



# Exhibit A

## Two Issues Raised in Twitter's Motion

- Data Scientist document collection
  - Twitter's requests:
    - (1) "collect[] and search[] all locations potentially containing 'communications . . . concerning the Analyses,' . . . Including Email, Slack, Box, and GoogleDocs"
    - (2) "produce any responsive documents from these sources, including CounterAction's preliminary report"
- Privilege/work product assertions
  - Twitter's requests:
    - (3) "produce any documents not subject to a legitimate claim of privilege or work product, while submitting any remaining withheld documents for *in camera* review"

## Defendants Collected from Three Data Scientist Firms

- Data scientist firms:
  - Halo
  - CounterAction
  - Cyabra
- Twitter separately subpoenaed each of the three firms
- CounterAction and Cyabra worked with Defendants' counsel to collect responsive documents
- Halo engaged corporate counsel to handle document collection as of September 1
  - Separately met and conferred with Twitter on September 7

## Data Scientist Productions

- Every collected document was reviewed by a QE attorney
- A team of senior QE attorneys familiar with the data scientist issues oversaw the review
- As of September 21:
  - **CounterAction**: 330 documents produced, 5 documents withheld in full
  - **Cyabra**: 203 documents produced, 7 documents withheld in full
  - **Halo**: 799 documents produced, 6 documents withheld in full
- Productions include both internal communications and communications with QE and Skadden
- Privilege logs served for all three Data Scientist firms

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- Note also the additional Slack production

## Twitter's Requests Have Been Mooted

- **Twitter's requests:**
  - “collect[] and search[] all locations potentially containing ‘communications . . . concerning the Analyses,’ . . . Including Email, Slack, Box, and GoogleDocs”
  - “produce any responsive documents from these sources, including CounterAction’s preliminary report”
- All sources used by Cyabra and CounterAction have been searched and collected
- Twitter negotiated and agreed to the scope of collection from Halo with its independent counsel
- Quinn Emanuel and Skadden have produced or logged responsive Data Scientist communications
- The specific deficiencies identified in Twitter’s motion have been resolved
  - CounterAction’s Slack messages and “preliminary report” have been produced

## The Court Acknowledged that Attorney Communications with the Data Scientists May Be Protected as Work Product

Equally important, Rule 26(b)(3) only protects the work product of the attorney. “At its core, the work-product doctrine shelters the mental processes of the attorney.” The doctrine does not shelter the mental processes of the expert, which are subject to a separate legal analysis and framework discussed above.

...

That said, “as a collaborator in the development of pretrial strategy, a non-testifying expert may become a unique repository of insights into counsel’s opinion work product[.]” And while Plaintiff has demonstrated exceptional circumstances and thus a substantial need for the Analyses, it is possible that communications with counsel concerning the Analyses reflect work product.

## The Court Provided a Process for Work Product Assertions and Challenges

That leaves documents and communications and drafts concerning the Analyses. Rule 26(b)(4)(B) does not apply to those materials. To the extent Defendants claim that any document contains work product, Defendants must identify that document on a privilege log. At that point, Plaintiff can seek production of specific documents. Plaintiff's Second Discovery Motion is therefore granted in part.

8/25/2022 Letter Decision Resolving Plaintiff's Second Discovery Motion at 13-14

## Data Scientist Privilege Assertions

- Initial privilege review conducted by QE attorneys who reviewed every collected document
- A team of senior QE attorneys oversaw the review
- Every documents tagged as privileged in whole or in part was reviewed by one or more senior QE attorneys



## Data Scientist Privilege Assertions

- Nearly all internal Data Scientist documents and communications and documents and communications between the Data Scientists and counsel were produced in full or with redactions
  - Only 18 documents withheld in their entirety across all three Data Scientist firms
- Nearly all redactions were applied to substantive communications *from counsel* reflecting counsel's mental processes and opinions
- Limited redactions were applied to documents or communications from the Data Scientists reflecting or restating counsel's mental processes and opinions

# Exhibit B

## Twitter Sent Signal Messages That We No Longer Have

**From:** Sender Unspecified  
**To:** Marty Korman <+16505214088>;Bret Taylor <>  
**Sent:**  
**Subject:** (No Subject)  
**Attachments:** rsmf.zip

Marty Korman <+16505214088>  
 2022-04-22T06:45:05.0000000Z  
 Maybe ask david again?

Bret Taylor  
 2022-04-22T06:49:07.0000000Z  
 I did as you asked - I think we heard from everyone

Bret Taylor  
 2022-04-22T06:49:16.0000000Z  
 Let me know if any other process points would be useful

Marty Korman <+16505214088>  
 2022-04-22T06:49:31.0000000Z  
 I'm good

Marty Korman <+16505214088>  
 2022-04-22T06:50:38.0000000Z  
 Let's have an exec session

Marty Korman <+16505214088>  
 2022-04-22T06:50:54.0000000Z  
 Lawyers and indep only

Bret Taylor  
 2022-04-22T07:16:23.0000000Z

TWTR\_000152138

Today

Hey, the transaction committee (and the fairly meaningful subset of the board who attended this morning) decided that we would ask Goldman to reach out to Morgan Stanley to ask some clarifying questions about Elon's updated filing.

In addition to getting more information on the financing, it sends an appropriate signal that we are taking the offer seriously, etc.

Parag strongly wants us to do this.

Wanted to make sure you knew and hear if you had any feedback. Available if you want to talk about any of i...

