Additional Questions for the Record

Research for the following responses was prepared by Jennifer Smith, Beasley Fellow at the University of Maryland, at the request of Frank Pasquale, Professor of Law at the University of Maryland.

<u>Questions from the Honorable Janice D. Schakowsky</u>

1. Last year, a ProPublica investigation found that Facebook allowed housing ads targeting users by race, religion, disability, nationality, and other protected traits. Federal law forbids housing ads that include "any preference, limitation, or discrimination" based on such traits.

In response, Facebook built an automated system intended to prevent biased ads. But ProPublica published a follow-up report in November 2017 showing that the exact same biased ads were approved by Facebook's new automated system.

> a. **Is a fully automated system sufficient to prevent biased or discriminatory advertising? If not, what else if necessary?**
> b. **Some critics have called housing ads that exclude certain ZIP codes or neighborhoods a modern day form of redlining. Location-based housing ads can be helpful, but are you concerned about their potential for bias? Should these ads be subject to additional review?**

Short answers:

a) No, automation cannot prevent such bias, and may actually accelerate it. Human review with involvement from affected groups is important to preventing such discrimination.
b) Location-based ads should be subject to additional review, thanks to the rise of data-based proxies for race and other protected characteristics.

General Information to support these points:

- On November 29, 2017 *ProPublica* reported, "Facebook said it would temporarily stop advertisers from being able to exclude viewers by race while it studies the use of its ads targeting system."[1]
  - This article was published the same day as the Committee Hearing.

This raises concerns about the legal standard for housing discrimination, and potential secondary liability for platforms.

- Disparate Impact
  - Key background here is the U.S. Department of Housing and Urban Development's (HUD) 2013 rule on disparate impact liability, and the Supreme Court's 2015 decision in

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[1] Julia Angwin, *Facebook to Temporarily Block Advertisers from Excluding Audiences by Race*, PROPUBLICA (Nov. 29, 2017, 2:00 PM), https://www.propublica.org/article/facebook-to-temporarily-block-advertisers-from-excluding-audiences-by-race.

Texas Department of Housing and Community Affairs v. The Inclusive Communities Project, Inc.[2]

- The Supreme Court found "disparate-impact claims are cognizable under the Fair Housing Act" in the 2015 case *Texas Department of Housing and Community Affairs v. The Inclusive Communities Project, Inc*.[3]
  - Although the Court formally found "disparate impact claims are cognizable under the Fair Housing Act," the Court also set a standard of proof that many commentators view as narrowing disparate impact liability.[4]
- In 2013 HUD issued *Implementation of the Fair Housing Act's Discriminatory Effects Standard; Final Rule*[5] which "established a three-part burden shifting test."[6]
  - "First, the plaintiff must demonstrate that the challenged practice caused or predictably will cause a discriminatory effect. Then, the burden shifts to the defendant to prove that the challenged practice is necessary to achieve one or more 'substantial, legitimate, nondiscriminatory interests.' If the defendant satisfies that burden, then, the plaintiff must prove that the substantial, legitimate, nondiscriminatory interest could be accomplished through a practice that has a less discriminatory effect. The defendant will be able to prevail if it can show that the substantial, legitimate, nondiscriminatory interest cannot be achieved through a practice that has any less discriminatory effect."[7]
- To date it remains unclear how the Court's decision in *Texas Department of Housing* and HUD's 2013 rule will impact HUD enforcement of Fair Housing Act claims[8]

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[2] Tex. Dep't of Hous. & Cmty. Affairs v. Inclusive Cmtys. Project, Inc., 135 S. Ct. 2507 (2015) (opinion available through HUD's website at https://www.hud.gov/sites/documents/131371BSACUNITEDSTATES.PDF).

[3] Tex. Dep't of Hous. & Cmty. Affairs v. Inclusive Cmtys. Project, Inc., 135 S. Ct. 2507 (2015) (opinion available through HUD's website at https://www.hud.gov/sites/documents/131371BSACUNITEDSTATES.PDF).

[4] *See* MICHAEL W. SKOJEC & MICHAEL P. CIANFINCHI, NAT'L MULTIFAMILY HOUSING COUNCIL & NAT'L APARTMENT ASSN., RECENT HUD ACTIONS REGARDING DISPARATE IMPACT (Apr. 2017), https://www.naahq.org/sites/default/files/naa-documents/government-affairs/protected/recent-hud-actions-regarding-disparate-impact.pdf; Paul Hancock, *Symposium: The Supreme Court Recognizes but Limits Disparate Impact in its Fair Housing Act Decision*, SCOTUSBLOG (Jun. 26, 2015, 8:58 AM), http://www.scotusblog.com/2015/06/paul-hancock-fha/.

