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2021 Biennial Report

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UNIVERSITY of WASHINGTON

Tech Policy Lab

2021 BIENNIAL REPORT



Letter From the Directors

The Tech Policy Lab at the University of Washington has become a leading source for tech policy research and education and an indispensable resource to local, national, and international policymakers. In its seven-year history, the Lab has built a strong network and increased credibility that allows us to work directly with policymakers, publish research and guides on emerging technologies, and provide opportunities for the public to learn from experts.

The last two years found not only our state, but our nation and the world in a time of great uncertainty. American society strives to reconcile centuries of racial and other injustice even as it faces down a global pandemic. The insights and expertise of the Tech Policy Lab mean that we can—and must—step up to address technology’s role in these vital issues to continue to achieve our mission of helping policymakers generate wiser, more inclusive tech policy. At the same time, the Lab had to adapt and find new ways to engage remotely.

The Lab has shown the ability to be **nimble, experimental, and deep**. In these last two years, these unique attributes have positioned the Lab to engage the demands of our times.

NIMBLE

Things change quickly in the world, and things moved even faster as we transitioned to a world trying to adapt to the pandemic. The Lab is intentionally set up to be nimble and pivot to address emerging conditions. Because of this, the Lab was uniquely able to look into ways technologists and policymakers were looking to use technology in the context of COVID. From the beginning, the Lab was a leader looking into and questioning the use of contact tracing apps and the attitudes of the public towards such apps and privacy. The pandemic has also brought a light to concerns about our food supply, and the Lab has taken multiple approaches in ways to look at food resiliency.

EXPERIMENTAL

The Lab is also experimental and not afraid to try new things. It is a leader in the emerging field of cyberbiosecurity and currently working on manipulating DNA wet lab experiments, as well as how to mitigate such manipulations. In conversations with policymakers, it became more and more apparent that the ability to share stories is vital in helping people understand tech policy issues. The Lab took that idea and has started to run with it by putting together *Telling Stories*, an anthology of new and cultivated stories from around the world looking at the importance of culture and the differential impact of artificial intelligence. A co-director also wrote a science fiction novella entitled *Our Reality* as another lens in which to view tech policy. Finally, in conjunction with the Value Sensitive Design Lab and Methow Valley radio station KTRT 97.5 FM, The Root, The Tech Policy Lab started *On The Steppe*, a radio series on designing and using technology wisely.

DEEP

Our now seven year history has allowed the Lab to drill deeper on different projects. Consider two projects aimed at mitigating bias. Data Statements, an established and well-received design solution and professional practice for natural language processing technologists to mitigate issues related to exclusion and bias, is entering its second version. This new version includes updated schema elements, a set of best practices, and *A Guide for Writing Data Statements* all in 2021. Diverse Voices was established four years ago as a way to facilitate inclusiveness in tech policy and is continuing to make an impact. It has recently been adopted by the Future of Privacy Forum and the Mexican Consulate thanks to the work of our postdoctoral scholar.

With the world constantly changing, we look ahead to the next five years to ensure that the Lab is positioned to play an important voice that helps shape the future by continuing to be nimble, experimental, and deep.

RYAN CALO / **BATYA FRIEDMAN** / **TADAYOSHI KOHNO**



About the UW Tech Policy Lab

The Tech Policy Lab is a unique, interdisciplinary research unit at the University of Washington. With co-directors from UW’s School of Law, Information School, and Paul G. Allen School of Computer Science & Engineering, the Lab aims to bridge the gap between technologists and policymakers to help develop wiser, more inclusive tech policy. Situated within a globally renowned research university, the Tech Policy Lab is committed advancing technology policy through interdisciplinary research, public discourse and education, and the cultivation of a diversity of expertise and perspectives. To learn more about the Lab’s cutting edge research, thought leadership, and education initiatives, go to techpolicylab.uw.edu.

Research

We do path-breaking research. Our commitment to being nimble allows the Lab to stay at the cutting edge of research. In the face of the pandemic we have explored the role of technology in food resiliency, the cultural impact of AI through narrative, and the use of automation by administrative agencies. We also remain committed to our long-standing efforts to mitigate bias in computing and information systems, deepening and expanding those contributions.