Read More 1m 🕒 🗨️

yes, I would always default to a collaborative approach. Now 🕒

Thanks, Jack. I agree Now 🕒 🗨️

TWTR\_000152139

feedback. Available if you  
 but any of i... 1m 🕒 🗨️

default to a  
 ch. Now 🕒

Thanks, Jack. I agree Now 🕒 🗨️

# Exhibit C

# Plaintiff's Motion to Compel Documents Wrongly Withheld As Privileged

# Twitter and Its Lawyers Manufactured the Spam Review Description After Musk Asked for it

**From:** Parag Agrawal <paraga@twitter.com>  
**To:** Kevin Cope  
**CC:** Vijaya Gadde; Robert Kaiden; Ned Segal; Juliana Hayes; Sean Edgett; Yoel Roth  
**Sent:** 5/20/2022 5:29:49 PM  
**Subject:** Re: Approval requested by Fri 5/20 -- Spam detection methodology (Privileged and Confidential)

I added questions in doc

On Fri, May 20, 2022 at 10:12 AM Kevin Cope <kcope@twitter.com> wrote:  
Thanks - yes, I was just made aware of that. I'll have Reid review as well.  
Kevin

  
**Kevin Cope** | Twitter, Inc.  
1355 Market St, Suite 500 San Francisco, CA 94103  
[kcope@twitter.com](mailto:kcope@twitter.com) | (408) 858-7698

On Fri, May 20, 2022 at 10:06 AM Vijaya Gadde <vijaya@twitter.com> wrote:  
Reviewing now, but I thought Parag wanted Reid to review also?

On Thu, May 19, 2022 at 9:58 PM Robert Kaiden <rkaiden@twitter.com> wrote:  


On Thu, May 19, 2022 at 9:18 PM Ned Segal <nedsegal@twitter.com> wrote:  


On Thu, May 19, 2022 at 8:59 PM Kevin Cope <kcope@twitter.com> wrote:  
**Privileged and Confidential**  
  
Vijaya, Ned and Parag,  
  
Attached [here](#) for your review and approval is the process document outlining the methodology used to estimate false/spam accounts as a % of mDAU that we intend to share with Musk/Morgan Stanley via the Tundra data room.  
  
Please note the document/methodology has been reviewed and confirmed by the individuals listed below. **The document has also been reviewed and approved by external counsel (WSGR/STB).**

**Redacted - Privilege**

Please let us know ASAP if you have any questions or concerns. Otherwise, please respond to this email with your approval to share this document (by Fri, 5/20 if possible).

Thanks!  
Kevin

Reviews

Confidential TWTR\_000146007

On Thu, May 19, 2022 at 8:59 PM Kevin Cope <kcope@twitter.com> wrote:  
**Privileged and Confidential**

Vijaya, Ned and Parag,

Attached [here](#) for your review and approval is the process document outlining the methodology used to estimate false/spam accounts as a % of mDAU that we intend to share with Musk/Morgan Stanley via the Tundra data room.

Please note the document/methodology has been reviewed and confirmed by the individuals listed below. **The document has also been reviewed and approved by external counsel (WSGR/STB).**

**Redacted - Privilege**

Please let us know ASAP if you have any questions or concerns. Otherwise, please respond to this email with your approval to share this document (by Fri, 5/20 if possible).

Thanks!  
Kevin

TWTR\_000146007

## Twitter's Privilege Log Descriptions Fail to Substantiate Privilege

Log No.	From	To	CC	BCC	Custodians All	Custodian	Privilege Type	PrivDescription
18					Kaiden, Robert	Kaiden, Robert	Attorney-Client	Draft Q4 2021 earnings call talking points reflecting legal advice of counsel.
19					Segal, Ned	Segal, Ned	Attorney-Client	Draft shareholder letter dated July 22, 2021 reflecting legal advice of counsel.
49					Kaiden, Robert	Kaiden, Robert	Attorney-Client	Draft Twitter 2021 Form 10-K reflecting legal advice of counsel concerning same.
1004	<a href="#">Google Docs &lt;comments-noreply@docs.google.com&gt;</a>	<a href="mailto:nedsegal@twitter.com">nedsegal@twitter.com</a>			Segal, Ned	Segal, Ned	Attorney-Client	Email containing comments received by in-house counsel to draft Musk communication strategy document reflecting legal advice of in-house counsel regarding the draft press release language and board seat rejection considerations.
1010	<a href="#">Leslie Berland (Google Docs) &lt;comments-noreply@docs.google.com&gt;</a>	<a href="mailto:nedsegal@twitter.com">nedsegal@twitter.com</a>			Segal, Ned	Segal, Ned	Attorney-Client	Email containing comments received by in-house counsel to draft Musk communication strategy document reflecting legal advice of in-house counsel regarding the draft press release language and board seat rejection considerations.
1333	Juianna Hayes; Matt Chronert; Will Smythe; Mani Chabria				Chabria, Manish; Chronert, Matt; Hayes, Julianna		Attorney-Client	Redacted slack chain reflecting legal advice from in-house counsel regarding public statement by Elon Musk.

Twitter Privilege Log, 9/5/22

3

18, 19, 49, 1004, 1010, and 1333

And the fields we should include are Log No, From, To, CC, BCC, Custodians All, Custodian, Privilege Type, and PrivDescription

# The Delta Between What It Says Versus How It Was Logged

## YTD ad engagements and CPE

@Will, Sophy, Keyonna - I've pulled language from the letter but since earnings materials only describe QTD YoY growth, I'd like to get your confirmation they are also applicable for describing YTD growth. We're required to include the YTD explanation in the 10-K to describe ad revenue growth.

In 2021, advertising revenue increased by \$1.30 billion or 40% compared to 2020. The overall increase in advertising revenue reflects an increase in advertiser demand driven by revenue product improvements, strong sales execution, and a broad increase in advertiser demand.

