

AMENDED Exhibit 140

PLAINTIFFS' OMNIBUS OPPOSITION TO DEFENDANTS' MOTIONS FOR SUMMARY JUDGMENT

Case No.: 4:22-md-03047-YGR

MDL No. 3047

In Re: Social Media Adolescent Addiction/Personal Injury Products Liability Litigation



Have we made people addicted to Facebook?

THURSDAY, AUGUST 3, 2017 · READING TIME: 9 MINUTES

This summer, I've been interning on the News Feed Ecosystems project as a Data Science Intern working to answer the following: "Are there people addicted to Facebook and if so, how can we identify and size this population so we can help them?" When my intern manager [REDACTED] first called me to tell me this, the timing seemed comical. Just an hour before, I had deleted the Facebook app from my phone because I thought I was obsessively using Facebook. By deleting the app, I was hoping to reclaim my time and hopefully decrease my internalized instinct to keep opening Facebook. Now, I had less than 12 weeks here would be around figuring out how we can improve the Facebook

Chats

MacBook Pro

EXHIBIT

9

HAUGEN - 9/25/25

Haugen_00016893

This summer, I've been interning on the News Feed Ecosystems project as a Data Science Intern working to answer the following: "Are there people addicted to Facebook and if so, how can we identify and size this population so we can help them?" When my intern manager, [REDACTED] first called me to tell me this, the timing seemed comical. Just an hour before, I had deleted the Facebook app from my phone because I thought I was obsessively using Facebook. By deleting the app, I was hoping to reclaim my time and hopefully decrease my internalized instinct to keep opening Facebook. Now, I had learned, my 12 weeks here would be around figuring out how we can improve the Facebook experience to make sure people like me don't feel the need to just leave Facebook. As I wrap up my internship, here's what I learned this summer in terms of addiction to Facebook.

What does it even mean to be addicted to Facebook?

How can we understand what being addicted to Facebook means? At the start of this project, [REDACTED] Ime Archibong, [REDACTED] and myself talked with Nir Eyal, author of the book *Hooked*. In this book, Nir discusses his extensive research into creating habit-forming products and the Hook model, "a four-step process embedded into the products of many successful companies to subtly encourage customer behavior" to ultimately get users to voluntarily choose to open your app without the need for external advertising.

Companies like ours have implemented the hook model well. However, Nir notes that using apps like ours in some cases leads a user from having a habit of using the app to being addicted. The difference between habit and addiction from Nir's perspective is harm: an addicted user is one who cannot stop using a product to the point where it can cause them harm.

Chats

ook/1766984813316275/?hc_location=ufi

Companies like ours have implemented the hook model well. However, Nir notes that using apps like ours in some cases leads a user from having a habit of using the app to being addicted. The difference between habit and addiction from Nir's perspective is **harm**: an addicted user is one who cannot stop using a product to the point where it can cause them harm.

*“When we feel overly stressed, we seek serenity, perhaps finding relief in sites like Pinterest. When we feel lonely, destinations like Facebook and Twitter provide **instant social connections**”*

While there are many factors that could lead to someone becoming addicted to Facebook, Nir noted that he expected the number of addicted people to be low. I hoped so too, based on his definition. Now let's get into the data behind this project.

Deactivations

While working on studying how to find addicted users, we realized that deactivations data could be quite helpful in this process. To explain how, I'll show the current deactivation flow

Chats

k/1766984813316275/?hc_location=ufi

Deactivations

While working on studying how to find addicted users, we realized that deactivations data could be quite helpful in this process. To explain how, I'll show the current deactivations flow.





REDACTED - SCA

Home







Are you sure you want to deactivate your account?

Deactivating your account will disable your profile and remove your name and photo from most things you've shared on Facebook. Some information may still be visible to others, such as your name in their friends list and messages you sent.

Your 2,100 friends will no longer be able to keep in touch with you.

REDACTED - SCA will miss you

REDACTED - SCA will miss you

REDACTED - SCA will miss you

REDACTED - SCA will miss you

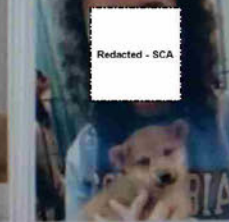
REDACTED - SCA will miss you


Send REDACTED - SCA a Message


Send REDACTED - SCA a Message


Send REDACTED - SCA a Message


Send REDACTED - SCA a Message


Send REDACTED - SCA a Message

Reason for leaving (required)

- ☐ This is temporary. I'll be back.
- ☐ I have another Facebook account.
- ☐ I spend too much time using Facebook.
- ☐ I don't find Facebook useful.
- ☐ I don't feel safe on Facebook.
- ☐ I have a privacy concern.
- ☐ My account was hacked.
- ☐ I get too many emails, invitations, and requests from Facebook.
- ☐ I don't understand how to use Facebook.
- ☐ Other, please explain further:

Please explain further

Email opt out

☐ Opt out of receiving future emails from Facebook

Even after you deactivate, your friends can still invite you to events, tag you in photos, or ask you to join groups. If you opt out, you will NOT receive these email invitations and notifications from your friends.

Delete applications

☐ Permanently delete all applications for which I'm the only developer

Note: You are listed as the only developer for the following Platform applications. You must either delete or transfer ownership of them before deactivating.

Chats

Are you sure you want to deactivate your account?

Deactivating your account will disable your profile and remove your name and photo from most things you've shared on Facebook. Some information may still be visible to others, such as your name in their friends list and messages you sent.

Your 2,100 friends will no longer be able to keep in touch with you.



Send [Redacted - SCA] Message



Send [Redacted - SCA] Message



Send [Redacted - SCA] Message



Send [Redacted - SCA] Message



Send [Redacted - SCA] Message

Reason for leaving (required)

- ☐ This is temporary. I'll be back.
- ☐ I have another Facebook account.
- ☐ I spend too much time using Facebook.
- ☐ I don't find Facebook useful.
- ☐ I don't feel safe on Facebook.
- ☐ I have a privacy concern.
- ☐ My account was hacked.
- ☐ I get too many emails, invitations, and requests from Facebook.
- ☐ I don't understand how to use Facebook.
- ☐ Other, please explain further:

Please explain further

Email opt out ☐ Opt out of receiving future emails from Facebook
 (Even after you deactivate, your friends can still invite you to events, tag you in photos, or ask you to join groups. If you opt out, you will NOT receive these email invitations and notifications from your friends.)