[5] 24 C.F.R. Part 100, Vol. 78, No. 3, 11460 (Feb. 15, 2013) (rule available through HUD's website at https://www.hud.gov/sites/documents/DISCRIMINATORYEFFECTRULE.PDF).

[6] MICHAEL W. SKOJEC & MICHAEL P. CIANFINCHI, NAT'L MULTIFAMILY HOUSING COUNCIL & NAT'L APARTMENT ASSN., RECENT HUD ACTIONS REGARDING DISPARATE IMPACT (Apr. 2017), https://www.naahq.org/sites/default/files/naa-documents/government-affairs/protected/recent-hud-actions-regarding-disparate-impact.pdf.

[7] MICHAEL W. SKOJEC & MICHAEL P. CIANFINCHI, NAT'L MULTIFAMILY HOUSING COUNCIL & NAT'L APARTMENT ASSN., RECENT HUD ACTIONS REGARDING DISPARATE IMPACT (Apr. 2017), https://www.naahq.org/sites/default/files/naa-documents/government-affairs/protected/recent-hud-actions-regarding-disparate-impact.pdf (citations omitted).

[8] *See* MICHAEL W. SKOJEC & MICHAEL P. CIANFINCHI, NAT'L MULTIFAMILY HOUSING COUNCIL & NAT'L APARTMENT ASSN., RECENT HUD ACTIONS REGARDING DISPARATE IMPACT (Apr. 2017), https://www.naahq.org/sites/default/files/naa-documents/government-affairs/protected/recent-hud-actions-regarding-disparate-impact.pdf ; Eric Epstein et al.,

- Current HUD Secretary Ben Carson's 2015 *Washington Time*s Op-Ed criticizing Obama administration HUD actions as "government-engineered attempts to legislate racial equality" may point to HUD not strongly enforcing disparate impact claims[9]

- Secondary Liability
  - A September 20, 2006 Memorandum from the U.S. Department of Housing and Urban Development states:
    - "The prohibition applies to all advertising media, including newspapers, magazines, television, radio, and the Internet. Just as the Department has found newspapers in violation of the Fair Housing act for publishing discriminatory classifieds, the Department has also concluded that it is illegal for Web sites to publish discriminatory advertisements."[10]

- There is a current case against Facebook stemming from Facebook ads' discriminatory practices:
  - Following *ProPublica*'s 2016 report on Facebook ads' discriminatory practices a complaint was filed in the U.S. District Court for the Northern District of California seeking "declaratory relief, injunctive relief, penalties, and monetary damages under the Fair Housing Act . . . and Title VII of the Civil Rights Act of 1964 to redress discrimination" based on Facebook Ads' inclusion of the "Exclude People" button.[11]
    - Facebook filed a motion to dismiss in April 2017, arguing Section 230 of the Communications Decency Act bars the plaintiffs' claims against Facebook since the ads were originated by third parties.
      - In making their argument Facebook cited:
        - Fair Housing Council of San Fernando Valley v. Roommates.com, LLC, 512 F.3d 1157 (9th Cir. 2008)
        - Perfect 10, Inc. v. CCBill LLC, 488 F.3d 1102 (9th Cir. 2007)

The U.S Supreme Court's Decision in Texas Department of Housing & Community Affairs v. Inclusive Communities Project, Inc., DORSEY & WHITNEY LLP PUBLICATIONS (June 30, 2015), https://www.dorsey.com/newsresources/publications/client-alerts/2015/06/the-us-supreme-courts-decision-in-itexas-departm .

[9] Ben S. Carson, Op-Ed, *Experimenting with Failed Socialism Again*, WASH. TIMES (July 23, 2015), https://www.washingtontimes.com/news/2015/jul/23/ben-carson-obamas-housing-rules-try-to-accomplish-/.

[10] Memorandum from Bryan Green, Deputy Assistnt Sec'y for Enforcement Programs, Fair Housing Act Application to Internet Advertising (Sept. 20, 2006), https://www.hud.gov/sites/documents/INTERNETADVERTMEMO.PDF. *See also* Written Statement by Kim Kendrick, Ass't Sec. of Fair Housing & Equal Opportunity, before the U.S. House of Rep., fair Housing Issues in the Gulf Coast in the Aftermath of Hurricanes Katrina and Rita (Feb. 28, 20006), https://archives.hud.gov/testimony/2006/test022806.cfm (stating "HUD has received and is investigating complaints alleging that some Internet sites have carried advertisements offering housing to evacuees, but only if they were of the right race or religion, or have no children. The Fair Housing Act makes it unlawful to publish discriminatory statements in connection with the sale or rental of housing.").

