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ENSURING A FUTURE THAT ADVANCES EQUITY IN ALGORITHMIC EMPLOYMENT DECISIONS

Statement of

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before the

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Committee on Education and Labor,

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THE FUTURE OF WORK: PROTECTING WORKERS' CIVIL RIGHTS IN THE DIGITAL AGE

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*The views expressed are my own and should not be attributed to the Urban Institute, its trustees, or its funders.

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Chair Bonamici, Ranking Member Comer, and distinguished members of the subcommittee, my name is Jenny R. Yang, and I serve as a senior fellow at the Urban Institute. In providing this testimony, I draw upon my work at the Urban Institute as well as my service as a member and Chair of the U.S. Equal Employment Opportunity Commission (EEOC) from 2013 to 2018. Prior to my time at the Commission, I spent 15 years litigating civil rights cases on behalf of workers. The views expressed here are my own and should not be attributed to the Urban Institute, its trustees, or its funders.

Technology is transforming the lives of America's workers, and this transformation has profound implications for civil rights. With the rise in algorithmic management, broadened monitoring and surveillance, and redefined employment relationships, technology is heightening the risk that employment discrimination may be masked through ineffective accountability structures and increasing information asymmetry. Many new tech-driven systems use artificial intelligence (AI) in algorithmic decisionmaking to make data-driven decisions about hiring or evaluating workers. Yet, these employment screens and evaluation systems raise critical legal questions. Systems are often opaque and make decisions on potentially inaccurate or biased data, and these decisions are often unreviewable. Because technology provides a sense of objectivity and scientific analysis, discriminatory decisions can become magnified and rapidly scaled.

Often with new technology, there is a desire to move fast, test new ideas and disrupt existing practices. However, in employment, technological systems are making highly consequential decisions that affect people's economic opportunities. These new technologies raise risks that must be adequately studied before systems are deployed. Just as we expect that driverless vehicles and diagnostic health algorithms will be rigorously studied, we should similarly expect that technology used to classify people will be adequately understood with clear accountability mechanisms before it is used.

I first started to explore issues concerning technology and hiring over four years ago, while I served as Chair of the EEOC. In celebrating the agency's 50th anniversary, we recognized the need to better understand how work was changing and how our laws may need to adapt. The Commission held several public meetings exploring social media, online recruiting, and big data in hiring screens.[1]

After leaving the EEOC, I joined the Urban Institute in April 2019, where I am building a new Initiative on Workplace Equity to translate research into action to revitalize our employment laws and advance opportunity for all to work with dignity. In October 2019, Urban hosted a meeting in collaboration with Upturn, the Leadership Conference on Civil and Human Rights, and the Lawyers' Committee for Civil Rights Under Law. The meeting convened about 50 people with expertise across sectors, including computer and data scientists, tech developers, industrial and organizational psychologists and other social scientists, employment lawyers, employers and entrepreneurs to translate for each other and explore a path forward to ensure fairness and equity in the use of hiring algorithms. Building on those discussions, civil rights organizations are working together to identify core principles for tech developers and employers to advance civil rights.

[1] See, e.g., "Equal Employment Opportunity Commission, Big Data in the Workplace, Hearing Transcript," October 13, 2016, https://www.eeoc.gov/eeoc/meetings/10-13-16/transcript.cfm; "EEOC at 50: Progress and Continuing Challenges in Eradicating Employment Discrimination," July 1, 2015, https://www.eeoc.gov/eeoc/meetings/7-1-15/index.cfm; "Social Media in the Workplace Examining Implications for Equal Employment Opportunity Law," March 12, 2014, https://www.eeoc.gov/eeoc/meetings/3-12-14/index.cfm.

The government has begun to investigate concerns regarding these systems. The Electronic Privacy Information Center has filed a complaint with the Federal Trade Commission alleging that one video-based hiring vendor has engaged in unfair and deceptive business practices by failing to ensure the accuracy, reliability, or validity of its algorithmically driven results and that the algorithmic assessments cannot be evaluated or meaningfully challenged by the job candidates they have assessed.[2] Bloomberg has reported that EEOC has at least two investigations into charges that algorithms unlawfully discriminate during the recruitment process.[3]

New technology in the workplace raises important issues for workers, policymakers, and business leaders as we shape the policies that will define our future. Tech leaders have increasingly agreed that it is time to regulate AI.[4] Regulatory action need not stifle innovation, but it can serve as a baseline from which technological innovations can flourish. As we consider how to best govern evolving technology, we must protect human dignity and empower workers to organize for fair and inclusive practices. Policies that safeguard basic rights for working people and promote economic security are fundamental to our democracy.[5]

In Part I below, I discuss how we can ensure fairness in the use of algorithmic hiring, including: (1) the use of algorithmic systems at different stages of the hiring process and how bias can enter decisions; (2) the application and gaps in our existing law as applied to algorithmic employment decisions; and (3) a framework for the development of an accountability structure with independent auditing and a workers' bill of rights for algorithmic decisions. In Part II, I address how (1) changing workplace relationships, including platforms that may misclassify workers as "independent contractors," have led to a rise in precarious work, in turn fueling a growing lack of accountability for civil rights concerns; (2) algorithmic management and surveillance have impacted workers' civil rights; and (3) technology can catalyze workers' ability to organize for greater equity.

I. Ensuring Fairness in Algorithmic Hiring

Automated hiring systems act as modern gatekeepers to economic opportunity. These systems include targeted job advertisements and online application processes that screen and rank resumes, conduct game-based assessments, and even analyze applicants' facial expressions through video interviews. Across industries, major employers including Unilever, Hilton, and Delta Air Lines are using data-driven, predictive hiring tools.[6]

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[2] Drew Harwell, November 6, 2019, "Rights group files federal complaint against AI-hiring firm HireVue, citing 'unfair and deceptive' practices," *Washington Post*, November 26, 2019, https://www.washingtonpost.com/technology/2019/11/06/prominent-rights-group-files-federal-complaint-against-ai-hiring-firm-hirevue-citing-unfair-deceptive-practices.

[3] Chris Opfer, "AI Hiring Could Mean Robot Discrimination Will Head to Courts," *Bloomberg Law*, Nov. 12, 2019, https://news.bloomberglaw.com/daily-labor-report/ai-hiring-could-mean-robot-discrimination-will-head-to-courts.

[4] Monica Nickelsburg, "Tech experts agree it's time to regulate artificial intelligence — if only it were that simple," *Geek Wire*, December 12, 2019, https://www.geekwire.com/2019/tech-experts-agree-time-regulate-artificial-intelligence-simple/.

[5] Sharon Block and Benjamin Sachs, *Clean Slate for Worker Power: Building a Just Economy and Democracy* (January 2020), https://assets.website-files.com/5ddc262b91f2a95f326520bd/5e28fba29270594b053fe537CleanSlateReport FORWEB.pdf.

[6] Drew Harwell, "A face-scanning algorithm increasingly decides whether you deserve the job," *Washington Post*, November 6, 2019, https://www.washingtonpost.com/technology/2019/10/22/ai-hiring-face-scanning-algorithm-increasingly-decides-whether-you-deserve-job/; "How Delta Disrupts Talent Acquisition With Assessments," accessed January 25, 2020, https://www.hirevue.com/resources/how-delta-disrupts-talent-acquisition-with-ai.

Selection assessments increasingly rely on algorithmic decisionmaking, a term that I will use broadly to encompass predictive analytics and artificial intelligence, including machine learning algorithms that identify patterns in data to build models to forecast outcomes without being explicitly programmed. Algorithmic hiring tools raise important questions for our antidiscrimination laws.[7] The complexity and opacity of many algorithmic systems often make it difficult if not impossible to understand the reason a selection decision was made. Often thousands of data points have been analyzed to evaluate candidates from social media sites, words in resumes, and other available data. Many systems operate as a "black box," meaning vendors of algorithmic systems do not disclose how inputs lead to a decision. This creates a risk that automated systems may make decisions virtually unchecked.

Because of the dramatic rise in online applications, employers are turning to data-driven, predictive tools to recruit and screen job candidates to achieve greater efficiency and cost savings through automated decisionmaking. Some employers aim to hire more quickly or reduce turnover. Others aim to make better job-related decisions and hire more diverse candidates. Employers are also using AI to optimize job description language to attract more qualified and diverse applicants through augmented writing techniques.[8] Predictive screens have the potential to expand the applicant pool by measuring abilities rather than relying on proxies for talent, such as graduation from an elite university, employee referrals, or recruiting from competitors, all of which may exclude qualified workers who are not well represented in these networks.

