The Digital Divide and the COVID-19 Pandemic

INTRODUCTION

In a world that has become increasingly technologically advanced, new Artificial Intelligence (AI) generated tools and other like-systems have formed to help counter the deep-rooted historical and societal inequalities that exist in global culture, and are reinforced in online spaces. What has formed at the forefront of this 'new digital world' is a global concern of bias in the systems, unequal access to digital tools, and unfair distribution of the rewards and consequences of these advanced tools. What has always existed, and only becomes further reinforced, is the idea of The Digital Divide: that there is an unequal access to digital technology. Not only does it create a division and inequality around access to information and resources, it is also based on pre-existing biases and opinions of certain genders or social groups.

When the COVID-19 pandemic struck the world in early 2020, everyone's way of life changed. Stores closed down, people were restricted in where they could go, social gatherings were prohibited. More importantly, the way people could access the most basic human necessities fundamentally changed. It was no longer as simple as joining the job market, or strapping on a backpack and going to school, or walking into your local doctor's office for medicine and treatment. What big corporations were positive about, was that AI tools could be developed and deployed in response to the emergency protocols of the COVID-19 pandemic. AI tools were promised to make predictions, enhance efficiencies, and free up staff through automation; they were promised to rapidly process vast amounts of information and make life-saving decisions (Chakravorti). What these systems ultimately failed to do was live up to those expectations. In fact, they only seemed to worsen social inequality, cultural bias,

and further perpetuate stereotypes in a way that directly reinforced ideas of the Digital Divide. This is a direct result of the data used to train these AI decision-making tools and algorithms: they are only as good (or bad) as the humans that created them. And it is nothing new to hear that history is littered with bias against certain racial, gender, or age groups.

Through the COVID-19 pandemic, digital bias presented itself in many sectors: access to education and academics radically reinforced inequality in low-income areas and for low-income households; access to health-care and health-based AI decision making proved to further perpetuate stereotype; contract-tracing and social control lead to issues of privacy and surveillance; unemployment and housing insecurity were unfortunate by-products of non-access to technology, and racialized algorithmic systems. All of the promises of usefulness, opportunity, and fairness that were associated with AI tools proved themselves to be the direct opposite during the COVID-19 pandemic. The following report will be an analysis of these various biases, and what they mean to a world that only becomes increasingly technologically advanced.

WHO GETS TO LEARN?

An unfortunate circumstance of student-learning that increasingly incorporates digital technology is that not all students have the same access to technology and other digital tools as others, both in the classroom or at home. The divide between students and teachers who are able to benefit from technology in academics enforces socioeconomic disparities for students coming from low-income families and households. According to statistics, fifty percent of low-income families, and forty-two percent of families of color in the United States simply do not have the technology required for online education (Understanding the Digital Divide). So, what happened to them during the COVID-19 pandemic? Unfortunately,

studies show that the pandemic likely strengthened the link between the digital divide and ethnic academic achievement gaps when many school districts were forced to move from in-person to remote learning (Francis and Weller 46). Students who already did not have access to stable internet or digital tools were not given anything to compensate for changes that resulted in light of the pandemic. In fact, early pandemic-related studies show that twenty-one percent of students could not complete their schoolwork because they did not have access to a computer at home, and twenty-two percent reported to using public wifi to finish their schoolwork because there was not a reliable internet connection at home (Lake and Makori). The graph below from the PEW Research Center (Lake and Makori) shows other disparities in lack of access that seem to specifically and solely target those who come from lower income families. The numbers explicitly show that those who are lower-income or from urban areas suffer the most at the turn of remote learning. Not only does this prove how essential the internet has become in modern-day learning, but how a travesty like the COVID-19 pandemic seems to only reinforce these pre-existing inequalities. What is further alarming about these results is that they also indicate how many students of color have fewer opportunities to participate in remote learning during the pandemic than their white peers (Francis and Weller 42). To conceptualize this issue, every child has the right to a full and resourceful education. However, students of color or those from lower-income households have been pushed to the margins of this narrative despite an issue like COVID-19 being all-encompassing and globally-scaled.

NOT FIT FOR CLINICAL USE

At the onset of COVID-19, a multitude of AI systems and algorithms were developed and deployed in emergency response to the pandemic. They promised to focus on early detection in at-risk patients and their prognosis, to support medical triage in those circumstances where

healthcare resources were scarce (Delgado et al. 408), to provide wider access to care, and to limit the virus's spread. Quickly into their inauguration, however, they proved to be systems ridden with social, cultural and economic bias. Models developed in elite and affluent academic health systems were not representative of the general population and lacked external validity (Delgado et al. 412). Early data unevenly represented and culminated infection and mortality rates in certain racial and ethnic groups. Additionally, Digital Contract Tracing (DCT) Applications posed a high risk for this same form of discrimination. Such data included ethnic information, demographic details, and socioeconomic status, which directly influenced the disproportionate allocation and distribution of COVID-19 resources (Delgado et al. 413). More generally, the datasets used to train the algorithms reflected a record of historical anomalies and inequities: lower levels of access to quality healthcare; incorrect and incomplete records; and a deep-seated distrust in the health care system that led some groups to avoid it (Chakravorti). Thus, not only was the data that made up these AI systems not entirely accurate, but they were also built in direct correlation with a pre-existing imbalance of care for people of racialized groups. As a call-to-action news report states:

> The COVID-19 pandemic has laid bare the many ways in which existing societal inequities produce health-care inequities -- a complex reality that humans can attempt to comprehend, but that is difficult to accurately reflect in an algorithm. The promise of AI in medicine was that it could help remove bias from a deeply biased institution and improve health care outcomes; instead, it threatens to automate this bias (Grant).

