Testimony of Jeff Thamkittikasem, Director of the Mayor's Office of Operations
Before the Committee on Technology
January 22, 2020

Good afternoon Chair Holden and members of the Technology Committee. My name is Jeff Thamkittikasem. I am the Director of the Mayor's Office of Operations, and was the Chair of the Automated Decision Systems Task Force. I am joined here today by former ADS Task Force Co-Chairs Kelly Jin, Director of the Mayor's Office of Data Analytics and Chief Analytics Officer for the City of New York, and Brittny Saunders, Deputy Commissioner of Strategic Initiatives at the New York City Commission on Human Rights. Thank you for the opportunity to testify today.

Before I speak about our progress since the April 2019 hearing, I'll quickly recap some key facts about the Task Force. The law that created our Task Force, Local Law 49 of 2018, required us to provide the Mayor and Speaker with a series of recommendations related to City agencies' use of automated decision systems, with particular focus on recommending protocols that could help members of the public obtain information about the tools and systems affecting them, and address any complaints of harm or bias connected with such tools or systems. The full list of mandates can be found on the Task Force website and in our report, which was submitted to the Mayor and City Council Speaker in November 2019.

To meet Local Law 49's requirements, the Task Force, led by three co-chairs and consisting of 17 academics, agency officials, activists, and issue advocates, met dozens of times between May 2018 and November 2019. The Administration's selection of Task Force members enabled the coming together of diverse, and sometimes divergent perspectives, under the belief that a diversity of opinions from within and from outside City government would ensure a more robust conversation, resulting in more balanced and realistic recommendations. That belief contributed to our success.

The ADS Task Force report we submitted to the Mayor and Speaker represents 18 months and countless hours of challenging conversations that touched upon critical issues related to transparency, equity, efficiency, and innovation. Many of those conversations we had to leave unresolved, as our report makes clear, given the overwhelming stature of the questions we were tasked with answering, or the previously unseen complexities of issues that were revealed through our deliberations. We are aware that not everyone believes these recommendations went far enough or deep enough, but nevertheless, these recommendations—which were developed with overwhelming consensus among members—are tangible and actionable, finding agreement and ways forward despite differing opinions. Most importantly, these recommendations demonstrate a clear path forward and a call to take action, to continue the conversation, and ensure the establishment of processes and functions that could continue to evolve with a rapidly changing topic.

The report organizes our recommendations into three key areas:

- First, we provided a series of recommendations related to centralizing and increasing resources for City government that could aid and empower agencies in the fair and equitable use of algorithms.
- Then, we put forward a number of critical recommendations to create and boost public education around algorithms, and to create opportunities for the public to be active in understanding government use of algorithms.
- Finally, we recommended key tenets for ongoing agency and citywide management of these tools.

I want to take a moment to speak in a bit more detail about the content of Task Force recommendations, and the responsive actions that followed. Our very first recommendation proposed the centralization of resources and algorithms management practices to better serve City agencies and to more effectively inform and engage with the public. The Mayor acted swiftly on this recommendation, issuing Executive Order 50, which establishes the role of an Algorithms Management and Policy Officer (AMPO), who will be named in the near future, and who will report to me. This new role is unique in city government and is intended to help agencies manage, and to help the public understand, the types of algorithmic tools and systems that agencies use to help make decisions.

The AMPO will:

- establish governing principles to guide City agencies in their work,
- design and implement a framework, including criteria, to help agencies identify, prioritize, and assess algorithmic tools and systems,
- develop a robust, ongoing public engagement plan, and
- create and maintain a public-facing platform by which people can provide insights on these systems and their use.

These tasks were identified by the Task Force as key areas for future work around algorithms, data, policy, and decision-making. Members believed it was this type of work that would need to be adaptable over time as agencies build capacity and technologies, and as methods mature.

Importantly, the Executive Order also created two committees that will support the AMPO in their work. A Steering Committee, composed of City officials, will advise the AMPO and me, and will contribute insights relevant to their area of expertise. An Advisory Committee, composed of six members of the public, will advise on the protocols and best practices with regard to City use of algorithms and decision making, and will help to channel public engagement into the work of the AMPO. Three of the members of the Advisory Committee will be selected by the Mayor, and three will be selected by you, the City Council. The existence of these committees, and the information, insights, and expertise they will provide, will be crucial to ensuring the AMPO's work does not take place in a vacuum, and that the public's insights are continuously heard and considered. I am excited about the creation of this new role, and am thrilled that the Officer will work within the Mayor's Office of Operations.

We would not have been able to arrive at Task Force recommendations without creating opportunities to engage with communities to discuss these issues. As you know, at last year's

hearing we heard calls from within and outside the Task Force to better engage with New Yorkers to hear what they had to say about automated decision-making. We took that charge seriously, holding a series of public forums and roundtables during the spring and summer of 2019. Our two public forums, open to all, were held at New York Law School and featured expert commentary from leading voices on the topic, and we fielded questions and comments from the public. Our roundtables, by contrast, were smaller events, where we worked directly with elected leaders and other stakeholders to bring together community members for a more targeted conversation in each borough. We want to thank Council Member Koo and his team again for setting up our Queens Library roundtable. These events were planned with full input from all Task Force members, and based on member suggestions for speakers and communities. Although we did not advertise each roundtable on our website, focusing instead on targeted community outreach, all Task Force members were encouraged to attend and to share information as appropriate with their networks.

As you know from our last hearing in April 2019, one additional thing our members believed was lacking at the time that they needed to perform their work was a clearer sense of how specific agency tools actually worked. To help close that gap and respond to the requests of Task Force members, we, as Chairs, set up four agency presentations from DOE, DOT, FDNY, and NYPD. At these presentations, agency representatives walked members through specific tools, describing the purpose, development, and other key pieces of information. Agencies also answered questions from Task Force members as part of these presentations.

When it was first convened, this Task Force was the first of its kind in the country, and, as such, began its work in uncharted territory. As you read in the report, this project was not without challenges. Last year, a number of Task Force members were dissatisfied with the group's progress, and we fielded tough but fair criticisms from you and members of the public who came to testify at the last hearing or speak at our forums. We took that criticism seriously. Based on that feedback, the Task Force as a whole adopted and committed to a more robust process for our internal planning, and emphasized the public engagement opportunities I spoke of earlier. Most importantly, as a Task Force, we became better at listening to and learning from one another. As mentioned earlier, our Task Force was composed of people of diverse backgrounds and we did not always agree on every topic. But overwhelmingly, our Task Force members took seriously the difficult work assigned by the Council, carving out time from their busy schedules to think through these challenging issues. In the interest of transparency, we made our disagreements and unresolved issues quite clear in our report. But our deliberations throughout the Summer and Fall were invaluable to promote a meaningful exchange of ideas, and a real collective desire to ensure that our group would not waste the opportunity we had before us to create meaningful, realistic, and implementable recommendations for this City. We are aware that our work would set a precedent for these issues for other governments, and while it should not be taken as the final word on the topic and instead as an important and necessary first step, our report reflects overwhelming consensus on a set of issues that were more complex than any of us could have anticipated going in.

It is our expectation that the soon-to-be-named AMPO will carry forward the work of this Task Force, and will create a robust framework by which agencies and offices can manage and report on their algorithms, related policies, and decisions. In the coming weeks, we anticipate the

appointments to the Advisory Committee, posting new personnel vacancies for AMPO support, and holding a series of public information sessions to better acquaint New Yorkers with this new function.

We are also looking forward to working with the Council on Intro 1806, but as written, we have concerns. In its current form, this proposed legislation would require each agency to produce individual reports based on potentially differing interpretations of automated decision systems, which was a concern we raised in the prior ADS hearing. We believe that Executive Order 50 is the right solution as we embark upon the work ahead. A key goal of EO 50 is to centralize leadership to manage and advise City agencies on their use of algorithms and other emerging technologies. We aim, with the creation of the AMPO role and with support from the two new committees, to streamline efforts around this work, strengthen related best practices citywide, and support agencies in better understanding algorithms and implementing these practices, while also prioritizing public engagement and accountability. Transparency and public information are central tenets of the AMPO's work, and we support efforts to ensure New Yorkers have the information they need about how City agencies serve them. We welcome the opportunity work with you to ensure that our shared goal of transparency is best aligned with agency operations and lessons learned from the ADS Task Force.

As we leave behind the process of the ADS Task Force, we are excited to enter a new era of innovation and accountability in government use of technology.

Thank you again for the opportunity to testify today. I welcome any questions you may have.

NYC Analytics
Mayor's Office of Data Analytics

Kelly Jin, Chief Analytics Officer
Testimony before the City Council Committee on Technology
Introduction 1447-2019: An Annual Inventory of Agency Data

Wednesday, January 22, 2020

Good morning, Chair Holden and members of the Technology Committee. My name is Kelly Jin, and I am the Chief Analytics Officer and Chief Open Platform Officer for the City of New York, and the Director of the Mayor's Office of Data Analytics. Thank you for the opportunity to testify on Introduction 1447 of 2019.

The Mayor's Office of Data Analytics (MODA), which was established by executive order in 2013 and codified in the City Charter in 2018, supports City agencies in applying strategic analytical thinking to data in order to deliver services more equitably and effectively, and to increase operational transparency.

MODA works in partnership with our colleagues at the Department of Information Technology and Telecommunications (DoITT) to oversee and implement the City's Open Data program. A testament to the potential of government transparency, New York City's Open Data Program is the country's largest municipal source of free, public data: at over two thousand data sets published by approximately 90 City agencies, offices, and commissions, and nearly 120,000 users per month.

To support this mission, each year MODA and DoITT conduct a robust Open Data compliance recruitment, training, and reporting process, where agency Open Data Coordinators collaborate with staff within their agencies to identify new datasets, highlight datasets in need of updates or revision, update metadata and dataset documentation, and prioritize open data work for the next year. Tomorrow, January 23rd, we will be kicking off the year by convening the Open Data Coordinators to review this year's key milestones.

City agencies, City Council, advocates, and the public are key partners in continuing to advance New York City as a national leader in Open Data and our vision of *Open Data for All*. Since the passage of the original Open Data Law, Local Law 11 of 2012, eight more pieces of legislation have made important contributions to this world-class program and its implementation.

Thanks to the City Council's passage of Local Law 8 of 2016, which introduced the Examination & Verification requirement (E&V), MODA carried out further steps to review agency compliance with the existing Open Data law. Through the E&V process, we assisted nine agencies over three years with an internal dataset review process with the mission to identify public datasets. The implementation of this law led to the identification of 57 additional datasets for publication on NYC Open Data. Because of the success of the E&V process, in our December 2019 E&V report, we committed to adopting elements of the process into our annual Open Data Program compliance cycle.

Through E&V, MODA has already seen the benefits of furthering guidance to augment and streamline the identification of datasets. With Introduction 1447, we appreciate City Council's forward-thinking efforts to update and expand dataset identification and cataloguing for New York City. The proposed Introduction 1447 aligns with the Open Data Program's mission to engage New Yorkers through increasing transparency in the information that is produced and used by City government.

From an implementation perspective, we seek to ensure that Introduction 1447 does not duplicate or misalign with elements of the existing annual compliance process, and incorporates the best practices and lessons learned through the past decade of Open Data collaboration and the E&V process. We would like to continue to work with both the Council and advocates to build on all of our past efforts and, ultimately, share a more holistic view of New York City's data. We recognize that New York City datasets are as dynamic as New York City itself; and are constantly striving to improve the program.

I invite Chair Holden and all Council members to join us at any event during the City's fourth annual Open Data Week festival, which we will co-host with BetaNYC from February 28 through March 7, 2020. One of the nation's largest public data celebrations, NYC Open Data Week 2020 will encompass dozens of events and engage thousands of New Yorkers.

Thank you again for the opportunity to testify. We look forward to working with Council to continue the important work of the Open Data program.

New York City Council
Committee on Technology

Oversight - Follow up on Local Law 49 of 2018 in Relation to Automated Decision Systems Used by Agencies.
January 22, 2020

Written testimony of
Marc Canellas
Vice-Chair, IEEE-USA Artificial Intelligence and Autonomous Systems Policy Committee

Good morning Chairman Holden and members of the Committee on Technology,

My name is Marc Canellas, and I serve as the Vice-Chair of the IEEE-USA's Artificial Intelligence and Autonomous Systems Policy Committee (referred to as the "AI Policy" Committee).[1] Our AI Policy Committee is responsible for advocating on behalf of the public policy interests of U.S. IEEE members on any topic related to artificial intelligence and autonomous systems, including the Automated Decision Systems (ADS) of interest today. We are a volunteer committee of the Institute of Electrical and Electronics Engineers, Inc. (IEEE, pronounced "Eye-triple-E"), the largest association of technical professionals in the world with over 422,000 members in over 160 countries.[2] I am grateful for the work done by my friends and colleagues at the IEEE considering how best to harness the promise and avoid the pitfalls of AI systems, but the specific conclusions in this testimony are my own.

I hold a Ph.D. in Aerospace Engineering from the Georgia Institute of Technology. I am currently a second-year law student at New York University's School of Law. I have previously served as an IEEE-USA Science and Technology Fellow in the United States House of Representatives. My research, funded by the Department of Defense and National Science Foundation, focused on how to design and deploy ADS in complex, safety-critical environments in the aerospace and defense domains. As a law student, I have interned with the Neighborhood Defender Service of Harlem's Family Defense Unit and the Federal Defenders of New York and seen the most punishing aspects of ADS being inflicted on New Yorkers.

The Task Force Had the Opportunity to Lead

The past two years have been a watershed moment for the governance of Artificial Intelligence (AI) and ADS. Government commissions and agencies in the United States and around the world have established procedures, processes, principles and recommendations for meaningful and ethical governance of AI. As officials acting for the benefit of their community, they recognize that they are trusted with the lives and livelihoods of their citizens. They recognize that they have an obligation to answer questions about the role

[1] The Artificial Intelligence and Autonomous Systems Policy Committee brings together IEEE members with experience and expertise in the various disciplines used in scientific field of artificial intelligence (AI) to address the public policy needs of the S&T community working with this important emerging technology. The committee meets as needed to address current events and the emerging questions related to AI and publishes position statements that reflect a consensus viewpoint of IEEE's U.S. membership, and which IEEE-USA staff will use to guide advocacy efforts within the United States. Specific uses include, but are not limited to, legislative advocacy, rule-making notice-and-comment letters, and advocacy efforts with the US Administration and federal agency officials. https://ieeeusa.org/volunteers/committees/aiaspc/

[2] https://www.ieee.org/about/today/at-a-glance.html

of technology in modern life. They recognize they are responsible for publicly addressing the risks to fundamental rights and freedoms.

Just a few weeks ago, the White House released the first-of-its-kind AI principles for executive agency regulators: public trust, public participation, scientific integrity and information quality, risk assessment and management, benefits and costs, flexibility, fairness and non-discrimination, disclosure and transparency, safety and security, and interagency coordination.[3] In 2019, the Department of Defense's (DOD) Defense Innovation Board adopted a set of principles stating that the ethical development and application of AI is responsible, equitable, traceable, reliable, and governable.[4] Also in 2019, the National Institute of Standards and Technology (NIST) established a plan for developing technical standards related to AI.[5]

Europe is making progress, too. In late 2018, the Council of Europe, the international organization devoted to upholding human rights, democracy, and the rule of law in Europe, adopted five principles for the use of AI: respect for fundamental rights, non-discrimination, quality and security, transparency, and user-control.[6] This past October, Germany released a set of ethical guidelines for protecting "the individual, preserving social cohesion, and safeguarding and promoting prosperity in the information age": human dignity, self-determination, privacy, security, democracy, justice and solidarity, and sustainability.[7]

It is against this backdrop that the New York City ADS Task Force Report is particularly disappointing. Within two years, each of these national and international commissions and agencies have been able to begin, establish and successfully complete their guiding principles and recommendations, while the ADS Task Force conclusion was that there "aren't easy answers to these questions."[8]

Good Governance Requires Good Design

No "easy answers."

That was the conclusion of the Chairs of the Automated Decision Systems Task Force. As a subject-matter expert in ADS, I must respectfully disagree. There are easy answers. Answers that other government bodies have embedded in their principles and recommendations. Answers that entire technical disciplines have been developing for decades to help build safe and effective automated systems that are relied upon each day. The "easy" answer is to require good design – to require that the ADS works.

---

[3] https://www.whitehouse.gov/wp-content/uploads/2020/01/Draft-OMB-Memo-on-Regulation-of-AI-1-7-19.pdf

[4] https://media.defense.gov/2019/Oct/31/2002204458/-1/-1/0/DIB_AI_PRINCIPLES_PRIMARY_DOCUMENT.PDF

[5] https://www.nist.gov/document/report-plan-federal-engagement-developing-technical-standards-and-related-tools

[6] https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c

[7] "The [German] Data Ethics Commission holds the view that regulation is necessary, and cannot be replaced by ethical principles... This is particularly true for issues with heightened implications for fundamental rights that require the central decisions to be made by the democratically elected legislator." https://www.bmjv.de/SharedDocs/Downloads/DE/Themen/Fokusthemen/Gutachten_DEK_EN.pdf?__blob=publicationFile&v=1

[8] The NYC Automated Decision Systems Task Force Report's opening letter from the Chairs highlight two questions at the center of their report: First, "[w]hat do the values of equity, transparency, and accountability that are already embedded in our work mean in [the] context [of Automated Decision Systems]?" Second, "[h]ow do we make sure that the technologies that can help improve the lives of those who rely on local government services are being used in an ethical manner and do not have unintended consequences that are unfair or harmful?" The Chairs conclude that "there aren't easy answers to these questions." https://www.documentcloud.org/documents/6561086-ADS-Report-11192019-1.html

There are many charges fairly levied against ADS: from embedding bias and discrimination, eviscerating privacy, or undermining fairness and due process of law. Unfortunately, lawmakers interpret this language as requiring them to develop entirely new and novel principles for designing AI and related technologies that are divorced from anything we've seen before. That is simply not true.

Framing any governance as new and novel is too often used to justify long deliberation processes, undue delay, and complete inaction, or to justify baseless claims that governments are demanding too much from technologists – supposedly impeding innovation and entrepreneurship.

Principles of civil liberties and civil rights are critical to comprehensive governance of ADS. But we cannot use those necessary discussions as a justification to force New Yorkers who are losing their jobs, losing their children, and losing their freedom to wait for basic protections that are already long past due.

Defining Good Design: Does It Work?

Does it work? Those are the three words that every ADS designer and regulator ought to answer before any ADS is deployed. Although questions of bias, transparency, and accountability must be discussed, a functional design is a necessary foundation to ensure a minimum standard of safety and efficacy.

- What are the ADS' capabilities and its limitations?
- What is the ADS' effect on the people who will use it, the organizations where it will be used, and the people upon whom it will be used?
- Has the ADS been independently verified and validated?

These principles of good design are so embedded in our daily lives that we take them for granted. When your doctor prescribes medicine for you or your children, you inevitably ask, "Does it work?" You ask about what the medicine can and cannot do (capabilities and limitations), whether it will work for your circumstances or have relevant side-effects (effects), and how it has been tested (independent verification and validation). Because the Federal Drug Administration requires good design to achieve basic safety and efficacy,[9] and requires that the medicine actually works, you can make informed decisions about your health and trust your doctor's prescription.

Good design is so embedded in our lives, it is assumed in many of these discussions about bias, transparency, and accountability when it should not be. Without knowing the ADS' capabilities and limitations, intended effects, or whether it has been verified and validated, how can anyone begin to determine bias, transparency, or accountability in a meaningful way?

Imagine a facial-recognition system that is twice as accurate in identifying Caucasian faces compared to faces of people of color.[10] This is clearly a biased system that needs investigation. But then it is revealed that the system is only 10% accurate overall. With that information, it does not matter that the system is biased. Minor modifications to the ADS will not improve it. It fundamentally does not work and should not be deployed.

---

[9] https://www.fda.gov/drugs/drug-information-consumers/fdas-drug-review-process-ensuring-drugs-are-safe-and-effective

[10] "Twice as accurate" is used as a hypothetical example of a facial-recognition system that may be able to be modified into some sort of compliance. However, the reality for facial-recognition system accuracy is much worse. The National Institute of Standards and Technology tested 189 facial-recognition algorithms from 99 developers, representing the majority of commercial developers. They found that the facial-recognition systems "falsely identified African-American and Asian faces 10 to 100 times more than Caucasian faces." https://www.nytimes.com/2019/12/19/technology/facial-recognition-bias.html

The power of "Does it work" is that it is a factual question. It is not normative or aspirational. Designers can comprehensively disclose the ADS' capabilities and limitations, how the ADS will affect organizations and people, and the results of independent verification and validation. That is demanded in the aviation and defense industry. That is demanded of our medicine. It ought to be demanded of ADS here in New York City.

Many of the ADS that undermine the rights and privileges of New Yorkers are flawed at their core because they simply do not work. Enforcing the minimum standard of good design is a path towards meaningful governance and regulation of ADS that can start today. It is found in each of the principles already adopted by the White House (scientific integrity and information quality, and safety and security[11]), the DOD Defense Innovation Board (reliability and traceability[12]), the Council of Europe (quality and security[13]), and the German Data Ethics Commission (security[14]).

Requiring good design will not stop all the inequitable, opaque, and unaccountable ADS, but it will begin to stop much of the tragic experimentation of pseudo-scientific, techno-solutionist automated decision systems on New Yorkers who need protection the most.

Where technologists may claim ignorance of the principles of due process, privacy, civil rights, and biases, they cannot ignore the principles of good design – they are the established foundations of engineering design and computer science.

IEEE: An American and World Leader in ADS Governance

Just like the FDA looks to biochemists and medical doctors for guidance, or the FAA looks to aerospace engineers and human factors engineers, this Council ought to look to engineers and technologists specialize in human-centered ADS design – especially those at the IEEE.

---

[11] Scientific Integrity and Information Quality: "The government's regulatory and non-regulatory approaches to AI applications should leverage scientific and technical information and processes. ...Best practices include transparently articulating the strengths, weaknesses, intended optimizations or outcomes, bias mitigation, and appropriate uses of the AI application's results. Agencies should also be mindful that, for AI applications to produce predictable, reliable, and optimized outcomes, data used to train the AI system must be of sufficient quality for the intended use." Safety and Security: "Agencies should promote the development of AI systems that are safe, secure, and operate as intended, and encourage the consideration of safety and security issues throughout the AI design, development, deployment, and operation process." https://www.whitehouse.gov/wp-content/uploads/2020/01/Draft-OMB-Memo-on-Regulation-of-AI-1-7-19.pdf

[12] Traceable: "AI engineering discipline should be sufficiently advanced such that technical experts possess an appropriate understanding of the technology, development processes, and operational methods of its AI systems, including transparent and auditable methodologies, data sources, and design procedure and documentation." Reliable: "AI systems should have an explicit, well-defined domain of use, and the safety, security, and robustness of such systems should be tested and assured across their entire life cycle within that domain of use." https://media.defense.gov/2019/Oct/31/2002204458/-1/1/0/DIB_AI_PRINCIPLES_PRIMARY_DOCUMENT.PDF

[13] Quality and Security: "Data based on judicial decisions that is entered into a software which implements a machine learning algorithm should come from certified sources and should not be modified until they have actually been used by the learning mechanism. The whole process must therefore be traceable to ensure that no modification has occurred to alter the content or meaning of the decision being processed. The models and algorithms created must also be able to be stored and executed in secure environments, so as to ensure system integrity and intangibility." https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c

[14] Security: "Guaranteeing security entails compliance with stringent requirements, e. g. in relation to human/machine interaction or system resilience to attacks and misuse." https://www.bmjv.de/SharedDocs/Downloads/DE/Themen/Fokusthemen/Gutachten_DEK_EN.pdf?__blob=publicationFile&v=1

IEEE has made its history in leveraging the technical expertise of its 420,000 engineers around the world. We advocate for public policy which adheres to the principles of good design, and to standardize these principles of good design in various industries.

ADS-related advocacy in the United States is led by the AI Policy Committee,[15] of which I am the Vice-Chair. Our efforts at the federal level notably include organizing the bipartisan and bicameral Congressional AI Caucuses which includes 27 Representatives (23 Democrats, 4 Republicans)[16] and 6 Senators (3 Democrats, 3 Republicans).[17] In just this past year, our AI Policy Committee commented on the development of the federal privacy framework by the National Institute of Standards and Technology,[18] endorsed Congressional legislation calling for the ethical development of artificial intelligence,[19] sent a letter to the U.S. House and Senate leadership urging passage of legislation recognizing every American's digital privacy rights, [20] and endorsed NYU's proposal to establish the New York City's Center for Responsible AI.[21] We also produced a report monitoring developments of AI around the world,[22] discussed automation and labor at the Texas AFL-CIO Constitutional Convention,[23] and our members were recognized for their contributions to the DOD's Defense Innovation Board's newly adopted set of principles to guide ethical development and application of AI.[24]

IEEE's Standards Association (SA) uses the same expertise in AI and ADS to establish formal standards for their design. IEEE SA plays a critical role in modern life. For example, the only way your phone or computer knows how to "talk" to the WiFi is because of the IEEE 802.11 Wireless Network Standards that define the "language" of WiFi.[25] In other words, if you want to connect to WiFi, the IEEE 802.11 standard is the only way to do it.

IEEE SA is now applying the same process to ADS-related technologies: if you want to design and deploy ADS, this is how you ought do it. IEEE has established the Global Initiative on Ethics of Autonomous and Intelligent Systems,[26] bringing together engineers, philosophers, social scientists, and lawyers from around the globe to leverage principles of good design into 14 standards addressing specific issues including: ethics

---

[15] Position Statement: Artificial Intelligence Research, Development and Regulation (February 2017) https://ieeeusa.org/wp-content/uploads/2017/10/AI0217.pdf

[16] https://artificialintelligencecaucus-olson.house.gov/

[17] https://www.heinrich.senate.gov/press-releases/heinrich-portman-launch-bipartisan-artificial-intelligence-caucus

[18] IEEE-USA and IEEE-SA Comments to NIST on Draft NIST Privacy Framework: A Tool for Improving Privacy Through Enterprise Risk Management. https://ieeeusa.org/wp-content/uploads/2019/10/102119.pdf

[19] Letter to Rep. Lawrence (Michigan) endorsing H. Res. 153, calling for the development of guidelines for ethical development of artificial intelligence. https://ieeeusa.org/wp-content/uploads/2019/04/032919.pdf

[20] Letter to House and Senate leadership urging passage of legislation recognizing every American's digital privacy rights. https://ieeeusa.org/wp-content/uploads/2019/01/010719.pdf

[21] IEEE-USA Letter endorsing New York University's (NYU) Proposal to Establish the New York City Center for Responsible AI. https://ieeeusa.org/wp-content/uploads/2019/07/073019.pdf

[22] https://ieeeusa.org/volunteers/committees/aiaspc/ai-global-survey/

[23] https://www.txworkersunite.com/

[24] AI&ASPC Chair Mina Hanna, AI&ASPC member Dr. Lydia Kostopoulos, and IEEE Executive Director Steve Welby were all recognized for their contributions to the U.S. Department of Defense's Defense Innovation Board's (DIB) newly adopted set of principles to guide ethical development and application of AI in DoD. https://innovation.defense.gov/ai/

[25] *IEEE 802.11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications.* (2016 revision). IEEE-SA. 14 December 2016. doi:10.1109/IEEESTD.2016.7786995. https://ieeexplore.ieee.org/servlet/opac?punumber=7786993

[26] https://ethicsinaction.ieee.org/#read

in system design,[27] transparency of autonomous systems,[28] data privacy,[29] algorithmic bias,[30] child and student data governance,[31] employer data governance,[32] and children's online rights.[33] There is a recent proposed project to develop a standard on organizational governance of AI.[34]

There is so much wisdom within IEEE and the engineering community about what constitutes good design. Good design – that if demanded today – would limit and constrain many biased, discriminatory systems and applications before they are deployed, and before citizens are left to protect themselves from experimentation.

Forensic Science Tool: The Standard-bearer for Bad Design and Bad Governance

For far too long unsafe and ineffective ADS have deployed on New Yorkers. If those responsible for them had just asked, "Does it work?" so much heartbreak could have been avoided.

The one most disturbing to me is the Forensic Science Tool, known as 'FST'. FST was an ADS developed in 2011 by the New York City's Office of Chief Medical Examiner (OCME) to help their forensic scientists make identifications from DNA samples that were too tiny or contained a mix of more than one person's genetic material.[35] FST emerged as a pioneering tool, beyond the standard FBI DNA practice and other public labs.[36] But while DNA evidence has been considered the gold standard of forensic evidence in criminal court, FST has been revealed as a standard-bearer of bad design.

There were fundamental and obvious flaws in FST. For example, the algorithm did not consider that different people in a mixture could be family and, therefore, share DNA. Even Dr. Bruce Budowle, an architect of the F.B.I.'s national DNA database, testified that the FST's statistical methods were "not

---

[27] Model Process for Addressing Ethical Concerns During System Design: defining a process model by which engineers and technologists can address ethical consideration throughout the various stages of system initiation, analysis and design. (IEEE P7000™) https://standards.ieee.org/news/2016/ieee_p7000.html

[28] Transparency of Autonomous Systems: Describing measurable, testable levels of transparency, so that autonomous systems can be objectively assessed and levels of compliance determined. (IEEE P7001™) https://standards.ieee.org/project/7001.html

[29] Data Privacy Process: Defining requirements for a systems/software engineering process for privacy oriented considerations regarding products, services, and systems utilizing employee, customer or other external user's personal data. (IEEE P7002™) https://standards.ieee.org/project/7002.html

[30] Algorithmic Bias Considerations: Describing specific methodologies to help users certify how they worked to address and eliminate issues of negative bias in the creation of their algorithms. (IEEE P7003™) https://standards.ieee.org/project/7003.html

[31] Standard for Child and Student Data Governance: defines specific methodologies to help users certify how they approach accessing, collecting, storing, utilizing, sharing, and destroying child and student data. (IEEE P7004™) https://site.ieee.org/sagroups-7004/

[32] Standard for Transparent Employer Data Governance: Defining specific methodologies to help employers to certify how they approach accessing, collecting, storing, utilizing, sharing, and destroying employee data. (IEEE P7005™) https://standards.ieee.org/project/7005.html

[33] Standard for Age Appropriate Digital Services Framework–Based on the 5 Rights Principles for Children: Establishing a framework for developing age appropriate digital services for situations where users are children. (IEEE P2089™) https://standards.ieee.org/project/2089.html

[34] Recommended Practice for Organizational Governance of Artificial Intelligence: specifying substantive governance criteria such as safety, transparency, accountability, responsibility and minimizing bias, and process steps for effective implementation, performance auditing, training and compliance in the development or use of artificial intelligence within organizations. (IEEE P2863)

[35] https://www.nytimes.com/2017/09/04/nyregion/dna-analysis-evidence-new-york-disputed-techniques.html

[36] https://www.propublica.org/article/thousands-of-criminal-cases-in-new-york-relied-on-disputed-dna-testing-techniques

defensible."[37] However, few, if any, at OCME or New York State's DNA Subcommittee had the expertise to double check it.[38] After years of defendants attempting to access the underlying FST code, a federal judge in 2016 finally made it available to defense experts for review. The expert witness concluded that FST's accuracy "should be seriously questioned."[39] Within three months,[40] OCME announced it would abandon FST in favor of a more commonly-used DNA ADS, known as STRMix.[41]

In October 2019, just three months ago, a New York State Supreme Court called for all cases using FST to be reviewed because there was "no scientific consensus in favor" of FST as a legitimate tool.[42] But this is little consolation to the over 1300 defendants who had their liberties and freedoms, threatened or taken away because of FST evidence. For six years, evidence was used from an ADS that is now considered indefensible and lacking legitimacy. For six years, evidence was used from an ADS that has been officially and voluntarily abandoned.

Hearing this, how was FST anything but a failed pseudo-scientific technological experiment on the population of New York City? People's lives, liberties, and freedoms were threatened by a scientifically and statistically illegitimate ADS. And who is evaluating whether STRMix, the OCME's new DNA ADS, is safe and effective? If previous performance is any indicator of future expectation, and it is, why should any New Yorker trust it?

Looking more broadly at the FST catastrophe, it's important to understand that FST failed before ever getting to the questions of bias, transparency, or accountability. FST was not good design. FST simply did not work. FST's true capabilities and limits were not disclosed. FST's designers did not account for the capabilities of those using it or anticipate and appreciate the effects it would have.

These issues with FST only came to light because of public defenders and investigative reporters seeking the truth. For six years, in over 1300 cases, OCME did not disclose FST's indefensible methods when New Yorker's liberties and freedoms were at stake. This begs the question: Where was the leadership of New York?[43] Judges did not need a theory of bias, accountability, or transparency to determine that FST was not fit for the courtroom, so what was the leadership of New York waiting for?

For all the discussion of transparency, equity, and accountability in discussions of ADS, the truth is that I am testifying about human decisions, not algorithmic ones. I have served in government myself. I have also seen the pain wrought by FST and other ADS. When I reflect on the ADS Task Force's procedures and

---

[37] https://www.nytimes.com/2017/09/04/nyregion/dna-analysis-evidence-new-york-disputed-techniques.html
[38] https://www.nytimes.com/2017/09/04/nyregion/dna-analysis-evidence-new-york-disputed-techniques.html
[39] https://www.propublica.org/article/thousands-of-criminal-cases-in-new-york-relied-on-disputed-dna-testing-techniques
[40] https://www.propublica.org/article/thousands-of-criminal-cases-in-new-york-relied-on-disputed-dna-testing-techniques
[41] https://www.nytimes.com/2017/09/04/nyregion/dna-analysis-evidence-new-york-disputed-techniques.html
[42] People v. Thompson, N.Y. Slip Op. 51521(U) (Sup. Ct. 2019); https://gothamist.com/news/judge-attacks-controversial-dna-software-s-still-used-send-people-prison
[43] It is not clear that this will be addressed given that the Mayor's Executive Order No. 50 establishing the Algorithms Management and Policy Officer excepted any information that would "interfere with a law enforcement investigation or other investigative activity by an agency or would compromise public safety." https://www1.nyc.gov/assets/home/downloads/pdf/executive-orders/2019/eo-50.pdf This exception is commonly critiqued as the "NYPD exception." But it can be critiqued through the lens of good design. As exemplified by FST, not disclosing information about these law-enforcement-related ADS will only compromise the public's right to know whether the ADS works at all.

final report, I can only hope that you realize that when New Yorkers are demanding transparency, equity, and accountability, they don't only mean for ADS, they mean for you, too.

Tombstone Design: The Need for Good Governance Before the Harm Occurs

I cannot overly emphasize enough that where there are threats of serious or irreversible damage, even the lack of "easy" answers cannot be used as a reason for abdicating governance until after the harm has occurred. While abdicating responsibility to prevent foreseeable and preventable harm may be acceptable to some, it is absolutely unacceptable to those in the aerospace and defense industry where I was trained, and unacceptable to those I work with in the IEEE – and it ought to be unacceptable to a City Council responsible for the health and wellbeing of such a great city.

We call it "tombstone design." That is the aviation industry's term for this type of abdication of responsibility. We have this haunting term because our ADS are responsible for the safety of millions of passengers, pilots, and warfighters – because when our systems fail, people die.

Aviation has historically been plagued by designers ignoring defects until they have caused fatal accidents. We have been forced to acknowledge tragedies, and the need to understand and remedy their causes. Today aviation is an incredibly safe mode of transportation because of these acknowledgements, but we are constantly reminded of why we must respect the demands of good design.