OPINION ON PRIVACY AND COVID

When the world suddenly changed in early 2020, acting nimbly, the Lab started to investigate public attitudes toward high tech contact tracing. A new preprint of *COVID-19 Contact Tracing and Privacy: Studying Opinion and Preference* with multiple Lab authors, looks at the diversity of public opinion and how it can inform the public discussion as well as how or whether to leverage technology to reduce the spread of COVID-19.

FOOD SECURITY

Along those same lines, in March of 2020, amidst growing concerns over food security, the Lab launched a multi-year project to explore how technology and tech policy could contribute to more resilient food systems. Our work has taken two complementary paths: an in-depth design research case study in a rural community in eastern Washington known for civic agriculture and innovation, ultimately leading to policy examinations; and a whitepaper focused on precision agriculture with considerations of both industrial and civic agriculture. Taken together, this work helps to support a diversity of forms of civic agriculture that reflect a wide range of practices focused on sustaining soil, food production, and communities. Lab students also presented their scholarly paper *Meating the COVID Moment* at the Yale University Big Ag and Antitrust Conference. The paper examines vulnerabilities in meat processing and shortcomings in regulatory oversight that contributed to the breakdown of food availability during COVID.

STORYTELLING

Trying new things is at the heart of being experimental, and diving in to the importance of storytelling is exactly that. We are in the process of distributing *Telling Stories: On Culturally Responsible Artificial Intelligence*. This collection of 19 powerful stories from around the world challenges policymakers and others to think critically about the role of culture in the development and deployment of AI. We look forward to spreading the word about this important work. Building on the theme of the impact of narrative, a Co-Director wrote a science-fiction novella entitled *Our Reality*. In this book, set in 2034, mixed reality has made it unnecessary to leave one's room. The author uses this story to critically examine the relationship between technology and society with a focus on who gets left out. Both of these works are being used by educators to enhance classroom discussion.



CYBERBIOSECURITY

Our Lab continues to be a field leader in “cybio” security. Because of our leadership in this field, our team was invited to contribute a chapter to a book tentatively titled *Cyberbiosecurity*, which we accepted. Additionally, we anticipate new, foundational results on adversarially manipulating DNA wet-lab experiments, as well as foundational results on how to mitigate such manipulations.

DATA STATEMENTS: MITIGATING BIAS IN AI SYSTEMS

Documentation about datasets and system assumptions is critical for mitigating unanticipated consequences and enabling the wise use of AI and machine learning systems. The TPL is a leader in this area, having conceptualized and developed Data Statements for Natural Language Processing in 2017 making Data Statements a great example of how the Lab produces work of depth. The following years have seen significant interest. With the goals of supporting broader uptake and learning how to make data statements a suitable practice across different research and institutional contexts, in 2020 the Lab organized a workshop at the 12th Language Resources and Evaluation Conference. Based on this workshop and related research activities, we have developed Version 2 of the data statement schema, a set of best practices, and *A Guide for Writing Data Statements* all in 2021.

AUTOMOTIVE TECH SECURITY

Another example of the Lab's deep work is how Lab Co-Director and Researcher were recently awarded for their trailblazing work and accompanying landmark papers that called attention to major vulnerabilities to automotive tech security they worked on for 10 years. The recognition is for the research's lasting impact and how good of an investment it has turned out to be.

IS TRICKING A ROBOT HACKING?

This year saw the publication of our interdisciplinary Lab paper *Is Tricking a Robot Hacking?* in Berkeley's technology law journal, explored the adequacy of the Computer Fraud and Abuse Act in addressing adversarial machine learning.

SMART CITIES

Policymakers are turning to smart cities to address the rising demands of urbanization. While enhancing people's quality of life in various ways, smart city technologies could expose the public to privacy and computer security risks and create situations with deep ethical implications. The Lab has and will continue to work with people living in underserved neighborhoods in Seattle, Washington, as we study the benefits and harms related to smart city data collection.

Impact

Policymakers in the United States and across the world turn to the Lab more and more. In recent years, the Tech Policy Lab has also become a model for universities and other institutions across the country interested in interdisciplinary impact. Even as our model catches on, we continue to innovate. The Lab is harnessing the transformative power of storytelling and moving into new areas of tech policy such as food resilience and the use of technology in the carceral system.

