2021

PROGRAMMATIC DIGITAL OUT OF HOME

A BUYER'S GUIDE

iab nz

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INTRODUCTION

1 INTRODUCTION

1.1 The Opportunity

Out of Home (OOH) may be the world's oldest advertising medium, but its undeniable strengths – mass reach, visual impact, and the ability to leverage location – remain undiminished even as the world becomes increasingly digitised.

The static posters and billboards of the past are being replaced by dynamic digital screens hosted on a range of formats including billboards, street furniture, buses and trains, shopping malls and more. Furthermore, the digital age has given rise to new tools and capabilities that make OOH advertising increasingly powerful. Marketers have more control than ever to select the perfect creative, location, screen size and moment to reach their target audiences.

Investment in Digital Out of Home (DOOH) advertising in New Zealand has increased dramatically in recent years. Digital formats now represent almost two thirds of all OOH advertising spend, up from just 30% in 2016.

Despite this growth, very little of the inventory is being traded programmatically. Programmatic trading has brought increased reach, greater targeting capabilities, real-time measurement, optimisation, flexibility and efficiency for online advertising. Advertisers and agencies are now looking to realise some of these benefits in DOOH.

1.2 The Purpose

Despite the massive opportunity for programmatic DOOH, there is still a significant lack of knowledge and understanding of the medium amongst buyers and sellers.

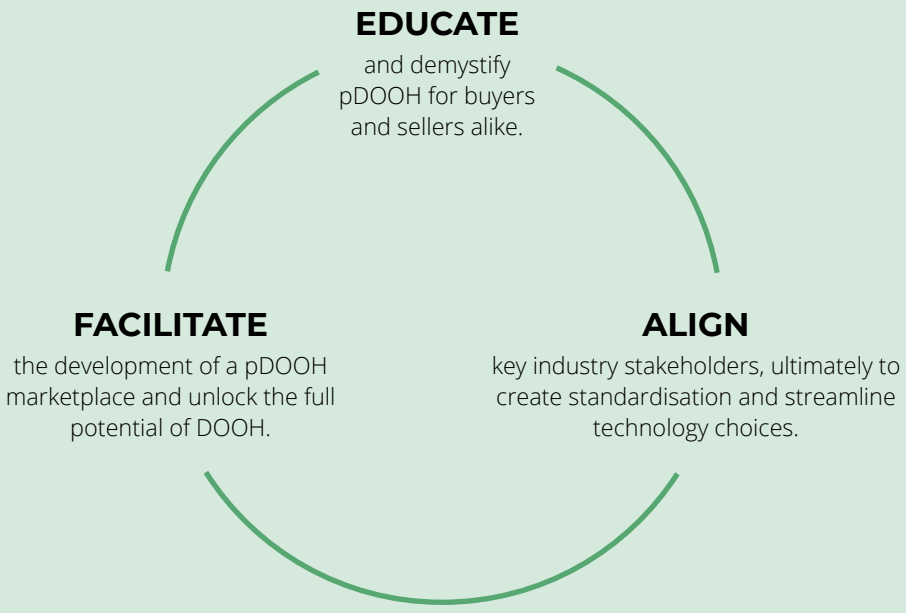
The screens may be digital but how the media owner's position, price, trade and report on campaigns is still largely tied to the world of traditional OOH. Knowledge of how programmatic trading operates is limited amongst these sellers.

Similarly, there is a lack of shared knowledge and expertise amongst advertisers and agencies. Few buyers have the deep understanding of both the programmatic and digital outdoor channels necessary to transact programmatic DOOH (pDOOH) successfully. The purpose of this document is to educate, facilitate and align buyers and sellers.

1.3 Authors and Contributors

This document has been developed by Richard Pook, Jack Plowright, Simon Teagle and Hydia Razavi for IAB New Zealand.

It wouldn't have been possible however, without generous input from a number of sources including: Broadsign; Hivestack; Dentsu New Zealand; Go Media; IAB Australia; IAB EU, JCDecaux; LUMO; oOh!media; QMS; Scentre Group; VMO; Verizon Media; VIOOH and Vistar. The intention of the document is to aggregate these sources into a consolidated view of the programmatic digital out of home product in New Zealand. A full list of sources can be found in the appendices.



CONTRIBUTORS

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PROGRAMMATIC DIGITAL OUT OF HOME EXPLAINED

2 PROGRAMMATIC DIGITAL OUT OF HOME EXPLAINED

2.1 OOH vs DOOH

It's helpful to understand the key strengths that DOOH has brought to traditional OOH before we explore programmatic advertising and OOH.

OOH	DOOH
Powerful and Targeted Media Offers broad reach, but can also be tailored to have local relevance and to target niche audiences. Can also help with all metrics from driving brand awareness to driving conversion.	**Hyper Targeting** More ability to target via demographic, geography, income level etc. Visuals can also be adapted to context and audience.
High Impact, Unavoidable Media The most visual media type. Enables life size and larger than life experiences.	**Greater Impact** Allows reach content and interactivity with full motion video, real time content, social media engagement, syncing and touch screen interactivity, AR. Location and multiplatform options.
Effective Media to Reach Mobile Audiences Reaches people as they move around, influencing decisions on their journeys between work, home and entertainment activities, enabling path to purchase.	**Flexibility / Real Time Creative** Allowing content to be created and edited in real time in response to data triggers across every site location.
Cost Effective Media OOH can be low cost per impression.	**Digital Efficiencies** Lower production and set up costs.

Source: IAB EU

2.2 Programmatic Advertising

Programmatic advertising is broadly defined as the use of automation in the buying, selling, or fulfilment of digital advertising. The main components of a programmatic transaction are automated workflow and real time bidding (RTB). RTB is an automated digital auction process that allows advertisers to bid on advertising space from publishers on a cost-per-thousand-impressions (CPM) basis, in real time. An 'impression' in online advertising is the count of how many times an advertisement plays/shows on screen.