Look no further than the recent tragic example of the Boeing 737 MAX 8. The MAX 8 incorporated the Maneuvering Characteristics Augmentation System (MCAS) automation, an ADS meant to help keep the aircraft pointed in the right direction. The MCAS ultimately contributed to two accidents and the deaths of 346 people before its tragically bad design was acknowledged, and the aircraft were grounded. The MCAS' flawed design pushed the nose of the aircraft down and, despite the pilots desperately trying to pull the nose up, they couldn't overcome the MCAS' death grip. Ethiopian Airlines Flight 302 impacted the ground at nearly 700 mph, creating a crater 90 feet wide and 120 feet long with wreckage driven into the soil up to 30 feet deep.[44]

The first tragedy is that Boeing's engineers and leadership knew that the MCAS automation was flawed from the beginning.[45] At the time of development, Boeing employees were describing the aircraft as a "joke,"[46] that there was no way they would put their families on those aircraft.[47] They knew they had designed a unstable aircraft and then tried to use an algorithm as a band-aid. As a result, the pilots – the humans which the Federal Aviation Regulations unequivocally state are directly and ultimately responsible for the safe operation of the aircraft[48] – had no idea how to regain control from the MCAS as it sped out of control into the ground.

---

[44] http://nymag.com/intelligencer/2019/04/what-passengers-experienced-on-the-ethiopian-airlines-flight.html

[45] https://www.seattletimes.com/business/boeing-aerospace/failed-certification-faa-missed-safety-issues-in-the-737-max-system-implicated-in-the-lion-air-crash/; https://www.aviationtoday.com/2019/11/02/boeing-ceo-outlines-mcas-updates-congressional-hearings/

[46] Boeing employees described the aircraft as a "joke" and "ridiculous." https://www.nytimes.com/2020/01/10/business/boeing-737-employees-messages.html

[47] https://www.cnn.com/2020/01/09/business/boeing-documents/index.html One employee wrote, "Honesty is the only way in this job — integrity when lives are on the line on the aircraft and training programs shouldn't be taken with a pinch of salt… Would you put your family on a MAX simulator trained aircraft? I wouldn't." "No," the other worker responded

[48] 14 C.F.R. §91.3 (2020) "Responsibility and authority of the pilot in command. (a) The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft."

The second tragedy is that the Federal Aviation Administration (FAA) had abdicated its responsibility to oversee and certify the safety of these aircraft dependent on highly-complex ADS. "[C]iting lack of funding and resources, [the FAA] had delegated increasing authority to Boeing to take on more of the work of certifying the safety of its own airplanes."[49] Ultimately, the certification of this ADS was completely delegated to Boeing.[50] Again, the Boeing employees knew the FAA was abdicating their role, describing regulators as "dogs watching TV" because "[t]here is no confidence that the F.A.A. is understanding what they are accepting (or rejecting)."[51]

The tombstone design perpetrated by designers at Boeing and allowed by regulators at the FAA, not only killed 346 people but eroded global trust in the aviation industry. CEO's of airlines around the world and the international aviation regulators are openly concerned about the long-term effects of draining public confidence.[52] Where an FAA certification of an aircraft was once respected around the world, the MAX 8 has now caused international aviation safety regulators to question their mutual recognition and reciprocity.[53]

Aware of the issue of public trust, Congress required testimony from the now-former Boeing CEO, Mr. Dennis Muilenburg. "If back then we knew everything that we know now, we would've made a different decision."[54] In other words, it took two accidents and the deaths of 346 people for them to realize that the flawed MCAS never should have been deployed in the first place. That is tombstone design.

Seeing the People at the Tip of the Spear

For all the tragedy that Boeing and the FAA have caused with their tombstone design, broader society demanded that they face their mistakes. With a year, the MAX 8 has been completely grounded, Boeing's CEO was fired, and Congress demanded testimony from designers and regulators.

What is truly unthinkable is that they would do nothing in the wake of tragedy.

But that is exactly what has happened in New York as an army of ADS spread across the city. FST illegitimately threatened the liberties and freedom of over 1300 New Yorkers without any oversight. OCME then adopted STRMix, a private version of FST, to replace it. The Administration for Child Services is developing new predictive analytics for investigating claims of abuse and neglect.[55] The New York City Housing Authority is beginning to use third-party data broker ADS systems to manage voucher programs, tenant screening, property management, and maintenance requests.[56] The New York Police Department has long implemented so-called "gang" databases[57] and technology persistently monitoring New York City for

---

[49] https://www.seattletimes.com/business/boeing-aerospace/failed-certification-faa-missed-safety-issues-in-the-737-max-system-implicated-in-the-lion-air-crash/

[50] https://www.seattletimes.com/business/boeing-aerospace/failed-certification-faa-missed-safety-issues-in-the-737-max-system-implicated-in-the-lion-air-crash/

[51] https://www.nytimes.com/2020/01/10/business/boeing-737-employees-messages.html

[52] https://www.businesstravelnews.com/Transportation/Air/Airline-CEOs-Worry-of-Eroding-Public-Trust-as-Boeing-Max-Return-Drags-On

[53] https://www.businesstravelnews.com/Transportation/Air/Airline-CEOs-Worry-of-Eroding-Public-Trust-as-Boeing-Max-Return-Drags-On

[54] https://www.aviationtoday.com/2019/11/02/boeing-ceo-outlines-mcas-updates-congressional-hearings/

[55] https://chronicleofsocialchange.org/child-welfare-2/new-york-predictive-analytics-debate-child-welfare/31732

[56] https://ainowinstitute.org/ads-shadowreport-2019.pdf

[57] https://theintercept.com/2018/06/11/new-york-gang-database-expanded-by-70-percent-under-mayor-bill-de-blasio/

gunfire.[58] The Department of Corrections and Board of Corrections are using ADS to determine who has access to care (e.g., nursery programs for new mothers) and programming (e.g., literacy classes).[59]

When will true oversight begin? Is anyone sure that any of these ADS actually work?

I worry that the difference between what happened with the Boeing MAX 8 and what is happening in New York City, is that when those in power see the Boeing MAX 8 accidents, they can see themselves at the tip of the spear. They can imagine themselves on those aircraft. They immediately worry about their and their family's safety. Their self-interest demands action.

But too many people in this city, when they hear about FST, do not empathize. They don't see those 1300 New Yorkers. They cannot imagine being affected by STRMix, child services, the housing authority, the police, or corrections. They just don't see the people, the families, and the communities at the tip of the spear. They don't see the people who have lost loved ones, children, homes, jobs, livelihoods, and dignity because of these agencies and their ADS. But those people are real. Their suffering is real. Their fear is real. Every bit as real as the tragedies caused by the MAX 8. And not reacting to the tombstone design occurring in this city is just as unthinkable.

Do Not Allow ADS Without Requiring That They Work

So, I implore you today, do not allow ADS to be implemented in New York without requiring that the ADS works. It is the foundation of ethical AI principles across the United States and around the world, and across the safety-critical domains that our lives depend upon each day from aviation and defense to medicine.

First, find and stop the badly designed ADS. Stop New York's own history of tombstone design. See the people at the tip of the spear. Don't allow unsafe and ineffective ADS like the Forensic Science Tool to run amok throughout the city, wreaking havoc for years without oversight.

Second, enforce the principles of good design. Demand that those designing and implementing the ADS disclose the ADS' capabilities and limitations, how the ADS will affect real people and organizations, and the independent verification and validation.

Of course, there are deeper issues of bias, accountability, and transparency that must be included in any meaningful governance. But, today, New York City can demand good design. Today, New York City can decide to end its own history of tombstone design.

New Yorkers are demanding transparency, equity, and accountability, and they don't only mean for ADS alone, they mean for you, too. The right first step is to assure them that ADS are safe and effective. It's not only what good design requires, but what good governance demands.

[58] https://www.nytimes.com/2015/03/17/nyregion/shotspotter-detection-system-pinpoints-gunshot-locations-and-sends-data-to-the-police.html

[59] https://ainowinstitute.org/ads-shadowreport-2019.pdf

SURVEILLANCE TECHNOLOGY OVERSIGHT PROJECT

40 Rector Street, 9th Floor
New York, New York 10006
www.StopSpying.org | (646) 602-5600

STATEMENT OF
ALBERT FOX CAHN, ESQ.
EXECUTIVE DIRECTOR
SURVEILLANCE TECHNOLOGY OVERSIGHT PROJECT, INC.

BEFORE THE
COMMITTEE ON TECHNOLOGY
NEW YORK CITY COUNCIL

FOR A HEARING CONCERNING,
FOLLOW UP ON LOCAL LAW 49 OF 2018 IN RELATION TO AUTOMATED DECISION SYSTEMS USED BY AGENCIES, INTRO 1447, AND INTRO 1806

PRESENTED
JANUARY 22, 2020

Good morning, my name is Albert Fox Cahn, and I serve as the Executive Director for the Surveillance Technology Oversight Project ("S.T.O.P."). S.T.O.P. advocates and litigates for New Yorkers' privacy rights, fighting discriminatory surveillance. I am here today to support greater automated decision system ("ADS") transparency and passage of Intro 1806.

The ADS Task Force was poised to make New York a leader in analysis and regulation of ADS. Sadly, unable to agree on fundamental questions and denied access to essential information, the Task Force's work became impossible.

I. ADS Transparency Reduces Discrimination and Legal Challenges

There is no reason for agencies to resist ADS transparency the way they have, as transparency serves both the interest of the public and the agencies. Nationwide, we see the consequences of hasty and covert ADS adoption. Arkansas's disastrous 2016 transition to algorithmic Medicare benefits haphazardly rolled-back attendants' hours and left vulnerable patients without clean clothing or even food.[1] When the cuts were challenged, Arkansas failed to defend an algorithm it did not understand in court.

Idaho transitioned to opaque ADS in 2011 that severely cut Medicaid services for Idahoans with developmental disabilities. As in Arkansas, the cuts were challenged. And, as in Arkansas, the agency lost.[2] In the end, Idaho settled to scrap the ADS and develop a replacement system with the input and consent of affected Idahoans.

Michigan's Unemployment Insurance Agency used ADS that wrongfully accused 40,000 residents of benefits fraud.[3] Michiganders were wrongfully put into foreclosure or made homeless, and some even took their own lives.[4] The system that was meant to save the agency money may end up costing millions in compensation.

ADS promise to increase efficiency and cut costs, but faulty systems will do neither. New York decisionmakers learned this lesson at the expense of large swaths of the Bronx.[5] Transparency and community engagement throughout the ADS development cycle mitigates these harms and promotes ADS that best serve New Yorkers.

II. Best Practices in ADS Transparency

The Task Force failed to effectively learn from the research community's recommendations and best practices. Agency transparency in ADS adoption and use, can protect New Yorkers from

---

[1] *Ledgerwood v. Ark. Dep't of Human Services*, No. 60CV-17 (Pulaski Ct. (ark.) Cir. Ct. Jan. 26, 2017).
[2] *See K.W. ex rel. D.W. v. Armstrong*, 789 F.3d 962 (9th Cir. 2015).
[3] Carol Thompson, *Michigan still looking for 500 people owed payback for unemployment agency error*, LANSING STATE JOURNAL (March 1, 2019) https://www.lansingstatejournal.com/story/news/2019/03/01/michigan-unemployment-fraud-refund-marvin-miwam-midas/3026164002/.
[4] Robert Charette, *Michigan's MiDAS Unemployment System: Algorithm Alchemy Created Lead, Not Gold*, IEEE SPECTRUM (January 24, 2018) https://spectrum.ieee.org/riskfactor/computing/software/michigans-midas-unemployment-system-algorithm-alchemy-that-created-lead-not-gold.
[5] Joe Flood, *Why the Bronx Burned*, N.Y. POST (May 16, 2010) https://nypost.com/2010/05/16/why-the-bronx-burned/.

discrimination, ensure the rights of the city's most vulnerable residents, and limit future agency liability.

ADS complexity often confounds disclosure efforts. Without adequate explainability tools and proper training, decisionmakers may not know a model's methodology or limits. And, decisionmakers may be unduly deferential to the model or unable to explain the ADS' role in a particular decision. "Model cards" that explain a model's methodology and limits should be considered to properly limit human deference to ADS.[6] The Task Force should have considered human-training practices that teach decisionmakers how bias (conscious and unconscious) impacts ADS outputs and inform decisionmakers of the danger of "automation bias."[7] If these best practices were adopted, they could safeguard against arbitrary, unexplainable, and therefore opaque applications of ADS.

I. The Task Force's Lack of Public Engagement

Having Task Force meetings that were open to public scrutiny was necessary but not sufficient to promote public discourse.[8] A Task Force created, in large part, to increase transparency should have been transparent itself. The Task Force only held two public forums and a few community-based meetings with little publicity and community engagement.

The public should have had access to the Task Force's work. Instead, it worked at a lethargic pace, never published a draft of its recommendations, and ultimately was never able to decide on a definition of ADS. Task Force meetings were kept private over the protestations of the public and members of the Task Force itself. The lack of transparency surprised onlookers and the justification for it was unpersuasive.

II. Existing ADS in New York City

Nearly every New Yorker has encountered an ADS. And, nearly every New Yorker was and is unaware of those encounters. Yet, a comprehensive list of active ADS was never provided to the Task Force. The Task Force was not able to make meaningful recommendations without a list of active ADS.

This Task Force may have been first in the nation, but it was not first in the field. Legal scholars and data scientists have written at length about fairness, accountability, and transparency in automated systems, often with the understanding that overly generalized, academic recommendations have clear limits.[9] A law review article or white paper to add to the towering stack was not the intended end

---

[6] Model cards explain the training materials, methodology, limitations, known biases, and unknown or untested capacities that the models might harbor. Understanding how narrow the focus of a model is, or whether it includes racial features or racial proxy features like zip Code can impact the decision-making of a human agent involved in reading the output of the algorithm.

[7] "Automation bias" is the phenomenon that people presented with an algorithmic prediction will confirm its truth rather than deny it. As we saw in the Boeing 737 case, poor training can result in catastrophic outcomes, especially when the machines and the humans disagree.

[8] Cary Coglianese & David Lehr, *Transparency and Algorithmic Governance* 71 ADMIN. L. REV. 1, 20-21 (2019) (discussing Fishbowl and Reasoned Transparency).

[9] *See, e.g., Id.* at 29 (noting the limitations on the general analysis of transparency procedures for ADS because any process will "depend on how government actually uses machine learning—and even on what kind of machine-learning

product of this Task Force. Its recommendations should have effectuated the academic ideas of the growing interdisciplinary field in New York City.[10] The 36 page final report only dedicated eight pages to recommendations. Those recommendations only amounted to generalizations and concerns about bias, funding, and regulatory burden. Without the transparency needed to make specific recommendations the Task Force's Final Report failed to provide the algorithmic accountability it was intended.

Intro 1806 would be a modest first step toward greater transparency about New York City's ADS. It would provide information the ADS Task Force was never granted, a current list of ADS, its purpose, and how it informs government decisions.[11] This information is increasingly vital as government ADS use expands. Growing agency dependence on ADS should not mean government systems are hidden from public oversight. Just the opposite. As government decisions and ADS become interwoven, transparency in one is synonymous with transparency in the other. If ADS continues to be hidden, intelligent regulation is near impossible. Intro 1806 would provide basic information necessary for the council to craft future needed regulations governing ADS. Intro 1806 is the initial step toward government ADS accountability, it can't respond to the full range of problems posed by ADS.

III. NYPD Use of ADS

Intro 1806 would provide greater transparency about the purpose and use of ADS in New York City, but it only partially addresses the unique threat posed by law enforcement use of ADS. Police ADS have the possibility to result in false arrest and even wrongful conviction. They can recreate the worst elements of human bias in policing communities of color. The lack of transparency about ADS in New York City is why for nearly three years I've fought for enactment of the only bill to comprehensively regulate The New York City Police Department ("NYPD") surveillance regime: The Public Oversight of Surveillance Technology ("POST") Act.[12] The NYPD has built up an arsenal of cutting edge, military-grade spy tools without any public notice or debate. These tools include items like facial recognition, x-ray vans, and automated license plate readers that can monitor a vehicle's location throughout the city. Facial recognition alone has led to the arrests of thousands of New Yorkers, many wrongly accused of crimes they didn't commit.

Let me be clear, the POST Act does not prohibit the NYPD from using new surveillance tools. Rather, it merely secures this Council's indispensable role in reviewing when and how such tools are deployed. Under the POST Act, the NYPD must issue an "impact and use policy" report when choosing to use a new surveillance tool.[13] This report must describe the technology, rules, and

---

algorithm it uses"); Robert Brauneis & Ellen P. Goodman, *Algorithmic Transparency for the Smart City* 20 YALE J. L. & TECH 103, 136 (2018) (complaining that because there are "no means of knowing how many algorithms are currently in use, who has developed them, or which governments are using them" there is no way "to generalize from [the authors'] finding").

[10] *Id.* at 29 (noting the limitations on the general analysis of transparency procedures for ADS because any process will "depend on how government actually uses machine learning—and even on what kind of machine-learning algorithm it uses").

[11] Reporting on Automated Decision Systems Used by City Agencies, Int 1806-2019.

[12] Public Oversight of Surveillance Technology (POST) Act, Int 0487-2018.

[13] N.Y. CITY COUNCIL 1482 § 1 (N.Y. 2017), ch. 1, 14 ADMIN. CODE OF N.Y.C. § 14-167(b) (as proposed)

guidelines for the use of that technology, and safeguards for protecting any data collected.[14] The City Council and the people of New York City would then be allowed to provide feedback on such an acquisition.[15] Thus, the POST Act strikes a delicate balance, requiring sufficient information to ensure oversight, while protecting operational details, sources, and methods.

Civilian oversight of policing and intelligence gathering is not only a fundamental American value, it is essential for effective policing. As then-President Obama's Task Force on 21st Century Policing found, "[l]aw enforcement agencies should establish a culture of transparency and accountability in order to build public trust and legitimacy."[16] The NYPD's current procurement methods are not only undemocratic, but they harm the NYPD's very mission of promoting public safety.

These spy tools pose a particularly potent threat to our immigrant communities. All too often, these systems create a risk of information sharing with federal agencies…even ICE. For example, the NYPD has contracted for years with the private firm Vigilant Solutions, which operates a nationwide database of over 2 billion license plate data points.[17] Shockingly, last year we learned that that Vigilant Solutions was not just contracting with local police departments…it was also contracting with ICE.[18] This one vendor is responsible for recording at least one million license plates per day.[19]

Perhaps most disturbingly, the NYPD relies on Vigilant Solution's artificial intelligence to map out social networks, label New Yorkers as "criminal associates", and create databases based on the company's unproven algorithms.[20] This is just one example of countless surveillance tools that requires a systematic solution.

The POST Act is not just a comprehensive response, but also a modest one. The NYPD can continue using these tools—no matter how problematic—by complying with limited protections against waste, discrimination, and misuse. In fact, the POST Act would be one of the weakest surveillance reform bills in the country,[21] especially when viewed in comparison to San Francisco's[22] and Oakland's

---

[14] *Id.* at 14-167(a) (as proposed)
[15] *Id.* at 14-167(e-f) (as proposed)
[16] PRESIDENT'S TASK FORCE ON 21ST CENTURY POLICING, FINAL REPORT OF THE PRESIDENT'S TASK FORCE ON 21ST CENTURY POLICING 12 (2015), https://cops.usdoj.gov/pdf/taskforce/taskforce_finalreport.pdf.
[17] *See* ROCCO PARASCONDOLA, *Exclusive: NYPD will be able to track fugitives who drive past license plate readers across the U.S.*, N.Y. DAILY NEWS, Mar. 02, 2015, https://www.nydailynews.com/new-york/nypd-track-fugitives-drive-license-plate-readers-article-1.2133879.
[18] The Domain Awareness System collects the license plate data scanned by the approximately 500 license plate readers operated by the NYPD and combines it with footage from cameras and other surveillance devices around the city. The NYPD holds on to the license plate data for at least five years regardless of whether a car triggers any suspicion. *See* MARIKO HIROSE, *Documents Uncover NYPD's Vast License Plate Reader Database*, ACLU, Jan. 25, 2016, https://www.aclu.org/blog/privacy-technology/location-tracking/documents-uncover-nypds-vast-license-plate-reader-database?redirect=blog/speak-freely/documents-uncover-nypds-vast-license-plate-reader-database.
[19] *See id.*
[20] *See id.*
[21] See ACLU, Community Control Over Police Surveillance, https://www.aclu.org/issues/privacytechnology/surveillance-technologies/community-control-over-police-surveillance
[22] See CONGER, KATE, San Francisco Bans Facial Recognition Technology, N.Y. TIMES, May 14, 2019, https://www.nytimes.com/2019/05/14/us/facial-recognition-ban-san-francisco.html.

outright bans on facial recognition technology[23] and Massachusetts's state-wide moratorium.[24] Additionally, many of the jurisdictions require legislators to approve each and every surveillance system their municipality buys, unlike the POST Act, which only requires public notice.

The evidence is clear: civilian oversight of surveillance enhances the public's trust in police departments and public safety.[25] Now, with thirty-two council members and the Public Advocate signed on as POST Act co-sponsors, the momentum is growing. Just last month the Committee on Public Safety heard the public's demands for NYPD accountability. Excitingly, members of this council reaffirmed their support to pass the bill despite NYPD stonewalling.[26]

IV. Next Steps

ADS Task Force fell short of its mission to develop specific recommendations on how to regulate ADS. City government did not provide the necessary tools for the task force to succeed. This opaque veil that ADS are being hidden behind is a problem today, but even more alarmingly for our future. Government use of ADS continues to grow, with that growth transparency becomes more important by the day. ADS transparency is a vital component to our government's future.

I'm grateful that the committee is addressing New Yorkers' myriad privacy concerns. Our alarm grows by the day, as emerging technologies exacerbate the threats we are only now starting to address. Intro 1806 is a simple first step toward ADS transparency. Its passage is important not only today but for future ADS oversight.

Additionally, we urge this City Council to prioritize its response to police use of ADS and enact the POST Act. This legislation will provide vital transparency for the NYPD's acquisition of, and use of, surveillance technology, including many tools using ADS. I thank you for giving me the opportunity to address these urgent issues, and I look forward to working with the Council to safeguard the rights of all New Yorkers in the months and years to come.

---

[23] See EDITORIAL BOARD, San Francisco Banned Facial Recognition. New York Isn't Even Close. N.Y. TIMES, May 18, 2019, https://www.nytimes.com/2019/05/18/opinion/nypd-post-act-surveillance.html.

[24] See MASSACHUSETTS SENATE, Bill S.1385, https://malegislature.gov/Bills/191/S1385.

[25] Oakland, California and Seattle, Washingron have enacted similar police oversighr laws without deteriorating public safery. See *id.*

[26] Councilman Donovan Richards asked rhe NYPD representatives, "Gentlemen, you do realize that we are empowered to pass legislation with or without you?" Annie Mcdonough, NYPD Stands Firm Against Reporting Requirements in POST Act, CITY & STATE N.Y., December 19, 2019, https://www.cityandstateny.com/articles/policy/policy/nypd-stands-firm-against-reporting-requirements-post-act.html

SURVEILLANCE TECHNOLOGY OVERSIGHT PROJECT

@ the Urban Justice Center:
40 Rector Street, 9th Floor
New York, New York 10006
www.S.T.O.P.Spying.org | (646) 602-5600

STATEMENT OF
LIZ O'SULLIVAN
TECHNOLOGY DIRECTOR
SURVEILLANCE TECHNOLOGY OVERSIGHT PROJECT, INC.

BEFORE THE
COMMITTEE ON TECHNOLOGY
NEW YORK CITY COUNCIL

FOR A HEARING CONCERNING,
FOLLOW UP ON LOCAL LAW 49 OF 2018 IN RELATION TO AUTOMATED DECISION SYSTEMS USED BY AGENCIES, INTRO 1447, AND INTRO 1806

PRESENTED
JANUARY 22, 2020

Good morning, my name is Liz O'Sullivan and I am the Technology Director for the Surveillance Technology Oversight Project ("S.T.O.P."). S.T.O.P. fights to end discriminatory surveillance and challenges both individual misconduct and broader systemic failures. I am here today in support of Intro 1806 and greater transparency about Automated Decision Systems ("ADS") in New York City.

ADS have direct and substantial effects on our lives. From what advertisements are displayed on an individual's computer screen, where students are sent to school, to how long judges' sentence someone to jail, ADS impact us every day. It is impossible to know if ADS are engaging in discriminatory or deceptive practices without information about how ADS make their decisions. Algorithmic transparency is a vital component of avoiding unaccountable biased decisions.

Here, in New York City, the ADS Task Force did not provide needed recommendations on how to regulate government use of ADS. Transparency about government ADS was instrumental to the task force being able to accomplish their goal. Yet, the Mayor's office would not provide a list of current ADS to the task force, capping their ability to create meaningful recommendations about ADS regulations. Advances in technology and its growing use continue to outpace the willingness of the government to regulate ADS. The use of ADS will continue to grow but without vital oversight.

ADS opacity undermines public trust. I urge you to question why an agency would not want the public, or even a Memorially-appointed task force, to know what ADS it currently uses. Reporting every ADS used by city agencies is a reasonable ask. Intro 1806 does not require protected information such as its source code to be shared.

The impact and outcomes of ADS decisions cannot be researched without algorithmic transparency. Beyond assessment of the demographic outcomes of ADS, without transparency, we cannot asses how ADS usage under real-world conditions can introduce or augment bias. Interacting with ADS can alter, in unintended ways, how an individual makes a decision through misguided trust of ADS. Individual deference to ADS creates an automation bias, blinding them to when these systems are wrong. Automation bias is the tendency for people to trust ADS even with contradicting information. Advanced technology does not always lead to greater and better outcomes. Algorithms may amplify bias, not dismantle them.

Examples of ADS errors are both numerous and heartbreaking. Houston school district used an opaque ADS claiming to determine teacher impact on student's academic growth.[1] The ADS backfired. It gave teacher's a score that would impact their evaluation, and the possibility of being fired.[2] Teachers' jobs were on the line and those with high-achieving students were unduly put at risk of losing their job.[3] The school district did not how to interpret the ADS outcomes and faced a lawsuit from the teacher's union.[4]

---

[1] Liana Loewus, *Houston District Settles Lawsuit With Teachers' Union Over Value-Added Scores*, EDUCATION WEEK, October 26, 2017,
http://blogs.edweek.org/edweek/teacherbeat/2017/10/houston_district_settles_lawsuit_union_value_added.html
[2] *Id.*
[3] *Id.*
[4] *Id.*

Virginia and 28 other states use ADS in sentencing decisions.[5] ADS claim to predict the future, scoring defendants on their 'chances of reoffending'.[6] It missed the mark. The ADS generated scores that would have made racial and age disparities in sentencing worse.[7] Wrongfully leading some young defendants and black defendants to being sentenced longer than pre ADS sentencing.[8] It wasn't just bad data being input that produced this outcome, it was also how the judges interacted with the score by increasing the sentence based on the ADS suggestion.[9]

Chicago Department of Children and Family Services adopted an ADS to determine which children were at high risk of injury or death.[10] It failed miserably. Overwhelming caseworkers with thousands of high risk children to prioritize, yet child deaths continued to happen without ADS prediction.[11] ADS was not predicting any of the worst cases, instead, it diverted caseworker attention to others falsely deemed highest-risk.[12] How the ADS was coming to its decision was secret, so caseworkers did not know what would give a child a high-risk score.[13] Poor training on how workers should interact and interpret the data was at the crux of the problem.

The goal is greater ADS transparency to ensure that bias and discrimination are not being amplified by the ADS or its users. The more we know about the data input into the creation of the ADS the better the training for the employees using the ADS can be. Greater transparency can also reduce the tendency for humans to rely on ADS even with inconsistent information.

It's impossible to evaluate or prevent ADS discrimination without ADS transparency. Government agencies should not be allowed to hide behind the fallacy of math-washing, where ADS are given a dangerous illusion of objectivity. Algorithms have the capability to be and are biased. It is time for government use of ADS to come out of the black box. We need transparency to ensure we have the necessary checks and balances to keep communities safe from algorithmic bias. It is critical that we have public oversight of how our city government uses these forms of technology. Today, I urge you to pass Intro 1806.

---

[5] Andrew Van Dam, *Algorithms Were Supposed to Make Virginia Judges Fairer. What happened was far more complicated.*, THE WASHINGTON POST, Nov. 19, 2019, https://www.washingtonpost.com/business/2019/11/19/algorithms-were-supposed-make-virginia-judges-more-fair-what-actually-happened-was-far-more-complicated/
[6] *Id.*
[7] *Id.*
[8] *Id.*
[9] *Id.*
[10] David Jackson and Gary Marx, *Data Mining Program Designed to Predict Child Abuse Proves Unreliable. DCFS Says*, CHICAGO TRIBUNE, December 6, 2017, https://www.chicagotribune.com/investigations/ct-dcfs-eckerd-met-20171206-story.html
[11] *Id.*
[12] *Id.*
[13] *Id.*

THE
LEGAL AID
SOCIETY

Testimony of

The Legal Aid Society

on

Automated Decision-Making Systems

presented before

The New York City Council's Committee on Technology

January 22, 2020

Presented by:
Lisa Freeman,
Director of Special Litigation and Law Reform
Juvenile Rights Practice
199 Water Street
New York, NY 10038
lafreeman@legal-aid.org

The Legal Aid Society welcomes this opportunity to testify before the New York City Council's Committee on Technology regarding automated decision-making systems and the threats they pose to fairness, equality, and individualized justice.

On October 16, 2017, the Legal Aid Society testified before this Committee on this subject in relation to Int. 1696, a bill that would have mandated transparency in the use of algorithms to make decisions affecting people's fundamental rights. That bill's laudable intent was to begin to address the absence of accountability for automated or partially-automated decision-making processes that determine a broad range of outcomes for New Yorkers.

In lieu of that ambitious bill, the Council passed Local Law 49 of 2018, creating the New York City Automated Decision Systems Task Force. The Task Force has a broad mandate to make recommendations for improving algorithmic accountability and addressing issues of bias. It is difficult to classify the Task Force as anything other than a failure. The Task Force's recommendations amount to little more than the re-delegation of its responsibilities to some future-created "centralized ADS Organizational Structure within City government." Many of the factors contributing to the Task Force's failure are acknowledged in the Task Force's own report. A more robust narrative of the many opportunities missed along the way are laid out in the shadow report prepared by a coalition of NGOs working on this issue.[1]

As a result, nearly three years after this Committee first identified an urgent lack of accountability for arbitrariness and discrimination in algorithmic decision-making across a broad range of city services and government functions, that problem remains unaddressed.

In our 2017 testimony, we presented to the Committee multiple of examples of the real-world impact of unregulated automated decision-making on our clients. This included use in policing decisions, pre-trial release determinations, delinquency proceedings, parole decisions, and DNA and other forensic science interpretations. We noted, among many other real-world examples, how many of the algorithms used in policing and pre-trial release decisions process data tainted by past patterns of racial discrimination; how Legal Aid Society lawyers had exposed the use of experimental and potentially scientifically unsound algorithm-based DNA interpretation software by the Office of the Chief Medical Examiner; and how algorithms used to assess children in delinquency proceedings included vague, subjective factors prone to bias such as assessments of "attitudes and orientation."

The Task Force report acknowledges none of these problems. In tone and substance, it engages with the expansion of automated decision-making mainly as a useful and inevitable boon for agency efficiency. It treats issues of public accountability and bias as avoidable management challenges. It never engages with the possibility that when relying on the private sector to deliver algorithmic frameworks driven by concerns of cost rather than public integrity, birthed in a culture of trade secrecy, and built on past patterns of bias-driven decisions, such problems may be a feature not a bug.

We commend the Committee for holding this hearing today and for signaling a desire to introduce legislation to fill this accountability gap and move closer to a serious engagement with the problems of algorithmic decision-making. In particular, Int. 1806, introduced by Councilmember Koos, represents a small step forward by requiring City agencies to account for their use of algorithmic decision-making

[1] *Confronting Black Boxes: A Shadow Report of the New York City Automated Decision System Task Force*, December 2019, available at https://ainowinstitute.org/ads-shadowreport-2019.pdf [last accessed January 20, 2020]

systems to the Mayor's Office. We echo the call of other organizations for the Committee to work to improve the definition of "automated decision-making" in the Bill to ensure its scope encompasses all relevant systems affecting people's fundamental rights. With a properly defined scope, this Bill would, at a minimum, give the Mayor's office a better vantage point for understanding and addressing the many risks and liabilities associated with the City's current over-reliance on potentially unsound and discriminatory algorithms and may inspire a moment's reflection within City agencies about the rapid proliferation of automated decision-making systems.

It is critical, however, for the Committee to quickly move further to address the threat that algorithmic decision-making poses to people's rights, and in particular the rights of New Yorkers who are clients of the Legal Aid Society and whose livelihoods and freedom are increasing adjudicated by such means. As we face growth in the use of facial recognition software and other technological developments, the potential for governmental action adversely affecting individuals based upon secret algorithms continues to expand. Reporting within government is progress compared to the empty status quo, but it is not transparency. Nor does it begin to address the issue of bias, fairness, and fundamental due process raised by City's ever-proliferating reliance on secret formulas and black box automated systems to displace open justice and accountable human judgment.

About The Legal Aid Society

The Legal Aid Society, the nation's oldest and largest not-for-profit legal services organization, is more than a law firm for clients who cannot afford to pay for counsel. It is an indispensable component of the legal, social, and economic fabric of New York City – passionately advocating for low-income individuals and families across a variety of civil, criminal, and juvenile rights matters, while also fighting for legal reform.

The Legal Aid Society has performed this role in City, State and federal courts since 1876. It does so by capitalizing on the diverse expertise, experience, and capabilities of more than 2,000 attorneys, social workers, paralegals, and support and administrative staff. Through a network of borough, neighborhood, and courthouse offices in 26 locations in New York City, the Society provides comprehensive legal services in all five boroughs of New York City for clients who cannot afford to pay for private counsel.

The Society's legal program operates three major practices — Civil, Criminal, and Juvenile Rights — and receives volunteer help from law firms, corporate law departments and expert consultants that is coordinated by the Society's Pro Bono program. With its annual caseload of more than 300,000 legal matters, The Legal Aid Society takes on more cases for more clients than any other legal services organization in the United States. And it brings a depth and breadth of perspective that is unmatched in the legal profession.

The Legal Aid Society's unique value is an ability to go beyond any one case to create more equitable outcomes for individuals and broader, more powerful systemic change for society as a whole. In addition to the annual caseload of 300,000 individual cases and legal matters, the Society's law reform representation for clients benefits more than 1.7 million low-income families and individuals in New York City and the landmark rulings in many of these cases have a State-wide and national impact.

The Legal Aid Society is uniquely positioned to speak on issues of law and policy as they relate to algorithmic decision-making. The Legal Aid Society has investigated and challenged the use and lack of transparency surrounding the use of algorithms in issues of pre-trial release in criminal cases through its Decarceration Project, DNA interpretation through its DNA Unit, police deployment decisions through its Cop Accountability Project, juvenile delinquency adjudications through its Juvenile Rights Practice, and sex offender status through its Criminal Defense Practice.

NYCDS

Testimony of

Christopher Boyle[1]

Director of Data Research and Policy

New York County Defender Services

Before the

Committee on Technology

Oversight Hearing – Follow up on Local Law 49 of 2018 in Relation to Automated Decision Systems Used by Agencies

&

Intros. 1447-2019 & 1806-2019

January 22, 2020

My name is Christopher Boyle and I am the Director of Data Research and Policy at New York County Defender Services (NYCDS). We are a public defense office that represents New Yorkers in thousands of cases in Manhattan's Criminal and Supreme Courts every year. I have been a New York City public defender for more than twenty years. Thank you to Chair Holden for holding this hearing on the use of automated decisions systems, or algorithms, by city agencies. There is an urgent need for greater transparency regarding these systems.

