



Use of Aggregated Location Information and COVID-19: What We've Learned, Cautions about Data Use, and Guidance for Companies

Mana Azarmi & Andy Crawford

Executive Summary

Over the last few months technology and data have featured prominently in discussions of how governments, public health officials, employers, and others should respond to the challenges presented by COVID-19. The Center for Democracy & Technology has expressed preliminary thoughts on the principles that should guide government responses that include the use of data and technology.¹ In those principles we voiced a preference for disclosure of aggregated data which can provide useful insights to public health officials. This short paper builds on that statement and reviews some of the disclosures of aggregated mobility data that have been made, its utility, and what companies who seek to disclose these and other forms of aggregated data should take into consideration in order to preserve privacy and aid public health policy.

Location information is sensitive and should enjoy strong privacy protections. When used inappropriately, location data can lead to financial, reputational, or even physical harm. Sharing any sort of location information should be consistent with modern concepts of privacy, including recent Supreme Court precedent. This is especially important when location information is shared with the government. Thankfully, there are examples where location data can be utilized in a manner that both recognizes and protects individual user privacy, while also offering insights that can benefit public health and efforts to combat COVID-19. The key to striking an acceptable balance is using and offering data that has been stripped of individual identifiers in sufficiently large samples. Even with privacy protecting considerations, however, it is vital to understand the limits of these offerings. They almost always represent segments of the population; they have gaps, and do not represent every community equally.

Public health policy and efforts to thwart COVID-19 must be led by experts using multiple tools. Aggregated location data has emerged as an intriguing and potentially powerful tool, but it is not an illusive “silver-bullet” that, once deployed, will put an end to the global pandemic. Instead, when designed to account for individual privacy and underrepresented communities, aggregated location data may be one part of a larger strategy to keep us all healthy, safe, and informed.

¹ Greg Nojeim, *CDT Statement and Announcement of Coronavirus: Data for Life and Liberty Task Force Formation*, Ctr. For Democracy & Tech (Apr. 30, 2020), <https://cdt.org/insights/cdt-statement-and-announcement-of-coronavirus-data-for-life-and-liberty-task-force-for-formation/>.

I. Introduction

COVID-19 has dramatically changed how we live. A novel feature of our current experience, as compared to past pandemics like the Spanish flu, is that we have much more data available to us to understand the virus, how it spreads, and how it affects people's lives. And because we live in an era of incredible data generation, private companies, researchers, academics, and governments (and we at CDT)² have all been exploring how data and technology can be leveraged to help stop the spread of the virus. To aid their efforts, governments around the world have demonstrated an appetite for utilizing extremely sensitive identifying information, such as location information generated by the operation of digital devices like cell phones, surveillance cameras, and applications.³

As the world explores ways to use the tools at its disposal to confront COVID-19, CDT and many others in civil society have advised of the need to be skeptical of unnecessary, ineffective, and disproportionate intrusions on individual privacy.⁴ Just because a certain data set or type of analysis exists and is available, doesn't necessarily mean it will be effective in stemming the spread of this virus. It's also true, however, that not every use of data or collaboration between private industry and government is cause for alarm. For example, the next section discusses how aggregated data can be voluntarily disclosed by tech companies to the public and public health entities in a manner that preserves privacy and is helpful in combating COVID-19 through better informed public health policy.

II. Location Data is Incredibly Sensitive and Difficult to Anonymize

There have been numerous calls for governments to leverage location information held by service providers to track the spread of COVID-19, or to monitor compliance with social distancing and shelter in place policies. Because some may suggest that privacy has no place in a pandemic, it seems important to reiterate that an individual's location data is a remarkably sensitive form of personal information. As the Supreme Court noted in *Carpenter v. United States*, a comprehensive record of a person's movements "reflects a wealth of detail about [the

² *Id.*

³ Jens-Henrik Jeppesen and Pasquale Esposito, *COVID-19: European Data Collection and Contact Tracing Measures*, Ctr. For Democracy & Tech (Apr. 29, 2020), <https://cdt.org/insights/covid-19-european-data-collection-and-contact-tracing-measures/>; *Coronavirus: Israel halts police phone tracking over privacy concerns*, BBC (Apr. 23, 2020), <https://www.bbc.com/news/technology-52395886>; *Location Data and Covid-19*, Privacy International, <https://privacyinternational.org/examples/location-data-and-covid-19> (last visited May 8, 2020).