With AI, machines work to simulate human processes. Often the bias in AI systems is the human behavior it emulates. As a society, we have made limited progress in addressing discriminatory hiring practices that have contributed to widespread occupational segregation[9]—a major contributor to wealth and opportunity gaps across race, ethnicity and gender. Still today, having a nonwhite or foreign-sounding name reduces the likelihood of being interviewed 40 to 50 percent when comparing those with the same qualifications.[10] In studies, men are viewed as more fact-based, reasoned, and logical when giving the exact same venture capital pitch as women.[11] People with disabilities and older workers[12] face systemic employment discrimination. Subjective decisionmaking practices have long perpetuated discrimination while being very difficult to challenge under current laws and class certification standards.[13] Algorithmic systems could help identify and remove systemic barriers in hiring and employment practices, but to realize

[7] This testimony draws from Jenny R. Yang and Rachel See, "The Promise and Threat of Artificial Intelligence in Combating (or Worsening) Employment Discrimination," paper presented at the NAPABA Convention, November 9, 2019.
[8] Dave Zeilinski, "Augmented Writing Technology Boosts Diversity Initiatives," *Society for Human Resource Management*, April 23, 2019 https://www.shrm.org/resourcesandtools/hr-topics/technology/pages/augmented-writing-technology-boosts-diversity.aspx.
[9] Kevin Stainback and Donald Tomaskovic-Devey, *Documenting Desegregation: Racial and Gender Segregation in Private Sector Employment Since the Civil Rights Act* (New York: Russell Sage Foundation, 2012).
[10] Marianne Bertrand and Sendhil Mullainathan, "Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination," *American Economic Review* 94, no. 4 (September 2004): 991–1013; Rupa Banerjee, Jeffrey Reitz, and Phil Oreopoulous, *Do Large Employers Treat Racial Minorities More Fairly? A New Analysis of Canadian Field Experiment Data* (Toronto, CAN: University of Toronto, 2017). http://www.hireimmigrants.ca/wp-content/uploads/Final-Report-Which-employers-discriminate-Banerjee-Reitz-Oreopoulos-January-25-2017.pdf .
[11] Alison Wood Brooks, Laura Huang, Sarah Wood Kearney, and Fiona E. Murray. "Investors Prefer Entrepreneurial Ventures Pitched by Attractive Men," *Proceedings of the National Academy of Sciences of the United States of America* 111, no. 12 (March 25, 2014): 4427–31.
[12] Peter Gosselin, "If You're Over 50, Chances Are the Decision to Leave a Job Won't be Yours," December 28, 2018, *ProPublica*, https://www.propublica.org/article/older-workers-united-states-pushed-out-of-work-forced-retirement.
[13] See Wal-Mart v. Dukes, 564 U.S. 338 (2011).

this promise we must ensure they are carefully designed to prevent bias and to document and explain decisions necessary to evaluate their reliability and validity.

By moving away from traditional criteria, such as a college degree requirement, employers can potentially hire from a more diverse pool of high-performing candidates that have an aptitude for certain jobs. For example, Catalyte uses data science and AI in online assessments to identify candidates from nontraditional backgrounds who have the potential to become high-performing software developers. Their program has enabled fast-food workers, truck drivers, construction workers and formerly incarcerated individuals to obtain software development and apprenticeship training that leads to well-paid jobs at technology firms.

But algorithmic systems can also operate to replicate and deepen existing inequities. Many employers attempt to simply automate their existing hiring processes, which rely on subjective judgments and reflect historic bias. Hiring algorithms trained on inaccurate, biased, or unrepresentative data can produce discriminatory decisions. Algorithms can also reflect the blind spots of their developers who may not detect bias in the data—a particularly acute concern given the lack of diversity in the AI field.[14] Bias can then impact hiring decisions on a massive scale because the systems can be deployed to make thousands of hires. Compounding these problems, systems are often designed solely to address the employers' efficiency needs. The screens may not adequately evaluate workers who could do the job but are screened out. Similar to long-standing concerns about employers' reliance on arrest and conviction or credit screens, algorithmic decisions may systematically exclude certain individuals from employment--leaving individuals virtually unemployable.

A. AI at Different Stages of the Hiring Process

Predictive technologies are playing very different roles at each stage of the hiring process, from determining who sees job advertisements, to screening and predicting an applicant's performance, to forecasting a candidate's salary requirements.[15]

Sourcing: Employers attract candidates to apply for jobs through advertisements, job postings, and individual outreach. Predictive analytics plays a powerful role in shaping the applicant pool by determining who learns of job opportunities through digital advertising and recruiting efforts.

Screening: Employers assess candidates by analyzing their experience, skills, and personality attributes. Some systems use AI to screen and rank resumes. Others use online games.

Interviewing: Video interviews use AI to evaluate thousands of dimensions, including facial expressions (a smile or a furrowed brow), tone of voice and word choice using natural-language processing and machine learning to purport to measure personality characteristics.

Selection: Employers make final hiring and compensation decisions. Humans typically make the selection but may be informed by algorithms that have ranked, scored or flagged candidates.

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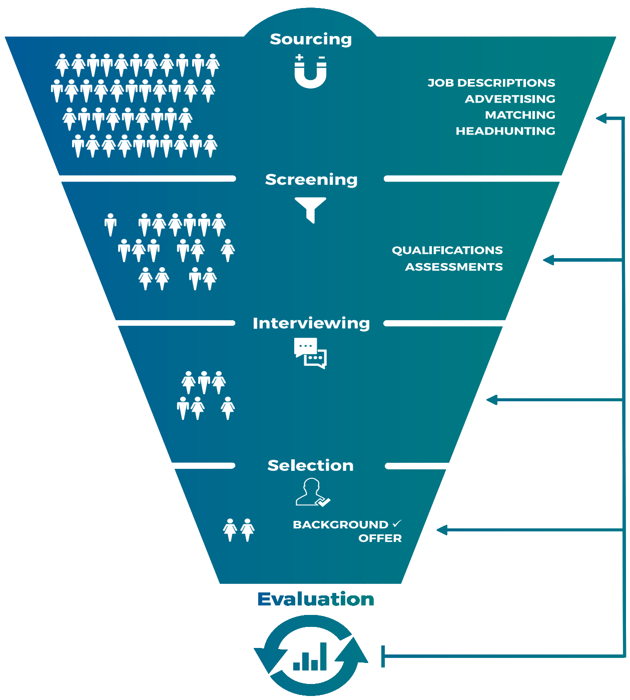
[14] Kate Crawford, Roel Dobbe, Theodora Dryer, Genevieve Fried, Ben Green, Elizabeth Kaziunas, et al., *AI Now 2019 Report* (New York: AI Now Institute, 2019). https://ainowinstitute.org/AI_Now_2019_Report.html.

[15] Miranda Bogen and Aaron Rieke. "Help Wanted: An Examination of Hiring Algorithms, Equity, and Bias" (Washington, DC: Upturn, 2018), https://www.upturn.org/reports/2018/hiring-algorithms/.

Today, I will focus on the operation of screening algorithms and potential discrimination concerns.

FIGURE 1

The Hiring Funnel



Source: Miranda Bogen and Aaron Rieke, *Help Wanted: An Examination of Hiring Algorithms, Equity, and Bias*, Upturn, December 2018, https://www.upturn.org/reports/2018/hiring-algorithms/

B. Algorithmic Assessments and Screening of Applicants

In the screening phase, employers review applications and rank candidates to weed out less-qualified applicants and obtain insights on candidates of interest. Predictive hiring screens can assist in this initial sorting by assessing, scoring, and ranking applicants for minimum and preferred qualifications or skill sets. These tools range from chatbots asking screening questions,[16] to a review of resumes with machine learning techniques,[17] to predictive assessments using online tests,[18] to "neuroscience" web games that attempt to make the hiring process engaging and competitive by requiring applicants to solve puzzles or other challenges to measure personality attributes such as risk taking or creativity.[19] Some screens operate to create risk profiles for toxic behavior by applying machine learning to social media and other public and internal HR data for both applicants and employees.[20]

Although algorithmic systems might have the appearance of objectivity, they risk introducing new avenues for bias to enter decisions in at least three significant ways:

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[16] "About Us," Mya, accessed January 25, 2020, https://mya.com/about.
[17] "Resume Screening," Ideal, accessed January 25, 2020, https://ideal.com/resume-screening/.
[18] "About Us," Koru, accessed January 25, 2020, https://www.joinkoru.com/about/.
[19] "About Us," Pymetrics, accessed January 25, 2020, https://www.pymetrics.com/about/.
[20] Kathryn Vasel, "This Company Uses AI to Flag Racist and Sexist Comments from Potential Hires," *CNN*, April 12, 2019, https://www.cnn.com/2019/04/12/success/fama-prescreen-employment/index.html.