[11] Onuoha v. Facebook, Inc., No. 5:16-cv-06440-EJD (N.D. Cal. 2016) (complaint is available at http://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=2320&context=historical). The case is also cited as Mobley v. Facebook, Inc.

- Currently, Facebook's motion to dismiss is administratively terminated while the parties are in mediation.[12]

This raises a question of whether HUD could investigate Facebook for its discriminatory ads (reported on ProPublica)? What would be the maximum penalties? Could states get involved?

- HUD investigation and penalties
  - The Fair Housing Act states it is unlawful to "make, print, or publish, or cause to be made, printed, or published any notice, statement, or advertisement, with respect to the sale or rental of a dwelling that indicates any preference, limitation, or discrimination based on race, color, religion, sex, handicap, familial status, or national origin, or an intention to make any such preference, limitation, or discrimination."[13]
  - An individual who believes his or her rights under the Fair Housing Act have been violated can file a complaint with HUD and HUD will investigate and attempt to conciliate the issue[14]
    - HUD may also charge a party with violation of the Fair Housing Act and assess a civil penalty in addition to any actual damages and/or attorneys' fees and costs[15]
      - The current civil penalty amounts are: "a maximum civil penalty of $19,787 for his or her first violation of the Fair Housing Act. Respondents who had violated the Fair Housing Act in the previous 5 years could be fined a maximum of $49,467, and respondents who had violated the Act two or more times in the previous 7 years could be fined a maximum of $98,935."[16]
  - According to *ProPublica*, following *ProPublica*'s 2016 report HUD was "'in discussions' with Facebook to address what it termed 'serious concerns' about the social network's advertising practices."[17]

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[12] *See* Joint Post-Mediation Status Report (Oct. 30, 2017) (report is available at https://www.leagle.com/decision/infdco20171101c16).

[13] 42 U.S.C. 3604(c) (2015).

[14] 42 U.S.C. 3610 (2015); *Fair Housing – It's Your Right*, HUD, https://www.hud.gov/program_offices/fair_housing_equal_opp/online-complaint (last visited Jan. 5, 2018).

[15] For information on HUD enforcement activity since 2004, see *Fair Housing Act Enforcement Activity*, HUD, https://www.hud.gov/program_offices/fair_housing_equal_opp/enforcement (last visited Jan. 5, 2018).

[16] Inflation Catch-Up Adjustments of Civil Monetary Penalty Amounts, 81 Fed. Reg. 38,931 (June 15, 2016) (to be codified at 24 C.F.R. pts. 28, 30, 87, 180, and 3282); Jeff Dillman, *HUD Increases Civil Penalty Amounts for Fair Housing Violations*, Fair Hous. Proj. (June 16, 2016), http://www.fairhousingnc.org/2016/hud-increases-civil-penalty-amounts-fair-housing-violations/.

[17] Stephen Engelberg, *HUD has Serious Concerns about Facebook's Ethnic Targeting*, PROPUBLICA (Nov. 7, 2016, 4:27 PM), https://www.propublica.org/article/hud-has-serious-concerns-about-facebooks-ethnic-targeting (quoting HUD spokeswoman Heather Fluitt). *See also* Teke Wiggin, *HUD Discussing 'Serious Concerns' with Facebook Over Ad Targeting*, Inman (Nov. 3, 2016), https://www.inman.com/2016/11/03/hud-discussing-serious-concerns-with-facebook-over-ad-targeting/.

- In *ProPublica*'s 2017 report on Facebook's continuing approval of discriminatory ads, HUD reported the agency had "closed an inquiry into Facebook's advertising policies."[18]
- A search of HUD's website for information on an inquiry, case and/or charges against Facebook resulted in no information.

- State involvement
  - General information
    - Some states have fair housing laws that have more protected categories than the seven protected categories in the federal Fair Housing Act
      - For example, Maryland prohibits discrimination based on sexual orientation, a category not included in the Fair Housing Act[19]
      - In 2000, the Virginia Supreme Court that presented the issue of whether an insurance company's marketing activities, which included not marketing towards a particular zip code with a predominately African American population, was discriminatory.[20]
    - The case was decided in the insurance company's favor based on the court finding the plaintiff lacked standing.
    - The marketing/advertising discussed in the opinion were paper based, not through an online platform.
  - Online platforms openly promote geo/zip code targeting
    - For example, Twitter promotes geographic targeting to "focus on users in specific locations to achieve [users'] business objectives" including targeting specific zip codes.[21]
    - Facebook also promotes location targeting to advertisers, including use of zip codes to target locations.[22]

- Media Organizations Being Held Accountable in Abetting Discrimination
  - Ragin v. New York Times Co., 923 F.2d 995 (2d Cir. 1991) (affirming the lower court's denial of the New York Times' motion to dismiss).
    - Four African-American plaintiffs and the New York Open Housing Center alleged the New York Times engaged in discriminatory housing advertising, specifically the use of all-white models in housing advertisements.

