Ms. Michelle Richardson, Director, Data and Privacy Project, Center for Democracy and Technology

Questions Submitted by Members of the Senate Committee on Commerce, Science, and Transportation

Enlisting Big Data in the Fight Against Coronavirus

April 9, 2020

Chairman Wicker

1. Many national and local governments around the world are seeking to use new technology to combat this unprecedented pandemic. Earlier this week, the German government launched an app that allows users to "donate" personal data collected by their fitness trackers or other health devices to help authorities analyze the spread of COVID-19. Authorities in Moscow have launched an app intended to be downloaded by those who test positive for COVID-19. Yet this app raises privacy concerns, as it would allow officials to track residents' individual movements.
    - As governments seek to use new technologies in the fight against COVID-19, it is imperative that privacy rights be protected. Are there specific examples of app-based programs you can recommend to policymakers that are both useful in the fight against COVID-19 and respectful of individual privacy rights?

2. Much of the discussion surrounding the collection of private data to fight the spread of COVID-19 presents two goals – effectiveness and privacy protection – as mutually exclusive factors that need to be balanced. On one side of the balance, it is assumed that greater amounts of personal data, in more granular form, will allow authorities to track the spread of the virus more effectively. On the other side of the balance is protection of individual privacy, which is believed to be threatened by greater surveillance of individuals by the government.
    - Is this an accurate view of the situation? Are privacy and effectiveness always part of a trade- off, such that the most effective public health measures will come at the expense of privacy, and vice versa? Or do you believe that the most effective policies for combatting COVID-19 can also respect individuals' privacy?

3. Today, the United States has numerous federal laws governing different types of data, such as health-care data or financial data. However, there is currently no federal privacy law that applies generally to all types of consumer data. As Chairman of the Commerce Committee, I have made it a priority to get a national data privacy law enacted as soon as possible.
    - If the United States had a national data privacy law in place before the COVID-19 pandemic began, what would the effect have been on efforts to use data to combat the spread of the virus? Would Americans' privacy be more protected, and would companies be more incentivized to take privacy-protective approaches, if we had such a law?

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4. In the United States, the mobile advertising industry and technology companies are collecting consumers' smartphone location data to track the spread of COVID-19 and compliance with social distancing measures. The location data is purported to be in aggregate form and anonymized so that it does not contain consumers' personally identifiable information.
    - How can the use of anonymized, de-identified, and aggregate location data minimize privacy risks to consumers? And, what additional legal safeguards should be imposed on the collection of this data to prevent it from being used or combined with other information to reveal an individual's identity?

5. As technology companies share anonymized location data with the U.S. government to support COVID-19 response efforts, to what extent should purpose limitation principles apply to the use and analysis of this data? And, when the pandemic finally passes, what should be done with any anonymized or de-identified data – and identifiable data, if applicable – collected by technology companies and the government for the purpose of addressing the public health crisis?

Sen. Thune

6. More and more Americans all throughout the country are turning to online video services to conduct their jobs, education, and social interactions in an effort to practice social distancing. For instance, Zoom Communications had more than 200 million daily users last month. It was found that thousands of Zoom's calls and videos have been exposed to other users online and log-in information has been stolen resulting in many individuals' personal information being compromised.
    - Did Zoom's privacy policy clearly outline what types of information its platform would collect on individuals? If not, what transparency requirements should be in place for companies like Zoom?
    - Americans are connecting with each other via online services across all 50 states. Would a patchwork of state laws benefit consumers and better protect their privacy? Should the United States enact a national privacy standard to safeguard consumer's information?

7. Without a federal privacy law in place, the American people must rely on the promises of tech companies that all have varying degrees of commitment to maintain consumers' privacy.
    - How do we ensure that organizations are actively engaging in data minimization and strategic deletion practices after data is used or transferred?

8. The country of Israel, through its internal security service, has reportedly used smart-phone location-based contact tracing to notify citizens via text that they have been in close proximity to someone infected with COVID-19, and ordering them to self-isolate

for 14 days. A recent opinion piece in the Scientific American urged democratic governments to quickly follow Israel's lead (see "As COVID-19 Accelerates, Governments Must Harness Mobile Data to Stop Spread").