(1) Bias in the training data. Algorithms are often developed based on data from past hiring decisions and evaluations of top performers at the company. However, using this historic data can reproduce inequity even when tools explicitly ignore race, gender, age, and other protected bases. When the data used to train the algorithm are not diverse, the analytical models may build in barriers to underrepresented groups, including candidates who could perform the job as well or better than top performers but who have a different profile.

For example, Amazon attempted to build an algorithmic screening tool for applicants' resumes to select top talent for software developer jobs and other technical posts.[21] Amazon's computer models were trained by observing patterns in resumes submitted over a 10-year period. Men had submitted most of those resumes, and the algorithms learned to prefer male candidates and penalize resumes that included phrases such as "women's chess club captain" or graduation from all-women colleges. Similarly, a resume screening service discovered that its model identified being named "Jared" and playing high school lacrosse as the strongest predictive indicators of success, despite neither having a causal link to job performance.[22] These examples highlight the problems of training algorithms on data that are not diverse and representative.

(2) Bias in model development. Bias can enter the process through the design of the algorithmic models that select the variables to consider and analyze the data. Removing race, gender, ethnicity, age, and other such variables from the dataset does not eliminate discriminatory decisions since the algorithm could identify unanticipated proxies for these attributes. For example, living closer to work is correlated with retention, but zip codes are a long-recognized proxy for race given historical neighborhood segregation. Model developers decide the types of attributes to select for in their assessments, which may introduce hidden assumptions, human bias and stereotypes.[23] For example, considering data such as leaves of absence are likely to exclude women with caregiving responsibilities and people with disabilities. Similarly, screens for graduation years or maximum years of experience will exclude qualified older workers. A model may also perform differently and with less accuracy for members of certain underrepresented groups who are not well-represented in the training data, which could set people up to fail, and lend support to harmful stereotypes.[24]

(3) Improper use of algorithmic predictions. Algorithmic systems rely on important interactions between humans and machines. Systems that score and rank applicants may lead humans to believe they are precise and objective even though systems can overstate small distinctions among qualified candidates that are not truly related to performance. Algorithms used to generate rankings are often unstable — small changes in the data or in the ranking methodology may lead to dramatically different results, making the scoring uninformative and easily manipulated.[25] And humans may misuse the algorithmic system in a way the vendor did not intend or may use the results differently for different groups based on biased

[21] Jeffrey Dastin, "Amazon Scraps Secret AI Recruiting Tool That Showed Bias Against Women," *Business News*, October 9, 2018, https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G.

[22] Dave Gershgorn, "Companies Are on the Hook If Their Hiring Algorithms Are Biased," *Quartz*, October 22, 2018, https://qz.com/1427621/companies-are-on-the-hook-if-their-hiring-algorithms-are-biased.

[23] Solon Barocas and Andrew D. Selbst, "Big Data's Disparate Impact." *California Law Review* vol 104, no. 3 (2016: 671–732. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2477899.

[24] Pauline Kim, "Auditing Algorithms for Discrimination," U. Pa. L. Rev. Online, 166, 189 (2017).

[25] Ke Yang, Julia Stoyanovich, et al. "A nutritional label for rankings." 2018. In Proceedings of the 2018 international conference on management of data, 1773–76, https://par.nsf.gov/servlets/purl/10074235.

assumptions. Understanding the use and the beliefs of the people using the screen may be just as important as monitoring the screen itself.

Further, gamified screens may also test for reflex and response time, which may disadvantage communities of color as well as older workers because of inequities in internet connection speeds. These screens may also raise concerns for people with disabilities as discussed below.

C. Application and Gaps in Existing Legal Protections for AI-Driven Hiring

The civil rights community,[26] leading technologists,[27] academics,[28] public policy makers,[29] and the media[30] have raised increasing concerns about the need for greater safeguards in the use of algorithmic decisionmaking in high-stakes circumstances such as employment, criminal justice, credit, and housing. Building on the European Union's General Data Protection Regulation (GDPR), governments at the state level and abroad are taking action to regulate algorithmic systems. One hundred and thirty countries have now passed comprehensive data protection laws.[31] Illinois became the first state to enact a video-based interview law to provide workers with a right to notice and other protections.[32] The California Consumer Privacy Act, effective January 1, 2020, provides consumers with access to and the power to delete personal information collected by businesses.

On January 7, 2020, the Trump administration proposed 10 principles for federal agencies to follow in crafting regulations for AI use in the private sector.[33] International bodies, including the Organization for Economic Cooperation and Development[34] and the European Union,[35] have put forth recommendations on the ethical use of AI. Although these recommendations do not provide concrete guidance, they provide a foundation for an accountability framework.

The legal standards that apply today to employment screens build on decades of guidance and litigation on the appropriate use of selection devices. Algorithmic screens do not fit neatly within our existing laws because algorithmic models aim to identify statistical relationships among variables in the data whether or

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[26] The Leadership Conference on Civil and Human Rights, "Letter to Congress on Civil Rights and Privacy," February 13, 2019. http://civilrightsdocs.info/pdf/policy/letters/2019/Roundtable-Letter-on-CRBig-Data-Privacy.pdf.
[27] Crawford et al., *AI Now 2019 Report*, https://ainowinstitute.org/AI_Now_2019_Report.html.
[28] Solon Barocas and Andrew D. Selbst, "Big Data's Disparate Impact." *California Law Review* vol 104, no. 3 (2016: 671–732. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2477899; Matthew T. Bodie, Miriam A. Cherry, Marcia L. McCormick, and Jintong Tang, "The Law and Policy of People Analytics," Saint Louis University Legal Studies Research Paper 2016-6, https://ssrn.com/abstract=2769980.
[29] John Podesta, "Big Data: Seizing Opportunities, Preserving Values" (Washington DC: White House, Executive Office of the President, 2014).
[30] Jennifer Valentino-DeVries, "How Police Use Facial Recognition and Where It Falls Short," *New York Times*, January 12, 2020, https://www.nytimes.com/2020/01/12/technology/facial-recognition-police.html; Hilke Schellmann, "How Job Interviews Will Transform in the Next Decade," *Wall Street Journal*, January 7, 2020. https://www.wsj.com/articles/how-job-interviews-will-transform-in-the-next-decade-11578409136; Shaun Donovan,"The Trump Administration Is Clearing the Way for Housing Discrimination," *New York Times*, January 22, 2020, https://www.nytimes.com/2020/01/22/opinion/fair-housing-act-trump.html.
[31] Crawford et al., *AI Now 2019 Report*. https://ainowinstitute.org/AI_Now_2019_Report.html.
[32] Public Act 101-0260, "Video Interview Act," Illinois General Assembly (2019).
[33] Exec. Order No. 13,859, "Maintaining American Leadership in Artificial Intelligence," 84 Fed. Reg. 3967, Feb. 11, 2019, https://www.whitehouse.gov/presidential-actions/executive-order-maintaining-americanleadership-artificial-intelligence/.
[34] "Recommendation of the Council on Artificial Intelligence," Organization for Economic Co-Operation and Development, May 21, 2019, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449.
[35] "Ethics Guidelines for Trustworthy AI," European Commission, April 8, 2019, https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai.

not they are understood or job related. Relying on data from far outside the workplace to discover correlations with characteristics relevant to job performance is in tension with our antidiscrimination laws.[36] Although algorithms can uncover job-related characteristics with strong predictive power, they can also identify correlations arising from statistical noise or undetected bias in the training data. Many of these models do not attempt to establish cause-and-effect relationships, creating a risk that employers may hire based on arbitrary and potentially biased correlations.

