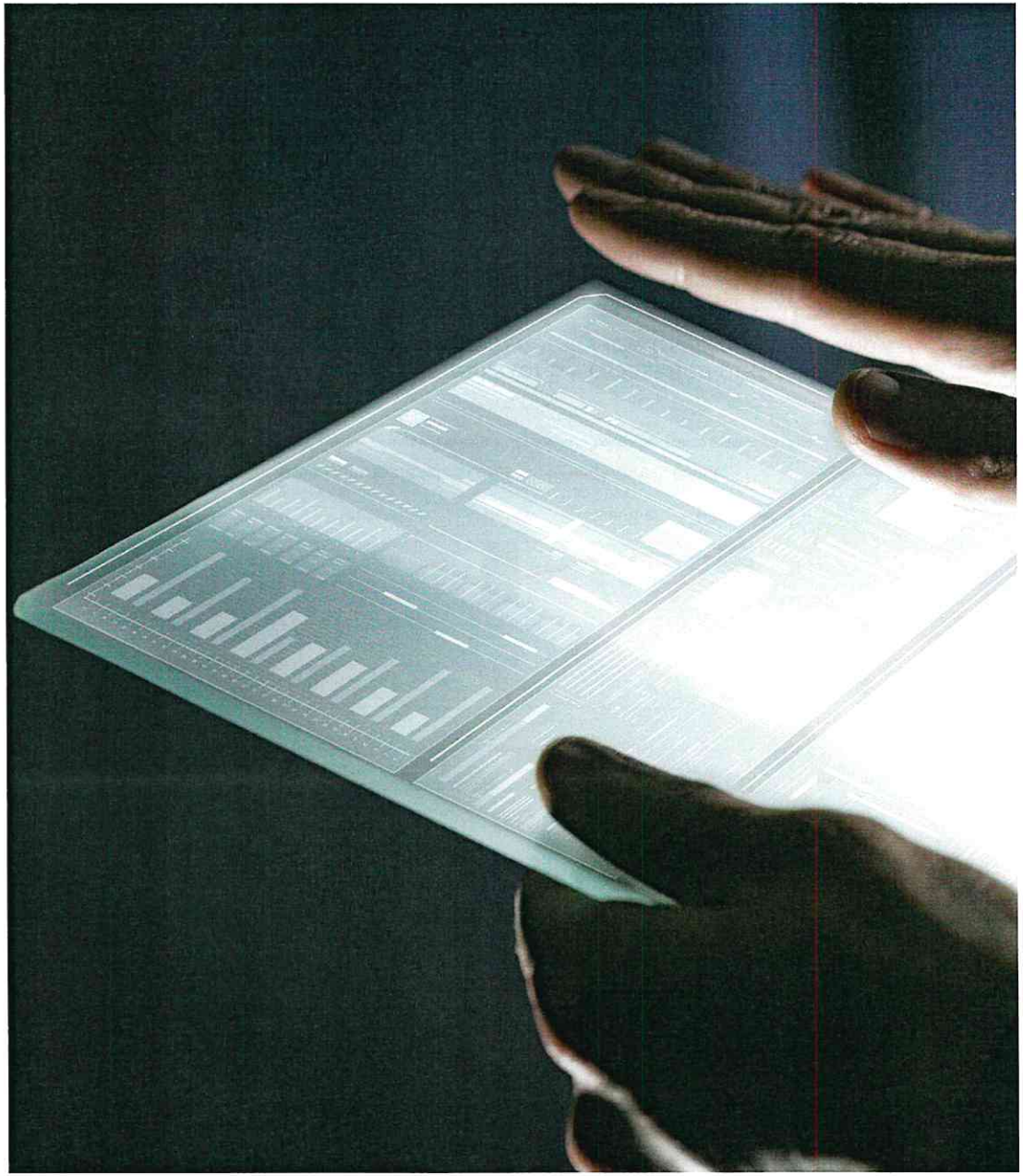


Note: Data for December is for the first 17 days and therefore care should be taken when making comparisons with full months.