Delete applications ☐ Permanently delete all applications for which I'm the only developer
 Note: You are listed as the only developer for the following Platform applications. You must either delete or transfer ownership of them before deactivating.

Messenger ☐ Opt out of receiving messages on Messenger
 Even if you deactivate your Facebook account, you can still chat on Messenger. Your profile picture will still be visible in your conversations and people will still be able to search for you by name to send you a message. You will continue to appear to friends on Facebook in places where they can message you. If you opt out, you will NOT be able to chat on Messenger or appear to your friends in messaging.

Deactivate Cancel

The flow is fairly aggressive as we try to stop people from leaving Facebook. We list your some of your friends to remind you that they will no longer be able to contact you through the site and more importantly, we require the user to choose a reason for why they're leaving. For my analysis this summer, we focused on two specific categories: people who said they spent too much time on Facebook and those who selected that their leave was temporary and that they planned to return (since many of these people listed similar reasons for deactivating their accounts). This subset provided a good signal for people who could be addicted, who ultimately leave Facebook as a solution. In a given week, approximately **5.9 million people leave Facebook** for just these two reasons alone so clearly we have work to do here if we want to improve the Facebook experience so they do not feel compelled to deactivate their accounts.

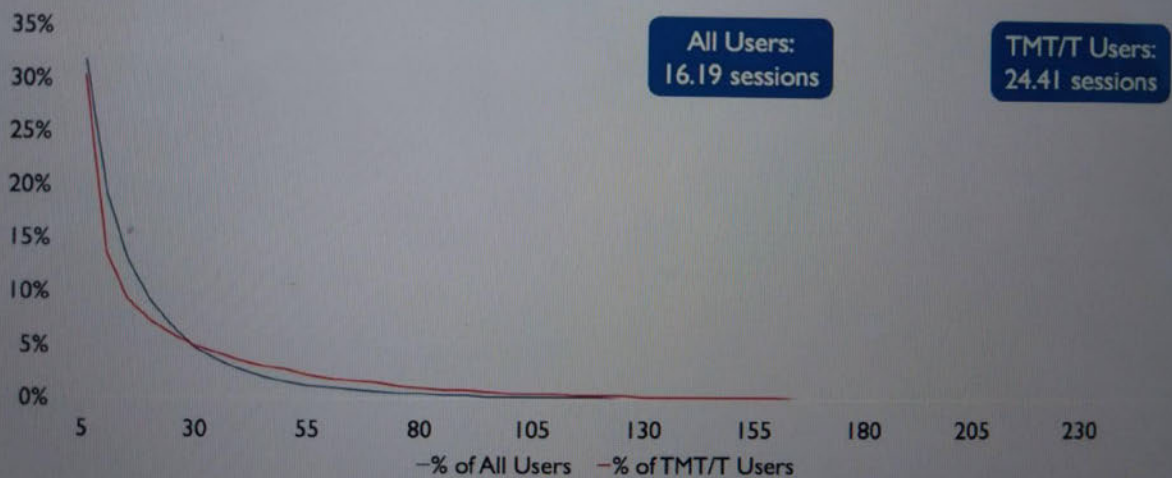
After settling on analyzing these two categories, I dug into these users' metrics and found a few interesting things. For the sake of keeping this note succinct, I'll only include a few of the findings and link to my full deck at the end of this for those interested in more information about what I found.

few interesting things. For the sake of keeping this note succinct, I'll only include a few of the findings and link to my full deck at the end of this for those interested in more information about what I found.

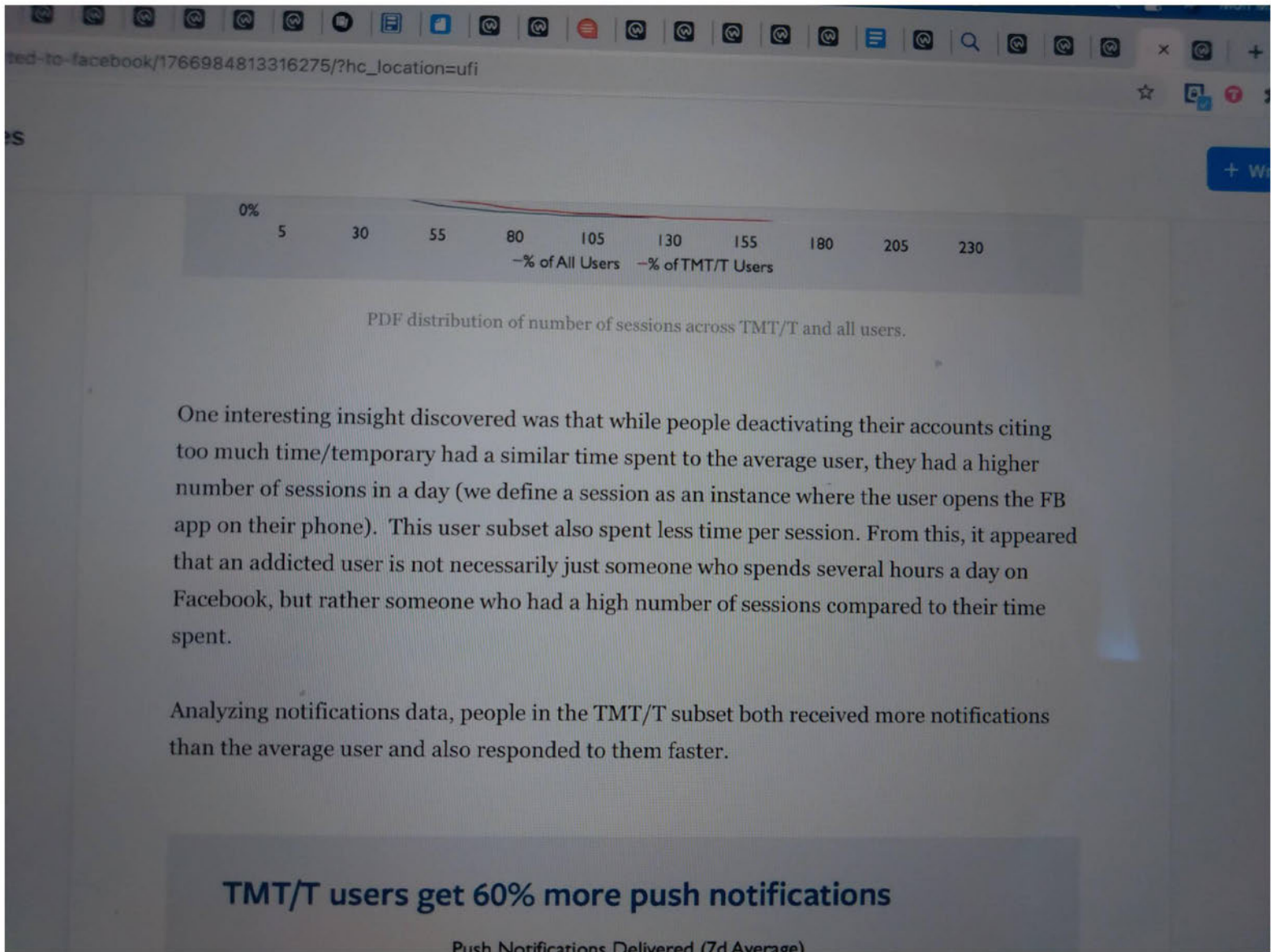
People who cite too much time/temporary have a higher number of sessions