Tests and other selection procedures can violate federal antidiscrimination laws if they disproportionately exclude people of a particular group by race, ethnicity, sex, or another covered basis, and the employer is unable to justify the screen as sufficiently job related.[37] Title VII of the Civil Rights Act of 1964 prohibits employers from discriminating on the basis of race, color, religion, sex, and national origin. It bars discrimination based on disparate treatment (where an employer treats people differently based on a prohibited basis) as well as disparate impact (when a facially neutral selection procedure disproportionately excludes people on a protected basis and is not "job-related and consistent with business necessity"). Employment screens can also violate the ADA, which prohibits an employer from asking applicants to answer medical questions or take a medical exam before making a job offer. The Genetic Information Nondiscrimination Act prohibits employers from requesting or acquiring genetic information. The Age Discrimination in Employment Act (ADEA) prohibits discrimination against workers age 40 or above.

The Uniform Guidelines on Employee Selection Procedures (Uniform Guidelines), adopted in 1978 by the EEOC, Department of Justice (DOJ), Department of Labor, and the then existing Civil Service Commission, provide unified principles to determine whether a test or selection procedure is nondiscriminatory. The Uniform Guidelines are important in the assessment field because they explain methods for validating selection procedures where a test has a disparate impact based on race, sex or ethnicity. These guidelines, read along with the Civil Rights Act of 1991, provide that once a plaintiff establishes the disparate impact of a certain practice, the burden shifts to the employer to show the screens are "job-related as a business necessity." If the employer satisfies that showing, the burden shifts back to the plaintiff to demonstrate that a less discriminatory alternative was available. Algorithmic systems raise many new legal questions, including how to evaluate "business necessity" as well as "a less discriminatory alternative."[38]

Often, proponents of algorithmic assessments will argue that the systems are less discriminatory than subjective human systems and should be permissible even where they exhibit some bias. However, the inquiry is not simply whether algorithmic systems are less biased than humans' subjective decisions. Rather, the law requires that systems with a disparate impact must be sufficiently job related. I began my career as a trial attorney in the Civil Rights Division of DOJ, where we litigated challenges to cognitive tests used by police and fire departments that assess applicants on areas such as speed and accuracy of reasoning and memory, or on math and reading comprehension. These tests often disproportionately exclude African American and Latinx candidates who could succeed on the job. We also challenged physical ability tests that measure strength and stamina, but often disproportionately screen out qualified women. Early cases

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[36] See pages 556–58 of Allan G. King and Marko Mrkonich, "Big Data and the Risk of Employment Discrimination," *Oklahoma Law Review* 68 (2016): 555 https://digitalcommons.law.ou.edu/olr/vol68/iss3/3 .
[37] "Employment Tests and Selection Procedures," The U.S. Equal Employment Opportunity Commission, September 23, 2010, https://www.eeoc.gov/policy/docs/factemployment_procedures.html.
[38] See page 557 of King and Mrkonich.

challenged the then-common height requirements in public safety and law enforcement positions. Although height may have some correlation with job performance, courts recognized that such criteria rely on stereotypes that unfairly screen out women who can perform the job.[39] Courts have long recognized that even though cognitive and physical ability tests have predictive power for performance, they serve as barriers to equal opportunity when they have a disparate impact and are not sufficiently job related.

These same principles apply equally to algorithmic screens. However, plaintiffs face substantial challenges in bringing discrimination lawsuits to challenge algorithmic systems. First, disparate treatment discrimination is difficult to prove. Assessments can be designed with knowledge that they exclude certain groups on a protected basis, but intent can be readily masked in the thousands of data points incorporated in a model. Second, disparate impact actions require plaintiffs to demonstrate that a specific employment practice leads to a pattern of discriminatory exclusions. This requires knowledge of how a large number of other individuals have been impacted, which is typically information only known to the employer. In addition, vendors often refuse to disclose essential information about the system's design and operation, asserting intellectual property protections. This leaves workers unable to obtain sufficient information about the operation of the screen to file a case that would entitle them to discover the inner workings of the system.

An update of the Uniform Guidelines is overdue. A revision could align the federal guidance with the latest scientific knowledge regarding industrial and organization psychology and computer science and provide greater clarity on the validation standards for algorithmic screens. Many screening models attempt to demonstrate that algorithms are job related by assessing the personal characteristics associated with a group identified as the best performing employees, but fail to show that the non-work-specific characteristics are required for job performance. Revisions could make clear that validation requires more than correlation alone and could establish standards for the sufficiency of evidence to demonstrate a causal relationship, or at a minimum a sound theory to explain the relationship between the screen's inputs and its decisions. Otherwise systems may rely on correlations that may be arbitrary and unstable over time. In addition, machine learning models that continue to train—and therefore change—after deployment raise complex validation challenges requiring clear standards to ensure stable data are analyzed.

Nearly half of all workers are estimated to be evaluated according to personality based screens,[40] which assess traits or temperaments such as dependability and conscientiousness, or aim to predict the likelihood that a person will engage in certain conduct (such as theft). The use of personality screens dramatically increased after 1988 when federal law banned employers from using polygraph tests because of concerns that they do not accurately assess truthfulness. [41]

Personality screens have been viewed as a promising alternative to cognitive tests since personality screens have typically had less of a disparate impact based on race and ethnicity. Yet, personality screens

[39] See Dothard v. Rawlinson, 433 US 321 (1977).
[40] See note 4 in Susan J. Stabile, "The Use of Personality Tests as a Hiring Tool: Is the Benefit Worth the Cost," *University of Pennsylvania Journal of Business Law* vol. 4, no. 279 (2002)..
[41] Employee Polygraph Protection Act, 29 USC §§ 20001; see also William McGeveran, *Privacy and Data Protection Law* (St. Paul, MN: Foundation Press, 2016), 676-77.

have increasingly raised discrimination concerns under laws including Title VII [42] and the ADA. For example, Roland Behm brought national attention to the experience of his son, Kyle, and other people with disabilities who have been systematically excluded from employment. Kyle Behm, a bright engineering student in college who is sadly no longer with us, applied for a number of hourly part-time jobs at retailers including Home Depot Inc., Kroger, Lowe's, PetSmart Inc., Walgreen Co. and Yum Brands Inc. He held similar positions in the past. A friend leaving a job at Kroger suggested Kyle apply, but after taking a personality screening test, Kyle learned from his friend that he had scored "red," and was ineligible for hire.[43] In online assessments used by major companies, workers are asked if they agree with statements such as, "over the course of the day, I can experience many mood changes." Because Kyle had been diagnosed with bipolar disorder, these types of questions screened him out even though he was highly qualified for the job.

Such broad personality based questions are often far removed from actual work requirements and risk screening out individuals who could successful perform the job while at the same time not accurately selecting those with the skills to succeed. Whole Foods Market, for example, stopped using personality tests in 2007 after managers noticed that workers who passed the personality-screening sometimes lacked basic food-preparation skills.[44] Tailoring questions that are focused more closely on job behaviors rather than abstract personality characteristics is a critical step.

The ADA prohibits an employer from asking an applicant to answer medical questions or take a medical exam before making a job offer. The Seventh Circuit has held that the Minnesota Multiphasic Personality Inventory was "medical examination" that violated the ADA.[45] Nevertheless, vendors still include questions in selection screens that may tend to screen out individuals with mental disabilities. Employers should invest in understanding the question: "Who is at risk of being screened out who could perform the work?" Otherwise, personality and new algorithmic screens could make certain workers who do not conform to one set profile virtually unemployable. Additional challenges for people with disabilities include that systems may not be fully accessible. In addition, gamified screens that test for reflex and personality may constitute pre-offer medical exams.