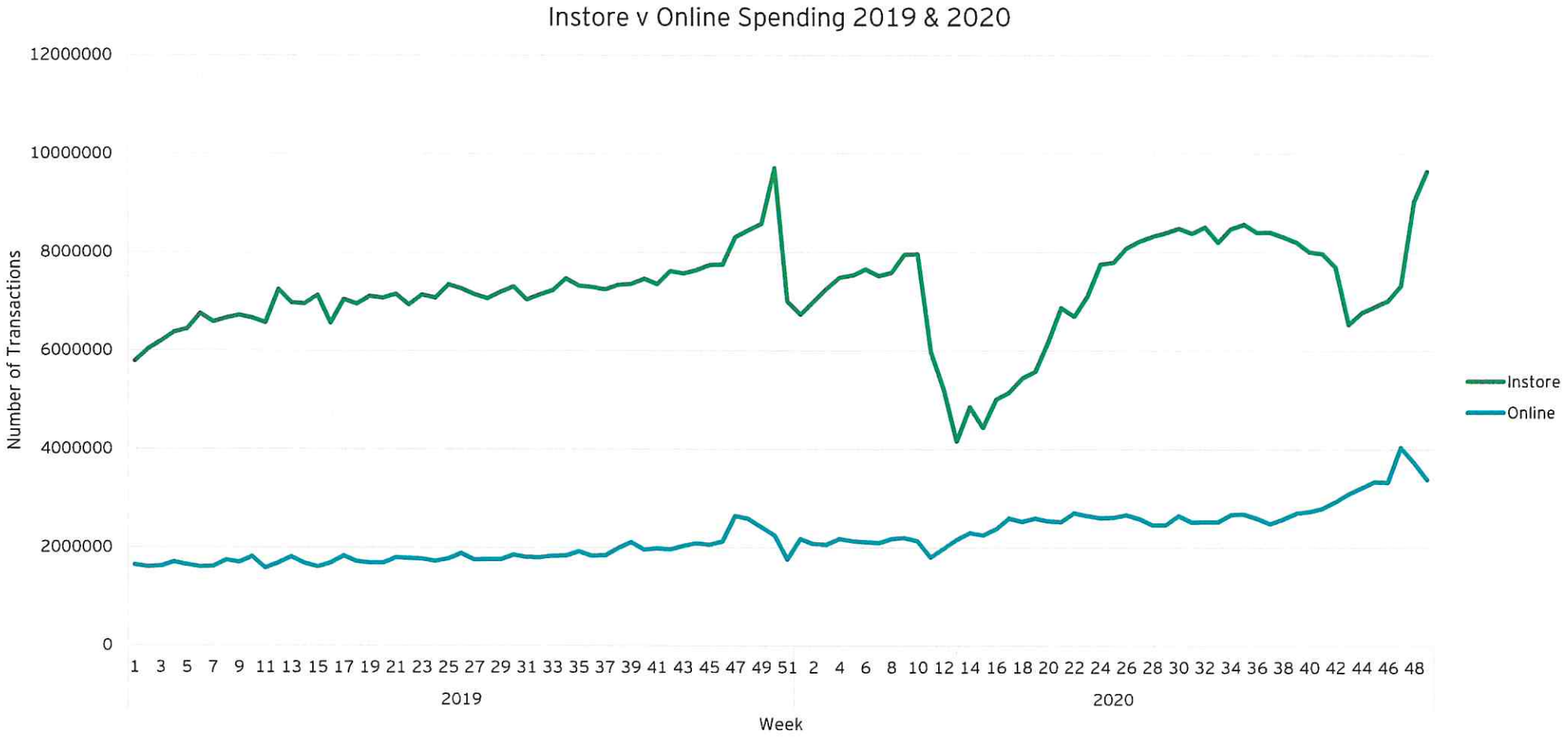
- The number of C19 outbreaks (of 5+ cases) and outbreak-related cases in schools was generally low to date, but did show a slight increase in Dec:
  - Oct saw 307 outbreak-related cases spread across 37 outbreaks, dropping off to 106 cases in 9 outbreaks during Nov
  - 1 Dec – 17 Dec has already exceeded Nov levels, with 141 cases spread across 13 outbreaks

Source: HPSC CIDR data aggregated summary report. Data based on CIDR data as at 22/12/20. It should be noted that there is typically a time lag between initial entry on CIDR and population of all case details. This analysis only considers outbreaks with 5 or more cases and outbreak date associated with first case date.