- Please provide your thoughts on smart-phone location-based contact tracing in light of the extraordinary privacy and other civil liberties concerns such an approach raises for U.S. citizens.
- According to the Wall Street Journal, MIT is developing a contact tracing app for COVID-19 patients and others who have not been infected by COVID 19 that can be voluntarily downloaded to a person's smart-phone. Please provide your views on this approach to contact tracing.

9. COVID-19 has caused private companies to seek out and utilize health data in an effort to protect users, employees, and the general public from the spread of the virus. Both Apple and Alphabet have released websites to help users self-screen for exposure to COVID-19. This data will be used to help public health officials. However, these tools also allow technology companies access to user's health information which the companies could in turn profit from in the future.
    - How are technology companies balancing the need for timely and robust reporting to prevent the spread of the virus with the confidentiality and privacy of the participants?
    - What safeguards are in place to ensure data collected as part of the fight against COVID-19 are not sold to business partners or used for the development of other commercial products?

10. Anonymization techniques are also critical for safeguarding consumers' privacy. Truly anonymized data can protect a consumer's personal information, like their geolocation, political opinions, or religious beliefs.
    - How do companies guarantee that every dataset they are storing contains truly anonymous data? And is the ability to re-identify data a part of the discussion in data-sharing arrangements?

Sen. Blunt

As you know, this committee has prioritized drafting federal privacy legislation for the purpose of creating clear, baseline definitions and standards for data collection, storage, and use across industry sectors. Similarly, the bills before this committee attempt to create definitions to meet appropriate levels of consent and transparency for protecting consumers' privacy and security.

In relation to COVID-19, the end users of specific data sets, like location data, are more likely to be governmental entities than commercial entities. Big data can be an incredible tool to better understand the spread of the virus, and the impact on communities across the country. Data can help identify resource deficits, inform governments and health care professionals to employ countermeasures at the appropriate time, and provide insight to the downstream economic effects of this pandemic.

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However, U.S. commercial entities that would likely be collecting this data have very few guardrails on the collection and distribution of this data. Similarly, there are few requirements or regulations at federal and state levels which guide methodologies for anonymizing or pseudonymizing data. De-identifying data may result in greater data privacy and data security for consumers or individual citizens but relies heavily on all of the entities involved in the collection and storage of that data making decisions based on best practices.

11. What efforts do you recommend that federal agencies undertake to ensure that data being used to track viral spread are upholding the highest possible standards for individual privacy and security?

12. Does data lose any utility when it is de-identified or anonymized? Is it possible to have large data sets that are not tied to individual's identities, but which would still be useful for governments or public health-related end users?

13. It is important to me that as government entities access commercially collected or publicly available data, that those efforts are giving reasonable consideration to protecting individual privacy and security.

14. Are there any technologies that offer the opportunity to collect data that would be useful to governmental pandemic response efforts, without resorting to surveillance methods that jeopardize individual privacy – like those which have been used recently by foreign governments?

Sen. Cruz

15. A little over two weeks ago, the Johns Hopkins Center for Health Security published a report titled *"Modernizing and Expanding Outbreak Science to Support Better Decision Making During Public Health Crises: Lessons for COVID-19 and Beyond."* Although full of thought-provoking ideas, one of the most notable was a recommendation to establish a "National Infectious Disease Forecasting Center," similar to the National Weather Service. Much like the National Weather Service, this new infectious disease forecasting center would have both an operational role—providing the best modeling and forecasting to policy makers and public health professionals before, during, and after a disease outbreak—as well as a research role—providing a venue for academic, private sector, and governmental collaboration to improve models and encourage innovation.
    - What do you all think of this idea, and what do you all think the positives and negatives would be if such a concept was operationalized?