New York City has spent the past two and a half years reviewing and discussing how city agencies use automated decision systems. But it feels like, despite legislation, public hearings, and task force reports, we have barely inched closer to true transparency. We are pleased to see the introduction of two new bills that we hope will mandate city agencies to disclose meaningful information about their use of automated decision systems, and we urge certain amendments that would allow members of the public to actually hold these systems and agencies accountable.

[1] Written together with Celia Joyce, Corrections Data Specialist and Willem Van Der Mei, Data Scientist.

Algorithms play an increasingly large role in the criminal legal system

"An 'automated decision system' is any software, system, or process that aims to aid or replace human decision making. Automated decision systems can include analyzing complex datasets to generate scores, predictions, classifications, or some recommended action(s), which are used by agencies to make decisions that impact human welfare." - Janai Nelson, Associate Director-Counsel of the NAACP Legal Defense Fund[2]

Automated Decision Systems are routinely used to inform actions at every step of the legal system. From the locations to which police are deployed to who gets released pretrial; from access to treatment and programs to the length of one's sentence or their eligibility for parole; algorithms are significantly influencing important criminal justice decisions. While a primary objective of such programs is to eliminate the effects of race or class biases, numerous studies have shown that without proper oversight, "risk assessments unintentionally amplify [these]... under the guise of science."[3] We have put together a chart of all of the ADS that we are aware of that affect our clients throughout the life of their criminal case. *See attachment.*

At present, we do not have access to information regarding how many ADS are used in New York City, nor do we know for what purposes they are being implemented. This must change.

The limitations – and harms – of predictive algorithms in the criminal legal system

Often omitted in any discussion when designing predictive algorithms is algorithmic bias. The use of technological jargon and scientific speech can obscure the bias in the design of classification and risk prediction algorithms. For example, an algorithm that predicts repetition of a crime that is based on race, class, and other marginalized groupings will ignore the history of oppression that causes certain groups to be overrepresented in crime statistics. Therefore, the algorithm may assign artificially high risks of reoffending to already marginalized groups and magnify historical oppression. However, mentions of neural nets and machine learning can allow us to forget this.

ADS designed to predict human behavior are trained using historical data. Thus, the predictions generated by these tools reflect decades of over-policing of communities of color (i.e. stop-and frisk, broken-windows policing) as well as disproportionate enforcement of specific charges (i.e. petty theft/minor drug offenses)[4]. NYPD uses predictive policing algorithms informed by such data, as well as a number of other ADS which have repeatedly produced unreliable outputs; especially when identifying women, children, and people with darker complexions (including but not limited to facial and vocal recognition, video analytics, and various forms of social media monitoring).[4] Absent transparency, we cannot know how many such systems are currently in use, nor if they are subjected to any validity testing.

---

[2] Frost, Mary. "Bias and Secrecy Among Pitfalls of NYC's Algorithm Use, Experts Say." *Brooklyn Eagle.* May 3, 2019. https://brooklyneagle.com/articles/2019/05/03/bias-and-secrecy-among-pitfalls-of-nycs-algorithm-use-experts-say/.

[3] Picard, Sarah, Matt Watkins, Michael Rempel, and Ashmini G. Kerodal. "Beyond the Algorithm: Pretrial Reform, Risk Assessment, and Racial Fairness." Center for Court Innovation. July 2019. https://www.courtinnovation.org/sites/default/files/media/documents/2019-06/beyond_the_algorithm.pdf.

[4] Díaz, Ángel. "New York City Police Department Surveillance Technology." Brennan Center for Justice. October 4, 2019. https://www.brennancenter.org/our-work/research-reports/new-york-city-police-department-surveillance-technology.

Even when attempting to produce race-neutral algorithms, many systems unintentionally include proxies for race and/or socioeconomic status (i.e. education level, employment status, ZIP-code, recent address changes, arrest history, prior FTAs).[3,5] Thus, outputs are still likely to deem people from these communities high risk, which may increase their rate of being held in jail. "There is strong evidence that people who are held in jail as they await court hearings plead guilty at considerably higher rates than do people who are released. The resulting conviction would then serve as an additional data point held against them the next time they are arrested, leading to a vicious circle."[6,3]

In 2016 *ProPublica* analyzed a popular risk assessment tool used across the country to inform pre and post-conviction judicial decisions (Northpointe, Inc's Correctional Offender Management for Profiling Alternative Sanctions-COMPAS). The results revealed that the algorithm was only slightly more accurate than a coin flip at predicting overall recidivism and predicted risk for violent recidivism only 20% of the time. In addition, black defendants were almost twice as likely as white defendants to be "false positives" (labeled "high risk" when they did not go on to commit another crime). White defendants, on the other hand, are far more likely to be misclassified as "low risk".[5] It was this ProPublica report that spurred City Council to act and pass Local Law 49 of 2017 to create the Automated Decision Systems Task Force.

The ADS Task Force

NYCDS previously supported the creation of the ADS Task Force in 2017, along with other New York City defenders and civil rights advocates, and we attended a task force public hearing in Manhattan in 2019.

While the Task Force was an important first step in assessing the breadth and scope of the use of ADS in city agencies, the final report fell short of advocates' goals for increased transparency. Critically, Local Law 49 failed to require city agencies to disclose information about ADS to the task force and the task force could not come to a consensus about what types of ADS should fall under the purview of the task force.

Despite the efforts and resources put towards the task force, the public remains in the dark about what algorithms exist in our city's agencies, how they operate, and whether they can be considered scientifically valid.

---

[5] Angwin, Julia, Jeff Larson, Lauren Kirchner, and Surya Mattu. "Machine Bias: There's software used across the country to predict future criminals. And it's biased against blacks." ProPublica. May 23, 2016. https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing.

[6] Wykstra, Stephanie. "Philosopher's Corner: What is "Fair"?: Algorithms in Criminal Justice." Issues in Science and Technology 34, no. 3 (Spring 2018). https://issues.org/perspective-philosophers-corner-what-is-fair-algorithms-in-criminal-justice/

What must subsequent legislation do?

We, the public, must have the necessary information to hold ADS accountable. This includes access to the data used in algorithm collection, methodology behind data collection and algorithm design, the algorithm itself, and performance and precision metrics. Additionally, any algorithm that can impact the precarious lives of the most vulnerable New Yorker must be vetted through the process of open scientific peer review through open access journal publication of the algorithm. Algorithms used in medicine are subject to no less and have a similar impact on people's lives.

Overwhelmingly, studies have shown that the best way to ensure these ADS do not perpetuate historical injustices are to:

1. *Avoid parameters which can serve as proxies for race or socioeconomic status,*
2. *Be transparent: we should know which systems are being used and how; this will allow for development of oversight and best/more consistent practices, and*
3. *Allow for consistent, rigorous validity testing, preferably by institutions outside of the agency using the system*

There's a saying in computer science and statistics: "garbage in and garbage out." If your data is fraught with selection bias, it will produce bad conclusions. This can be worsened by incorrectly or dishonestly applying statistical techniques. This is self-evident in the reproducibility crisis in the sciences. Therefore, it is imperative that those designing algorithms are trained in research methodology enabling them to appropriately address sources of bias and confounding, and that they be scrutinized by senior scientists and citizen scientists.

Int. 1447-2019 - A Local Law to amend the New York city charter, in relation to an annual inventory of agency data

NYCDS supports passage of Int. 1447-2019. At a bare minimum, as this law proscribes, the public should know what kind of data is being collected and stored by city agencies. However, this bill only requires that this information be reported to the Mayor and Speaker of the Council. We urge that this information be made publicly available on the Mayor's Office of Data Analytics website, or at the very least that the Office of Data Analytics create a process for members of the public to access this information by request. We also urge that the Mayor's Office of Data Analytics be required to offer annual recommendations to the Council about the future of data analytics in New York City and steps the Council can take to improve public accountability.

Int. 1806-2019 - A Local Law to amend the administrative code of the city of New York, in relation to reporting on automated decision systems used by city agencies

NYCDS similarly supports passage of Int. 1806-2019, which goes further than Int. 1447, in requiring reporting by city agencies about ADS. Primarily, this bill defines ADS and thus lays out the parameters of what types of ADS agencies would be required to report on.

However, we believe that the information that this bill requires reporting on is insufficient to ensure public accountability. For example, the new Criminal Justice Agency release assessment was developed over the past several years to better provide courts with additional information about an accused person's likelihood to return to court. CJA has released significant underlying information about the algorithm on their website.[7] This is the kind of information that we believe should be released for every ADS used in the criminal legal system, as well as other city agencies, but even the CJA website, while a step in the right direction, does not go far enough.[8]

But we believe that even more is needed. As we noted about, the validity of a risk assessment instrument depends on its ability to be validated and replicated by others. Thus, we recommend that agencies be required to provide the underlying data and algorithms to the Office of Data Analytics so that interested third parties, particularly universities and think tanks, can successfully replicate the validation studies and publish the results to the public. The National Institutes of Health has a good model for this, whereby they maintain private health data sets but allow scientists access to the data sets for future research.[9] The Office of Data Analytics should develop a similar process informed by existing models in medical and scientific research to allow for third-party validation and study of city data and algorithms. The data formatting for ADS should also be dictated by the Office of Data Analytics to ensure that researchers can easily use the data.

Finally, the Council should ban city agencies from contracting with companies to purchase or adopt proprietary algorithms that cannot be reviewed by the public. Any such existing agreements must be immediately phased-out or revoked. Our citizens, and particularly those whose liberty hangs in the balance based on ADS in the criminal legal system, must have access to the data underlying these tools to ensure that they are not biased or invalid.

If you have any questions about my testimony, please contact me at cboyle@nycds.org.

---

[7] New York City Criminal Justice Agency, Release Assessment, available at https://www.nycja.org/release-assessment.

[8] For example, the CJA website makes no mention of external validation and which metrics are going to be used to evaluate the validity of the algorithm. The website also does not reveal anything about the technical aspects of the algorithm. This is information that we believe should be available to researchers upon request.

[9] *See, e.g.,* NIH National Cancer Institute Genomic Data Commons, Obtaining Access to Controlled Data, available at https://gdc.cancer.gov/access-data/obtaining-access-controlled-data.

Automated Decision Systems Currently in Use in NYC

SYSTEM	STAGE/ USER	USES
School Assignment Algorithm[1]	Before criminal contact	◦ Assign students (K-12) to schools ◦ 8th graders: placement based on preference, test scores, portfolios, and other requirements. ◦ Some school districts with racial and socioeconomic segregation issues use a "controlled choice" model, which is designed to meet a school districts diversity goals
Child Risk and Safety Assessments[1]	Any point	◦ Child welfare agencies to evaluate potential child neglect and abuse cases for risk of child death/injury- inform about which cases should be investigated further ◦ Data often comes from multiple sources, including a jurisdiction's department of human services and the police.
Homelessness Prioritization Algorithms[1]	Any point	◦ Coordinated entry systems use information from different government agencies and sometimes third-parties to assess/prioritize allocation of existing housing based on need ◦ Alternate systems identify which individuals use the most amount of public services (such as health services, enter ER rooms, or use of jails) by analyzing data from public agencies to recommend which homeless individuals should be given housing
Video Analytics[2]	Law enforcement/ Court evidence	◦ Isolates individuals and objects within surveillance footage, like articles of clothing and luggage ◦ Some claim to be able to identify a particular hair color, facial hair, and even skin tone
Facial Recognition[2]	Law enforcement/ Court evidence	◦ Identifies an individual in a photograph, video feed, or real-time surveillance based on facial characteristics ◦ Huge database from various sources (arrest photos including those of juveniles as young as 11) ◦ The system uses a target photo and generates 200+ potential matches (without clear indicators of strength of resemblance) from which an FIS investigator (with limited training) selects one ◦ When footage is blurry or incomplete, NYPD are allowed to use photo editing to replace facial features in reference photo that more closely resembles mugshots
Vocal Recognition[3]	Law enforcement/ corrections/ Court evidence	◦ Identify individuals in recordings and phone calls using individual characteristics; technology extracts and digitizes voices, creating unique biometric signature, "voice prints" ◦ Used on phone calls in NY corrections facilities and analyzes the voices of call recipients outside prisons to track which outsiders speak to multiple prisoners regularly
Social Media Monitoring[1,2]	Law enforcement/	◦ Tracking an individual or an affiliation using public info ◦ Using a friend/informant/undercover to access protected or private information

[1] https://ainowinstitute.org/nycadschart.pdf
[2] https://www.brennancenter.org/our-work/research-reports/new-york-city-police-department-surveillance-technology
[3] https://theintercept.com/2019/01/30/prison-voice-prints-databases-securus/

	Corrections/ Court evidence	◦ Monitoring individuals, groups, associations, or locations ◦ With warrants, can access direct messages, metadata, and subscriber information ◦ Target individuals, phrases, or behaviors
Gang Database[1,2]	Law enforcement (NYPD and ICE)	◦ Contains information about people police consider suspected or confirmed gang members (currently over 42,334 people listed) ◦ Criteria for inclusion are unclear (associations, style of dress, certain tattoos) ◦ ICE uses this database to identify targets for deportation
Predictive Policing[2,4]	Law enforcement	◦ Place-Based:Place based uses algorithms to analyze data to predict where certain crimes are likely to occur to inform where officers are deployed ◦ Person-Based: generates a list of individuals the algorithm believes are likely to commit a crime
Investigative Decision System[1]	Law enforcement (ICE/DHS)	◦ Access an individual's personal and private information such as biometrics, criminal records, work/home addresses and personal connections, to identify new targets for deportation and aid in removal proceedings
DNA Analytics[1]	Law enforcement/ Court evidence	◦ Probabilistic genotyping: interprets forensic DNA samples by performing statistical analysis on a mixture of DNA from different people to determine the probability that a sample is from a potential suspect.
Inmate Housing Classification[1]	Corrections	◦ Analyzes a variety of criminal justice data and outcomes to determine the conditions of confinement, eligibility for programming, and overall housing arrangements of inmates in a jail or prison
Risk Assessments		
◦ Pretrial Release[5,6,7,8,9] ◦ Programs and/or Treatment ◦ Sentencing[10] ◦ Parole/ Probation	Court/ Programs (treatment and other)	◦ Used to determine relative "risk"- the probability that one will fail to appear for a future court date, recidivate, or recidivate violently ◦ Influences decisions on whether or not to release the client pending bail, the level of pretrial supervision, eligibility for alternatives to incarceration, eligibility for programming, sentence length and conditions, eligibility for release ◦ Use a range of characteristics: inclusion of proxies for race or class can unwittingly create a feedback loop, trapping the already marginalized in the criminal justice system[11]
Immigration Detention Risk Assessment[1]	ICE	◦ Computerized system that evaluates an individual's criminal history, work status, likelihood of fleeing and other information to produce a recommendation about whether the person should be detained or released prior to a removal hearing

[4] https://www.theatlantic.com/politics/archive/2019/09/do-algorithms-have-place-policing/596851/
[5] https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing, https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm
[6] https://www.newamerica.org/public-interest-technology/blog/designing-equitable-algorithms-criminal-justice-reform/
[7] https://www.courtinnovation.org/sites/default/files/media/documents/2019-06/beyond_the_algorithm.pdf
[8] https://www.themarshallproject.org/2019/07/01/can-racist-algorithms-be-fixed
[9] https://theappeal.org/the-failure-to-appear-fallacy/
[10] https://dash.harvard.edu/bitstream/handle/1/33746041/2017-07_responsivecommunities_2.pdf
[11] https://issues.org/perspective-philosophers-corner-what-is-fair-algorithms-in-criminal-justice/

BRENNAN CENTER FOR JUSTICE

TESTIMONY OF THE BRENNAN CENTER FOR JUSTICE

Laura Hecht-Felella
Legal Fellow, Liberty & National Security Program

before the New York City Council Committee on Technology

on Oversight of Local Law 49 & Intros. 1447 and 1806

January 22, 2020

Good afternoon members of the Committee on Technology. Thank you Chairman Holden for holding this hearing and inviting the Brennan Center to testify.

My name is Laura Hecht-Felella. I am a Legal Fellow with the Liberty and National Security Program at the Brennan Center for Justice at NYU School of Law. The Brennan Center is a nonpartisan law and policy institute that seeks to improve our systems of democracy and justice. The Liberty and National Security Program focuses on promoting government accountability and ensuring that government use of new technologies does not violate fundamental rights.

While emerging technologies like automated decision systems (ADS) make it possible for government agencies to work more efficiently, they also have the potential to exacerbate inequalities and bias. This is particularly true when it comes to law enforcement. The Brennan Center has advocated for greater oversight of the New York City Police Department's surveillance tools, including their use of ADS, before the City Council and New York City's Automated Decision Systems Task Force.[1] We also contributed to a report published by AI Now in December 2019, *Confronting Black Boxes: A Shadow Report of the New York City Automated Decision System Task Force*.[2]

The launch of the ADS Task Force in May 2018 positioned New York City as a leader in the regulation of government use of ADS. Unfortunately, the Task Force fell short of its mandate. It was unable to produce substantive policy recommendations or meaningfully

[1] Angel Diaz, Brennan Center Testimony Before the New York City Automated Decision Systems Task Force, May 30, 2019, https://www.brennancenter.org/our-work/research-reports/testimony-new-york-city-automated-decision-systems-task-force.

[2] Rashida Richardson, ed., "Confronting Black Boxes: A Shadow Report of the New York City Automated Decision System Task Force," AI Now Institute, Dec. 4, 2019, https:// ainowinstitute.org/ads-shadowreport-2019.html.

engage with the public.[3] It also failed to effectively utilize the numerous resources proffered by a coalition of civil rights activists, researchers, and community organizers, including the Brennan Center.[4]

The two bills proposed today, Intros. 1447 and 1806, are important first steps in remediating some of the Task Force's missed opportunities. Mandating an annual inventory of agency data and requiring reporting on agency use of ADS are essential. Oversight is impossible without an understanding of what, how, why, and when ADS are being used by City agencies.

As the City Council engages in efforts to regulate ADS, it is important that it does not carve out an exception for the NYPD. Earlier this year, the Brennan Center published a chart that tracks each of the NYPD's known surveillance tools.[5] Based on the limited public information available, we believe the NYPD employs ADS in its use of automated license plate readers,[6] facial surveillance,[7] predictive policing,[8] and social media monitoring.[9] However, given the lack of public information about the NYPD's technologies, it is likely there are many other ADS that the public and City Council simply do not know about.

---

[3] Benjamin Freed, "New York City's Algorithm Task Force To Hold First Public Meetings Nearly A Year After Creation," State Scoop, Mar. 29, 2019, https://statescoop.com/new-york-citys-algorithm-task-force-to-hold-first-public-meetings-nearly-a-year-after-creation/; Diana Budds, "New York City's AI Task Force Stalls," Curbed, Apr. 16, 2019, https://ny.curbed.com/2019/4/16/18335495/new-york-city-automated-decision-system-task-force-ai.

[4] "Automated Decision Systems: Examples of Government Use Cases," AI Now Institute, https://ainowinstitute.org/nycadschart.pdf; Coalition Letter to the NYC ADS Task Force, "Re: New York City's Automated Decision Systems Task Force," Aug. 20, 2018, https://ainowinstitute.org/announcements/letter-to-the-nyc-ads-task-force.html (writing to offer recommendations to the Task Force and providing a list of experts and advocates).

[5] Angel Diaz, "New York City Police Department Surveillance Technology," Brennan Center, Oct. 4, 2019, https://www.brennancenter.org/our-work/research-reports/new-york-city-police-department-surveillance-technology.

[6] Anthony Romero, "Documents Uncover NYPD's Vast License Plate Reader Database," HuffPost, Jan. 25, 2017, https://www.huffpost.com/entry/documents-uncover-nypds-v_b_9070270.

[7] Clare Garvie, "Garbage In, Garbage Out – Face Recognition on Flawed Data," Georgetown Law Center on Privacy & Technology, May 16, 2019, https://www.flawedfacedata.com/.

[8] Rachel Levinson-Waldman & Erica Posey, "Court: Public Deserves to Know How NYPD Uses Predictive Policing Software," Brennan Center, Jan. 28, 2018, https://www.brennancenter.org/blog/court-rejects-nypd-attempts-shieldpredictive-policing-disclosure.

[9] *Millions March NYC v. New York City Police Department*, Index No. 100690/2017, Jan. 14, 2019, available at https://www.documentcloud.org/documents/5684800-Millions-March-Nypd.html#document/p1 (ordering the NYPD to respond to a public records request seeking documents relating to its use of Dataminr, a software program that uses algorithms to monitor social media).

For example, the Brennan Center was party to a multi-year legal dispute with the NYPD to obtain information about the Department's use of predictive policing technologies, which rely on algorithms to analyze large data sets to generate statistical estimates about crime and direct police resources.[10] The heavily redacted documents ultimately produced by the NYPD failed to shed light on a number of key issues – including what datasets are inputted into the predictive policing algorithm and how the predictions are used by precinct commanders. By design, the NYPD's system does not store inputs or outputs, making it difficult to assess the algorithm's effectiveness or potential for bias.[11] The Brennan Center's difficulties in obtaining this information exemplify the NYPD's unwillingness to keep the public informed about its use of ADS and underscore why it is so important that ADS transparency bills like the ones proposed today include the NYPD.

ADS have wide-ranging consequences when used by law enforcement because they can perpetuate and exacerbate racially discriminatory policing practices – in other words, an algorithm is only as good as its data. The NYPD has a history of racially biased policing. In *Floyd v. City of New York*, for example, a federal court found the NYPD had violated the Equal Protection Clause in disproportionately subjecting New Yorkers of color to stop and frisks.[12] Similarly, predictive policing tools have been widely criticized by civil rights advocates for relying on historic crime data derived from decades of biased enforcement against communities of color.[13] If biased historic crime data is being inputted into the NYPD's ADS, it is likely that the resulting outcomes will reinforce and replicate the same prejudices.

The recommendations made in the *Confronting Black Boxes* report are a starting point in addressing these issues. The NYPD should be required to maintain a public, updated list of the ADS technologies it uses and provide a simple description of how each system works. It should conduct a systematic examination of how different racial and ethnic groups will be affected by each of its automated decision systems and provide an opportunity for meaningful public feedback. Lastly, the NYPD should not sign vendor contracts that restrict auditing of ADS or prevent public disclosure of basic information regarding how the systems work.[14]

---

[10] Rachel Levinson-Waldman & Erica Posey, "Predictive Policing Goes to Court," Brennan Center, Sept. 5, 2017, http://www.brennancenter.org/blog/predictive-policing-goes-court.

[11] Ali Winston, "'Red Flags' as New Documents Point to Blind Spots of NYPD 'Predictive Policing'," Daily Beast, Jul. 15, 2019, https://www.thedailybeast.com/red-flags-as-new-documents-point-to-blind-spots-of-nypd-predictive-policing.

[12] *Floyd v. City of New York*, 959 F. Supp. 2d 540 (S.D.N.Y. 2013).

[13] Leadership Conference on Civil and Human Rights, et al., "Predictive Policing Today: A Shared Statement of Civil Rights Concerns," Aug. 31, 2016, http://civilrightsdocs.info/pdf/FINAL_JointStatementPredictivePolicing.pdf.

[14] *Supra* note 3 at 42.

In addition, the Brennan Center also urges the City Council to pass the POST Act, which would require the NYPD to disclose basic information about the surveillance tools it uses and the existing safeguards to protect the privacy and civil liberties of New Yorkers.[15] The POST Act is a valuable companion to Intros. 1447 and 1806 because it requires more complete reporting on the NYPD's use of surveillance technologies, including ADS. The POST Act is supported by over half the City Council, with thirty-four sponsors and endorsements from the Black, Latino/a, and Asian Caucus and the Progressive Caucus.

Transparency and oversight are essential features of a strong democracy, and the Brennan Center commends the Council for addressing these critical and timely issues.

Thank you again for the opportunity to testify today. I am happy to answer any questions.

[15] New York City Council Int. 0487-2018, https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3343878&GUID=996ABB2A-9F4C-4A32-B081-D6F24AB954A0. For more on the POST Act, see "The Public Oversight of Surveillance Technology (POST) Act: A Resource Page," Brennan Center, https://www.brennancenter.org/analysis/public-oversight-surveillance-technology-post-act-resource-page.

AINOW

New York City Council
Committee on Technology

Oversight - Follow up on Local Law 49 of 2018 in Relation to Automated Decision Systems Used by Agencies
January 22, 2019

Written testimony of
Rashida Richardson, Director of Policy Research, AI Now Institute

Chairman Holden and members of the Committee on Technology thank you for the opportunity to speak today. My name is Rashida Richardson and I am the Director of Policy Research at the AI Now Institute at New York University. AI Now is the first university research institute dedicated to understanding the social implications of artificial intelligence ("AI"). Part of my role includes researching the increasing use of and reliance on data-driven technologies, including government use of automated decision systems ("ADS"), and then designing and implementing policy and legal frameworks to address and mitigate problems identified in this research.

The Problem with Government Reliance on Automated Decision Systems and Big Data

Nationally, state and local governments are increasingly turning to ADS and other data-driven processes to aid or supplant human decision-making and government procedures in various sensitive social domains. These systems determine where a child will go to school, who will go to jail before their trial, who will have their food subsidies terminated, how much Medicare benefits a person is entitled to, and who is likely to be a victim of a crime. While these new technologies are often hailed for their time-saving, cost-cutting, or even bias-reducing potential, the actual implementation of these technologies demonstrate a very different reality:

one of rampant discrimination, hidden or unanticipated costs, increased government distrust, litigation, and even the death[1] of individuals misidentified by such systems.

AI Now's 2018 and 2019 *Litigating Algorithms* workshops and reports, hosted and issued in collaboration with NYU Law's Center on Race, Inequality and the Law, highlighted numerous examples of legal challenges to these harmful realities. For instance, in Michigan, roughly 20,000 residents were improperly disqualified from food assistance benefits after the State Department of Health and Human Services used a matching algorithm to implement the State's "fugitive felon" policy, which attempted to automatically disqualify individuals from food assistance based on outstanding felony warrants.[2] Michigan subsequently lost a class action lawsuit that required the state to restore benefits and pay back pay to the plaintiff class. To date, this ADS failure has cost Michigan over $50 million, and the state is still engaged in the process of restoring food assistance benefits and issuing settlement payments.

In my law review essay, *Dirty Data, Bad Predictions: How Civil Rights Violations Impact Police Data, Predictive Policing Systems, and Justice*, I examined the use of the ADS colloquially known as predictive policing in jurisdictions with documented histories of racially biased and unlawful policing practices and policies, including New York City.[3] I found these policing practices and policies skew police data so that it does not accurately represent actual crime trends or rates but rather reflects the department's policing practices and policies. Because predictive policing systems rely on police data to make predictions, these systems are likely to further perpetuate the legacies of biased and unlawful policing practices and policies. In fact, I found that in some jurisdictions the predictive policing system's forecasts predominantly targeted that the same demographic that was disproportionately affected by the police department's unlawful and

---

[1] Rashida Richardson, Jason M. Schultz, & Vincent M. Southerland, Litigating Algorithms 2019 US Report: New Challenges to Government Use of Algorithmic Decision Systems (AI Now Institute, September 2019). https://ainowinstitute.org/litigatingalgorithms-2019-us.html.

[2] Rashida Richardson, Jason M. Schultz, & Vincent M. Southerland, Litigating Algorithms 2019 US Report: New Challenges to Government Use of Algorithmic Decision Systems (AI Now Institute, September 2019). https://ainowinstitute.org/litigatingalgorithms-2019-us.html.

[3] Rashida Richardson, Jason M. Schultz & Kate Crawford, Dirty Data, Bad Predictions: How Civil Rights Violations Impact Police Data, Predictive Policing Systems, and Justice, 94 N.Y.U. L. REV. ONLINE 192 (2019).

biased practices. The paper also articulates the broader societal and public policy implications that result from the continued use of this "dirty data" and ADS in the criminal justice system. Shortly after the publication of this paper, the Los Angeles Police Department (LAPD) suspended the use of one of its controversial predictive policing systems after an audit by the Inspector General questioned its overall effectiveness at predicting crime and revealed that use of this ADS may have facilitated unconstitutional police conduct.[4]

These accounts and countless others around the country have diminished public trust and safety, reduced the efficacy of government services, deterred people from government services or benefits they are entitled to, and increased government expenditures (both from hidden costs of implementation[5] and subsequent litigation expenses). Yet, in spite of these recurring and harmful outcomes, government reliance on ADS persists and is likely to drastically increase, particularly in light of policy changes made by the Trump Administration.

In 2018, President Trump issued Executive Order 13828, which imposes more bureaucratic burdens on public benefits recipients such as work requirements (that in turn require government agencies to track and measure more data and outcomes).[6] These policy changes were coupled with requirements to "streamline services to promote the effective use of resources" and "reduce wasteful spending." It is notable that this same austerity-focused rhetoric and policy changes are commonly followed by the adoption of ADS to achieve these goals. This push from the federal level will likely increase use of ADS because with shrinking budgets and increased reporting requirements, local and state governments will presume they lack the infrastructure and capacity to implement the necessary changes. And this concern is not speculative. For instance, in Oregon, the state implemented an ADS that issued drastic cuts

---

[4] Los Angeles Police Commission Office of The Inspector General, Review of Selected Los Angeles Police Department Data-Driven Policing Strategies (2019). https://docs.wixstatic.com/ugd/b2dd23_21f6fe20f1b84c179abf440d4c049219.pdf.

[5] *See, e.g.,* Virginia Eubanks, Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor (2018).

[6] Exec. Order No. 13828,83 Fed. Reg. 72 (Apr. 13, 2018). https://www.whitehouse.gov/presidential-actions/executive-order-reducing-poverty-america-promoting-opportunity-economic-mobility/

to residents disability benefits without notice or explanation. The litigation process revealed that the state was aware of the tool's flaws, but implemented nonetheless in response to political pressure to cut costs.[7]

In 2019, the Trump Administration's tacit endorsement of ADS as a front for reducing regulation was made explicit with the Department of Housing and Urban Development's proposed rule change regarding the disparate impact standard, an important legal mechanism for challenging housing discrimination.[8] In addition to attempting to dilute the disparate impact standard, this proposed rulemaking provided broad defenses for the use of algorithmic tools, effectively absolving government and private actors of responsibility when use of algorithmic tools produces discriminatory outcomes.[9]

In light of this projected expansion of ADS in government, there is an even greater need for policy interventions. Though legal challenges to government use of ADS have been useful in shining light on the impact of these tools and mitigating some of their worst consequences, litigation is not a viable long-term solution. In addition to being a costly and slow mitigation mechanism, litigation does not always result in adequate redress those harmed or necessary structural change in government practices and policies. Also, depending on the types of legal claims raised, liability and responsibility may not reach third-party vendors[10] nor incentivize best practices in ADS development and design. These limitations of litigation are also concerning in the backdrop of the evolving Supreme Court dicta. In a recent essay, legal scholar Amy Kapczynski detailed the disturbing trend in Supreme Court decisions that are increasingly

---

[7] Rashida Richardson, Jason M. Schultz, & Vincent M. Southerland, Litigating Algorithms 2019 US Report: New Challenges to Government Use of Algorithmic Decision Systems (AI Now Institute, September 2019). https://ainowinstitute.org/litigatingalgorithms-2019-us.html.

[8] U.S. Hous. & Dev., HUD's Implementation of the Fair Housing Act's Disparate Impact Standard, 84 Fed. Reg. 42854 (Aug. 19, 2019), https://www.federalregister.gov/documents/2019/08/19/2019-17542/huds-implementation-of-the-fair-housing-acts-disparate-impact-standard

[9] AI Now Institute & NYU Law Center on Race, Inequality, and the Law, Comments on HUD's Implementation of the Fair Housing Act's Disparate Impact Standard (Oct. 18, 2019). https://ainowinstitute.org/ainow-cril-october-2019-hud-comments.pdf.

[10] Kate Crawford &Jason Shultz, AI Systems as State Actors, 119 Colum. L. Rev. 1941 (2019).

interpreting civil liberties to favor corporate interests.[11] In particular, she notes several cases where private vendors made first amendment claims to resist attempts of democratic regulation. Since there is established Supreme Court case law holding that the source code of algorithmic systems is protected speech,[12] it is likely that vendors in the ADS space will also turn to similar perverted legal arguments to evade regulation. Therefore, legislative and regulatory interventions are necessary, and the City Council must act with urgency.

Why The New York City Council Must Act with Urgency

In November 2019, Mayor de Blasio published the New York City Automated Decision Systems Task Force Report, which culminated an 18-month process that most hoped would result in recommendations on regulatory and policy interventions the City could implement to address the concerns regarding City use of ADS. On the same day Mayor issued an Executive Order creating an Algorithms Management and Policy Officer that is tasked with creating guidelines and policies regarding City agency use of ADS but lacks authority to obtain information regarding current agency use of ADS. After months of no community education and minimal public engagement, we still have no clear understanding of ADS use by City agencies and no clear plan on how New York City could expeditiously and critically address ADS issues.

This is why me and several other advocates, researchers, and community members published *Confronting Black Boxes: A Shadow Report of the New York City Automated Decision System Task Force*.[13] This Shadow Report not only provides a robust counter narrative of the NYC ADS Task Force process, but it also includes over 70 recommendations with rationales on next steps for a variety of stakeholders in New York City and State. The recommendations range from pre-deployment considerations for agencies wishing to acquire or use ADS; policy and practical changes that can be implemented at an agency level; legislative changes to improve the

[11] Amy Kapczynski, *Free Speech, Incorporated,* Boston Review (Dec. 5, 2019). https://bostonreview.net/law-justice/amy-kapczynski-free-speech-incorporated

[12] Bernstein v. United States, 922 F. Supp. 1426 (1996).

[13] Rashida Richardson, ed., "Confronting Black Boxes: A Shadow Report of the New York City Automated Decision System Task Force" (AI Now Institute December 2019). https:// ainowinstitute.org/ads-shadowreport-2019.html.

procurement process; investigatory and oversight actions that can be taken by different City officials; and tips for community members and advocates interested in ADS accountability issues. I hope that in addition to considering the legislative proposals before the Committee on Technology today, the City Council will evaluate the policy interventions proposed in our Shadow Report and work with other City officials and agencies to implement our recommendations.

Int. 1806 & Int. 1447

Int. 1806 is an important first step for the City to take to create greater transparency regarding the City's use of ADS. Int. 1806 requires the Mayor's Office of Operations to annually compile a list of all ADS used by City agencies along with pertinent information that can help City officials as well as City residents understand the scope and reach of these tools in agency decision-making and policy implementation. Government use of ADS presents a myriad of issues that require context specific solutions because their use often implicates or exacerbates existing structural problems within agencies, local issues, and broader societal concerns (e.g. wealth inequalities, discrimination). Thus transparency is needed to fully evaluate the broad and complex scope of problems and concerns.

Last month, almost twenty organizations including AI Now and led by the NAACP Legal Defense and Educational Fund hosted a public education focused community event where there was dynamic group discussion of ADS uses in New York City and community concerns.[14] The turnout and engagement during this event demonstrates that New Yorkers are concerned about government use of ADS and desire more information about what is happening in this City. The transparency provided by Int. 1806 is necessary to meet this community need, evaluate community and legal concerns within the local use context, and assess the appropriateness of mitigation interventions or legislative solutions.

[14] *See*, Addressing Algorithmic Bias in NYC's Automated Decision Systems Transcript (Dec. 7, 2019), https://isoc.live/ldf/2019-12-07_adscommunityforum.pdf; Richard Wexler, *Predictive Analytics in child welfare--and elsewhere: A brilliant lesson in understanding algorithms and bias*, NCCPR Child Welfare Blg (Dec. 9, 2019). https://www.nccprblog.org/2019/12/predictive-analytics-in-child-welfare.html.