D. A Framework to Promote Equal Opportunity with the Use of Algorithmic Screens

1. APPLYING EXISTING LAW TO ALGORITHMIC DECISIONMAKING

Under our existing laws, employers and vendors can take important steps to design and deploy algorithmic screens to ensure compliance with anti-discrimination laws. First, employers should invest in obtaining better and more representative data for use when designing algorithms. Employers need to ensure that both the criteria for selection and the performance measures are both fair and job related. This requires a rigorous job analysis to determine the skills and abilities for which to screen. In addition, employers must create more accurate systems to identify top performers and reduce bias in the performance evaluation

[42] "CVS Caremark Corporation and EEOC Reach Agreement to Resolve Discrimination Charge," June 6, 2018 (resolving a Commissioner's charge of race and national origin discrimination by personality assessments). https://www.eeoc.gov/eeoc/newsroom/release/6-6-18b.cfm
[43] Lauren Weber and Elizabeth Dwoskin, "Are Workplace Personality Tests Fair," *Wall Street Journal*, September 29 2014, https://www.wsj.com/articles/are-workplace-personality-tests-fair-1412044257.
[44] Ibid.
[45] Karraker v. Rent-A-Center, Inc., 411 F.3d 831 (7th Cir. 2005).

processes.[46] If an algorithmic model is not sufficiently job-related, it could perform even worse than chance and systematically screen out qualified people based on protected characteristics. Because plaintiffs must first establish the disparate impact of a screen, many vendors focus on ensuring a screen does not have a disparate impact. This is a critical step, but employers should go beyond that to ensure screens are sufficiently job-related.

Second, developers of algorithmic systems at all stages, from software designers to managers of analytics teams and hiring managers, need to better understand and evaluate how data and decisionmaking systems may bias outcomes. As we have seen with personality screens, tailoring criteria and screening questions more closely to job-related skills and abilities helps minimize the risk of excluding those who can perform the job but may not fit a certain profile. To test the validity of the screen, employers could compare people hired by an algorithmic assessment with those hired based on minimum hiring criteria who complete the algorithmic assessment after they are hired.

Third, employers should understand how AI models work, including the validation studies supporting screening systems, the variables leading to decisions, and the steps vendors have taken to de-bias algorithms. Ultimately, employers bear legal responsibility for discrimination in their employment practices, even when using a third-party tool developed by a vendor. Although vendors may contend that information on the validity and operation of the system are proprietary and confidential, employers cannot rely on vague representations of validity; nor can employers rely on a vendor's promise of indemnification because multiple large cases could render a vendor unable to satisfy this promise.

To enable employers to meet their obligations under the law, algorithmic hiring screens should be designed to document the reasons decisions are made to ensure those decisions can be explained. In the context of employment decisions, explainability should be prioritized even where it leads to a reduction in the predictive power of the model. Employers may wish to use models that rely on fewer data points to ensure they are understandable and job-related. Employers should only use systems that have sufficient data and consistent and reliable data provenance systems to support the validity and interpretability of a given screen. This may require further research on interpretability in machine learning systems, which may include technical methods and better ways of translating explanations into language understood by a broad audience. Further study is also needed on whether machine learning algorithms that change continually can be used for selection or whether all workers should be screened using the same variables to enable validation.

Finally, employers should monitor the operation of algorithmic systems to ensure they perform as intended and do not lead to biased decisions when applied in the workplace. Employers should also monitor how humans use algorithms to make decisions. One helpful tool is a "nutritional label" for rankings, which incorporates research on fairness, stability, and transparency to assist users in understanding the appropriate use and limitations of algorithmic ranking systems.[47]

The EEOC and the Department of Labor's Office of Federal Contract Compliance Programs (OFCCP), which enforces affirmative action requirements for federal contractors, have an especially important role to

[46] See Lori Mackenzie, Joanne Wehner, and Shelley J. Correll, "Why Most Performance Evaluations are Biased and How to Fix Them," *Harvard Business Review,* January 11, 2019, https://hbr.org/2019/01/why-most-performance-evaluations-are-biased-and-how-to-fix-them.
[47] Yang, Stoyanovich, et al., "A nutritional label for rankings," 1773–76.

play in oversight of hiring screens. Even where employees do not have sufficient information to file a charge of discrimination, Commissioners of the EEOC have authority to open a Commissioner's charge under Title VII and the ADA, and EEOC district offices may open a directed investigation under the ADEA and Equal Pay Act where concerns arise. OFCCP is charged with conducting audits to evaluate federal contractors' compliance with affirmative action requirements and other nondiscrimination laws. Thus, the federal government must ensure it has the expertise and resources necessary to thoroughly analyze and investigate algorithmic screens that raise concerns. Proactive government efforts to investigate concerns of discrimination raised by such screens can create greater incentives for employers to ensure the appropriate validation, documentation, and monitoring of decisions.

2. STRENGTHENING OUR ACCOUNTABILITY STRUCTURE

Algorithmic employment systems raise new challenges to workplace equity that require modernizing our laws. Doing so will require workable regulatory standards that remain nimble enough to evolve alongside changing technology while providing sufficient clarity to drive accountability. Any such effort will require robust public participation, including technologists, workers, unions, employers, civil rights advocates, industrial and organizational psychologists, and researchers. A starting framework for a regulatory structure to address these concerns could include (1) a third-party auditor free of conflicts; and (2) a Workers' Bill of Rights for Algorithmic Decisions.

a. An Independent Third-Party Auditing Structure

To ensure accountability while providing flexibility for innovation, a third-party auditing system with federally established standards would provide a safety review of opaque and complex algorithmic systems while protecting intellectual property concerns.[48] This type of approach parallels other sectors where an impartial review of complex information is needed to protect the public. For example, the Securities and Exchange Commission (SEC) requires that independent auditors examine the financial statements of public companies. SEC regulations govern auditor independence, and auditors adhere to generally accepted auditing standards.

Meaningful transparency is an important first step in advancing algorithmic fairness. Yet, transparency alone will not create accountability. When the source code, training data, and outputs are made available in a format that is understandable to an external party, bias in the data can be identified, flagged, and corrected. External parties could use testing and analysis to identify data problems such as significant gaps for certain communities, or the use of variables that are merely a proxy for race or ethnicity with little other predictive value. As employers become more transparent in how systems work, they will have greater incentives to ensure the systems are fair and understandable. But reliance solely on transparency so others may voluntarily undertake evaluation of complex models is unlikely to yield sufficient accountability.[49]

The EEOC could be empowered to establish standards for auditors concerning qualifications and independence.[50] The government could establish an auditing framework and set core requirements for

[48] Hannah Bloch-Wehba, "Access to Algorithms," *Fordham Law Review* vol. 88, no. 4 (forthcoming).
[49] For example, the SEC issued a rule requiring credit rating agencies to store the data on which their rating relied in a clearinghouse, which would allow other ratings firms to provide an evaluation for which they were not directly paid. In theory, the additional transparency provided under the rule would bring accountability to the ratings and improve accuracy. Yet, since the program's enactment in 2010, no firms appear to have conducted such ratings.
[50] In considering how to best structure an auditing system, we can learn from the operation of credit rating firms, which use complex data and analysis to evaluate complicated financial products and ultimately issue a rating. Notably, in triggering the

retention and documentation of technical details, including that training data must be disclosed for review during an investigation. A federal "explainability" standard that sets forth the parameters for what it means to explain an algorithm to different audiences (such as workers, employers, or technologists) would be valuable to ensure these considerations are built into the design of an algorithmic system from the outset. Independent auditors could follow consensus principles in the field for computer scientists and test validation, informed by workers, civil rights principles, and the public. This would provide auditors with clear standards that have the flexibility to evolve with new technology.[51]

b. A Workers' Bill of Rights for Algorithmic Decisions

A Workers' Bill of Rights for Algorithmic Decisions would complement a third-party auditing structure by ensuring that individuals understand how decisions are made and ensure a process to challenge biased or inaccurate decisions. Third-party auditors can ensure these rights are provided as part of their evaluation of systems. These rights could build on the GDPR, which creates a more robust individual rights-based approach to data protection that requires companies collecting or processing data of EU residents to comply with strict transparency, accountability, and data minimization requirements.[52] Under GDPR, individuals have a right not to be subject to a selection decision based solely on automated processing.

Additionally, principles set forth by a variety of bodies, including the US Public Policy Council of the Association for Computing Machinery,[53] as well as work by technology scholars[54] provide a valuable framework. Further, laws governing the use of consumer reports provide a starting place for workplace rights that provide: 1) notice and consent, 2) an explanation, 3) redress, and 4) accountability both for applicants and employees evaluated by algorithmic systems.

The Fair Credit Reporting Act (FCRA) and the Equal Credit Opportunity Act (ECOA) combine protections for algorithmic decisionmaking in the credit and lending sector with private rights of action and government enforcement provisions to ensure accountability. Under the FCRA, employers must obtain written permission from job applicants to run credit reports and criminal records checks. Employers must inform candidates that the report may be used in employment decisions and if any adverse action was taken as a result of information.[55] Employers must also provide individuals with a copy of the report along with notice of the right to dispute the accuracy of information. Regulations implementing ECOA require that

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2008 financial crisis, experts place significant blame on the inflated ratings credit rating agencies granted to risky financial products that defaulted. Critics argued that the compensation model, in which the issuer of a financial product hires an entity to provide a rating, is inherently rife with conflicts of interest.

