Into the Black Box: Twitter Edition

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Introduction

Since the 2016 Cambridge Analytica Scandal, users are becoming more aware that their online interactions have consequences beyond what they originally thought. Earlier, the consequences that users focused on were primarily their image to the community and potential employers. Now, consequences can shape or influence users' free thinking. Social media sites seem to be black boxes where very few people completely understand the extent of how much data is collected and harvested about a user. Twitter is generally considered to be the most transparent about the information that it collects since it is the most researcher-friendly.

However, even with Twitter, users are not aware of just how much information it collects about the user, apart from the voluntary information given by the user in tweets and interactions with the page. This paper hopes to analyze the extent to which Twitter collects data about a person beyond their voluntary information. We consider voluntary information to be what the user has tweeted, liked, retweeted, or any other actions on the page along with the information they have chosen to provide to Twitter such as their name, birthdate, etc.

Related Work

Existing research related to Twitter often involves mining and analyzing large scale twitter datasets for a variety of purposes, and less often deals with observational case studies. There are a few studies however that address issues with using publicly available data on Twitter, specifically for research studies. Van Dijck (2013) explains that many social media companies use the algorithm to predict personal characteristics and viewpoints that are not explicitly volunteered to Twitter. The data being used in these algorithms is not all 'naturally occuring', and curated by AI agents and often tweaked by Twitter to improve customer experience (Williams).

Many researchers have tackled the issue of creating interest profiles of users based on tweets, location data, and other external sources. Wagner et al. 2012 utilized many aspects of user-related information (tweets, bio, retweets, lists) and found that lists and bio content could best model topical interests of a user. Early works from (Chen et al. 2010) and (Weng et al. 2010) tend to rely more heavily on statistical learning from text tweets, but

suffer from the fact that tweets in general can be short and lack grammatical structure. We believe our study could be relevant in identifying the extent to which user profiling methods Twitter uses affect the user experience, specifically across different browsers.

With many questions on ethical use of twitter data and the complexity of how Twitter and other researchers use our public tweets and personal data, we are motivated to uncover some details on how users data is curated and ultimately used, particularly in the context of advertising.

Methods

On October 24, 2019, our group of 3 people created 2 email accounts each in order to create 6 Twitter accounts. We had 3 researchers each create 2 accounts, one on Firefox and one on Incognito. Researcher 1 created the accounts @DaBaby08208134 on Firefox and @JimboBob62071018 on Chrome Incognito. Researcher 2 created the accounts @Carlsomething on Firefox and @something_carl on Chrome Incognito. Researcher 3 created the accounts @Som93656881 on Firefox, and @Som27916456 on Chrome Incognito. These @ tags were automatically generated from Twitter after providing our handles: Carlsomething55 (twice), Da Baby, Jimbo Bob, and Som (twice).

When each account was created we decided to act on a persona. We agreed the account would emulate a University of Michigan college student who is politically and physically active. There was an emphasis on politics and fitness while tweeting, following, and liking during our interactions on the accounts.

We also created all accounts completely identical. This means that we created the accounts at the same time and location. During the account creation process we followed the same follower suggestions, and added the same interests. Once the account was created, we posted at the same time, inputting the exact same information (except for our usernames), and maintaining the same interactivity with the account. Throughout the process, we did our best to minimize extraneous clicks or searches, and did not use the account for anything other than this experiment.

To maintain strict consistency, we created a Google doc with our tweets for each day, which was used as a platform to copy and paste each tweet and ensure quality control of the capitalization, spacing, and special characters of each tweet between researchers. We proceeded in this identical fashion for the entirety of the research period.

Results

Considering all six of our accounts had a 100 percent similarity on ad preferences and interests at the start of the experiment, the results contrasted the null hypothesis that the accounts would remain 100 percent similar by maintaining the interactions. Once the interaction phase was over, we started our data retrieval phase, in which we observed the visual layout of each account, from tweet order, tweets at the top of our feed, our ad locations on the page, the advertisements shown, ‘who

to follow' suggestions, and interest data that we pulled from the accounts.

During the interaction phase, each of us took daily observations on what tweets we were seeing, ad locations, and follow the suggestions. When we first opened our accounts, we observed that the 'who to follow' suggestions were mostly similar. They were mostly influenced by our locations (Michigan sports writers, UM affiliated accounts) and likely by what accounts people near us followed. We were able to track this geo-location based recommendation throughout our experiment, as we noticed starker difference in recommendation when one of our researchers logged on from a different region of the country.

Around the fourth day we started to notice some differences in the algorithms of eachesearcher's individual accounts (Incognito vs Firefox). We also noticed even bigger differences on the accounts between different researchers, but the difference was mostly the order of the content feed, not the actual content itself.

Near the end of our study we noticed that the similarities between our individual accounts (Incognito vs Firefox) were high, however, the similarities when comparing our individual accounts across researchers had a greater difference. In order to quantify similarity between accounts for observation, we decided to pull out ad interests that Twitter had made for us.

When our observation phase was over we started by comparing the interests from our individual incognito and firefox accounts. To quantify similarity, we used the following metric:

Similarity correlation =

# of similar interests / (# similar interests + # different interests)

Each calculation was done pairwise, comparing two lists of interests two each other.

Researcher 1 who used the tags @DaBaby08208134 on Firefox and @JimboBo62071018 had a similarity correlation of interests at a value of .707. Researcher 2 who used the tags @Carlsomething on Firefox and @something_carl on incognito had a similarity correlation of interests at a value of .605. Researcher 3 who used the tags @@Som93656881 on Firefox and @Som27916456 on incognito had a similarity correlation of interests at a value of .658.

Once we got these results, we decided to compare the interest similarity between accounts sharing the same browser, Firefox and incognito, to see if they had any closer correlation. Firefox had a similarity correlation of interests at a value of .395 between the three accounts, while Incognito had a similarity correlation of interests at a value of .363. These values were fairly comparable all things considered.

After this, we performed a comparison between all accounts, determining an overall similarity correlation. The overall similarity correlation between all six accounts came out to a value of .261. This value

is much lower than the 100 percent correlation we started with only 10 days earlier.

On top of the differences in our interest data we also observed that the overall layout of both accounts from a single researcher seemed to be very similar. For example, researcher 2 had almost identical layouts when it came to the tweet order, ads shown, and “who to follow” suggestions between Firefox and Chrome Incognito. However, this phenomenon was not observed between 2 accounts of different researchers. When compared to another researcher, the accounts had different tweet orders, ads shown, and “who to follow” suggestions.

We did, after day 10, notice a few anomalies in our interest data. For example, researcher 2 had an interest in video games on his incognito account, that was not shared with any other account. We note that this could have been caused by the researcher’s interest in video games showcased on other browsers or real accounts. There were quite a few times where our researchers were pegged with interests that they themselves have a proclivity towards, but other researchers did not. This seems to suggest that data was pulled from sources other than our individual accounts and account activity.

Conclusion

After the results of the research, we realized that a portion of our data is tracked and determined based on the geolocation in which we log in to the platform. When we started, we all logged in at the same time and place. However, throughout the experiment, we logged in at the same time but different locations. If we were to replicate this experiment again, it would be suggested that each account should log on at not only the same time, but should also log on in the same location with the other accounts. This would allow for less variation in the possible data that the platform is taking in.

On top of this, the differences in browsers were large themselves. It would be advised, if attempted again, to make 6 accounts all using the same browser, to better determine where interest data could be pulled from. Since each data had a unique interests pulled, such as Firefox giving each of its 3 accounts Travel, while, incognito gave accounts Travel: New England, Travel: Boston, and Travel: North America. This specificity was not observed while using the Firefox browser.

It could also be beneficial to utilize a web browser such as Tor, which would allow anonymity of ones IP address to further prevent data leaks to each perspective account. Since social media platforms have access to ones IP address, the browser hardly matters if that same computer is used to access another social media account. As it seems, Twitter did not treat each account on the same device as the same, but it did tend to share more correlation between a single researches two accounts, than between any two researchers. This leads us to believe that Twitter is possibly pulling data from our individual devices rather than solely the interactions with the accounts.

It is also worth mentioning, that researcher 3 had an overall different

Twitter layout. After some research we believe that she was potentially part of a beta test for one of her accounts. We have no definitive evidence that this was the case, so it is hard to determine how this might have skewed our overall results.

The last thing of note would be in the interest data. Each account had many different interests, but some accounts had duplicates of each interest. For example, each account had travel as an interest, but some accounts ended with travel in their interest page twice, and on rare occasions a third duplicate of an interest would occur. There was no concrete evidence we could find to explain this phenomenon, so it would be wise in future attempts to recreate this experiment to understand this phenomenon at a deeper level to better understand how to process the data.

Taking all of this into account, our evidence suggests that there is a correlation between an individual user's actual interests and their account interests and ad preferences, even when one tries to be someone else. We also observe a smaller correlation between users and their interactions with the accounts as it pertains to interests and ad preferences. The accounts seem to also pull information about the user from a 3rd party source or sources such as ones IP address, search history, and/or browser.

The platform would appear to use both of these systems as avenues for data collection to better understand its users. Then using its multiple sources of data it creates a more accurate user profile that better represents the actual users, even if the user attempts to fool the platform. This evidence shows a strong correlation that the platform is using more than just voluntary information. The next question we would have is, where else is Twitter getting our data from?

Appendix

Twitter Activity Schedule

On 10/28 we followed Sam Webb, Barack Obama, and AOC. At 4:52pm we tweeted: "Great workout, now time to watch the debate! #firsttweet".

On 10/29 we followed Ariana Grande and tweeted: "Gotta study for that exam on Thursday! #thegrindisreal" at 9:16pm.

On 11/1 we logged on and tweeted #Betosmyboy at 4:09pm. This was a way to start introducing our political stances. We retweeted Ariana Grande's tweet: "love y'all sm. excited for next leg. thank you for everything." with the comment "queen". Throughout the process, due to this being an observational study, for ethical purposes, we did not interact with others by commenting on other posts. Rather, we allowed others to interact with us, by commenting only on our own retweets or posts. On this day we also followed MLive and realDonaldTrump. Finally, we liked Obama's tweet: "Today's the first day of open enrollment on http://HealthCare.gov, and high-quality coverage might be more affordable than you think. Nearly 9 in 10 http://HealthCare.gov customers qualify for financial help—so if you or someone you know needs insurance, #GetCovered today."

On 11/4 at 4:15 we tweeted: "Went to #orangetheory the other day. Never sweated so hard in my life. #soretomorrow" . We also replied to our own tweet of #Betosmyboy with "#nevermind". We followed Pure Michigan and Detroit Free Press. We also liked an MLive post: "PFAS levels in Ann Arbor drinking water tick up again".

On 11/5 we decided to get more political and more radical with our activity. At 3:30pm we tweeted “I don’t understand why there’s a political divide for human rights” and followed 8Chan.

On 11/6, we tweeted at 10:00pm: “Somedays I think to myself- what would the world be like without water? #showerthoughts”. We then liked Obama’s tweet: “Proud of all the Americans who showed up to vote yesterday, electing a set of hopeful, forward-thinking leaders primed to protect Medicaid, draw fair voting maps, and reduce gun violence. A great night for our country—one that’ll leave a lasting legacy.” Finally, we retweeted a realDonaldTrump post of a live feed of the rally.