⁴ Testimony of Michelle Richardson, *Enlisting Big Data in the Fight Against Coronavirus Before the Committee on Commerce, Science, and Transportation*, Ctr. For Democracy & Tech (Apr. 9, 2020), <https://cdt.org/wp-content/uploads/2020/04/2020-04-07-Enlisting-Big-Data-in-the-Fight-Against-Coronavirus-Senate-Commerce-Michelle-Richardson.pdf>.

person’s] familial, political, professional, religious, and sexual associations.”⁵ From location information one can infer sensitive medical, religious, or legal needs from visits to cancer centers, churches or mosques, or visits to an immigration legal clinic. Over time, patterns of life can even be identified including when an individual goes to work, where they spend their free time, and with whom they have relationships.

Location data, because of its deeply revealing nature, is also very difficult to sufficiently anonymize. New York Times reporters have analyzed databases of de-identified location data (location data points not directly connected to an individual’s name or another conventional identifier), and demonstrated that the data could become re-identifiable.⁶ Other researchers were famously able to identify 95% of the people in an anonymized location data set using only four points each.⁷ Additional studies have demonstrated how susceptible anonymous location datasets are to re-identification, “[w]ith merged mobility datasets, this becomes even easier: An agent could potentially match users trajectories in anonymized data from one dataset, with deanonymized data in another, to unmask the anonymized data.”⁸ Part of what makes location information difficult to anonymize is the wealth of information that can be combined with the dataset to enable conclusions about identity to be drawn, and the uniqueness of our travel patterns. For example, an anonymized route of a morning commute can reveal where the commuter likely lives and works. This information almost always uniquely describes one person and is identifiable to that person. Publicly available housing records, or online information about who works where, for example, can likely reveal the commuter’s identity. Given these facts, disclosure of individual location information, even de-identified, raises significant privacy and civil liberties concerns.

III. Aggregated Mobility Data Can Help Governments and Preserve Individual Privacy

Privacy rights and the use of consumer data to inform public health policy are not always in tension. While there are, of course, examples of where that is true, we should caution against

⁵ *Carpenter v. United States*, 138 S. Ct. 2206, 2217 (2018) (quoting *United States v. Jones*, 132 S.Ct. 945, 955 (2012) (Sotomayor, J., concurring)).

⁶ Jennifer Valentino-DeVries et. al., *Your Apps Know Where You Were Last Night, and They’re Not Keeping It Secret*, N.Y. Times (Dec. 10, 2018),

<https://www.nytimes.com/interactive/2018/12/10/business/location-data-privacy-apps.html>; Stuart A. Thompson and Charlie Warzel, *Twelve Million Phones, One Dataset, Zero Privacy*, N.Y. Times (Dec. 19, 2019),

<https://www.nytimes.com/interactive/2019/12/19/opinion/location-tracking-cell-phone.html>.

⁷ Yves-Alexandre de Montjoye et. al., *Unique in the Crowd: The Privacy Bounds of Human Mobility*, *Nature* (2013), <https://www.nature.com/articles/srep01376>.

⁸ Rob Matheson, *The privacy risks of compiling mobility data: Merging different types of location-stamped data can make it easier to discern users’ identities, even when the data is anonymized*, MIT News (Dec. 7, 2018),

<http://news.mit.edu/2018/privacy-risks-mobility-data-1207> (describing Daniel Kondor et al., *Towards matching user mobility traces in large-scale datasets*, *IEEE Transactions on Big Data* (Sep. 24, 2018),

http://senseable.mit.edu/papers/pdf/20180927_Kondor-et-al_TowardsMatching_IEEE-BigData.pdf)).



narratives that suggest that any use of data by health officials automatically equates to an erosion of core privacy protections. Aggregated mobility data can accomplish the dual goals of preserving an individual's rights to privacy and freedom of association, while allowing public health officials to reap the benefits of trend analysis.