Banking Payment Insights

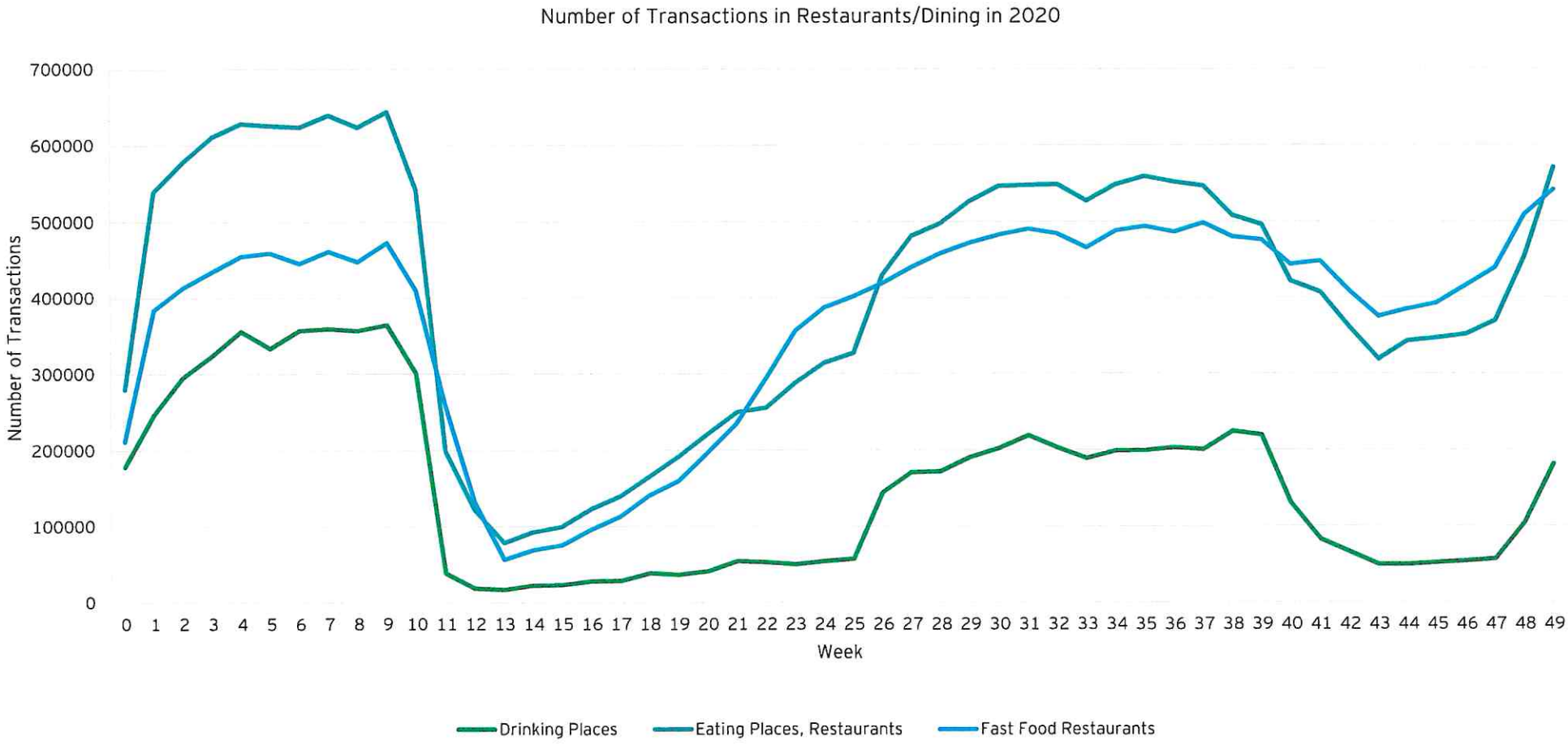


Instore transactions returns to 2019 levels after level 5 restrictions were lifted. Online transactions see steady growth throughout 2020



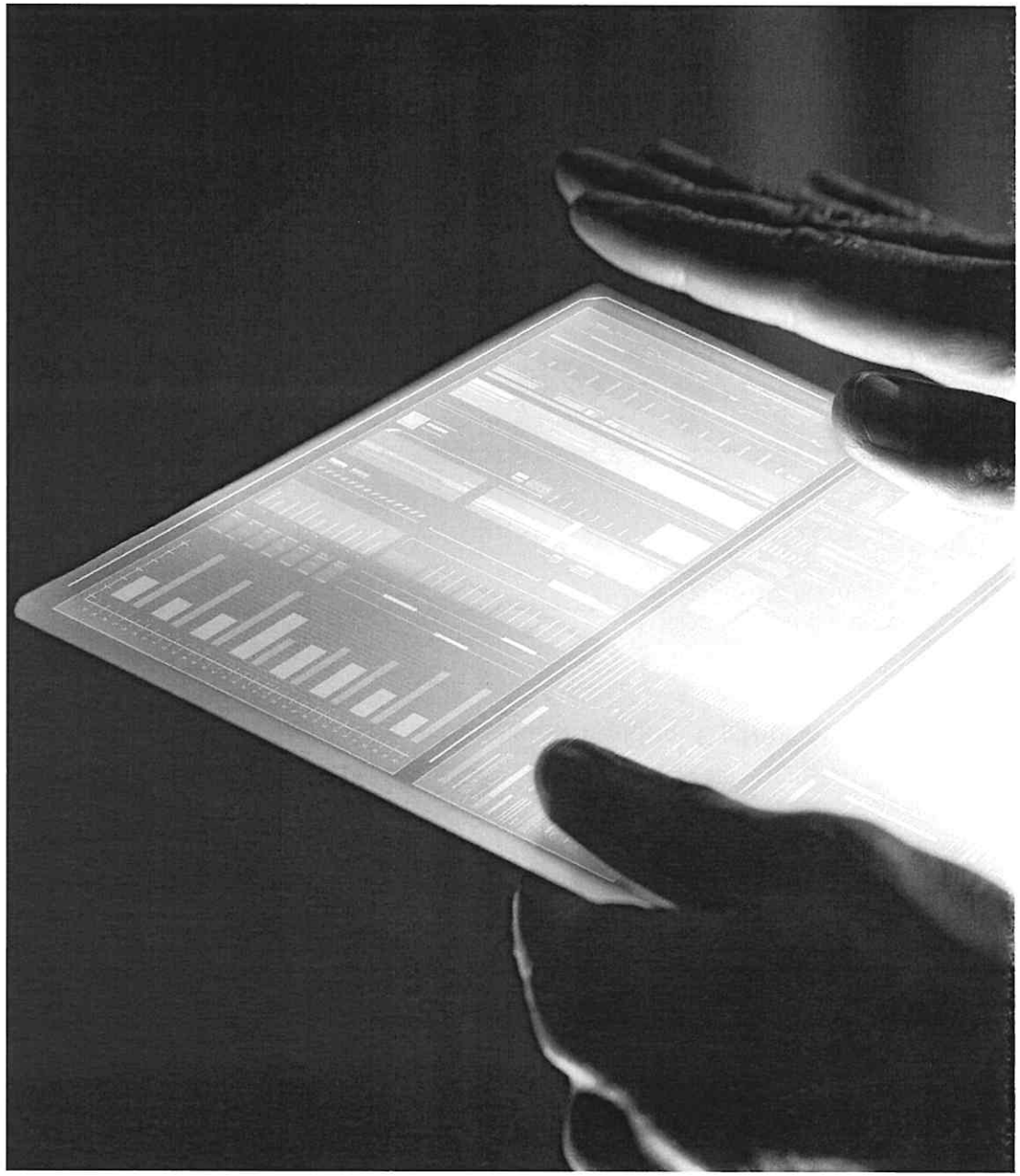
Source: Banking data is from a bank operating in Ireland

Spending in Restaurants/ Dining returns to Summer levels on the lifting of level 5 restrictions