2.3 Programmatic DOOH

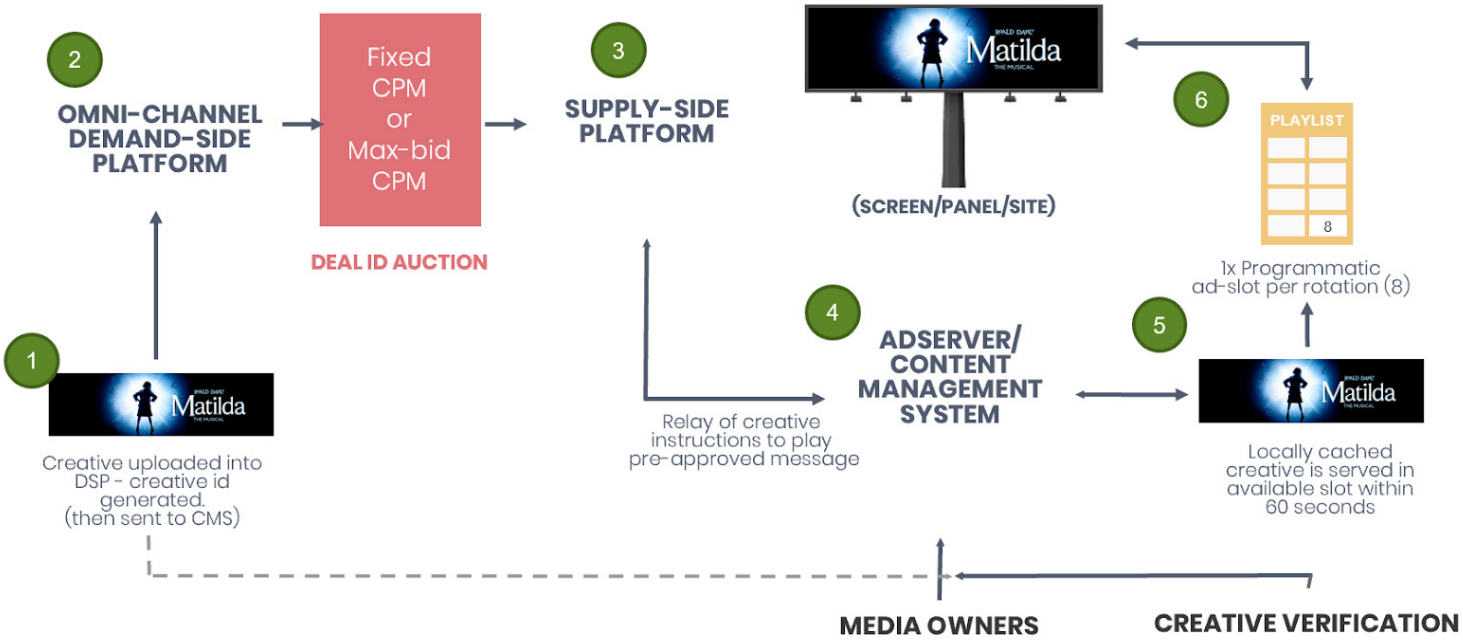
The automated buying, selling, and delivery of out-of-home advertising – that's advertisement inventory on digital outdoor screens such as digital billboards, digital street furniture and digital screens in retail environments.

Put simply, pDOOH allows digital outdoor media suppliers to take advertisement slot opportunities within a DOOH screen's loop sequence and present these to buyers via automated platforms, in real time.

Unlike in online where an 'impression' is a count of advertisement plays, in pDOOH an 'impression' is the count of how many people are exposed to an advertisement play.

2.4 How the pDOOH Transaction Works

A simplified illustration of the programmatic DOOH buying process and technology can be shown as follows:



Source: Broadsign

2 PROGRAMMATIC DIGITAL OUT OF HOME EXPLAINED

2.4 How the pDOOH Transaction Works *continued...*

Sell-side technology

Screen/panel/site
A physical, network-connected digital screen that displays advertising content on a share of voice loop sequence i.e six advertisers in a continuous rotation. Screens vary in size, environment and quality.

Content Management System
A platform/'scheduling engine' used by DOOH media suppliers to create a playlist and schedule predetermined advertisements on the loop of selected screens.

Adserver
Rather than pushing a predetermined schedule to the screen, the screens pull the most relevant advertisement for each slot in real time by making requests to the adserver. The adserver works with the SSP and when a screen has an available slot in the loop to play an advertisement, the screen will ask the adserver to determine and deliver the correct creative to render.

Supply-Side Platform (SSP)
An advertising technology platform used by DOOH media suppliers to manage, sell and optimize available advertisement slots in their screens' loops in a more automated manner. SSPs communicate with DSPs (the buying technology necessary for a programmatic transaction) via 'bid requests'; information such as location, screen size, time of day, impressions, floor CPM price etc for upcoming advertising opportunities.

Buy-side technology

Demand Side Platform (DSP)
An advertising technology platform used by buyers to automatically purchase advertising inventory on an impression-by-impression basis from publishers via supply-side platforms (SSPs) and advertising exchanges when predetermined conditions are met.

- **Bespoke DOOH DSPs**: DSP technology that transacts DOOH only. These platforms tend to be more intuitive (in both the user interface and capability) to the nuances of DOOH planning and buying.
- **Omnichannel DSPs**: DSP technology that has the capability of transacting multiple digital formats programmatically, including DOOH.

Note: there are no universally integrated SSP or DSP platforms in the pDOOH ecosystem, meaning both supply and buying siloes may exist and multiple DSPs and SSPs could be required to access multiple DOOH formats/media suppliers.

The pDOOH transaction explained

1. A buyer sets up a campaign within the DSP, selecting criteria such as screen formats, locations, time of day, day of week, audience demographics and behaviours, budget, and campaign window.

2. The creative is loaded into the DSP, which is connected to the SSP, usually using a Deal ID. When the Deal ID is established, the two technologies communicate via a series of bid requests via the SSP and bid responses via the DSP.

3. Once the SSP and DSP agree to serve an impression (the conditions are met on the buy side, and the floor price is met on the sell side), this request is relayed to the CMS/adserver. The CMS/adserver determines which creatives appear on which screens. The preapproved creative is held in cache, serving it in an available slot on the specified screen within 60 seconds.

2.5 Key Benefits for Buyers and Sellers (DOOH vs pDOOH)

Buyer benefits

pDOOH gives buyers improved campaign control over traditional DOOH by allowing them to stop, start and optimise campaigns, in real time with less involvement from the media owner.

pDOOH allows digital buyers to create automated rule-based targeting options that trigger both buying and scheduling workflows. Common rules could encompass audience concentration, reach, time of day, weather conditions and location. When the circumstances are right and inventory available, the transaction automatically takes place and the advertisement displays on screen.

For example, an ice cream brand may wish to advertise on screens in close proximity to the beach and only on sunny days. Whilst location can be delivered today using DOOH, a real time transaction at that location when the weather is sunny is only possible via pDOOH. Brands can choose sites and triggers for creative, but without pDOOH must either book a guaranteed slot with fallback creative if the trigger is not met, or book at very short notice.

pDOOH transactions are based on audience-indexed spot plays – meaning that the variable audience reach of different screens at different times of day can be taken into account in the pricing of screens.

pDOOH bought through omnichannel DSPs also allows buyers to incorporate reporting across all their digital media spend, which means they can measure delivery in real time and gauge which digital channel produces the best results and optimise their campaign accordingly (upweight/downweight/change creative).