Aggregated mobility data is data reflecting individual travel over time that has been summarized in some statistical fashion. For example, rather than view everyone's individual movements, aggregated data could provide summaries of population level data such as the relative popularity of one location in a city as compared to another. Whether aggregation sufficiently masks the identity of any particular individual depends on the specifics of the aggregation, including the number of people represented in the data set, the granularity of the location discussed, and other similar factors.

On the spectrum of proposals to respond to COVID-19, the disclosure of aggregated mobility data or inferences drawn from consumer data, to inform public health officials, poses some of the least privacy risk in return for the most gain. First, it keeps individual consumer data in the hands of the service provider, which is the entity with which the consumer has the direct relationship. This allows the provider to maintain trust with its customers, and keeps the companies from running afoul of legal restrictions that preclude disclosure of consumer data.⁹ Second, keeping the raw data out of the hands of the government prevents a lot of mischief. When data is in the hands of the government it is quickly put to new purposes that can be difficult to control for. Third, it preserves privacy and freedom of association, while still being useful. To measure compliance with social distancing policies, the government need not collect everyone's individual location history, but as has been illustrated over the past few weeks, inferences from that data or aggregated mobility data can be of sufficient utility.¹⁰

In reviewing such aggregated mobility, data public health authorities could determine that more resources need to be allocated towards public messaging, or determine whether changes in messaging had an effect on mobility. Aggregated mobility data could inform members of the public about the locations in their community that are highly popular, and therefore should be approached with appropriate precautionary measures. It could reveal mobility flows and inform health authorities of a potential new outbreak. Aggregated mobility disclosures, as described in more detail in the next section, have also helped illustrate and spurr conversations about how

⁹ 18 U.S. Code § 2702. (Section of the Electronic Communications Privacy Act that concerns the voluntary disclosure of customer communications or records)

¹⁰ Aaron Holmes, *Facebook, Google, and Apple are using data from millions of users to map COVID-19 and people's movements. Here are all the coronavirus maps and dashboards made by tech giants you can explore today*, Business Insider (Apr. 21, 2020), <https://www.businessinsider.com/explore-coronavirus-maps-made-from-facebook-google-apple-user-data-2020-4> ; Our Impact, Facebook Data for Good, <https://dataforgood.fb.com/impact/category/disease-prevention-maps/> (last visited May 8, 2020).

different communities are surviving and living during COVID.¹¹ Importantly, this is the kind of data that public health experts have said can be helpful in dealing with COVID-19.¹²

IV. Aggregated Mobility Data Disclosures: A Set of Case Studies

In recent weeks Google,¹³ Apple,¹⁴ and Facebook¹⁵ have used the data they already have and produced publicly available models and reports reflecting mobility trends. While the data that informs these models may have been initially generated and collected for other, commercial reasons, it can also provide key insights when analyzed by health care professionals, researchers, and policy makers. Data for each of these efforts is generally generated by individuals' use of Google, Apple, and Facebook products. In describing their COVID-19 reports on their websites, each company also outlines the privacy protections surrounding the data used for the reports. It is important that privacy was not merely an afterthought, but was designed into many levels for each of these offerings. Each company carefully communicated to the public what they were doing and why, creating needed transparency to enable consumers to feel that disclosures are not being made hastily, and without attention to necessary equities like privacy.

Google

Google's COVID-19 Community Mobility Reports use aggregated, anonymized data to show how frequently certain types of places, like transit hubs, shops, and offices are visited, compared to pre-COVID-19 levels.¹⁶ The data stem from devices used by consumers who have turned on the location history setting of their Google account.¹⁷ Google points the public to instructions on how to turn off this feature for their accounts, and how to delete this data.¹⁸ These reports won't be a permanent fixture, and Google says it will only keep them around as long as public health officials find them useful in their efforts to combat COVID-19.¹⁹ As demonstrated below, the disclosures made are done at a high level of generality—the city or

¹¹ See articles cited in Section V.