Int. 1447 requires the Mayor's Office of Data Analytics to annually report on datasets created and maintained by City agencies. Datasets are used to develop and implement ADS; inform or justify government decisions, practices, and policies; and function as a digital record of City activities. City agency datasets can derive from agency practices or policies, the administration of government services (i.e. data collected to receive benefits), and data sharing within or outside of government. They can be created through automation, manual processing, or a combination of both. Thus, datasets, even from the same agency, can vary drastically and the methodology shaping their creation and maintenance are rarely apparent without extensive documentation. Even the City agencies themselves may not fully know what data they have or what it reflects.[15]

When datasets are made available to the public, they can be a valuable resource in understanding government services and procedures; identifying problems and necessary reforms; auditing by researchers; streamlining of interagency cooperation; and building public trust.[16] Int. 1447 helps illuminate the need for greater transparency regarding the role and function of big data in City agencies, but the legislation falls short for several reasons. The definition of dataset is incomplete and provides several loopholes. The current definition ignores several important techniques and practices common in dataset construction and maintenance, which would result in many datasets of public interest being excluding from the legislation's reporting requirements. Int. 1447 also includes an overly broad carve out provision that undermines the legislation's transparency and accountability goals. If the City has concerns about the disclosure of sensitive datasets, agencies should be required to demonstrate why public disclosure would create a liability for the City rather than evade compliance with

[15] Ben Green, *The Smart Enough City: Putting Technology in Its Place to Reclaim Our Urban Future*, MIT Press (2019). See "6. The Innovative City: The Relationship between Technical and Nontechnical Change in City Government," https://smartenoughcity.mitpress.mit.edu/pub/yyth5w6y.

[16] Ben Green, et al., Open Data Privacy (Berkman Klein Center for Internet & Society Research Publication 2017). https://cyber.harvard.edu/publications/2017/02/ opendataprivacyplaybook.

undefined and subjective concerns currently allowed by this carve out provision.[17] Finally, the disclosure requirements of Int. 1447 are both incomplete and hard to operationalize without ensuring that agencies employ rigorous documentation. We encourage the City Council to consult the growing body of research on dataset documentation to assess how to improve Int. 1447 to meet the growing public interest in data transparency.[18]

[17] *See, e.g.,* Ben Green, et al., Open Data Privacy (Berkman Klein Center for Internet & Society Research Publication 2017). https://cyber.harvard.edu/publications/2017/02/ opendataprivacyplaybook (highlight privacy preserving approaches for open data).

[18] *See,* Timnit Gebru et al., *Datasheets for Datasets*, arXiv:1803.09010 [cs] (2020), http://arxiv.org/abs/1803.09010 (last visited Jan 15, 2020); Margaret Mitchell et al., *Model Cards for Model Reporting*, Proceedings of the Conference on Fairness, Accountability, and Transparency - FAT* '19 220–229 (2019), http://arxiv.org/abs/1810.03993 (last visited Jan 15, 2020); Matthew Arnold et al., *FactSheets: Increasing Trust in AI Services through Supplier's Declarations of Conformity*, arXiv:1808.07261 [cs] (2019), http://arxiv.org/abs/1808.07261 (last visited Jan 15, 2020).

Testimony of Daniel Schwarz

On Behalf of the New York Civil Liberties Union

Before the New York City Council Committee on Technology

In Relation to Automated Decision Systems Used by Agencies

January 22, 2020

NYCLU

ACLU of New York

1 Whitehall Street, 3rd Fl.
New York NY 10004
nyclu.org

Donna Lieberman
Executive Director

Robin Willner
President

The New York Civil Liberties Union ("NYCLU") respectfully submits the following testimony in relation to automated decision systems used by city agencies. The NYCLU, the New York affiliate of the American Civil Liberties Union, is a not-for-profit, non-partisan organization with eight offices throughout the state and more than 180,000 members and supporters. The NYCLU's mission is to defend and promote the fundamental principles, rights, and values embodied in the Bill of Rights, the U.S. Constitution, and the Constitution of the State of New York. The NYCLU works to expand the right to privacy, increase the control individuals have over their personal information, and ensure civil liberties are enhanced rather than compromised by technological innovation.

Automated decision systems ("ADS") comprise any software, system, or process that aims to automate, aid, or replace human decision-making. ADS are widely used in administering government services; allocating resources; and making inferences about individuals, groups, or places. Their ubiquity across government agencies means that ADS have the potential to impact a person's eligibility for welfare benefits, education opportunities, and even their very liberty. In most instances these tools are deployed opaquely without regulation, transparency, impact assessments, or independent audits. If left unchecked, they risk severely undermining the civil, human, and privacy rights of New Yorkers.

Two years ago, the Council recognized the need to regulate the government use of automated decision systems, and enacted Local Law 49 of 2018 to create an ADS Task Force. Unfortunately, the final ADS Task Force report[1] offered New Yorkers little information on the actual use of ADS; as a result, we have joined other advocates and researchers in the publication of a Shadow Report that addresses some of the shortcomings and offers detailed recommendations to different stakeholders and institutions.[2]

---

[1] *New York City Automated Decision Systems Task Force Report*, November 2019, https://www1.nyc.gov/assets/adstaskforce/downloads/pdf/ADS-Report-11192019.pdf.

[2] *See*: Rashida Richardson, ed., *Confronting Black Boxes: A Shadow Report of the New York City Automated Decision System Task Force*, AI NOW INSTITUTE, December 4, 2019, https://ainowinstitute.org/ads-shadowreport-2019.html.

NYCLU
ACLU of New York

The public has a right to know about the automated systems used by our government, how widespread they are, and what type of decisions they make. A broad disclosure requirement for all agencies is long overdue. The NYCLU therefore offers qualified support for Intro. 1806-2019 as a first step towards accountability, equity, and due process.

The Need for Regulation of Automated Decision Systems

Government agencies justify their use of ADS by claiming that such systems allow them to provide new services or improve current services, to increase speed and efficiency, to cut costs, and for the algorithms' assumed accuracy and neutrality. While the use of computational tools undoubtedly boosts speed and scale, their accuracy and neutrality are consistently questioned by researchers and experts, despite the fact that these systems operate with little to no transparency. Many studies have challenged their opaque or "black box" operation,[3] and provided evidence of harmful,[4] discriminatory,[5] sexist,[6] and racist[7] outcomes.

---

[3] *See e.g.:* CATHY O'NEIL, WEAPONS OF MATH DESTRUCTION: HOW BIG DATA INCREASES INEQUALITY AND THREATENS DEMOCRACY (2016); FRANK PASQUALE, THE BLACK BOX SOCIETY (2015).

[4] *See e.g.:* VIRGINIA EUBANKS, AUTOMATING INEQUALITY: HOW HIGH-TECH TOOLS PROFILE, POLICE, AND PUNISH THE POOR (2018); Ed Pilkington, *Digital dystopia: how algorithms punish the poor*, THE GUARDIAN, October 14, 2019, https://www.theguardian.com/technology/2019/oct/14/automating-poverty-algorithms-punish-poor (last visited Jan 15, 2020); Colin Lecher, *A healthcare algorithm started cutting care, and no one knew why*, THE VERGE (2018), https://www.theverge.com/2018/3/21/17144260/healthcare-medicaid-algorithm-arkansas-cerebral-palsy (last visited Jan 15, 2020).

[5] SOLON BAROCAS & ANDREW D. SELBST, *Big Data's Disparate Impact* (2016), https://doi.org/10.2139/ssrn.2477899 (last visited Jan 16, 2020).

[6] *See e.g.:* Jeffrey Dastin, *Amazon scraps secret AI recruiting tool that showed bias against women*, REUTERS, October 10, 2018, https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G (last visited Jan 16, 2020); Galen Sherwin, *How Facebook Is Giving Sex Discrimination in Employment Ads a New Life*, AMERICAN CIVIL LIBERTIES UNION , https://www.aclu.org/blog/womens-rights/womens-rights-workplace/how-facebook-giving-sex-discrimination-employment-ads-new (last visited Jan 16, 2020).

[7] *See e.g.:* Kate Crawford, *Opinion | Artificial Intelligence's White Guy Problem*, THE NEW YORK TIMES, June 25, 2016, https://www.nytimes.com/2016/06/26/opinion/sunday/artificial-intelligences-white-guy-problem.html (last visited Jan 15, 2020); Alistair Barr, *Google Mistakenly Tags Black People as 'Gorillas,' Showing Limits of Algorithms*, WSJ (2015), https://blogs.wsj.com/digits/2015/07/01/google-mistakenly-tags-black-people-as-gorillas-showing-limits-of-algorithms/ (last visited Jan 15, 2020).

Software systems are often wrongly perceived as more neutral or offering a scientific and objective truth.[8] Their proponents are able to make these assertions because the vast majority of ADS are opaque systems, secretly developed and silently deployed, that are shielded from independent review and scrutiny due to their proprietary nature. This secrecy obscures the potential errors, flaws, subjective decisions, personal choices, and views that find their way into these systems.

While actually obtaining access to the underlying source code for ADS is difficult and resource intensive, the public's ability to view and evaluate the code is critical to understanding the extent to which such errors occur. For example, it was revealed that a Medicaid ADS in Arkansas had failed to correctly assess care needs of patients with cerebral palsy or diabetes: a fact only discovered through lengthy litigation and subsequent disclosure of the code.[9] And here in New York City, an independent review of the source code of a DNA analysis tool used by the office of the chief medical examiner raised serious questions about its validity, including whether the code may have been intentionally skewed to create more matches.[10]

Many automated systems purport to predict the future by observing the past. Among them are "risk assessment tools," designed to use past policing and court data to "predict" the future behavior of an individual criminal defendant. Specifically, risk assessment tools attempt to determine which attributes are shared by people who previously failed to show up to court. Certain weights are placed on each of the attributes to produce a formula and "score" a person's future risk of flight. For instance, in 2019, the city recently revamped its old pretrial risk assessment tool to develop a new one based on a dataset of cases from 2010 to 2014. Risk assessment tools reflect a troubling philosophy toward criminal justice policy: Using past cases to determine what might happen in future cases disregards time-specific influences that may have affected prior case outcomes, and freezes a government judgment in the realities of the past. Critically, it also strips the person who is awaiting trial of independent agency and the ability to make the case that they will appear in court.

But even those who philosophically agree with using past statistics to predict future individual human behavior acknowledge that the value of such a predictive system lies in the value of the data input into it. When an ADS deploys machine learning that relies on large historic datasets to train the

---

[8] danah boyd & Kate Crawford, *Critical Questions for Big Data: Provocations for a cultural, technological, and scholarly phenomenon*, 15 INFORMATION, COMMUNICATION & SOCIETY 662–679 (2012).
[9] Litigating Algorithms 2018, AI NOW INSTITUTE, https://ainowinstitute.org/litigatingalgorithms.pdf.
[10] Lauren Kirchner, *Thousands of Criminal Cases in New York Relied on Disputed DNA Testing Techniques*, PROPUBLICA (2017), https://www.propublica.org/article/thousands-of-criminal-cases-in-new-york-relied-on-disputed-dna-testing-techniques (last visited Jan 16, 2020).

underlying models, the quality of that underlying data is of paramount importance. If that data includes false or biased data, every output will repeat this pattern and in turn result in false and biased decision-making. In the context of policing, utilizing data from unconstitutional and racially biased stop-and-frisk practices by the NYPD will create outputs reflecting these practices.[11] This behavior is commonly known by the computer-science idiom "garbage in, garbage out," or in this scenario, as Sandra Mayson coined, "bias in, bias out".[12] In another recent example, researchers discovered that a widely used health care algorithm used to identify patients' health risks failed to identify many Black patients, making them less likely to be enrolled for medical treatment.[13] And where these systems operate in the dark, people may not even realize that they are suffering at the hands of a flawed machine-learning system: one ADS in Indiana blocked hundreds of thousands of people from receiving vital support services and left them struggling to challenge these decisions.[14]

Given these enormous human impacts that automated systems make on our community – and the very real possibility of simply automating existing human error and bias – meaningful regulation is the bare minimum our democracy demands. The growing power imbalance between people affected by ADS and those who deploy them is at its height when affected people aren't even aware that their lives have been changed by an ADS. Access to information on what systems are in use, whether their accuracy has been studied and their impact assessed, and the mechanisms to obtain redress for harm is essential for the public to be able to engage in a fully-informed discussion regarding what role—if any—these systems should have in government decision making.

---

[11] Rashida Richardson et al., *Dirty Data, Bad Predictions: How Civil Rights Violations Impact Police Data, Predictive Policing Systems, and Justice,* 94 N.Y.U. L. REV. ONLINE 192 (2019), https://ssrn.com/abstract=3333423.

[12] Sandra G. Mayson, *Bias In, Bias Out*, 128 YALE LAW JOURNAL (2019), https://www.yalelawjournal.org/article/bias-in-bias-out (last visited Oct 28, 2019). Archived at: http://archive.is/nzP1D.

[13] *See:* Beth Haroules & Simon McCormack, *How an Algorithm Puts Black People's Health in Danger*, NEW YORK CIVIL LIBERTIES UNION (2019), https://www.nyclu.org/en/news/how-algorithm-puts-black-peoples-health-danger (last visited Jan 15, 2020); Ziad Obermeyer et al., *Dissecting racial bias in an algorithm used to manage the health of populations*, 366 SCIENCE 447–453 (2019).

[14] Alyssa Edes & Emma Bowman, *"Automating Inequality": Algorithms In Public Services Often Fail The Most Vulnerable*, NPR.ORG (2018), https://www.npr.org/sections/alltechconsidered/2018/02/19/586387119/automating-inequality-algorithms-in-public-services-often-fail-the-most-vulnerab (last visited Jan 16, 2020); Virginia Eubanks, *We created poverty. Algorithms won't make that go away*, THE GUARDIAN, May 13, 2018, https://www.theguardian.com/commentisfree/2018/may/13/we-created-poverty-algorithms-wont-make-that-go-away (last visited Jan 16, 2020).

NYCLU
ACLU of New York

Use of Automated Decision Systems in New York City Agencies

In 2016 ProPublica published *Machine Bias,* a seminal report on the disparate impact of the risk assessment tool COMPAS.[15] It inspired then-Councilmember James Vacca to introduce legislation with the intent to mandate transparency and accountability requirements for the use of ADS in city government.[16] Initially proposing broad transparency requirements, the legislation was later amended to create an ADS Task Force and was enacted as Local Law 49 of 2018.[17] Its mandate included creating criteria for identifying which ADS should be subject to regulation and oversight; procedures by which a person affected by ADS receive an explanation of that decision; procedures to determine whether an ADS disproportionately impacts people based upon protected status and how to address such bias; a process for making information publicly available to enable public oversight of government use of ADS; and procedures for archiving ADS and related data. Although an important first step in addressing government use of ADS, the Task Force's mandate was very modest, and included no ability to actually audit ADS and a wide carve-out for law enforcement use.

Despite the Task Force's limited mandate, it represented the first real attempt at establishing a formal oversight mechanism over ADS in the United States. Unfortunately, the Task Force's final report, published in November 2019, fell short of these expectations. It did not examine any individual ADS and limited its recommendations to broad guidelines. Non-governmental Task Force members requested access to, but were blocked from reviewing, specific ADS. And disappointingly, the Task Force completely missed the opportunity for broad public education and community engagement envisioned by its enacting legislation. The NYCLU and our partners repeatedly sought to offer input and recommendations to the Task Force, including through open letters

---

[15] Julia Angwin et al., *Machine Bias*, ProPublica (2016), https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing.

[16] Lauren Kirchner, *New York City Moves to Create Accountability for Algorithms*, ProPublica (2017), https://www.propublica.org/article/new-york-city-moves-to-create-accountability-for-algorithms.

[17] The New York City Council - File #: Int 1696-2017, https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3137815&GUID=437A6A6D-62E1-47E2-9C42-461253F9C6D0.

NYCLU
ACLU of New York

in January 2018,[18] August 2018,[19] March 2019,[20] and finally in a comprehensive Shadow Report in December 2019.[21]

A major recommendation from the Task Force report was the establishment of a "centralized ADS Organizational Structure within City government". The Mayor created this structure, titled the Algorithms Management and Policy Officer (AMPO),[22] through an Executive Order at the time of the report publication.[23] Beyond having the practical effect of further postponing any actual release of information to the public on the use of ADS in city government and punting on setting up a system for democratic oversight, this order also severely limited the AMPO's effectiveness by including a broad "public safety" carve-out. We can expect the NYPD to interpret this exemption in the broadest sense, interfering with the important oversight function. But it is precisely the Police Department's use of ADS that warrants the greatest scrutiny due to the potential for police ADS systems to rely on data resulting from unconstitutional and racially biased policing. Especially when an encounter with law enforcement can result in the deprivation of one's liberty or, in the most tragic of cases, the loss of one's life, the public deserves to know whether police are making enforcement decisions based on flawed or biased data.

Even though ADS have faced greater scrutiny in the last few years and the field of study has significantly grown, it remains difficult to identify the full scope of ADS in use. Much of what we know about their use in New York City is pieced together from disparate sources such as public records requests, litigation, procurement data, employee information, and press statements. It is safe to assume that ADS are used by virtually all City agencies, including:

- the New York City Department of Education for teacher evaluations and student placements;
- the NYPD for predictive policing, the gang database, the case recommendation tool Patternizr, automated license plate readers, social media monitoring, and facial recognition;

---

[18] Letter to Mayor de Blasio: Regarding NYC Automated Decision Systems Task Force, NEW YORK CIVIL LIBERTIES UNION (2018), https://www.nyclu.org/en/publications/letter-mayor-de-blasio-regarding-nyc-automated-decision-systems-task-force (last visited Jan 16, 2020).
[19] Open Letter to Automated Decision Systems Task Force, NEW YORK CIVIL LIBERTIES UNION (2018), https://www.nyclu.org/en/publications/open-letter-automated-decision-systems-task-force (last visited Jan 16, 2020).
[20] Letter to the Automated Decision Systems Task Force - March 1, 2019, NEW YORK CIVIL LIBERTIES UNION (2019), https://www.nyclu.org/en/publications/letter-automated-decision-systems-task-force-march-1-2019 (last visited Jan 16, 2020).
[21] *See supra 2.*
[22] *New York City Algorithms Management and Policy Officer*, https://www1.nyc.gov/site/ampo/index.page.
[23] The City of New York Office of the Mayor, Executive Order 50, November 19, 2019, https://a860-gpp.nyc.gov/bitstream/gpp/24020/1/Executive%20Order%2050%20-%20Algorithms%20Management%20and%20Policy%20Officer.pdf.

- the Mayor's Office of Criminal Justice for their failure-to-appear tool;
- the New York City Fire Department to anticipate where fires may spark;
- the New York City Department of Health to identify serious pregnancy complications;
- the Administration for Children's Services for child welfare, ecomap and genogram software;
- the Center for Innovation through Data Intelligence to predict families' risk of homelessness and to identify buildings that are likely to house at-risk families;
- the New York City Human Resources Administration to identify fraudulent benefit recipients;
- the New York City Housing Authority to predict malfunctions in apartments and buildings and report alerts in real time;

...and many other instances. Without giving the public tools to know that these systems even exist and to provide them with the information needed to assess their usefulness and impact, we are in grave danger of outsourcing government decision-making to ever-more opaque tools that could automate bias and strip us of our most fundamental rights.

In November 2018, New York City joined the Cities Coalition for Digital Rights and signed its Declaration. It clearly states that people have "sovereignty over their data, including the right to know what happens to their data, who uses it and for what purposes. [...] Everyone should have access to understandable and accurate information about the technological, algorithmic and artificial intelligence systems that impact their lives, and the ability to question and change unfair, biased or discriminatory systems."[24] We urge the Council to uphold this promise by enacting legislation that will serve our democratic values and create the regulatory mechanisms necessary to protect against harmful and discriminatory algorithms.

Intro 1806-2019 - Reporting on Automated Decision Systems Used by City Agencies

The legislation would require city agencies to provide basic information about every automated decision system in use. The disclosure requirement would include what each automated decision system is intended to measure or reveal, a description of the decisions made, the name of the entity that developed the ADS, and how long the system has been in use. The Mayor's Office of Operations would be required to compile the information received by city agencies and report it to the Mayor and the Speaker of the Council every year.

[24] Declaration of Cities Coalition for Digital Rights, https://citiesfordigitalrights.org/assets/Declaration_Cities_for_Digital_Rights.pdf.

This legislation is a first step toward closing the overwhelming information gap around the use of ADS in New York City. New Yorkers currently lack even the most basic information about what these systems are and how public officials are using them. A disclosure requirement will help the public and policymakers alike understand the current terrain, craft better and more targeted oversight mechanisms, aid people in finding help when they feel they are unfairly impacted by a decision, and drive public education opportunities. The sponsor of the 2017 ADS oversight bill, former Councilmember James Vacca, has already publicly endorsed the legislation as further realizing the intent of his original bill.[25] And some agencies have already shown that this is a workable model and that it is feasible to release information about their use of ADS. The Criminal Justice Agency published details about their Risk Assessment tool on their website allowing the public to understand the scoring.[26] However, the Criminal Justice Agency should go further and make sure that the thresholds and specific data used to determine their risk calculations are made public.[27]

It is worth noting that the proposed legislation defines automated decision systems very broadly. As drafted, it would cover a myriad of software tools, scripts, and processes. Though likely unintended, this could include search scripts, automated software updates, virus scanners, and other programs. This over-inclusivity could make the disclosure requirement unworkable for agencies to compile, and tedious for the public to review. We therefore recommend adding a narrow carve-out that would exclude certain tools:

"ADS do not include: 1. routine software tools for internal cybersecurity procedures such as update schedulers, anti-virus, and network security, or 2. routine software tools for data back-ups, retention, and deletion."

In any definition of ADS adopted by the Council, it is imperative that the disclosures at a minimum include information on when and whether such systems are making decisions that impact the lives and rights of New Yorkers – and where they do, require detailed documentation and racial equity analyses.

Intro. 1806 has the potential to accomplish what the Task Force failed to do by affirming New Yorkers' right to know what types of automated decision systems are being used by city agencies and how these tools are

---

[25] Noel Hidalgo, *Council Member Peter Koo Introduces Bill to Require Reporting on Automated Decision Systems (ADS) used by City Agencies*, BETANYC (2019), https://beta.nyc/2019/11/27/council-member-peter-koo-introduces-bill-to-require-reporting-on-automated-decision-systems-ads-used-by-city-agencies/ (last visited Jan 16, 2020).

[26] *Release Assessment*, New York City Criminal Justice Agency, https://www.nycja.org/release-assessment/3704.

[27] The Leadership Conference on Civil and Human Rights, "The Use of Pretrial Risk Assessment Instruments: A Shared Statement of Civil Rights Concerns" (2018), *available at* https://civilrights.org/edfund/pretrial-risk-assessments/.

impacting their lives and environments. Similarly, the Council will benefit from these disclosures and be better able to fulfill its oversight role over City agencies and be better capable of pursuing further legislation on ADS going forward.

The proposed legislation is a modest, but necessary first step to protecting civil liberties and civil rights as the City moves its operations into the Digital Age.

Intro 1447-2019 - Annual Inventory of Agency Data

NYCLU
ACLU of New York

The NYCLU supports the underlying purpose of Intro. 1447, but we believe the bill's numerous exceptions will prevent it from achieving that goal. This bill would require the Director of the Office of Data Analytics to submit an annual report to the Mayor and the Speaker of the Council describing data collected and maintained by mayoral agencies. For each data set the report would include descriptions of the content, the agency collecting or maintaining it, which agencies have access, whether it is available on the open data portal, collection method used, update frequency, and size.

The NYCLU agrees with the need for public reporting of agency data collections. Unfortunately, however, the legislation includes an exception broad enough to critically undermine its potential utility. The legislation includes a broad carve-out for information whose disclosure: "(i) is expressly prohibited under federal, state law or local law; (ii) would pose a risk to individual privacy, public safety, or the cyber-security of agency systems; or (iii) would violate a confidentiality agreement or trade secret protection." This carve-out would allow for vast exemptions in the disclosure of covered data sets. Most disappointingly, we could expect that reliance on these exemptions would be most pronounced in the very areas like policing that would benefit the most from public reporting. Thus, reporting required by the bill would not add significantly to the already existing Open Data Law (Local Law 11 of 2012). For this legislation to actually succeed in increasing transparency, this exception must first be removed. Otherwise, it is doubtful whether it would give the public a better understanding of what data agencies collect, retain, share, and act on.

Conclusion

We thank the Committee for the opportunity to provide testimony and for recognizing the need for oversight and regulation of automated decision systems. The NYCLU urges the Council to pass Intro. 1806 to enhance transparency around automated decision systems as a first step for accountability, fairness, due process, and the protection of New Yorkers' civil rights and liberties.

THE HANDBOOK FOR RADICAL LOCAL DEMOCRACY

RadicalxChange

TABLE OF CONTENT

Introduction 5

Quadratic Voting 8

Quadratic Finance 20

Self-Assessed Licenses Sold via Auction — SALSA 31

Conclusion 45

1 Introduction

A HANDBOOK OF NEW SOCIAL TECHNOLOGIES FOR COLLABORATING ACROSS DIFFERENCE

Good governance means striking a good balance between public power and private power. Public power has the potential to be exceptionally fair and democratic. But governments sometimes wield their power counterproductively. Private power, conversely, has the potential to be uniquely flexible and efficient. But private actors sometimes wield their power without regard for democratic values and the general welfare.

In many ways, the politics of the past century was characterized by a long tug-of-war between public and private power. But these debates have passed their sell-by date. What we need now is a fresh perspective — a new methodology for mixing, blending, and balancing public and private power.

History offers some clues. During the industrial era, technological disruption placed immense strains on society and hastened the need for new ways of governing. The resultant reforms included the expansion of democracy toward universal suffrage; the end of child labor and the rise of unions; the rise of antitrust law; and the beginnings of the welfare state. These new modes of social organization helped society accommodate radical changes in technology.

These changes were not “pro-government” or “anti-government”. Rather, they were social innovations based on democratic values. Their common feature was that they pushed power outwards, away from sites of highly concentrated public or private power, and into the hands of individuals and communities. They enabled new, more responsive, and more genuinely democratic institutions to support technological progress — while also main-

taining an open and free society. They served as a counterweight against the tendency of new technologies to generate concentrations of power in either government or industry — and the corresponding tendencies of those power concentrations to push societies toward anti-democratic modes of government.

By mixing and balancing public power and private power in new ways, while empowering communities, the reformers of the first part of the 20th century bolstered civil society, and helped the United States navigate — however imperfectly — many of the challenges that pushed other societies into totalitarianism.

We need similar social innovations today. In recent years, social technologists have been developing new ways of striking an attractive balance between public and private power. A few of these ideas are the subject of this short handbook. While they may be a bit unfamiliar, the values and the way of thinking behind them are not. For democracy to function, everyone needs to have a voice, and everyone needs to be encouraged to engage with civic processes that allow collaboration across difference.

To revitalize democracy, we desperately need updates to our basic mechanisms of collective decision-making and resource sharing. That is what these ideas strive for. We hope you will find something inspiring here.

Quadratic Voting

WHAT IS QUADRATIC VOTING?

Quadratic voting is a twist on normal voting procedures, which allows voters to express their wishes with more precision. It lets voters trade some of their overall voting power for the right to "speak louder" on the issues they deem most important. A growing body of academic work and real-world use cases[1] indicates that quadratic voting captures more precise and useable information than simple voting. For example, in 2019 the Democratic Caucus of the Colorado House of Representatives successfully used quadratic voting to decide which spending bills to prioritize.[2] The experiment was a success, and cutting-edge institutions[3] all over the world are now adopting quadratic voting for both internal and public decision-making processes.

THE RATIONALE BEHIND QUADRATIC VOTING

Simply Allowing Voters To "Reallocate" Votes Creates A Problem

Letting voters reallocate votes to issues they care more about is an old idea with a clear appeal. It would obviously be a boon to democracy if people could indicate *how strongly they felt* about issues, in addition to which choice they preferred. For example, if a voter cares weakly about one issue, but strongly about another, why shouldn't they be able to vote twice on the one she cares strongly about, while abstaining from the other?

1 See Wikipedia for a partial list of examples *https://en.wikipedia.org/wiki/Quadratic_voting.*
2 See, e.g., A New Way of Voting That Makes Zealotry Expensive, Bloomberg (May 1, 2019), *https://www.bloomberg.com/news/articles/2019-05-01/a-new-way-of-voting-that-makes-zealotry-expensive*.
3 Official site of the Taiwan's 2019 Presidential Hackathon *https://presidential-hackathon.taiwan.gov.tw/en/.*

Yet, simply allowing people to concentrate their votes on single issues has failed to become a popular democratic practice, because it leads to a serious problem. Namely, people and groups who aggressively concentrate their votes nearly always win their favorite issues. It encourages everyone to concentrate their votes on single issues as much as they can stand to, meaning that the ballots stop capturing voters' views on other issues, which they care about more moderately. It ultimately impoverishes the voting process.

Quadratic Voting Addresses It

Quadratic voting retains the flexibility and benefits of allowing vote reallocation — but it solves the "loudest voices in the room" problem. It does so by (1) allowing voters to reallocate their votes, while also (2) imposing a precisely calibrated, non-monetary cost on voters who choose to do so. The "cost" increases with the degree of concentration so that ***the more they concentrate their votes, the fewer votes they get to cast overall.***

HOW DOES IT WORK?

In quadratic voting, each voter starts with an equal budget of "voting credits". They can then allocate these credits to different voting issues as they please. To illustrate, picture a ballot with 10 issues or questions on it. Each voter likewise has 10 voting credits, and each vote "costs" one voting credit. So, they may simply choose to spend her 10 voting credits by casting one vote on each issue. But if she prefers to concentrate her voting power on a particular issue, she must pay a special cost for doing so. This cost is calculated as the **square of the number of votes cast.** In other words, if she chooses to vote twice on an issue, she must spend four voting cred-

its (because two squared equals four). Similarly, if she chooses to vote three times on an issue, she must spend nine voting credits (because three squared equals nine). This dynamic is illustrated in the graphic below.

Credits	Votes
●○○○○○○○○○	1
●●●●○○○○○○	2
●●●●●●●●●○	3

In this illustration, we have three verified voters (corresponding to the three rows), each voting on the same bill. Each has a budget of 10 voting credits. The first voter spends one credit — which buys one vote — and has nine left credits left over to vote on other bills. The second voter spends four credits, which buys two votes on the bill. The third voter spends nine credits, buying three votes on the bill, but leaving her with only one voting credit to allocate towards other bills.

WHAT KINDS OF SITUATIONS CALL FOR QUADRATIC VOTING?

Small group decisions by town councils, corporate boards, or cooperatives

Instead of taking simple up-down votes on a series of issues, collect the issues on a single ballot and present this ballot to the voting members. After all the issues have been discussed and debated, have the voting members vote privately, and submit their votes simultaneously. If there are rules such as bylaws governing how decisions need to be taken, simply conduct a quadratic

vote, and then "endorse" the results through a conventional majority vote per the bylaws.

Large group decisions such as public elections

Quadratic voting can be done in large groups as well as small. As with any election, it is important that the voting be done privately and that the identity of the voters be verified so that no one can vote more than once.

Surveys

Quadratic voting has been shown to outperform[4] the typical methods of preference-strength measuring (i.e., rating on a scale of 1-5?). We recommend asking people to allocate a budget of voice credits across different statements, according to how strongly they agree. This permits respondents to indicate where they actually feel most strongly.

LIKERT SCALE

1	Strongly Disagree	
		40% Negative
2	Disagree	
3	Undecided	20% Neutral
4	Agree	
		40% Positive
5	Strongly Agree	

4 Charlotte Cavaillé, Daniel L. Chen, Karine Van der Straeten, Towards a General Theory of Survey Response: Likert Scales vs. Quadratic Voting for Attitudinal Research, The University of Chicago Law Review, 2019, forthcoming (Nov. 19, 2018), *https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3307327*.

The following illustrations, from research by David Quarfoot,[5] illustrate the advantages of quadratic voting over a conventional survey methodology (called Likert scales). Using the conventional Likert scales, many respondents assert that they feel strongly negatively or strongly positively (figure X). But a quadratic voting survey asking the same question reveals that respondents' strength of feeling is much more closely clustered around the midpoint — indicating weakly positive or weakly negative preferences (figure Y). This result is actually not surprising. Using conventional surveys, respondents can express extreme views at no cost. In quadratic voting, however, respondents must pay in voice credits to express an extreme view. This incentivizes them to think carefully about which issues really matter the most to them, thus providing much richer information to the survey-taker.

Ranking or prioritization exercises

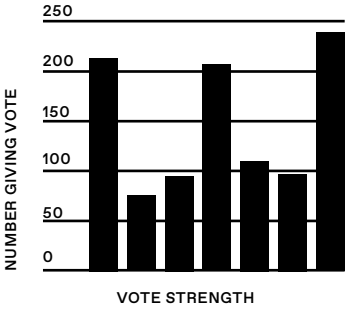
Quadratic voting can be used to help a group rank or prioritize a long list of options. Simply allow each group member to allocate their voting credit budget across the options, with the voting credits representing the square of the "counted" votes. Compared to other methods, this yields more detailed and nuanced information about the group's level of support for each of the options.

5 David Quarfoot et. al., Quadratic Voting in the Wild: Real People, Real Votes (unpublished manuscript) (Mar. 30, 2016), *https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2755844*.

COMPARING QUADRATIC VOTING RESULTS USING WITH LIKERT SCALE POLLS

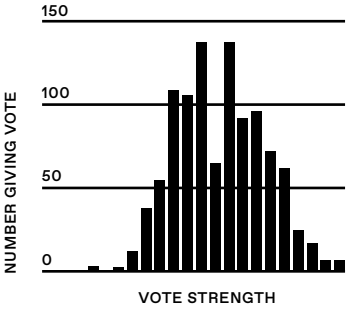
Likert Votes for repeal Obamacare

FIGURE X

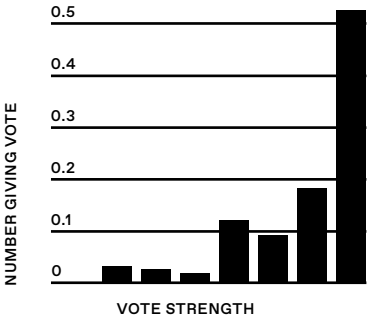


QV votes for repeal Obamacare

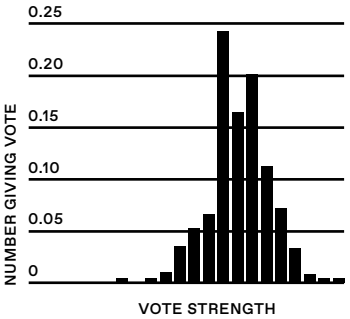
FIGURE Y



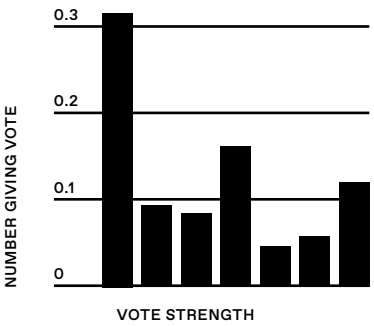
Likert Votes for Pay Woman Equally



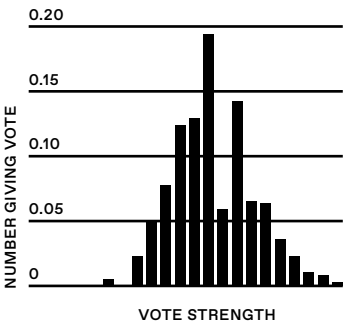
QV Votes for Pay Woman Equally



Likert Votes for Ban Abortion



QV Votes for Ban Abortion



The next graph shows the smooth prioritization curve that the quadratic voting process yielded for the Democratic Caucus in the Colorado State Representatives, who used it to prioritize a long list of spending bills in 2019.[6] This solves a very clear problem. In 2018, before using quadratic voting, the Democratic Caucus used a different process where each representative simply received 15 votes to cast for the 15 bills that they felt deserved funding. That process generated what Representative Chris Hansen called a "big blob" of bills with roughly the same number of votes,[7] and no clear preferences between them. By contrast, quadratic voting generated a clearly ordered list, showing which bills have the most support and how steeply the support declines as one proceeds down the list. It is easy to think of other examples where this kind of prioritization curve would be desirable. For example, consider the front office of a sports team, which needs to decide not only how it orders an upcoming class of draft prospects, but also where in that ordered list the largest quality "drop-offs" occur. A quadratic vote would allow the whole scouting team to combine its assessments of a long list of draft prospects, thus identifying the quality drop-off points, and giving accurate information about the team's degree of enthusiasm for each different player.