Comparing Sessions of All Users and TMT/T Users (FB Blue)

PDF (bucketed by a person's average sessions – blocks of 5)

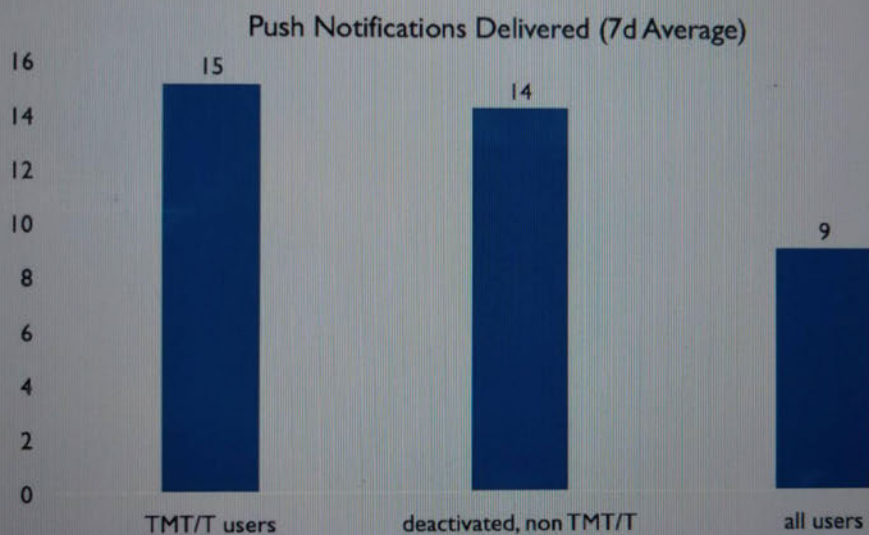


PDF distribution of number of sessions across TMT/T and all users.



Analyzing notifications data, people in the TMT/'T' subset both received more notifications than the average user and also responded to them faster.

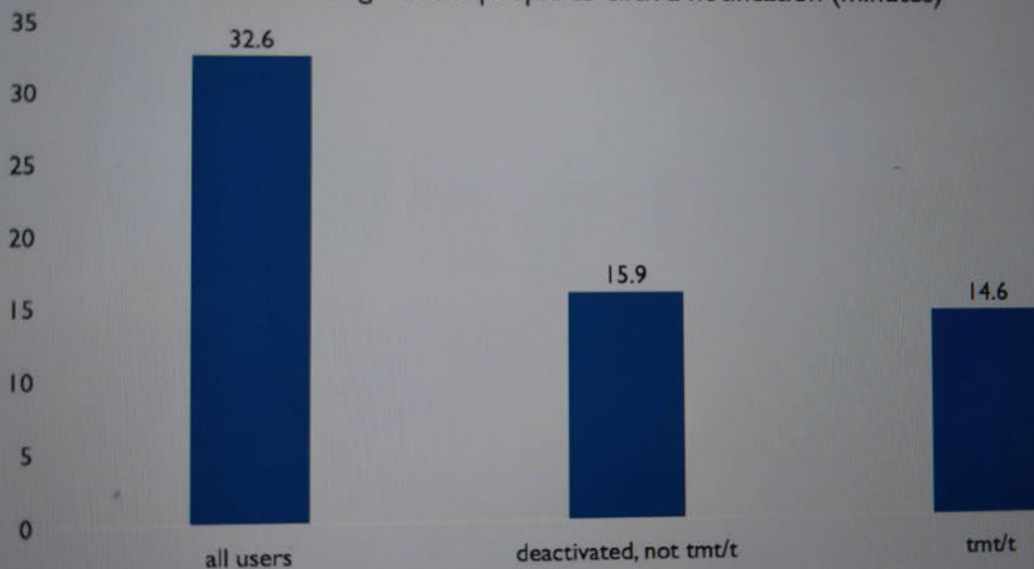
TMT/T users get 60% more push notifications



Visualization of average push notifications a user gets in a day.

TMT/T users also click them sooner

How long it takes people to click a notification (minutes)



Average time it takes a user to click on a delivered push notification.

Building Model

book/1766984813316275/?hc_location=ufi

Average time it takes a user to click on a delivered push notification.