¹² Caroline O. Buckee et al, *Aggregated mobility data could help fight COVID-19*, *Science* 145-146 (Apr. 10, 2020), <https://science.sciencemag.org/content/368/6487/145.2/tab-pdf>.

¹³ *Covid-19 Mobility Reports*, Google, <https://www.google.com/covid19/mobility/> (last visited May 8, 2020).

¹⁴ *Maps Mobility Trends Reports*, Apple, <https://www.apple.com/covid19/mobility> (last visited May 8, 2020).

¹⁵ *Our Work on Covid-19*, Facebook Data for Good, <https://dataforgood.fb.com/docs/covid19/> (last visited May 8, 2020).

¹⁶ *Covid-19 Mobility Reports*, Google, <https://www.google.com/covid19/mobility/> (last visited May 8, 2020).

¹⁷ Jen Fitzpatrick and Karen DeSalvo, *Helping public health officials combat COVID-19*, Google (Apr. 3, 2020), <https://www.blog.google/technology/health/covid-19-community-mobility-reports?hl=en>.

¹⁸ *Id.*

¹⁹ *Id.*

county level—minimizing the risk of re-identification. Google also makes use of differential privacy to obscure individual data.²⁰



COVID-19 Community Mobility Report

District of Columbia April 30, 2020

Mobility changes

This dataset is intended to help remediate the impact of COVID-19. It shouldn't be used for medical diagnostic, prognostic, or treatment purposes. It also isn't intended to be used for guidance on personal travel plans.

Each Community Mobility Report dataset is presented by location and highlights the percent change in visits to places like grocery stores and parks within a geographic area.

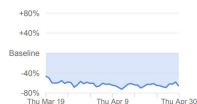
Location accuracy and the understanding of categorized places varies from region to region, so we don't recommend using this data to compare changes between countries, or between regions with different characteristics (e.g. rural versus urban areas).

To learn how we calculate these trends and preserve privacy, read [About this data](#).

Retail & recreation

-66%

compared to baseline



Mobility trends for places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

District of Columbia May 2, 2020

Mobility changes

This dataset is intended to help remediate the impact of COVID-19. It shouldn't be used for medical diagnostic, prognostic, or treatment purposes. It also isn't intended to be used for guidance on personal travel plans.

Each Community Mobility Report dataset is presented by location and highlights the percent change in visits to places like grocery stores and parks within a geographic area.

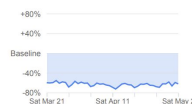
Location accuracy and the understanding of categorized places varies from region to region, so we don't recommend using this data to compare changes between countries, or between regions with different characteristics (e.g. rural versus urban areas).

To learn how we calculate these trends and preserve privacy, read [About this data](#).

Retail & recreation

-62%

compared to baseline



Mobility trends for places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

Images from Google's COVID-19 Community Mobility Reports for the District of Columbia

Facebook

Facebook is also utilizing data it already possesses and offering a variety of services, including to researchers who are trying to confront COVID-19.²¹ One of Facebook's offerings are disease prevention maps.²² According to Facebook, these maps are designed to show general trends about where people are congregating and how they move over time. The data that informs these maps comes from aggregated location information from Facebook users' mobile phones, who have enabled location services, along with de-identified and aggregated cellular connectivity data.²³

²⁰ *Id.*

²¹ COVID-19 Mobility Data Network, [https://www.covid19mobility.org/\(network of infectious disease epidemiologists at universities around the world working with technology companies to use aggregated mobility data to support the COVID-19 response\)](https://www.covid19mobility.org/(network%20of%20infectious%20disease%20epidemiologists%20at%20universities%20around%20the%20world%20working%20with%20technology%20companies%20to%20use%20aggregated%20mobility%20data%20to%20support%20the%20COVID-19%20response))(last visited May 8, 2020). For a list of Facebook Data for Good's projects please see, <https://dataforgood.fb.com/docs/covid19/>. For example, Facebook's aggregated mobility data is being used to inform the California Governor's office about county-level mobility. Issie Lapowsky, *Facebook data can help measure social distancing in California*, Protocol (March 17, 2020), <https://www.protocol.com/facebook-data-help-california-coronavirus>.