ENGAGING THE FEDERAL GOVERNMENT ON CORONAVIRUS AND TECH

In a great example of how the Lab is nimble, a co-director testified before the U.S. Senate in a first-of-its-kind paper hearing about the use of technology and information to combat the novel coronavirus. His Brookings essay, co-authored with a technologist and an epidemiologist, still lies at the heart of debates on digital contact tracing.

AUTONOMY AND EMERGING TECHNOLOGY

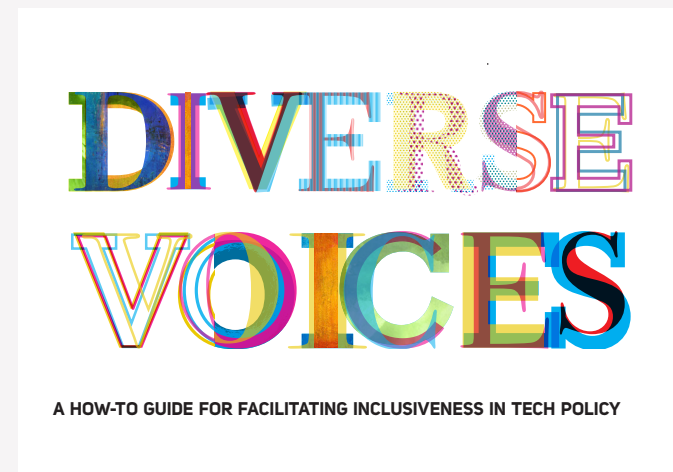
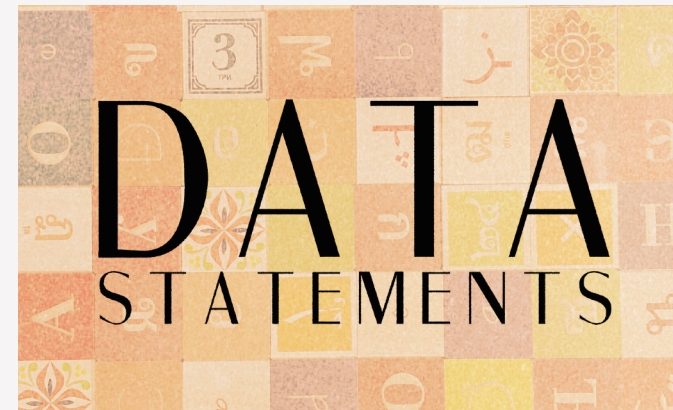
In an example of how the Lab is experimental, we are embarking on a new wave of investigations and interventions around the impact of emerging technologies on human autonomy and other values. Areas include: (1) notions of responsibility and equity in the development and deployment of brain-machine interfaces; (2) the evolution of monitoring software and other surveillance technology in criminal, carceral, and immigration contexts; and (3) the potential of crowd-based defense algorithms to mitigate the negative impacts of facial recognition, especially on vulnerable populations. We bring interdisciplinary knowledge and methods to bear upon impactful but still emerging technologies, such that possibilities remain open for channeling these in the public interest.

SHARING TPL RESEARCH WITH THE WORLD

Data Statements is a great example of how the Lab can dive deep. The work of a Lab co-director and a Lab faculty associate on Data Statements for natural language processing to address bias and inequity, was the subject of a global workshop this year, attracting attention for possible implementation by the Danish government. The Diverse Voices method the co-director pioneered became the basis for a full-time position at the Partnership on AI. Over 100 people from 45+ policy, industry and research organizations have been trained in Diverse Voices and the method now forms the basis for a full-time position at the Partnership on AI. In the past year, the Lab has also worked with the Mexican consulate on ways they could apply the Diverse Voices method for constituent outreach.

EXPANDING ACCESS TO JUSTICE TECHNOLOGY

After incorporating stakeholder feedback through the Lab's Diverse Voices method, the Washington State Access to Justice Technology Committee sent revised principles guiding the use and procurement of technology in the Washington state court system to the state Supreme Court for adoption.



TECHNICAL EXPERTISE

The Lab continues to work at the cutting-edge of biology, genetics, and security. Lab researchers have been called on as experts in adversarial machine learning by policymakers, scientists, and the military, working with organizations including the Army Research Office, IARPA, and JASON—a group of leading scientists who advise the U.S. government in science and technology.