Automated buying workflows improve procurement efficiencies for marketers, and media buying agencies.

If executed well, pDOOH should represent a brand safe and transparent environment for client brands.

Seller benefits

The automation of selling and management of inventory should significantly reduce campaign set up and handling costs for outdoor suppliers.

It should also increase yield and sell through rates through:

- Access to new digital channel budgets and encouraging DOOH to be part of an integrated digital campaign.
- Accessing different geographical markets, including international placement via DSP and SSP connections.
- Maximising digital inventory utilisation via 'waterfall' scheduling. In comparison, management of DOOH inventory can often be complex and inefficient.

Benefits	pDOOH	DOOH
Flexibility to stop, start and optimise campaigns instantly without financial impact	✓	✗
Targeting options: ability to transact inventory when set conditions are met e.g. audience, weather conditions	✓	✗
Automated workflows improve efficiencies for both buyers and sellers	✓	✗
Streamline reporting across all digital media spend	✓	✗

2.6 Why pDOOH is Different to Programmatic Digital

Out of home is a one-to-many medium, vs the one-to-one relationship we see in online advertising. Each time a digital OOH advertisement plays, the advertisement can be seen by numerous people. As a result, one DOOH play can result in a variable number of impressions being delivered.

Buying DOOH programmatically won't result in significant falls in the market price of inventory. It is still the same premium inventory that advertisers are currently willing to purchase as direct IO buys, and supply remains limited.

Buyers need to consider the campaign strategy and when a programmatic transaction is appropriate. For example, an advertiser's message may only be relevant at certain times of the day or when it's raining. Instead of having to buy the entire day or week, advertisers can bid on available inventory at times when these conditions are met. Providing technology fees made clear, buyers can make an informed decision as to whether these are offset by the benefits programmatic provides.

Unlike online advertisements, programmatic DOOH cannot be skipped by the audience it reaches nor is it susceptible to ad blockers or advertising fraud.

There are also a number of other considerations:

	pDOOH	Other programmatic digital
Real time bidding	Auction normally occurs ~1min in advance of loop starting (Can range from 15 seconds to 5 minutes)	Auction occurs in real time, resulting in almost instant rendering Some channel and format specific exceptions
Transaction types (see Section 2.7 for detail)	PG, PMP, OMP, UFR (functionality varies by DSP)	PG, PMP, OMP, UFR
Advertisement stitching	**Two Options:** 1. Via a direct API integration – all spots can be made visible to programmatic buyers 2. Via creation on a HTML file that sits in the loop – dedicated spot visible to programmatic buyers Waterfall in place, with priority to buys where inventory is reserved. No header bidding capability	Initially, inventory was remnant with a strict waterfall or pecking order With header bidding, programmatic buyers have comparable access to inventory as direct buyers
Creative files	Huge range of creative sizes and file formats within numerous aspect ratios. Most exchanges match files based on aspect ratio, and may also apply pixel dimension restrictions. No animated creative allowed on roadside formats (digital billboards and digital street furniture) Animated creative available on non-roadside formats, internal airport/mall/transport hubs Common file types include: JPG, PNG, MP4. Media owners may also accept HTML5 creatives, which tend to require additional time and QA to set up	A few main creative sizes, but can handle multiple creative formats including animation Common file types include: JPG, PNG, MP4, HTML5 etc.

2.6 Why pDOOH is Different to Programmatic Digital *continued...*

	pDOOH	Other programmatic digital
Rotation	Share of voice depends on the number of spots in a loop, which can vary significantly due to different dwell times and road safety regulations	A set number of advertisement slots on web page or in video player
Bidding and impressions	Due to the one to many nature of the medium, one spot play can result in a variable number of impressions	A won auction can only ever result in a maximum of one impression
Measurement	User IDs are not present in the bid request Measurement partners used for proof of play, reach/frequency and attribution	Cookies and user/device IDs allow for accurate measurement of uniques, frequency, viewability, impression volumes, clicks and attribution
Targeting	Existing technology is mostly based on inferred models	Cookie and device IDs allow for more accurate targeting and retargeting using declared demographic data
Frequency capping	Only available at the advertisement play level, per screen or per network	Available at a user/device level

Source: IAB AU, OMG, Mediamath

2.7 Deal Types – The Ways in Which pDOOH Can Be Bought

Deal Type	Inventory agreement	Pricing	Participation	Other terms used in market	Benefits to buyers	Benefits to sellers
Programmatic Guaranteed (limited to select DSP/SSP integrations)	Reserved	Fixed CPM	One seller to one buyer	Automated Guaranteed Programmatic Premium Programmatic Direct Programmatic Reserved	Securing target inventory when supply is limited and impressions need to be delivered.	Secures revenue or impression commitment as buyers are required to purchase all inventory presented to them when conditions are met.
Unreserved Fixed Rate	Unreserved	Fixed CPM	One seller to one buyer	Preferred Deal Private Access First Look First Right of Refusal Last Look Last Right of Refusal	Secure a price discount on specific inventory without needing to commit to a set spend. Gives the buyer the ability to bid or pass on impressions.	Opportunity to offer more exclusive inventory to higher value buyer relationships. Ability to negotiate CPM and forecast based on soft guarantees.
Private Marketplace	Unreserved	First Price Auction (highest bid over floor rate wins, buyer pays CPM rate bid)	One seller to few buyers	Invitation Only Auction Private Access Closed Auction Private Auction	Less competition than the Open Exchange to secure target inventory, meaning less opportunity to increase. Gives buyers the opportunity to bid or pass on available impressions.	Opportunity to offer more exclusive inventory to higher value buyer relationships. Submits advertising slot opportunity to multiple bidders.
Open Exchange (limited to select SSPs and DSPs)	Unreserved	First Price Auction (highest bid over floor rate wins, buyer pays CPM rate bid or second highest bid +$0.01)	One seller to many buyers	Open Market Open Marketplace	Opportunity to secure exclusive inventory at a lower price should publishers make it available to a public auction. Gives buyers the opportunity to bid or pass on available impressions.	Increases volume of bidders for specific inventory.

3

BUYING CONSIDERATIONS

3 BUYING CONSIDERATIONS

3.1 Screen Types

The majority of digital OOH inventory in New Zealand is still not available programmatically. Of the formats that are, only a relatively low percentage of the inventory is activated. This however, is not expected to change quickly in the next 12 months.