The increase in advertising revenue was attributable to a 7% increase in the number of ad engagements in 2021 offset by a 32% increase in cost per ad engagement compared to 2020. The increase in ad engagements was [due

Confidential

TWTR\_000104334

to our growing audience and increased demand for ads on a year-over-year basis, offset in part by a mix shift toward 15-second video views and lower funnel ad formats which, although they have higher cost per ad engagement, generally have lower engagement rates.] The increase in cost per ad engagement was primarily driven by [like-for-like price increases across most ad formats due to the impact of COVID last year, as well as a mix shift toward 15-second video views and lower funnel ad formats.]

## Forecasting statements

@Mani/Brian - please confirm if any changes to our forecasting statements

COR - We plan to continue to scale the capacity and enhance the capability and reliability of our infrastructure to support mDAU growth and increased activity on our platform. We expect that cost of revenue will increase in absolute dollar amounts and vary as a percentage of revenue over time.

R&D - We plan to continue to invest in key areas of our business to ensure that we have an appropriate level of engineering, product management and design personnel and related resources to support our research and development efforts on key priorities. We expect that research and development expenses will increase in absolute dollar amounts and vary as a percentage of revenue over time.

S&M - We plan to continue to invest in key areas of our business to ensure we have an appropriate level of sales and marketing expenses to execute on our key priorities and objectives. We expect that sales and marketing expenses will increase in absolute dollar amounts and vary as a percentage of revenue over time.

G&A - We plan to continue to invest in general and administrative functions to ensure we have an appropriate level of support for our key objectives. We expect that general and administrative expenses will increase in absolute dollar amounts and vary as a percentage of revenue over time. Capex - We anticipate making capital expenditures in 2022 of approximately \$900 million to \$950 million as we support our existing data centers and infrastructure needs.

Log No.	From	To	CC	Custodians All	Custodian	Privilege Type	PrivDescription
107	Keyonna Smith <keyonnas@twitter.com>	Alyssa Tio <atio@twitter.com>; Tiffany Kao <tkao@twitter.com>; Matt Chronert <mchronert@twitter.com>	Manish Chabria <mani@twitter.com>; Will Smythe <wsmythe@twitter.com>; Sophy Wang <sophyw@twitter.com>; Brian Kirrene <bkirrene@twitter.com>; Nicole Lee <nicolel@twitter.com>	Chabria, Manish; Chronert, Matt; Smythe, Will	Chabria, Manish	Attorney-Client	Redacted email chain containing excerpts from draft 2021 Form 10-K reflecting legal advice of counsel.



## Twitter's Entries Regarding Email Attachments Do Not Suggest They are Privileged

Log No.	BegAttach	Parent DateTime UTC	File Extension	From	To	CC	Custodians All	Custodian	Privilege Type	PrivDescription
1684	20220722_569-000072843	4/20/2022 16:22	pptx				Cope, Kevin	Cope, Kevin	Attorney-Client	Draft 2022 annual meeting slide deck sent to counsel for final review and to facilitate the rendition of legal advice.
1815	20220721_430-000111384	4/22/2022 12:10	pdf				Edgett, Sean; Gadde, Vijaya	Edgett, Sean	Attorney-Client	Draft Project Tundra presentation sent to counsel to facilitate the rendition of legal advice regarding same.

Twitter Privilege Log, 9/5/22

## Stand-alone Documents Do Not Appear To Be Privileged

Log No.	BegAttach	Parent DateTime UTC	File Extension	From	To	CC	Custodians All	Custodian	Privilege Type	PrivDescription
624	20220806_ 602- 000006322	3/21/2022 13:45	xlsx				Edgett, Sean	Edgett, Sean	Attorney-Client	Draft spreadsheet concerning user metrics reflecting legal advice of in-house counsel regarding same.
626	20220806_ 602- 000005937	3/21/2022 13:55	xlsx				Edgett, Sean	Edgett, Sean	Attorney-Client	Draft earnings spreadsheet reflecting legal advice of in-house counsel and provided to facilitate the rendition of legal advice from in-house counsel regarding related update call.
6942	20220722_ 569- 000060853	7/5/2022 16:06	eMail	<a href="#">Slack</a> < <a href="mailto:notification@slack.com">notification@slack.com</a> >	<a href="mailto:kcope@twitter.com">kcope@twitter.com</a>		Cope, Kevin	Cope, Kevin	Attorney-Client; Work Product	Slack message requesting legal advice of counsel regarding access to Project Tundra data room.

Twitter Privilege Log, 9/5/22

# Twitter Has Wrongly Withheld Google Documents

**Summary** - On 17 June API Policy pulled a random sample of 500 V2 standard API apps created over the prior 30 days to review them for compliance with Twitter's [June 17, 2022 V2 App Developer Terms](#). API Policy's analysis shows 254 apps (50.8%) of the sample to be policy-violative. This figure is higher (by ~10%) than previous analyses conducted during a similar analysis run from Q4

## Data Set 1: dr

- **Active apps - 378 apps (75.8%)** in this cohort at the time of the data pull. Upon review, API Policy identified a variety of abuse types (mostly spam and nefarious developers to evade our anti-spam systems). These erased apps were found to have been deleted (validating that deletion is a fact) and/or showed direct ties to known spam details on the letter below)
- **Erased apps - 121 apps (24.2%)** in this cohort at the time of the data pull. API Policy identified nefarious developers to evade our anti-spam systems. These erased apps were found to have been deleted (validating that deletion is a fact) and/or showed direct ties to known spam details on the letter below)
- **Abuse types** - API abuse is generally split into POST-based (putting spam content onto the timeline that make it hard to understand GET usage on individual apps), API Policy's review focus on abuse uncovered here fell into the below long-standing app abuse vectors:
  - Crypto (and to a lesser extent NFT)
  - Automation Rules spam voice (mostly 16.5%)
  - Spam (spam adult content) - 1.6%
  - Round Year Fun (This is a very low percentage of greater detail here) - 50.1%
  - Multi-key abuse, or MKA (White MKA showed that the apps in this cohort increase the reach of their spam content apps = 2X spam, etc.) - 12.2%