CYBER-BIO SECURITY: NOVEL THREATS AND EXPLORATIONS

Wired, *The Wall Street Journal* and other national news outlets covered new research from Lab faculty and students in which they were able to encode malware in synthetic DNA. This synthetic DNA, when processed, gave remote control of the computer doing the processing.

PROVIDING NATIONAL LEADERSHIP

A Lab co-director became the second of us to join the advisory committee of the Electronic Frontier Foundation, a flagship digital liberties organization. His work with Lab students on driverless car vulnerabilities was featured as an exhibit at the London Science Museum, entitled *Driverless: Who is In Control?*

Sample Story from *Telling Stories*

We are pleased to reprint the story “United States of Brazil” by Dennys Antonialli. Dennys is the executive director of InternetLab, a think tank on internet law and policy based in São Paulo, Brazil. He specializes in technology policy and fundamental rights, particularly in privacy, freedom of expression, and state surveillance. Having lived and studied in the United States and in Germany, he has a soft spot for multicultural discussions and international perspectives on tech policy. He is an active voice in the LGBTQ community and deeply cares about policies that promote diversity and inclusion in the tech world or outside of it.

United States of Brazil

Dennys Antonialli
InternetLab
Brazil



HE WAS HOMESICK. AFTER TWENTY YEARS WORKING ABROAD, he missed so many things about his country. He missed the flavorful and extremely unhealthy food, with lots of meat and salt. He missed how people would always be late for things and still find it perfectly normal. He missed not having to make a reservation for every meal and then having to spend an hour

waiting for a table by the bar chatting with the bartenders. He missed how people from work would get drunk and be slightly inappropriate at happy hours without being judgmental about it. He missed the heavy traffic jams that he could use to listen to all of his guilty pleasure songs. He missed the crazy weather changes and how he got soaked when he forgot his umbrella.

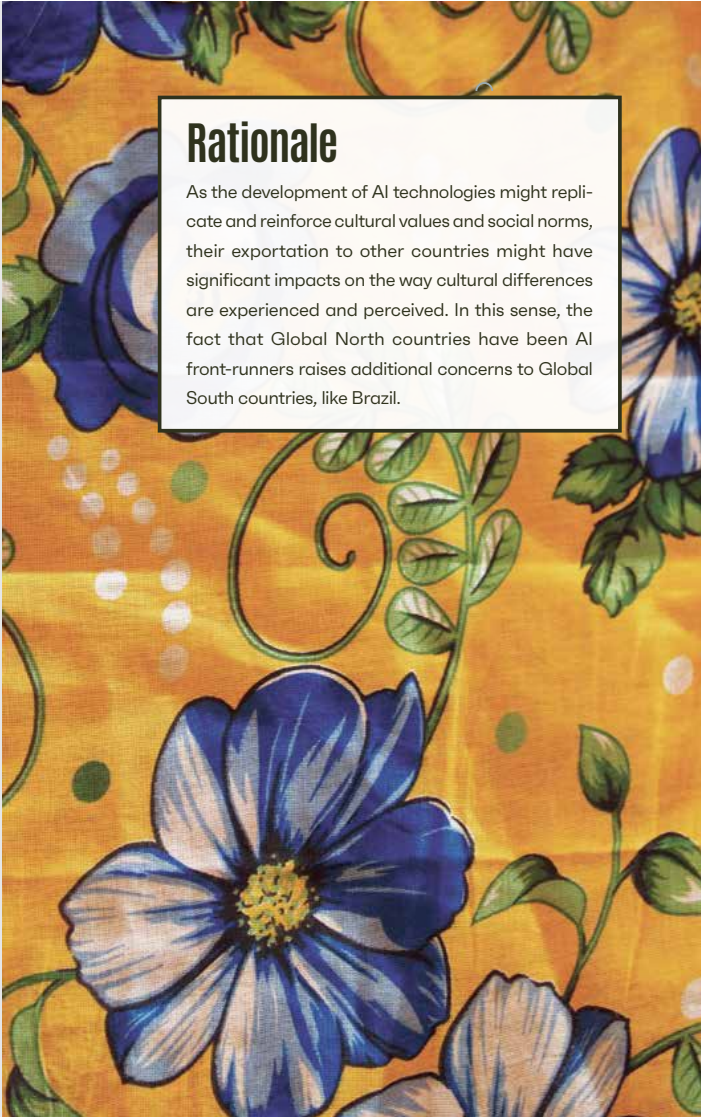
He missed having that unplanned life. He missed losing control. Life in Brazil was certainly chaotic, but Brazilians knew how to turn chaos into fun. It was part of the culture. It was part of his culture. And he was excited to go back.