Surveying Users/Building a Model

We wanted to learn about whether people would admit they were addicted to Facebook. To do this, I worked with [REDACTED] and the Communications team to make a branded survey that asked users the following questions:

How often in the last month have you:

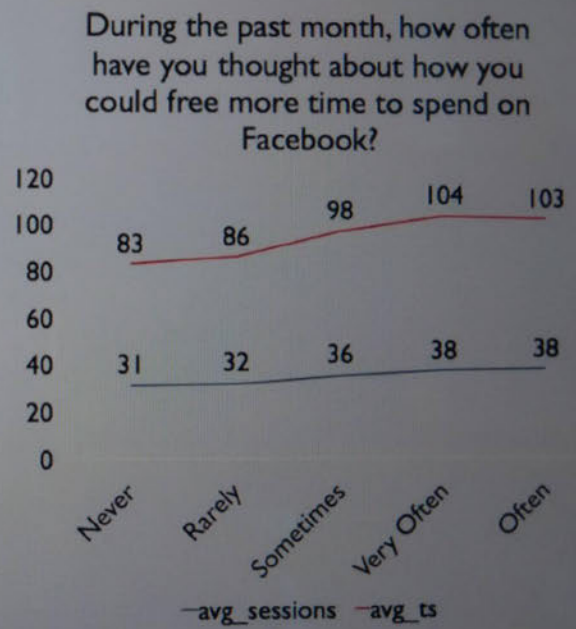
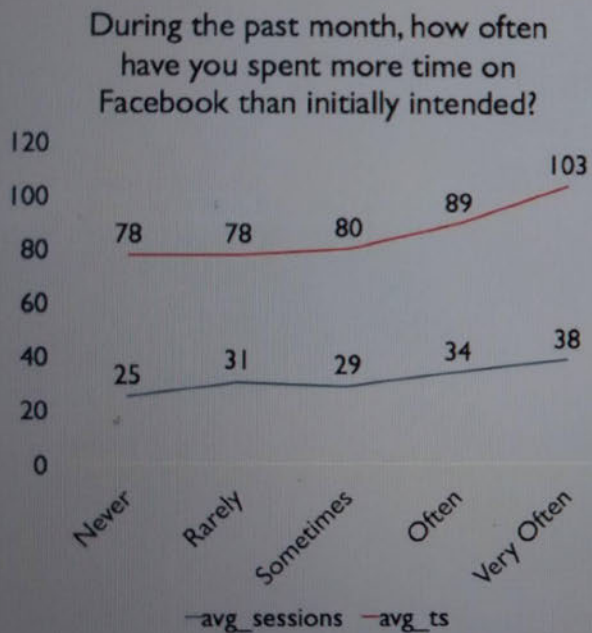
- Spent a lot of time thinking about Facebook or planned use of Facebook? (0.61)
- Thought about how you could free more time to spend on Facebook? (0.42)
- Thought a lot about what has happened on Facebook recently? (0.55)
- Spent more time on Facebook than initially intended? (0.68)
- Felt bad if you, for different reasons, could not log on to Facebook for some time? (0.58)

We left the survey running for a week and focused on Facebook users living in the United States. In that week, we received around 1300 responses. The main insight we found was that for most questions posed to these survey takers, people who marked often/very often had an average higher time spent and number of sessions than someone who said rarely/never (I've excluded notifications data here because while we log them well, in their current form it's hard for us to analyze the data over long periods for all users).

Chats

excluded notifications data here because while we log them well, in their current form it's hard for us to analyze the data over long periods for all users).

There are noticeable trends in people's answers



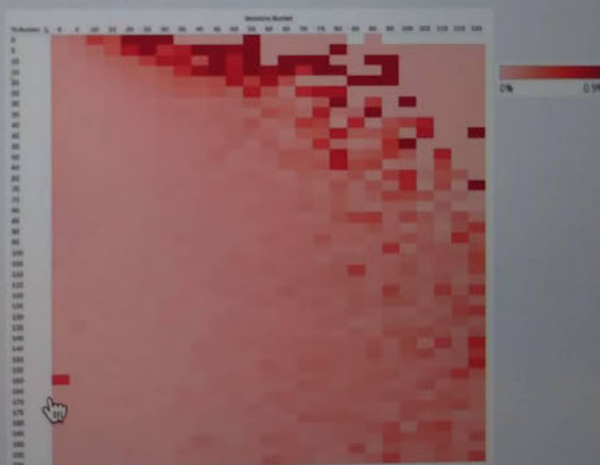
Sample of results from user survey.

Sample of results from user survey.

Next, we built out a model to try and size the number of addicted users. To build this, we used both sessions data and average time spent and looked at the deactivation rate in each bucket.