Source: Banking data is from a bank operating in Ireland

Restrictions Impact Analysis

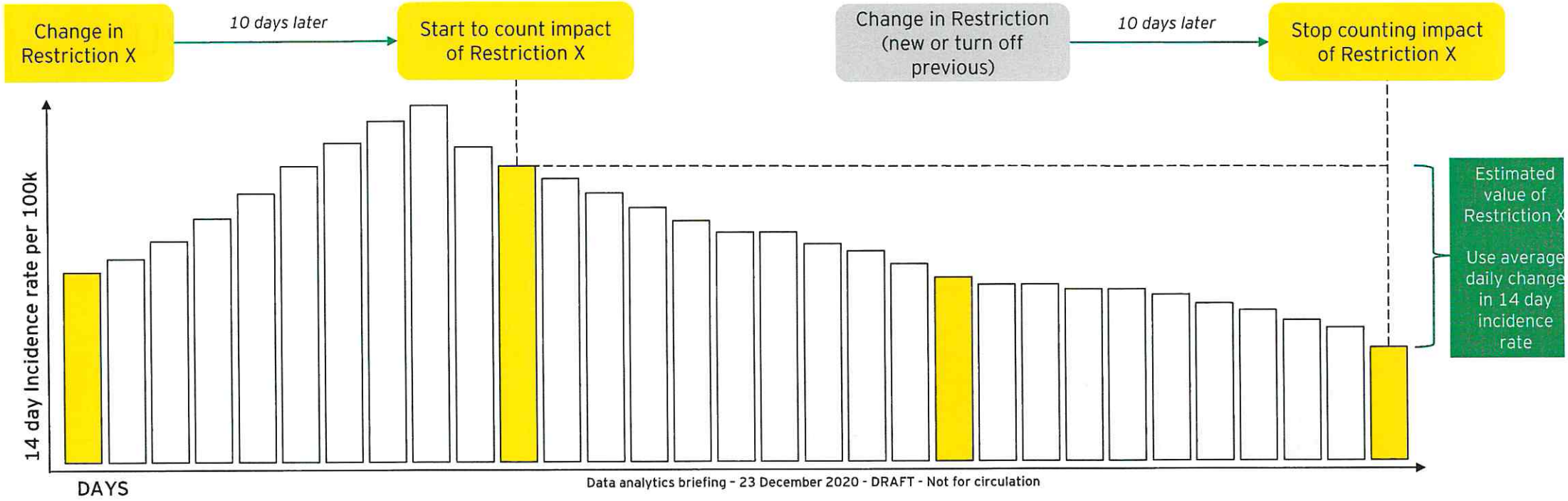


Overview of Restriction Analysis Methodology

It is not easy to quantify the value of restrictions. There have been relatively few changes in restrictions, which generally combine more than one change at a time, therefore hiding the unit value per restriction. There is also a time lag between a restriction change and the impact being seen, and the incidence rate can clearly be impacted by significant outbreaks. We have used the below methodology to initially quantify the impact of changes in restrictions. This calculation has been applied across counties. The outputs should be seen as directionally useful, rather than precise statistical outputs. A sensitivity analysis has also been completed looking at a reduced 7 day and rolling average incidence rate over 3 days per 100k especially for periods where there were more frequent restriction changes.

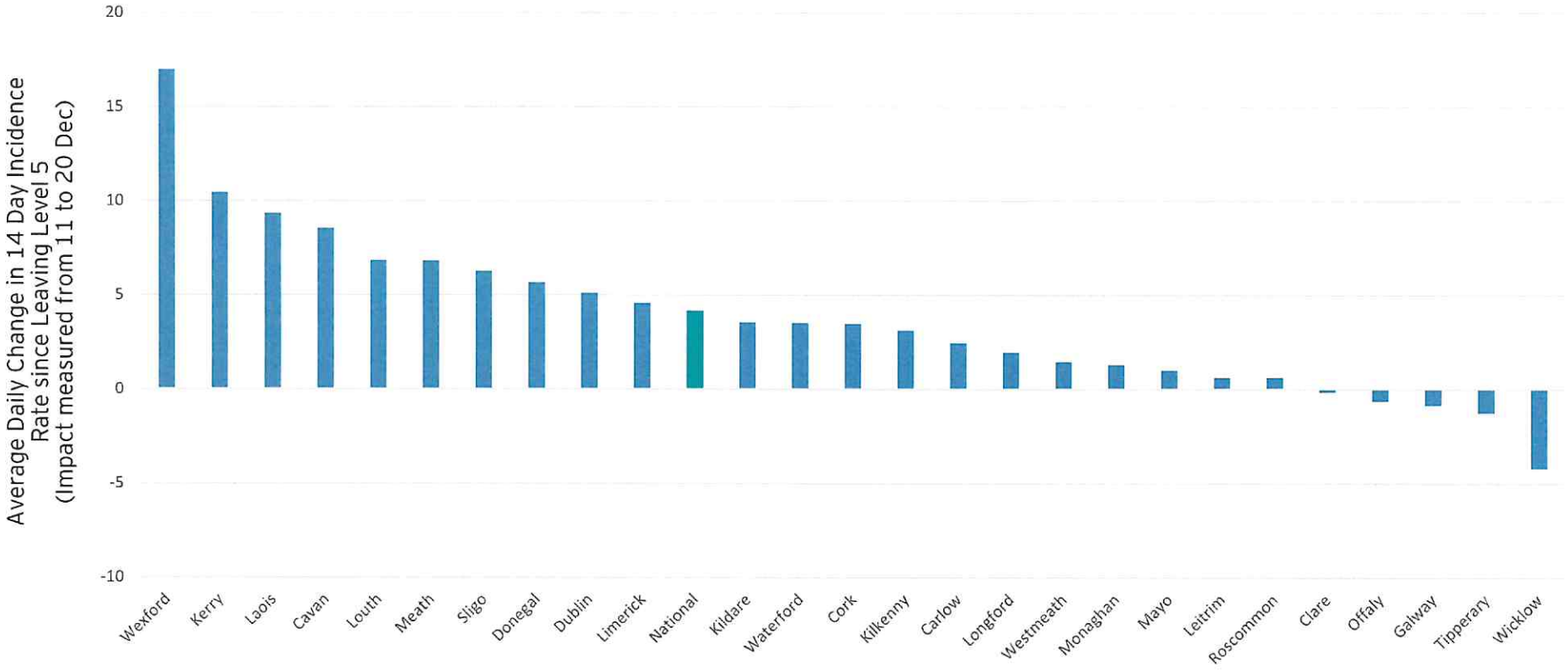
It should be noted that this does not measure compliance or behavioural aspects related to restrictions.