16. One of the big reasons weather forecasting works, if not the biggest, is how many observations—things like water temperature, barometric pressure, radio profiles of the atmosphere, etc.—are fed into the weather model. Now while collecting ocean

temperatures from buoys, or pressure readings from weather balloons, doesn't really raise privacy concerns, collecting health observations almost certainly would.

- How can we thread the needle—either in this concept or private sector modeling—of getting enough of the right kind of data to accurately model infectious disease outbreaks while still protecting the privacy and security of individuals?

17. To date the State of Texas has reported thousands of cases of coronavirus, and hundreds of deaths related to complications from infection. To mitigate the risk of infection in Texas and across the country, the administration has restricted international travel, provided more access to medical supplies by involving the powers of the Defense Production Act, and cut red tape to expand access to testing. Congress also passed the CARES Act which provided $377 billion in emergency loans for small businesses and directed $100 billion to hospitals and healthcare providers. However, I believe much still needs to be done to finish this fight and recover once this is behind us.
    - In your expert opinions, what more needs to be done to beat this virus, and how can federal, state, and local governments work with private companies to both mitigate spread of the virus—both now and later this summer or fall—and recover quickly once the threat of this virus has passed?

Sen. Moran

18. Many of the discussed proposals related to utilizing "big data" to fight against the spread against coronavirus rely upon the concepts of anonymized and aggregated data to protect the personal identity of individuals that this information pertains to and prevent consumer harms that could result. As such, many members on this Committee have spent significant time and energy drafting federal privacy legislation that tries to account for practices such as these that prevent harmful intrusions into consumers' privacy while also preserving innovative processing practices that could utilize such information responsibly without posing risks.
    - That being said, do the witnesses have any policy recommendations for the Committee as it relates to effectively defining technical criteria for "aggregated" and "anonymized" data, such as requiring companies to publicly commit that they will refrain from attempting to re-identify data to a specific individual while adopting controls to prevent such efforts?

19. Consumer data has tremendous benefits to society, as is clearly evident in the fight against the COVID-19 outbreak. Big data and the digitized processes and algorithms that technology companies are developing have led to an entirely new sector of the global economy.
    - Are you satisfied that the technology industry is striking an appropriate balance between producing services that better our ability to solve problems, as is clear in the fight against COVID-19, versus their production of products that increase their bottom line and generate profit? Are you satisfied that the United States

government is striking an appropriate balance between supporting these companies in addressing COVID-19 versus ensuring we conduct adequate oversight of the industries' activities?

20. Consumer trust is essential to both the United States government and to the companies whose products we use every day. We need to work to maintain that trust and ensuring that the big data being used to analyze the COVID-19 outbreak was collected and processed in a manner that aligns with our principles is important to my constituents.
    - How can we adequately ensure that the data being used to address COVID-19 is sourced and processed in a manner that ensures consumer trust is not being violated, while allowing the innovation and success we've seen continue to grow?

21. It is important to remember that the internet is a global network and that no matter how secure we make our networks, they remain vulnerable to bad actors, corruption, and misguided influence from around the world. Can you comment on the practices we've seen used by companies and international partners to ensure the data used to address COVID-19 is both accurately sourced and stored in a manner that is secure?

Sen. Blackburn

It's time that we align consumer expectations with reality. That holds true whether we are discussing the latest in wearables or the hot new videoconferencing app that helps people work remotely. Consumers have a reasonable expectation that their information will be kept private, and that the platforms they interact with will maintain adequate levels of security to bolster that effort.

We need to pass federal privacy legislation to set a national standard that will allow companies to innovate while protecting consumers. HIPAA was not designed to work with 21st century systems, yet consumers expect that all of their health-related information will be protected by those same standards. I'm afraid that the COVID-19 pandemic will only exacerbate these issues. Corona points out the need to update HIPPA, not to allow tech companies to exploit a crisis to gather even more personal data.

22. How do you see HIPPA interacting with your worldview of the tech industry?

23. How do you envision working with the CDC to develop the updated surveillance system (which was given $500 million in the recently passed CARES Act) while protecting health information and thereby allow CDC to use their expertise – epidemiology that inherently seeks to protect health information – with big tech's powerful data collection and analysis tools?