None of that was possible in the United States, where he had been living for so long. His personal AI assistant took care of everything. It would advise him on his diet and make reservations for the exact type of food he wanted to eat. His autonomous car would be ready to take him everywhere, so he would never be late and would never spend extra time in traffic. He would never get drunk with people from work because his smartwatch just wouldn't let him. There was no room for error in that very artificially intelligent society.

But he was finally leaving that perfect world behind.

As he leaves the plane in São Paulo, he is puzzled by the fact that everyone is wearing the same smartwatches he has around his wrist. They all have the same AI assistants. Autonomous cars are picking people up at the airports. There are no lines. Not even in the restaurants. No one is drunk at happy hours. No one is caught off guard by the storms. Everything is working perfectly.

It just didn't feel like home anymore. It was not home anymore.



Rationale

As the development of AI technologies might replicate and reinforce cultural values and social norms, their exportation to other countries might have significant impacts on the way cultural differences are experienced and perceived. In this sense, the fact that Global North countries have been AI front-runners raises additional concerns to Global South countries, like Brazil.

Education

As part of our mission to foster wiser, more inclusive tech policy, the Lab has explored the power of art, design, and storytelling to widen perspectives and outline a path for societal change. From original training modules and toolkits, to a unique writing workshop and radio show, the Lab is redefining the terms of tech policy discourse.

PREPARING POLICY-SAVVY TECHNOLOGISTS AND TECH-SAVVY POLICYMAKERS

In an experimental project led by Tech Policy Lab associate faculty and piloted with over a thousand students, *Designing Tech Policy: Instructional Case Studies for Technologists and Policymakers*, is designed to enhance tech policy and ethics capacity in a wide variety of settings. The case studies bridge engineering, technology, policy, and design to prompt students and other participants, including policymakers to consider the socio-technological aspects of a setting to engage in a design activity that involves both technical and policy design. Topics include: personal drones, IoT in smart homes, the sharing economy, and workforce management.

PUBLIC ENGAGEMENT

As an established member of the tech ecosystem, our events and engagement efforts reflect the Lab's ability to embed ourselves into the tech community. Our Distinguished Lecture Series brings individuals to Seattle that the public might not otherwise hear from and shares their work with the community. This helps broaden their viewpoint and spark new discussions around the field of tech policy. On the other side, the Lab also provides Primer Videos that cover basic topics for a robotics policy class, such as: bots, algorithms, machine learning, and robots; as well as administrative law and product liability. Designed to enhance tech policy capacity and fluency in a wide variety of settings, the Lab's Instructional Case Studies range from preparing policymakers to educating undergraduate students. The case studies bridge engineering, technical, policy, and ethics and prompt participants to consider the socio-technical aspects of a setting and to engage in a design activity that involves both technical and policy design.

ORGANIZING AND OUTLINING SOCIETAL CHANGE

The Lab has put out a variety of content to help facilitate the conversation around the inclusivity of recent public policy. In order to consolidate viewpoints and understand the logic behind differing perspectives the Lab has taken up recent projects to help not only develop broader viewpoints but provide ways to keep the conversation going.

Telling Stories. The Lab has developed an international collection of 19 short stories that delves with hesitation and wonder into AI's cultural impacts. Authors from around the world vividly recount the anticipated influences of AI on love, time, justice, identity, language, trust, using the power of narrative. Telling Stories provides educators a way to incorporate social, cultural, and ethical impacts as a part of technology instruction. It can also be used by educators looking to expose students to a broad array of world views as well as technological implications. The book also shares the story writing process that took place in creating these stories along with a story toolkit that educators can use to help provide structure for their students in writing their own stories.

Diverse Voices Trainings. All too often, policy development for emerging technology neglects under-represented populations. In response to this challenge, the UW Tech Policy Lab developed the Diverse Voices method in 2015. The method uses short, targeted conversations about emerging technology with experiential experts from under-represented groups to provide feedback on draft tech policy documents. In order to adapt to the pandemic, the Lab worked hard to transform the training for an online setting. Once established, the Lab ran workshops with participants representing a number of state departments of health to help them address the COVID pandemic, including representatives from of Hawai'i, New Mexico, Tennessee, Texas, and Utah.