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[18] Julia Angwin, Ariana Tobin & Madeleine Varner, *Facebook (Still) Letting Housing Advertisers Exclude Users by Race*, PROPUBLICA (Nov. 21, 2017, 1:23 PM), https://www.propublica.org/article/facebook-advertising-discrimination-housing-race-sex-national-origin.

[19] MD. Code Ann. 49B §§ 19 – 39.

[20] Nationwide Mut. Ins. Co. v. Housing Opportunities Made Equal, Inc., 259 Va. 8 (Va. 2000).

[21] *Geography and Language Targeting*, TWITTER BUS., https://business.twitter.com/en/targeting/geo-and-language.html (last visited Jan. 5. 2017).

[22] *About Location Targeting*, FACEBOOK BUS.: ADVERTISER HELP CTR., https://www.facebook.com/business/help/202297959811696 (last visited Jan. 5, 2017).

- The New York Times "sought to dismiss the suit on First Amendment grounds, arguing that the ads were created by advertisers and that the newspaper 'merely published the advertisements as submitted.'"[23]
- The New York Times settled the case in 1993, agreeing to pay $150,000 in damages and donating $300,000 worth of advertising to the New York Open Housing Center. Further, the Times implemented a "policy requiring that pictures of people in housing advertisements be representative of the racial makeup in the metropolitan area."[24]
- It appears most media organizations and online platforms are being held accountable in the "court of public opinion" and in investigative articles like those of *ProPublica* for aiding and abetting discrimination, but not by government agencies and courts.

2. Some platforms rely on users to report advertising and content that violate a platform's standards. Is reporting by users sufficient, or do platforms need a proactive system so that such content and advertising are never approved and published in the first place?

To prevent very bad outcomes, platforms need a proactive system to avoid certain very troubling content from becoming widely disseminated. Fortunately, they are now taking this responsibility more seriously, but more needs to be done.

- Ads and content being vetted by humans
  - Recent commentary advocates a combination of machine and human interventions to identify content that violates a platform's standards.
    - A recent article in *Quartz* states "[t]he solution will likely require a combination of machines and humans, where the machines flag phrases that appear to be offensive, and humans decide whether those phrases amount to hate speech."[25]
    - Frank Pasquale's article "The Automated Public Sphere" also suggests this need for human review.
  - There appears to be a shift away from platforms relying only on users and monitoring technology to flag content, toward the hiring of more humans to monitor content.
    - For example, the *Financial Times* reported in December 2017: "Both YouTube and Facebook have previously relied heavily on users reporting inappropriate content and technology designed to root it out automatically. The companies have changed tack and are now investing in more people, although they continue to hope that improvements in machine learning will make the removal of content more efficient."

[23] William Glaberson, *Times Adopts a New Policy in Advertising for Housing*, N.Y. TIMES (Aug. 14, 1993), http://www.nytimes.com/1993/08/14/nyregion/times-adopts-a-new-policy-in-advertising-for-housing.html.
[24] William Glaberson, *Times Adopts a New Policy in Advertising for Housing*, N.Y. TIMES (Aug. 14, 1993), http://www.nytimes.com/1993/08/14/nyregion/times-adopts-a-new-policy-in-advertising-for-housing.html; *New York Times Settles Ad Case Worth $450,000*, NAT'L FAIR HOUSING ADVOC. ONLINE (1993), https://fairhousing.com/news-archive/advocate/1993/new-york-times-settles-ad-case-worth-450000.
[25] Keith Collins, *Facebook and Google Need Humans, Not Just Algorithms, to Filter Out Hate Speech*, QUARTZ (Sept. 17, 2017), https://qz.com/1075499/facebook-and-google-need-humans-not-just-computers-to-filter-out-hate-speech/.