6 See, e.g., A New Way of Voting That Makes Zealotry Expensive, Bloomberg (May 1, 2019), *https://www.bloomberg.com/news/articles/2019-05-01/a-new-way-of-voting-that-makes-zealotry-expensive*.

7 See, e.g., $120 million in requests and $40 million in the bank. How an obscure theory helped prioritize the Colorado budget, Colorado Sun (May 28, 2019), *https://coloradosun.com/2019/05/28/quadratic-voting-colorado-house-budget/*.

Colorado 2019 Quadratic vote distribution

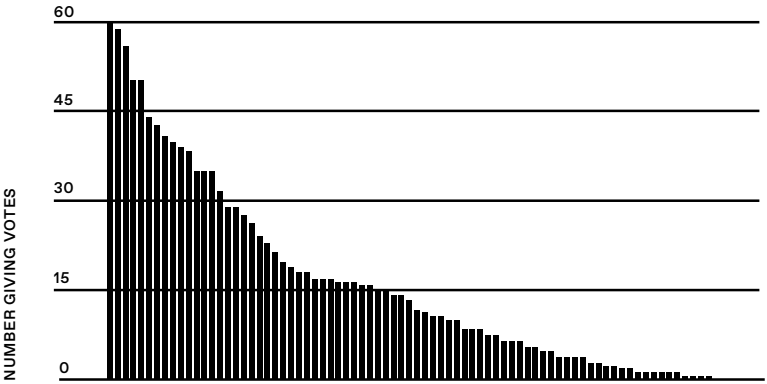


Table Of results For Colorado Quadratic vote (top 25)

60	Equal Pay For Equal Work Act
59	Demographic Notes For Certain Legislative Bills
55	CDPHE Maternal Mortality Review Committee
52	Youth Mental Health Ed & Suicide Prevention
52	Grants For Property Tax Rent & Heat
44	Mental Health Parity Insurance Medicaid
43	Health Care Cost Savings Act Of 2019
40	Increase Student Aid Application Completion Rates
38	School Nurse Grant Program
38	Comprehensive Human Sexuality Education
37	GreenHouse Gas Pollution Impact In Fiscal Notes
36	School Incentives To Use Colorado Food & Producers
33	Expand Child Nutrition School Lunch Protection Act
33	Sexual Assault While In Custody Or Detained
33	Office Of Public Guardianship Operation Conditions
31	State Court Administrator Reminder Program
29	Increase Tax Credit Allocation Affordable Housing
29	Modify Innovative Motor Vehicle Income Tax Credits
27	Wildfire Mitigation Wildland-Urban Interface Areas
25	Child Care Expanses Tax Credit Low-income Families
23	Investment In Primary Care To Reduce Health Cost
22	CO Child Abuse Response And Evaluation Network
29	Child & Youth Behavioral Health System Enhancement
29	Regulate Student Education Loan Servicers
18	Colorado Resiliency Office Reauthorization Funding

IMPLEMENTATION TIPS

Fraud, collusion, and vote-buying

Fraud, collusion, and vote-buying are problems in all democratic systems, and quadratic voting is no exception. The integrity of results and/or the benefits of quadratic voting can be undermined if parties agree in advance how to vote, or vote multiple times, or vote on behalf of others. Therefore, private voting and fraud-free voter rolls are essential to building a secure, unhackable system. While this is less imperative, keeping votes private even after they are cast also helps make the system more secure — because then malicious parties trying to buy others' votes cannot verify compliance.

How many issues, and which ones, should be on the ballot?

The more issues there are on the ballot, the more complex the tradeoffs voters can make, and the more nuanced information the process will yield. Therefore, where possible, it is a good idea to put a reasonably large and diverse set of questions on the ballot, touching different subject matter areas that are likely to have different levels of importance for different voters or groups of voters.

Whole numbers

The process of quadratic voting is easier for voters to understand using whole numbers. Therefore, it helps to force voters to allocate square numbers of voting credits to each option. For example, on each issue, you can permit them to allocate 1, 4, 9, 16, or 25 credits. This way, the ballot system can clearly communicate the costs of vote concentration by displaying that 16 credits → 4

votes, 25 credits → 5 votes, and so on. It might seem that compelling voters to use square numbers would reduce the flexibility of the process, but the disadvantages are extremely marginal.

Paper ballots

It is entirely possible to conduct quadratic voting using paper ballots, but it requires voters to check their own work to ensure that they are doing it properly. Simply provide a worksheet that maps the number of “counted” votes to the correct costs in voting credits, such as:

NUMBER OF VOTES	"VOTE CREDIT" COST
1	1
2	4
3	9
4	16
5	25

Then ask voters to indicate the number of votes they wish to cast on each issue, keeping track of spent voting credit on a simple worksheet. Ballots that “spend” more than their budget of voice credits should be returned to voters for correction if possible, but otherwise not counted.

Spreadsheets or simple surveys

Quadratic voting interfaces can be implemented in the form of simple spreadsheets[8] or programmable surveys.

Software applications and blockchains

Democracy Earth[9] builds robust quadratic voting platforms, including the one used by the Democratic Caucus of the Colorado House of Representatives. These platforms can readily be deployed by organizations or governments who are in a position to verify the identity of users.

Moreover, the potential for quadratic voting on decentralized blockchain applications is extremely exciting. However, as of this writing, there is no (decentralized) way of verifying that blockchain users are real, unique humans. This means blockchain-based quadratic voting still depends on some centralized, authoritative verification of voter identity.

Still, technologists are hard at work addressing the challenge of decentralized identity verification. This technology is likely to unlock exciting new possibilities for truly decentralized governance, and we believe quadratic voting will play a crucial role in these emerging systems.

8 See this template, *https://docs.google.com/spreadsheets/d/11JTCQwLATpqCsPBU-gLETi2vLesz-S13uzqfyddQvBTg/edit?usp=sharing*.
9 See the Democracy Earth website, *https://democracy.earth/*.

Quadratic Finance

THE RATIONALE BEHIND QUADRATIC FINANCE

The difficulty of funding public goods

Public goods (that is, goods that benefit everyone, non-exclusively) are hard to fund through private markets. Because nobody can capture their benefits, everybody tries to "free ride" and supplies less than their fair share of the shared benefit. It is a classic problem in economics.

Centralized funders, like governments and philanthropists, often step in and try to correct this market failure. But they create issues of their own. Specifically, they sometimes fund things that the community would not have freely chosen.

The appeal of matching funds

Matching funds are a valuable tool fundraising tool for public goods, which helps address this problem. In essence, they allow centralized funders to collaborate with decentralized donors. Central funders (who provide matching funds) and small donors (who provide the "matched" funds) each use their money to incentivize one another in the service of a shared goal.

Matching funds have several clear benefits:

- → They harness decentralized information about what should be funded
- → They make philanthropic or government spending more efficient and responsive
- → They help maximize fundraising by giving central funders and small donors greater incentive to contribute

But most matching funds are unsystematic and sub-optimal

Matching funds usually use a basic template, with little or no optimization or design thinking. It goes like this: Donations are matched according to a simple ratio, such as 1-to-1, until the matching funds run out.

This can be dramatically improved upon. To see why, it's helpful to notice that traditional matching funds sometimes accomplish nothing. Suppose that there are two large donors for a cause. Donor One establishes a matching fund of $1,000,000. Donor Two then makes his donation of $1,000,000 — which he would have made anyway — exhausting the matching fund. The matching fund thus accomplished nothing. It did not increase the amount of money raised, nor increase the number of contributors to the cause.

For an example of an unsystematic matching fund system, look at the chart describing the New York City campaign finance matching funds from 2019:

	Mayor	Public Advocate and Comptroller	Borough President	City Council
Contribution limit	2000$	2000$	1500$	1500$
Matching rate		$8 to $1		
Maximum matchable per Contributor	250$	250$	175$	175$
Maximum matchable per Election	2000$	2000$	1400$	1400$
Maximum Public Founds Per Election	5,464,500$	3,461,250$	1,230,000$	142,000$

Who chose the 8-1 matching rate, and why? Why are the individual maximums set at these particular levels? They appear to have been arbitrarily chosen. There is a more efficient and optimized way of allocating matching funds.

WHAT IS QUADRATIC FINANCE?

A 2018 paper[10] by Vitalik Buterin, Zoe Hitzig, and Glen Weyl proposed a new mechanism design for matching funds. It optimizes their usefulness, among other things, by encouraging more broad-based participation in fund-raising drives.

It works based on a formula that seems complicated, but is not. Namely, the total funding for a proposal is ***the square roots of each private contribution, summed up, and then squared.*** Again: You take each donor's contribution, and find its square root. You then add those square roots up, and square the total. This operation gives the "total funding" for the proposal. The total funding, minus the sum of the individual contributions, gives you the amount of money that the matching fund allocates to the proposal.

The result of the formula is that proposals with few contributors get little or no match, while proposals with many contributors get large matches.

10 Vitalik Buterin, Zoe Hitzig & Eric Glen Weyl, Liberal Radicalism: A Flexible Design For Philanthropic Matching Funds (unpublished manuscript) (Dec. 2018), *https://ssrn.com/abstract=3243656*.

To illustrate the whole process more concretely: Let us say we have a matching fund of $50. There are three proposals (Fix Streets, Build Playground and Improve Cell Coverage), and three participants in the quadratic finance process (Alicia, Bertha, and Cecilia). Their contributions to the three proposals run as follows:

	Fix Streets	Build Playground	Improve Cell Coverage
Alicia	$9	$1	$1
Bertha	$1	—	$64
Charles	$4	$16	—
Pledged Amount	**$14**	**$17**	**$65**

First, think about why different individuals might value these three proposals differently. Likely, they derive different private benefits from the different public goods. Alicia really hopes to see the potholes fixed on the streets, but likes the other proposals as well. Bertha cares a little bit about the streets, and doesn't much want a playground in her neighborhood — however, she runs a business that requires her to drive around town and take phone calls constantly, so she is likely to become more successful if the cell coverage improves. Charles, meanwhile, really wants a playground — he has several children who lack good places to play.

The matching would work as follows. First, take the square roots of each of the contributions for each proposal, and add them up.

	Fix Streets	Build Playground	Improve Cell Coverage
Alicia	3	1	1
Bertha	1	—	8
Charles	2	4	—
Sum of Roots	**6**	**5**	**9**

Now, square each of those amounts to get the final funding amount:

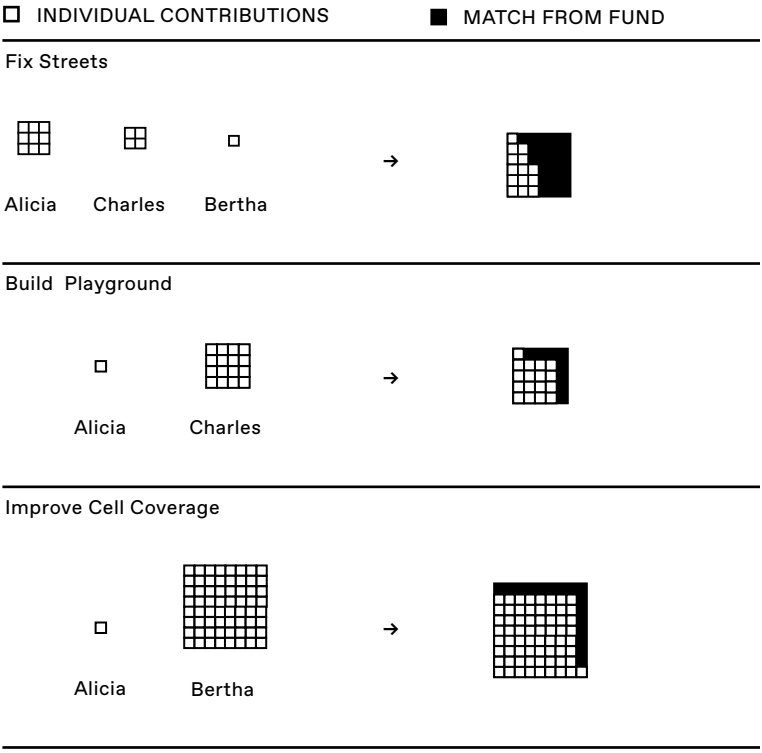
	Fix Streets	Build Playground	Improve Cell Coverage
Funding Amount	**$36**	**$25**	**$81**

Recall, however, that the quadratic finance matching fund only supplies the difference between the total funding amount and the pledged amount:

	Fix Streets	Build Playground	Improve Cell Coverage
Funding Amount	**$36**	**$25**	**$81**
Pledged Amount	**$14**	**$17**	**$65**
QF Match	**$22**	**$8**	**$16**

The total amount of matching funds allocated is $46, which is less than the available $50, so the remaining $4 may be saved. Notice that the cell coverage proposal got the smallest match to its contributions (16/65), while the street fixing proposal got the largest (22/14). That's because the cell coverage proposal had the most con-

centrated support (most coming from Bertha), while the street fixing proposal had comparatively even, broad-based support from Alicia, Bertha, and Charles. the street fixing proposal got the largest (22/14), as this illustration shows.



Limited Matching Budgets

In many cases, particularly where there are many participants, the quadratic finance formula will suggest very large matching amounts that exceed the matching budget. This is not a problem. You simply allocate the matching budget between the competing proposals “pro rata”, according to the matching amounts they would have received if you had an infinite budget. This remains a far

more optimized use of matching funds than doling them out according to a predetermined ratio, such as 1-1 or 2-1.

USE CASES FOR QUADRATIC FINANCE

In government

Every local government has a "wish list" of infrastructure projects, repairs, and other public goods to which it would like to allocate budgetary funds. Imagine if, instead of trying to prioritize these projects internally, and seeking additional funding sources ad hoc, it simply posted the "wish list" publicly, and called for donations. Then, the government could use its own budget as a pool of "matching funds" following quadratic finance. Not only would this help solicit private contributions, it would also better conform to democratic values by ensuring that the most broadly supported projects got the most public funding, and that the smallest donors benefited from the largest relative matches. The process would generate much more information about the community's true priorities.

A few attractive use cases:

- → ***Funding infrastructure investments or repairs:*** Quadratic finance has the potential to replace central analysis of infrastructure investment needs. A city or other authority could post a detailed list of possible infrastructure spending projects on a public portal. Citizens could then make pledges to the proposals that most appealed to them. The public budget would be allocated as a quadratic finance matching fund to the pledges.

- → ***Funding journalism:*** By allowing citizens to decide

which journalistic outlets they most wished to support, the government could subsidize journalist outlets without "picking winners" (or undermining journalism's ability to be critical of politicians).

→ ***Funding campaign finance:*** A matching fund could be set up to subsidize candidates' campaigns. The quadratic financing mechanism would ensure that candidates with a very narrow base of support — such as those with a small number of wealthy backers — would receive minimal public support.

In cooperatives, associations, and clubs

Cooperatives, associations, and clubs can apply quadratic finance in circumstances analogous to those of government.

A few examples:

→ ***Housing coop:*** A housing coop might use quadratic finance to allocate its budget for the improvement of common areas.

→ ***Software:*** An open-source software organization might use quadratic finance to allocate its budget to important projects.

→ ***Community Fund:*** A philanthropic fund supporting a community might invite members of that community to participate in a quadratic finance initiative to fund public goods.

IMPLEMENTATION TIPS

Maintaining the integrity of the system

The effectiveness of quadratic finance can be undermined when groups of people collude, or when one person pretends to be many. Therefore, it's important to have rules against collusion. Depending on the context, it might be enough to require contributors to certify that they are not acting on anyone else's behalf. But where sophisticated exploits are likely to be attempted, or the stakes are very high, something more robust might be required. For example, the size of the match can be reduced when the group supporting a given cause shares characteristics that make them likelier to be colluding, such as being members of the same family or having many social connections.

Connecting quadratic finance with other mechanisms

One of the most exciting possibilities for quadratic finance comes from linking it to a different, revenue-producing mechanism, called SALSA (below).

SALSA, as you will see, is a mechanism that asks the possessors of certain assets to pay a precise fee corresponding to the negative externality that their possession imposes on the rest of society. By collecting fees raised through SALSA, and using them as a source of quadratic finance matching funds, one can start to imagine a kind of self-sustaining public good funding ecosystem. (For example, heavy users of infrastructure pay a fee for their use; and those funds go into a matching pool that supports improvements to the same infrastructure.)

Self-Assessed Licenses Sold via Auction — SALSA

WHAT IS SALSA?

Imagine that a city decides it has space for 100 farmers market stalls, but there are 300 local food vendors interested in selling their products at the market. How should the city decide which 100 can operate? The city could take one of two traditional approaches.

1) First-come, first-served licenses: The city could set a flat fee for a stall and allocate the licenses to the first 100 vendors who complete some registration process.

2) Auction: The city could auction off the stall spaces to the 100 highest bidders.

Unfortunately, these two approaches both have significant shortcomings in terms of both efficiency *and* social equity (more on this below). Instead, we think that the city should allocate the licenses using a new mechanism called SALSA (Self-Assessed Licenses Sold via Auction). In this system, the stall spaces are sold to the 100 highest bidders via auction. Then, license-holders pay a yearly fee to continue holding the license — this fee is a percentage of each holder's own self-assessed value of the stall license. And — this is where the magic of SALSA happens — if any potential vendor would pay more for a license than the holder's declared self-assessment, the holder *must* sell the license at this new, higher value, unless she increases her own value (and subsequently pays the annual fee on this new, higher value).

Use Cases for SALSA in Local Government

In this section, we'll sketch out two more situations where local governments could apply a SALSA and then provide a list of many shorter ideas. We hope this section inspires some productive brainstorming on your part —

and we encourage you to let us know of any more applications you come up with!

1) Long-term street parking

Many municipalities offer long-term resident-only parking permits, which allow residents to park for longer periods of time than standard public parking (e.g., two-hour parking). Unfortunately, residential parking permits are frequently either free[11] or cheap.[12] This mechanism runs the risk of allocative inefficiency: for a fixed number of parking spaces/permits, an arbitrarily low fee is unlikely to allocate the permits to those who value them most.

We recommend that municipalities use a SALSA mechanism — open to residents and non-residents alike — to improve allocative efficiency. It's easy to imagine, for instance, that non-residents who work in a given municipality may value a parking space more than a resident who already has one car and has just purchased a second one.

Policymakers may have social equity concerns. Many low- and middle-income families rely on affordable parking to support themselves economically, so policymakers may worry that a SALSA will simply allocate parking permits to a city's wealthiest residents. To address this, policymakers could set geographic quotas for the permits: i.e., permits allow the holder to park within a certain two-block area of the city, ensuring that households in the area will be most likely to bid. And, insofar as people of similar income levels tend to live near each other, low- and middle-income households will largely be

11 Boston Considers Charging for Residential Parking Permits, NECN (Jun. 29, 2018), *https://www.necn.com/news/new-england/Boston-Considers-Charging-for-Residential-Parking-Permits-486985971.html*.

12 Request a Residential Parking Permit, City of Cambridge MA, *https://www.cambridgema.gov/iwantto/requestresidentparkingpermit*.

bidding against similarly-situated households for permits. In addition, policymakers should keep in mind that revenue generated from the SALSA's yearly fee is likely to be spent in a progressive manner.

If municipalities want to get extra creative, they could allow the space to be used for non-parking activities too. Some municipalities do this on an infrequent, temporary basis,[13] but there could potentially be large gains both for individual space-users who would value the space and the public who would take in extra revenue from the yearly fee.

2) Micromobility: Bikes and e-scooters

Cities across the world are facing regulatory challenges related to micromobility (i.e., bikes and scooters that provide "last mile" mobility solutions). Implementing a fixed cap on the number of vehicles allowed would resurface the undersupply problem of taxi medallions that we discussed above (i.e., how can a municipality know exactly how many scooters its citizens demand?). However, because micromobility companies are often well-funded and pursuing network effects, cities that do not regulate supply risk becoming flooded with unused vehicles taking up valuable public space and making urban life unpleasant.[14] Some cities are considering"dynamic caps," whereby the number of vehicles each company can deploy expands and contracts according to the "usage rate" of the vehicles.[15] We think that a SALSA mechanism could further enhance the effectiveness of a dynamic

13 PARKing Day, City of Cambridge MA, *https://www.cambridgema.gov/CDD/Projects/Transportation/parkingday*.

14 For a rather extreme example, see, e.g., Alan Taylor, The Bike-Share Oversupply in China: Huge Piles of Abandoned and Broken Bicycles, The Atlantic (Mar. 22, 2018), *https://www.theatlantic.com/photo/2018/03/bike-share-oversupply-in-china-huge-piles-of-abandoned-and-broken-bicycles/556268/*.

15 Polina Marinova, Lime Investor Sarah Smith: It's 'Inevitable' That E-Scooters Are Coming to Every Major Market, Fortune (Feb. 7, 2019), *https://fortune.com/2019/02/07/lime-funding-sarah-smith-bain-capital-ventures/*.

cap. Under our proposed solution, companies would purchase vehicle licenses at auction from the city and then would engage in the self-assessment and exchange process that we have described in detail above — the firms could reallocate vehicle licenses among themselves in an online marketplace and would pay a yearly holding fee based on their self-assessed value. The dynamic cap would be based on the city's overall usage rate, rather than the usage rate of any one particular company.[16] Finally, citizen welfare could be further enhanced with interoperability, whereby users could view the location of and pay for a ride on any company's vehicle in the same app/platform. This way, rather than competing for network effects (and flooding cities with duplicate vehicles in the same areas), companies would compete on price and experience quality.

More Examples

Below is a list of potential further applications of SALSA that we have come up with. This is by no means comprehensive — we encourage you to experiment with others, and let us know what you come up with!

→ ***Temporary vending opportunities:*** Food truck space licenses, really any sort of vendor stall, especially things in the "pop up" vein, because transaction/re-allocation costs would be minimal.

→ ***Road space/transportation units:*** Cap on number of "vehicle licenses" (i.e., vehicles allowed to drive in a city), as a more efficient alternative to cordon or congestion pricing.[7]

16 When the dynamic cap needs to shrink (e.g., because of a decrease in demand, population decline, etc.), the city would randomly purchase back the required number of licenses at self-assessed value from their holders.

→ ***Public facility use:*** Reserving public fields / tennis / basketball courts. With this application, it is probably important to have "windows" of time in which people can buy out your reservation, so that people aren't, e.g., getting bought off a field in the middle of a soccer game.

→ ***Permanent vending spaces limited for other reasons:*** Marijuana stores/liquor licenses (things that cities may have "moral" reasons to cap) .

→ ***Natural resources:*** Grazing rights, mineral, fishery/hunting, farming rights, which are frequently sold off at arbitrary prices.

→ ***Electronic resources:*** Domain names (e.g., NYC has its own domain, ".nyc"[17]).

→ ***Public attention resources:*** Citywide public wifi supported by advertisements, where advertisement slots are maintained via SALSA (i.e., rather than funded by tax dollars).

→ ***Public Facilities Management:*** In 2008, Mayor Daley of Chicago awarded a 75-year lease[18] to a private consortium, allowing them to manage the city's parking meters. The deal has turned out to be a terrible albatross for the city and its residents. A SALSA system asking the lessee to periodically self-assess its franchise, and pay a fee against that (or surrender it to another operator), would have protected the public interest.

17 Ash Milton, COST as Cure for Car Dependency, RadicalXChange Blog, (June 7, 2019), *https://radicalxchange.org/blog/posts/2019-06-07-z6cxo7/.*

18 Chris Lentino, Chicago to Pay $20 Million to Parking Meter Company in 2018, Illinois Policy (Nov. 2, 2017), *https://www.illinoispolicy.org/chicago-to-pay-20-million-to-parking-meter-company-in-2018/*.

THE RATIONALE BEHIND SALSA

Problems that SALSA solves

Black markets: A flat license fee for a limited number of licenses (i.e.,first-come,first-served) runs the risk of corruption and the creation of black markets.[19] For instance, a 2011 Wall Street Journal article explains that New York City charged $200 for a two-year food-cart permit license.[20] But the permits fetched tens of thousands of dollars on the black market — revenue that could have gone to the city.

Holdout problems: Even a well-run public auction will run into the following types of "holdout" problem, rooted in the fact that people's values change over time and new people, with higher values, may enter a city after the auction.

→ ***Assembly cost holdout:*** Sometimes, a large-scale project requires assembling several assets together in a package (think multiple parcels of land needed for a railroad right-of-way). However, once any single asset-holder realizes that a buyer needs to assemble several assets, she can raise the price of her own asset extract some of the gains from the potential projects — and, if all asset holders behave this way, projects that would be productive may not get done. SALSA solves this problem by allowing instantaneous purchase at self-assessed values.

→ ***Endowment effect:*** People frequently exhibit a cognitive bias called the endowment effect, whereby

19 See generally Chapter 2 in Susan Rose-Ackerman & Bonnie J. Paflika, Corruption and Government: Causes, Consequences, and Reform (2016).
20 Prices for Food-Cart Prices Skyrocket, Wall Street Journal (Mar. 9, 2011), *https://www.wsj.com/articles/SB10001424052748704754.*

they value an asset more simply because it's theirs. Though SALSA does not "solve" the endowment effect, it does make asset-holders put their money where their mouths are by paying the annual fee on their self-assessed value.

→ ***Lazy monopolist:*** Sometimes, an asset-holder just doesn't want to sell because to someone who values the asset more because they don't feel like it, even though they themselves aren't putting it to productive use. Imagine a stall license holder who just never checks her email, and so fails to see that many potential vendors are making high offers to her. SALSA solves this problem by requiring asset-holders to transfer the asset to someone who values it more.

When an asset-holder is unwilling to sell the asset to someone who would value it more, the public good can be harmed in at least two ways: (1) the higher-valuer, who would have created more economic value, is not able to do so, and (2) the government loses out on the potentially higher tax revenue it would have gained, both from any sales transactions related to the asset, and from any sort of "property tax" paid on the value of the asset.

In general, SALSA addresses the above problems because it disincentivizes excessively high valuations. Asset owners will have to pay a tax based on their self-assessed valuation, so they are disincentivized from declaring a valuation that is too high.

What is the right annual license fee rate?
Some simple arithmetic shows that setting the tax rate equal to the turnover rate (i.e., the percent chance that someone who values the asset higher will come along within any given time period) will incentivize owners to

self-assess honestly, at their actual subjective valuation.[21] In addition, the government can reduce the rate slightly to incentivize appropriate investments in the asset. The chart below walks through a sample SALSA rate calculation. As a side effect, as values decrease, low-income people or otherwise credit-constrained people may be able to participate more, relative to situations where with artificially high valuations and holdout problems.

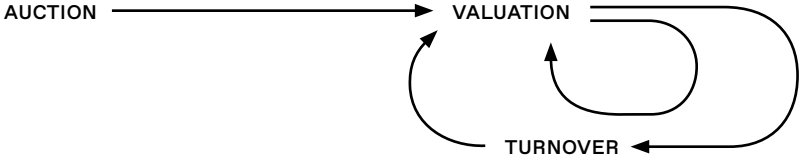
Base rate	20%	Suppose that the turnover rate for farmers' market stall is 20% per year. This means that, for each stall, there is a 20% probability that a farmer who values the stall more will come along in any given year.
↓	↓	↓
Adjusted (final) Rate	5-15%	In settings where there is potential for investment or improvement in the asset, the government will want to set the fee somewhere below this turnover rate. For instance, even in his farmers' market example, a license itself will become more valuable if all the current license holders work hard to appeal to consumers (thus increasing foot traffic) and maybe even make the area around look nicer.

Progressivity: To make the license fee progressive, policymakers can set a small exemption. For instance, the 5-15% rate in the above example might apply to the declared value of the asset minus $1,000.

21 Imagine that there is a 30% chance that a higher-value purchases comes along in any given year. If the asset holder sets her self-assessed value above her actual value by ΔP, then she will benefit by $0.3\Delta P$ (this is the 30% probability that a higher-valuing buyer comes along and buys the asset at the new higher price), but she will also have to pay a higher annual fee on the asset. And if the government sets the fee rate equal to the turnover rate, this will penalize the asset-holder by exactly $0.3\Delta P$, cancelling out the gain to her from setting her valuation above her true valuation. See pages 57-58 in Eric A. Posner & E. Glen Weyl, Radical Markets (2018).

IMPLEMENTATION TIPS

A step-by-step example



Step 1: Auction a set number of licenses to the highest bidders. We recommend using a Dutch auction (i.e., descending price) or a Channel auction. In a Channel auction, there is a lower bound price, which gradually rises, and an upper bound price, which gradually descends. Buyers are committed to buy, for at least the lower bound price, but may purchase directly at the upper bound price at any time.[22]

Step 2: Holders maintain their valuations in an online platform and pay annual fees on their self-assessed valuation (e.g., a 20% fee). As mentioned above, the right annual fee rate will be somewhere between zero and the turnover rate (i.e., the probability that a higher-value purchaser comes along within a year).

Notes:

→ **Bundling/packaging units:** For some assets, there are such strong complementarities across assets that it would represent a market failure for owners to part with one, but not all, of the assets (e.g., a physical structure and the land upon which the structure stands). In such cases, asset-holders should get to determine what bundle of items con-

22 Eduardo M. Azevedo et al., Channel Auctions (August 5, 2019) (unpublished manuscript), *https://ssrn.com/abstract=3241744*.

stitutes the single “asset” for which they will enter a valuation in the online marketplace. This concern is unlikely to affect operating licenses, like our farmers' market example, but policymakers should keep this concern in mind.

Net asset value: To avoid double taxation, possessors can deduct the value of any mortgages or liabilities related to the asset from their self-assessment for the purposes of paying the self-assessed fee. Thus, possessors are taxed on the net value of the asset to them, but they must stand ready to sell at their listed valuation.[23]

Step 3: Purchasers who value the asset higher opt to buy in the online marketplace.

Notes:

→ **Valuation difficulties:** For goods that require inspection by the buyer, the purchaser could freeze the listed price and pay a small percentage to the seller in order to inspect it, before deciding whether to proceed.

→ **Turnover time:** A reasonable amount of time to turn the asset over will depend on the asset type.

→ **Asset maintenance:** To the extent that maintenance is required, it would be good to have an automated way to monitor maintenance and even subsidize (via reduced tax rate) positive investments made in the condition of the asset.

23 See page 65 in Eric A. Posner & E. Glen Weyl, Radical Markets (2018).

Pitfalls to avoid

Deciding how many units to allocate: Far and away, the most important risk with a SALSA is generating an artificial undersupply of a given service. Many kinds of services do not need to be restricted in supply — any entrepreneur who wants to provide them can try, and the public at large will benefit from the lower prices and innovation that come with robust competition. When supply is restricted artificially, license holders can earn higher profits by charging higher prices to customers for the scarce good or service. In urban settings, the effects of undersupply due to industry influence frequently hurt the poorest citizens.[24] It is therefore important to ensure that SALSA licensure does not become influenced by industry resulting in artificial undersupply.

Social equity reasons to allocate assets on a non-financial basis: There are many reasons why local governments may not want to allocate resources to those who value them most, related to cultural traditions and notions of fairness apart from willingness-to-pay. For instance, Washington, D.C. has a cultural tradition of go-go music, frequently performed and enjoyed by its lower-income, Black population. If the District decided to allocate a certain number of "street corner music performance" licenses via SALSA, this tradition might not be able to survive.[25] In fact, a situation like go-go music in D.C. may be better suited for quadratic voting (see chapter above), in which groups can democratically express their preference intensity.

24 For one example, see the following OECD report on the taxi industry, Taxi Services: Competition and Regulation, OECD (2007), *http://www.oecd.org/regreform/sectors/41472612.pdf.*

25 For a similar discussion, see, e.g., 'Don't Mute D.C.': Bill Aims To Protect Go-Go As District's Official Music, WBUR (NPR local station) (Jul. 1, 2019), *https://www.wbur.org/hereandnow/2019/07/01/go-go-music-washington-dc-gentrification.*

Legal issues: This document does not, and cannot, provide legal advice. State and local laws for auctioning public licenses vary widely by jurisdiction. In general, however, local governments are less likely to encounter obstacles to using SALSA for licenses to use government property (such as licenses to operate on city land). Moreover, local governments will often be on strong footing to use SALSA for licenses that have already been cleared for auction by a state legislature, and/or where the local government enjoys the unilateral power to increase license fees. However, local governments must ensure that particular applications of SALSA do not overstep limitations on their power to impose new taxes. This issue is most likely to arise when local governments sell licenses at high prices unrelated to the cost of providing the regulatory scheme, and/or when the revenues from a regulatory licensing scheme go into an unrestricted general fund, rather than being used on services related to the regulation scheme. You should always have your plans reviewed by qualified counsel.

Conclusion

Quadratic voting, quadratic finance, and SALSA are more than just clever, efficient mechanisms. We think they represent a step forward in our ability to manage common resources fairly, and to make complex decisions in groups. There is still a lot of tweaking and experimentation to be done — good governance is always a work in progress. But we hope you will take up the challenge to apply these ideas and help advance them.

We also want to help! The RadicalxChange Foundation is a willing resource to anyone looking to pilot these or related ideas. Similarly, the RadicalxChange movement has chapters and discussion groups all around the world — so there are likely people in your community interested in helping out. Visit us at *RadicalxChange.org* or reach out at *info@radicalxchange.org* to get connected.

THE HANDBOOK FOR RADICAL LOCAL DEMOCRACY

Authors
Matt Prewitt
Paul Healy

Graphic Design
Leo Kirincic
Marin Nižić

Contributors
Glen Weyl
Jennifer Morone

For further information, contact
Email: info@radicalxchange.org
Web: https://radicalxchange.org

This RadicalxChange publication is part of a larger effort by the RadicalxChange Foundation, Ltd. to provide open access to its research and make a contribution to economic policy discussions around the world.

RadicalxChange Foundation, Ltd., is a 501(c)(3) non-profit company incorporated and registered under the laws of the state of New York, USA. Registrar:, Secretary of State, State of New York.

The Data Freedom Act[1]

What's At Stake

The immense economic importance of data presents one of the most important policy challenges of our time. Yet to many, the nature of the problem remains opaque. The processes by which data gives rise to value differ from the processes by which value was produced in the 20th century. Therefore, traditional ways of thinking about property, investment, and productivity often serve us poorly in this context.

Yet we cannot afford to remain confused. Because data nearly always contains information about groups, communities, and networks (in addition to individuals), it cannot be treated as conventional personal property without leading to distortions and market failures. This difficulty has resulted in an imbalanced economy in which powerful private businesses wield inappropriate power over millions by harnessing their information.

The power dynamic regarding data mirrors our society's growing inequality. It is time for legislators to address the policy vacuum that has allowed millions to be denied their rightful share in the data economy.

When Value Comes From Network Effects, Who Owns the Network?

Data about people is always the output of a network of social activity. Even apparently "individual" data, such as a particular consumer's shopping habits or travel itinerary, is a product of the social world in which that person lives. For example, lists of items Jane purchases, and places she visits, also contain information about what her friends and family buy, and where they like to go.[2] As a result, data about individuals cannot be understood as "belonging" exclusively to those individuals.