**Commented [1]:** @tonar@twitter.com need access please

**Commented [2]:** Just made the doc open to anyone at Twitter with the link. Please LMK if that doesn't do the trick

**Commented [5]:** @sharon@twitter.com what is the percentage of unhealthy accounts created each day? Do we sample that?

**Commented [6]:** I can help answer this on behalf of the Account Health team. :)

We suspend approximately 1M accounts during and immediately after signup each day. (You can correlate that against our total top-of-funnel; not including in this doc given finance sensitivities.) That's in addition to post-signup challenges and enforcements. We evaluate this as part of our mDAU sampling.

If we take this comparison at face value, the 1M accounts we suspend on signup (the product of sustained investment by Health) are akin to what we'd want the Risk Profiler to do. We're all aware of the shortcomings in the RP.

**Commented [7]:** Define RP?

Not sure why you're not seeing these comments in the nature of this review.

**Commented [15]:** Rough stats added. I appreciate they don't quite add up to 100%, but this one was a bit tricky as most apps violated more than one policy. [4]

Amir Shevat replied to a comment in the following document

17 June V2 App Review - Summary Findings

Amir Shevat • 9:53 AM, Jun 29 (PDT)

@sharon@twitter.com what is the percentage of unhealthy accounts created each day? Do we sample that?

Yoel Roth • 3:09 PM, Jun 29 (PDT)

I can help answer this on behalf of the Account Health team. :)

We suspend approximately 1M accounts during and immediately after signup each day. (You can correlate that against our total top-of-funnel; not including in this doc given finance sensitivities.) That's in addition to post-signup challenges and enforcements. We evaluate this as part of our mDAU sampling.

If we take this comparison at face value, the 1M accounts we suspend on signup (the product of sustained investment by Health) are akin to what we'd want the Risk Profiler to do. We're all aware of the shortcomings in the RP.

Amir Shevat • 10:12 PM, Jun 29 (PDT) New

Define RP?

Google LLC, 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA

You have received this email because you are a participant in this thread. Change what Google Docs sends you. You can reply to this email to reply to the discussion.

TWTR\_000142673

TWTR\_000139751

## Twitter Has Wrongly Withheld Google Documents

Log No.	BegAttach	Parent DateTime UTC	File Extension	From	To	CC	Custodians All	Custodian	Privilege Type	PrivDescription
488	20220721_430-000034198	3/1/2022 18:32	eMail	<a href="#">Google Docs</a> <comments - noreply@docs.google.com>	<a href="mailto:mchabria@twitter.com">mchabria@twitter.com</a>		Chabria, Manish	Chabria, Manish	Attorney-Client	Email containing comments received by in-house counsel to draft Quarterly Objective Updates & Summary for Q1 2022.
3713	20220721_430-000182928	5/13/2022 22:05	eMail	<a href="#">Matt Chronert (Google Docs)</a> <comments - noreply@docs.google.com>	<a href="mailto:eanargyros@twitter.com">eanargyros@twitter.com</a>		Anargyros, Emmy	Anargyros, Emmy	Attorney-Client	Email containing portions of draft document regarding the responses to the information requests made in connection with the merger and reflecting legal advice of in-house counsel concerning same.

Twitter Privilege Log, 9/5/22

## Twitter Has Withheld Non-Privileged Exchanges about Information Requests

Log No.	BegAttach	Parent DateTime UTC	File Extension	From	To	CC	Custodians All	Custodian	Privilege Type	PrivDescription
3732	20220722_569-000377404	5/14/2022 0:45	eMail	<a href="#">Yoel Roth (Google Docs)</a> < <a href="mailto:comments-noreply@docs.google.com">comments-noreply@docs.google.com</a> >	<a href="mailto:jhayes@twitter.com">jhayes@twitter.com</a>		Hayes, Julianna	Hayes, Julianna	Attorney-Client	Email containing comments to draft document sent to counsel regarding the responses to the information requests made in connection with the merger and reflecting legal advice of in-house counsel concerning same.
4903	20220805_556-000187542	5/31/2022 19:05	eMail	<a href="#">Roselena Martinez</a> < <a href="mailto:roselenam@twitter.com">roselenam@twitter.com</a> >	<a href="#">Corey Faibish</a> < <a href="mailto:cfaibish@twitter.com">cfaibish@twitter.com</a> >		Faibish, Corey	Faibish, Corey	Attorney-Client; Work Product	Redacted email chain conveying legal advice of counsel regarding recommendation for settlement of litigation with user of suspended account.