Screen type	Media owners	Available programmatically
Roadside billboards 	LUMO, Go Media, QMS, oOh!media, Media 5, JCDecaux	LUMO and Go Media only
Transport  	QMS, JCDecaux	No
Street furniture (bus shelters) 	oOh!media	No
Offices 	VMO	Yes
Retail centres 	oOh!media, Scentre Group	No

Media Owner	# of Digital Screens	Portrait	Landscape	Smallest screen size dimensions	Largest screen size dimensions	Locations	Number of plays in one cycle	Time per play	Single slot plays per day
Go Media (roadside billboards)	45	8	37	3 x 4m	16 x 4m	Nationwide	Mostly 6	Mostly 8 seconds	Mostly 1,500
Go Media (interior airport)	11	6	5	1 x 1.7m	10 x 2m	Nelson	8	15 seconds	540
JCDecaux (external including airport)	44	9	35	3.1 x 4.8m	22 x 12m	6	6 (average – number of plays vary)	8-10 seconds (average – display times vary)	1,234 -1,540
JCDecaux (internal airport)	120	72	48	0.81 x 1.43m	8 x 2m	3	6 (average – number of plays vary)	8-10 seconds (average – display times vary)	1,234 -1,540
LUMO	26	9	17	6 x 4m	18 x 5.5m	Nationwide	6	16 seconds	900 (min)
oOH! Media	698	689	9	Office: 15 inch (lift) Retail: 65 inch Street: 75 inch Study: 60 inch	Office: 55 inch Retail: 4.4 x 2.4m Street: 75 inch Study: 60 inch	Nationwide	6	8 seconds (Street, Office) 7 seconds (Retail, Study)	1,800 (min) (Street)
QMS	125	108	17	70 inch	8 x 16m	Nationwide	Mostly 8	Variable, mostly 8 seconds	Average 1,340 per day
Scentre Group	206 x Floor Based (SmartScreens Faces) 10 x Large Format (SuperScreen) Faces	All	N/A	1.43 x 0.84m	5.7 x 3.5m (20sqr mtr)	AKL, CCH	Max 6	10 seconds (Small format) 20 seconds (Large format)	Avg 660
VMO	137	135	2	40 Inch	70 Inch	Nationwide	7	10 seconds	617 (min)

3.2 Creative

Expansive Creative Opportunity and HTML5

DOOH provides brands, advertisers, and agencies with an unprecedented opportunity for creativity. Automated buying allows brands to bring in data sources of their choice to do two key things in real time:

1. Decide when to show an advertisement
2. Decide what advertisement to show

These capabilities enable a near infinite range of campaign permutations. Given this, rules for targeting and creative decisioning, an advertiser buying DOOH programmatically through a DSP has countless more creative options than an advertiser purchasing through insertion orders.

What is important is that advertisers are flexible when planning their programmatic DOOH creative strategy. As with all advertising, what will resonate with consumers is impactful relevant creative that makes good use of data. To make advertisements contextually relevant, advertisers should look for sources of information that they can pass on to people as they walk, or drive, by the screen.

HTML5 is encouraged with pDOOH as it opens even more creative doors for advertisers and makes it more likely their advertisements will win the attention of consumers. HTML5 also provides designers the flexibility and responsiveness they need to generate the same creative on the variety of screen sizes available.

Creativity tips

Provide, rather than ask	As with content marketing, sometimes the best approach with DOOH is to provide information to people rather than ask something of them. Consider providing weather data, transport, news, events, headlines, and conversations within your creative.
Explore third party data sources	Third party data can be used to help brands target specific audiences based on their known location at given times. Third party data can also be used for content aware creative. Data to consider includes financial market data, flight arrival times and air pollution data, all of which are usually available via APIs.
Investigate data sources within the company	A digital brand may have analytics data that shows user behaviour by location and time of day, which could be used in DOOH campaign settings. A physical retail brand, on the other hand, may have store analytics systems in place that can provide data for optimising footfall.
Have a cross channel mindset	By using a DSP with capability to buy on several channels, you can enrich DOOH line items with mobile retargeting, or use your online campaign's behaviour for storytelling.
Engage creative partners from the beginning	Proactively making creative partners aware of the targeting capabilities available in pDOOH may inspire them to think about creative copy in a different way and spin off new ideas.

Source: IAB EU

Advertisement Durations, Restrictions and Approvals Process

The creative approval process is not yet fully automated across all SSPs (some SSPs do have an automatic approval process). As with direct buying, the creative assets must be approved by the media owner. The creative is uploaded directly via the DSP or a 3rd party Ad Server, and once approved by the media owner, that creative is then activated for delivery.

There are rules against serving animated creative on roadside products like billboards and street furniture, which are exposed to drivers. There are also certain restrictions on where you can place alcohol and gambling advertisements. Media suppliers may also have category restrictions due to commercial agreements with landowners or regulatory consent conditions.

Creative duration is also determined by the individual screen inventory. Local council consent is required to build digital inventory, especially Roadside DOOH inventory. They also determine a minimum advertisement rotation length. Different screens dictate different lengths of advertisement rotation – there is no standard rotation length.

3 BUYING CONSIDERATIONS

3.3 Dayparting

In the DSP, the programmatic buyer can select the following:

1. Daypart(s) i.e. 9am-12pm
2. Day of week
3. Flight date(s) i.e. Thursday-Tuesday

This allows buyers to be more flexible with which creative they show when, how they allocate budget and how long they run the campaign for.

3.4 Targeting

There are a number of ways to target buying within the DSP:

1. Location of the screen, set by latitude/longitude or the location of a point of interest (passed through the bid request).
2. Audience concentration – using first, second or third party data scoring the screens based on the highest probability of reaching your desired audience with the inventory and times you have available.
3. External data sources – buying based on variables such as mobile location data, register/sales data, weather, traffic or sport scores.

3.5 Verification

As outdoor becomes more digital, advertisers are increasingly looking for validation that what was booked was delivered.

Digital verification usually involves confirming number and location of screens, advertisement length, share of time and total exposure for each creative that played. This is achieved via two main methods:

1. Proof of play reports, which aggregate delivery data from the outdoor providers.
2. Smart creative tags, where a 3rd party pixel is inserted into the digital creative to independently confirm delivery details. It's limited to the advertisement play level and doesn't incorporate the impression multiplier.

Third-party verification can help provide detailed data on campaign parameters, such as:

1. Was delivery reflective of what was bought?
2. Were exclusivity terms met?
3. Were the share of time terms met?
4. Was creative playing on the specific booked screens/ panels?
5. Was the creative viewable / not obstructed / not impacted by panel/screen faults?
6. Did the contextual advertisements run in the right place?
7. How many times did the advertisements run?
8. Did the advertisements run at the right time?
9. Did the advertisements run for the duration it was booked for?