24. Today we are giving into state surveillance for the sake of saving thousands of lives that might otherwise be lost to coronavirus. The CDC is already relying on data analytics from mobile ad providers to track the spread of the disease. How can we ensure the data

collection will only be done for the limited purposes of the emergency, with safeguards to ensure anonymity? On retention time, when should the data be deleted? Who has the right to that deletion – the federal government or the individuals themselves? Most importantly, what duty do tech companies owe to protect consumer privacy, even during a global pandemic?

25. The US Department of Energy (DOE) has established a public-private consortium to focus its resources in high-performance computing, big data, and artificial intelligence on combatting the COVID-19 pandemic. From your perspective, how can these extraordinary capabilities be leveraged to accelerate our understanding of the SARS-CoV-2 virus, speed the development of treatments and vaccines for COVID-19, and contribute to ending this pandemic?

26. Foreign countries like South Korea, Taiwan, Singapore, and Israel swiftly mobilized collection of cell phone location data to track the spread of the virus and map out infection hot zones. Israel just released an app that allows the public to track whether they have may visited a location that put them into contact with an infected individual. Is it even possible to adopt similar measures while still balancing protections for privacy and civil liberties?

Sen. Capito

27. Federal, State, and Local governments could likely benefit from a system that provided a real time view of where patients are seeking treatment and for what.
    - Should the government enlist the help of private industry to establish this system?
    - What key privacy components should be included in a system like this, and is there an existing similar federal system that could be revamped to accomplish a system of this nature?

Sen. Lee

28. Ms. Richardson, in your opinion is the data that is currently being collected by tech companies for COVID-19 related reasons consistent with the uses of data specified in the company's current terms of service?
    - Do you believe consumers been offered meaningful notice and choice that their data is being gathered for such purposes?
    - To your knowledge, have users been notified that their data is being collected for COVID-19 related reasons?

29. To date, what specific data (or types of data) are companies (or your company) currently collecting for COVID-19 related purposes? What specific data (or types of data) are governments and health officials seeking for COVID-19 related purposes?

30. Most tech companies currently claim that the data being gathered is being "anonymized" so that a specific person is not identifiable.

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- What specific steps are companies (or your company) taking to anonymize this data?
- Certain data may not necessarily be considered personally identifiable, but with enough data points, you could identify a specific person. How can we ensure that data is truly anonymous and is not traceable back to an individual person?
- Can effective contact tracing be conducted with "anonymized data"? Or will it require personally identifiable information?

31. Since the beginning of this COVID-19 crisis, has a federal agency, a state government, or local government requested a company or association to gather any specific consumer data?
    - To your knowledge, are there any current COVID-19 related data sharing agreements in place between governments and private sector organizations? To your knowledge, has any federal, state, or local law enforcement used private sector collected data to enforce any COVID-19 related government orders or requirements?

32. Ms. Richardson, what lines should be drawn in the type of data collected? And what data (or categories of data) should not be gathered? What underlying principles should inform the drawing of those lines?

Sen. Johnson

33. Most of the data collection is anonymized, aggregate data, which is good as it lessens the invasion of privacy threat to the individual. Who is holding companies accountable – or who should be holding companies accountable – to ensure that individualized data is not made public, can't be accessed by bad actors, etc.? And ensure that companies claiming to use anonymized, aggregate data are not saving the individualized data for later use?

34. With regard to statutory classification of the internet under the Communications Act of 1934, how does leveraging big data in the fight against coronavirus differ under a Title II "common carrier" regulatory regime compared to the current Title I "information service" regulatory regime? And how does the application of these regulations on ISPs vs. edge providers play a role?

Sen. Scott

35. For months, Communist China lied about the Coronavirus data, the spread of the virus, and their response. They silenced critics and those trying to alert the Chinese people to this public health crisis. The lack of usable data coming out of Communist China cost lives and put the world behind on response efforts, including here in the United States.