Twitter Privilege Log, 9/5/22

# Exhibit D

## Defendants' Fifth Discovery Motion – Motion To Compel Certain Discovery

- 1 Twitter's Production Remains Deficient**

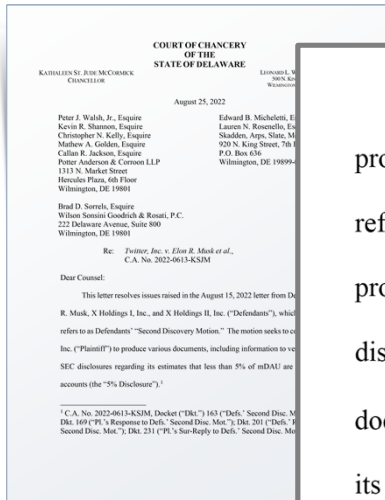
---
- 2 mDAU Documents Should Be Produced**

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- 3 UAM Documents Should Be Produced**

---
- 4 Stickiness Documents Should Be Produced**

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- 5 Luke Simon's Slack Messages Should Be Produced**

## Twitter Agrees to Produce “Broad Categories” Of mDAU Documents and Your Honor Orders It To Produce Documents Reflecting Discussion Of Other Key Metrics



Second, as to Defendants’ mDAU fraud theory, Plaintiff has already agreed to produce ten broad categories of documents addressing mDAU, including documents reflecting Plaintiff’s reliance on mDAU relative to other metrics.<sup>7</sup> Plaintiff is ordered produce a small additional set of data from its review database—documents reflecting discussion of any other key metric identified by Defendants, regardless of whether those documents expressly address mDAU. Although Plaintiff may not withhold documents in its existing review database concerning these other key metrics, Plaintiff need not engage in further collection to satisfy this obligation.

August 25, 2022 Letter Decision, pp. 3-4



## Twitter's Supplemental Productions Did Not Cure Deficiencies

Search Term	Twitter's Hit Report	Documents Produced	Documents Logged	Percent Produced Or Logged
mDAU	18,086	7,960	1,463	52.1%
UAM	5,863	2,056	47	35.9%
Stickiness	986	202	0	20.5%

# Twitter Must Produce mDAU Documents

## Twitter Has Produced Or Logged Approximately Only 50% Of mDAU Hits

Search Term	Twitter's Hit Report	Documents Produced	Documents Logged	Percent Produced Or Logged
mDAU	18,086	7,960	1,463	52.1%
UAM	5,863	2,056	47	35.9%
Stickiness	986	202	0	20.5%

## Twitter Represents mDAU Is The Best Way To Measure Success

Table of Contents

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

FORM 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934  
For the fiscal year ended December 31, 2021

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934  
FOR THE TRANSITION PERIOD FROM \_\_\_\_\_ TO \_\_\_\_\_

Twitter, Inc.

(Exact name of registrant as specified in its charter)

Delaware 01-893279  
State or other jurisdiction of incorporation 33-528687-01

1355 Market Street, Suite 800  
San Francisco, California 94103  
Twitter, Inc.  
800-451-7424

We believe that mDAU, and its related growth, is the best way to measure our success against our objectives and to show the size of our audience and engagement. Average mDAU for a period represents the number of mDAU on each day of such period divided by the number of days for such period. Changes in mDAU are a measure of changes in the size of our daily logged in or otherwise authenticated active total accounts. To calculate the year-over-year change in mDAU, we subtract the average mDAU for the three months ended in the previous year from the average mDAU for the same three months ended in the current year and divide the result by the average mDAU for the three months ended in the previous year. Additionally, our calculation of mDAU is not based on any standardized industry methodology and is not necessarily calculated in the same manner or comparable to similarly titled measures presented by other companies.

Twitter 2021 10-K, pg. 42

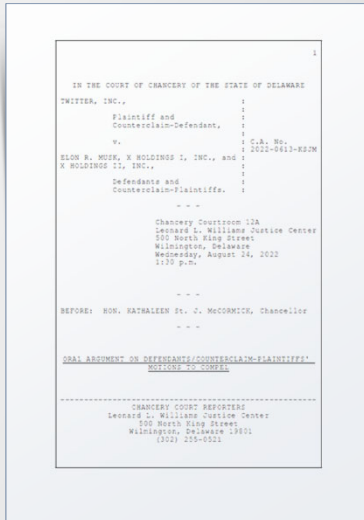
## Twitter Agrees To Produce Numerous Categories of mDAU-Related Documents

**RFP Nos. 12, 59, 60, 61.** In response to Defendants' mDAU-related RFPs, and in an effort to avoid burdening the Court with motion practice, Twitter agreed to produce, among other categories of mDAU-related documents: (1) Board-level documents concerning mDAU; (2) management-level documents concerning mDAU;<sup>2</sup> (3) documents concerning Twitter's belief that mDAU is a key metric for Twitter; (4) documents concerning Twitter's disclosure of its mDAU metric; (5) documents concerning Twitter's spam-estimation process for the fourth quarter of 2021; (6) documents concerning the relationship between mDAU and Twitter's revenue or EBITDA; (7) Twitter's recast of its mDAU on April 28, 2022; (8) Twitter's criteria for determining whether an account is included in mDAU; (9) documents relating to the impact of mDAU on Twitter's performance metrics; and (10) communications with advertisers regarding the importance of mDAU and its impact on performance metrics. Ex. 6.

Twitter August 17 Opp. to MTC, at 10

## Twitter Tells The Court That It Agreed To Produce Documents Relating To Twitter's Belief That mDAU Is A Key Metric

### Twitter's Statement To The Court During August 24 hearing



**“We've agreed to produce documents relating to Twitter's belief that mDAU is a key metric** and documents that discuss – I think this is the most important one for purposes of this theory – documents that discuss the relative importance of other metrics as compared to mDAU. Those are the documents we've agreed to produce in response to Requests 27, 39, and 50.”