Preliminary Model Results

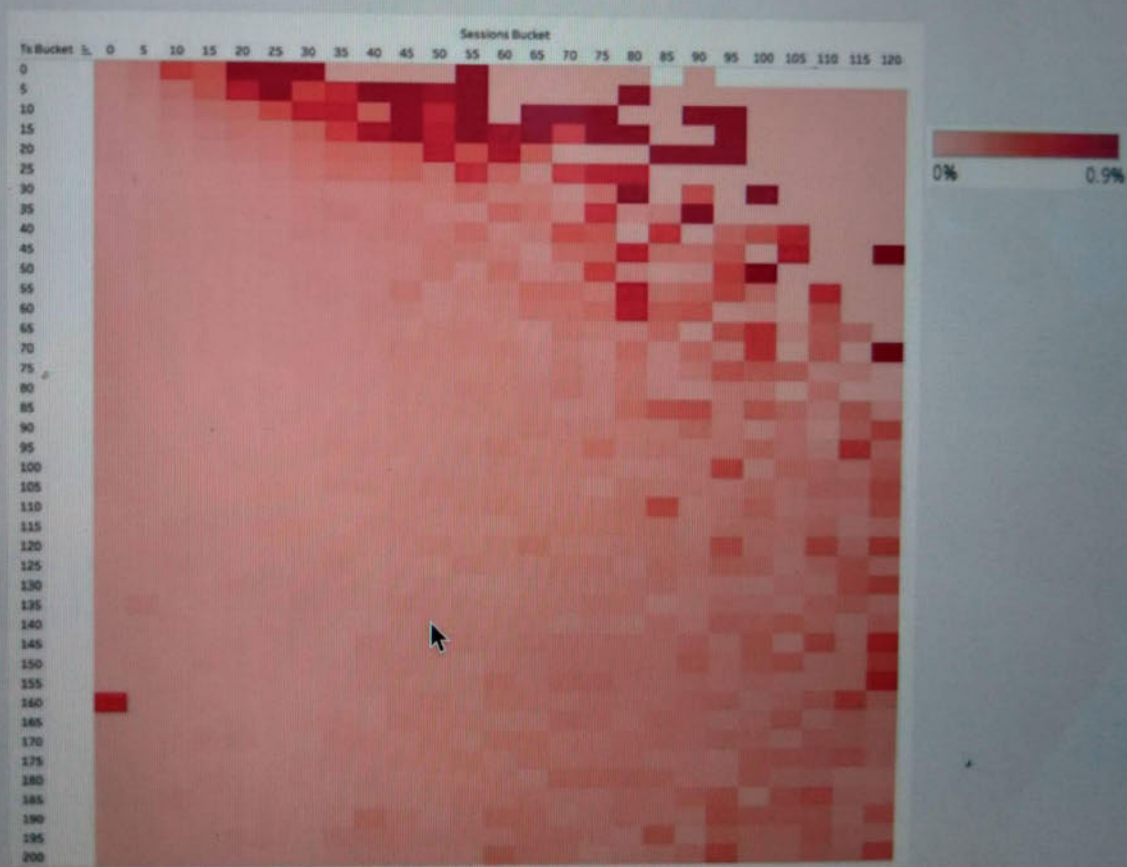
TMT/T Deactivation Rate



A model of mapping addicted users. The darker the area, the more deactivated TMT/T users that were in that bucket. Note: This is only U.S. users.

Preliminary Model Results

TMT/T Deactivation Rate

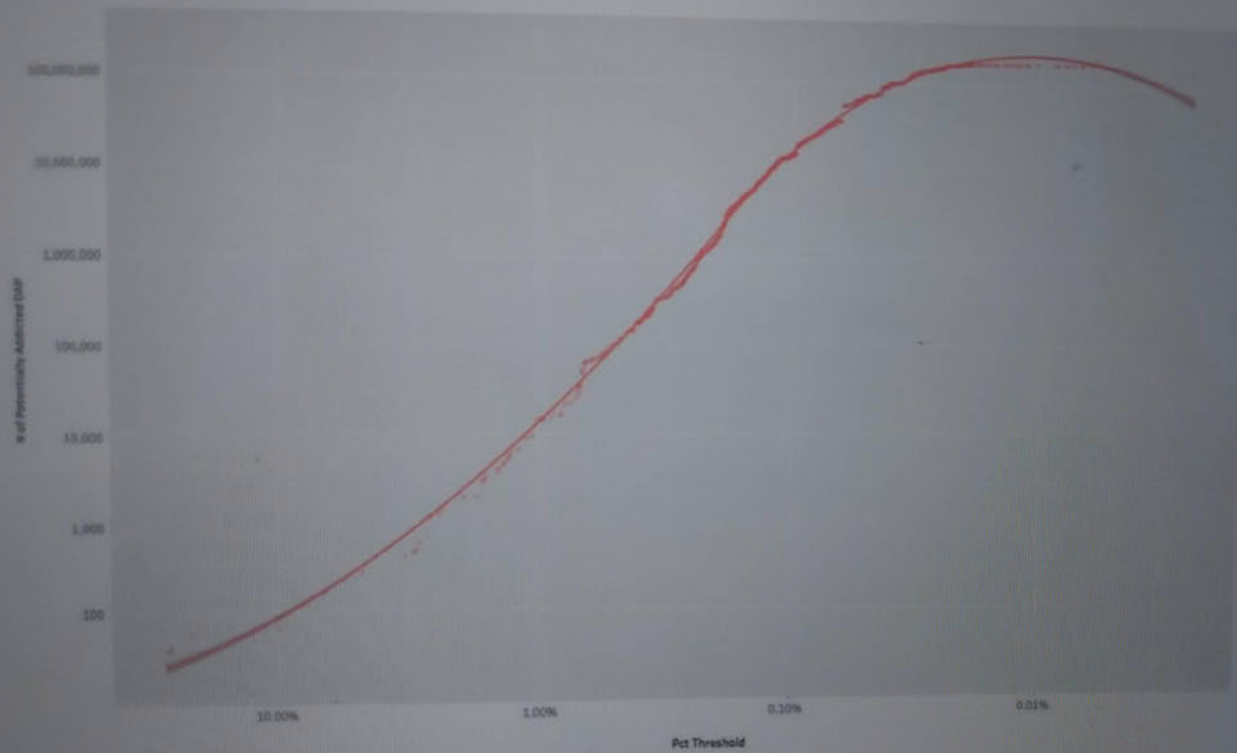


facebook/1766984813316275/?hc_location=ufi

A model of mapping addicted users. The darker the area, the more deactivated TMT/T users that were in that bucket. Note: This is only U.S. users.

From here, we plotted out the number of people that could be considered addicted based on the threshold we set. This threshold is based on the TMT/T deactivated users as a percentage of total DAP. At a minimum threshold of 1%, that would be ~15k people we could call addicted, but if we loosen the threshold to 0.2%, that's nearly 200k people.