They are also presented alongside international academic research to provide a broad view to support decision-making. Further analysis has commenced to enhance the measurement of correlation between restrictions and their impact.



Summary of Restriction Impact since leaving Level 5 (14 day incidence rate change)

The average daily change in 14 day incidence rate per 100k per day has increased in 21 counties since the most recent change in restrictions. The national 14 day incidence rate is increasing by 4.2 cases per 100k per day during this period.



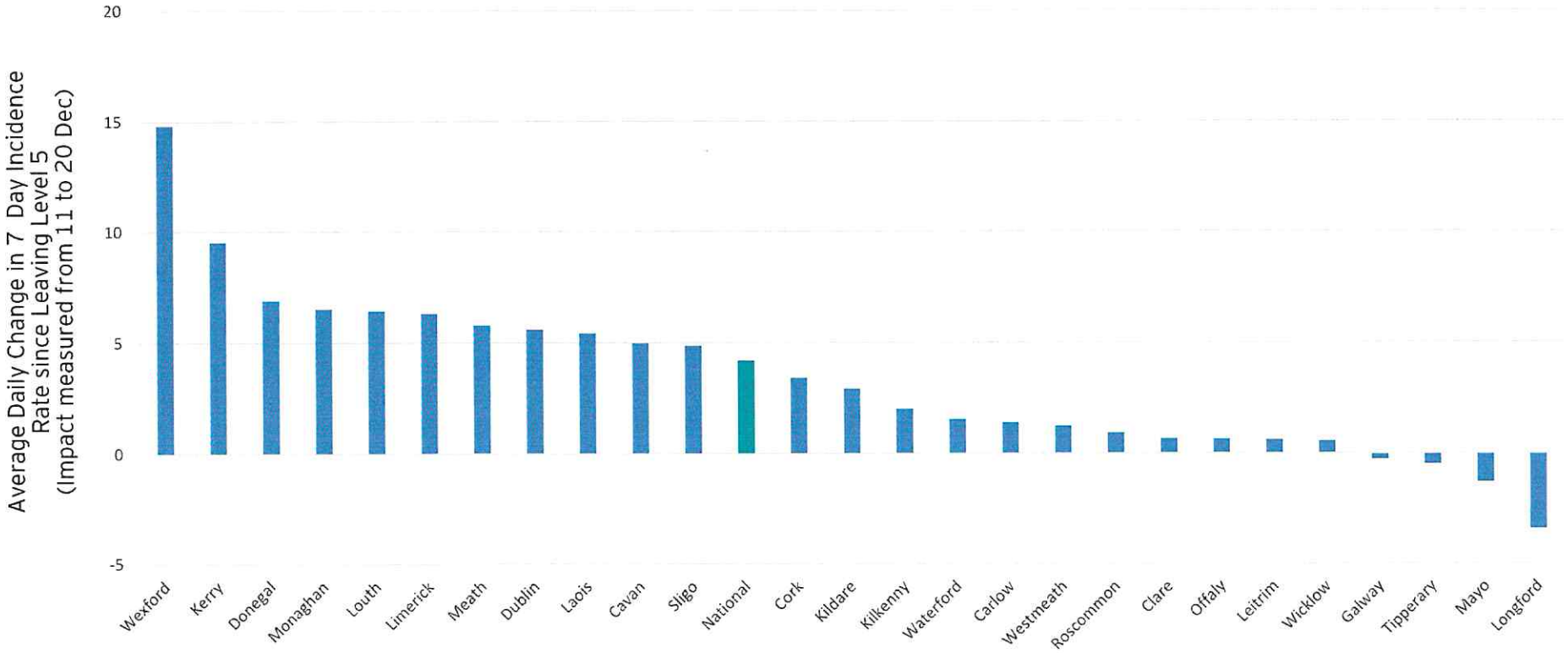
Note:

- The outputs should be seen as directionally useful, rather than precis statistical outputs
- The restriction changes o 1 December allowed the opening of hospitality and non-essential retail as wel as allowing up to six people from a maximum c two households to meet outdoors
- This analysis does not als consider potential behavioural changes beyond the restrictions

Source: Based on daily cumulative data from HPSC published on Geohive as at 23/12/2020 (data up to 20/12/2020). This data is published daily. Measures the average daily change in the 7 day incidence rate per 100k for the period of time that the restriction was in place for that county. Does not measure compliance with restrictions or other behavioural aspects

Summary of Restriction Impact since leaving Level 5 (7 day incidence rate change)

The most recent restriction changes were introduced on 1 December 2020 and therefore are only counted 10 days later from 11 December. This analysis has also therefore been repeated for a 7 day average incidence rate per 100k per day. The average daily change in 7 day incidence rate has increased in 22 counties since the most recent change in restrictions. The national 7 day incidence rate is increasing by 4.2 cases per 100k per day during this period