- o Google employs "ads quality raters," temporary workers who watch videos on YouTube to "identify and flag offensive material to build the trove of data [Google's] AI will learn from."[26]
  - The information is not used to remove videos, rather the information is used to combat the issue of paid ads being shown with videos promoting violence, hate speech, and terrorism. Recently, companies such as Walmart and PepsiCo stopped advertising on YouTube due to the uncertainty of whether their ads would be shown with offensive videos.[27]
- o In December 2017, Google announced it would hire more human reviewers to review content on YouTube in response to advertiser concerns as well as parents concerned about reports of violent content being targeted at children.[28]
- o In the fall of 2017, Facebook announced it would "begin subjecting ads targeted based on social issues, politics, religion, and ethnicity to human review."[29]
  - Sheryl Sandberg, Facebook's Chief Operating Officer, posted on her Facebook account that Facebook was "adding more human review and oversight to our automated processes."[30]

- Content-flagging systems that automatically pull down copyrighted content and offensive/inappropriate content show that a fully automated system can lead to many false positives and other difficulties. Human judgment remains necessary now, and in the foreseeable future.
  - o Background on pulling down copyrighted content
    - For general information see:
      - YouTube Help's *How Content ID Works*[31]
      - The Electronic Frontier Foundation's *A Guide to YouTube Removals*[32]
      - Maayan Perel & Niva Elkin-Koren, *Accountability in Algorithmic Copyright Enforcement*, 19 STAN. TECH. L. REV. 473 (2016),

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[26] Davey Alba, *The Hidden Laborers Training AI to Keep Ads Off Hateful YouTube Videos*, WIRED (Apr. 21, 2017, 2:08 PM), https://www.wired.com/2017/04/zerochaos-google-ads-quality-raters/.

[27] Davey Alba, *The Hidden Laborers Training AI to Keep Ads Off Hateful YouTube Videos*, WIRED (Apr. 21, 2017, 2:08 PM), https://www.wired.com/2017/04/zerochaos-google-ads-quality-raters/.

[28] Hannah Kuchler, *YouTube Hires Moderators to Root Out Inappropriate Videos*, FIN. TIMES (Dec. 5, 2017), https://www.ft.com/content/080d1dd4-d92c-11e7-a039-c64b1c09b482.

[29] Kevin Tran, *Humans will Vet Political Ads on Facebook*, BUS. INSIDER (Oct. 10, 2017, 9:39 AM), http://www.businessinsider.com/humans-will-vet-political-ads-on-facebook-2017-10. *See also* Todd Spangler, *Facebook Pledges to Hire 1,000 More Ad Reviewers Amid Russian Political Scandal*, VARIETY (Oct. 2, 2017, 8:55 PM), http://variety.com/2017/digital/news/facebook-to-hire-1000-ad-reviewers-russian-political-scandal-1202577789/.

[30] Sheryl Sandburg, FACEBOOK (Sept. 20, 2017), https://www.facebook.com/sheryl/posts/10159255449515177. *See also* David Ingram, *Facebook to Add More Human Review to Ad System – COO Sandberg*, REUTERS (Sept. 20, 2017, 9:34 PM), https://www.reuters.com/article/legal-us-facebook-advertising/facebook-to-add-more-human-review-to-ad-system-coo-sandberg-idUSKCN1BV2X5.

[31] YOUTUBE HELP, HOW CONTENT ID WORKS, https://support.google.com/youtube/answer/2797370?hl=en (last visited Jan. 4, 2017).

[32] A GUIDE TO YOUTUBE REMOVALS, ELECTRONIC FRONTIER FOUND., https://www.eff.org/issues/intellectual-property/guide-to-youtube-removals#content-id (last visited Jan. 4, 2017).

- Frank Pasquale, The Black Box Society, Chapter 3.[33]
  - Facebook has recently taken steps to improve flagging unauthorized content:
    - In July 2017 Facebook bought the intellectual property tracking company Source3[34]
    - Facebook announced in October 2017 it would integrate "Rights Manager with services from three third-party providers" in order "to make it easier for content owners to police the social platform for unauthorized and pirated videos."[35]

    o Pull down inappropriate/offensive content
      - In November 2017, Facebook stated "99% of the ISIS and Al Qaeda-related terror content we remove from Facebook is content we detect before anyone in our community has flagged it to us, and in some cases, before it goes live on the site. We do this primarily through the use of automated systems like photo and video matching and text-based machine learning. Once we are aware of a piece of terror content, we remove 83% of subsequently uploaded copies within one hour of upload."[36]

3. Algorithms can be manipulated to promote content that is dangerous. For example, conspiracy theories opposing vaccines are sometimes disproportionately promoted on social media platforms. What kinds of content and engagement do social media platforms' algorithms favor when "deciding" what to put in our feeds? Is there a risk that they may disproportionately favor sensationalist content that may not be true?