It is critical to the success of the medium that outdoor media suppliers are aligned in their verification approach. Although direct verification by supplier is available when buying DOOH programmatically, the DSPs and SSPs are still working on the 3rd party verification integrations with Seedoh, IAS, Veridooh and others. The workaround would be to use an adserver pixel to count spot plays, but this is not uniformly supported. On the media owner side, there is lots of work to be done to test everything from cyber security to scalability.

4

AUDIENCES AND MEASUREMENT

4 AUDIENCES AND MEASUREMENT

4.1 The Impression Multiplier

In digital, we're used to knowing that a user can see an advertisement when displayed on a device screen, having accurate insights on the nature of that user and being able to measure attribution and frequency across multiple digital channels.

As OOH is a one to many medium, we need to know the size of the audience passing the screen at the time the advertisement is played. This metric, known as the impression multiplier, is passed on the bid request from the exchange or SSP. It will vary by screen and by time; it might be 150 for a roadside billboard during rush hour or 5 for a screen in an office at 3pm. The impression multiplier is always greater than zero, but can be less than 1.

There is no standard impression multiplier. Each screen and individual play will have a distinct value reflecting its unique audience composition at that specific time.

The MRC Standard determines the Impression Multiplier as:

Screen audience per hour x (Screen dwell time in secs/advertisement slot duration in sec) / screen slots per hour

As standard, all advertisement plays are subject to the average impression multiplier seen during the hour in which the advertisement played. Hourly impression data is the programmatic standard. Day of week impression data is preferred. The majority of impression data attached to the bid request is based on historical averages vs near real time live impressions seen in view of screen.

pDOOH is bought by combining a standard CPM (or cost per thousand advertisement plays) with an impression multiplier.

Bid CPM x Impression Multiplier/1000

For example, a $10 CPM with an expected delivery of 25 impressions = $10*25/1000 = $0.25 media cost per bid or play.

4.2 The Measurement Challenge

There is no New Zealand standard for the impression multiplier, with media owners and SSPs currently using different methodologies and source data to determine its value. This can lead to inconsistent valuation, confusion and added complexity for buyers.

For pDOOH buying to increase, a standardised methodology for data definition and collection needs to be implemented and adopted by all players in New Zealand.

For now, sellers need to share their methodologies openly and transparently, whilst buyers need to carefully evaluate how audiences and costs are derived and validate the value driven by transacting programmatically against their direct buys.

4.3 Assessment Criteria

The quality of the data used in audience measurement or targeting can be evaluated using the following criteria:

1. **Data Density**
   This assesses whether a model has sufficient detection data volume compared to the final audience impression volume so that any adjustments or extrapolations are statistically significant.

   There are 3 elements that determine data density:

   a. **Coverage:** How many screens are part of the measurement. Perfect coverage would be 100% of the screens.
   b. **Granularity:** What level of time the data is provided in e.g. hourly totals, 15 minute intervals.
   c. **Capture rate:** How much of the audience can be detected with the measurement method.

2. **Data Fidelity:**
   This assesses how accurately the data is being captured and transferred.

3. **Data Recency**
   This is how "old" the data is. Buyers will want to understand how often the data is updated to ensure that their audience planning can be as accurate as possible.

4. **Data Privacy**
   Whether the data set is privacy compliant and adheres to all local rules and regulations.

4.4 New Zealand Measurement Methodologies

There are currently three main ways to measure audiences passing an outdoor screen:

1. **Traffic data counts on road segments**

   Street level traffic count data is sourced from RAMM. Critchlow Geospatial then applies visibility rules (as certified by OOHMAA members) to develop Daily Traffic Visuals (DTV) for the specific site. DTVs are refreshed annually and have been the accepted standard for the last 5 years.

2. **Mobile location data sourced from mobile devices**

   Mobile location via smartphone devices is becoming the most common source of audience data for outdoor media. Three data source types include: mobile GPS (SDK integration or bid stream), beacon tech and telco network cell towers. Together the three data sources provide the greatest accuracy.

3. **Camera technology installed in the screens that count faces or vehicles**

   Camera based audience measurement systems provide a high level of data granularity and recency due to the live, always on capture of the audience in view of the screen inventory.

pDOOH bid requests are typically attached with historical day of week impression averages by hour by screen. It is assumed that if the media was showing, then the audience from the plan was delivered.

Measurement Solutions

New Zealand Outdoor media suppliers have developed a number of proprietary modelled audience measurement solutions. The main ones are as follows:

Calibre, as used by JCDecaux, oOh!Media, Media5 and Advantage

Calibre audience data is modelled from sources including Qrious (cell tower), Ubermedia (mobile GPS) and media vendor supplied RAMM (Daily Traffic Visuals). Qrious captures smartphone location behaviour of near 40% of New Zealanders providing volume and scale to Calibre. Ubermedia captures mobile GPS location behaviour from a mix of bid-stream and opt-in SDK devices, timestamped at 10-minute intervals. RAMM is the go-to measurement system New ZealandTA uses for counting vehicles on every public road.

A proprietary algorithm to ReachMedia Ltd models the data to produce total audience impressions in proximity to the billboard site. A street-flow model tracking people as they travel about informs daily reach and frequency performance.

Calibre aggregates audience data across multiple assets and days to provide unique reach, frequency, and impressions for the period the campaign is active. Audience seasonality based on historic travel patterns of the campaign month is applied to the normalised monthly average.

Enrichment variables that enable advertisers to refine their outdoor-of-home target audience comprise home location (above mentioned sources), demographic breakdown (Stats New Zealand), segmentation characteristics (Mosaic and Helix Persona) as well as purchase behaviours for select categories (BNew Zealand Marketview).

Impression data is available in weekly increments per billboard site. Calibre is in the process of advancing its capability with regards to providing greater recency and impression granularity by site, by day and by hour. At present Calibre audience data is not being supplied to pDOOH trading platforms.

The Calibre group of media vendors (JcDecaux, oOh!Media, Go Media, Media5 and Advantage) are focused on developing its data requirements to provide a robust audience measurement system (AMS) for pDOOH trading purposes. The intent of the Calibre group is that its AMS becomes the industry standard that meets the needs of the industry.

Learn more: calibremeasurement.co.New Zealand

4.4 New Zealand Measurement Methodologies *Continued...*

Datalab, as used by QMS

Datalab was the first audience measurement platform for Out of Home inventory in New Zealand. Built by QMS in partnership with Datamine in 2013, it delivers accountable, engaging, audience driven insights and thereby offers customers tailored solutions for effective outdoor campaigns. The audience data in the platforms modelled from a comprehensive list of sources to generate a rich nationwide data map that covers multiple outdoor formats.