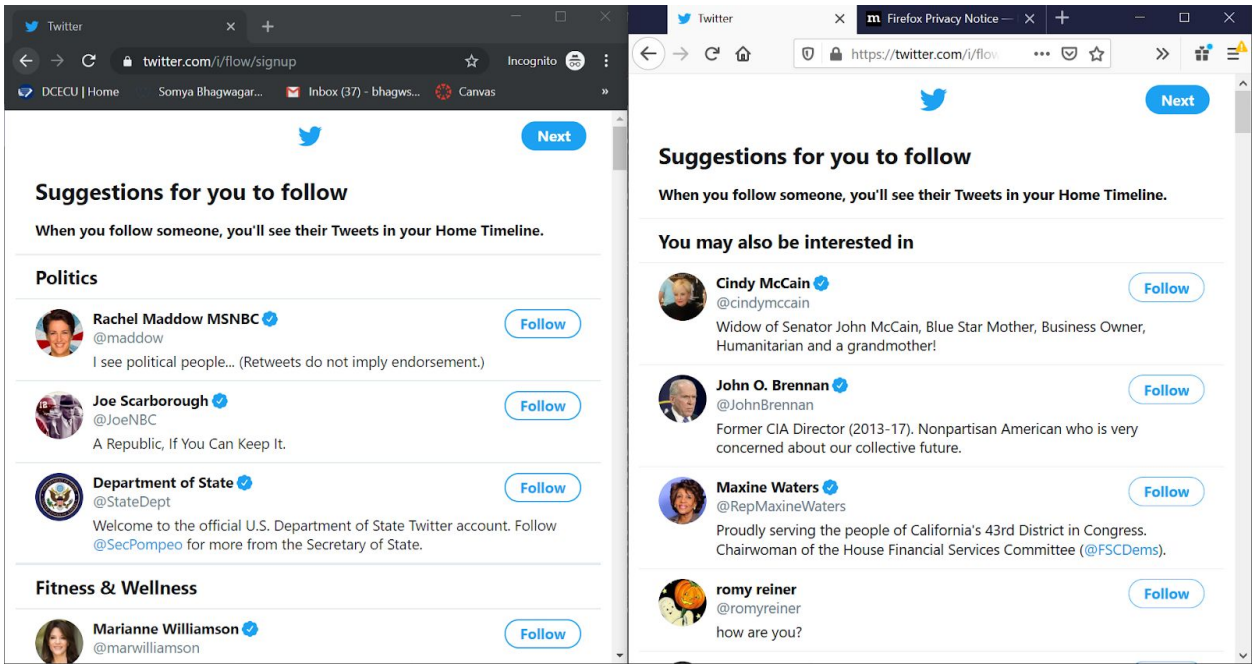
On 11/7, we tweeted at 3:20pm: “Idea: @AOC and @realDonaldTrump Debate!”. We also followed Showerthoughts. Finally, we retweeted Elizabeth Warren’s tweet: “Some billionaires seem confused about how much they would pay under my #TwoCentWealthTax. Don’t worry, we've got a calculator for that, too. The bottom line: If you made it big, you should chip in to make sure everyone else also has a chance to succeed:” with the comment: “#elizabethwarrenhasaplanfor #StopTheCoup”.

On 11/8 we tweeted at 6:15pm: “ Why do I feel scared or unsafe when I enter an area where people have American flags put up? #political #pocviews” and “AMerican tea tastes like a white person mixed 2 drops of essential oils in water #thatsthetea #sip #therealtea. Finally, we retweeted a Pure Michigan Tweet: Snow on the ground doesn't mean you have to slow down with seasonal fun. Dog Sledding in the #UpperPeninsula is a sure-fire way to have fun, no matter the temps!”

Our last day on 11/10 we went through our final pages, collected our screenshots, and analyzed our ad interests.

Somya Bhagwagar Notes:

Accounts Created on 10/24



10/28-

first login after creating the account. THe Twitter on the incognito mode is asking to verify that I am not a robot.

We need to set up our profile more- username, bio, followers, one tweet.

We decided that the bio should be the exact same.

We followed Sam Webb, Barack Obama, and AOC

We noticed that there are different interfaces per laptop per browser which limit certain aspects. For example, I cannot see my feed on Mozzilla until I fill out my profile

On incognito mode, I am able to see my feed.

Note- we have not given our location yet. Now that we have followed the three people, my suggestions for more followers on incognito are mgoblog, John U. Bacon, and Brice Marich.

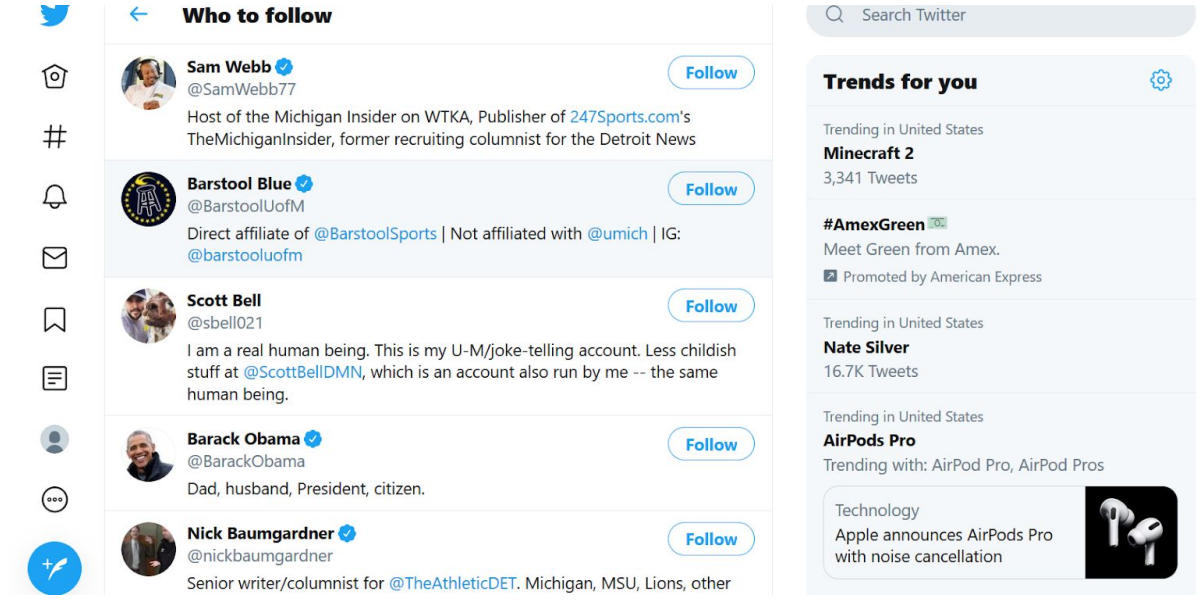
On firefox, my suggestions are Steve Lorenz, Bernie Sanders, and The Michigan Insider.

After deliberation, we decided to keep our given usernames.

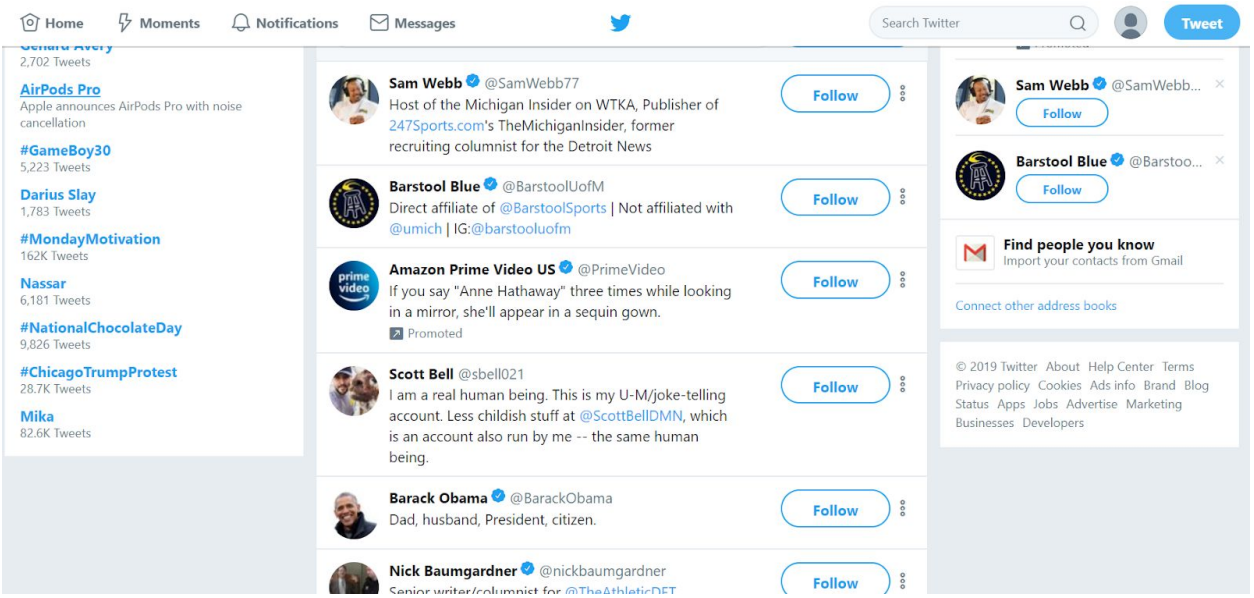
Changed bio to 'Go Blue!'

We downloaded our twitter data thinking that we could do this before and after. However, once we requested the data, a note popped up on the screen stating that we could not request data for another 30 days.

Our first tweet was posted at 4:52pm



Firefox



Incognito

10/29- 9:16pm

Logged on. Incognito mode. My tweet from yesterday has it's first like! From someone named Chris Engelo @angelodangerous

I am confused since I did not see a notification for it. I only saw the like when visiting my profile to look at my tweet

Tweeted the second tweet at 9:23pm.

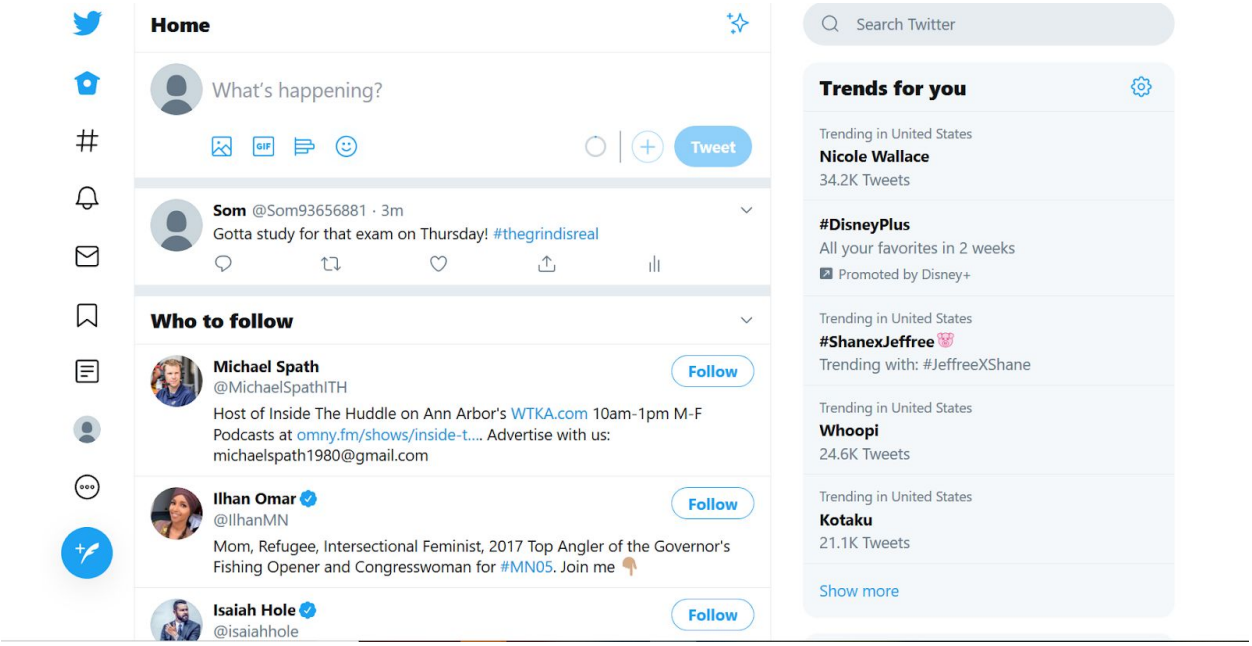
On incognito, my follower suggestions are @AdellCenter (promoted), Ariana Grande, and Rihanna.