Tr. 56:12-19

## Twitter Reveals It Did Not Produce The Documents It Agreed To Produce

### Twitter's August 17 Opposition Brief

RFP Nos. 12, 59, 60, 61. In response to Defendants' mDAU-related RFPs, and in an effort to avoid burdening the Court with motion practice, Twitter agreed to produce, among other categories of mDAU-related documents: (1) Board-level documents concerning mDAU; (2) management-level documents concerning mDAU;<sup>2</sup> (3) documents concerning Twitter's belief that mDAU is a key metric for Twitter; (4) documents concerning Twitter's disclosure of its mDAU metric; (5) documents concerning Twitter's spam-estimation process for the fourth quarter of 2021; (6) documents concerning the relationship between mDAU and Twitter's revenue or EBITDA; (7) Twitter's recast of its mDAU on April 28, 2022; (8) Twitter's criteria for determining whether an account is included in mDAU; (9) documents relating to the impact of mDAU on Twitter's performance metrics; and (10) communications with advertisers regarding the importance of mDAU and its impact on performance metrics. Ex. 6.

Twitter August 17 Opp. to MTC, at 10

### Twitter's September 14 Opposition Brief

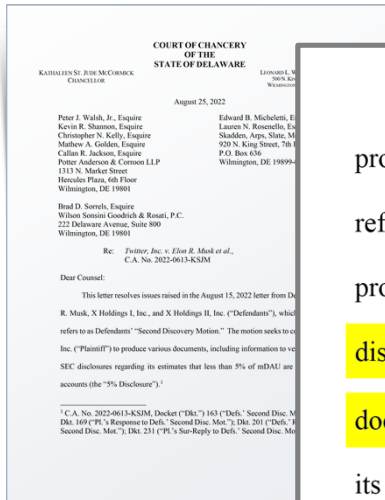
Now, Defendants claim that *any* document hitting on the term must be produced, because they believe such documents *per se* "relate to Twitter's belief that mDAU, and its related growth, is a key metric Twitter uses to measure success . . . ." Mot. 7-8. This argument again assumes that Twitter must produce all documents having anything whatsoever to do with mDAU. But Twitter never agreed to produce all documents relating to its belief that mDAU, and its related growth, is a key metric. Defendants' last-minute attempt to impose yet more burden on Twitter, long after the close of document discovery on the topic, should be denied.

Twitter Sept. 14 Opp. to MTC, at 8

# Twitter Must Produce UAM And Stickiness Documents



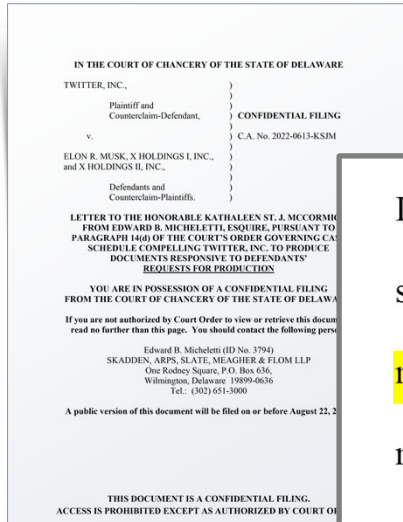
## Your Honor Orders Twitter To Produce Documents Reflecting Discussion Of Other Key Metrics



Second, as to Defendants' mDAU fraud theory, Plaintiff has already agreed to produce ten broad categories of documents addressing mDAU, including documents reflecting Plaintiff's reliance on mDAU relative to other metrics.<sup>7</sup> Plaintiff is ordered produce a small additional set of data from its review database—documents reflecting discussion of any other key metric identified by Defendants, regardless of whether those documents expressly address mDAU. Although Plaintiff may not withhold documents in its existing review database concerning these other key metrics, Plaintiff need not engage in further collection to satisfy this obligation.

August 25, 2022 Letter Decision, pp. 3-4

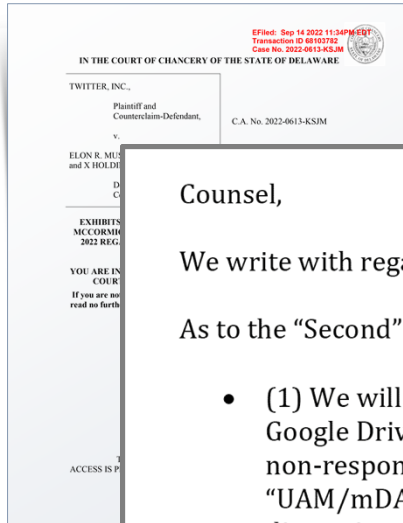
## Defendants Identified UAM As A Key Metric



Internal operational documents, for example, focus on other metrics, such as specific engagement metrics like **User Active Minutes (“UAM”) (total minutes spent on Twitter)**, UAM/mDAU (minutes per mDAU), mDAU/MAU (days per month mDAU come to Twitter), and the engagement of Twitter’s heaviest users. This internal focus makes sense, as,

Defendants’ August 15 MTC, at 3

## Twitter Agreed To Produce Non-Privileged Discussions Of That Metric



Counsel,

We write with regard to the Court's Order on Defendants' Second Discovery Motion.

As to the "Second" issue resolved by the Order, we intend to proceed as follows:

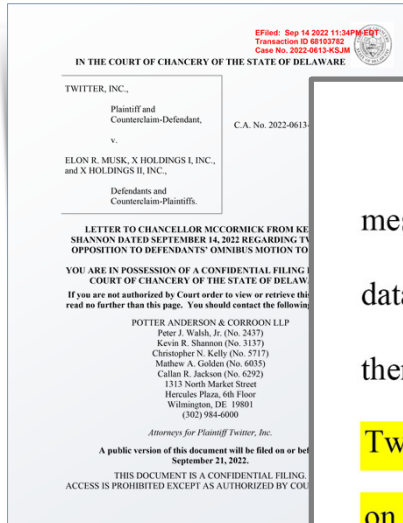
- (1) We will re-review any previously non-responsive documents within the universe of emails and Google Drive documents captured by the Discovery Parameters, to the extent that such previously non-responsive documents hit on the search terms **UAM**, "Ad impressions," "Ad engagements," "UAM/mDAU," or "mDAU/MAU," and we will produce any non-privileged documents that reflect a discussion of one or more of these metrics.