Using a series of algorithms proprietary to Datamine, the Datalab supplies QMS and its customers with reach and frequency data for roadside digital, airport digital, bus media and commuter based products.. This model predicts the combined audience of all QMS New Zealand formats across 135bn triangulated interactions, it can create a single audience view across multi-format campaigns and deal with multiple flights and weightings in one audience output.

The base data as for other platforms is government collated road user data (Road Assessment Maintenance and Measurement (RAMM) delivering Daily Traffic Visuals). Mobile data is provided by 2degrees, leveraging 1.4m phones. Financial transaction data for profiling consumer spend is provided by Westpac.

Commuter data is provided by transport authority, air passenger data is provided by airlines and all of this is augmented and cross referenced with New Zealand Stats data. Demographic profiling is further enhanced with the use of the Helix Personas dataset from Roy Morgan and spend profile data from Westpac.

Learn more:
qmsmedia.co.New Zealand/datalab/explore-the-datalab

LANDMARKS ID, as used by Go Media

LANDMARKS ID (LMID) works exclusively with mobile GPS data, the most accurate mobile location data available (5-10m). Data is collected via an 'always-on' SDK integration into the mobile application of an +80,000 Mobile Insights Panel, a subset of New Zealand's largest loyalty programmes comprising +2.5M members. LMID location data is de-identified, collected from users who provide their explicit opt-in consent and is compliant with global privacy regulations.

LMID tracks panellist's journeys, including direction and speed of travel via geo or smart-fence technology. A screen exposure smart-fence has been mapped for every digital billboard, with a distance ranging between 30-100m. The distance is determined by uninterrupted sight lines and advertisement-image viewability. Panellist journeys through the smart-fence are collected across all modes of transport throughout the day and are time-stamped.

Dwell time duration is calculated by measuring each panellist's smart-fence entry and exit times. Average dwell time is measured for every site, hour of the day and day of week.

Using proprietary modelling, LMID profiles the home location of everyone in the Mobile Insights Panel and uses Stats New Zealand Census to accurately represent population potentials. In addition to supplying total audience impressions, LMID can supply a billboard's reach and frequency for any given campaign period.

While LMID collects mobile location data in real time, hourly audience impressions are normalised over a rolling 13-week period and refreshed weekly. Should a sudden and significant audience change occur, such as heightened Covid-19 restriction levels, the dataset time-frame can be shortened to daily to represent current outdoor journey behaviours.

In addition to audience performance, LMID enriches its dataset with location destination behaviours for the purpose of aiding site selection decision-making. Relating those who travel past a specific site with those that visit an advertiser's store, or have an advertiser's mobile application on their mobile device, enables the sites 'brand affinity' index to be calculated.

Learn more: landmarksid.com

LENS, as used by LUMO Digital Outdoor

LENS is a camera based OOH measurement platform that relies on multiple high-resolution cameras positioned on each billboard structure to capture in real-time, the vehicle number plates that are in view of the roadside OOH inventory. Each site is surveyed to allow clarity on the positioning of each camera to maximise data accuracy.

The software converts each plate into an alpha-numeric code which allows the platform to quantify site visitation and frequency. This code is time stamped (day, date, time (h:m:s) upon conversion. Each number plate is unduplicated for reach and frequency analysis.

All cameras are operational 24/7 and capture second by second number plate data on 95%+ of vehicles in view of all screen inventory across a given roadside DOOH network. Apart from 1.6 multiplier added to the count of vehicles (Stats New Zealand average vehicle occupancy rate) to calculate total impressions, LENS does not model the source data it collects.

With registered vehicle number plates as the primary data source, LENS too has the capability to identify anonymised vehicle information through accessing the New ZealandTA database (make, year, model). In its current capacity, LENS cannot provide audience specific targeting i.e. age, gender, location behaviour, however these developments are in the pipeline.

Data Coverage
100% data coverage. Live measurement occurs at each screen.

Data Fidelity
100% of the reported audience are vehicles detected in view of screen inventory.

Data Granularity
Impression data captured at a second by second rate, uploaded into the LENS platform every 5 minutes and reported at hourly intervals. Day of week, week and month available also.

Data Capture
The capture rate of LENS is 95%+ of the vehicle number plates travelling passed the OOH inventory at any given time.

Data Recency
No historical 'moment in time' reporting. Measurement occurs and is reported from the dates of the given campaign window. Data is captured every second and updated in 5 minute intervals, with near real time impression data becoming available for programmatic transaction.

Data Privacy
LENS does not collect any personally identifiable information from the vehicle number plates it detects, adhering to the current and forthcoming New Zealand privacy regulations.

Learn more here: lensoutdoor.com

Quividi, as used by Scentre Group and VMO (DART)

Quividi is a camera based OOH measurement system that employs privacy-safe computer vision algorithms to power facial detection measurement for audiences 'in view' of screen. Using a proprietary visibility adjustment methodology, the detection metric (faces) is converted into an audience impression in a way that considers screen sizes, camera resolutions, camera angles and venue types. This audience data is then married with advertising playback data to determine the audience of a particular advertisement, in real time.

Data Coverage
Detection data occurs at 100% of screen inventory.

Data Fidelity
100% of the reported audience are people detected in view of screen inventory.

Data Granularity
Impression data captured at individual viewer sessions, in real time.

Data Capture
100% of the audience is detected, in view of screen inventory with the measurement method.

Data Recency
Live data leisure locally (at screen) in parallel with the advertisement being played. No historical studies or averages.

Data Privacy
Software employs advanced facial detection software, not facial recognition technologies. Audience data is generated from aggregate measurements of passers-by. Quividi's software never collects any information that is uniquely associated to an individual nor their image; demographics are assessed purely from visual cues. All video processing is performed locally in real time so that no image needs to be recorded or transmitted.