My firefox follower suggestions have remained the similar with John U. Bacon @Johnubacon, angelique @chengelis, and mgoblog @mgoblog

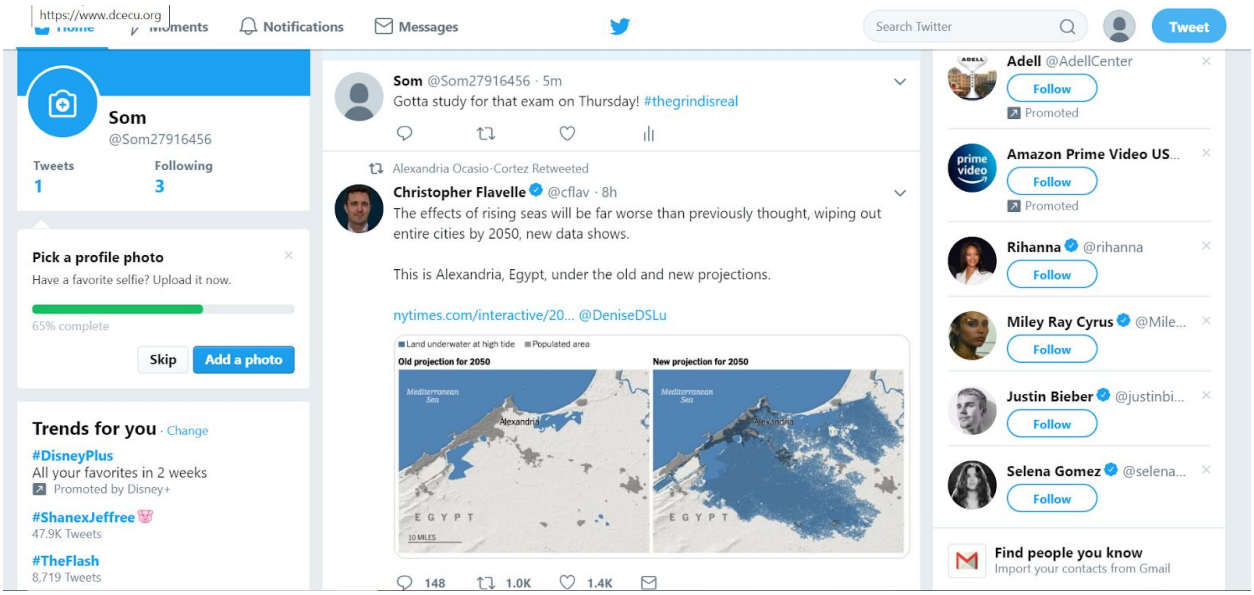
We followed Ariana Grande

Notes:On my feed for both accounts, the first post I saw was a post by Christopher Flavelle that AOC retweeted about rising sea levels

Still, all my follower recommendations on both accounts remain very Ann Arbor oriented, or pop culture oriented



Firefox



Incognito

11/1- 4:00pm

Logged on. Checked to boost my ego about the like that I saw last time and it was gone! The guy who liked it must have taken it back?

After the observation, I will have to take a look and see if his account still exists.

On Firefox, got an Apple TV promoted ad.

Tweeted a hashtag #Betosmyboy to both accounts at 4:09pm

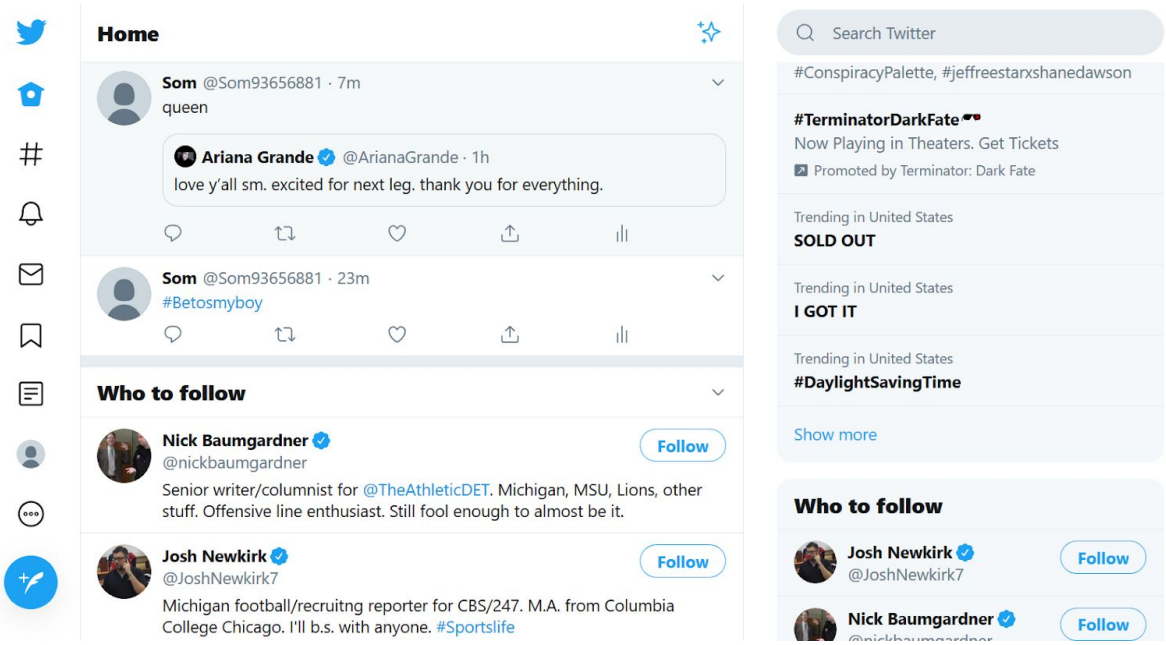
Retweeting Ariana Grande's tweet with 'queen'

Followed Mlive and Donald Trump

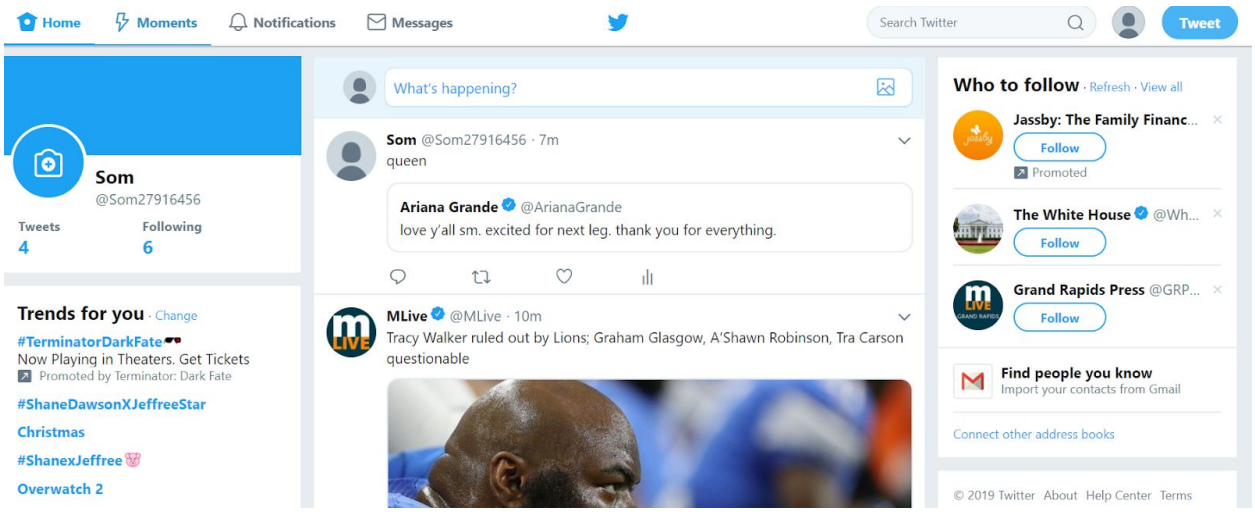
Liked a Barack Obama Tweet

Firefox is staying consistent with following recommendations. However, my incognito account is changing. I now have more financial and news source recs

Posts seem to remain fairly chronological on both accounts.



Firefox



Incognito

11/4- 4:00pm

Logged on. My feed both had a tweet from Donald Trump at the top, but two different tweets. on Firefox, it said '95% approval rating in the republican party. Thank you!' and for incognito it said 'Read the transcript!'

Tweeted at 4:15

Replied to previous tweet

Followed Pure Michigan

Followed Detroit Free Press

Liked MLive: PFAS levels in Ann Arbor drinking water tick up again

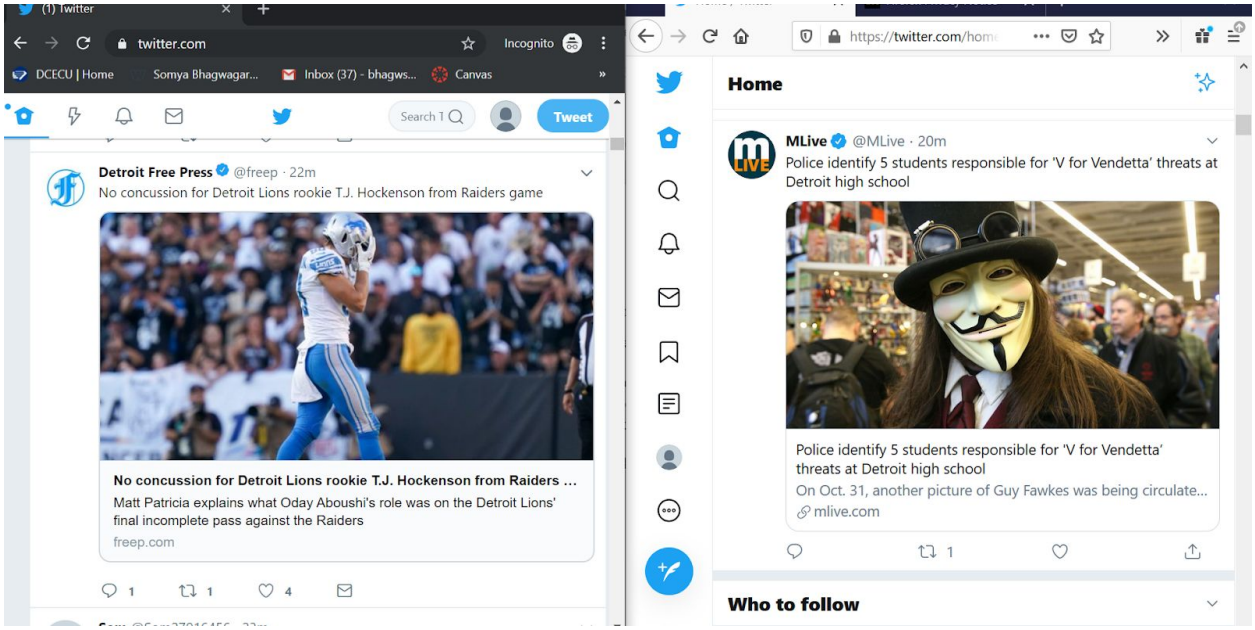
Observations: I got an ad from John Legere on the incognito account about TMobile

Starting to get a difference in algorithms as shown in screenshot

If I were to choose one algorithm that is more appealing to me, it would be on firefox

There are a lot more pop culture tweets, and AOC tweets with news from Mlive that I find more relevant.