---

[1] This draft proposal was assembled by RadicalxChange Foundation Ltd. with the volunteer help of more than 20 prominent academics, entrepreneurs, and activists, who participated in a multi-month research and brainstorming process. A final draft of the report will contain a full list of contributors.

[2] The Data Freedom Act is informed by a model of social, overlapping claims to data. This view of data, which challenges more familiar notions of individual data ownership, is echoed by top researchers in the fields of data privacy, security, and network economics. See, e.g., Delacroix and Lawrence, 2019, https://academic.oup.com/idpl/advance-article/doi/10.1093/idpl/ipz014/5579842; Benzell and Collis, 2019: http://ide.mit.edu/sites/default/files/publications/Multi-Sided%20Platform%20Strategy%2C%20Taxation%20and%20Regulation%20October%202019.pdf

Here are a few more examples, which illustrate why data belongs more properly to communities, groups, and networks, than to individuals:

- Genetic data: Whenever people reveal their own genetic data, they also reveal much about their family members.
- Social graphs: Every individual's social networking data, such as their contacts or friend lists, also contains important information about the social networks of those friends and contacts.
- Multiparty Records: Text or email conversations, group photos, calendar entries for meetings, and many other records of social life, record many peoples' activities--not only those of the person who chooses to reveal or exploit the records.
- Literally all data about every particular individual--what they ate for breakfast yesterday, what radio stations they like, and what diseases they have--can be combined with other public or private data to make better predictions about other people, especially their friends, family, and colleagues.

Thus, every person's data can compromise the privacy of others in his or her network.

Another interesting observation supports the idea that data really should belong to groups rather than individuals. Namely, "individual" data only acquires its vast financial value when combined with the data of other individuals, forming collective datasets.

In short, where a single person's data has little apparent utility, the combined data of many people can become exponentially more valuable. As the numbers of people increase, different individuals' datasets can "complement" one another, powering rich, reliable predictions and inferences--even about individuals and communities who never willingly shared any information about themselves.[3]

This simple insight--that data emerges from networks, and derives its value from network effects--is the key to understanding the problems of the data economy. Our traditional notions of individual property rights are a mismatch for data because, unlike most other kinds of property, people who decide to give data away cheaply very seriously affect the interests of others around them. Thus, a new economic model that imagines data as the property of larger groups and networks is necessary to restore fairness and user control.

[3] For more on data's increasing returns characteristics, see Li, Nirei, Yamana, 2019: https://www.rieti.go.jp/jp/publications/dp/19e022.pdf

We cannot afford to ignore this problem. It goes without saying that the power derived from data can be terribly abused.[4] And even short of obvious abuse, it can be used to influence consumer and citizen behavior in ways that raise much more serious concerns than the advertising techniques of the 20th century.[5] Even more significantly, machine learning and artificial intelligence techniques will improve exponentially, transforming large datasets into powerful instruments of social and political control.

Economic injustice also threatens. Imagine a machine learning algorithm that makes editing easy. Such a product could be worth billions, and it could undermine the job security of precisely those people whose data labor made it possible--that is, editors. Without meaningful change, the immense value of the data of millions of people will accrue exclusively to the few who succeed in winning the races to a handful of powerful new technologies.

Lawmakers' Options

It is difficult to imagine a future in which individuals or communities wrest back meaningful leverage, absent policy change. Large institutions have extremely durable advantages in gathering data and using it to train algorithms.[6] Lawmakers must address the situation.

But what would the ideal policy look like? Data-driven businesses, eager to avoid new rules, are busily promoting incremental changes to their practices.[7] Moreover, some privacy advocates fret that policies enhancing users' power to negotiate over their data will encourage them to hand yet more more information to big businesses.[8]

An ideal policy response would strike a flexible balance between the benefits of a robust data economy and the long-term interests of individuals and communities. Because the problem is so complex, it is a poor candidate for precise social planning: Market mechanisms must be harnessed to some degree to strike a satisfactory balance. However, no market mechanism will improve matters unless communities, groups, and networks acquire meaningful bargaining

---

[4] See Facebook's experiments affecting users' moods, https://www.theatlantic.com/technology/archive/2014/06/everything-we-know-about-facebooks-secret-mood-manipulation-experiment/373648/; Cambridge Analytica scandal generally; and Renee DiResta's work on political actors using social media campaigns to influence politics: https://www.ribbonfarm.com/2018/11/28/the-digital-maginot-line/, https://yalereview.yale.edu/computational-propaganda

[5] Research on Youtube and extremism helpfully summarized by Tristan Harris of the Center for Humane Technology: https://vimeo.com/332532972

[6] See Jaron Lanier on "Siren Servers" in *Who Owns the Future* and elsewhere.

[7] See, e.g., Google's 2019 policies: https://www.washingtonpost.com/technology/2019/05/07/google-vows-greater-user-privacy-after-decades-data-collection/

[8] See Elettra Bietti for more on the perverse incentive worry: https://ethics.harvard.edu/elettra-bietti-may-13-2019

power over their data interests. This is why we believe increased bargaining power should be the principal aim of any comprehensive new data policy.

Until now, concerned lawmakers have largely gravitated toward strengthening privacy protections as a means of helping consumers control their data.[9] This is an important step in the right direction. However, stronger privacy rules are only a half-measure--they do not address the deeper problems of the data economy.

Why Isn't Privacy Legislation Enough?

The legitimate interests that individuals and communities have in their data extend beyond privacy. There are at least two other kinds of important interests, which we might call "financial" interests and "control" interests. These can be infringed even when privacy is not.

Financial interests refer to the interests that individuals and communities have in the economic value of data pertaining to them. To illustrate, let us say that a number of people trade access to personal data for the use of a convenient digital service. That digital service then aggregates their individual data, generating a pooled dataset, insights from which can be sold for many times more than the summed value of the services provided to the individuals. Here, financial interests are being disserved. The community as a whole is getting a bad deal, even if no one involved has any privacy concerns.

Control interests in data refer to the interests of individuals and communities in determining the purposes for which information about them is used. Just as one might decline to work for an employer who behaves illegally or unethically, individuals and communities may wish to withhold their data from certain parties or purposes for any number of legitimate reasons. Again, this is true even if their data could be anonymized in such a way that no traditional privacy interests would be implicated.

Privacy legislation therefore cannot suffice. The interests that it protects do not exhaust the legitimate financial and control interests at issue. To see why, it helps to notice that privacy is a somewhat narrow, individualistic concept: Privacy interests are often closely held, only covering information likely to be held by an individual and his or her family and close friends. Financial and control interests, however, extend much further into social networks. Entire communities--geographic, cultural, professional, or otherwise--are jointly responsible for the creation of vast datasets that can only be appropriately managed by the community as a whole. Think, for example, of professional editors whose work goes into natural language editing algorithms; or genetic communities who wish to broadly disseminate information about hereditary diseases for research purposes, without letting it fall into the hands of discriminatory insurers.

---

[9] See, e.g., the GDPR. See also the California Consumer Privacy Act: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB375

Privacy is the wrong metaphor. Labor, though still not perfect, is a better one.

Why the Labor Metaphor?

No metaphor is perfect, but it is useful to consider the parallels between peoples' interests in their data and workers' interests in their labor.

Laborers have *de facto* financial and control interests. They may negotiate a share in the fruits of their labor, and may withhold their labor from anyone they do not wish to serve.

Yet, historically as today, those interests are undermined when large numbers of laborers must negotiate on an individual basis against a relatively small number of powerful employers.[10] Labor unions arose a means of rebalancing the distortions caused by such market concentration. When they work properly, unions transform exploitative, failing labor markets into fair negotiating environments.

The current bargaining situation between Data Producers (ordinary citizens of the digital world) and Data Buyers (digital platforms, advertisers, and the like) constitutes a market failure. This is evident, for example, in the practical impossibility of simple market behaviors such as avoiding the use of particular digital services; and renegotiating contracts such as privacy policies on an individual basis. It is also evident in analyses showing that the owners of large social networks (such as Facebook) destroy far more value for others than they capture for themselves through their various monetization interventions, such as targeted advertising.[11]

Basic features of a fair marketplace--and others such as widely-shared ownership in platforms, and meaningful opt-out possibilities--will become thinkable only when data interests become the subject of collective bargaining.

The Case for Data Cooperatives

The idea of creating intermediaries with legal fiduciary duties to shield ordinary people from the vicissitudes of the data economy has a somewhat controversial history. Proponents see it as accomplishing some combination of the following goals:[12]

---

[10] See Azar, Marinescu, and Steinbaum on the effects of labor market concentration: http://www.marinescu.eu/AzarMarinescuSteinbaum.pdf

[11] Benzell and Collis, 2019: http://ide.mit.edu/sites/default/files/publications/Multi-Sided%20Platform%20Strategy%2C%20Taxation%20and%20Regulation%20October%202019.pdf

[12] See Delacroix and Lawrence, 2019, https://academic.oup.com/idpl/advance-article/doi/10.1093/idpl/ipz014/5579842; Lanier and Weyl, 2018 https://hbr.org/2018/09/a-blueprint-for-a-better-digital-society

- Establishing reliable advocates for individuals' data interests, analogous to legal or financial fiduciaries
- Leveraging market forces to help reveal the value of a complex, hard-to-value asset (i.e., data)
- Empowering and incentivizing entrepreneurs to think creatively about how to advance the data interests of individuals and communities
- Bolstering the bargaining power of individuals and communities, as a counterweight to the network-effect-driven market power of digital platforms

Others, however, worry about unwanted consequences including:[13]

- Creating a perverse incentive (either for all people, or for the most vulnerable in particular) to sell more data and accept more surveillance by private businesses
- Creating profit-motivated data intermediaries that exploit individuals just as much as status quo businesses
- Technical challenges in data custody and processing
- Unfair situations in which some people are in a position to wrongly profit from the value of other peoples' data

Here, we have made an effort to map the problem space and sketch a fairly detailed solution. Our proposal takes seriously the worries above, and robustly addresses them. We envision a new class of business entities, called Data Cooperatives, which would:

- owe strict duties to the individuals and groups who join them;
- have special exemptions from a new set of rules regarding the treatment of data; and
- be regulated by a new body called the Data Relations Board.

The aim is for Data Cooperatives to benefit individuals and communities by affording them dramatically increased bargaining power. Such bargaining power could be used, first, to receive a fair share of income generated from data pertaining to them, but also--at least as importantly--to protect their privacy and control how their data is used by others. The legislation attempts to preclude various possibilities that could lead to "races to the bottom" between Data Cooperatives, or that could enable businesses to undermine or circumvent Data Cooperatives. And it builds in sufficient flexibility for technical challenges to be addressed. Given the complexity of the subject matter, certain issues must be addressed by subsequent regulation. However, this proposal embodies a comprehensive effort to sketch in substantial detail a legislative framework that could serve as the basis for a fairer data economy.

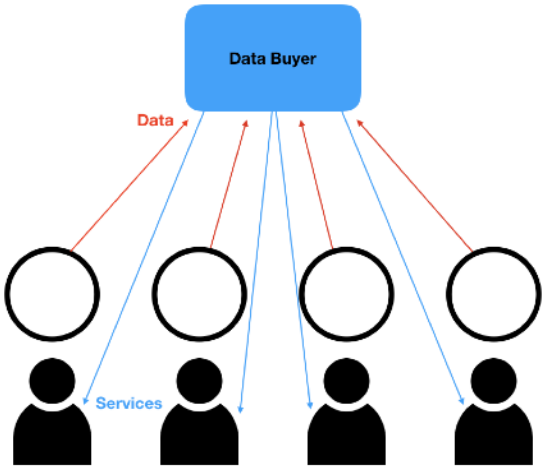
---

[13] See Bo Waggoner surveying various relevant views: https://www.bowaggoner.com/blahg/2019/04-28-data-is-capital/index.html

Improving the Bargaining Situation

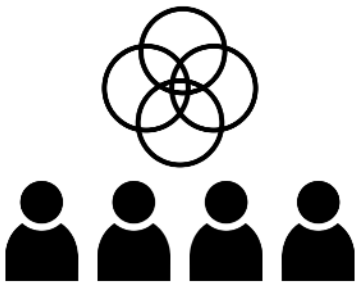
To understand the aim of the legislation, it is useful to reflect upon the reasons Data Producers are in such a difficult bargaining position today, and the unique challenges posed by bargaining for data.

We typically think of data like the picture above. Different people have different, distinct sets of data (represented by the circles above their heads). These people exchange their data with data “buyers” such as apps and platforms, which repay them with free or low-cost services, as below:



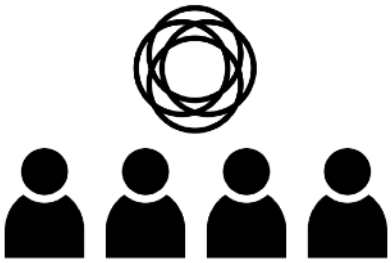
What's wrong with this picture? Why doesn't it depict a fair transaction? After all, even though there are relatively few Data Buyers compared to Data Producers (people), the Data Buyers are in intense competition with one another.

The answer is that the picture above is fundamentally misleading. It misunderstands the nature of data itself, and the time has come to discard it as a model of the data marketplace. In reality people don't have distinct, hermetically-sealed datasets. Rather, they have overlapping ones, like this:

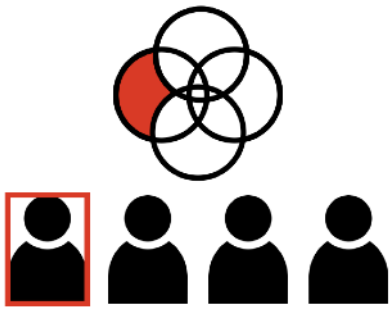


In fact, the closer people are to one another in a social network, the more heavily their datasets overlap. They contain many data points that are literally the same, such as the record of an email exchange between multiple parties, or common photographs of a group. The amount of

such concurrence is higher between people who are close to one another socially. Thus, the closer people are to one another socially, the more heavily their datasets overlap, like this:

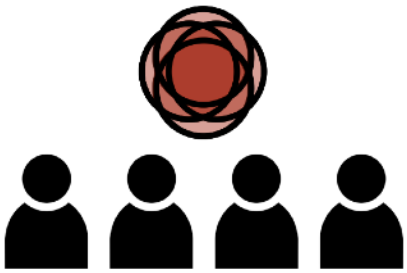


The phenomenon of overlapping datasets means that individuals have much less bargaining power than it might seem. If one person decides they don't like what they are getting for their data, they can't withhold anything like the entirety of their dataset--because they can't stop others from revealing large swathes of their data. Rather, the data an individual can withhold--and thus the extent of their practical bargaining leverage--is limited to their unique data:



This unique slice, of course, gets smaller as the network grows. And the problems do not stop there. Because, as suggested above, each individual's data actually contains information about other individuals *which those other individuals' datasets do not themselves contain*. Suppose, for example, that nothing in my medical history suggests a high cancer risk. But if many of my

family members have had cancer disease, it is far more likely that I will suffer from it as well. This means that the most heavily overlapping sections of the collective dataset are in fact the most data-rich parts *for each individual*. The middle parts of the Venn diagram are *the most valuable parts*, which yield the strongest predictions. And yet these are precisely the sections for which no individual can effectively bargain.



This explains why the debate about whether the financial returns to data increase or decrease with scale is not straightforward.[14] Data--especially data about people--has aspects of both increasing and decreasing returns that cannot be easily teased apart.

In many respects, Data Producers are now suffering the worst of both worlds. Their bargaining leverage--and their ability to defend their data interests--seems to reflect a decreasing returns scenario, in which their unique marginal data points constitute their only leverage. Yet, personal data has obvious applications whose value increases nonlinearly with scale, at least over certain unknowable intervals.[15] Businesses collecting data at scale capture the entirety of those rich pockets of value, cutting Data Producers out of the bargain.

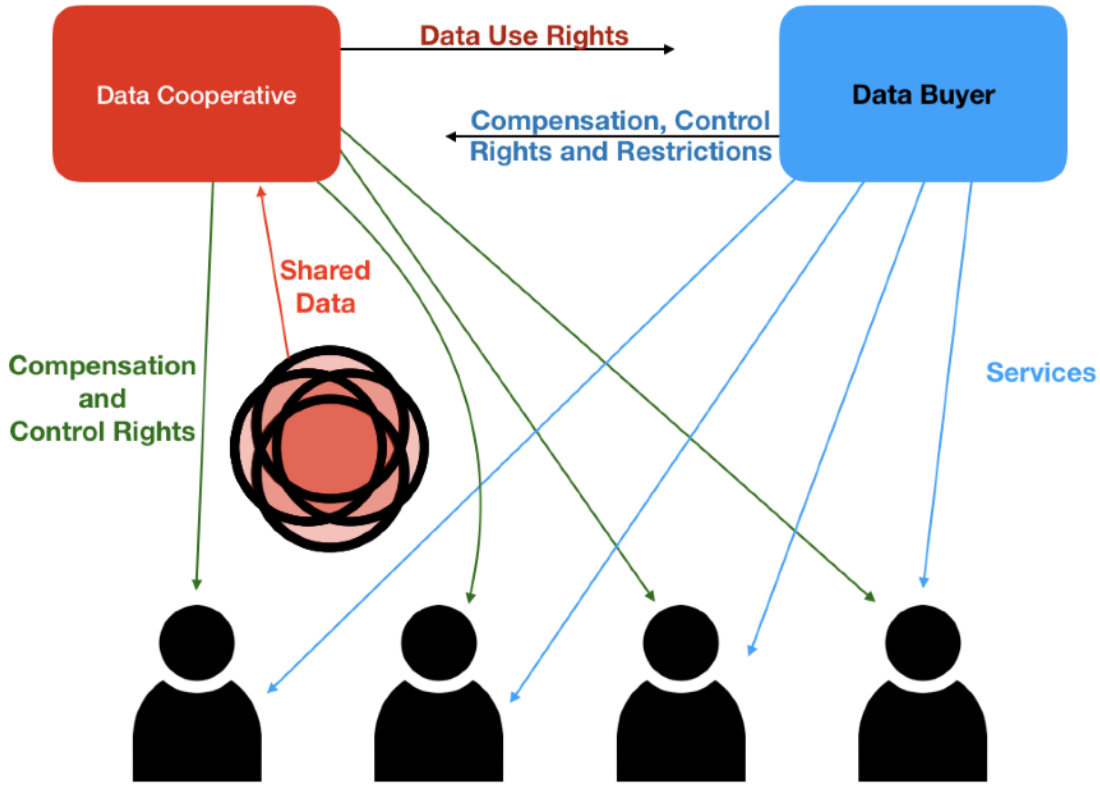
Moreover, the overlapping nature of people's interests in data means that a market in which individuals act as distinct bargaining units will always fail. In essence, each individual infringes the interests of each other one when she contracts bilaterally with a Data Buyer.

---

[14] See Google economist Hal Varian's presentation on this issue: http://www.learconference2015.com/wp-content/uploads/2014/11/Varian-slides.pdf; see also see Li, Nirei, Yamana, 2019: https://www.rieti.go.jp/jp/publications/dp/19e022.pdf

[15] Id.

A collective bargaining system could squarely address each of these problems by interposing Data Cooperatives that take account of their Members' overlapping interests. Below is a sketch of the architecture this legislation envisions:



The figure above depicts what collective bargaining through Data Cooperatives would look like. By assigning large swathes of data, flowing from many parties, to a Cooperative with strong fiduciary duties, Data Producers would be able to bargain for the true, collective value of their data.

An Overview of the Proposed Legislation

The Data Relations Board

The Data Freedom Act would create the Data Relations Board, a quasi-judicial administrative body, in order to adjudicate disputes arising under the Act and promulgate rules clarifying it. Modeled upon labor relations boards, it would play an important role interpreting the Act and helping it evolve with a changing technological environment.

Defining Data Cooperatives

Data Cooperatives would be a new class of legislatively defined business entity, either for profit or non-profit, and subject to a strict set of rules governing their operation.

In essence, they would be collective bargaining entities that ordinary natural persons--Data Producers--could interpose between themselves and businesses that collect or use their data. The method of this interposition is simple. Data Producers would award exclusive rights to use all or some of their data to Data Cooperatives, thus becoming "Members". Having done this, other businesses ("Data Buyers" or "Non Data Cooperative Businesses") would be required to negotiate with the relevant Data Cooperative in order to collect, maintain, or commercially exploit those Data Producers' data. The Data Cooperative would thus step into its Members' shoes as the party qualified to negotiate privacy policies, terms of use, and other data-related contracts with Non Data Cooperative Businesses.

A Data Cooperative's rights to a Data Producer's data would simply be defined contractually. For example, Data Producer X might assign to Cooperative Y the exclusive right to all interests in the data produced by her web browsing activity. This expansive assignment, having been made and publicly registered, would preclude any third party Z from directly collecting data about X's browsing activity, without Cooperative Y's permission. In other words, the Act would statutorily shift the enforcement burden from Data Producer X, to third party Z, to respect X's exclusive assignment of rights to Cooperative Y.

As mentioned, Data Cooperatives would be required to operate according to a strict set of rules and fiduciary duties. These include duties to:

- submit certain decisions to Member votes;
- under certain circumstances, share revenues and control rights with other Data Cooperatives;
- "watermark" data transmitted to third parties, so that the third parties may have ready evidence that their data is lawfully obtained;
- transmit a certain portion of its profits to Members;
- treat all members and prospective Members fairly;
- never sell shares of the company to Non Data Cooperative Businesses;
- never enter into certain anti-competitive agreements with third parties;
- make all data pertaining to Members available for those Members to port to other Data Cooperatives using convenient, industry-standard methods;
- never enter into contractual agreements with Members that exceed six months;
- never sell to third parties a permanent right to use any Member data; and
- negotiate meaningful and proportionate future interests in any products or lines of business created by third parties using Members' data.

Below, several of the key provisions are explained in greater detail.

Democratic Governance of Cooperatives

1. *Data Cooperatives shall make available to Members a convenient means to submit private votes from time to time.*
2. *Data Cooperatives shall allocate at least one-third of the seats on their board of directors or equivalent governing body to representatives chosen by Members, and who shall be up for reelection at least once per year. This requirement shall not apply to Data Cooperatives that are sole proprietorships.*
3. *Data Cooperatives cannot take certain actions without prior approval by Members, secured through a democratic process. Conversely Data Cooperatives must take these actions if Members have demanded them by a democratic process. The actions are:*
    a. *Changes to the Data Cooperative's Statement of Purpose.*
    b. *Boycotting a Non Data Cooperative Business.*
    c. *Ending a boycott of a Non Data Cooperative Business.*
    d. *Entering into or terminating a major agreement with a third party that will materially impact some or all users.*

In order for Data Cooperatives to have the leverage to effectively bargain on behalf of large groups of Members, they would need the power to bind Members to decisions with which some Members disagree. Therefore, certain safeguards need to be in place. Not all of those safeguards are in the provision excerpted above--for example, other provisions limit potential harm by requiring Data Cooperatives never to permanently sell any Member's data, and forbidding contracts that prevent Members from being bound to a Cooperative for more than six months (see draft legislation below).

Nonetheless, just as labor unions must obtain the consent of members before calling a strike, Data Cooperatives must obtain democratic Member consent before calling a data boycott that could disrupt Members' lives by cutting off access to private services, or taking other actions that could alter the fundamental bargain between Data Cooperatives and Members.

Control and Profit Sharing Between Cooperatives

1. *Where two or more Data Cooperatives possess concurrent rights to data which is significantly overlapping in its content, and which pertains to Members of the different Cooperatives, each of the relevant Data Cooperatives has a claim upon the use of such data. They may exercise their rights as follows:*

a. *The most-restrictive rule governing the use of the data, which is embodied in the Statement of Purpose of a relevant Data Cooperative, and where the relevant Members of that Data Cooperative and other relevant Data Cooperatives who have more-restrictive rules shall total at least 25% of the relevant Members, shall limit the use of the data.*
b. *Subject to (i), a majority of relevant Members, acting through votes or through negotiating rights delegated to their Data Cooperatives, shall have the power to prevent any less-restrictive or less-privacy-preserving uses of the data by any other Data Cooperative.*
c. *All Data Cooperatives with relevant Members shall have a proportional right to revenues earned by other Data Cooperatives through the use of the data.*

One of the most important possible failure modes for this system of Data Cooperatives is a "race to the bottom" dynamic, in which some Data Cooperatives could undermine the leverage of others by offering unreasonably favorable terms to Data Buyers.

To see why, imagine a small group of socially-connected Data Producers--such as a family. A majority of the family wishes to maintain a very high standard of privacy, or monetize their data only under extraordinary circumstances, and has joined a Data Cooperative that pursues those priorities. However, one troublesome brother has joined a different Data Cooperative that readily looks to convert data into income streams.

The troublesome brother might spoil things for the rest of the family. By making his personal data available to paying customers, he divulges much about the rest of the family's data, such as where they vacation, their approximate level of wealth, their probable tastes in various consumer items, their race, their likely vulnerability to certain diseases, and much more. They therefore cannot maintain their privacy. And, should they wish to sell access to their data, they could not get a fair market price--because a large part of their information could be gotten by proxy, through a deal with the troublesome brother's Data Cooperative.

To prevent this kind of scenario from spoiling the entire scheme, Data Cooperatives need to be able to make claims upon one another. The Data Cooperative representing the majority of the impacted Data Producers must be able to enjoin the Cooperative representing a minority interest from exploiting the overlapping data on more permissive terms. Thus, if a democratically determined majority of Data Producers wish to keep an overlapping dataset private, it must be kept private, even if this impacts multiple Data Cooperatives. Moreover, if a

majority accepts a certain degree of privacy loss in exchange for payment, the payment must be fairly divided between all Cooperatives representing relevant Data Producers.

Notably, these inter-Cooperative claims should not be decided on a strictly majoritarian basis. Certain kinds of strong interests--for example, highly sensitive privacy interests--should be able to outweigh even a strong majority interest in monetizing data. Data Cooperatives, then, must have clear lines of communication with one another, and a well-developed framework for working together actively to craft equitable solutions. Disputes that inevitably arise between them would be refereed by the Data Relations Board, which would play an important role in developing relevant rules and jurisprudence.

No Permanent Data Alienation; Ongoing Interest Requirements

1. ***Permanent Data Sales Prohibited.*** *Data cooperatives may not permanently sell any data, or rights to use, access, or possess any data to any third party. All agreements to sell data, or rights to use, access, or possess data, must:*
    a. *be time-limited, with a period of no more than one year;*
    b. *require deletion by the third party at the end of the time period;*
    c. *prohibit the third party's maintenance of the data after the time period in any form from which the initial data may be significantly reconstructed; and*
    d. *negotiate a meaningful and proportionate future interest in any products or services depending upon the data, as detailed in [section XYZ below].*
2. ***Requirement to Negotiate Meaningful and Proportionate Ongoing Rights.*** *Where Data Cooperatives make agreements permitting third parties to use data to construct algorithms; train machine learning or artificial intelligence technology; build statistical or computational models; or otherwise build any product, service, or tool through the use of the data that will continue to exist after the third party's right to use, access, or possess the original data has expired, the Data Cooperative must retain certain ongoing rights. These ongoing rights must:*
    a. *include rights to meaningfully influence or control the present and future uses of such products, services, or tools, and to share in the revenues derived from them; and*
    b. *such rights must be reasonably proportionate, taking into account both the possible value to the third party of the ongoing product, service, or tool, and its possible implications for Members' interests.*

This section of the legislation represents perhaps the largest departure from existing law.

The first provision would forbid any Data Cooperative from selling a permanent or absolute right to use or maintain any data obtained from them. Accordingly, all “sales” of data by Data Cooperatives would really be time-limited “leases” lasting no more than one year.

This is, in certain respects, the core of the legislation. Without it, the bargaining power of all Data Cooperatives would be undermined by a secondary market in which data sold by the least protective cooperative would be resold by its purchaser, thus eliminating the ability of all other Data Cooperatives and their Members with an interest in that data to protect it or benefit from it.[16]

The second provision, concerning ongoing interests, closes a loophole in the first provision. A crucially important use of data is its use in training machine learning algorithms or artificial intelligence systems. Such systems, which are often highly opaque, can extract and retain much of the use-value from data even after the original data itself has been deleted. This provision requires all Data Cooperatives to be cognizant of that reality. It imposes upon them a duty to negotiate “reasonably proportionate” financial and/or control interests in any and all outputs of data, including machine learning algorithms or artificial intelligence systems, even when those outputs outlast the actual data.

Anticipated Objections

Isn’t there a principal-agent problem between Data Producers and Data Cooperatives?

In every field where principals give agents special access or sensitive information--such as legal representation, or money management--agents are in a position to exploit principals. Data Cooperatives are no exception. This legislation takes pains to mitigate these inherent conflicts using a mixture of Member “exit and voice”, and hard-coded fiduciary responsibilities.

---

[16] Data use that preserves differential privacy to a reasonable degree, and/or precludes secondary markets is neither unprecedented nor unfeasible. RIPL.org’s platform, which provides research access to sensitive government information, without abridging government’s ownership of the data, is just one example.

First, no Data Cooperative is permitted to contract with any Data Producer for a period of longer than six months.[17] This combined with strict data mobility requirements[18] means that at least every six months Data Producers have the opportunity to abandon Data Cooperatives with which they are not satisfied.

Second, as detailed above, a number of crucial decisions by Data Cooperatives must be directly ratified by Member vote.[19]

Third, the legislation erects several rules that combine to incentivize Data Cooperatives to grow by adding additional Members--that is, to improve the terms of the bargain--rather than to increase profits by more aggressively monetizing the data of existing Members. First, Data Cooperatives that decide to severely restrict new membership are likely to expose themselves to more claims of undermining the interests of other Data Cooperatives. Second, Data Cooperatives must remit at least 80% of their revenues after costs to Members—except that Cooperatives with larger numbers of Members may be permitted to retain a higher portion of revenues. This incentivizes Cooperatives to seek growth in Membership numbers, instead of growth in per-Member profits.

Doesn't this encourage people to accept more private surveillance?

This legislation would increase Data Producers' leverage to pursue whatever priorities they choose. Some Data Cooperatives would likely pursue monetization and seek to sell significant access to Member data. However, businesses seeking to use such data would have to pay for it more dearly than they do today, and Data Producers would receive far more value in exchange.[20]

Other Data Cooperatives would prioritize privacy and control interests. Data Producers could readily choose to join those Data Cooperatives, and protect their data far more effectively than is currently feasible.

We believe Data Producers must be allowed to sacrifice privacy for money, within certain limits. The legislation restricts only their ability to undermine the privacy or bargaining power of other Data Producers.

---

[17] Data Freedom Act, Section 1(E)(vi).

[18] Data Freedom Act, Section 1(G).

[19] Data Freedom Act, Section 1(F).

[20] Such value would not be limited to cash--it would also include ongoing equity interests. See Data Freedom Act, Section 1(N) on "Meaningful and Proportionate Ongoing Rights".

Doesn't this commodify data?

This legislation seeks to strike an elegant balance between commodification and other values.

In the present economy, data is already a commodity--and a very dysfunctional one. This legislation, especially in light of the all-important restriction on permanent data sales, surely decreases the extent to which data may be treated as a pure commodity by erecting barriers before businesses that would seek to cheaply collect and exploit data. Without halting or banning the information trade, it enables individuals and communities to safeguard their data, or sell it much more dearly--even if that means disrupting business as usual for data-harvesting economic actors.

Wouldn't it be simpler to just tax Data Buyers?

A well-designed tax could improve upon the status quo. However, a Data Cooperative ecosystem would accomplish several positive things that a new tax regime could not.

First, Data Cooperatives would serve as the collective bargainers for large groups of individuals, stepping into their shoes for purposes of negotiating privacy policies, terms of service, and other complex consumer contracts. This would help address the notorious problem of unreadable, incomprehensible "click-wrap" agreements--one of the most troublesome market failures of the digital economy.

Second, Data Cooperatives would serve as incentive-aligned, professional advocates for their Members' interests in a complex environment. The assistance of an informed fiduciary, who stands to profit by better serving consumers, could lead to creative solutions balancing privacy, monetization, and other interests. Individuals with limited information and narrow interests; and policymakers attempting to understand the values of entire populations, are both poorly-positioned to devise such creative solutions.

Third, and perhaps most importantly, Data Cooperatives would drive a market-based process by which Data Producers efficiently configured themselves into the interest groups that best match their interests. This elaborate sorting of individuals into interest groups is an exceedingly complex problem that governments are ill-equipped to solve. If a government tried, for example, to advocate for all consumers at the same time (e.g., through a tax), then politically less-influential minority interest groups would see their interests overwhelmed by majority interests. A Data Cooperative system would uniquely facilitate the emergence of dynamic balance of complex interests.

Wouldn't this increase inequality between people with more and less valuable data?

It is true that this legislation would permit some people to receive more compensation than others for the value of their data. It is not clear how large these differences would be, or whether they would track existing inequalities.

The primary effect of the legislation, however, would be distinctly egalitarian. Namely, it would convert capital income (enjoyed by the shareholders of companies in a position to exploit the value of data) into labor income (enjoyed by the providers of the data). This would constitute a very real limit on the ability of the wealthy few to capture the value generated by the data economy.

Conclusion

Data, especially data about people, is not a traditional personal asset, because many parties have shared, overlapping legitimate interests in it. Because our present legal framework does not treat data as a shared asset, individuals are unable to vindicate their legitimate interests in controlling its use, profiting from it, or keeping it private.

This legislative proposal aims to erect a reasonable system for managing these shared interests in data. It would establish tightly regulated collective bargaining entities, called Data Cooperatives, which would pursue their Members' varying interests from a vastly better bargaining position. It would establish fiduciary and other duties governing those Cooperatives. It would require democratic Member control over key aspects of Cooperatives' conduct. It would enable Data Cooperatives to make special claims against one another to prevent a "race to the bottom" in which some undermined the interests of others. And it would establish a Data Relations Board to adjudicate the complex issues arising under these rules, and to ensure that the framework evolved with a changing technological landscape.

This framework is intended to strengthen the hand of participants in the digital economy who currently have no meaningful leverage behind their efforts to protect their privacy, control the uses of their information, or share in the profits that they co-create. We hope it will be a step in the right direction.

Data Freedom Act -- Draft Legislation

This bill would enact the Data Freedom Act of 2020. It would establish a new class of regulated entity called Data Cooperatives, whose purpose is to work on behalf of Data Producers to help them protect their privacy, control how their data is used by others, and receive a share of income generated from data pertaining to them.

The bill would impose certain duties upon Data Cooperatives, including a duty to submit certain decisions to Member votes; a duty to “watermark” data transmitted to third parties; a duty to transmit a certain percentage of its per-Member profits to Members; a duty not to sell shares of the company to Non Data Cooperative Businesses; a duty under certain circumstances to share revenues and control rights with other Data Cooperatives; a duty not to sell to third parties a permanent right to use any Member data; a duty not to enter into certain anti-competitive agreements with third parties; a duty to make all data pertaining to Members available for those Members to port to other Data Cooperatives using convenient, industry-standard methods; a duty to limit compensation differences between Members; a duty not to discriminate against prospective Members; a duty not to enter into contractual agreements with Members that exceed a certain duration; and a duty to negotiate meaningful and proportionate future interests in any products or lines of business created by third parties using Members’ data.

The bill would impose certain duties on businesses other than Data Cooperatives, including a duty to make all the data they hold pertaining to citizens of this jurisdiction available to be ported to Data Cooperatives using convenient, industry-standard methods; a duty to negotiate contractual policies relating to privacy and data with Data Cooperatives; a duty to refrain from entering into agreements with Members of Data Cooperatives that contradict the terms agreed to with their Data Cooperatives; and a duty not to retaliate or discriminate against persons for joining Data Cooperatives.