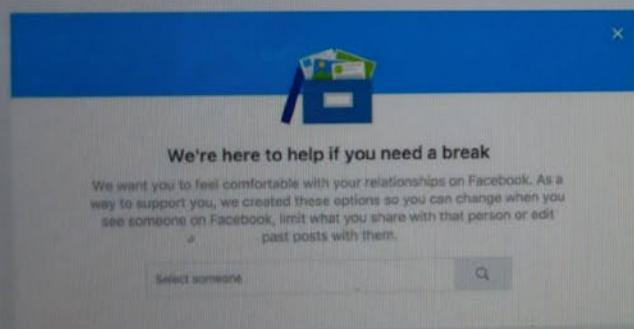
100,000,000



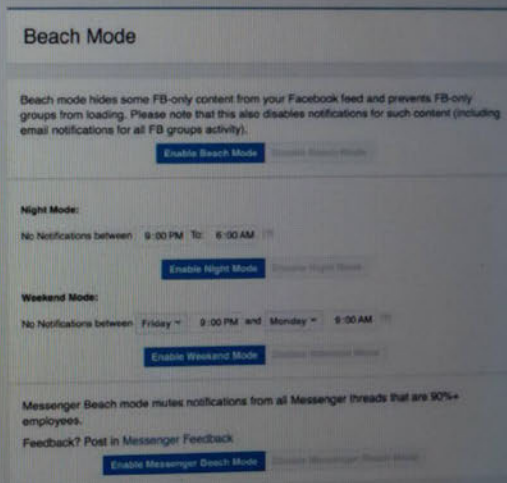
A plot with approximate line of best fit of how many users could be considered addicted based on threshold set. Note: the trend line does not fit well after 0.02%.

How do we help these users?

New tools to help people not obsessively check their account

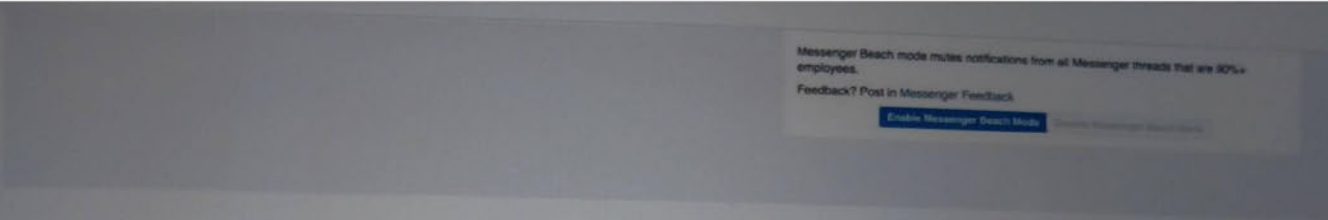


+



Hand icon

Screenshot of Take a Break Tool and Beach Mode



Messenger Beach mode mutes notifications from all Messenger threads that are 90%+ employees.
Feedback? Post in Messenger Feedback
[Enable Messenger Beach Mode](#)

Screenshot of Take a Break Tool and Beach Mode

In order to help these users, we can create new tools that don't stop them from using Facebook, but help them feel more in control of when they choose to visit the app. To this end, we could leverage the easy to navigate structure of the [Take a Break](#) tool by the Protect and Care team. The tool, designed for breakups, makes it easy for someone to adjust their settings to see less of a person in their feed, photos, or messages. Rather than digging through the settings tab, this tool makes it easier to find the relevant settings a person may want to change.

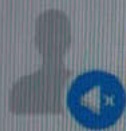


We're here to help if you need a break

Here are some changes we think might be helpful so you can take a break and stay friends on Facebook.

Don't worry, we won't notify [REDACTED] about changes you make.

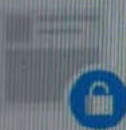
[Take a break from someone else.](#)



See Less of [REDACTED]

See [REDACTED] on Facebook only if you visit his profile.

[See Options](#)



Limit What [REDACTED] Will See

Update your privacy settings so he won't see your posts.

[See Options](#)



Edit Who Can See Past Posts

Change who can see past posts of you and [REDACTED]

[See Options](#)

Want to make more changes?

Visit the [Help Center](#) to see more options.

DONE

Take a Break tool by the Protect and Care team.

Chats

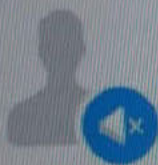


We're here to help if you need a break

Here are some changes we think might be helpful so you can take a break and stay friends on Facebook.

Don't worry, we won't notify [REDACTED] about changes you make.

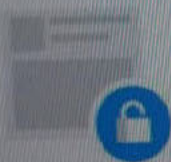
[Take a break from someone else.](#)



See Less of [REDACTED]

See [REDACTED] on Facebook only if you visit his profile.

[See Options](#)



Limit What [REDACTED] Will See

Update your privacy settings so he won't see your posts.

[See Options](#)