On the Steppe. In conjunction with the Value Sensitive Design Lab and the Methow Valley radio station KTRT 97.5 FM "The Root", the Tech Policy Lab created "On the Steppe", a radio series hosted by TPL Co-Director and Information School Professor Batya Friedman and KTRT Radio Program Manager Don Ashford think about how we shape technology, how technology shapes us, and how we can grow our moral and technical imaginations. Each episode discusses in-depth, a facet of technology whether it was from our past, present, or future, in order to bring more variables into the conversation regarding its ethical impacts, possibly community risks, and the scopes of personalization to break down their perspectives to a broader audience.

WEEKLY DISCUSSION GROUPS

The Lab also continues to organize our popular weekly tech policy discussion group with topics ranging from newsworthy tech policy items to deep dives into areas of interest to the students attending. The interdisciplinary discussion group is joined by graduate students from communications, computer science & engineering, electrical & computer engineering, human-centered design and engineering, information science, law, and public policy, among others. As the discussion group discusses the latest in tech news, we help our students navigate an ever-changing environment.



Events & Workshops

We are convening critical conversations. The Lab continues to build a diverse community of policymakers, technologists, artists, and others, despite the challenge of adapting to a remote environment. The Lab has convened a variety of stakeholders to discuss the future of democracy, privacy, and control in a technologically mediated environment. Lab events have emphasized inclusion, by organizing discussions over the past year that bring together diverse perspectives.

DISTINGUISHED LECTURE SERIES

The Lab's Distinguished Lecture series, attended widely by the UW and greater Seattle community, brought to the University, artist, organizer, teacher, and cofounder of the School for Poetic Computation, Taeyoon Choi in 2020 before the pandemic hit. Choi discussed what care means for a technologically-oriented future, and the lessons he learned in working in and with different cultural and geographic contexts. In 2021, we were proud to host political theorist Langdon Winner in a virtual lecture. In Winner's Lecture entitled, "Technology Innovation and the Malaise of Democracy," he pointed out the lack of democratic participation in the shaping of new technologies and pointed to early initiatives in "technology assessment" as a potential way forward.



TAEYOON CHOI

INCREASED GLOBAL IMPACT

The Lab met with Paula Helm and the entire International Center for Ethics in Science at the University of Tübingen in Germany to share scholarship, and are planning in-person visits when the pandemic allows to foster greater collaboration. A Co-Director presented a keynote for the Center in September 2021. Similarly, the Tech Policy Lab met separately with the Mexican and French Consulates to discuss Tech Policy, which led to a Tech Policy Lab postdoc working with the Mexican Consulate on ways to use the Diverse Voices Method for outreach.



LANGDON WINNER

TECH LAW SUMMIT FOR GIRLS

The Lab co-sponsored the annual Tech Law Summit for Girls. Hosted at a local high school, this free event, designed to encourage young women to consider a future in tech law through a discussion of the intersection of law, technology and social justice issues.

INVITED TALKS

Other events included an in person lunch talk by Mutale Nkonde on the role of racial literacy in technology and a virtual primer, co-hosted with the UW Space Policy and Research Center, on space law by Heloise Vertaider.



MUTALE NKONDE

PRIVACY VIOLATION REMEDIES WORKSHOP AND PUBLIC PANEL

Privacy Remedies workshop and public panel in partnership with Microsoft. The panel was aimed at investigating the costs and benefits of different policy options for privacy redress. This panel included one current FTC Commissioner, two former FTC Commissioners, and a leading privacy remedy legal scholar.



BOOK TALK

The Lab co-hosted a virtual book talk with Kate Crawford on her new book, *The Atlas of AI*. In this conversation, Crawford discussed the role of AI and politics, along with the planetary costs of AI.



PRIVACY VIOLATIONS REMEDIES PUBLIC PANEL

Spotlight on TPL Members



LASSANA MAGASSA, PH.D., TECH POLICY LAB POSTDOCTORAL FELLOW

Please explain what you are working on as a postdoc.