There is a bias toward content that increases engagement—and often this is very sensationalistic or even untrue content.[37] As David Golumbia has argued:

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[33] Frank Pasquale, *The Black Box Society* (Cambridge: Harvard University Press, 2015); Frank Pasquale*, Dominant search engines: an essential cultural & political facility*, in *The Next Digital Decade* (2010), at http://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=2363&context=fac_pubs.

[34] Todd Spangler, *Facebook Buys Startup Source3 to Get Better at Catching Pirated Content*, VARIETY (July 25, 2017, 8:12 AM), http://variety.com/2017/digital/news/facebook-acquires-source3-piracy-1202505740/.

[35] Todd Spangler, *Facebook Connects Video Copyright-Flagging System to Third-Party Tools*, VARIETY (Oct. 3, 2017, 7:00 AM), http://variety.com/2017/digital/news/facebook-rights-manager-copyright-videos-third-party-1202578122/.

[36] Monika Bickert, *Hard Questions: Are We Winning the War on Terrorism Online?*, FACEBOOK NEWSROOM (Nov. 28, 2017), https://newsroom.fb.com/news/2017/11/hard-questions-are-we-winning-the-war-on-terrorism-online/. *See also* Hannah Kuchler, *Facebook Says It Can Quickly Remove Most Content From Terrorist Groups*, FIN. TIMES (Nov. 28, 2017), https://www.ft.com/content/a2ff9a9e-3230-371a-90e4-339a0ffc61c0; Jana J. Pruet, *Facebook Says It Deletes 99 Percent of ISIS and Al Qaeda Content Before It's Flagged*, THE BLAZE (Nov. 29, 2017, 4:30 PM), http://www.theblaze.com/news/2017/11/29/facebook-says-it-deletes-99-percent-of-isis-and-al-qaeda-content-before-its-flagged.

[37] Frank Pasquale, The Automated Public Sphere, at (2017)

Social media too easily bypasses the rational or at least reasonable parts of our minds, on which a democratic public sphere depends. It speaks instead to the emotional, reactive, quick-fix parts of us, that are satisfied by images and clicks that look pleasing, that feed our egos, and that make us think we are heroic. But too often these feelings come at the expense of the deep thinking, planning, and interaction that democratic politics are built from. This doesn't mean reasoned debate can't happen online; of course it can and does. It means that there is a strong tendency—what media and technology researchers call an "affordance"—away from dispassionate debate and toward strong emotions.[38]

There is also evidence that certain manipulators can pollute or otherwise influence feeds. For every change a social media platform makes to an algorithm there are multiple sources instructing users (usually focused on marketing) on how to get around or "beat" the change. *See, e.g.*:

- Betsy McLeod, *How to Beat Facebook's News Feed Algorithm*, BLUE CORONA MARKETING BLOG (Aug. 9, 2017), https://www.bluecorona.com/blog/facebook-news-feed-algorithm-tips.
- Jenn Chen, *9 Tips to Improve Organic Growth with the Facebook Algorithm*, SPROUT BLOG (July 19, 2017), https://sproutsocial.com/insights/facebook-algorithm/.
- Gabriele Boland, *How Brands Can Adapt to Social Media Algorithms*, NEWSWHIP (Apr. 14, 2016), http://www.newswhip.com/2016/04/brands-can-adapt-social-media-algorithms/.
- Christina Newberry, *The Twitter Algorithm: What You Need to Know to Boost Organic Reach*, HOOTSUITE BLOG (May 15, 2017), https://blog.hootsuite.com/twitter-algorithm/.

The following sources give more information on the nature of the problem:

Citation	Description/Quotes
Samuel Albanie, Hillary Shakespeare & Tom Gunter, *Unknowable Manipulators: Social Network Curator Algorithms*, 30TH CONFERENCE ON NEURAL INFO. PROCESSING SYS. (2016), http://www.robots.ox.ac.uk/~albanie/publications/albanie16manipulators.pdf.	Authors discuss how algorithms used to engage users can also learn to manipulate users.
JANNA ANDERSON & LEE RAINIE, PEW RES. CTR., THE FUTURE OF TRUTH AND MISINFORMATION ONLINE (Oct. 2017), http://www.pewinternet.org/2017/10/19/the-future-of-truth-and-misinformation-online/.	Report on survey of over 1000 "technologists, scholars, practitioners, strategic thinkers and others" about the "online information environment." "51% chose the option that the information environment will not improve, and 49% said the information environment will improve."

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[38] David Golumbia, Social Media Has Hijacked our Brains Threatens Global Democracy, at https://motherboard.vice.com/en_us/article/bjy7ez/social-media-threatens-global-democracy.