[51] Danielle Keats Citron and Frank A. Pasquale, "The Scored Society: Due Process for Automated Predictions," *Washington Law Review*, vol. 89 (2014). https://ssrn.com/abstract=2376209.

[52] For example, consent to data collection must follow an opt-in approach, and all data subjects have a right to be informed about the collection and use of their personal data in a precise, transparent, comprehensible and easily accessible form, the right to object to the collection and processing of personal data, the right to correct the information if its accuracy is contested, and the right to have all information erased from databases.

[53] Association for Computing Machinery – US Public Policy Council, January 12, 2017, https://www.acm.org/binaries/content/assets/public-policy/2017_usacm_statement_algorithms.pdf.

[54] Kartik Hosanagar, *A Human's Guide to Machine Intelligence*, (New York: Viking Press, 2019), 208–22.

[55] "Background Checks What Employers Need to Know," A joint publication of EEOC and the FTC, https://www.eeoc.gov/eeoc/publications/background_checks_employers.cfm.

when consumers are denied credit, they receive an "adverse action notice," containing a specific reason for why credit was not extended, with reason codes explaining four key factors affecting scores.[56]

A Workers' Bill of Rights for Algorithmic Decisions would create needed incentives to identify and prevent discrimination. Independent auditors could assess compliance with these rights along with a private-right of action and government enforcement. These four areas provide an important starting place so that workers may learn of and correct erroneous or discriminatory decisions:

- **Notice and consent:** Workers should have the right to know when and how an algorithmic system is used to make employment decisions, and employers should obtain written consent.[57] Workers should be informed of the information collected to screen and evaluate them and to understand how personal information is stored, sold, or otherwise used. Employees need to understand how they will be evaluated so they can determine whether they need to seek a reasonable accommodation for a disability under the ADA or request alternative screenings if an applicant has concerns about the accuracy of the system such as concerns of natural language processing errors in transcribing accents.
- **Right to an explanation:** To address concerns about fairness and accuracy, employers should explain the rationale for a decision in terms that a reasonable worker could understand. Standards could be established to include disclosure of the material variables considered and the types of inferences the algorithm is making to score the individuals.
- **Process for redress:** Employees should have the right to view the data collected to make decisions on them and have an opportunity to correct errors so they can dispute erroneous conclusions and ensure the accuracy of the data collected. An accessible process should allow workers to question decisions and obtain human review and redress for harms where appropriate.
- **Accountability:** Employers and vendors should both be responsible and accountable for algorithmic systems and discriminatory harm. Systems should be capable of audit by third-parties, including in litigation or in a government investigation. Responsibilities could include retaining records on the data used to train the algorithms as well as documentation of the decisions made by models. In addition, responsible parties should be required to explain the methods used to mitigate bias in the design, testing, and monitoring of algorithms and provide validation studies. Intellectual property defenses should not bar review.

The policy choices that we make now will play a dramatic role in how these technologies are deployed. By modernizing our laws to create greater incentives to explain systems and prevent discrimination, we have the potential to promote the development of hiring tools that isolate and dismantle systemic barriers to equal opportunity concealed in many of our current hiring and evaluation systems.

II. Civil Rights Concerns Raised by Changing Workplace Structures, Surveillance, and Algorithmic Monitoring

In recent decades, the American workplace has undergone fundamental restructuring: companies have shed jobs as well as accountability for workers by outsourcing work to domestic subcontractors or foreign

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[56] CFPB Consumer Laws and Regulations ECOA, https://files.consumerfinance.gov/f/201306_cfpb_laws-and-regulations_ecoa-combined-june-2013.pdf.

[57] Although workers often have no choice but to consent, the provision of clear information about the system's operation creates needed transparency about the kinds of systems that are in use.

companies, increased their reliance on staffing agencies to provide temporary or contract workers, and increasingly classifying workers as independent contractors. New technologies, including online platforms, have accelerated this shift toward precarious, nonstandard work by disrupting the traditional employer-employee relationship many legal protections rely upon. Independent contractors, for example, do not have protections under most federal antidiscrimination laws such as Title VII, the ADA, or the ADEA. The Reconstruction-era statute, Section 1981 of the Civil Rights Act of 1866, prohibits discrimination in contracting based on race and ethnicity, it does not protect against other forms of discrimination such as sexual harassment or age discrimination. It also only allows claims of intentional discrimination (which can be especially difficult to prove for algorithmic systems) and not disparate impact. Yet, all workers should have robust protections against discrimination regardless of how they are classified. People of color, immigrants, women, and people with disabilities are disproportionately represented in these precarious jobs, which means that many workers who are in greatest need of protections are in the jobs that offer the fewest.

In addition, the growth of forced arbitration has exacerbated the lack of accountability for workplace civil rights concerns by hiding civil rights violations from public view. Technology-enabled click-through contracts require workers to forfeit their right to go to court or to proceed in a class action. For platform workers, clicking through a contract that mandates forced arbitration is often a precondition to even downloading an app to obtain work. Workers may not understand that they have lost their rights to a public trial or to demonstrate the existence of widespread problems as a class.

These structural forces are operating to shift risk from employers to workers, while technological systems are widening information disparities and reshaping how employers monitor work, raising significant civil rights concerns. Employers are increasingly using technology to monitor when and how people work, including incorporating potentially biased customer ratings as a performance metric.[58] Surveillance of workers increases the amount of data available to employers (including potentially sensitive data), and it could contribute to discrimination, collection of sensitive disability or genetic information, retaliatory measures, termination, and suppression of the right to organize around civil rights concerns.

A. Workplace Monitoring and Productivity Targets Could Silence EEO Concerns

Employers are increasingly monitoring workers' physical locations and activities using Global Positioning System trackers in company vehicles or smart phones as well as through Radio Frequency Identification Devices (RFID), such as security access badges, wristbands, and microchips. Personal tracking devices such as smart badges monitor time and attendance as well as how employees spend their time and with whom they interact. Hospitals, for example, are monitoring the physical location of nurses and other employees to record the frequency and time spent in visits to patients and other activities. Some companies have deployed "sociometric badges" worn by employees to collect insights into workplace interactions by tracking who people interact with as well as measuring their tone of voice and dynamics, such as how often someone is interrupted.[59] Some tracking devices, such as apps on employees' phones, monitor movements

[58] This testimony draws from Jenny R. Yang, "The Changing Workplace Realities for Low-Wage Workers," from an online course panel offered by the Practicing Law Institute, *Wage & Hour Litigation & Compliance 2019*, recorded February 12, 2019, https://www.pli.edu/programs/wage-and-hour-litigation-and-compliance?t=ondemand&p=254128.
[59] Joshua Rothman, "Big Data Comes to the Office," *New Yorker*, June 3, 2014, https://www.newyorker.com/books/joshua-rothman/big-data-comes-to-the-office.

even outside business hours. Three Square Market implanted an RFID chip into the hands of employees who agreed to participate to ease tasks such as gaining access to the building, logging into computers, or buying food at the cafeteria. However, once a system is activated for one purpose, employers can use it to capture data for other purposes, such as monitoring the time employees spend at lunch or on bathroom breaks and tracking who employees interact with throughout the day.

Increased surveillance creates a very real risk that employers will use technology to monitor who workers are communicating with in a manner that may suppress worker dissent and organizing efforts, which in addition to raising concerns under the National Labor Relations Act of 1935, could also interfere with the ability for workers to raise and organize around civil rights issues such as harassment. Access to this information could also lead to retaliatory measures against employees who exercise these rights.