Project Telecommunication

I am studying how the telecommunications policies of incarceration facilities during the pandemic affected people's relationships with their families and friends. The CARES Act included a provision that temporarily made phone calls and video calls free at federal prisons. Many state prisons (and their corporate partners) waived fees for all calls either entirely or partially. Since then, prisons (and their corporate partners) have begun reinstating fees and are charging 1.00/min (not including service fees) for phone calls and 15.00 (:30 min) for low quality video calls. I am designing a study to understand how incarcerated people (in Washington State) and their families experienced telecommunication policy changes. I am interested in learning about how the switch back to fee-based calls has affected people's relationships with their families and friends.

Project Digital Inclusion

I am analyzing the responses of 33 people who were released from incarceration less than 120 days before completing responding to four open questions regarding how they are getting up to speed on digital technologies and what the Department of Corrections should know about their experience incarcerated as it relates to being prepared to participate in a technology-driven society. The goal of this work is to understand the effect of current prison and jail practices as it relates to preparing people to reenter the technology-driven communities and to develop policy recommendations.

What has the opportunity for being a postdoc at the Tech Policy Lab meant to you?

Being a postdoc at the Tech Policy Lab has meant having an opportunity to dig deep into tech policy issues that have negative consequences for marginalized communities in order to understand and make known the effects and work with those communities to explore solutions that benefit all communities.

Are there any additional items that you would like to share about your experience with the Tech Policy Lab?

This has been an especially unique year. Schools have been mostly closed during the duration of my postdoc. I live with a family of six (wife and four children—the eldest 7 yrs. old and the youngest 1 yr. old). On several occasions, I have felt an array of feelings including anxiety, shame, guilt, and confusion because I felt like either I was not giving enough time to my postdoc responsibilities or not giving enough time to my family. There have also been moments where I felt a sense of pride and success. Batya Friedman and Ryan Calo have been there along the way, reminding me of my responsibilities and acknowledging the difficulties given the circumstances.



LUCY SIMKO, PHD STUDENT, PAUL G. ALLEN SCHOOL OF COMPUTER SCIENCE & ENGINEERING

Please explain what you have been working on for the last year or two.

I've had the pleasure of working on several projects in the last year, all under the theme of security and privacy for those undergoing crisis or transition. One project I'm particularly proud of is about how Sudanese activists used technology during the 2018-2019 revolution — my Sudanese co-lead-author, Alaa Daffalla, and I interviewed 13 activists who were a part of the revolution to learn about their threat models and how they protected themselves against a nation-state adversary with control over the telecommunications network. One thing we have tried to emphasize in this work, at a meta-level, is the importance of understanding the societal and political landscapes when studying users — for example, we observed that one major threat to the activists was what happened after they were arrested: police forced them to give up their passwords and went through their phones to look for proof of activism and identity. So some of the technical measures to help protect users in the US against law enforcement, like forcing passcodes over biometrics in certain situations, are not useful to users in Sudan, or other countries where the right to privacy is defined differently. Another example is how international sanctions dictate what apps are available to activists (and all users), which means that users in sanctioned countries can't download paid apps or pay for features in apps directly (or sometimes at all). Another project I led this year was a longitudinal study of public

opinion towards contact tracing apps. We started early on, in April 2020, just after US states started imposing restrictions, and, for the next 12 months, surveyed people about different aspects of contact tracing apps and privacy. Going into this project at the start of the global pandemic, we didn't really know what to expect, but I expected public acceptance of automated contact tracing apps to correlate to infection rate. However, our data did not support that — public opinion was actually remarkably stable throughout, with about 70% of people willing to download a contact tracing app in some circumstances and a slight increase over time. Another finding was that people tried to reason about how the apps worked, yet this reasoning revealed a lot of inaccurate or incomplete technical mental models.

How important is being supported by the Tech Policy Lab to you?

The Tech Policy Lab's support has been absolutely critical throughout my Ph.D.! It has been amazing to be able to take my own path and work on problems that I am organically excited about (which are largely non-technical and have both technical and policy implications), and it has also helped me as a researcher to be able to develop these ideas myself. The computer security and policy communities can respond and support vulnerable populations appropriately, to both have accurate and appropriate mental models, and to have the protection that they want to have.



Where is the money going?

What are the effects of AI?
AI + Adv

Are we asking the right questions?

Tech Policy Lab
Global Summit
2018

What "AI" exactly?

How do you describe/identify place?

time (3)

* META + misc