I have also been getting more Adobe ads on my Firefox



11/5- 3:30

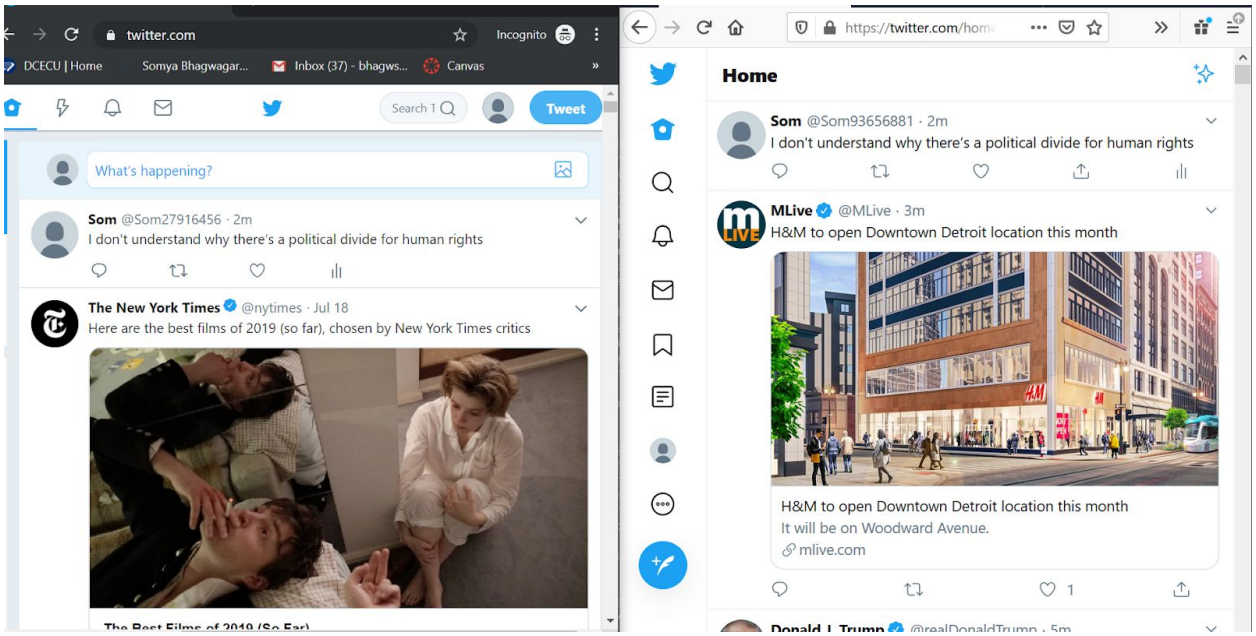
Logged on. Starting to see more of a difference in algorithms. As soon as I complained that the algorithms were different, they updated to exactly the same.

Getting ads for Queen and Slim on Incognito, and fifth third bank ads on firefox

Followed 8Chan on Twitter

pop culture follower recommendations for firefox: justin bieber, iamcardib, and halsey

political follower recommendations for incognito: OS technical, Halsey, Nancy Pelosi



11/6- 10pm

Logged on. Incognito has more popculture content: ariana Grande shows up second wheras on firefox, Soledad O'brien's posts come. Both Sam Webb and AOC follow her, but I am not

Next on incognito is more ariana grande, whereas on firefox it's Ana Navarro Cardenas who Sam Webb follows.

Follower recommendations are the same- Detroit Tigers, Fox 2 Detroit, and Grand Rapids Press

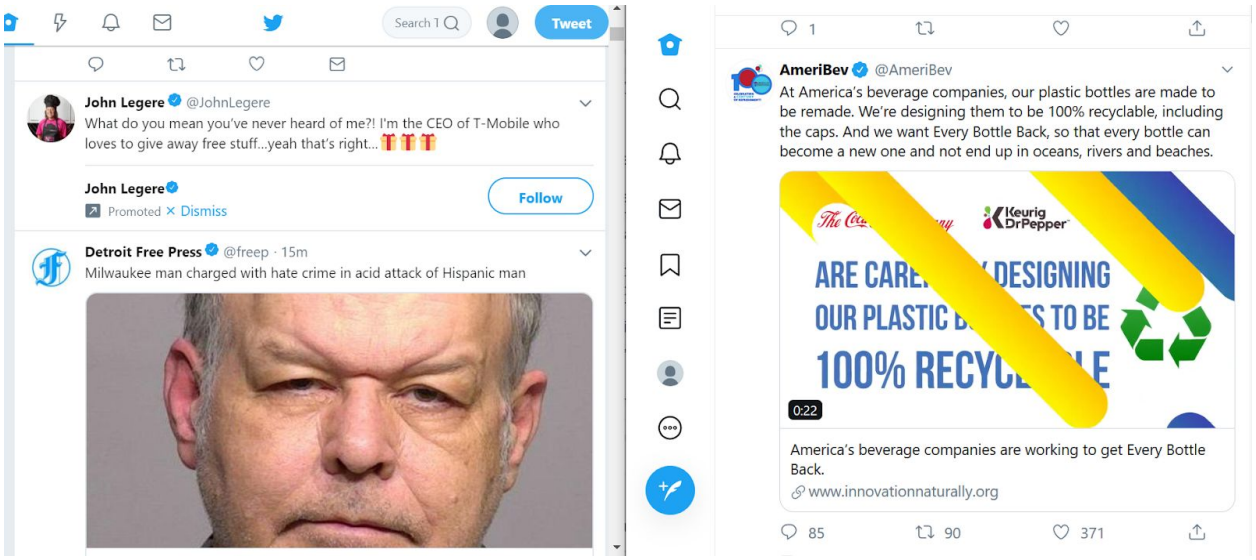
Retweeted a post by trump of a live feed of the rally

liked a post by Obama saying he was proud of all americans who voted

Even after refreshing, I am getting Elizabeth Warren advertisements in incognito. I am definitely getting politically targeted in incognito

I am getting more ads scrolling through incognito for Aspiration,DuckDuckGo, and John Legere.

On firefox, I am getting ads for Far and Wide, Elizabeth Warren, and PlayersCoalition, and 22Words



11/7- 3:15pm

Logged on. Firefox is recommending me to follow GOP, Jeanne Piro, and Nancy Pelosi

Incognito is recommending me to follow Amazon Prime, Ronna McDaniel, and Detroit Tigers

Tweeted at 3:20

Followed Showerthoughts

Getting ads for lunchables on incognito account as well as Maxwell house. I am noticing more ads on Incognito than Firefox.

I am getting ads for Elizabeth Warren, FAIR, and The Penny Hoarder on Firefox

11/8- 6:00pm

On incognito, the top tweet is my own from yesterday-- even after refreshing the page a couple times to make sure there was no glitch.

The second tweet is a promoted ad by Elizabeth Warren flying a guest to meet the democratic presidential primary debate in Atlanta

My first tweet on Firefox is from Dan Rather who AOC follows which says 'Apparently the Trump family took the phrase 'charity begins at home' literally"

The second tweet is the same promoted ad

tweeted at 6:15

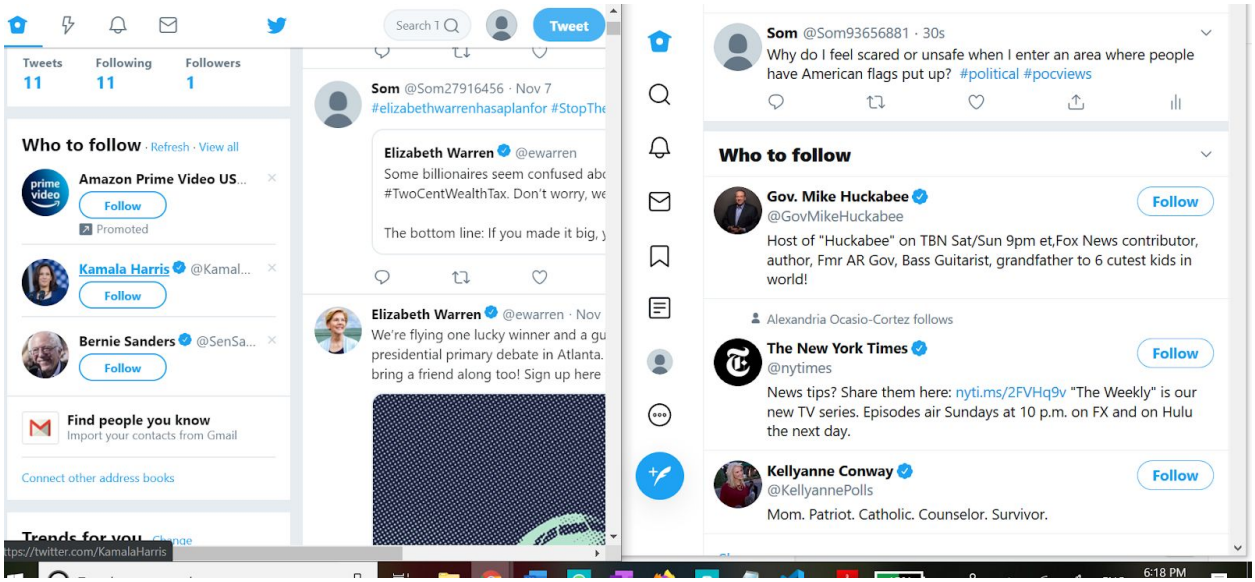
According to notifications, on incognito Charlotte Scott followed me

Retweeted a Pure Michigan tweet.

MLive tends to spam both my twitters which gets annoying because I do not care about many of the headlines

Firefox is more catered to me based on ads. There are more animals, more environmental impact type issues, and less sports

incognito seems to be all sports based news and dry political ads



11/10

Final statistics:

Incognito had 13 tweets, 11 following, 1 followers

Firefox had 13 tweets, 11 following, 0 followers, 1 favorite

Incognito has 115 interests from twitter

0 interests from partners

0 audiences from 0 advertisers

firefox has 113 interests from Twitter

0 inferred interests from partners

1 audience from 1 advertiser

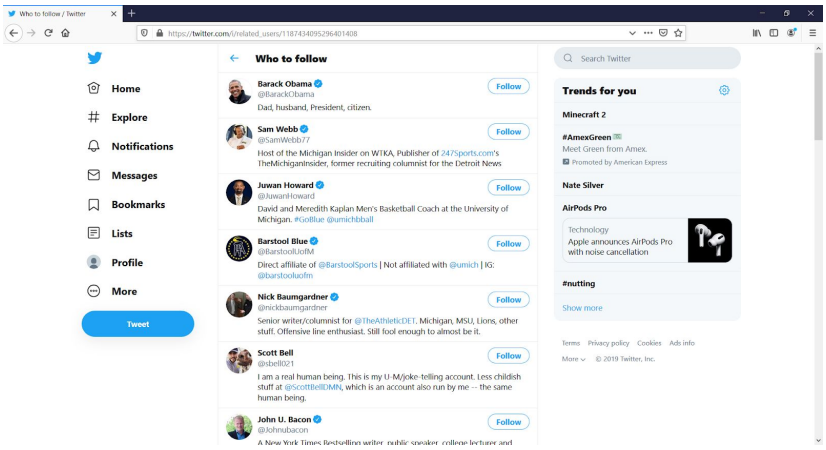
Steven Dobrovich Notes:

10/24/19 2:00pm

1. Created 2 new emails to create twitter accounts
2. Created 2 new twitter accounts
    a. 1 with a yahoo email using incognito
        i. Username: Carlsomething55@yahoo.com
    b. 1 with a gmail email using firefox
        i. Username: Carlsomething55@gmail.com
3. Ad preferences and display are exact copies of each account.

10/28/19 4:15pm

1. Started our 10 day trial
    a. All 6 of our accounts followed Barrack Obama, Sam Webb, and Alexandria Ocasio Cortez.
    b. Both of my accounts maintain the same exact preferences and suggestions.
    c. Changed the Bio to “Go Blue!”
    d. Downloaded our Twitter Data from day 1, before the first tweet.
    e. Sent our first tweet
        i. Great workout, now time to watch the debate! #firsttweet
        ii. Sent at 4:53pm

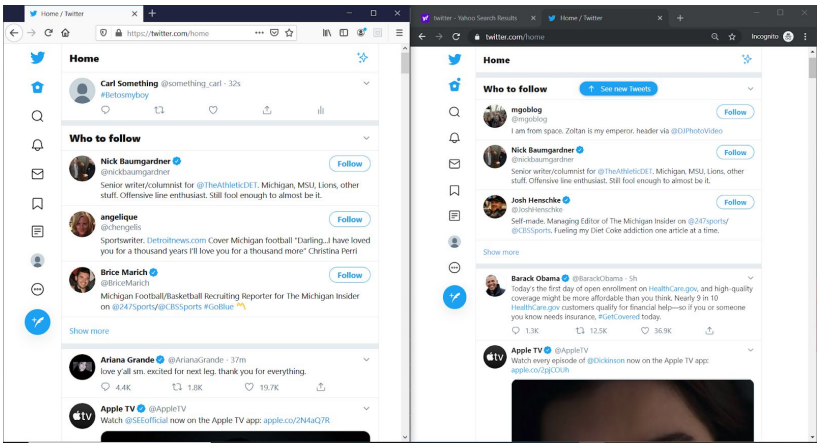


10/29/19 9:30pm

1. Send out our 2nd tweet:
    a. Accounts maintain similarity, both have same ad locations and same follow preferences and trending hash tags.