Learn more here:
quividi.com/actual-audience/#ARTAUDIENCE

4.5 New Zealand Outdoor Measurement Summary

Media owner	Type of location data used	Partner data provider	Data recency (Average frequency that devices are seen each hour/day/ week)	How often is data refreshed in trading platforms	How is data captured in view of the screen?	Reporting (Measurement of delivery of audience against campaigns)
Go Media	LANDMARKS ID: Mobile GPS, accurate to 5m-10m, is collected via 'always-on' SDK integration into the mobile application of an +80,000 Mobile Insights Panel (MIP).	The data provider is one of New Zealand's largest loyalty pro-grammes, with 2.5M members. Contractual reasons do not permit their name to be shared in print, but can be discussed.	Data is collected in real time across all modes of transport throughout the day and are time-stamped. In addition to supplying hourly impressions,a billboard's reach and frequency can be provided for any given campaign period.	Hourly audience impressions will be normalised over a rolling 13-week period and refreshed weekly. The time-frame can be shortened to daily to represent sudden and significant audience changes e.g. Covid-19.	Mobile GPS pin-points devices travelling through a geo-fenced viewing corridor of the billboard. The distance is determined by uninterrupted sight lines and advertisement-image viewability.	Seedooh for direct IO contracted campaigns Integrated with IAS. Onboarding Veridooh for Q1 2021.
JCDecaux (external including airport)	Calibre: Blended data from App SDK and Bid-stream mobile, cell-tower people location data and traffic counts from DTV. Impressions and audiences.	Qrious, UberMedia, Critchlow, BNew Zea-land Marketview, Expe-rian, Helix Personas.	Devices seen 24/7 and tagged at 10 minute intervals.	Trading platform not operational yet. VIOOH to launch Q2 ballpark. Ability to refresh every 10 mins based off current capabilities.	Street-flow' model calculates audience in viewable corridor of each panel.	JCDecaux to onboard Seedooh and Veridooh by Q2 2021.
JCDecaux (internal airport)	Calibre: Blended data from App SDK and Bid-stream mobile, cell-tower people location data and traffic counts from DTV. Impressions and audiences.	Qrious, UberMedia, Critchlow, BNew Zea-land Marketview, Expe-rian, Helix Personas.	Devices seen 24/7 and tagged at 10 minute intervals.	Trading platform not operational yet. VIOOH to launch Q2 ballpark. Ability to refresh every 10 mins based off current capabilities.	Street-flow' model calculates audience in viewable corridor of each panel.	JCDecaux to onboard Seedooh and Veridooh by Q2 2021.
LUMO	LENS: Camera based, vehicle number plate recognition.	LENS: Camera based, vehicle number plate recognition. Cached vehicle plate numbers collected by cameras and matched against New ZealandTA non PII registration data.	Real time audience capture (second by second data recency). Captures and reports all vehicles in view of screen inventory (margin of error ~2%).	Every 5 minutes.	Vehicle Number plates detected only within likelihood of opportunity to see screen inventory (25-30m in front of screen).	Seedooh for direct IO contracted campaigns (pDOOH not 3rd party verified).
oOh!me-dia	LANDMARKS ID: Mobile App SDK partner integration for audience profiling, measurement and insights Calibre: Blended data from App SDK and Bid-stream mobile, cell-tower people location data and traffic counts from DTV. Impressions and audiences.	LANDMARKS ID: (Source panel is AA Smartfuel), Critchlow, Helix Personas.	Constant 'always-on' mobile panel of 80,000+ devices weighted to region according to Census. Frequency relative to device movememt and activity.	Trading platform not currently live. Plan for H1 2021.	Geo-fencing the 'travelling past' viewable distance corridor.	oOh! to onboard Seedooh in H1 2021.
QMS	Datalab: Blended data from Bid-stream mobile, cell-tower people location data and traffic counts from DTV, Impressions and audiences.	Datamine, 2 Degrees, Westpac, Critchlow, Helix Personas.	Devices seen 24/7 and tagged at 10 minute intervals.	Trading platform not live yet. Data refresh rates TBC.	Data modelling calculates audience in viewable corridor of each panel, accounting for direction of travel.	Seedooh
Scentre Group	Facial Detection Technology powered by Quividi in 100% of SmartScreens Traffic Counters at every entry/exit point Ticketless Parking System (exclusive to Newmarket).	Camera based detection powered by Quividi.	Always On Continuous.	N/A	Camera based detection in 100% of floor based screens powered by Quividi.	Integrated with Seedooh, Veridooh, OIS for contracted campaigns.
VMO	DART: Camera based detection powered by Quividi.	DART: Camera based detection powered by Quividi.	24/7 camera based detection.	Quarterly and ad hoc as required.	DART: Camera based detection powered by Quividi.	Integrated with Seedooh, Veridooh, Thorndyke (IAS) and OIS for contracted campaigns.

5

THE FUTURE

5 THE FUTURE

5.1 How pDOOH Can Grow

Drawing upon 2019 IAB/PWC research from the US and Canada, there are three main challenges that need to be overcome before pDOOH growth can really accelerate in New Zealand.

Standardisation

For pDOOH buying to increase, a standardised methodology for data definition and collection needs to be implemented and adopted by all media owners.

It is anticipated that the Calibre and Datalab brands will merge during 2021 for a unified market measurement approach under New Zealand's industry association, OOHMAA.

For now, sellers need to improve their methodologies and share them openly and transparently, whilst buyers need to carefully evaluate how audiences and costs are derived and validated against their direct buys.

Fragmentation

The number of platforms available and the fragmentation of inventory across these platforms is increasing. Furthermore, not all media owners are programmatically enabled.

On the buy-side, it is not always possible to access multiple media owners through a single DSP.

Technology and inventory consolidation are needed in order to create greater effectiveness and efficiency for the buyer.

Education

Required on both the buy-side and the sell-side to explain:

- The benefits of DOOH as a medium to media planners including comparisons to other digital mediums, taking into consideration brand safety, viewability, and advertising fraud.
- The capabilities and benefits of an audience buying approach and the ways in which programmatic trading can bring value to clients as part of the comms and channel strategy.
- How to transact programmatically, including what a one-to-many buy looks like in comparison to a one-to-one digital buy.

Source: IAB/PWC

5.2 Product Development and Use Cases

It's still very early days but there have already been some interesting use cases and applications of the technology in overseas markets.

One recent example is a campaign with a global outdoor retailer, who activated DOOH inventory programmatically to drive consumers to their retail stores.

They applied passive location data to define and target custom audiences who had recently visited outdoor recreational areas, restaurants and visited similar retail stores. They bought DOOH programmatically at locations and times of the day when these audiences indexed the highest.

Weather conditions successfully triggered inventory at these times and places, targeting this audience with contextual relevant creative messaging (sun, rain and snow).

The retailer saw a 2.8x lift in store visits vs the controlled group during the campaign flight.

6

BUYING CHECKLIST

iab nz

6 BUYING CHECKLIST

6.1 Questions to Ask Before You Buy

1 What are the inventory sources?

- Is there enough scale?
- Are the sites of good quality, or are they remnant?

2 Is my brand protected?

- Can you be certain that the creative will render properly on the screens selected?
- Will the campaign adhere to ASA standards?

3 How are you defining the audience?

- Which first-party or third-party data sets are you using?
- Is it contextual, demographic, or behavioral targeting?
- How is the model deriving the audience and matching that to screens?