Worker surveillance along with productivity monitoring raise significant civil rights and privacy concerns.[60] For example, at Amazon warehouses, workers' entire workday is monitored, and any "time off-task," such as unallotted bathroom breaks, can generate algorithm-based warnings or even termination.[61] Over the past four years, Amazon has faced wrongful termination lawsuits from pregnant workers who took additional bathroom breaks.[62] The aggressive productivity targets could also operate to disproportionately exclude individuals based on protected characteristics such as older workers, people with disabilities, or those needing religious prayer breaks. For example, workers at a Minnesota facility who were immigrants from East Africa organized protests against the company for failing to provide sufficient break time, including for prayer.[63]

Ensuring the workers have a right to an explanation for decisions made by algorithmic management systems as well as a process to challenge them would be an important first step in preventing discrimination and retaliation. There are campaigns around the country to strengthen just-cause provisions for workers. For example, the New York City Council proposed two just-cause bills that would require employers to provide notice and explanation for any termination.[64] These efforts could provide an opportunity to include protections for workers who are at risk of wrongful terminations because of algorithmic systems.

B. Customer Ratings in Algorithmic Evaluations May Lead to Biased Decisions

Customer ratings have become an increasingly important performance measure for workers as employers and technology platforms seek to incorporate customers' feedback in determining pay and access to work. For example, employers are using AI-informed systems to automate performance management for call

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[60] Ifeoma Ajunwa, Kate Crawford, and Jason Schultz, "Limitless Worker Surveillance," 105 Cal. L. Rev. 735 (2017). https://ssrn.com/abstract=2746211.

[61] Colin Lecher, "How Amazon automatically tracks and fires warehouse workers for 'productivity,'" *The Verge*, April 25, 2019, https://www.theverge.com/2019/4/25/18516004/amazon-warehouse-fulfillment-centers-productivity-firing-terminations.

[62] Alfred Ng and Ben Fox Rubin, "Amazon fired these 7 pregnant workers. Then came the lawsuits," *CNET*, May 6, 2019, https://www.cnet.com/features/amazon-fired-these-7-pregnant-workers-then-came-the-lawsuits/.

[63] Chavie Lieber, "Muslim Amazon workers say they don't have enough time to pray. Now they're fighting for their rights," *Vox*, December 17, 2018, https://www.vox.com/the-goods/2018/12/14/18141291/amazon-fulfillment-center-east-africa-workers-minneapolis.

[64] See Int. No. 1415, "Wrongful Discharge from Unemployment," New York City Council (2019), https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3860317&GUID=F97F44AA-CCC8-470B-998E-C3C35A5C0717&Options=ID%7cText%7c&Search=just+cause. See also Int No. 1396, "Fast Food Employee Layoffs," New York City Council (2019), https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3860321&GUID=76C5427B-7B33-4E55-AA73-37345B8ABEEF&Options=&Search.

center employees that use speech analytics to transcribe and make evaluations of recorded conversations and customer feedback. Vendors use speech recognition technology to automatically score calls with performance and sentiment scoring—data that employers build into evaluations and bonus systems.[65] Sentiment analysis is a kind of natural language processing that scans text and then estimates the emotion expressed in that text, which is expressed as a positive or negative score.[66] A recent study of over 200 sentiment analysis systems found evidence of gender and racial bias in over 75 percent of these systems.[67] Natural language processing technologies raise concerns about racial bias[68] as well as accuracy when transcribing words spoken by those with dialects or accents, which could result in discrimination based on race, national origin, or disability.

The Communications Workers of America has negotiated safeguards for call center workers, including provisions such as prior notification of monitoring, a limitation on the number of calls that can be monitored, and protection from discipline by using information for coaching purposes only.

Although customer service can be a relevant evaluation metric, research has documented the prevalence and impact of customer bias on discrimination in the hiring, pay, and evaluation across fields and industries, particularly for customer-facing and tipped-workers. For example, a study of over 1,000 taxi trips found that customers tip African American drivers approximately one-third less than whites, and African American drivers are 80 percent more likely to not be tipped at all.[69] The Economic Policy Institute has documented that tipped workers of color experience poverty at nearly twice the rate of tipped white workers.[70]

Studies have found evidence of bias along racial and gender lines in online marketplace platforms.[71] On Fiverr, a freelance services platform, researchers found evidence African American and Asian American workers received lower ratings than white workers. On TaskRabbit, women received fewer reviews than men, and African American workers received lower ratings than white workers. For online markets,

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[65] "How it Works," CallMiner, accessed January 25, 2020, https://callminer.com/.

[66] Blodgett, Green, and O'Connor, "Demographic Dialectical Variation," and Jurgens, Tsvetkov, and Jurafsky, "Incorporating Dialectical Variability."

[67] Svetlana Kiritchenko, "Examining gender and race bias in two hundred sentiment analysis systems," in *Proceedings of the Seventh Joint Conference on Lexical and Computational Semantics*, New Orleans, LA, June 2018. https://svkir.com/papers/Kiritchenko-Mohammad-ethics-StarSem-2018.pdf.

[68] Su Lin Blodgett, Lisa Green, and Brendan O'Connor, "Demographic dialectal variation in social media: A case study of African-American English," in *Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing*, Austin, TX, November 2016. https://arxiv.org/pdf/1608.08868.pdf; David Jurgens, Yulia Tsvetkov, and Dan Jurafsky, "Incorporating dialectal variability for socially equitable language identification," In *Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)* 51–57, Vancouver, Canada, July 2017. https://www.aclweb.org/anthology/P17-2009.pdf.

[69] Ian Ayres, Frederick E. Vars, and Nasser Zakariya, "To insure prejudice: Racial disparities in taxicab tipping," *Yale Law Journal* 114 (2004): 1615–29.

[70] Heidi Shierholz "Low Wages and Few Benefits Mean Many Restaurant Workers Can't make Ends Meet." Briefing Paper No. 383 (Washington, DC: Economic Policy Institute, 2014).

[71] Anikó Hannák, Claudia Wagner, David Garcia, Alan Mislove, Markus Strohmaier, and Christo Wilson, "Bias in online freelance marketplaces: Evidence from taskrabbit and fiverr," *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*, Portland, OR, February 25-March 1, 2017.

researchers have documented that bias based on the race of the other party to the exchange leads to lower offer prices and decreased response rates in sales on eBay[72] and Airbnb.[73]

Algorithmic management systems are increasingly used to make significant work decisions based on potentially biased consumer ratings. As online or platform-based technologies become the manager of large decentralized workforces, they may exacerbate employment discrimination.[74] Ride-sharing companies rely even more heavily on customer ratings because drivers' continued employment is directly tied to customer ratings. If an employer or platform relies on such ratings as a performance metric, these systems, although appearing neutral, can operate with bias that adversely impacts workers based on protected categories.

C. Potential Solutions to Civil Rights Concerns of Workers from Algorithmic Management

In addition to a Workers' Bill of Rights, several potential solutions would provide workers with much needed protections against discrimination.

- **Altering legal frameworks:** One fundamental problem faced by independent contractors is that federal law does not protect them from discrimination.[75] Four states, New York, Maryland, Minnesota, and Rhode Island, protect independent contractors from discrimination in employment or contracting. [76] Three other states, California, New Jersey, Washington, provide some protections for independent contractors, and Pennsylvania provides protections for certain licensed contractors.[77] Notably, states have started to enact legislation to address the widespread misclassification of employees. New Jersey recently joined California in passing legislation to prevent misclassification, placing the burden on the hiring entity to demonstrate individuals are properly classified as independent contractors.[78]
- **Creating baseline statistics:** Collecting data about ratings and employment outcomes among different groups of workers is an essential first step to identifying discrepancies based on protected

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[72] Jennifer L. Doleac and Luke Stein, "The visible hand: Race and online market outcomes," *Economic Journal* vol. 123 no. 572 (2013): F469–92.

[73] Benjamin Edelman, Michael Luca, and Dan Svirsky, "Racial discrimination in the sharing economy: Evidence from a field experiment," *American Economic Journal: Applied Economics* vol. 9, no. 2 (2017): 1–22. https://news.harvard.edu/wp-content/uploads/2015/12/airbnb-guest-discrimination-2015-12-09.pdf.

[74] Alex Rosenblat, Karen E. C. Levy, Solon Barocas, and Tim Hwang, "Discriminating tastes: Uber's customer ratings as vehicles for workplace discrimination," *Policy & Internet* vol. *9* no. 3 (2017): 256–79. https://onlinelibrary.wiley.com/doi/abs/10.1002/poi3.153.

[75] Lu-in Wang. "When the Customer Is King: Employment Discrimination as Customer Service." *U. of Pittsburgh Legal Studies Research Paper No. 2016-01* (2016). http://ssrn.com/abstract=2657758.