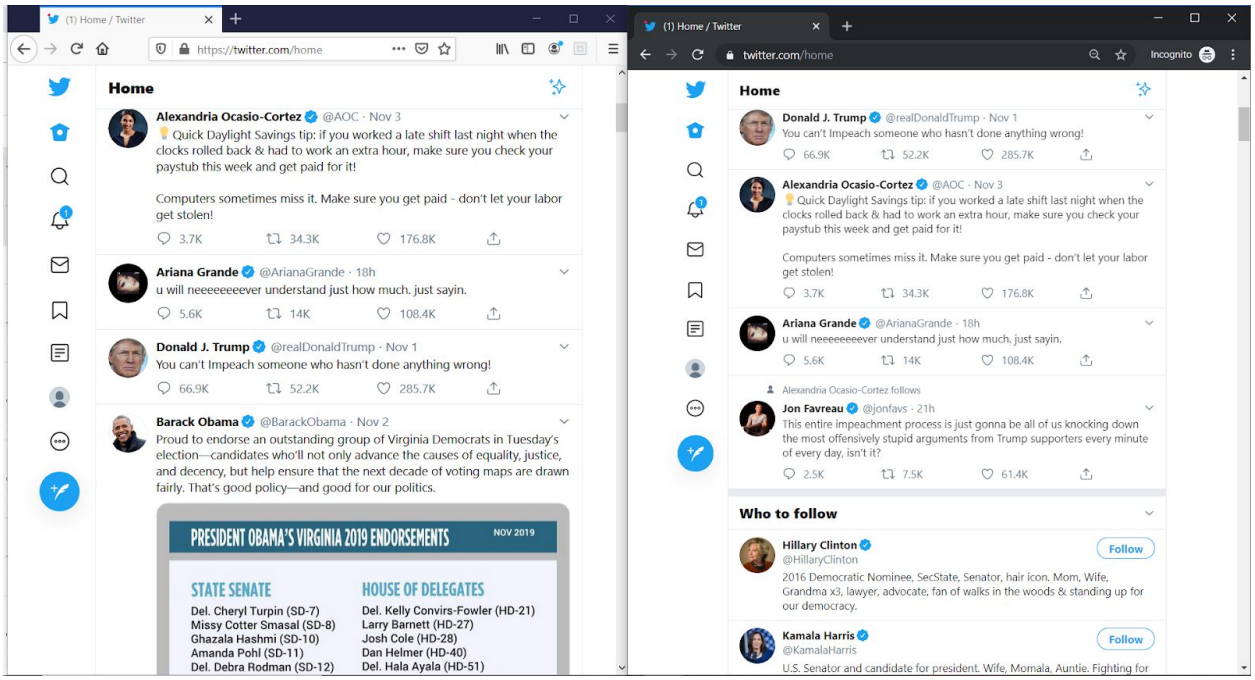
11/1/2019 —- pm

1. Sent out our 3rd tweet
    a. Each account performed 2 likes
    b. Followed ARIANNA Grande and Donald Trump
2. Accounts maintain similarity, both have same ad locations and same follow preferences and trending hash tags.



11/4/2019 4:15pm

1. Sent our 4th and 5th tweet out
    a. Followed pure michigan
    b. And Detroit free press
2. My incognito and my firefox have similar content as each other just different layouts. Ads are in the same locations, each ad is from the same provider although maybe different ads, (ex. Both ads are apple TV but for two different shows.)
3. My follow preferences are also the same as each other.

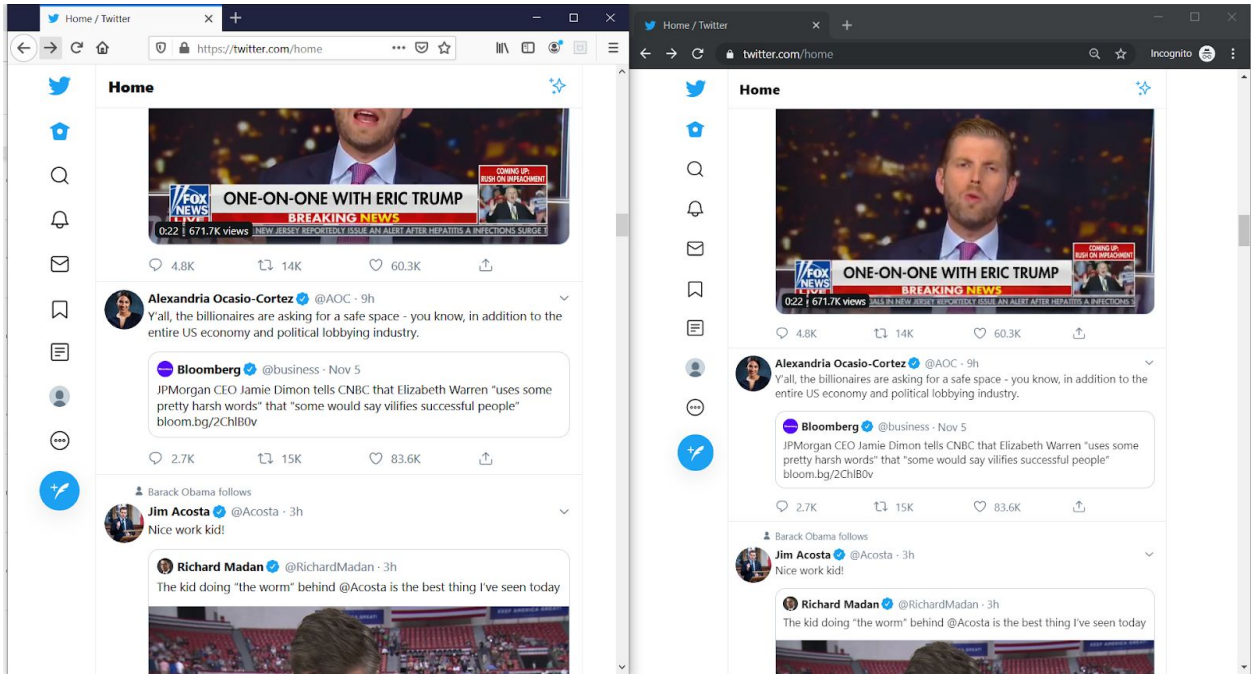


11/5/2019 3:40pm

4. Sent our 6th tweet: I don't understand why there's a political divide for human rights
    a. Each of my ads and follow requests are identical between my incognito accounts and firefox accounts
    b. Arianna grande is my top tweet on both accounts
    c. 5 of our six accounts all have the same top post, only yashmeets one is different
5. Suggested to follow:
    a. Epoch Times
    b. John Solomons
    c. CNN

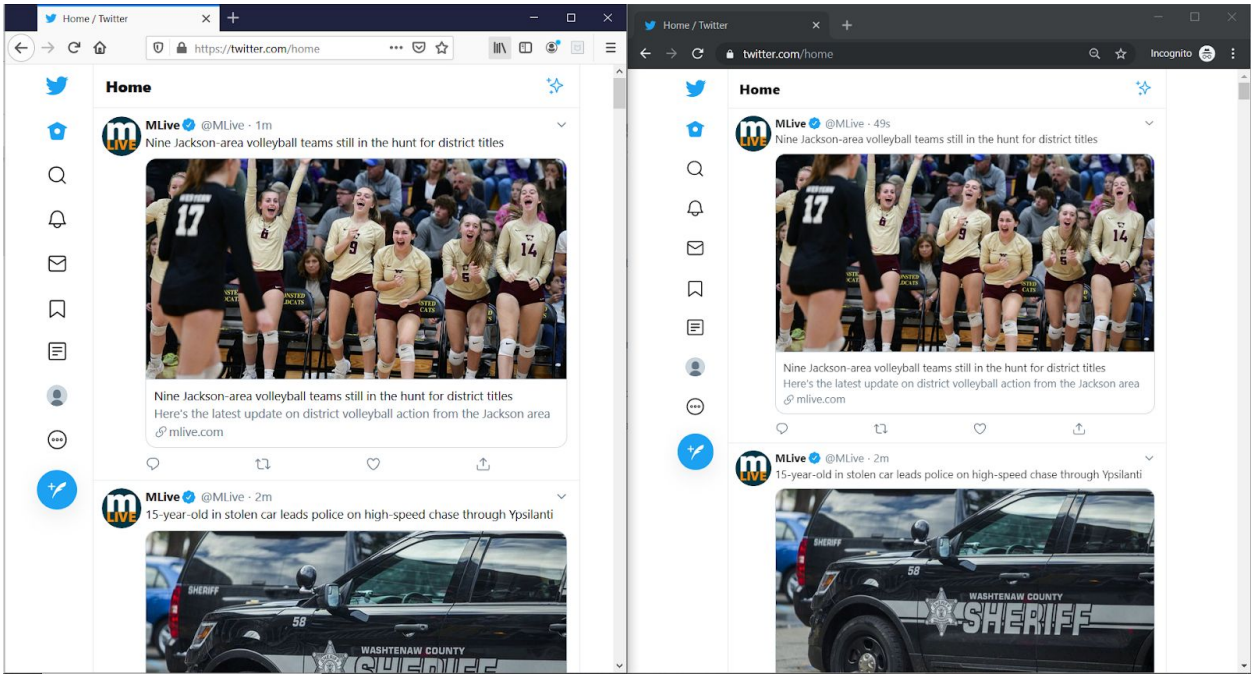
11/6/2019

1. Sent out our 7th tweet:
    a. Each of my accounts maintain similarity today, surprisingly they are almost identical. Each post is in the same order, and each add placement is in the same place, however, the ads do differ slightly (Typically same company different ads)



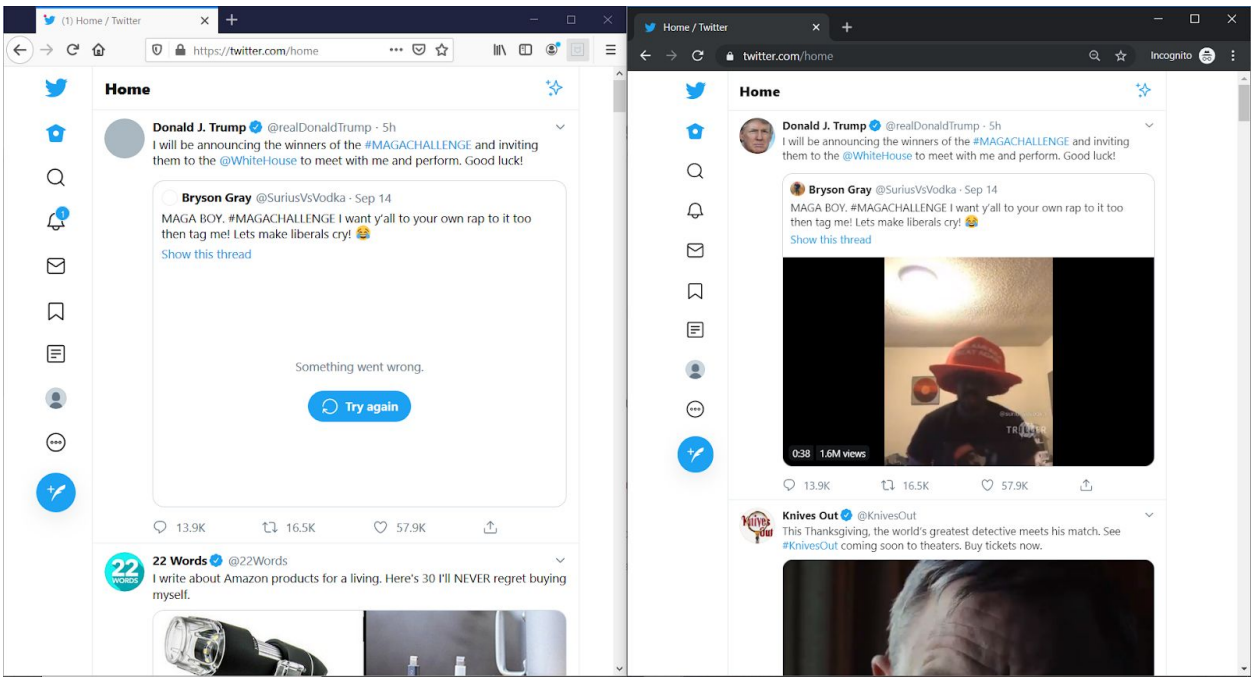
11/7/2019

2. 3:20pm Sent out our 8th tweet: Idea: @AlexandriaOcasioCortez and @DonaldTrump Debate!
    a. Each of my accounts maintain similarity. Same feed posts, same advertisement locations, and same ad companies, but different products.
    b. Followed @shower_logic
    c. Followed and retweeted an Elizabeth Warren tweet



11/8/2019

1. 6:10pm sending out our 9th and last tweet:
    d. My post order is registering completely different from previous days. My tweets, follow preferences and ads are all different from each other.
    e. I have an ad for Apple TV on my Fire fox, and an ad for 22 amazon products on my Incognito
    f. This is the first day my accounts start to differ.