4 How is the impression multiplier calculated?

- What is the methodology being used and how is it reported?
- How does it compare between platforms?
- Is the measurement calculation transparent?

5 What is the price?

- How much are the technology and agency fees?
- How does the price compare to a similar direct buy?
- Am I buying reach or outcomes more effectively than if I went direct?

6 Verification

- Are you planning to use a verification platform?
- If so, did I get what I paid for – number and location of screens, advertisement length, share of time, total exposure for each creative that played?

7

APPENDIX

7 APPENDIX

7.1 Glossary of Terms

Ad Exchange
A technology platform that facilitates the buying and selling of media advertising inventory from multiple parties. The approach is technology-driven as opposed to the historical approach of negotiating price on media inventory

Ad Server/Content Management System (CMS)
The technology in which the advertising material is stored and is the means of distributing that material into appropriate advertising slots online or onto DOOH billboards

Ad Unit Orientation
Should be referred to as either Landscape or Portrait. Companion Ad unit orientation should also be referred to as either Companion Landscape or Companion Portrait

Audience Composition
The demographic, socioeconomic, or behavioural profile of the network's audience that is inclusive of the percentage of the total audience falling in each segment

Audience Impression
Audience Impressions are calculated by taking the won impression and multiplying it by the impression multiplier passed by the exchange. This allows advertisers to understand the potential number of viewers of our OOH campaign and not just the number of times the advertisement was shown

Behavioural Profiles
Profile based on past-observed behaviour, typically within 30-90 days of recency. Behavioural profiles may or may not refer to a profile about unique users

Coverage
The geographic area covered by network installations or can sometimes refer to reach % of a particular audience.

Cost per Minute
Calculation of operating hours and SOV to present cost (price) to deliver one advertiser one minute of screen time.

Cost per Play
The cost (price) to deliver an advertisement play on a screen. Variations in the advertising play length will exist.
Cost per Thousand (CPM) – the cost (price) to deliver 1000 impressions or contacts

Deal ID
A system generated token of numbers and letters used to identify an agreed programmatic deal between the buyer and the publisher/ seller.

DSP:
Demand Side Platform
A system for advertisers to purchase and manage advertising inventories from multiple advertisement sources through a single interface. This is normally done using intelligent software which bids on the inventories using an auction process

Dwell Time
The length of time an individual is in a Screen Exposure Zone which is a location from which the screen is visible and, if appropriate, audible. (Source: MRC Digital Place-Based Audience Measurement Standards Version 1)

Environment
The place and location of the advertising network and screens. Examples include supermarkets, shopping centres, office buildings and other places where consumers can be found

Frequency
The number of times the target audience is typically exposed to content, advertising, or a specific advertisement, in the defined time frame. Frequency represents the average exposure when used in conjunction with cumulative reach estimates

Frequency Capping
There are no person level advertisement exposure limits (frequency capping) possible with DOOH. Screen level frequency capping is possible but keep in mind that the audience is constantly changing throughout the day

Impression Multiplier
The impression multiplier is greater than zero (but can be less than one) value passed on through the bid request by an exchange to signify the Audience Impression count – or potential number of viewers – for that particular opportunity or request. Impression multipliers are measured in a few different ways by vendors

Look-alike Targeting
Targeting audiences that have some number of attributes in common with an audience of interest. For example, an advertiser may target "look-alikes" of past purchasers, i.e. people who share demographic or behavioural characteristics of past purchasers but have not themselves made a purchase

Media Unit
A unit defined by the DOOH network, used to describe the physical device on which a DOOH advertisement unit will play. Common media unit type references in Australia include panels, sites or faces. Most often for digital place-based networks, a media unit is a single screen, however in locations where multiple screens are combined to portray content that is larger than one screen, the entirety of the group of screens may be referred to as a single media unit

Notice
The percentage of respondents who claimed to have noticed a screen

Play Length
The interval of time when a DOOH message is viewable. Also, as message duration in other markets

7 APPENDIX

7.1 Glossary of Terms *continued...*

Psychographic Targeting
Targeting audiences defined by personality, interests, attitudes or mindsets, e.g. Financial Optimists, Environmentally Conscious Consumers. Often driven from offline surveys and stated preferences

Reach
The net (unduplicated) count or percent of the defined universe of the target audience exposed to content, advertising campaign, or a specific advertisement within a defined time frame

Rotations/Faces
A rotation or interval of when a DOOH message is viewable. Most DOOH displays will have multiple advertisers in a rotation

Screen
A device or medium designed to deliver Digital Place-Based, Digital Out-of-Home, and/or Advertising content whether it be video, audio, or both

Share of Voice
Amount of advertising display time received out of the total display time of all advertisers and content displayed. Usually calculated over a 24-hour period or operating hours, whichever is shorter

SS: Supply-side Platform
A technology platform to enable web publishers and digital out-of-home (DOOH) media owners to manage their advertising inventory, fill it with advertisements, and receive revenue

Target Audience
Any audience reflecting the most desired consumer prospects for a product or service, defined by age, sex, race, ethnicity or income, or their combinations for any geographic definition. Expanded targets include purchasing, behavioural, and audience segmentations

Universe
A geographic universe or coverage definition stated on the basis of population amounts is required for Digital Place-Based / Out-of-Home Networks subject to measurement. These may be customized (or limited) based on the specific attributes of the network and the associated Venue Traffic

Source: IAB AU

7.2 Sources

We would like to thank all of the following contributors who have generously provided their time and material.

IAB Australia/OMG Australia/MediaMath
iabaustralia.com.au/resource/programmatic-dooh-q-a/
iab.org.New Zealand/wp-content/uploads/2016/06/IAB-Programmatic-Advertising-Deep-Dive_FINAL.pdf
clearcode.cc/blog/what-is-digital-out-of-home-dooh/
iabaustralia.com.au/the-opportunity-in-digital-out-of-home-programmatic-advertising/
iab.com/wp-content/uploads/2019/09/IAB_2019-09-17_Growing-pDOOH.pdf
youtube.com/watch?v=j4-C-KZmQss
iabaustralia.com.au/guideline/digital-advertising-glossary-of-terms-july-2019/

IAB EU:
iabeurope.eu/wp-content/uploads/2020/11/IAB-Europe-Guide-to-Programmatic-OOH-Nov-2020.pdf

Broadsign – Ben Allman
broadsign.com/blog/digital-out-of-home-and-privacy

Quividi
quividi.com/dooh-audience-impressions-white-paper

VIOOH – Cassandra Cameron

Landmarks – James Fogelberg
landmarksid.com

Calibre – Tim MacMillan

LENS – Robin Arnold