FACEBOOK: NEWS FEED, https://newsfeed.fb.com/welcome-to-news-feed?lang=en (last visited Jan. 5, 2018). For updates on changes to the Facebook News Feed, see *News Feed FYI*, Facebook Newsroom, https://newsroom.fb.com/news/category/news-feed-fyi/ (last visited Jan. 5, 2018).	Information on Facebooks News Feed.
Wael Ghonim & Jake Rashbass, *It's Time to End the Secrecy and Opacity of Social Media*, WASH. POST (Oct. 31, 2017), https://www.washingtonpost.com/news/democracy-post/wp/2017/10/31/its-time-to-end-the-secrecy-and-opacity-of-social-media/?utm_term=.5e2b2c180484.	Authors advocate for "far more transparency of the outputs produced by [social media] algorithms so we can create an effective accountability mechanism" and a "standardized public interest API."
Andrew Hutchinson, *How Twitter's Feed Algorithm Works – As Explained by Twitter*, Social Media Today (May 11, 2017), https://www.socialmediatoday.com/social-networks/how-twitters-feed-algorithm-works-explained-twitter.	Author describes how Twitter's algorithm works, including how tweets are ranked.
DILIP KRISHNA, NANCY ALBINSON & YANG CHU, DELOITTE, MANAGING ALGORITHMIC RISKS (2017), https://www2.deloitte.com/us/en/pages/risk/articles/algorithmic-machine-learning-risk-management.html.	Authors examine "algorithmic risks" and offer advice to organizations/businesses on how best to manage those risks.
Nicolas Koumchatzky & Arton Andryeyev, *Using Deep Learning at Scale in Twitter's Timeline*, TWITTER: ENGINEERING (May 9, 2017), https://blog.twitter.com/engineering/en_us/topics/insights/2017/using-deep-learning-at-scale-in-twitters-timelines.html.	Describing how Twitter's "ranking algorithm is powered by deep neural networks."
Will Oremus, *Twitter's New Order*, SLATE (Mar. 5, 2017, 8:00 PM), http://www.slate.com/articles/technology/cover_story/2017/03/twitter_s_timeline_algorithm_and_its_effect_on_us_explained.html.	Author examines Twitter's "algorithmic timeline." "But you can't see more of some kinds of tweets without seeing less of others, and the hidden consequences of that equation could affect us all. As it gradually tightens the loops in Twitter's social fabric, the algorithm risks further insulating its users from people whose viewpoints run counter to their own—a phenomenon, already rampant on Facebook, that has contributed to the polarization of the American electorate and the Balkanization of its media."

	"Twitter, in other words, is no longer a social network, at least by its own reckoning. It's a real-time, personalized news service. And since there are no human editors, it falls to Twitter's algorithm to determine which tweets will lead the news each time you open it." "Yet if ever-greater personalization is the answer to Twitter's business woes, it's unlikely to be the answer to the woes of a media ecosystem in which all news has become "fake news" to someone."
LEE RAINIE & JANNA ANDERSON, PEW RES. CTR., CODE-DEPENDENT: PROS AND CONS OF THE ALGORITHM AGE (Feb. 2017), http://www.pewinternet.org/2017/02/08/code-dependent-pros-and-cons-of-the-algorithm-age/.	Report on survey of over 1300 "technology experts, scholars, corporate practitioners and government leaders" on "current attitudes about the potential impacts of algorithms in the next decade." "The non-scientific canvassing found that 38% of these particular respondents predicted that the positive impacts of algorithms will outweigh negatives for individuals and society in general, while 37% said negatives will outweigh positives; 25% said the overall impact of algorithms will be about 50-50, positive-negative."
Kai Shu, Amy Silva, Suhang Wang, Jiliang Tang & Huan Liu, *Fake News Detection on Social Media: A Data Mining Perspective*, ARXIV (Sept. 3, 2017), https://arxiv.org/pdf/1708.01967v3.pdf.	Paper discusses the dissemination and risks related to fake news online as well as an overview of current detection strategies and research.
Tom Wheeler, *Using "Public Interest Algorithms" to Tackle the Problems Created by Social Media Algorithms*, BROOKINGS: TECHTANK (Nov. 1, 2017), https://www.brookings.edu/blog/techtank/2017/11/01/using-public-interest-algorithms-to-tackle-the-problems-created-by-social-media-algorithms/.	Author proposes use of public interest algorithms "to monitor and report on the effects of social media algorithms." "[A] public interest algorithm can provide awareness of and access to the information behind any posting. Such sunlight will not only expose any propaganda, but also will help independent evaluation of the veracity of the information being delivered." "*That problem is how the software algorithms that determine what you see on social media prioritize revenue over veracity.*" (emphasis added).