²² *Disease Prevention Maps*, Facebook Data for Good, <https://dataforgood.fb.com/tools/disease-prevention-maps/> (last visited May 8, 2020).

²³ Paige Maas et. al, *Facebook Disaster Maps Aggregate Insights for Crisis Response & Recovery*, ISCRAM (May 19, 2019), https://research.fb.com/wp-content/uploads/2019/04/isgram19_camera_ready.pdf.

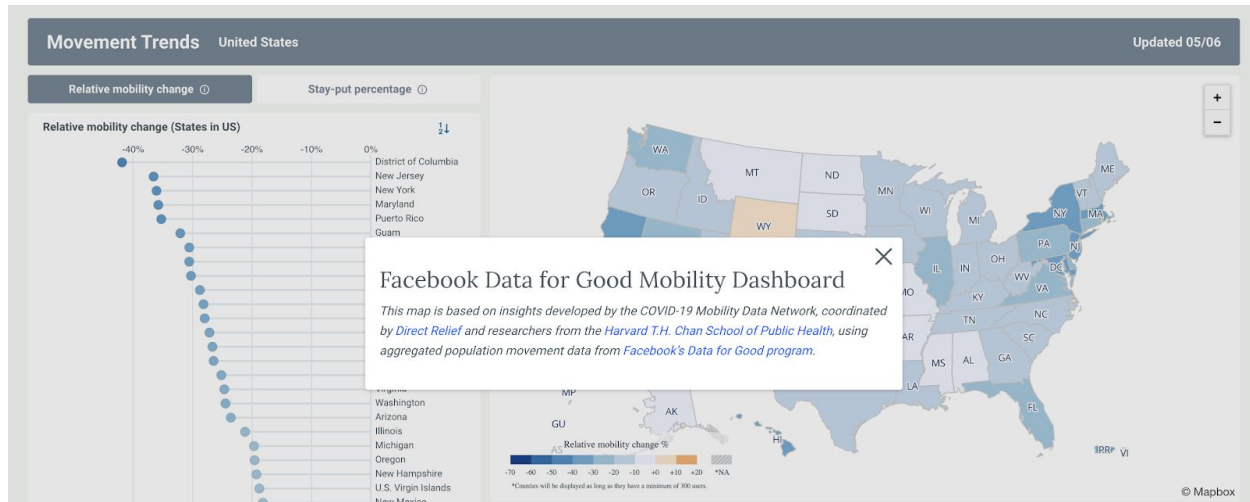


Image from Facebook's COVID-19 Mobility Data Network²⁴

Apple

Apple has made mobility trends reports available to the public that show the changes in routing requests in specific geographical areas based on user requests for directions in Apple's maps app.²⁵ Apple explains that data it relies upon for these reports is associated with random, rotating identifiers so it doesn't have a profile of individual users' movements and searches. There are also minimum thresholds for direction requests made per day.²⁶ Notably, the data reflects *inquiries* for directions, *not mobility itself* and should be interpreted carefully (For example, it is unlikely that a decrease in requests for walking directions indicates that people simply stopped walking.²⁷ Rather, it might mean they just don't need directions to do the short neighborhood walks permitted under the local "stay at home" order.)

²⁴ <https://visualization.covid19mobility.org/?date=2020-05-06>.

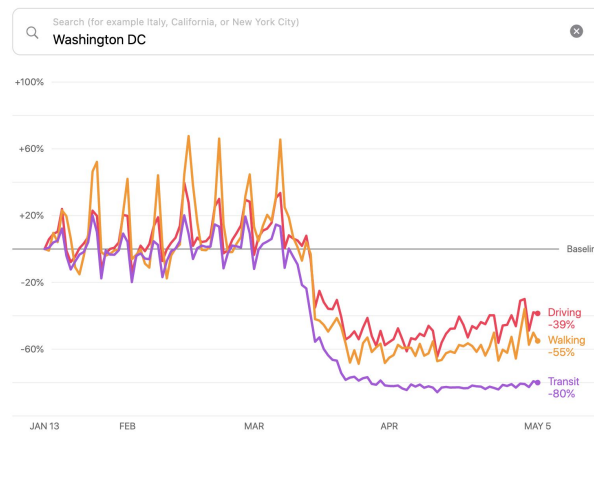
²⁵ *Maps Mobility Trends Reports*, Apple, <https://www.apple.com/covid19/mobility> (last visited May 8, 2020).