11/10/2019

1. Final Observation day
    a. Both of my accounts have the exact same set up, same ads, same posts. Its quite incredible
    b. My firefox account ended with 114 recorded interests by twitter
        i. 1 tailored audience and 1 advertiser (Som aswell)(Yash 0)
    c. My incognito account ended with 128 recorded interests by twitter
        i. 0 tailored audience and 0 advertiser (Som and Yash)

    Moxilla firefox had more interests for all of our accounts over incognito

    Som: incognito - 115

    Firefox - 113

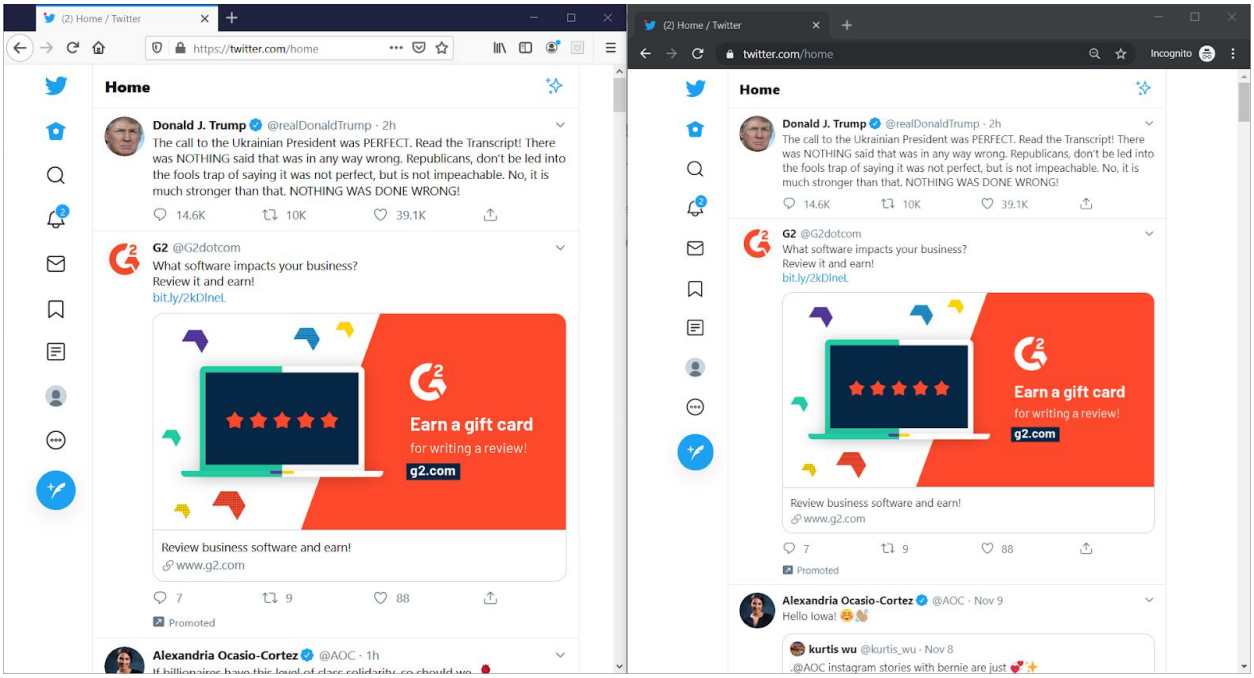
    Steve: incognito - 114

    Firefox - 128

Yash: Incognito - 92

Firefox - 103

d. My Follow preferences on the final day were as such.
    i. Incognito
        1. Team Trump, The White House, Ronna Mcdaniel
    ii. Firefox
        1. The White House, Gov. Mike Huckabee
e. I had 2 notifications on each account
    i. Both the same notification from AOC



Yashmeet Gambhir Notes:

Day 1 Notes

Who to Follow recommendations are similar across both browsers, across all of us.

Barack Obama

Sam Webb

Barstool Blue

Scott Bell

Followed

Barack Obama

Sam Webb

Alexandria

Follow recommendations

Steve Lorentz

The Michigan Insider

John Henschke

John U. Bacon
@Johnubacon
Follow
A New York Times Bestselling writer, public speaker, college lecturer and radio commentator, who only tweets when I actually have something to say. Honest.
Andrew Yang
@AndrewYang
Follow
2020 US Presidential Candidate (D). Entrepreneur & Founder of @venture4america My book: amzn.to/2HQMk83 Join the campaign here: yang2020.com
RedditCFB
@RedditCFB
Follow
The official account for /r/CFB, the home of college football on Reddit!
Barack Obama
@BarackObama
Follow
Dad, husband, President, citizen.
The D Zone
@TheD_Zone
Follow

@BarackObama
Dad, husband, President, citizen.
Sam Webb
@SamWebb77
Follow
Host of the Michigan Insider on WTKA, Publisher of 247Sports.com's TheMichiganInsider, former recruiting columnist for the Detroit News
Barstool Blue
@BarstoolUofM
Follow
Direct affiliate of @BarstoolSports | Not affiliated with @umich | IG: @barstooluofm
Juwan Howard
@JuwanHoward
Follow
David and Meredith Kaplan Men's Basketball Coach at the University of Michigan. #GoBlue @umichbball
John U. Bacon
@Johnubacon
Follow
A New York Times Bestselling writer, public speaker, college lecturer and radio commentator, who only tweets when I actually have something to say. Honest.

Day 2

Trends for you
Trending in United States
#LizzoIsOverParty
6,390 Tweets
#Frozen2
Get your Frozen 2 tickets now!
Promoted by Disney's Frozen 2
Trending in United States
#Covfefe
17.2K Tweets
Trending in Michigan
John Conyers
1,431 Tweets
Trending in United States
Boomer
Trending with: The Facebook, "Boomer"

Ilhan Omar
@IlhanMN
Follow
Mom, Refugee, Intersectional Feminist, 2017 Top Angler of the Governor's Fishing Opener and Congresswoman for #MN05. Join me
Bernie Sanders
@BernieSanders
Follow
U.S. Senator from Vermont and candidate for President of the United States.
Michael Spath
@MichaelSpathITH
Follow
Host of Inside The Huddle on Ann Arbor's WTKA.com 10am-1pm M-F Podcasts at omny.fm/shows/inside-t.... Advertise with us: michaelspath1980@gmail.com

Day 3

Who to follow
Selena Gomez
@selenagomez
LOSE YOU TO LOVE ME out now: smarturl.it/LoseYouToLoveMe
Follow
Justin Bieber
@justinbieber
Let's make the world better.
Follow
Miley Ray Cyrus
@MileyCyrus
#DontCallMeAngel song & video out NOW
charliesangels.lnk.to/DCMA
Follow