The bill would establish a Data Relations Board which would adjudicate disputes arising under the provisions of this bill.

1) **<u>The legislature finds and declares that:</u>**

a) Powered by relatively recent advances in technology, the data economy has unleashed tremendous productivity, improved the lives of many, and has the potential to further benefit countless individuals, communities, businesses, and fields of endeavor.

b) However, the data economy's rapid development also has eroded individuals' ability to defend certain vital interests, such as their right to privacy. [Preexisting privacy legislation] represents an attempt to restore individuals' ability to maintain their privacy.

c) In many cases, when ordinary individuals transmit data to businesses, they either do so unwittingly or because they have no practical choice. It is not possible for most individuals to read and understand the privacy policies that govern their everyday activities, and even if they could read and understand them, it would be practically impossible either to renegotiate those policies or to consistently avoid using services with unsatisfactory ones. Many central aspects of social and economic life cannot be participated in without using certain services, and many individuals do not have a realistic option of foregoing participation in those aspects of social and economic life because of their dissatisfaction with particular services' privacy policies or data use practices.

d) Certain concerns about the consequences of the data economy go beyond privacy. For example, data about individuals and communities now represents a vital ingredient in the provision of goods and services, not only to those individuals and communities but also to third parties. Businesses depending on the sale or use of such data have disrupted large sectors of the economy and gained trillions of dollars in value. Yet the individuals and communities who provide the data, or allow it to be collected, or who are impacted by its surreptitious collection, have not benefited in a proportionate manner from that economic activity.

e) Individuals' data enables their behavior to be affected by advertisers or other third parties armed with sophisticated analyses of their behavioral patterns. Individuals have a legitimate interest in reducing the degree to which third parties can affect their behavior in this way.

f) The highly concentrated and unequal participation in the value generated by data has contributed to high and growing levels of inequality.

g) The paradigm of "personal data" cannot comprehensively address the challenges of the data economy. This is because data is frequently interpersonal. Information pertaining to one person frequently also pertains to other people in their family, community, or network. Therefore, any system formalizing individuals' interests in their data must take into account data's social and interpersonal characteristics.

h) Therefore, it is the intent of the legislature to establish a legislative and regulatory framework within which individuals can effectively work together to defend their legitimate interests. This bill would:

   i) Establish a new class of regulated entity called Data Cooperatives, to which ordinary individuals ("Data Producers") could assign certain rights to use some or all of their data (thus becoming "Members" of the Data Cooperative);

   ii) Impose certain duties and responsibilities upon Data Cooperatives to prevent abuse and align their incentives with Members;

   iii) Impose certain duties on businesses other than Data Cooperatives in order to enable Data Cooperatives to effectively represent and defend their Members' interests.

   iv) Establish a Data Relations Board to promulgate rules and adjudicate disputes arising under the terms of this bill.

2) <u>Data Cooperatives:</u>

1. Establishing Data Cooperatives

Data Cooperatives are established as a new class of business entity with special duties, rights, and features, as defined in this Section.

a. **For Profit or Nonprofit.** A Data Cooperative may be organized as any for-profit or non-profit entity, partnership, or sole proprietorship that would otherwise be authorized to do business, and whose form does not prevent it from operating as prescribed in this Section.

b. **Registration and Disclosure Requirement.** Every Data Cooperative must register with the Data Relations Board, providing such information as the Board may deem necessary to initially certify and periodically renew its right to operate as a Data Cooperative. Further, Data Cooperatives must maintain an up-to-date record with the Data Relations Board, which shall be made accessible to the

public, sufficient to inform the public of the nature and extent of the rights and interests that each Member has assigned to the Data Cooperative.

c. **Independence Requirement.** A Non Data Cooperative Business may not own shares or possess any other form of beneficial or control interests in a Data Cooperative.
d. **Restrictions on Income From Other Activities.** A Data Cooperative may not earn more than 10% of its income in a calendar year from business activities other than representing its Members' data interests. Membership fees and revenue from training courses or other data-related services offered to Members fall within the scope of representing Members' data interests.
e. **Contracts Between Data Cooperatives and Members**
    i. **Statement of Purpose.** Every Data Cooperative must maintain a clear and concise Statement of Purpose, which shall be incorporated into the contract between a Data Cooperative and its Members, and which explains the essential aims and priorities it pursues on behalf of all of its Members. It shall articulate, among other things, the principles that guide its decisions, and the tradeoffs that it may occasionally make between defending its Members' privacy, monetizing their data, exerting control over downstream uses of their data, and other important Member interests.
    ii. **Uniform Contracts.** A Data Cooperative must offer the same contract to all Members and prospective Members during the same period of time.
    iii. **Limits on Member Compensation Differences Within Cooperatives.** Data Cooperatives must enact a policy defining maximum differences in the rates of compensation between Members during the same time period. This policy must be susceptible to periodic change through a democratic process.
    iv. **Nondiscrimination.** A Data Cooperative shall publish clear, non-discretionary membership eligibility criteria, and shall accept as a Member any Data Producer who meets them. No Data Cooperative shall discriminate on the basis of race, sex, religion, sexual orientation, national origin. Furthermore, no Data Cooperative shall discriminate on the basis of past, present, or future membership in any other Data Cooperative, or other anti-competitive grounds. The Data Relations Board shall have broad authority to enumerate new categories of impermissible discrimination on public policy grounds.

v. **Assignment of Negotiating Rights.** Members of a Data Cooperative may assign to a Data Cooperative a contractually defined licenses to represent their interests relating to some or all of the data that they generate or have generated other than in clear view of a broad public; for example by reaching bilateral contracts or agreements with Non Data Cooperative Businesses that do not otherwise conflict with this Section.

vi. **Time Limits for Member Contracts.** No contract between a Data Cooperative and a Member shall bind the Member for more than six months.

vii. **Membership in Multiple Data Cooperatives.** Data Cooperatives and Members may negotiate the terms under which Members shall be permitted to be simultaneous members of multiple Data Cooperatives. Data Cooperatives may not contractually impede Members' ability to join other Data Cooperatives after their Membership has ended, or discriminate or retaliate against prospective Members on the basis of their past, present, or future Membership in other Data Cooperatives.

f. **Member Control of Data Cooperatives.**

i. Data Cooperatives shall make available to Members a convenient means to submit private votes from time to time.

ii. Data Cooperatives shall allocate at least one-third of the seats on their board of directors or equivalent governing body to representatives chosen by Members, and who shall be up for reelection at least once per year. This requirement shall not apply to Data Cooperatives that are sole proprietorships.

iii. Data Cooperatives cannot take certain actions without prior approval by Members, secured through a democratic process. Conversely Data Cooperatives must take these actions if Members have demanded them by a democratic process. The actions are:

1. Changes to the Data Cooperative's Statement of Purpose.
2. Boycotting a Non Data Cooperative Business.
3. Ending a boycott of a Non Data Cooperative Business.
4. Entering into or terminating a major agreement with a third party that will materially impact some or all users.

iv. Data Cooperative Members must have a reasonable ability to initiate votes or equivalent democratic processes from time to time, in which Data Cooperative policies may be adjusted or other actions may be demanded.

g. **Data Portability Requirement.** Data Cooperatives shall make possible convenient, live, two-way, industry-standard programmatic access to all data covered by Cal. Civ. Code Sections 1798.110 and 1798.115 [the CCPA]. Subject to the Data Producer's agreement with the Data Cooperative, as well as to the other provisions of this Section, Data Cooperatives shall make possible such programmatic access of a Data Producers' data to other specified Data Cooperatives, upon verified request by the Data Producer.

h. **Reasonable Per-Member Profits.** All Data Cooperatives shall report their financial information yearly to the Data Relations Board. The Data Relations Board shall ensure that, absent a compelling reason to do otherwise, the Data Cooperative is remitting at least 80% of its income after expenses to its Members. Data Cooperatives with larger numbers of Members may be permitted, pursuant rules to be promulgated by the Data Relations Board, to remit lower percentages of such income to Members, but in no case less than 65%.

i. **Watermarking Data.** Data Cooperatives shall be required to use industry-standard technology to cryptographically "watermark" any Member data that comes into their care, and to subsequently maintain a chain of provenance on all data in their possession, so that all such data may be verifiably traced to its public or Member sources.

j. **Exclusivity.** Data Producers may assign rights to data to more than one Data Cooperative. But Data Producers shall not intentionally assign conflicting rights to data to more than one Data Cooperative, and Data Cooperatives shall not knowingly accept assignment of such rights to data.

k. **Shared Revenue And Control Rights Between Data Cooperatives For Overlapping Data.** Where two or more Data Cooperatives possess concurrent rights to data which is significantly overlapping in its content, and which pertains to Members of the different Cooperatives, each of the relevant Data Cooperatives has a claim upon the use of such data. They may exercise their rights as follows:

    i. The most-restrictive rule governing the use of the data, which is embodied in the Statement of Purpose of a relevant Data Cooperative, and where the relevant Members of that Data Cooperative and other relevant Data Cooperatives who have more-restrictive rules shall total at least 25% of the relevant Members, shall limit the use of the data.

ii. Subject to (i), a majority of relevant Members, acting through votes or through negotiating rights delegated to their Data Cooperatives, shall have the power to prevent any less-restrictive or less-privacy-preserving uses of the data by any other Data Cooperative.

iii. All Data Cooperatives with relevant Members shall have a proportional right to revenues earned by other Data Cooperatives through the use of the data.

l. **Certain Anti-Competitive Agreements Prohibited.** Data Cooperatives are prohibited from entering into agreements with third parties including Non Data Cooperative Businesses where the agreement aims to restrict the Data Cooperative's ability to do business with, or impede its Members' ability to use the services of, any Non Data Cooperative Business or Businesses.

m. **Permanent Data Sales Prohibited.** Data cooperatives may not permanently sell any data, or rights to use, access, or possess any data to any third party. All agreements to sell data, or rights to use, access, or possess data, must:

i. be time-limited, with a period of no more than one year;

ii. require deletion by the third party at the end of the time period;

iii. prohibit the third party's maintenance of the data after the time period in any form from which the initial data may be significantly reconstructed; and

iv. negotiate a meaningful and proportionate future interest in any products or services depending upon the data, as detailed in [section XYZ below].

n. **Requirement to Negotiate Meaningful and Proportionate Ongoing Rights.** Where a Data Cooperative makes an agreement permitting a third party to use its data to construct algorithms; train machine learning or artificial intelligence technology; build statistical or computational models; or otherwise build any product, service, or tool through the use of the data that will continue to exist after the third party's right to use, access, or possess the original data has expired, the Data Cooperative must retain certain ongoing rights. These ongoing rights must:

i. include rights to meaningfully influence or control the present and future uses of such products, services, or tools, and to share in the revenues derived from them; and

ii. such rights must be reasonably proportionate, taking into account both the possible value to the third party of the ongoing product, service, or tool, and its possible implications for Members' interests.

2. **Requirements for Non Data Cooperative Businesses:**

    a. **Data Portability Required.** Non Data Cooperative Businesses shall make possible convenient, live, two-way, industry-standard programmatic access to all data covered by Cal. Civ. Code Sections 1798.110 and 1798.115 [the CCPA]. Upon verified request by a Data Producer or Data Cooperative, Non Data Cooperative Businesses shall make such programmatic access available to a Data Cooperative duly designated by a Data Producer.
    b. **Good Faith Required.** A Non Data Cooperative Business shall have a duty to negotiate in good faith with any Data Cooperative. As part of the duty of good faith, a Non Data Cooperative Business must permit any Data Cooperative to accept terms that are the same in all respects to those it has agreed to with any other Data Cooperative.
    c. **Retaliation and Discrimination Against Data Cooperative Members Prohibited.** Non Data Cooperative Businesses shall not, by act or omission, retaliate or discriminate against any Data Producer, whether or not the Data Producer is a current or former customer of the business, by reason of the Data Producer's past, present, or future association with any Data Cooperative. Discrimination or retaliation under this provision includes but is not limited to witholding interoperability, erecting burdens, costs, or inconveniences, or any other differential treatment motivated in substantial part to burden any Data Producers by reason of their past, present, or future association with any Data Cooperative, or to dissuade Data Producers from associating with Data Cooperatives.
    d. **Agreements with Members Contradicting Agreements with Data Cooperatives Prohibited.** Where a term in a contract between a Data Cooperative Member and a Non Data Cooperative Business contradicts a valid term in a contract between that Member's Data Cooperative and the same Data Cooperative Business, the latter term shall control and the former shall be void.
    e. **Working With Members of Data Cooperatives in the Absence of an Agreement with the Data Cooperative.** Where a Non Data Cooperative Business learns, through verified notice from a Data Cooperative, that a Data Producer is a Member of that Data Cooperative, it shall record and/or use no further data from that Data Producer, the rights to which have been assigned to the Data Cooperative. If reasonably necessary and non-retaliatory, and

reasonable notice is given to the Data Producer, it may cease to do business with that Data Producer, unless and until it has reached an agreement with the relevant Data Cooperative. It may not, absent the Data Producer's express consent, delete or alter any data pertaining to that Data Producer, insofar as such data would have been maintained had the Data Producer not joined the Data Cooperative.

f. **Reporting Revenues From Data.** Non Data Cooperative Businesses shall be required to disclose the source and amount of revenues from the use of or transactions concerning data. The precise requirements of this provision shall be enumerated by the Data Relations Board and where possible shall harmonize with other applicable requirements.

3. Remedies

a. Any Data Producer harmed by a violation of this title by a Data Cooperative or a Non Data Cooperative Business, or any Data Cooperative harmed by a violation of this title by a Non Data Cooperative Business, may seek the following remedies by filing an action with the Data Relations Board:
    i. To recover damages in an amount not less than one hundred dollars ($100) and not greater than seven hundred and fifty ($750) per incident or actual damages, whichever is greater.
    ii. Injunctive or declaratory relief.
    iii. Any other relief the Data Relations Board deems proper.
    iv. In assessing the amount of statutory damages, the court shall consider any one or more of the relevant circumstances presented by any of the parties to the case, including, but not limited to: the nature and seriousness of the misconduct; the number of violations; the persistence of the misconduct; the length of time over which the misconduct occurred; the willfulness of the misconduct; and the defendant's assets, liabilities, and net worth.
b. A determination pursuant to this Section made by the Data Relations Board shall be appealable once pursuant to a process to be defined by the Data Relations Board, and is appealable thereafter to a civil court.
c. Actions pursuant to this Section may be brought by only if all of the following requirements are met:

i. Prior to initiating any action for statutory damages on an individual or class-wide basis, a Data Producer or Data Cooperative shall provide the defendant 30 days' written notice identifying the specific provisions of this title alleged to be violated. In the event a cure is possible, if within the 30 days the defendant actually cures the noticed violation and provides an express written statement that the violations have been cured and that no further violations shall occur, no action for individual or class-wide statutory damages may be initiated. No notice shall be required prior to a Data Producer or Data Cooperative initiating an action solely for actual pecuniary damages suffered as a result of the alleged violations of this title. If the defendant continues to violate this title in breach of the express written statement provided to the consumer under this section, the Data Producer or Data Cooperative may initiate an action against the defendant to enforce the written statement and may pursue statutory damages for each breach of the express written statement, as well as any other violation of the title that postdates the written statement.

ii. A party bringing an action as defined in [the foregoing paragraph] shall notify the Attorney General within 30 days that the action has been filed.

iii. The Attorney General, upon receiving such notice shall, within 30 days, do one of the following:

1. Notify the consumer bringing the action of the Attorney General's intent to prosecute an action against the violation. If the Attorney General does not prosecute within six months, the consumer may proceed with the action.
2. Refrain from acting within the 30 days, allowing the consumer bringing the action to proceed.
3. Notify the consumer bringing the action that the consumer shall not proceed with the action.

iv. Nothing in this act shall be interpreted to serve as the basis for a private right of action under any other law. This shall not be construed to relieve any party from any duties or obligations imposed under other applicable laws.

4) <u>Data Relations Board:</u>

1. This Chapter shall be known as the Data Relations Board.

a. The government establishes a Data Relations Board which shall be independent of any other agency. The Board shall consist of five members appointed in accordance with subdivision (c) and shall conduct its business in accordance with this chapter.
b. Members of the commission shall be individuals with knowledge of, and expertise in two or more of economics, civil rights, data science or machine learning, and privacy, whether by experience or training.
c. Three members shall be appointed by the Governor, with one member each having experience in
    i. academia;
    ii. advocacy on behalf of consumers in the area of privacy, labor, or data rights;
    iii. and the technology industry.
d. One member shall be appointed by the Senate Committee on Rules.
e. One member shall be appointed by the Speaker of the Assembly.
f. Terms of appointment shall be five years and members shall be eligible for reappointment. Members shall hold no other concurrent public office. The Governor shall select one member to serve as chairperson. The Governor may remove members for neglect of duty or malfeasance in office, but no other reason. A vacancy shall not impair the other board members from carrying out their duties, and three members shall constitute a quorum.
g. Each member of the board shall receive a receive a reasonable salary.
h. The board shall be empowered to appoint an executive director who shall serve at the pleasure of the board, and who shall manage various administrative affairs of the board, and appoint other persons to carry out such work as may be necessary to enable the board to perform its duties. The government shall provide adequate resources for the board to carry out its work and adjudicate all matters before it in a timely and rigorous manner.

2. The Data Relations Board is charged with the following responsibilities:

a. To adopt or amend, by a majority of the Board's members, rules and regulations to carry out and effectuate the policies and purposes of this Act, and to govern the procedures of the Board.

b. To hear and resolve disputes arising under the Data Freedom Act of 2020 as a court of first impression, and to publicly communicate the reasoning behind its decisions in a manner that allows members of the public to act with a clear and up-to-date understanding of the board's interpretation of the Data Freedom Act of 2020.
c. To maintain a registry of Data Cooperatives and decide contested matters relating to their registration or deregistration.
d. To hold hearings, subpoena witnesses, administer oaths, take the testimony or deposition of any person, and, in connection therewith, to issue subpoenas duces tecum to require the production and examination of any Data Cooperative or non Data Cooperative business's records pertaining to its compliance with the Data Freedom Act of 2020 or other matters falling under the board's jurisdiction.
e. To investigate charges of violations of the Data Freedom Act of 2020, and take any action and make any determinations in respect of these charges or alleged violations as the board deems necessary to effectuate the policies of the Data Freedom Act of 2020.
f. To bring an action in a court of competent jurisdiction to enforce any of its orders, decisions, or rulings, or to enforce the refusal to obey a subpoena. Upon issuance of a complaint charging that any business or person has engaged in a violation of the Data Freedom Act of 2020, the board may petition the court for appropriate temporary relief or restraining order.
g. To delegate its powers to any member of the board or to any person appointed by the board for the performance of its functions, except that no fewer than two board members may participate in the determination of any ruling or decision on the merits of any dispute coming before it.
h. Within its discretion, to conduct studies relating to questions of data, technology, economics, and related matters, which may be necessary to help it carry out its duties. The board shall report to the Legislature by October 15 of each year on its activities during the immediately preceding fiscal year. The board may enter into contracts to develop and maintain research and training programs designed to assist individuals and businesses in the discharge of their rights and responsibilities under the Data Freedom Act of 2020.

5) <u>For purposes of this title:</u>

1. "Data" means personal information as defined in [other relevant authority].

2. “Data Cooperative” means any entity acting as a Data Cooperative under the terms of this title.
3. “Member”, as of a Data Cooperative, means a Data Producer who has contractually assigned to certain rights to use the Data Producer’s data to that Data Cooperative.
4. “Non Data Cooperative Business” means any sole proprietorship, partnership, limited liability company, corporation, association, or other legal entity that is organized or operated for the profit or financial benefit of its shareholders or other owners, that does business in the jurisdiction, and that satisfies one or more of the following thresholds:
    a. Has annual gross revenues in excess of twenty-five million dollars ($25,000,000).
    b. Alone or in combination, annually buys, receives for the business’ commercial purposes, sells, or shares for commercial purposes, alone or in combination, the personal information of 50,000 or more consumers, households, or devices.
    c. Derives 50 percent or more of its annual revenues from selling consumers’ personal information.
5. “Data Producer” means a natural person who is a resident of the jurisdiction, as defined in [relevant authority].
6. Data that “pertains” to a Data Producer means data that has been lawfully assigned to a Data Cooperative by that Data Producer.
7. “Agreement” means any contract or other agreement, whether written or unwritten, and whether express or implied.
8. “Control Right” means an enforceable contractual right to restrict, prohibit, or determine the uses of certain data.
9. A rule governing a use of data is more “restrictive” than another if, in order to preserve privacy, confidentiality, or control of the data, it would preclude the use of the data, where the other rule would not.

To the Members of the Committee on Technology, thank you for having me.

My name is Emmanuel Midy. I am a leader in the RadicalxChange Movement, which is a global community of technologists, artists, activists, and academics dedicated to reexamining the basic institutions of capitalism and democracy in order to build a more collaborative social life. We believe that much of the dysfunction in our economy and society is caused by the fact that we are using outdated mechanisms to take collective decisions and to reward productivity. This dysfunction results in power concentrations that lie at the source of many of our most vexing social problems.

While this may sound somewhat abstract, our ideas and research are not. We believe, for example, that fairly straightforward redesigns of ballots and voting systems would result in a more accurate aggregation of group preferences; that redesigned public matching fund systems could revolutionize problems such as participatory budgeting and campaign finance; that license designs informed by game theory could result in fairer and more efficient allocations of scarce public resources, and more. We have drafted a document, which I would be happy to share with you, that we call the Handbook for Radical Local Governance. This explains these ideas in greater detail and is now guiding many ground-level governance experiments around the world.

I am here, however, to talk about data. The question of who gets to control and profit from data may turn out to be the single most important battleground in the political economy of the 21st century. And the course we set now could have resounding implications.

Others have observed that Introductions 1446 and 1807 may serve as safeguards against unconstitutional and discriminatory uses of data; or they may force agencies to take inventory of their own practices. These are important consequences, but there is another dimension to the analysis that has received less attention today. Specifically, I am thinking about the possibility for individuals and communities to control and collectively bargain over the downstream uses of their data.

Data is an unusual asset that has no exact parallel in economic history. Among other peculiarities: (1) data is very rarely truly "personal", and almost always inextricably "interpersonal". Information about my behavior is also information about my friends' behavior; my genetic information also contains the information of my family members. (2) Its value is extraordinarily opaque. Often, its value increases with scale--because information from different people complement each other, forming an exponentially more accurate picture--but it is impossible for ordinary people to know when these increasing returns processes are occurring. (3) Its uses are unforeseeable. It may be combined with other data to achieve purposes that could not have been imagined ex ante.

This adds up to a gigantic market failure, which is playing an increasingly important role in the concentration of wealth and the disillusionment of millions of participants in the digital economy. In order to gain traction on this urgent problem, RadicalxChange Foundation has published a

proposal we call the "Data Freedom Act", which sketches a regulatory framework that would enable collective bargaining over the value and uses of data through intermediary entities. You can think of these as data co-ops, data trusts, or data unions. Whatever you call them, their goal will be to restore balance to a wildly distorted market by consolidating bargaining power concerning the value and uses of data.

As I have noted, however, the problem of understanding downstream uses of data, and bargaining over them, is a matter of enormous complexity. The collective bargaining architecture we envision is likely to be a necessary step towards a fairer data economy, but it will not thrive without support from policymakers. Asking data users to accountably articulate and disclose the purposes for which they are using data is a reasonable way of reducing the complexity of the problem. It is a precedent that could well pave the way for a much broader wave of innovation concerning the dignified, fair, and responsible use of data.

I thank you for your time and would be delighted to answer questions or speak to any of you further.

Reinvent Albany

Testimony to the New York City Council Technology Committee on Int. No. 1447 of 2019 (Johnson)

January 22, 2020

Good morning Chair Holden and members of the New York City Council Technology committee. My name is Tom Speaker, and I am a Policy Analyst for Reinvent Albany. Reinvent Albany advocates for transparent and accountable government in New York State. We were instrumental in the passage of the New York City's 2012 Open Data Law and subsequent amendments.

Before testifying on Int. No. 1447 (Johnson), Reinvent Albany reiterates its request that this committee hold a hearing on the 2019 Open Data progress report.[1] The Council Technology Committee has held a hearing annually for years but did not in 2019. Council oversight is critical to ensure city agencies continue to make progress in identifying and releasing datasets to the public as required under Local Law 251 of 2017.

Regarding Int. No. 1447, Reinvent Albany supports the intent of this bill to inventory the city agencies' data. However, we believe the bill should be reworked to reflect the experience with agency compliance with the Open Data Law and the Open Data Examination process. Unfortunately, city agencies have failed in the past to inventory data despite various requirements in state law, the City Charter, and the Administrative Code. We believe another law requiring the creation of agency data directories will be largely ignored. Our take is that the fundamental question here is "How do we get agencies to comply?" We believe the answer is to expand and accelerate the Open Data Examination process led by the Mayor's Office of Data Analytics' (MODA), which has already created data directories for nine of the city's biggest agencies.

There are several existing laws regarding inventorying of agency data the City is required to follow. The New York State Freedom of Information Law requires that "each

[1] *The Next Decade of Open Data*: 2019 Open Data for All Progress Report and Plan. Available at: https://opendata.cityofnewyork.us/wp-content/uploads/2019/09/2019_OpenDataForAllReport.pdf

www.reinventalbany.org
OPEN, ACCOUNTABLE, EFFECTIVE GOVERNMENT
148 Lafayette. 12th Floor, New York, NY 10013

agency shall maintain a reasonably detailed current list by subject matter of all records in the possession of the agency, whether or not available under this article [meaning FOIL]." It further requires that, "each agency shall update its subject matter list annually, and the date of the most recent update shall be conspicuously indicated on the list" that is to be posted on the agency's website and the New York State Committee on Open Government's website.[2] The Metropolitan Transportation Authority (MTA) is one agency that does provide a comprehensive list of the subject matter of its records.[3]

Under the City Charter, The Commission on Public Information and Communication (COPIC) is required to annually publish a Public Data Directory of City agency data. However, COPIC has rarely published a Data Directory in the last three decades.[4] The Open Data Law (Local Law 11 of 2012) required agencies inventory data by 2018 to identify datasets to put into the City's Open Data portal. Yet agencies did not meet the deadline despite having six years to do so. Local Law 8 of 2016 required MODA to work with nine agencies over three years to identify datasets for publication and, as part of that process, develop "a list of all public data sets that such mayoral agencies did *not* make available" on the City's Open Data portal (effectively, a data inventory).

Local Law 8 of 2016 has expired, but MODA tells us creating a data inventory as part of implementing that law was useful in fulfilling the requirements of Local Law 251 of 2017. Under Local Law 251, MODA has worked with agencies to annually identify datasets city agencies possess that they can release in the next year in the City's Open Data portal.

Reinvent Albany therefore recommends amending the Speaker's bill to integrate the expired examination procedure in Local Law 8 of 2016 into the current process of data publication MODA is implementing with agencies under Local Law 251 of 2017. Specifically, we recommend the following:

- require MODA design a plan for 10 agencies a year to inventory their data. The plan should be subject to review by the Department of Investigation to measure

---

[2] Public Officers Law, Article 6, section 87(3)(c).
[3] MTA Foil Request Subject Matter List. Available at:
https://new.mta.info/transparency/foil/agency-subject-matter-lists
[4] Title 47, section 1062 of the New York City Charter. Public data directory. a. The commission shall publish annually a directory of the computerized information produced or maintained by city agencies which is required by law to be publicly accessible. Such directory shall include specific descriptions of the contents, format and methods of accessing such information, and the name, title, office address, and office telephone number of the official in each agency responsible for receiving inquiries about such information.

whether it conforms with generally accepted auditing practices or other best practices for examination.

- require MODA execute the plan with the designated agencies, and provide the data inventory to the Mayor's Office, the Council Speaker and the public. MODA has already completed data inventories with nine agencies, since Local Law 8 of 2016 required it be done for select agencies.

- prioritize the data inventory of biggest agencies first as part of a schedule for all mayoral agencies to complete their data directories.

- require agencies to update their data set inventory annually once they've been inventoried with MODA's help.

- require all requested information in the bill about the datasets in the inventory be shared with the Mayor's Office and Council including datasets protected from public release because of concerns over cybersecurity, public safety or individual privacy (we are concerned exempting datasets for these reasons, as provided in the bill, will create a loophole for agencies to exclude datasets by identifying many of their datasets as non-public).

- require disclosure of all agency public data directories in the Open Data Portal exempting datasets shared with the Mayor's Office and Council when the public does not have a legal right to know if they exist or not.

Thank you for the opportunity to testify today. I welcome any questions you may have.

To: NYC Council - Committee on Technology
From: Noel Hidalgo, Executive Director of BetaNYC
Re: **Oversight hearing of Local Law 49 of 2018 (Open Algorithms Law) & Int 1806-2019 (aka ADS transparency) & Int 1447-2019 (aka data inventory)**

Thursday, 22 January 2020

"We [...] want to ensure that New York City leads the way in ethical algorithmic government. We want transparency around data tools, algorithms, artificial intelligence, and tracking. We want New York City to be the thought leader in smart, ethical, algorithmic government." - Noel Hidalgo, 4 Jan 2016[1]

First, I want to say Happy New Year. We are glad to see Chairman Holden's enthusiasm to use technology for good. Congratulations on your chairmanship, and we look forward to many hearings to come.

From BetaNYC's point of view, these bills represent two of three battles for government transparency. Underpinning technology systems is data. Automated Decision Systems (ADS) is a function of software that affects us all. The third is actual software code and its design process.

For us to have government for the people, by the people, for the digital era, we must have transparent government software. To that end, we want more open source code within government.

Here are our thoughts on the two bills at hand.

Int 1806-2019[2] (aka ADS transparency)

We support the bill and suggest that the bill adopts the definition as specified by the *AI Now* report "Confronting Black Boxes - A Shadow Report of the New York City Automated Decision System Task Force."[3]

> An "automated decision system" is any software, system, or process that aims to automate, aid, or replace human decision-making. Automated decision systems can include both tools that analyze datasets to generate scores, predictions, classifications, or some recommended action(s) that are used by agencies to make decisions that impact human welfare, and the set of processes involved in implementing those tools.

---

[1] http://bit.ly/BetaNYC-2016-YearInReview
[2] https://on.nyc.gov/3aA9XOj
[3] https://ainowinstitute.org/ads-shadowreport-2019.pdf

Int 1447-2019[4] (aka data inventory)

We support the bill but it needs significant modifications and conversations to ensure sustainability.

Reporting Deadline

The bill's reporting date needs to better align with existing Mayor's Office of Data Analytics (MODA) reporting. MODA is already incorporating portions of the old examination and verification (E&V) process into their annual open data report, which has historically come before this committee in the fall. Moving this bill's reporting deadline brings about a natural alignment of existing practices. Also, we would like to note that this committee has NOT held its annual open data oversight hearing.

Scaling

The outcome of this bill should produce a sustainable, recursive process. To go deeper than the previous E&V process, there needs to be a learning process and alignment with existing open data reporting. Since we hope to be going deeper, we envision a process akin to the previous E&V — a process where a handful of agencies go through a data discovery process — then, learnings are quickly scaled to other agency audits. **Since NYC Emergency Management already engages in a continuity of operations planning, agencies should be aware of their own technology systems and data sets that have to be maintained in two locations.** You could even start with continuity of operations reports and publish a listing of those datasets and tools.

Our friends at GovEx Labs has a guide on how to marry data inventories with priorities and goals.[5]

Accountability

If one of the goals is to get to a clear listing of data systems held at each agency, then we believe that MODA should be in charge of producing this report; however, **Council Members need to hold agency leaders accountable.** Over the past eight years, we have seen several data driven agencies resist posting data on the city's open data portal. Then, in front of Council, see MODA interrogated for poor leadership at an Agency.

We want this bill to hold Agencies accountable.

As part of the last examination and verification report, the Department of Transportation (DOT) indicated it would post an additional 85 data sets on or before 31 December 2019 on the City's open data portal. As of 21 January 2020, 45.88% (39) were posted or could be hiding under an

[4] https://on.nyc.gov/2sM75g0
[5] http://labs.centerforgov.org/data-governance/data-inventory/

existing dataset — over half (54% - 46 data sets) are not on the open data portal. I point to DOT as an example agency who has hosted several "open data sessions" with their CIO emphatically saying "if we have the data and if you want the data, we will get you the data."

Additionally, this bill should state if the data is on the open data portal or a related dataset is on the City's open data portal. If not on the open data portal, the report should state why it can not be posted to the open data portal.

Reviving the City's Data Directory

Since the Charter revision of 1989, the Commission on Public Information and Communication (COPIC) has been in charge of producing an illustrious white whale. In April 1993, the first and only Data Directory was printed. **Twenty seven years later, none of the open data / open government bills have ever gotten us to what was published in 1993.**

Per the original data directory, the public was given a listing of:

- City databases which "contain information relating to the regulatory functions or statutory duties of an agency. Databases which are used for agency administrative support functions where not included (example accounting systems, personnel records, equipment inventory systems."
- This includes: Agency contact information, Public Liaison contact information, Agency mission statement, Application Name, Year activated, Application description, Database contents

While this bill addresses data inventories, and not systems inventories, we believe that a comprehensive list of technology systems should be publicly available. If those systems were produced by the City, then their code should be available for public inspection.

If we say "in code we trust," we must be able to see the code — whether it is law, software, or algorithms — we must have digital government transparency.

Future of Government Information and references to paper data...

The inventorying of paper data verges on the mission of NYC Records & Information Services. [6] It is not clear how MODA is best suited to inventory data on paper. This bill has pointed out that freedom of information, automated decision making, and emergency management planning, all branch off from a simple and clear understanding of data and systems.

We look forward to these modifications and further discussion around digital transparency in New York City government.

"Our destiny is largely in our hands." — Frederick Douglass

---

[6] https://www1.nyc.gov/site/records/about/mission.page

New York City Council
Committee on Technology

Oversight - Follow up on Local Law 49 of 2018 in Relation to Automated Decision Systems Used by Agencies.
January 22, 2020

Written testimony of
Marc Canellas
Vice-Chair, IEEE-USA Artificial Intelligence and Autonomous Systems Policy Committee

Good morning Chairman Holden and members of the Committee on Technology,

My name is Marc Canellas, and I serve as the Vice-Chair of the IEEE-USA's Artificial Intelligence and Autonomous Systems Policy Committee (referred to as the "AI Policy" Committee).[1] Our AI Policy Committee is responsible for advocating on behalf of the public policy interests of U.S. IEEE members on any topic related to artificial intelligence and autonomous systems, including the Automated Decision Systems (ADS) of interest today. We are a volunteer committee of the Institute of Electrical and Electronics Engineers, Inc. (IEEE, pronounced "Eye-triple-E"), the largest association of technical professionals in the world with over 422,000 members in over 160 countries.[2] I am grateful for the work done by my friends and colleagues at the IEEE considering how best to harness the promise and avoid the pitfalls of AI systems, but the specific conclusions in this testimony are my own.

I hold a Ph.D. in Aerospace Engineering from the Georgia Institute of Technology. I am currently a second-year law student at New York University's School of Law. I have previously served as an IEEE-USA Science and Technology Fellow in the United States House of Representatives. My research, funded by the Department of Defense and National Science Foundation, focused on how to design and deploy ADS in complex, safety-critical environments in the aerospace and defense domains. As a law student, I have interned with the Neighborhood Defender Service of Harlem's Family Defense Unit and the Federal Defenders of New York and seen the most punishing aspects of ADS being inflicted on New Yorkers.