²⁶ *Apple makes mobility data available to aid COVID-19 efforts*, Apple Newsroom (Apr. 14, 2020), <https://www.apple.com/newsroom/2020/04/apple-makes-mobility-data-available-to-aid-covid-19-efforts/>.

²⁷ Ben Schott, *People Have Stopped Taking Walks*, Bloomberg (May 1, 2020), <https://www.bloomberg.com/opinion/articles/2020-05-01/coronavirus-how-global-lockdowns-have-affected-walking-habits>.

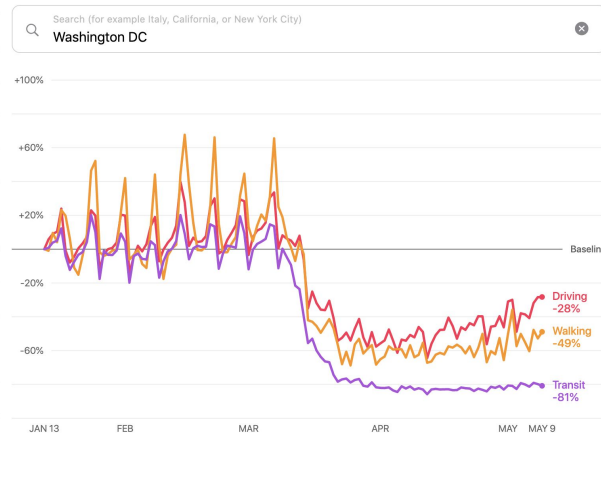
Mobility Trends

Change in routing requests since January 13, 2020



Mobility Trends

Change in routing requests since January 13, 2020



Images from Apple Maps Mobility Trends Report for the District of Columbia

V. Limitations of Aggregated Data Generally and Needed Precautions

Disclosures of aggregated data, like those discussed above, can certainly inform public health policy, however, simply because aggregated data (assuming sufficient steps have been taken to obscure any one person's identity) may preserve individual privacy does not make it inherently useful. The data and inferences drawn from it are only as good as the kind of data captured and who is included in the data set. For example, the aggregated mobility data discussed above only represents people who have smartphones, use the respective services, and have permitted the disclosure to the companies of their data. This data has historically, and continues to, under-represent lower income Americans,²⁸ those who may abstain from use of technologies for religious reasons, those without access to the internet or needed data plans, and others. Adoption of certain technologies and applications may additionally skew younger. The data is also only one piece of a puzzle. There is a risk of bad policymaking if officials and commentators use this data alone to inform policy and judgments. For example, the ability of any individual to comply with a strict "stay at home" order is highly dependent on conditions of employment,²⁹

²⁸ See e.g., Monica Anderson & Madhumitha Kumar, *Digital divide persists even as lower-income Americans make gains in tech adoption* Pew Research Center (May 7, 2020), <https://www.pewresearch.org/fact-tank/2019/05/07/digital-divide-persists-even-as-lower-income-americans-make-gains-in-tech-adoption/>.

²⁹ Jennifer Valentino-DeVries, Denise Lu and Gabriel J.X. Dance, *Location Data Says It All: Staying at Home During Coronavirus Is a Luxury*, N.Y. Times (Apr. 3, 2020), <https://www.nytimes.com/interactive/2020/04/03/us/coronavirus-stay-home-rich-poor.html>; Claire Cain Miller, Sarah Kliff, and Margot Sanger-Katz, *Avoiding Coronavirus May Be a Luxury Some Workers Can't Afford*, N.Y. Times (March 1, 2020), <https://www.nytimes.com/2020/03/01/upshot/coronavirus-sick-days-service-workers.html>; Amanda Mull, *The Problem With Telling Sick Workers to Stay Home*, The Atlantic (Feb. 28, 2020),

conditions at home,³⁰ proximity to essential resources,³¹ and other factors.³² Aggregated data disclosures alone will fail to communicate these realities. In other words, a decrease in mobility in one discreet area of a state that is less than the decrease in the mobility of an entire state does not necessarily mean that enforcement efforts should be focused there because people are willfully and unnecessarily violating orders that place limitations on personal movement. It might instead be the case that essential workers from minority communities are disproportionately located in that area. Directing law enforcement resources to counter that trend in mobility might be counterproductive, if not potentially harmful to those individuals.