Edit Who Can See Past Posts

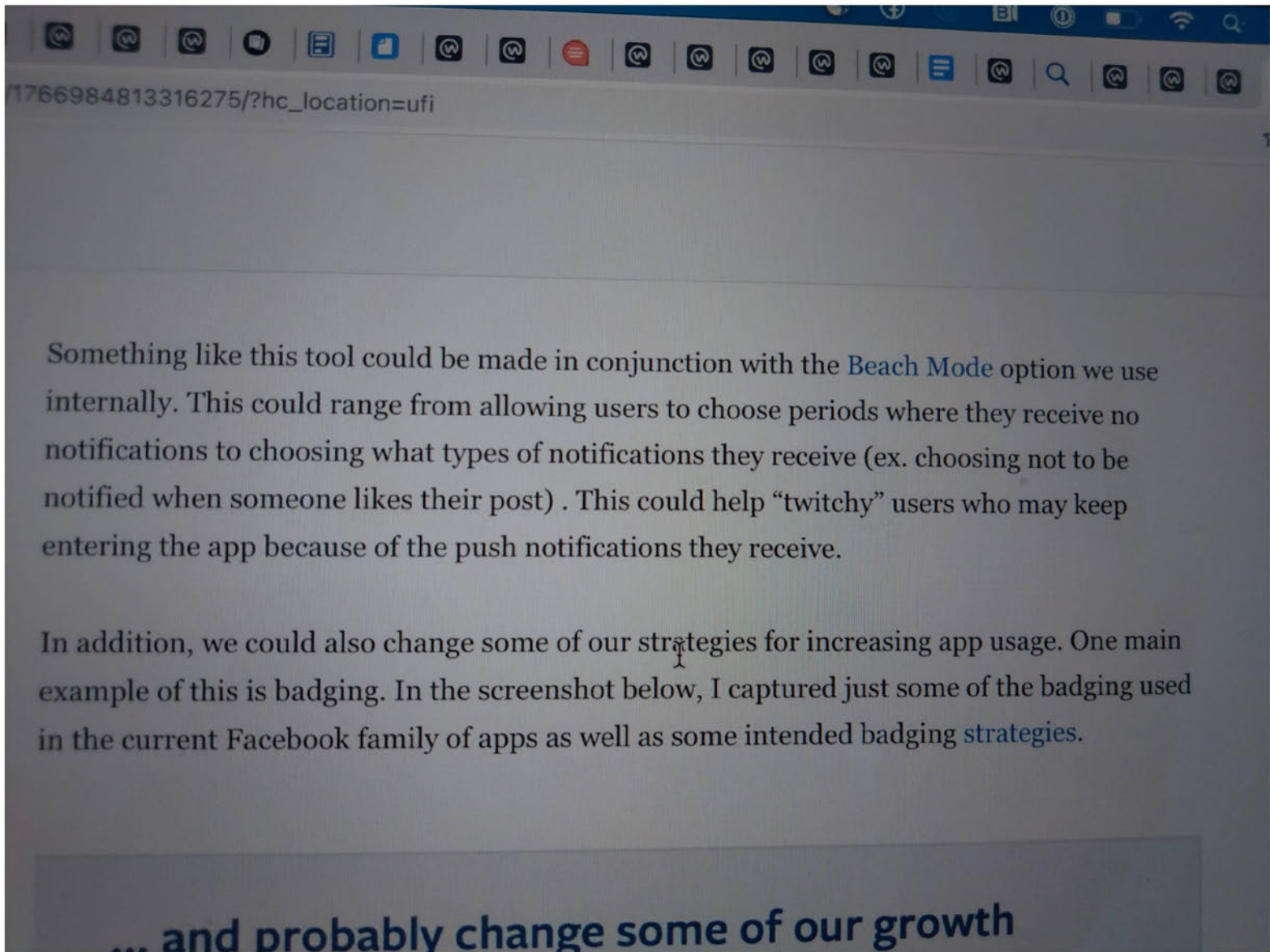
Change who can see past posts of you and [REDACTED]

[See Options](#)

Want to make more changes?

Visit the [Help Center](#) to see more options.

DONE



... and probably change some of our growth “hacks”

“What shared responsibilities do we so-called growth hackers ... have to our users, to our future generations, and to ourselves?”

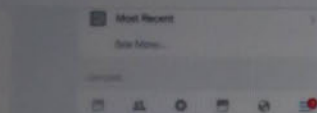
Bonfire

we can be very aggressive with our notifications to create a habit

Chat

and

Good morning, I hope you



Screenshots of badging added to different parts of the Facebook family of apps.

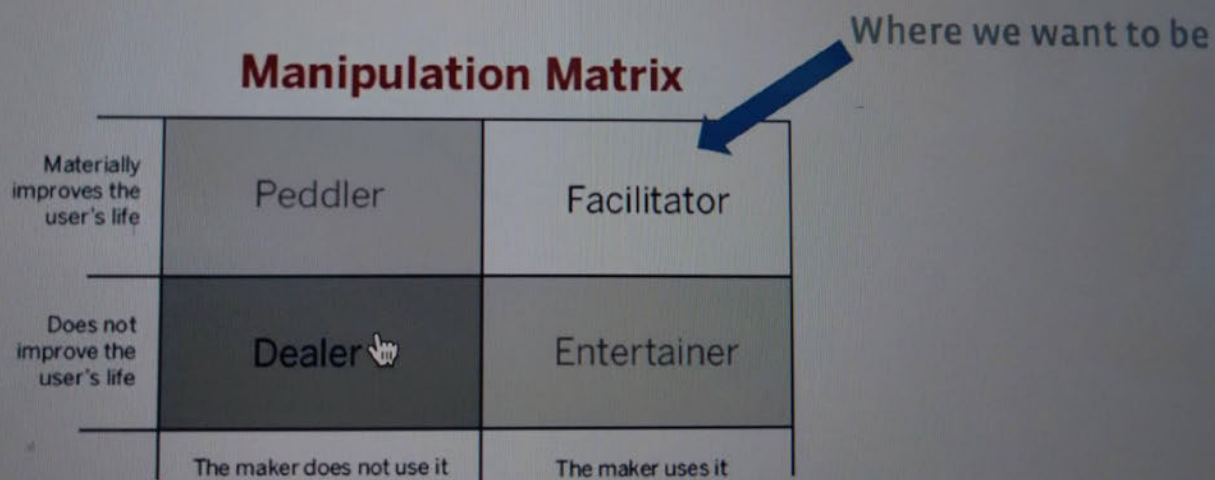
Now this is not to say that we should never notify users. But, if people are addicted to our products, we do have an obligation to help them. Rather than inundating users with excessive notifications, we should focus on creating experiences that users to willingly want to come back. As we work towards creating meaningful connections on Facebook, **we should focus more on quality time spent than just time spent.**

Where do we go from here?

Which quadrant are we targeting?

Where do we go from here?