[76] *Maryland Fair Employment Practices Act*, MD State Govt § 20-601(c) (2019)(defining "employee" to include an individual working as an independent contractor for an employer); *New York State Human Rights Law*, N.Y. Exec. L. § 296-d (2019) (amended to protect a non-employee who is a "contractor, subcontractor, vendor, consultant" from unlawful discriminatory practices, effective October 11, 2019); *Minnesota Human Rights Act*, Minn. Stat. Ann. §§ 181.145, 363A.03 (Subd. 14) (West)(prohibiting discrimination in contracting and including "commission salespeople" in definition of employee); *Rhode Island Civil Rights Act*, RS ST § 42-112-1, (prohibiting discrimination in contracting against "all persons").

[77] *California Government Code*, Cal. Gov't Code § 12940 (j)(4) (anti-discrimination protections include "a person providing services pursuant to a contract" from harassment on all bases); *New Jersey Law Against Discrimination*, § 12(l)(prohibits discrimination in the formation or termination of a contract but held not to apply to discrimination during ongoing execution of a contract such as hostile work environment harassment); *Washington Law Against Discrimination*, RCW 49.60.030 (prohibiting discrimination in the making or performance of a contract based on sex, race, national origin or disability but not age); Pennsylvania Human Relations Act, 43 Pa. Stat. Ann. § 954(x)(protecting only independent contractors in occupations regulated by state licensing or included in Fair Housing Law).

[78] Sophie Nieto-Munoz, "Murphy signs gig economy worker bills to revamp N.J. labor laws," *NJ.com*, January 20, 2020, https://www.nj.com/business/2020/01/njs-self-employed-gig-workers-protected-under-new-laws-signed-by-murphy.html. See also AB- 5, "Worker Status: Employees and Independent Contractors," California State Assembly (2019-2020). http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200AB5.

characteristics. The data collection could include publishing data by demographic categories to determine whether people are more likely to receive low ratings from consumers or other negative performance feedback in an algorithm on protected bases. For examples, platform companies should analyze whether workers on their platform are deactivated at different rates based on different demographic categories. Companies then need to implement procedures to redesign systems to address bias identified.

- **Redesigning algorithmic rating systems:** Careful analysis should be given to what performance metrics are truly job related and to consider the ways bias can enter an algorithmic system. In addition, changing how customers provide feedback, such as requiring a reason for a low rating, could increase users' reflection on the criteria that lead to their ratings.[79] An analysis of the feedback could also help identify comments that may reflect bias that should not be considered. In addition, reducing information available to customers, such as eliminating driver names or photographs, could reduce bias, because evidence shows names without high racial associations are tied to less biased customer ratings.[80] EEOC has long advised that "employers should not ask for a photograph of an applicant,"[81] yet many hiring platforms rely heavily on photographs to obtain work in jobs such as cleaning, caregiving, and freelancing.

D. Technology Supporting Worker Voice and Organizing to Advance Equal Opportunity

Technological advancements have also transformed how workers organize and raise concerns about workplace issues. Online platforms and tech-enhanced tools are helping workers connect to share workplace concerns and to organize around civil rights concerns, including sexual harassment, equal pay, barriers to promotion, and restrictive employment contracts. Through forums such as Coworker.org or Blind, workers connect to share broader patterns and concerns. This heightened public sunlight and worker engagement equity issues have become powerful forces for change.

In addition, unions and their allies representing workers have made significant strides through media campaigns, collective bargaining, and legislation to provide stronger civil rights protections and tech-enabled tools to fight against sexual harassment and assault in the workplace. For example, UNITE HERE successfully bargained contract language requiring employers to provide its members with "panic buttons" that can be used to get immediate assistance if an employee is being assaulted or harassed.[82] Its efforts have yielded legislation throughout the country requiring hotels to provide room attendants with panic buttons.[83]

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[79] Alex Rosenblat and Karen E. C. Levy, "Discriminating Tastes: Uber's Customer Ratings as Vehicles for Workplace Discrimination," *Policy & Internet*, vol. 9 no. 3 (2017): 256–79. https://onlinelibrary.wiley.com/doi/abs/10.1002/poi3.153.

[80] Ray Fishman and Michael Luca, "Fixing Discrimination in Online Marketplaces,"" *Harvard Business Review* 94 no. 12 (2016): 88–95, https://hbr.org/2016/12/fixing-discrimination-in-online-marketplaces.

[81] The EEOC's statement on prohibited practices explains that as a general rule, the information obtained through the pre-employment process should be limited to what is "essential for determining if a person is qualified for the job," https://www.eeoc.gov/laws/practices/.

[82] Seventeen major hotel chains (including Hilton, Hyatt, and Marriott) have stated that they will provide all room attendants with panic buttons nationwide by 2020. See Julia Jacobs, "Hotels See Panic Buttons as a #MeToo Solution for Workers. Guest Bans? Not So Fast," *New York Times*, November 11, 2018, https://www.nytimes.com/2018/11/11/us/panic-buttons-hotel-me-too.html.

[83] As of April 2019, legislation requiring hotels to provide room attendants with panic buttons has passed in Chicago, Sacramento, Miami Beach, and Long Beach. See Julia Jacobs, "Hotels See Panic Buttons"; and Diana Boesch, Jocelyn Frye, and Kaitlin Holmes, *Driving Change in States to Combat Sexual Harassment* (Washington, DC: Center for American Progress, 2015).

The #MeToo movement has brought national attention to the widespread underreporting of sexual harassment and discrimination. For survivors, trusted and effective avenues to stop unwanted behavior are often scarce. For employers, information gaps about the nature and scope of concerns hinder efforts to address them. To address these challenges, some employers have embraced tech-enabled third-party complaint and ombuds processes[84] that can serve as early warning systems by using anonymous and aggregated data to reveal trends and identify systemic issues within an organization. These systems can supplement existing complaint procedures by serving as independent and confidential resources for workers to explore options for resolving concerns. Companies have even deployed AI-powered chatbots for workers to record details of harassment or discrimination; workers can then submit a time-stamped report of the conversation anonymously to HR or choose to save the report for later use.[85]

One benefit of tech platforms is that they can be used to report incidents through an app, leading to timely data from users that companies can analyze to understand the scope and nature of problems and develop tailored response systems. For example, in 2018, Uber, Inc., leadership engaged with RALIANCE, the National Sexual Violence Resource Center, and the Urban Institute to develop a new taxonomy to collect, categorize, and report on sexual harassment, sexual misconduct, and sexual assault experiences on the Uber rideshare platform.[86] The taxonomy provided a research-informed categorization system to classify users' reports of such incidents. Applying this taxonomy, Uber released its first *US Safety Report* in December 2019, reporting for the first time the prevalence of sexual assault experienced by riders and drivers.[87] Other companies can use this data-informed approach as a starting point to develop consistent mechanisms for appropriate discipline and preventative measures.

III. Conclusion

Workplace technology is fundamentally changing the lives of workers. Algorithms are automating decisions that determine major life opportunities, including hiring, pay, performance evaluations and termination. Individuals evaluated by these systems, as well as employers deploying these systems, often do not have a clear understanding of how algorithmic systems make decisions. To ensure that equal opportunity remains the foundation of our democracy, we must develop a new regulatory framework that creates safeguards and meaningful accountability. At the same time, our laws can be nimble to adapt to advances in technology and scientific understanding. Further study on how to reduce bias in the design and deployment of algorithms is critical. Equally important is for that knowledge to be broadly shared across technologists, workers, government, and the public. As a society, we must recognize that the focus cannot remain solely on optimizing processes for employers—systems must also consider the impact on workers' dignity, civil rights and the preservation of our democracy.

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[84] "What We Do," tEQuitable, accessed January 25, 2020, https://www.tequitable.com/.
[85] See the Spot app (created by All Turtles) at https://talktospot.com/reporting.
[86] Janine M. Zwieg and Emily Tiry, "Three Lessons Businesses Can Learn from Uber's Collecting and Reporting Sexual Assault Data," *Urban Wire*, December 6, 2019, https://www.urban.org/urban-wire/three-lessons-businesses-can-learn-ubers-collecting-and-reporting-sexual-assault-data.
[87] "U.S. Safety Report 2017-2018," *Uber*, December 5, 2019, https://www.uber-assets.com/image/upload/v1575580686/Documents/Safety/UberUSSafetyReport_201718_FullReport.pdf.