Before disclosing aggregated data, companies should be wary of the potential for a disclosure to actively harm individual privacy and public policy. Past efforts to disclose data inferences have fallen short.³³ Affluent individuals are more likely to have a digital footprint that can be analyzed, and therefore be represented in a data set disclosed by a private entity. For example, some e-health and fitness companies are seeking to study if their product usage can predict the next COVID-19 outbreak. These efforts are rife with risk. Aside from the developing science illustrating the variety of symptoms that virus carriers present,³⁴ if any, they could also be leaving out people who cannot afford to adopt their product,³⁵ risking misallocating resources away from populations that are the most vulnerable right now.³⁶

<https://www.theatlantic.com/health/archive/2020/02/coronavirus-could-hit-american-workers-especially-hard/607213/>.

³⁰ Jason DeParle, *The Coronavirus Class Divide: Space and Privacy*, N.Y. Times (Apr. 12, 2020), <https://www.nytimes.com/2020/04/12/us/politics/coronavirus-poverty-privacy.html>; Asheley Fetters & Olga Khazan, *The Worst Situation Imaginable for Family Violence*, The Atlantic (May 8, 2020), <https://www.theatlantic.com/family/archive/2020/05/challenge-helping-abuse-victims-during-quarantine/611272>.

³¹ Jessica Flores, *Local leaders help communities where healthy food is hard to find amid coronavirus*, USA Today (Apr. 22, 2020), <https://www.usatoday.com/story/news/2020/04/22/coronavirus-pandemic-makes-healthy-food-harder-find-some/5169249002/>.

³² Emma Grey Fillis, *For Homeless People, Covid-19 Is Horror on Top of Horror*, Wired (Apr. 2, 2020), <https://www.wired.com/story/coronavirus-covid-19-homeless/>.

³³ David Lazer and Ryan Kennedy, *What We Can Learn From the Epic Failure of Google Flu Trends*, Wired (Oct. 1, 2015), <https://www.wired.com/2015/10/can-learn-epic-failure-google-flu-trends/>.

³⁴ *Symptoms of Coronavirus*, Center for Disease Control, <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html> (last visited May 8, 2020).

³⁵ Ridhi Shetty, *Data Use In The Fight Against COVID-19 Should Treat People Equitably, Not Exacerbate Long-Standing Disparities*, Ctr. For Democracy & Tech (Apr. 23, 2020), <https://cdt.org/insights/data-use-in-the-fight-against-covid-19-should-treat-people-equitably-not-exacerbate-long-standing-disparities/>.

³⁶ Emma Grey Fillis, *For Homeless People, Covid-19 Is Horror on Top of Horror*, Wired (Apr. 2, 2020), <https://www.wired.com/story/coronavirus-covid-19-homeless/>; Dan Vergano and Kadia Goba, *Why The Coronavirus Is Killing Black Americans At Outsize Rates Across The US*, BuzzFeed (Apr. 10, 2020), <https://www.buzzfeednews.com/article/danvergono/coronavirus-black-americans-covid19>; Rheem Hanna, *Guest commentary: U.S is failing its undocumented immigrants during coronavirus pandemic*, Denver Post (May 3, 2020),

Reports suggest that we will be dealing with COVID-19 for the foreseeable future. There will be a desire to lean on big data to inform policy decisions, such as when to loosen stay-at-home restrictions. As companies contemplate disclosing aggregated consumer information to the public and to governments, we recommend the following six principles guide their practice:

1. Work with public health experts to identify the information that would be useful to public health policy.
2. Assess who is represented in your data set, who is omitted, and the potential risk of misinforming the public and officials with disclosure of inferences from that data.
3. If practicable, communicate with the public and your customers about what aggregate data you are considering disclosing before releasing the data and allow for opting into the disclosure.
4. Be transparent about what you are disclosing and why, the steps taken to protect individual privacy, and who will have access to the data. If the data isn't representative of all segments of society, be transparent about that reality and publicize any resultant limitations on the inferences that can be drawn from that data.
5. Aggregate sufficiently and supplement with other anonymizing techniques as appropriate, including differential privacy.³⁷
6. Time-limit the disclosures to expire with the end of the pandemic, or when public health officials say the data no longer has utility for dealing with the pandemic.

We're relying on companies to voluntarily adopt these precautions and police the data they disclose to the public and governments, in order to preserve the public's trust that their privacy won't become a certain casualty of COVID-19. CDT has testified several times before Congress on the need for federal privacy legislation that sets out the guardrails of what is and is not appropriate corporate behavior, and what rights and expectations consumers should readily have.³⁸ This crisis has only made the need for a strong law clearer, an issue that has not escaped

<https://www.denverpost.com/2020/05/03/guest-commentary-u-s-is-failing-its-undocumented-immigrants-during-coronavirus-pandemic/>; Oliver Laughland, 'A perfect storm': poverty and race add to Covid-19 toll in U.S. deep south, *The Guardian* (Apr. 12, 2020),

<https://www.theguardian.com/us-news/2020/apr/12/coronavirus-us-deep-south-poverty-race-perfect-storm>.

³⁷ Alexandra Wood et. al, *Differential Privacy: A Primer for a Non-Technical Audience*, Berkman Klein Ctr. For Internet and Society (Nov. 1, 2018), <https://cyber.harvard.edu/publication/2018/differential-privacy>.

³⁸ See e.g., Testimony of Michelle Richardson, Enlisting Big Data in the Fight Against Coronavirus Before the Committee on Commerce, Science, and Transportation, Ctr. For Democracy & Tech (Apr. 9, 2020), <https://cdt.org/wp-content/uploads/2020/04/2020-04-07-Enlisting-Big-Data-in-the-Fight-Against-Coronavirus-Senate-Commerce-Michelle-Richardson.pdf>.



the notice of Congress.³⁹ Additional protections are also needed for data disclosed to, and compelled by, government entities.⁴⁰

VI. Conclusion

Humanity faces an incredible challenge, and data and technology can have an important role to play in how we manage this crisis and live during a time of COVID-19.⁴¹ Privacy need not be a dirty principle stifling the ability of the government to combat the spread of this virus. Measures can be adopted that are rights respecting and that support public health policy. CDT will continue to issue short papers reviewing data and technology that is adopted.

³⁹ Press Release: Committee Leaders Introduce Data Privacy Bill, U.S. Senate Committee on Commerce, Science & Transportation (May 7, 2020),

<https://www.commerce.senate.gov/2020/5/committee-leaders-introduce-data-privacy-bill>.

⁴⁰ Tim Hoagland, *CDT Kicks Off the First in a Series of Webinars on Tech Policy Responses to COVID-19*, Ctr. For Democracy & Tech (May 4, 2020),

<https://cdt.org/insights/cdt-kicks-off-the-first-in-a-series-of-webinars-on-tech-policy-responses-to-covid-19/> (First Webinar: Gaps in U.S. Privacy and Surveillance Law Laid Bare by Coronavirus).

⁴¹ Elizabeth Laird, *Homeschooling and COVID-19: Parents as Chief Information and Privacy Officers*, Ctr. For Democracy & Tech (Apr. 8, 2020),

<https://cdt.org/insights/homeschooling-and-covid-19-parents-as-chief-information-and-privacy-officers/>; Stan Adams, *In the Middle of COVID-19: Can We All Agree Now That Internet Access is a Necessity?*, Ctr. For Democracy & Tech (Apr. 2, 2020),

<https://cdt.org/insights/in-the-middle-of-covid-19-can-we-all-agree-now-that-internet-access-is-a-necessity/>.