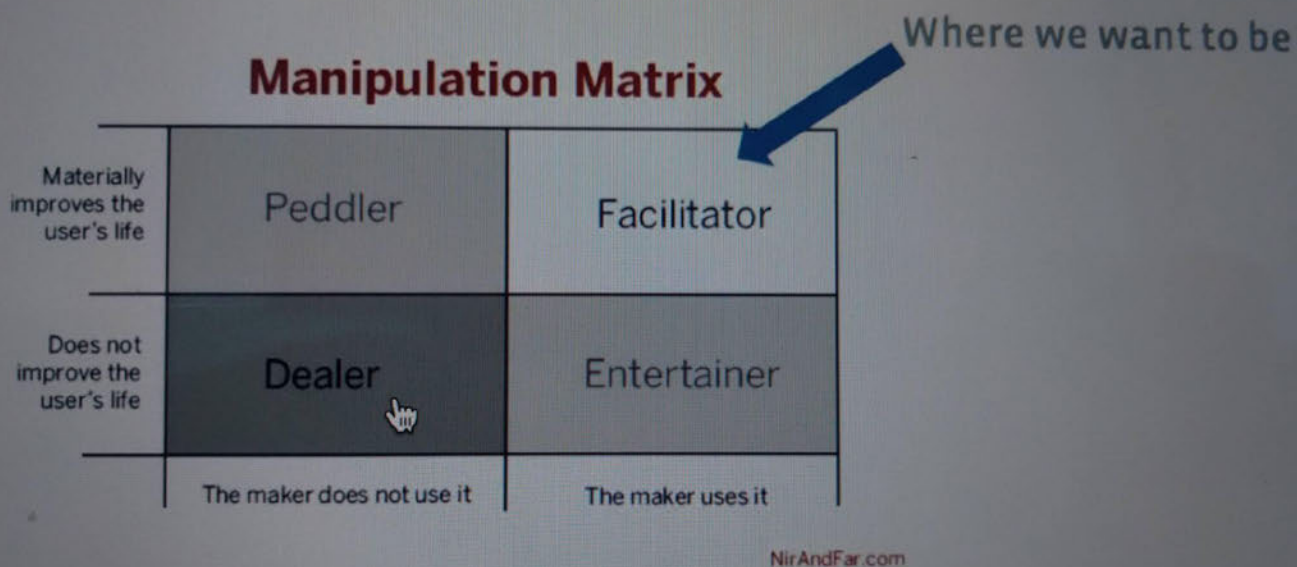
Which quadrant are we targeting?



NirAndFar.com

The manipulation matrix (from Nir's blog).

Which quadrant are we targeting?



The manipulation matrix (from Nir's blog).

The maker does not use it	The maker uses it

NirAndFar.com

The manipulation matrix (from Nir's blog).

I'll end this note with the Manipulation Matrix that Nir discusses in his book. The matrix has four sections: each defining the type of product you can create based on whether we as Facebook employees would actually use it and whether it helps people's lives. As Mark said when he [announced](#) the company's new mission statement, "we have a unique opportunity and platform to bring people closer together, and now more than ever, we each have a responsibility to make the most of our opportunity to do this." As we work to build community on Facebook, it is important that as we create new products and tools we continue to build things that we both use and know help people's lives. While boosting metrics with products that are not helping people's lives can work in the short term, in the long term we need to focus on making products that align with our company's mission and make sure people feel in control of their time spent on Facebook.

52

9 Comments 2 Shares

Share

Save

 Link to Powerpoint deck: <https://www.facebook.com/media/set/...>

1

3y

This is awesome!

1

3y

great job [redacted] i'm really glad this was your project this summer and it was great working with you!

for posterity, i'll add here that we had some good conversations as to whether we could actually label these people "addicted" which is a pretty specific term. for instance, the survey items that you used were the most tame ones from an existing scale so may not really be picking up on "addicting" but likely picking up on patterns of use that we wouldn't want to be encouraging. I think all of your research and analyses suggest we should continue to dig deeper here, so thanks for all of your hard work!

cc: Moira, [redacted] [redacted]

6

3y

Moira Burke Agree that this is really interesting and something that a lot of people here care about! Great work, [redacted] point is good, as well, that "addicted" has clinical implications (including that the addiction interferes with other aspects of your life), but that in general, we care about providing people with meaningful, high-quality social connections and not just a junk food time-sink.

5

3y

It was great working with you as well [redacted] We should definitely look into other ways to define these users. While I think addicted is the easiest word, I think we could have a clearer word for these users because our data confines to how they act on Facebook and we don't know if they're suffering from other non-online addictions. One good adjective I've been thinking about is "twitchy" since it seems these users just feel jumpy and keep coming into the app.

3y

3y

This is awesome, nice job [redacted] To your point around allowing users to choose periods where they receive no notifications/choosing what types of notifications they may want to receive, I saw that Google announced "Inbox Pause" today which allows people to adjust their settings so emails come in at a designated schedule and cadence. <http://www.boomeranggmail.com/inboxpause/?ref=producthunt>. Is this similar to what you had in mind for notifications?

Get back against email overto

Chats

MacBook Pro

ok/1766984813316275/?hc_location=ufi

to be encouraging. I think all of your research and analyses suggest we should continue to dig deeper here, so thanks for all of your hard work!

cc: Moira, [REDACTED]

3y

Moira Burke Agree that this is really interesting and something that a lot of people here care about! Great work, [REDACTED]'s point is good, as well, that "addicted" has clinical implications (including that the addiction interferes with other aspects of your life), but that in general, we care about providing people with meaningful, high-quality social connections and not just a junk food time-sink.

3y

[REDACTED] It was great working with you as well [REDACTED] We should definitely look into other ways to define these users. While I think addicted is the easiest word, I think we could have a clearer word for these users because our data confines to how they act on Facebook and we don't know if they're suffering from other non-online addictions. One good adjective I've been thinking about is "twitchy" since it seems these users just feel jumpy and keep coming into the app.

3y

3y

[REDACTED] This is awesome, nice job [REDACTED] To your point around allowing users to choose periods where they receive no notifications/choosing what types of notifications they may want to receive, I saw that Google announced "Inbox Pause" today which allows people to adjust their settings so emails come in at a designated schedule and cadence. <http://www.boomeranggmail.com/inboxpause/?ref=producthunt>. Is this similar to what you had in mind for notifications?

Get back against email overload



BOOMERANGGMAIL.COM

Inbox Pause: Eliminate Interruptions, Stop Stress, and Feel Free

3y

[REDACTED] yeah, this is a cool idea! This is by Baydin (but their main products run as gmail extensions). I think this is a good start followed by general ways to filter out specific notification types. For example, choosing to not get notified if someone liked your status (since you can't really do anything because of it).

3y Edited

[REDACTED] Makes sense, that's an interesting idea!

3y

Chats

MacBook Pro

Haugen_00016920

Confidential