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- As we work to keep American families healthy, how can we follow the lead of countries with low case counts, like South Korea, using technology and data collection, without infringing on our citizens' rights and privacy?

Ranking Member Cantwell

36. Science and technology will be critical drivers of our response to COVID-19, and we have seen many examples of data being used in positive ways – from the University of Washington's forecasts of hospital needs to Johns Hopkins' maps of disease spread. These are leading examples of how firms can innovate while protecting other equities, like privacy.
    - What recommendations do you have to encourage further innovation to fight the virus? How do we encourage technologists to help people transition to regular life while preparing for future pandemic incidents? What are the best practices you have seen in innovating in the fight against COVID-19 that support privacy rights?

37. In the fight against COVID-19, other countries like South Korea and Singapore have utilized mobile apps and other technological tools to track infections and limit the spread of the virus. Here in the United States, the federal government and state and local governments are reportedly seeking to harness data to assist in tracking infected populations, facilitating contact tracing, monitoring compliance with social distancing protocols, and otherwise helping the government in this fight against the epidemic.
    - What lessons can the United States learn from other countries in using data to battle the spread of COVID-19? Which approaches would be most effective and appropriate for the United States?

38. Some witness testimony today refers to apps applying innovative decentralized architectures. Ms. Richardson described a technology known as Pan-European Privacy-Preserving Proximity Tracing (PEPP-PT), which was "created to develop technical mechanisms and standards that protect privacy while also leveraging digital resources to bolster pandemic response efforts." Mr. Dufault described Private Kit, an app designed so that "location data stays on the user's phone and does not go to a centralized server."
    - These are both examples of the emerging decentralization movement in software and Internet design, whose proponents claim the benefits of greater efficiency and enhanced privacy protection. Are you monitoring this movement? Do you believe decentralized applications can inspire greater trust in users, leading to more rapid voluntary adoption?

39. Frequently, data used to combat COVID-19 is described as "anonymized" or "aggregated" or "de-identified," and these terms are meant to convey that data will be used or shared in a privacy-protective manner.
    - How do you define "anonymized," "aggregated," and "de-identified" data? What are the best practices to ensure that the data remains anonymous?

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Sen. Klobuchar

40. According to reports, one research institute is launching a project to collect data from wearable devices to analyze how heart rate, sleep patterns, physical activity, and other personal health data can be used to create a public health surveillance program to help fight pandemics like this one. I introduced a bill with Senator Murkowski to require the Department of Health and Human Services to promulgate regulations to protect sensitive health data that is not covered under existing federal laws—like the data that would be analyzed under this project.
    - Can you speak to the privacy concerns that exist regarding proposals for the use of sensitive health data, and in your view, is there a need for privacy regulations to cover sensitive health data that is not covered under existing federal health privacy laws?

41. While identifying the communities most vulnerable to the coronavirus (COVID-19) through the use of data can help health officials guide response efforts, allocate emergency funding, and implement preventative measures, we know that not all people have adequate access to the internet to use the technologies that are required to gather this information—and that this often includes low-income people or those in rural areas.
    - What are the risks involved in using data that may not accurately reflect all communities in efforts to limit the spread of the coronavirus?

Sen. Blumenthal

42. Privacy for America, a coalition of advertising associations including IAB and NAI, have proposed a federal privacy framework that is focused on a set of prohibited data uses, transparency measures, and a limited subset of data rights found under the GDPR and CCPA. However, the Privacy for America framework also provides wide discretion for companies to use particular types of data or engage in particular activities without consent, as well as a self-regulatory safe harbor and broad state preemption.
    - Would the Privacy for America framework provide Americans the full set of consumer rights and protections necessary to guarantee the privacy, security, and equitable use of their personal data, and the enforcement regime necessary to deter and punish the misuse of their information? Please elaborate on why or why not.

Sen. Schatz

43. You described in your testimony that some foreign governments are using individual data for contact tracing or to enforce social distancing and quarantines. This includes Taiwan's "electronic fence" to ensure people are staying home, and South Korea's and Israel's use of geo-location data and other personal data to trace the movements of infected individuals. You also noted that in emergency situations there's tendency for "overreach in ways that are uncommon in less urgent situations."