Trends for you

Trending in United States

SOLD OUT

136K Tweets

#TerminatorDarkFate

Now Playing in Theaters. Get Tickets

Promoted by Terminator: Dark Fate

Trending in United States

#ShaneDawsonXJeffreeStar

Trending with: #ShanexJeffree, #ConspiracyPalette, #jeffreestarxshanedawson

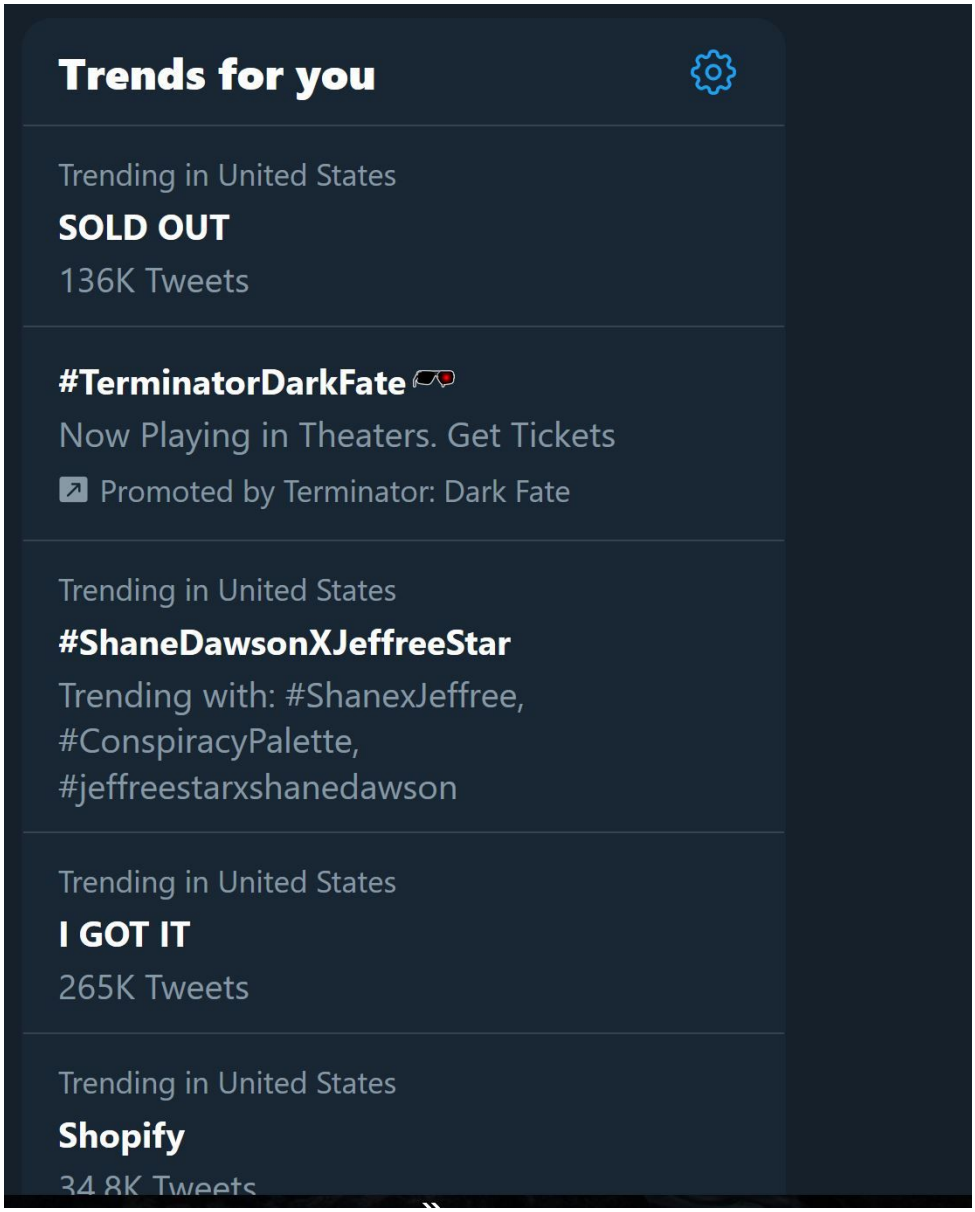
Trending in United States

I GOT IT

265K Tweets

Trending in United States

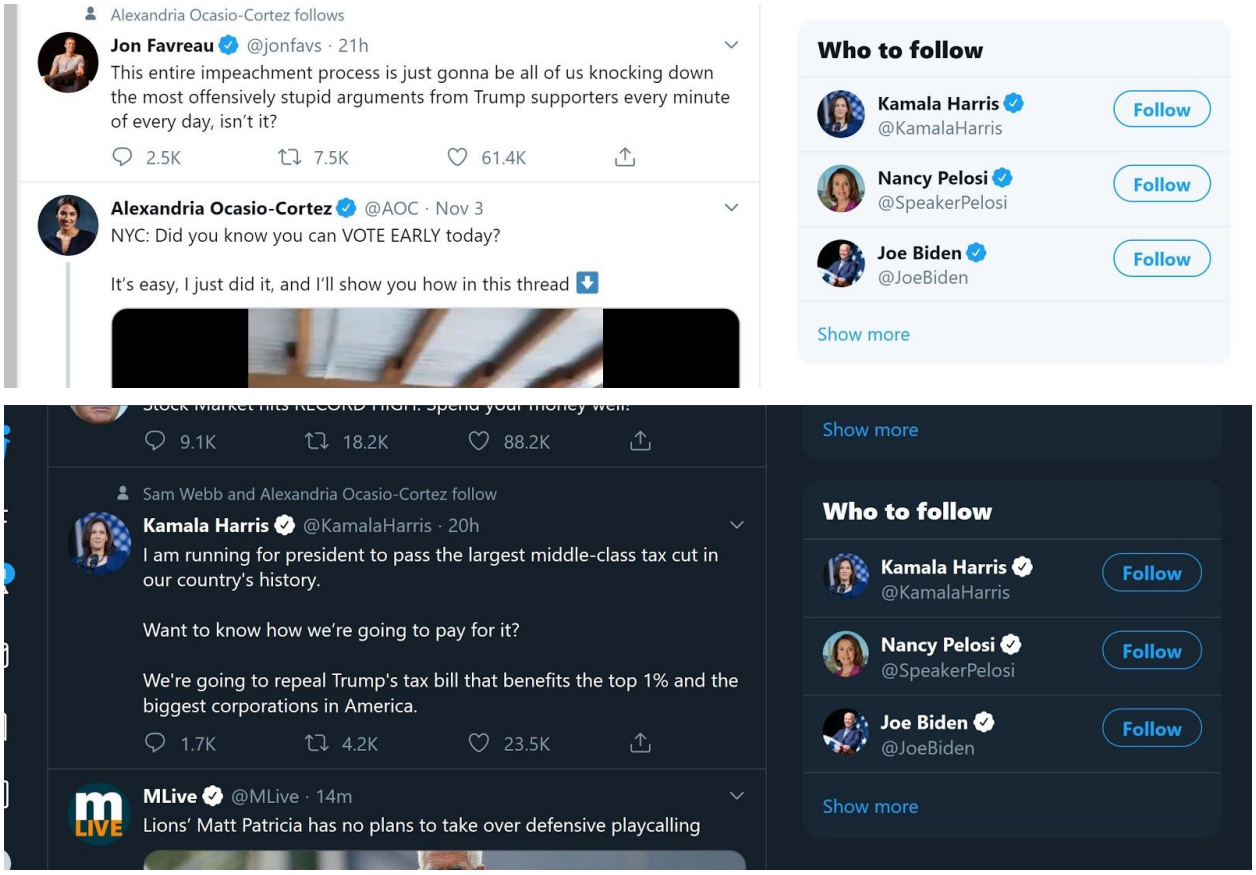
#DaylightSavingTime


Trends for you
Trending in United States
SOLD OUT
136K Tweets
#TerminatorDarkFate
Now Playing in Theaters. Get Tickets
Promoted by Terminator: Dark Fate
Trending in United States
#ShaneDawsonXJeffreeStar
Trending with: #ShanexJeffree, #ConspiracyPalette, #jeffreestarxshanedawson
Trending in United States
I GOT IT
265K Tweets
Trending in United States
Shopify
34.8K Tweets

Who to follow
angelique
@chengelis
Follow
Sportswriter. Detroitnews.com Cover Michigan football "Darling...I have loved you for a thousand years I'll love you for a thousand more" Christina Perri
Ace Anbender
@AceAnbender
Follow
"you have some good tweets" | writer/podcaster @mgoblog, Ypsi/A2, person with ME | he/him
Barb McQuade
@BarbMcQuade
Follow
Professor @UMichLaw, legal analyst @NBCNews and @MSNBC, former U.S. Attorney, Eastern District of Michigan, @Tigers and @UMich sports fan, wife, mother of four

Who to follow
jaboukie
@jaboukie
Follow
parody don't hurt me mgmt: ogerke@3arts.com
Barb McQuade
@BarbMcQuade
Follow
Professor @UMichLaw, legal analyst @NBCNews and @MSNBC, former U.S. Attorney, Eastern District of Michigan, @Tigers and @UMich sports fan, wife, mother of four
mgoblog
@mgoblog
Follow
I am from space. Zoltan is my emperor. header via @DJPhotoVideo

Day 5


Alexandria Ocasio-Cortez follows
Jon Favreau @jonfavs · 21h
This entire impeachment process is just gonna be all of us knocking down the most offensively stupid arguments from Trump supporters every minute of every day, isn't it?
2.5K
7.5K
61.4K
Alexandria Ocasio-Cortez @AOC · Nov 3
NYC: Did you know you can VOTE EARLY today?
It's easy, I just did it, and I'll show you how in this thread
Who to follow
Kamala Harris @KamalaHarris
Follow
Nancy Pelosi @SpeakerPelosi
Follow
Joe Biden @JoeBiden
Follow
Show more
9.1K
18.2K
88.2K
Sam Webb and Alexandria Ocasio-Cortez follow
Kamala Harris @KamalaHarris · 20h
I am running for president to pass the largest middle-class tax cut in our country's history.
Want to know how we're going to pay for it?
We're going to repeal Trump's tax bill that benefits the top 1% and the biggest corporations in America.
1.7K
4.2K
23.5K
MLive @MLive · 14m
Lions' Matt Patricia has no plans to take over defensive playcalling
Show more
Who to follow
Kamala Harris @KamalaHarris
Follow
Nancy Pelosi @SpeakerPelosi
Follow
Joe Biden @JoeBiden
Follow
Show more

Trends for you

Trending in United States
#LizzoIsOverParty
6,162 Tweets

#Frozen2
Get your Frozen 2 tickets now!
Promoted by Disney's Frozen 2

Trending in United States
#Covfefe
17.1K Tweets

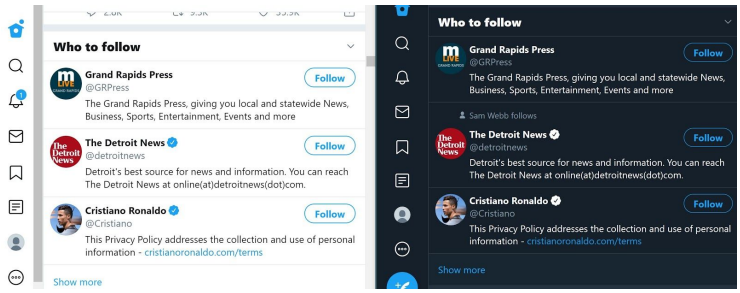
Trending in United States
Boomer
Trending with: The Facebook, "Boomer"

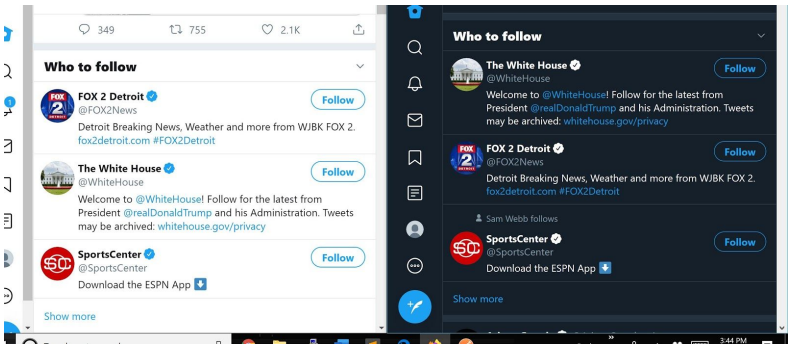
Trending in Michigan
John Conyers
1,420 Tweets

Trends for you
Trending in United States
#LizzoIsOverParty
6,390 Tweets
#Frozen2
Get your Frozen 2 tickets now!
Promoted by Disney's Frozen 2
Trending in United States
#Covfefe
17.2K Tweets
Trending in Michigan
John Conyers
1,431 Tweets
Trending in United States
Boomer
Trending with: The Facebook, "Boomer"

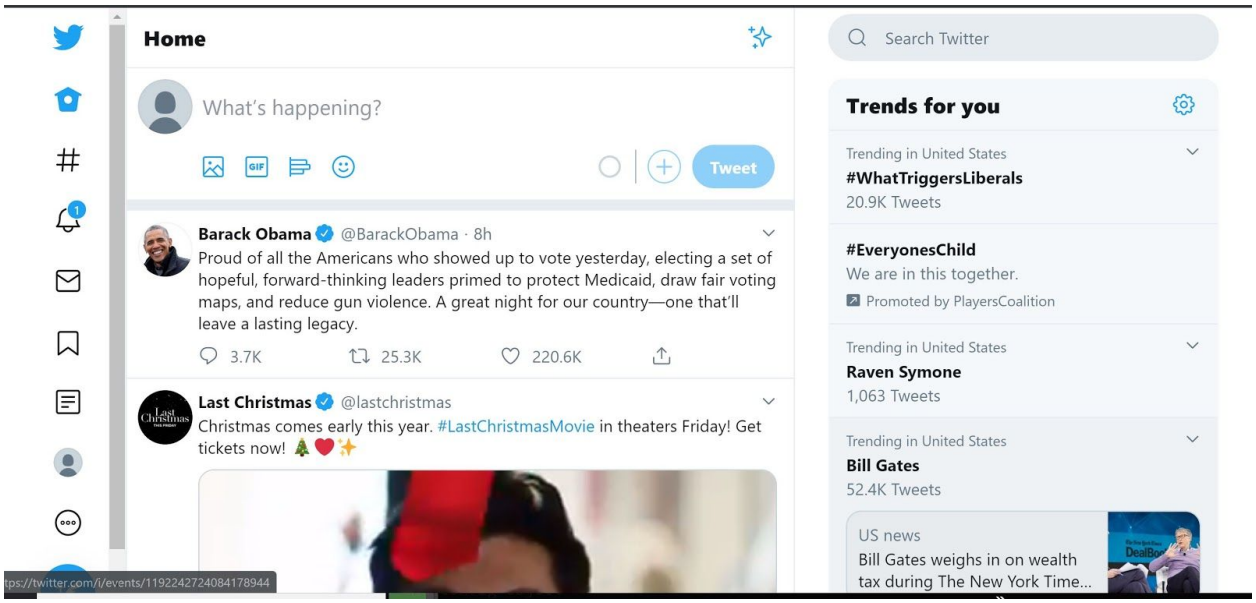
Trends for you
Trending in United States
Emma Watson
19.7K Tweets
#DisneyPlus
Start streaming in 1 week
Promoted by Disney+
Trending in United States
#EpsteinSuicideCoverUp
29.2K Tweets
Trending in United States
#EpsteinCoverup
Trending with: #epstiencoverup
Trending in United States
#ShaneXJeffreeStar
1,476 Tweets

Day 6


Who to follow
Grand Rapids Press
@GRPress
Follow
The Grand Rapids Press, giving you local and statewide News, Business, Sports, Entertainment, Events and more
The Detroit News
@detroitnews
Follow
Detroit's best source for news and information. You can reach The Detroit News at online(at)detroitnews(dot)com.
Cristiano Ronaldo
@Cristiano
Follow
This Privacy Policy addresses the collection and use of personal information - cristianoronaldo.com/terms
Show more
Who to follow
Grand Rapids Press
@GRPress
Follow
The Grand Rapids Press, giving you local and statewide News, Business, Sports, Entertainment, Events and more
Sam Webb follows
The Detroit News
@detroitnews
Follow
Detroit's best source for news and information. You can reach The Detroit News at online(at)detroitnews(dot)com.
Cristiano Ronaldo
@Cristiano
Follow
This Privacy Policy addresses the collection and use of personal information - cristianoronaldo.com/terms
Show more



Day 7



Day 8

Same two tweets, barack obama tweet the same and Last Christmas add

Both who to follows are 2/3 similar, not exactly. Side who to follow remains different from in tweet recommendations. WXYZ detroit in side notifications

Mozilla became littered with sports tweets. Like more than usual, couldn't find obama tweet that I had at the top of my feed earlier.