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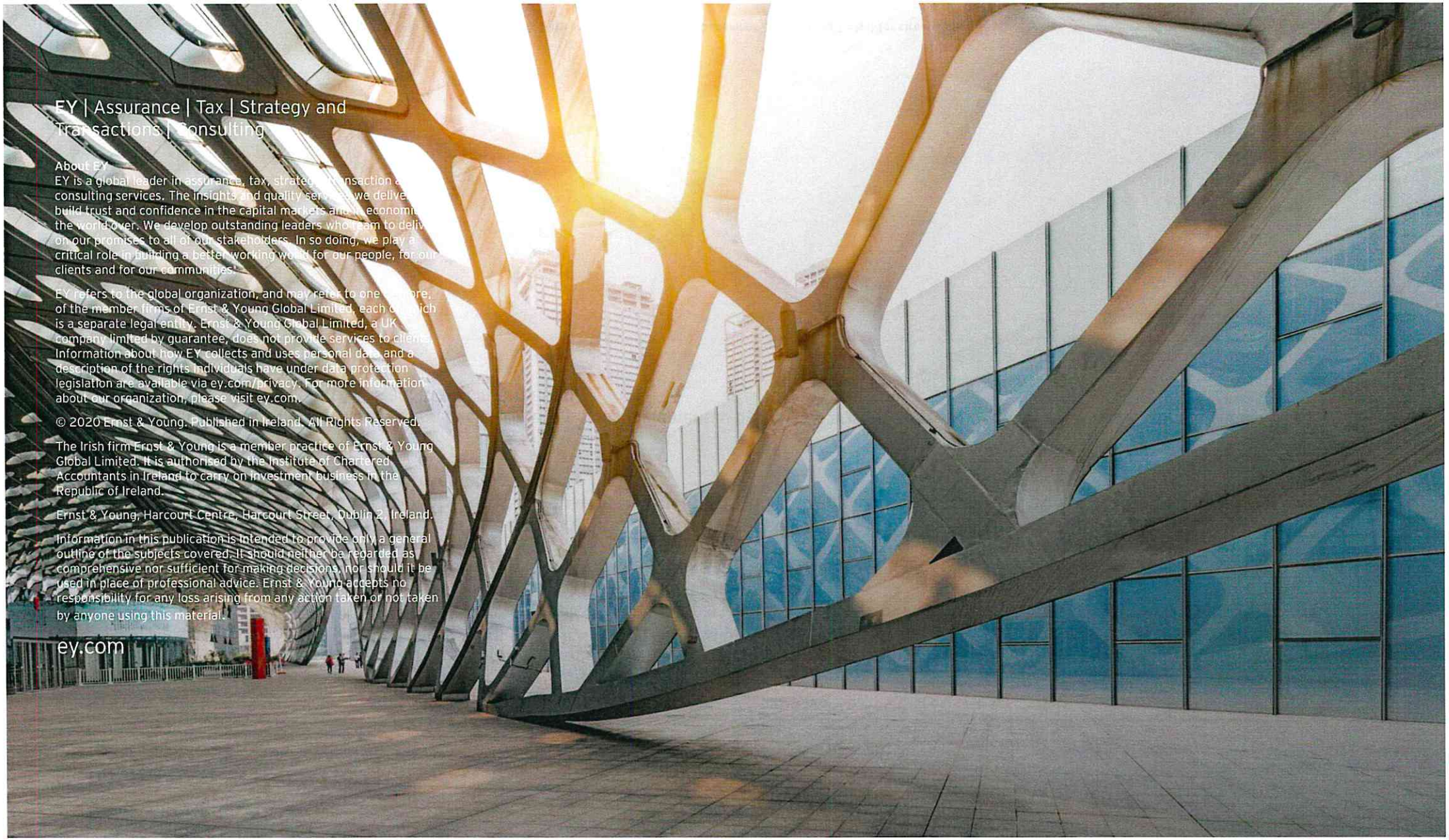

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Data Analytics Insights
Daily RAG
Not for Circulation
29 December 2020
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Daily RAG

	HEALTH				RESTRICTIONS	MOVEMENT		COMPLIANCE	EVENTS
County	14 Day Incidence Rate per 100k	5 Day Incidence Rate per 100k	ICU Capacity %	Graph in a cell for 5 Day Incidence Rate	Change in 5 Day Rate Since Opening of Restaurants 4th Dec (+10 days)	% Change in traffic volume to benchmark Week (28th Sep - 4th Oct)	Change in Google / Apple	Change in Facebook Mask Compliance in last 7 days (30th Nov - 6th Dec)	Number of High Risk Events (Also Weighted by Event Size)
Last Update	29/12/2020	29/12/2020	29/12/2020	From 01/10/2020 to 26/12/2020 (updated 29/10/2020)	From 14/12/2020 to 26/12/2020 (updated 29/12/2020)	Week Ending 20th Dec	Week Ending 25th Dec vs Week Ending 18th Dec	29/12/2020	December
Carlow	238.88	112.41	66.7%		64%	9.4%	2%	NA	1
Cavan	225.79	89.27	28.6%		55%	8%	8%	NA	1
Clare	118.67	102.68	37.5%		1425%	0%	11%	NA	0
Cork	167.08	123.79	53.0%		1122%	5%	4%	3%	4
Donegal	457.94	270.74	62.5%		239%	22%	7%	NA	0
Dublin	264.37	166.55	59.0%		412%	14%	-1%	3%	14
Galway	128.65	99.98	43.6%		545%	3%	3%	NA	11
Kerry	255.24	149.62	36.4%		531%	-5%	12%	NA	1
Kildare	178.87	113.26	75.0%		300%	20%	5%	NA	3
Kilkenny	293.25	183.41	66.7%		168%	8%	4%	NA	2
Laois	227.87	85.01	150.0%		16%	20%	6%	NA	3
Leitrim	78.02	56.17	37.5%		500%	17%	NA	NA	0
Limerick	351.98	231.91	81.8%		361%	14%	3%	NA	3
Longford	119.88	39.15	62.5%		-50%	9%	NA	NA	0
Louth	339.84	167.59	66.7%		110%	11%	8%	NA	4
Mayo	146.35	78.92	75.0%		41%	0%	10%	NA	3
Meath	193.29	105.10	20.0%		294%	9%	9%	NA	8
Monaghan	293.23	203.63	28.6%		495%	12%	8%	NA	0
Offaly	96.20	47.46	71.4%		76%	33%	11%	NA	5
Roscommon	94.51	65.07	62.5%		320%	7%	NA	NA	0
Sligo	207.52	132.75	37.5%		335%	4%	4%	NA	1
Tipperary	110.31	68.32	80.0%		187%	11%	11%	NA	3
Waterford	165.27	100.71	90.0%		303%	1%	11%	NA	4
Westmeath	100.26	69.84	62.5%		210%	13%	9%	NA	6
Wexford	361.34	205.05	71.4%		553%	3%	6%	NA	1
Wicklow	122.87	80.74	59.0%		360%	5%	9%	NA	4
National	223.02	138.39	60.9%		319%	11%	6%	2%	