The Task Force Had the Opportunity to Lead

The past two years have been a watershed moment for the governance of Artificial Intelligence (AI) and ADS. Government commissions and agencies in the United States and around the world have established procedures, processes, principles and recommendations for meaningful and ethical governance of AI. As officials acting for the benefit of their community, they recognize that they are trusted with the lives and livelihoods of their citizens. They recognize that they have an obligation to answer questions about the role

[1] The Artificial Intelligence and Autonomous Systems Policy Committee brings together IEEE members with experience and expertise in the various disciplines used in scientific field of artificial intelligence (AI) to address the public policy needs of the S&T community working with this important emerging technology. The committee meets as needed to address current events and the emerging questions related to AI and publishes position statements that reflect a consensus viewpoint of IEEE's U.S. membership, and which IEEE-USA staff will use to guide advocacy efforts within the United States. Specific uses include, but are not limited to, legislative advocacy, rule-making notice-and-comment letters, and advocacy efforts with the US Administration and federal agency officials. https://ieeeusa.org/volunteers/committees/aiaspc/
[2] https://www.ieee.org/about/today/at-a-glance.html

of technology in modern life. They recognize they are responsible for publicly addressing the risks to fundamental rights and freedoms.

Just a few weeks ago, the White House released the first-of-its-kind AI principles for executive agency regulators: public trust, public participation, scientific integrity and information quality, risk assessment and management, benefits and costs, flexibility, fairness and non-discrimination, disclosure and transparency, safety and security, and interagency coordination.[3] In 2019, the Department of Defense's (DOD) Defense Innovation Board adopted a set of principles stating that the ethical development and application of AI is responsible, equitable, traceable, reliable, and governable.[4] Also in 2019, the National Institute of Standards and Technology (NIST) established a plan for developing technical standards related to AI.[5]

Europe is making progress, too. In late 2018, the Council of Europe, the international organization devoted to upholding human rights, democracy, and the rule of law in Europe, adopted five principles for the use of AI: respect for fundamental rights, non-discrimination, quality and security, transparency, and user-control.[6] This past October, Germany released a set of ethical guidelines for protecting "the individual, preserving social cohesion, and safeguarding and promoting prosperity in the information age": human dignity, self-determination, privacy, security, democracy, justice and solidarity, and sustainability.[7]

It is against this backdrop that the New York City ADS Task Force Report is particularly disappointing. Within two years, each of these national and international commissions and agencies have been able to begin, establish and successfully complete their guiding principles and recommendations, while the ADS Task Force conclusion was that there "aren't easy answers to these questions."[8]

Good Governance Requires Good Design

No "easy answers."

That was the conclusion of the Chairs of the Automated Decision Systems Task Force. As a subject-matter expert in ADS, I must respectfully disagree. There are easy answers. Answers that other government bodies have embedded in their principles and recommendations. Answers that entire technical disciplines have been developing for decades to help build safe and effective automated systems that are relied upon each day. The "easy" answer is to require good design – to require that the ADS works.

---

[3] https://www.whitehouse.gov/wp-content/uploads/2020/01/Draft-OMB-Memo-on-Regulation-of-AI-1-7-19.pdf
[4] https://media.defense.gov/2019/Oct/31/2002204458/-1/-1/0/DIB_AI_PRINCIPLES_PRIMARY_DOCUMENT.PDF
[5] https://www.nist.gov/document/report-plan-federal-engagement-developing-technical-standards-and-related-tools
[6] https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c
[7] "The [German] Data Ethics Commission holds the view that regulation is necessary, and cannot be replaced by ethical principles… This is particularly true for issues with heightened implications for fundamental rights that require the central decisions to be made by the democratically elected legislator." https://www.bmjv.de/SharedDocs/Downloads/DE/Themen/Fokusthemen/Gutachten_DEK_EN.pdf?__blob=publicationFile&v=1
[8] The NYC Automated Decision Systems Task Force Report's opening letter from the Chairs highlight two questions at the center of their report: First, "[w]hat do the values of equity, transparency, and accountability that are already embedded in our work mean in [the] context [of Automated Decision Systems]?" Second, "[h]ow do we make sure that the technologies that can help improve the lives of those who rely on local government services are being used in an ethical manner and do not have unintended consequences that are unfair or harmful?" The Chairs conclude that "there aren't easy answers to these questions." https://www.documentcloud.org/documents/6561086-ADS-Report-11192019-1.html

There are many charges fairly levied against ADS: from embedding bias and discrimination, eviscerating privacy, or undermining fairness and due process of law. Unfortunately, lawmakers interpret this language as requiring them to develop entirely new and novel principles for designing AI and related technologies that are divorced from anything we've seen before. That is simply not true.

Framing any governance as new and novel is too often used to justify long deliberation processes, undue delay, and complete inaction, or to justify baseless claims that governments are demanding too much from technologists – supposedly impeding innovation and entrepreneurship.

Principles of civil liberties and civil rights are critical to comprehensive governance of ADS. But we cannot use those necessary discussions as a justification to force New Yorkers who are losing their jobs, losing their children, and losing their freedom to wait for basic protections that are already long past due.

Defining Good Design: Does It Work?

Does it work? Those are the three words that every ADS designer and regulator ought to answer before any ADS is deployed. Although questions of bias, transparency, and accountability must be discussed, a functional design is a necessary foundation to ensure a minimum standard of safety and efficacy.

- What are the ADS' capabilities and its limitations?
- What is the ADS' effect on the people who will use it, the organizations where it will be used, and the people upon whom it will be used?
- Has the ADS been independently verified and validated?

These principles of good design are so embedded in our daily lives that we take them for granted. When your doctor prescribes medicine for you or your children, you inevitably ask, "Does it work?" You ask about what the medicine can and cannot do (capabilities and limitations), whether it will work for your circumstances or have relevant side-effects (effects), and how it has been tested (independent verification and validation). Because the Federal Drug Administration requires good design to achieve basic safety and efficacy,[9] and requires that the medicine actually works, you can make informed decisions about your health and trust your doctor's prescription.

Good design is so embedded in our lives, it is assumed in many of these discussions about bias, transparency, and accountability when it should not be. Without knowing the ADS' capabilities and limitations, intended effects, or whether it has been verified and validated, how can anyone begin to determine bias, transparency, or accountability in a meaningful way?

Imagine a facial-recognition system that is twice as accurate in identifying Caucasian faces compared to faces of people of color.[10] This is clearly a biased system that needs investigation. But then it is revealed that the system is only 10% accurate overall. With that information, it does not matter that the system is biased. Minor modifications to the ADS will not improve it. It fundamentally does not work and should not be deployed.

---

[9] https://www.fda.gov/drugs/drug-information-consumers/fdas-drug-review-process-ensuring-drugs-are-safe-and-effective

[10] "Twice as accurate" is used as a hypothetical example of a facial-recognition system that may be able to be modified into some sort of compliance. However, the reality for facial-recognition system accuracy is much worse. The National Institute of Standards and Technology tested 189 facial-recognition algorithms from 99 developers, representing the majority of commercial developers. They found that the facial-recognition systems "falsely identified African-American and Asian faces 10 to 100 times more than Caucasian faces." https://www.nytimes.com/2019/12/19/technology/facial-recognition-bias.html

The power of "Does it work" is that it is a factual question. It is not normative or aspirational. Designers can comprehensively disclose the ADS' capabilities and limitations, how the ADS will affect organizations and people, and the results of independent verification and validation. That is demanded in the aviation and defense industry. That is demanded of our medicine. It ought to be demanded of ADS here in New York City.

Many of the ADS that undermine the rights and privileges of New Yorkers are flawed at their core because they simply do not work. Enforcing the minimum standard of good design is a path towards meaningful governance and regulation of ADS that can start today. It is found in each of the principles already adopted by the White House (scientific integrity and information quality, and safety and security[11]), the DOD Defense Innovation Board (reliability and traceability[12]), the Council of Europe (quality and security[13]), and the German Data Ethics Commission (security[14]).

Requiring good design will not stop all the inequitable, opaque, and unaccountable ADS, but it will begin to stop much of the tragic experimentation of pseudo-scientific, techno-solutionist automated decision systems on New Yorkers who need protection the most.

Where technologists may claim ignorance of the principles of due process, privacy, civil rights, and biases, they cannot ignore the principles of good design – they are the established foundations of engineering design and computer science.

IEEE: An American and World Leader in ADS Governance

Just like the FDA looks to biochemists and medical doctors for guidance, or the FAA looks to aerospace engineers and human factors engineers, this Council ought to look to engineers and technologists specialize in human-centered ADS design – especially those at the IEEE.

---

[11] Scientific Integrity and Information Quality: "The government's regulatory and non-regulatory approaches to AI applications should leverage scientific and technical information and processes. …Best practices include transparently articulating the strengths, weaknesses, intended optimizations or outcomes, bias mitigation, and appropriate uses of the AI application's results. Agencies should also be mindful that, for AI applications to produce predictable, reliable, and optimized outcomes, data used to train the AI system must be of sufficient quality for the intended use." Safety and Security: "Agencies should promote the development of AI systems that are safe, secure, and operate as intended, and encourage the consideration of safety and security issues throughout the AI design, development, deployment, and operation process." https://www.whitehouse.gov/wp-content/uploads/2020/01/Draft-OMB-Memo-on-Regulation-of-AI-1-7-19.pdf

[12] Traceable: "AI engineering discipline should be sufficiently advanced such that technical experts possess an appropriate understanding of the technology, development processes, and operational methods of its AI systems, including transparent and auditable methodologies, data sources, and design procedure and documentation." Reliable: "AI systems should have an explicit, well-defined domain of use, and the safety, security, and robustness of such systems should be tested and assured across their entire life cycle within that domain of use." https://media.defense.gov/2019/Oct/31/2002204458/-1/1/0/DIB_AI_PRINCIPLES_PRIMARY_DOCUMENT.PDF

[13] Quality and Security: "Data based on judicial decisions that is entered into a software which implements a machine learning algorithm should come from certified sources and should not be modified until they have actually been used by the learning mechanism. The whole process must therefore be traceable to ensure that no modification has occurred to alter the content or meaning of the decision being processed. The models and algorithms created must also be able to be stored and executed in secure environments, so as to ensure system integrity and intangibility." https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c

[14] Security: "Guaranteeing security entails compliance with stringent requirements, e. g. in relation to human/machine interaction or system resilience to attacks and misuse." https://www.bmjv.de/SharedDocs/Downloads/DE/Themen/Fokusthemen/Gutachten_DEK_EN.pdf?__blob=publicationFile&v=1

IEEE has made its history in leveraging the technical expertise of its 420,000 engineers around the world. We advocate for public policy which adheres to the principles of good design, and to standardize these principles of good design in various industries.

ADS-related advocacy in the United States is led by the AI Policy Committee,[15] of which I am the Vice-Chair. Our efforts at the federal level notably include organizing the bipartisan and bicameral Congressional AI Caucuses which includes 27 Representatives (23 Democrats, 4 Republicans)[16] and 6 Senators (3 Democrats, 3 Republicans).[17] In just this past year, our AI Policy Committee commented on the development of the federal privacy framework by the National Institute of Standards and Technology,[18] endorsed Congressional legislation calling for the ethical development of artificial intelligence,[19] sent a letter to the U.S. House and Senate leadership urging passage of legislation recognizing every American's digital privacy rights, [20] and endorsed NYU's proposal to establish the New York City's Center for Responsible AI.[21] We also produced a report monitoring developments of AI around the world,[22] discussed automation and labor at the Texas AFL-CIO Constitutional Convention,[23] and our members were recognized for their contributions to the DOD's Defense Innovation Board's newly adopted set of principles to guide ethical development and application of AI.[24]

IEEE's Standards Association (SA) uses the same expertise in AI and ADS to establish formal standards for their design. IEEE SA plays a critical role in modern life. For example, the only way your phone or computer knows how to "talk" to the WiFi is because of the IEEE 802.11 Wireless Network Standards that define the "language" of WiFi.[25] In other words, if you want to connect to WiFi, the IEEE 802.11 standard is the only way to do it.

IEEE SA is now applying the same process to ADS-related technologies: if you want to design and deploy ADS, this is how you ought do it. IEEE has established the Global Initiative on Ethics of Autonomous and Intelligent Systems,[26] bringing together engineers, philosophers, social scientists, and lawyers from around the globe to leverage principles of good design into 14 standards addressing specific issues including: ethics

---

[15] Position Statement: Artificial Intelligence Research, Development and Regulation (February 2017) https://ieeeusa.org/wp-content/uploads/2017/10/AI0217.pdf
[16] https://artificialintelligencecaucus-olson.house.gov/
[17] https://www.heinrich.senate.gov/press-releases/heinrich-portman-launch-bipartisan-artificial-intelligence-caucus
[18] IEEE-USA and IEEE-SA Comments to NIST on Draft NIST Privacy Framework: A Tool for Improving Privacy Through Enterprise Risk Management. https://ieeeusa.org/wp-content/uploads/2019/10/102119.pdf
[19] Letter to Rep. Lawrence (Michigan) endorsing H. Res. 153, calling for the development of guidelines for ethical development of artificial intelligence. https://ieeeusa.org/wp-content/uploads/2019/04/032919.pdf
[20] Letter to House and Senate leadership urging passage of legislation recognizing every American's digital privacy rights. https://ieeeusa.org/wp-content/uploads/2019/01/010719.pdf
[21] IEEE-USA Letter endorsing New York University's (NYU) Proposal to Establish the New York City Center for Responsible AI. https://ieeeusa.org/wp-content/uploads/2019/07/073019.pdf
[22] https://ieeeusa.org/volunteers/committees/aiaspc/ai-global-survey/
[23] https://www.txworkersunite.com/
[24] AI&ASPC Chair Mina Hanna, AI&ASPC member Dr. Lydia Kostopoulos, and IEEE Executive Director Steve Welby were all recognized for their contributions to the U.S. Department of Defense's Defense Innovation Board's (DIB) newly adopted set of principles to guide ethical development and application of AI in DoD. https://innovation.defense.gov/ai/
[25] *IEEE 802.11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications.* (2016 revision). IEEE-SA. 14 December 2016. doi:10.1109/IEEESTD.2016.7786995. https://ieeexplore.ieee.org/servlet/opac?punumber=7786993
[26] https://ethicsinaction.ieee.org/#read

in system design,[27] transparency of autonomous systems,[28] data privacy,[29] algorithmic bias,[30] child and student data governance,[31] employer data governance,[32] and children's online rights.[33] There is a recent proposed project to develop a standard on organizational governance of AI.[34]

There is so much wisdom within IEEE and the engineering community about what constitutes good design. Good design – that if demanded today – would limit and constrain many biased, discriminatory systems and applications before they are deployed, and before citizens are left to protect themselves from experimentation.

Forensic Science Tool: The Standard-bearer for Bad Design and Bad Governance

For far too long unsafe and ineffective ADS have deployed on New Yorkers. If those responsible for them had just asked, "Does it work?" so much heartbreak could have been avoided.

The one most disturbing to me is the Forensic Science Tool, known as 'FST'. FST was an ADS developed in 2011 by the New York City's Office of Chief Medical Examiner (OCME) to help their forensic scientists make identifications from DNA samples that were too tiny or contained a mix of more than one person's genetic material.[35] FST emerged as a pioneering tool, beyond the standard FBI DNA practice and other public labs.[36] But while DNA evidence has been considered the gold standard of forensic evidence in criminal court, FST has been revealed as a standard-bearer of bad design.

There were fundamental and obvious flaws in FST. For example, the algorithm did not consider that different people in a mixture could be family and, therefore, share DNA. Even Dr. Bruce Budowle, an architect of the F.B.I.'s national DNA database, testified that the FST's statistical methods were "not

---

[27] Model Process for Addressing Ethical Concerns During System Design: defining a process model by which engineers and technologists can address ethical consideration throughout the various stages of system initiation, analysis and design. (IEEE P7000™) https://standards.ieee.org/news/2016/ieee_p7000.html

[28] Transparency of Autonomous Systems: Describing measurable, testable levels of transparency, so that autonomous systems can be objectively assessed and levels of compliance determined. (IEEE P7001™) https://standards.ieee.org/project/7001.html

[29] Data Privacy Process: Defining requirements for a systems/software engineering process for privacy oriented considerations regarding products, services, and systems utilizing employee, customer or other external user's personal data. (IEEE P7002™) https://standards.ieee.org/project/7002.html

[30] Algorithmic Bias Considerations: Describing specific methodologies to help users certify how they worked to address and eliminate issues of negative bias in the creation of their algorithms. (IEEE P7003™) https://standards.ieee.org/project/7003.html

[31] Standard for Child and Student Data Governance: defines specific methodologies to help users certify how they approach accessing, collecting, storing, utilizing, sharing, and destroying child and student data. (IEEE P7004™) https://site.ieee.org/sagroups-7004/

[32] Standard for Transparent Employer Data Governance: Defining specific methodologies to help employers to certify how they approach accessing, collecting, storing, utilizing, sharing, and destroying employee data. (IEEE P7005™) https://standards.ieee.org/project/7005.html

[33] Standard for Age Appropriate Digital Services Framework–Based on the 5 Rights Principles for Children: Establishing a framework for developing age appropriate digital services for situations where users are children. (IEEE P2089™) https://standards.ieee.org/project/2089.html

[34] Recommended Practice for Organizational Governance of Artificial Intelligence: specifying substantive governance criteria such as safety, transparency, accountability, responsibility and minimizing bias, and process steps for effective implementation, performance auditing, training and compliance in the development or use of artificial intelligence within organizations. (IEEE P2863)

[35] https://www.nytimes.com/2017/09/04/nyregion/dna-analysis-evidence-new-york-disputed-techniques.html

[36] https://www.propublica.org/article/thousands-of-criminal-cases-in-new-york-relied-on-disputed-dna-testing-techniques

defensible."[37] However, few, if any, at OCME or New York State's DNA Subcommittee had the expertise to double check it.[38] After years of defendants attempting to access the underlying FST code, a federal judge in 2016 finally made it available to defense experts for review. The expert witness concluded that FST's accuracy "should be seriously questioned."[39] Within three months,[40] OCME announced it would abandon FST in favor of a more commonly-used DNA ADS, known as STRMix.[41]

In October 2019, just three months ago, a New York State Supreme Court called for all cases using FST to be reviewed because there was "no scientific consensus in favor" of FST as a legitimate tool.[42] But this is little consolation to the over 1300 defendants who had their liberties and freedoms, threatened or taken away because of FST evidence. For six years, evidence was used from an ADS that is now considered indefensible and lacking legitimacy. For six years, evidence was used from an ADS that has been officially and voluntarily abandoned.

Hearing this, how was FST anything but a failed pseudo-scientific technological experiment on the population of New York City? People's lives, liberties, and freedoms were threatened by a scientifically and statistically illegitimate ADS. And who is evaluating whether STRMix, the OCME's new DNA ADS, is safe and effective? If previous performance is any indicator of future expectation, and it is, why should any New Yorker trust it?

Looking more broadly at the FST catastrophe, it's important to understand that FST failed before ever getting to the questions of bias, transparency, or accountability. FST was not good design. FST simply did not work. FST's true capabilities and limits were not disclosed. FST's designers did not account for the capabilities of those using it or anticipate and appreciate the effects it would have.

These issues with FST only came to light because of public defenders and investigative reporters seeking the truth. For six years, in over 1300 cases, OCME did not disclose FST's indefensible methods when New Yorker's liberties and freedoms were at stake. This begs the question: Where was the leadership of New York?[43] Judges did not need a theory of bias, accountability, or transparency to determine that FST was not fit for the courtroom, so what was the leadership of New York waiting for?

For all the discussion of transparency, equity, and accountability in discussions of ADS, the truth is that I am testifying about human decisions, not algorithmic ones. I have served in government myself. I have also seen the pain wrought by FST and other ADS. When I reflect on the ADS Task Force's procedures and

---

[37] https://www.nytimes.com/2017/09/04/nyregion/dna-analysis-evidence-new-york-disputed-techniques.html
[38] https://www.nytimes.com/2017/09/04/nyregion/dna-analysis-evidence-new-york-disputed-techniques.html
[39] https://www.propublica.org/article/thousands-of-criminal-cases-in-new-york-relied-on-disputed-dna-testing-techniques
[40] https://www.propublica.org/article/thousands-of-criminal-cases-in-new-york-relied-on-disputed-dna-testing-techniques
[41] https://www.nytimes.com/2017/09/04/nyregion/dna-analysis-evidence-new-york-disputed-techniques.html
[42] People v. Thompson, N.Y. Slip Op. 51521(U) (Sup. Ct. 2019); https://gothamist.com/news/judge-attacks-controversial-dna-software-s-still-used-send-people-prison
[43] It is not clear that this will be addressed given that the Mayor's Executive Order No. 50 establishing the Algorithms Management and Policy Officer excepted any information that would "interfere with a law enforcement investigation or other investigative activity by an agency or would compromise public safety." https://www1.nyc.gov/assets/home/downloads/pdf/executive-orders/2019/eo-50.pdf This exception is commonly critiqued as the "NYPD exception." But it can be critiqued through the lens of good design. As exemplified by FST, not disclosing information about these law-enforcement-related ADS will only compromise the public's right to know whether the ADS works at all.

final report, I can only hope that you realize that when New Yorkers are demanding transparency, equity, and accountability, they don't only mean for ADS, they mean for you, too.

Tombstone Design: The Need for Good Governance Before the Harm Occurs

I cannot overly emphasize enough that where there are threats of serious or irreversible damage, even the lack of "easy" answers cannot be used as a reason for abdicating governance until after the harm has occurred. While abdicating responsibility to prevent foreseeable and preventable harm may be acceptable to some, it is absolutely unacceptable to those in the aerospace and defense industry where I was trained, and unacceptable to those I work with in the IEEE – and it ought to be unacceptable to a City Council responsible for the health and wellbeing of such a great city.

We call it "tombstone design." That is the aviation industry's term for this type of abdication of responsibility. We have this haunting term because our ADS are responsible for the safety of millions of passengers, pilots, and warfighters – because when our systems fail, people die.

Aviation has historically been plagued by designers ignoring defects until they have caused fatal accidents. We have been forced to acknowledge tragedies, and the need to understand and remedy their causes. Today aviation is an incredibly safe mode of transportation because of these acknowledgements, but we are constantly reminded of why we must respect the demands of good design.

Look no further than the recent tragic example of the Boeing 737 MAX 8. The MAX 8 incorporated the Maneuvering Characteristics Augmentation System (MCAS) automation, an ADS meant to help keep the aircraft pointed in the right direction. The MCAS ultimately contributed to two accidents and the deaths of 346 people before its tragically bad design was acknowledged, and the aircraft were grounded. The MCAS' flawed design pushed the nose of the aircraft down and, despite the pilots desperately trying to pull the nose up, they couldn't overcome the MCAS' death grip. Ethiopian Airlines Flight 302 impacted the ground at nearly 700 mph, creating a crater 90 feet wide and 120 feet long with wreckage driven into the soil up to 30 feet deep.[44]

The first tragedy is that Boeing's engineers and leadership knew that the MCAS automation was flawed from the beginning.[45] At the time of development, Boeing employees were describing the aircraft as a "joke,"[46] that there was no way they would put their families on those aircraft.[47] They knew they had designed a unstable aircraft and then tried to use an algorithm as a band-aid. As a result, the pilots – the humans which the Federal Aviation Regulations unequivocally state are directly and ultimately responsible for the safe operation of the aircraft[48] – had no idea how to regain control from the MCAS as it sped out of control into the ground.

---

[44] http://nymag.com/intelligencer/2019/04/what-passengers-experienced-on-the-ethiopian-airlines-flight.html

[45] https://www.seattletimes.com/business/boeing-aerospace/failed-certification-faa-missed-safety-issues-in-the-737-max-system-implicated-in-the-lion-air-crash/; https://www.aviationtoday.com/2019/11/02/boeing-ceo-outlines-mcas-updates-congressional-hearings/

[46] Boeing employees described the aircraft as a "joke" and "ridiculous." https://www.nytimes.com/2020/01/10/business/boeing-737-employees-messages.html

[47] https://www.cnn.com/2020/01/09/business/boeing-documents/index.html One employee wrote, "Honesty is the only way in this job — integrity when lives are on the line on the aircraft and training programs shouldn't be taken with a pinch of salt… Would you put your family on a MAX simulator trained aircraft? I wouldn't." "No," the other worker responded

[48] 14 C.F.R. §91.3 (2020) "Responsibility and authority of the pilot in command. (a) The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft."

The second tragedy is that the Federal Aviation Administration (FAA) had abdicated its responsibility to oversee and certify the safety of these aircraft dependent on highly-complex ADS. "[C]iting lack of funding and resources, [the FAA] had delegated increasing authority to Boeing to take on more of the work of certifying the safety of its own airplanes."[49] Ultimately, the certification of this ADS was completely delegated to Boeing. [50] Again, the Boeing employees knew the FAA was abdicating their role, describing regulators as "dogs watching TV" because "[t]here is no confidence that the F.A.A. is understanding what they are accepting (or rejecting)."[51]

The tombstone design perpetrated by designers at Boeing and allowed by regulators at the FAA, not only killed 346 people but eroded global trust in the aviation industry. CEO's of airlines around the world and the international aviation regulators are openly concerned about the long-term effects of draining public confidence.[52] Where an FAA certification of an aircraft was once respected around the world, the MAX 8 has now caused international aviation safety regulators to question their mutual recognition and reciprocity.[53]

Aware of the issue of public trust, Congress required testimony from the now-former Boeing CEO, Mr. Dennis Muilenburg. "If back then we knew everything that we know now, we would've made a different decision."[54] In other words, it took two accidents and the deaths of 346 people for them to realize that the flawed MCAS never should have been deployed in the first place. That is tombstone design.

Seeing the People at the Tip of the Spear

For all the tragedy that Boeing and the FAA have caused with their tombstone design, broader society demanded that they face their mistakes. With a year, the MAX 8 has been completely grounded, Boeing's CEO was fired, and Congress demanded testimony from designers and regulators.

What is truly unthinkable is that they would do nothing in the wake of tragedy.

But that is exactly what has happened in New York as an army of ADS spread across the city. FST illegitimately threatened the liberties and freedom of over 1300 New Yorkers without any oversight. OCME then adopted STRMix, a private version of FST, to replace it. The Administration for Child Services is developing new predictive analytics for investigating claims of abuse and neglect.[55] The New York City Housing Authority is beginning to use third-party data broker ADS systems to manage voucher programs, tenant screening, property management, and maintenance requests.[56] The New York Police Department has long implemented so-called "gang" databases[57] and technology persistently monitoring New York City for

[49] https://www.seattletimes.com/business/boeing-aerospace/failed-certification-faa-missed-safety-issues-in-the-737-max-system-implicated-in-the-lion-air-crash/
[50] https://www.seattletimes.com/business/boeing-aerospace/failed-certification-faa-missed-safety-issues-in-the-737-max-system-implicated-in-the-lion-air-crash/
[51] https://www.nytimes.com/2020/01/10/business/boeing-737-employees-messages.html
[52] https://www.businesstravelnews.com/Transportation/Air/Airline-CEOs-Worry-of-Eroding-Public-Trust-as-Boeing-Max-Return-Drags-On
[53] https://www.businesstravelnews.com/Transportation/Air/Airline-CEOs-Worry-of-Eroding-Public-Trust-as-Boeing-Max-Return-Drags-On
[54] https://www.aviationtoday.com/2019/11/02/boeing-ceo-outlines-mcas-updates-congressional-hearings/
[55] https://chronicleofsocialchange.org/child-welfare-2/new-york-predictive-analytics-debate-child-welfare/31732
[56] https://ainowinstitute.org/ads-shadowreport-2019.pdf
[57] https://theintercept.com/2018/06/11/new-york-gang-database-expanded-by-70-percent-under-mayor-bill-de-blasio/

gunfire.[58] The Department of Corrections and Board of Corrections are using ADS to determine who has access to care (e.g., nursery programs for new mothers) and programming (e.g., literacy classes).[59]

When will true oversight begin? Is anyone sure that any of these ADS actually work?

I worry that the difference between what happened with the Boeing MAX 8 and what is happening in New York City, is that when those in power see the Boeing MAX 8 accidents, they can see themselves at the tip of the spear. They can imagine themselves on those aircraft. They immediately worry about their and their family's safety. Their self-interest demands action.

But too many people in this city, when they hear about FST, do not empathize. They don't see those 1300 New Yorkers. They cannot imagine being affected by STRMix, child services, the housing authority, the police, or corrections. They just don't see the people, the families, and the communities at the tip of the spear. They don't see the people who have lost loved ones, children, homes, jobs, livelihoods, and dignity because of these agencies and their ADS. But those people are real. Their suffering is real. Their fear is real. Every bit as real as the tragedies caused by the MAX 8. And not reacting to the tombstone design occurring in this city is just as unthinkable.

Do Not Allow ADS Without Requiring That They Work

So, I implore you today, do not allow ADS to be implemented in New York without requiring that the ADS works. It is the foundation of ethical AI principles across the United States and around the world, and across the safety-critical domains that our lives depend upon each day from aviation and defense to medicine.

First, find and stop the badly designed ADS. Stop New York's own history of tombstone design. See the people at the tip of the spear. Don't allow unsafe and ineffective ADS like the Forensic Science Tool to run amok throughout the city, wreaking havoc for years without oversight.

Second, enforce the principles of good design. Demand that those designing and implementing the ADS disclose the ADS' capabilities and limitations, how the ADS will affect real people and organizations, and the independent verification and validation.

Of course, there are deeper issues of bias, accountability, and transparency that must be included in any meaningful governance. But, today, New York City can demand good design. Today, New York City can decide to end its own history of tombstone design.

New Yorkers are demanding transparency, equity, and accountability, and they don't only mean for ADS alone, they mean for you, too. The right first step is to assure them that ADS are safe and effective. It's not only what good design requires, but what good governance demands.

[58] https://www.nytimes.com/2015/03/17/nyregion/shotspotter-detection-system-pinpoints-gunshot-locations-and-sends-data-to-the-police.html
[59] https://ainowinstitute.org/ads-shadowreport-2019.pdf

Statement for the Record
Hearing of the New York City Council Committee on Technology
On Oversight of Automated Decision Systems Used by Agencies
January 22, 2020

We appreciate the invitation to testify before the New York City Council Committee on Technology in connection with the oversight hearing on automated decision systems. Although we are not able to testify in person, we submit this statement for the hearing record.

In August of 2018, we joined a letter to the Chairs of New York City's Task Force on Automated Decision Systems,[1] making a series of recommendations to the Task Force. Among other recommendations, our coalition letter urged the Task Force to establish fair procedures for evaluating the use of automated decision systems, to develop robust standards for assessing whether an automated decision system has a disproportionate impact on the basis of race or other protected status, to design meaningful redress procedures for people harmed by automated decision systems, and to provide opportunities for public input and consultation with outside experts.

The Task Force took some steps toward these goals, and we were pleased to see that when the Task Force released its report in November 2019, it included some important recommendations along the lines urged in our coalition letter. In particular, we welcome the report's recommendations to "incorporate key principles of fairness, transparency, innovation and efficiency, and accountability to help guide responsible City agency use and management" of automated decision systems, and to "Involve impacted communities in discussions about specific" uses of automated decision systems.[2] However, the report does not go far enough to ensure that the goals set forth in our letter will be met.

In *Confronting Black Boxes,* the Shadow Report of the New York City Task Force on Automated Decision Systems,[3] Task Force participants from NGOs outline how the Task Force process failed to adequately include community voices. This is particularly discouraging since our coalition letter had highlighted the need for community input and had provided a suggested list of outside experts for consultation. In addition, the Shadow Report provides a series of recommendations to regulate government use of automated decision systems. These recommendations extend well beyond those offered in the Task Force report and, if adopted,

---

[1] Coalition Letter to Chairs of New York City Task Force on Automated Decision Systems, August 17, 2018, http://assets.ctfassets.net/8wprhhvnpfc0/1T0KpNv3U0EKAcQKseIsqA/52fee9a932837948e3698a658d6a8d50/NYC_ADS_Task_Force_Recs_Letter.pdf

[2] New York City Automated Decision Systems Task Force Report, at 19 & 23, November 2019, https://www1.nyc.gov/assets/adstaskforce/downloads/pdf/ADS-Report-11192019.pdf

[3] Rashida Richardson, ed., *Confronting Black Boxes: A Shadow Report of the New York City Task Force on Automated Decision Systems,* AI Now Institute, December 4, 2019, https://ainowinstitute.org/ads-shadowreport-2019.pdf

would provide more robust safeguards for individual rights, greater transparency and accountability to the public and to mitigate problems of algorithmic bias and disproportionate impact on people based on race or other protected status.

New York City has the opportunity to serve as a model for other cities in the United States and around the world searching for best practices to deal with automated decision systems. Especially in light of that fact, we urge the Committee to build on the work of the Task Force as outlined in the further recommendations of the Shadow Report.

Sharon Bradford Franklin
New America's Open Technology Institute
franklin@opentechinstitute.org

Megan Garcia
New America's National Network
garcia@newamerica.org

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 1-22-20

(PLEASE PRINT)

Name: Marc Canellas

Address: NYU Law

I represent: IEEE-USA AI Policy Committee

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 1-22-20

(PLEASE PRINT)

Name: Emmanuel Mudy

Address: _____

I represent: Radicalxchange.org

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: 1-22-20

(PLEASE PRINT)

Name: Lisa Freeman

Address: 199 Water St

I represent: The Legal Aid Society

Address: 199 Water St

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☑ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Christopher W. Boyle

Address: 100 William Street

I represent: New York County Defender Services

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 1447+1806 Res. No. _____

☑ in favor ☐ in opposition

Date: 1/22/19

(PLEASE PRINT)

Name: Laura Hecht-Felella

Address: 120 Broadway 17th Floor

I represent: Brennan Center for Justice

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 1447 Res. No. _____

☐ in favor ☐ in opposition

Date: 1-22-20

(PLEASE PRINT)

Name: Tom Speaker

Address: 5002 65th St Woodside NY

I represent: Reinvent Albany

Address: 148 Lafayette NY NY

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. 1447 Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: KELLY JIN, CHIEF ANALYTICS OFFICER

Address: 253 BROADWAY

I represent: MAYOR'S OFFICE OF DATA ANALYTICS

Address: _____

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Brittney Saunders

Address: 22 Reade Street, 7th fl

I represent: NYC Commission on Human Rights / ADS

Address: Task Force

THE COUNCIL
THE CITY OF NEW YORK

(P)

Appearance Card

I intend to appear and speak on Int. No. 1 Res. No. _____

☐ in favor ☐ in opposition

Date: 1/22/20

(PLEASE PRINT)

Name: Jeff Thamkittikasem

Address: 253 Broadway R. 10

I represent: NYC Mayors Office of Operations

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☑ in favor ☐ in opposition

Date: 1/22/19

(PLEASE PRINT)

Name: William van der Mei

Address: ~~100 William Str.~~ 290 Potter Place

I represent: New York County Defender Services

Address: 100 William Street

11

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☑ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Rashida Richardson

Address: _____

I represent: AI Now Institute

Address: _____

11

51

THE COUNCIL
THE CITY OF NEW YORK

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☐ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Daniel Schwarz

Address: _____

I represent: New York Civil Liberties Union

Address: _____

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

(1)

Appearance Card

I intend to appear and speak on Int. No. 1806 Res. No. _____

☑ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: Lindsay Greyerbiehl

Address: _____

I represent: S.T.O.P. - Surveillance Technology Oversight project

Address: 40 rector st.

Please complete this card and return to the Sergeant-at-Arms

THE COUNCIL
THE CITY OF NEW YORK

(2)

Appearance Card

I intend to appear and speak on Int. No. _____ Res. No. _____

☑ in favor ☐ in opposition

Date: _____

(PLEASE PRINT)

Name: NOEL HIDALGO

Address: _____

I represent: BETA NYC

Address: _____

Please complete this card and return to the Sergeant-at-Arms