Ex. E to Plaintiff's September 14 Opposition Brief

## Twitter Has Produced Or Logged Approximately Only 1/3 Of UAM Hits

Search Term	Twitter's Hit Report	Documents Produced	Documents Logged	Percent Produced Or Logged
mDAU	18,086	7,960	1,463	52.1%
UAM	5,863	2,056	47	35.9%
Stickiness	986	202	0	20.5%

## Twitter Reveals Its Parsed And Unworkable Reading Of The Court's August 25 Order



Twitter did exactly that. It promptly re-reviewed every single email, text message, and standalone document containing the term “UAM” within its review database to determine whether the document reflected a “discussion” of UAM. It then produced every non-privileged document reflecting a discussion of UAM.

Twitter did not, however, produce documents where UAM was merely a line item on a spreadsheet. Consistent with that approach, Twitter has produced or logged as

Plaintiff's September 14 Opposition Brief at at 5-6

# Documents That "Mention" UAM Are Still Responsive

Table of Contents

1. Cheat Sheet
2. Official P&L
3. Revenue Detail
4. Expenses
5. Headcount
6. Engagement Metrics
7. Audience Meas
8. Advertising Me
9. Close Doc
10. External P&L
11. O&A
12. Consensus

Confidential

## 6. Engagement Metrics

CONFIDENTIAL IN RED												
Daily UAM	Q1'19	Q2'19	Q3'19	Q4'19	Q1'20	Q2'20	Q3'20	Q4'20	Q1'21	Q2'21	Q3'21	Q4'21
Daily User Active Minutes (M)												
United States	935.0	927.5	1,043.2	1,125.8	1,259.0	1,338.6	1,319.9	1,316.7	1,208.5	1,058.2	1,056.6	1,075.3
International	3,540	3,743	4,154	4,374	5,024	5,704	5,430	5,084	5,089	5,063	5,121	5,069
Worldwide	4,475	4,670	5,198	5,500	6,283	7,043	6,750	6,401	6,296	6,121	6,178	6,144
Daily UAM / mDAU	33.5	33.7	35.8	36.2	37.8	37.3	36.0	33.3	31.6	29.8	29.3	28.4
YoY Growth												
United States	16%	14%	26%	33%	35%	44%	27%	17%	-4%	-21%	-20%	-18%
International	21%	19%	27%	37%	42%	52%	31%	16%	1%	-11%	-6%	0%
Worldwide	20%	18%	27%	36%	40%	51%	30%	16%	0%	-13%	-8%	-4%
Daily UAM / mDAU	8%	4%	8%	12%	13%	12%	1%	-8%	-16%	-21%	-19%	-15%
QoQ Growth												
United States	11%	-1%	12%	8%	12%	6%	-1%	0%	-8%	-12%	0%	2%
International	11%	6%	11%	5%	15%	14%	-5%	-6%	0%	-1%	1%	-1%
Worldwide	11%	4%	11%	6%	14%	12%	-4%	-5%	-2%	-3%	1%	-1%
Daily UAM / mDAU	4%	1%	6%	1%	4%	0%	-5%	-8%	-5%	-6%	-2%	-3%

Kaiden Deposition Ex. 13 at 2, 27

## What Level Of “Discussion” Warrants Production?

Q4 2021  
Earnings  
Binder



go/earningsbinder

- Daily UAM is at -4% YoY and -1% QoQ in Q4'21, lower than mDAU YoY (+13%) and QoQ (+3%)
- Daily UAM/mDAU at 28.4, -15% YoY, -3% QoQ. Lowest since 2017Q1.
- US daily UAM -18% YoY, +2% QoQ, International (Ex-US) daily UAM -0% YoY, -1% QoQ.
- US mDAU +2% YoY, +2% QoQ, International (Ex-US) mDAU +15% YoY, +3% QoQ.
- Source: go/earningsdetail

Kaiden Deposition Ex. 13 at 93

## mDAU / MAU Is Stickiness



**Todd Doughty**  
Twitter  
Senior Data  
Science Manager

Q. What is stickiness?

**A. So, "stickiness" is a term that represents the fraction of either DAU or mDAU over the corresponding MAU equivalent.**