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Using the last 14/5 days with data for the incidence rate - there was no data for the 23rd & 24th of December.
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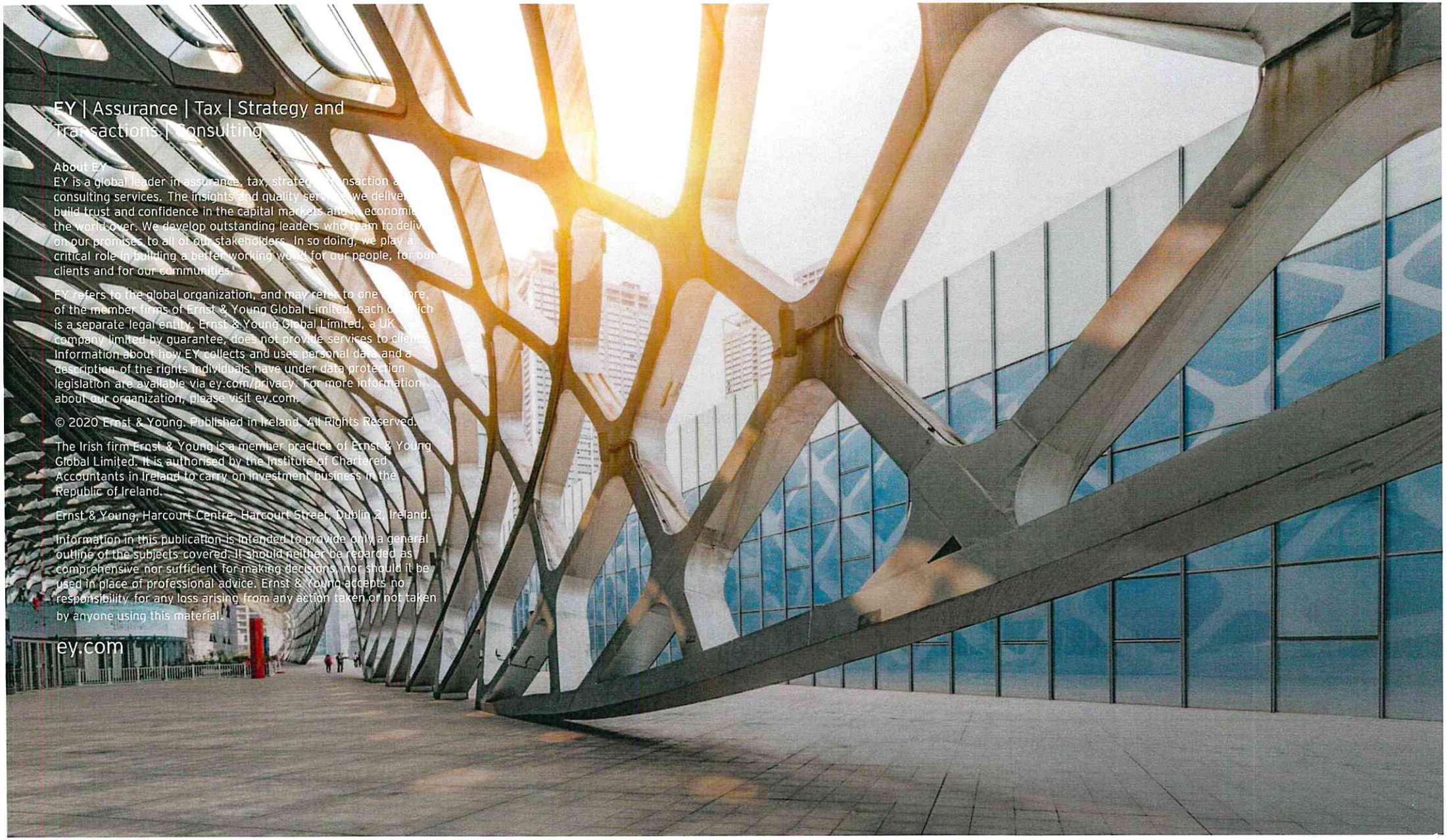