The Honorable Frank Pallone, Jr.

1. In your testimony for this hearing, you discussed ways that racial bias can leak into the content we see online. I appreciate your work in this area pointing out a problem that the Congressional Black Caucus has also been working hard to address. I am concerned that systematic bias in our technology could cause disproportionate harms to minority communities.

Fortunately, on our Committee, Congressman Butterfield has led the fight along with Congressman Rush and Congresswoman Clarke to tackle this issue head on. Off Committee, Congressman Cleaver, Congressman Ellison, and Congresswoman Lee have also taken the problem straight to the tech companies, forcing them to confront their role creating this widespread problem. Are there ways that technology companies can better wring bias out from our systems?

Yes, and this is a critical problem. Groups like the Electronic Privacy Information Center, AI Now, Algorithm Watch, Data & Society, and Upturn have worked on this problem for years. They have generated many key reports which the Committee should consult.[39] The following resources give further information:

Citation	Description/Quotes
DEEPMIND ETHICS & SOCIETY, https://deepmind.com/applied/deepmind-ethics-society/ (last visited Jan. 8, 2018). *See also* Verity Harding & Sean Legassick, *Why We Launched DeepMind Ethics & Society*, DeepMind (Oct. 3, 2017), https://deepmind.com/blog/why-we-launched-deepmind-ethics-society/.	"Technology is not value neutral, and technologists must take responsibility for the ethical and social impact of their work."
Jen Heazlewood, *Combatting Unconscious Bias in Design*, R/GA BY DESIGN (Feb. 2, 2017), https://rgabydesign.com/combatting-unconscious-bias-in-design-ac5940232fb7.	"The result of the actions by designers quickly encroaches on that of machines, and as we progress further into the world of machine learning and artificial intelligence we need to ensure that pre-existing models and shortcuts are not designed into the technology. A problem with the evolution of these systems is that algorithms are being created with the inventors' unconscious biases: Once systems are created, the test subjects are often internal subjects or recruits with similar backgrounds to the creators, therefore the voice or learning program becomes more receptive to that uniform group."
Matt Reynolds, *Bias Test to Prevent Algorithms Discriminating Unfairly*, NEW SCIENTIST (Mar. 29,	

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[39] See also Giovanni Commande, *Regulating Algorithms' Regulation: First Ethico-Legal Principles*, in *Transparent Data Mining for Big and Small Data* (edited by Tania Cerquitelli, Daniele Quercia, and Frank Pasquale, 2016).

2017), https://www.newscientist.com/article/mg23431195-300-bias-test-to-prevent-algorithms-discriminating-unfairly/.	
Jackie Snow, *New Research Aim to Solve the Problem of AI Bias in "Black Box" Algorithms*, MIT TECH. REV. (Nov. 7, 2017), https://www.technologyreview.com/s/609338/new-research-aims-to-solve-the-problem-of-ai-bias-in-black-box-algorithms/.	Author discusses recent research and proposal to combat algorithmic bias. *See* Sarah Tan et al. paper cited below.
Matthias Spielkamp, *Inspecting Algorithms for Bias*, MIT TECH. REV. (June 12, 2017), https://www.technologyreview.com/s/607955/inspecting-algorithms-for-bias/.	"Democratic societies should be working now to determine how much transparency they expect from ADM systems. Do we need new regulations of the software to ensure it can be properly inspected? Lawmakers, judges, and the public should have a say in which measures of fairness get prioritized by algorithms. But if the algorithms don't actually reflect these value judgments, who will be held accountable?"
Sarah Tan, Rich Caruana, Giles Hooker & Yin Lou, *Detecting Bias in Black-Box Models Using Transparent Model Distillation*, ARXIV (Nov. 18, 2017), https://arxiv.org/pdf/1710.06169.pdf.	Authors discuss and "propose a transparent model distillation approach to detect bias" in black-box risk scoring models.
Paul Voosen, *How AI Detectives are Cracking Open the Black Box of Deep Learning*, Science (July 6, 2017, 2:00 PM), http://www.sciencemag.org/news/2017/07/how-ai-detectives-are-cracking-open-black-box-deep-learning.	Author examines different ways researchers/scholars are tackling the interpretability problem of AI to understand how neural networks make decisions. "That interpretability problem, as it's known, is galvanizing a new generation of researchers in both industry and academia. Just as the microscope revealed the cell, these researchers are crafting tools that will allow insight into the how neural networks make decisions. Some tools probe the AI without penetrating it; some are alternative algorithms that can compete with neural nets, but with more transparency; and some use still more deep learning to get inside the black box."