Q. So, for example, it's either mDAU over or mMAU or DAU over MAU?

**A. Yes, that's correct.**

Doughty Dep. Tr. 24:2-17

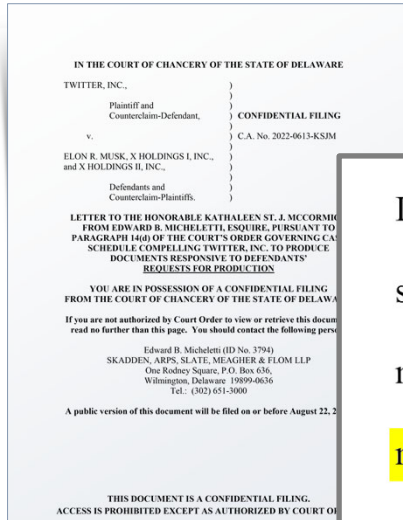
18



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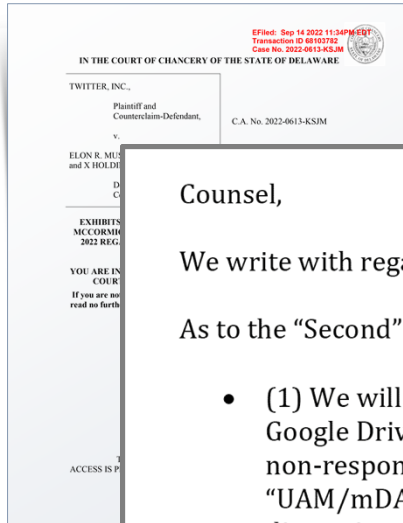
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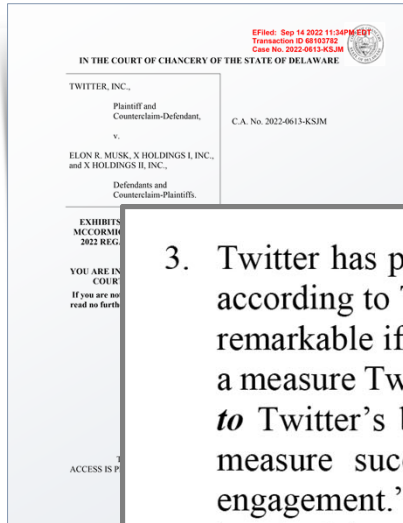
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Ex. E to Plaintiff's September 14 Opposition Brief at 2

## Twitter Previously Agreed To Run Stickiness As A Search Term



3. Twitter has produced only 130 documents hitting on the term “stickiness,” even though, according to Twitter’s hit count, 945 documents hit on that term. Once again, it would be remarkable if more than 85% of the documents hitting on the term “stickiness”—which is a measure Twitter uses to measure the engagement levels of its mDAU—would not “*relate to*” Twitter’s belief that mDAU, and its related growth, is a key metric Twitter uses to measure success against its objectives and to show the size of its audience and engagement.” Please explain the basis on which you have withheld more than eight hundred documents relating to this relevant term.

Ex. A to Defendants’ September 7 MTC at 2

# Documents Regarding Stickiness Necessarily Compare mDAU To Other Metrics

**From:** Neil Dugli <ndugli@twitter.com>  
**To:** Tom Doughty  
**CC:** Parag Agrawal, Maximilian Schmeiser, Kayven Brykovic, Taylor DeLoevon  
**Sent:** 2/20/22 4:05:50 PM  
**Subject:** Re: mDAU modeling risks

thanks. I know we are doing a lot of work to ensure the interventions balance health and reducing friction too, will be curious to learn what you come up with and also encourage you to make sure that if the team is making changes to interventions that you don't extrapolate too much from "old interventions"

On Thu, Feb 3, 2022 at 10:22 AM Tom Doughty <tdoughty@twitter.com> wrote:  
Hi all,

Yes I agree with Max that I also feel more optimistic with my view of the forecast right now especially as we are currently trending above it and our future extrapolation for continuing decreases in engagement for our Engaged users is likely overly pessimistic.

However, I do see one key area of risk that we are looking to better understand to improve our confidence around the impact of health interventions to be signed forecast. One of our highest priority right now is better modeling the onboarding population to take into account the dynamics of our health defenses.


Thanks  
Tom

On Wed, Feb 2, 2022 at 11:47 AM Parag Agrawal <paraga@twitter.com> wrote:

On Wed, Feb 2, 2022 at 10:21 AM Maximilian Schmeiser <mschmeiser@twitter.com> wrote:  
Thanks Parag. Personally, I'm somewhat more confident in the forecast after seeing the cohort analysis of growth factors that indicates we are actually trending positive for more recent (Q1 2021+) cohorts on the key factors. Similarly the correlation between engaged stickiness retention and UAM per engaged user, as well as trending as apparent though in these metrics' trend, suggests less downside risk to the forecast than I'd originally thought.

@Tom Doughty, Feel free to chime in with any of your own observations having seen all the analysis.

Best,  
Max

 Max Schmeiser  
Pronouns (He/Him) | Head of Data Science  
Email: [mschmeiser@twitter.com](mailto:mschmeiser@twitter.com) | Follow me @Max\_Schmeiser

On Wed, Feb 2, 2022 at 10:03 AM Parag Agrawal <paraga@twitter.com> wrote:  
thanks, reviewed the dashboard - this is great and will enable us to see any assumptions that might be trending differently than our forecasts early.

having done this work, do you all as a team feel more or less confident in the forecast?

On Thu, Jan 27, 2022 at 2:08 PM Maximilian Schmeiser <mschmeiser@twitter.com> wrote:

Confidential TWTR\_000162162

Max Schmeiser  
Pronouns (He/Him) | Head of Data Science  
Email: [mschmeiser@twitter.com](mailto:mschmeiser@twitter.com) | Follow me @Max\_Schmeiser

2. Yes, the UAM decline is very concerning, but I do believe that we are including this in the model, at least indirectly. The UAM per mDAU decline is not independent of the trends we are seeing in the growth components. In particular, both the Engaged User Stickiness and the Engaged Retention have been declining in concert with UAM per mDAU for the engaged user segment for the last 18 months. We will provide an overview of this correlation by EOD this Thursday 1/27/2022.

On Tue, Jan 25, 2022 at 9:32 AM Parag Agrawal <[paraga@twitter.com](mailto:paraga@twitter.com)> wrote:

2. UAM. The decline in UAM/mDAU is concerning, and this factor not being included in the model makes me uncomfortable. Finding the right strong correlates from UAM -> some growth factor and vice versa will help strengthen assuming it's statistically informative.

TWTR\_000162162