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What privacy concerns do the systems implemented by the foreign governments noted above pose for Americans and do you believe that the US's response to COVID-19 is enabling companies and the government to overreach into American's privacy rights?

Sen. Markey

44. I am also concerned that data that government entities and private companies are collecting and processing for purposes aimed at combatting the coronavirus pandemic may later be used for unrelated endeavors that pose a threat to individuals' privacy. I've introduced the Privacy Bill of Rights Act, which includes critical data use limitations, including a prohibition on the sale of biometric data. Ms. Richardson, do you agree that responses to the coronavirus pandemic underscore the need for comprehensive privacy legislation that includes limitations on how individuals' data may be used?

Sen. Peters

45. The one thing that has been absent from this discussion is that neither the federal government nor the private sector have adequately anticipated nor met the demands for personal protective equipment. Even basic things like masks and gloves have been inaccessible. Our nation has unparalleled resources in the supply chain and manufacturing space.
    - From a data perspective—where have failures been and what improvements do you recommend?

46. Despite many structural challenges, Taiwan has fared better than many countries in dealing with the COVID-19 pandemic. Stanford Medical School documented 124 distinct interventions that Taiwan implemented with remarkable speed including community initiatives, hackathons, etc. Their "Face Mask Map" a collaboration initiated by an entrepreneur working with government helped prevent the panicked buying of facemasks, which hindered Taiwan's response to SARS by showing where masks were available and providing information for trades and donations to those who most needed them, which helped prevent the rise of a black market.
    - What specific initiatives like this should we be implementing here?

Sen. Baldwin

47. Emerging reports from many localities demonstrate that COVID-19 is having a disproportionate impact on African Americans and communities of color. For example, in my home state of Wisconsin, Milwaukee County reports that approximately 70% of those killed by coronavirus are African American, despite that community making up only 26% of the county's population.

    We know this about Milwaukee County because the local government is proactive about collecting and reporting data on race and ethnicity. Reporting indicates that this disproportionate impact exists in places with significant African American communities, including Chicago, New Orleans, and Detroit. But a lack of consistent, quality data

nationwide means we do not yet know just how sizable this disparity is, and what we can do about it.

While I am encouraged that we are drawing on the massive amount of data about Americans held by the private sector to support the COVID-19 response, I worry that it may not include and represent all communities equally. For example, if we use mobility data from mobile phones or particular apps to inform our understanding of adherence to social distancing requirements, I am concerned how it might affect the usefulness of the dataset if members of certain minority communities less likely to own such a device or utilize such an app.

- For the members of our panel: how do you think "big data" can support efforts to strengthen our public health knowledge around COVID-19 and race, and how can we ensure that the methods and models through which "big data" supports our understanding of the epidemic take into account differences among communities?

48. I am also concerned about the impact of "big data" informing our COVID-19 response on rural communities. Again, I worry that some of these data sources may not be well-utilized in rural America – where connectivity is still a significant challenge – and thus may not reflect the reality of the pandemic in those communities. But I recognize that this information is vital to developing better predictive models that can inform our current response to COVID-19 and help us prepare for the future.
    - For the members of our panel: how does "big data" ensure that the different experiences of rural, suburban and urban communities are taken into account when informing models that may guide the COVID-19 response?

49. It is important that public health, and local public health departments in particular, have the data they need to map and anticipate hotspots for infectious disease outbreaks such as COVID-19 or overdose patterns in a community, including data that may be generated by the private sector. It is also important that local health departments have the capability to leverage this information together with that available through traditional public health surveillance efforts.
    - For the members of our panel: how can the private sector coordinate data efforts with public health and ensure that local health departments have the necessary capabilities to make full use of these efforts?