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Carlow	207.26	87.82	83.3%		28%	-17.4%	2%	NA	1
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Clare	131.29	98.47	50.0%		1363%	-22%	11%	NA	0
Cork	172.23	95.42	53.0%		842%	-20%	4%	3%	4
Donegal	424.02	184.05	62.5%		131%	-2%	7%	NA	0
Dublin	264.22	117.34	62.3%		261%	-13%	-1%	2%	14
Galway	128.27	71.30	50.0%		360%	-20%	3%	NA	11
Kerry	251.85	106.97	45.5%		351%	-22%	12%	NA	1
Kildare	172.58	73.26	100.0%		159%	-6%	5%	NA	3
Kilkenny	261.00	92.71	83.3%		35%	-17%	4%	NA	2
Laois	187.73	61.40	133.3%		-16%	-1%	6%	NA	3
Leitrim	81.14	59.29	50.0%		533%	-3%	NA	NA	0
Limerick	336.58	161.62	90.9%		221%	-12%	3%	NA	3
Longford	85.63	29.36	62.5%		-63%	-4%	NA	NA	0
Louth	342.94	118.71	88.9%		49%	-16%	8%	NA	4
Mayo	129.49	62.83	75.0%		12%	-19%	10%	NA	3
Meath	198.42	76.39	20.0%		187%	-16%	9%	NA	8
Monaghan	384.45	154.76	42.9%		352%	-13%	8%	NA	0
Offaly	83.38	37.20	71.4%		38%	10%	11%	NA	5
Roscommon	103.81	61.97	75.0%		300%	-9%	NA	NA	0
Sligo	209.05	119.02	50.0%		290%	-14%	4%	NA	1
Tipperary	96.52	62.68	60.0%		163%	-11%	11%	NA	3
Waterford	153.22	59.39	90.0%		138%	-18%	11%	NA	4
Westmeath	109.27	73.22	62.5%		225%	-10%	9%	NA	6
Wexford	343.30	112.21	71.4%		257%	-21%	6%	NA	1
Wicklow	119.36	63.19	62.3%		260%	-20%	9%	NA	4
National	219.37	99.58	64.5%		202%	-14%	0%	2%	

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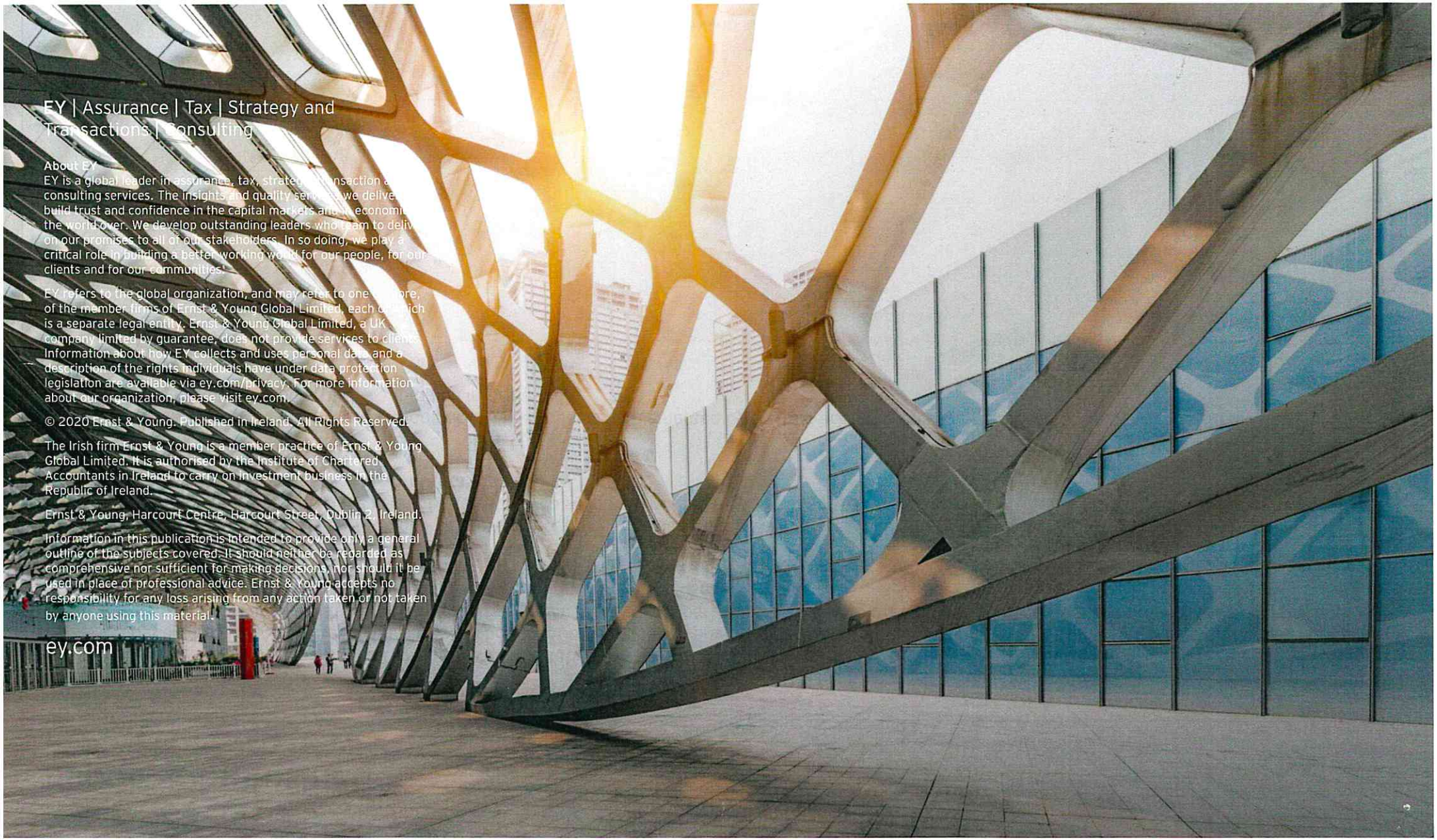

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