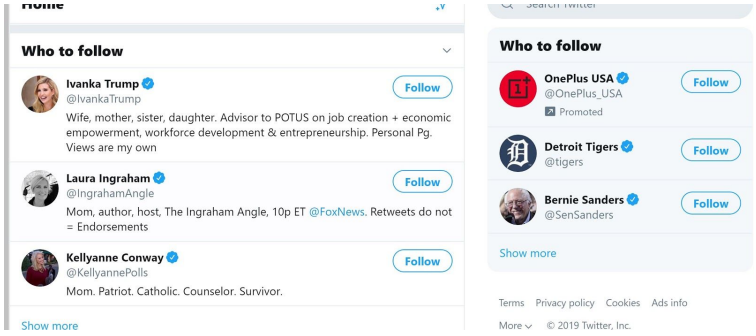
Day 9

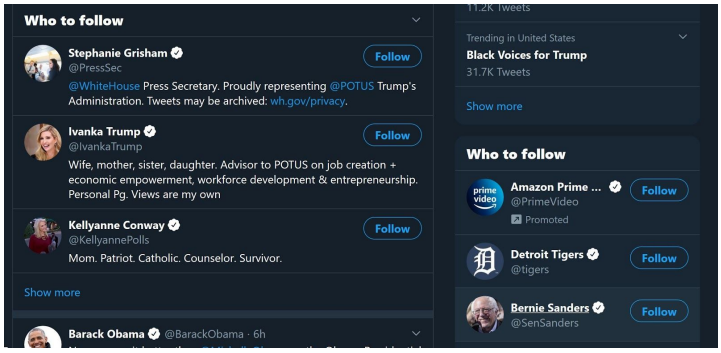
Ads on Mozilla: Best Buy, new york times

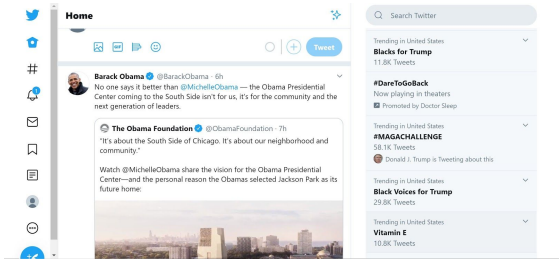
Ads on incognito: Best buy, elizabeth warren

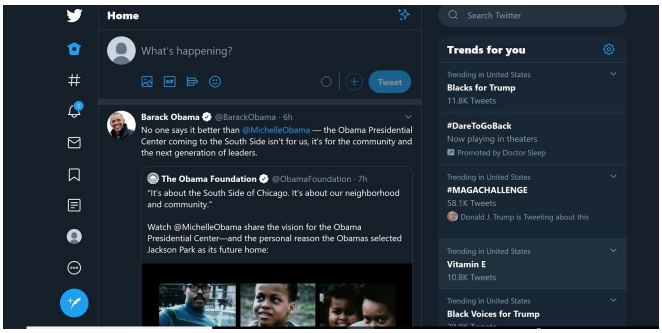
GOP follow recommendation on incognito, not on Mozilla though

Followed Shower thoughts, retweeted Elizabeth Warren



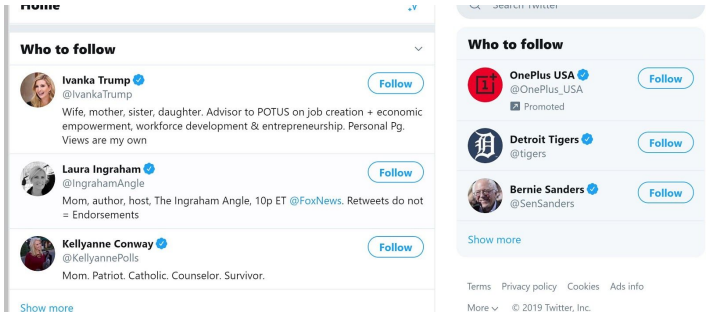


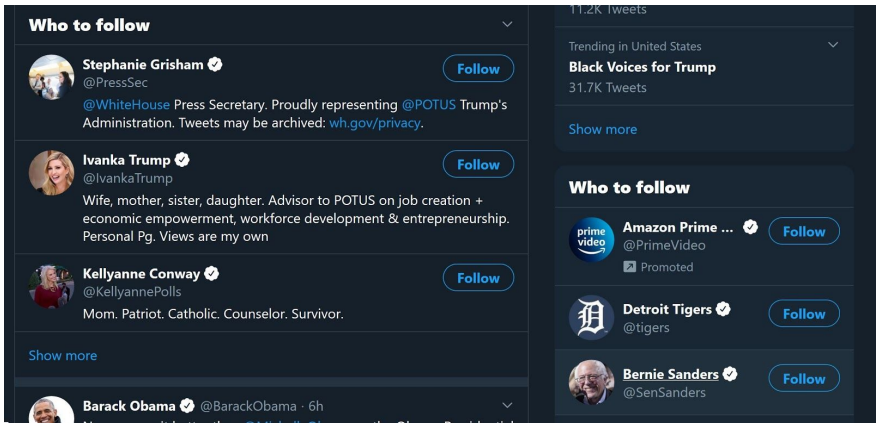


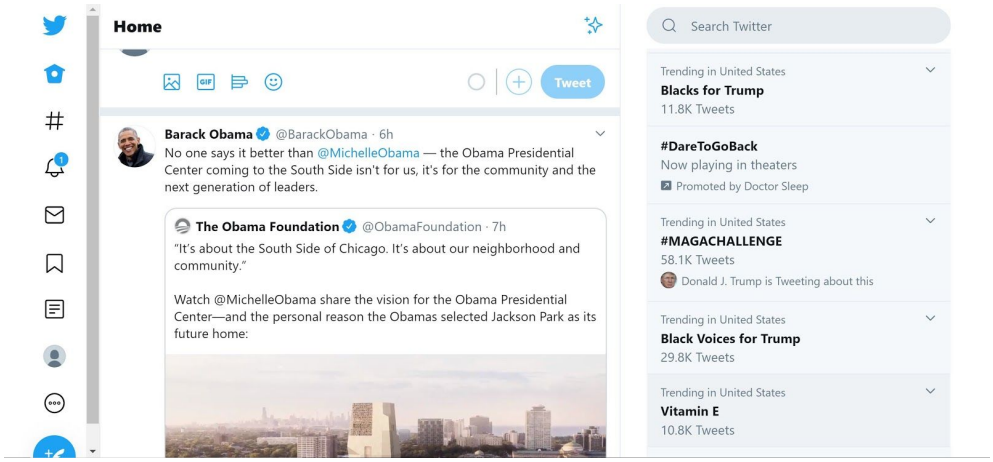


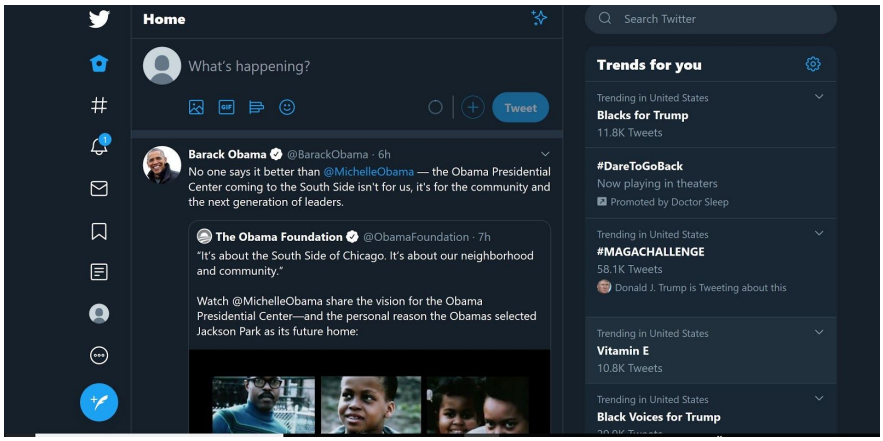
Day 10

Both accounts got the notification from AOC liking a video from Public citizen


Who to follow
Ivanka Trump
@IvankaTrump
Follow
Wife, mother, sister, daughter. Advisor to POTUS on job creation + economic empowerment, workforce development & entrepreneurship. Personal Pg. Views are my own
Laura Ingraham
@IngrahamAngle
Follow
Mom, author, host, The Ingraham Angle, 10p ET @FoxNews. Retweets do not = Endorsements
Kellyanne Conway
@KellyannePolls
Follow
Mom. Patriot. Catholic. Counselor. Survivor.
Show more
Who to follow
OnePlus USA
@OnePlus_USA
Promoted
Follow
Detroit Tigers
@tigers
Follow
Bernie Sanders
@SenSanders
Follow
Show more
Terms Privacy policy Cookies Ads info
More © 2019 Twitter, Inc.


Who to follow
Stephanie Grisham
@PressSec
Follow
@WhiteHouse Press Secretary. Proudly representing @POTUS Trump's Administration. Tweets may be archived: wh.gov/privacy.
Ivanka Trump
@IvankaTrump
Follow
Wife, mother, sister, daughter. Advisor to POTUS on job creation + economic empowerment, workforce development & entrepreneurship. Personal Pg. Views are my own
Kellyanne Conway
@KellyannePolls
Follow
Mom. Patriot. Catholic. Counselor. Survivor.
Show more
Barack Obama @BarackObama · 6h
11.2K Tweets
Trending in United States
Black Voices for Trump
31.7K Tweets
Show more
Who to follow
Amazon Prime ...
@PrimeVideo
Promoted
Follow
Detroit Tigers
@tigers
Follow
Bernie Sanders
@SenSanders
Follow


Home
Tweet
Barack Obama @BarackObama · 6h
No one says it better than @MichelleObama — the Obama Presidential Center coming to the South Side isn't for us, it's for the community and the next generation of leaders.
The Obama Foundation @ObamaFoundation · 7h
"It's about the South Side of Chicago. It's about our neighborhood and community."
Watch @MichelleObama share the vision for the Obama Presidential Center—and the personal reason the Obamas selected Jackson Park as its future home:
Search Twitter
Trending in United States
Blacks for Trump
11.8K Tweets
#DareToGoBack
Now playing in theaters
Promoted by Doctor Sleep
Trending in United States
#MAGACHALLENGE
58.1K Tweets
Donald J. Trump is Tweeting about this
Trending in United States
Black Voices for Trump
29.8K Tweets
Trending in United States
Vitamin E
10.8K Tweets


Home
What's happening?
Tweet
Barack Obama @BarackObama · 6h
No one says it better than @MichelleObama — the Obama Presidential Center coming to the South Side isn't for us, it's for the community and the next generation of leaders.
The Obama Foundation @ObamaFoundation · 7h
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10.8K Tweets
Trending in United States
Black Voices for Trump

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