50. In speaking with experts in Wisconsin working on developing and refining predictive models around COVID-19, I heard that while there is a significant number of both public sector and private sector data sources to inform models, the data is not consistently easy to obtain and incorporate. As we rely on real-time models to inform the COVID-19 effort, as well as look to prepare for future infectious disease outbreaks, it is important that data-sharing be as seamless as possible.
    - For the members of our panel: what are ways we can strengthen the data-sharing infrastructure for government, public health, academic and private sector sources?

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Sen. Sinema

51. This virus affects communities across our country. If a small community reports a single positive case, it is important to both inform the community and protect the privacy of the infected individual. Technology can play a role in helping us map the virus, but it is more difficult to sufficiently anonymize personal health data in smaller populations.
    - How do we ensure public health officials in underserved and unserved communities, especially in rural communities and Indian Country, are able to provide first responders and EMT dispatch with valuable information about the potential for exposure when firefighters or local law enforcement are responding to a call, while maintaining patient privacy?

52. Some states, including Arizona have limited testing capabilities and therefore limited testing. It is also widely reported that tests around the world have produced inaccurate results. How can we mitigate against inaccurate assumptions related to disease trends in situations in which we have limited or inaccurate data?

53. Many point to travel as a key factor in the spread of COVID-19. Contact tracing for travelers, specifically by plane, is a mechanism that can slow the spread of the virus. The data collected (full name, address while in U.S., email address, and two phone numbers) enables the government to contact individuals who may have come into contact with an individual who has tested positive. Once contact is established, individuals can start self-quarantining.
    - What is the best way to balance the need for this information to slow the spread of the virus and privacy rights?

54. How can big data help resolve challenges within the manufacturing supply chain to spur increased production and distribution of needed testing, personal protective equipment, and other resources to address this pandemic?

55. This pandemic has caused serious economic harm. Businesses of all sizes and their employees suffer as sales drastically fall or disappear altogether. State, tribal and local governments are under enormous strain as response costs increase and revenues drop.
    - How can big data assist in the better creation and execution of economic assistance programs like the Paycheck Protection Program, Treasury's lending facilities, business interruption or pandemic risk insurance, and state, tribal and local stabilization funds?

Sen. Rosen

56. Germany's national disease control center recently asked their citizens to donate data collected by their fitness tracker. This voluntary initiative has consumers download an app on their phones and contribute health information such as pulse rates and temperature that is collected by fitness tracking devices anonymously. Using machine learning,

epidemiologists can analyze this data to better understand the spread of the coronavirus across the country and detect previously unknown clusters.

- What are the advantages and pitfalls in using voluntarily donated data to improve responses during a pandemic?
- How can we use donated data to support our response to this pandemic and future similar public health issues?
- What privacy guardrails are needed to ensure that this data is collected and analyzed safely and anonymously?
- What are the gaps we need to consider when analyzing such data?

57. Much of the data companies rely on to make informed decisions in fighting this COVID-19 relies on people having smartphones, fitness trackers, and other IOT devices. But there are many Americans who either don't own a fitness tracker or use a smartphone. Approximately 81% of Americans use a smartphone, and 21% wear some type of fitness tracker or smartwatch. Despite the high usage of smartphones in this country, approximately 20% of our population is unrepresented and granular data sets from wearables leaves out a sizable portion of our population.
    a. Ms. Richardson, how could this underrepresentation impact not only the type of data collected, but also proposals and policies to fight this pandemic? How do we ensure as we use technology to find solutions, we do so to serve all Americans in a technologically neutral way?

58. The National Science Foundation (NSF) is the only federal agency whose mission includes supporting all fields of fundamental science and engineering. The research and educational programs backed by NSF are integral to the continued success of our country's innovation, supporting scientific discoveries that have led to new industries, products, and services. Since 2012, NSF has funded research on the emerging field of data science through its BIG DATA program. Now, NSF's larger program – "Harnessing the Data Revolution" – will support research, educational pathways, and advanced cyberinfrastructure in the field of data science.
    - Given NSF's leadership in data science research and development, what role do you think NSF can play in leading public-private partnerships for increased research on big data that could help address the COVID-19 crisis or future pandemics?