Because these systems are human creations, they are subjected to the many human-made social and cultural biases that exist in our world, and have for centuries. When those biases are baked into the framework of the systems that promise to bridge this gap, they only result in a more discreet, but equally damaging, perpetuation of stereotypes and discrimination.

THE ETHICS OF CONTACT-TRACING

Not only were these various AI systems designed to support health-care systems during the COVID-19 pandemic, many resources were also allocated to controlling and containing the spread of the virus. These additional curve-flattening AI tools include DCT systems that use location data and Bluetooth-related methods to trace COVID-19 cases and to identify flare-ups in certain communities. Not only do these technologies raise a multitude of concerns in terms of ethics, privacy, and security, they have also been proven to contain bias. Early into their development, many of these apps were found to be based on inadequate data collection, insufficient frequency of monitoring, and bias (Delgado et al. 413). Many of the communities impacted by these surveillance systems were poorer communities of color hit harder by COVID-19 for a variety of reasons linked to historical inequalities and discrimination (Smith and Rustagi). This focused attention on highly racialized or lower-income populations presents an interesting dichotomy where bias is already present. It also has the potential to unfairly subject certain communities to greater enforcement. Using AI to decide who leaves their home led to a form of COVID-19 redlining similar to the surveillance of poor communities of color found in predictive policing AI systems (Smith and Rustagi). The potential to over-stigmatize areas that are already racially or socioeconomically profiled are in direct correlation with these contact-tracing services, and since they have been put into use, have done nothing but further prove this concern. In addition, ethical problems related to privacy, consent, and the lack of regulation have been identified in DCT Apps (Delgado et al. 418). What is interesting here, is how they are presented to the public as an innovative way of keeping people safe and informed, despite the growing list of concerns that counter the positive assurances of contact-tracing.

SELF-QUARANTINE: ON WHO'S DIME?

Similar to the digital divide in academics, the COVID-19 pandemic shifted many companies, and their related work and services, to online spaces, which only further highlighted the question of accessibility. The pandemic widened racial and ethnic gaps in income and wealth in that Black and Latinx workers tended to work in less stable jobs, where they experienced earlier and longer layoffs than White workers during the recession (Francis and Weller 45). The COVID-19 pandemic only further exasperated these unemployment rates. Studies show that many of the workers who were disproportionately concentrated in industries that were hard-hit by pandemic-related restrictions and were more likely to experience pandemic-related unemployment were specifically Black and Latinx workers (Francis and Weller 47). While many workers were given the opportunity to self-quarantine and work from home, or have the adequate sick-leave funding to stay at home, the reality is that this was not the case for all workers, especially those who already suffered from job instability and lack of access to technology. In this regard, DCT Apps and other forms of AI tools were not attuned to the context of social life in which such systems can produce harmful, difficult-to-foresee effects that replicate or amplify pre-existing inequalities (Delgado et al. 415). With a deep-rooted bias in employment and economics, many families experienced the effects in other areas as well. It has already been proven that AI tools have perpetuated housing discrimination, in terms of tenant selection and mortgage qualifications in that they have their own built-in biases that reflect systemic racism, sexism and ableism (Akselrod). With housing tenure so closely reflected by households' wealth, the pandemic's propensity to shut down work and increase layoff only further reinforces the bias in these AI algorithms.

CONCLUSION

In light of the COVID-19 pandemic and the various implications it had on academics, health,

economics, and overall society, the idea of the Digital Divide was only further exasperated. Not only did technological tools prove only to be useful to those affluent enough to already have them, the AI systems developed as an emergency response to the pandemic were equally as unhelpful in many ways. While raising ethical and privacy concerns, they also proved themselves to be riddled with bias, social inequality, and stereotype. The unfortunate reality is that, like many other technological advancements, those created in response to the COVID-19 pandemic failed to accomplish anything close to what they promised. They further deepened the divide that already exists in our world, in our infrastructures, and in our online spaces. The automation of bias makes the larger issue of bias seem like an unfortunate byproduct of the systems which are designed to counter it, however, many people forget that these systems are entirely driven by the human condition, which is already deeply flawed on its own. A common theme in the world of digitization is the concern for true equality; true access to information, resource, and opportunity; true unity. What AI tools designed for the COVID-19 pandemic tried, and ultimately failed to do, tells us a cautionary tale of the way these systems are created, and how they are designed to operate. In order to fix them, it is clear that we must first fix the historical and systemic biases that exist in our societies, otherwise, we are only eternally doomed to repeat them.

Work Cited

Akselrod, Olga. “How Artificial Intelligence Can Deepen Racial and Economic Inequities.” *American Civil Liberties Union,* 24. Feb. 2023. https://www.aclu.org/news/privacy-technology/how-artificial-intelligence-can-deepen-racial-and-economic-inequities.

Chakravorti, Bhaskar. “Why AI Failed To Live Up To Its Potential During the Pandemic.” *Harvard Business Review*, 17 Mar. 2022, https://hbr.org/2022/03/why-ai-failed-to-live-up-to-its-potential-during-the-pandemic.

Delgado et al. “Bias In Algorithms of AI Systems Developed For COVID-19: A Scoping Review.” *Bioethical Inquiry,* vol 19, 2022, pp. 407-419. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9463236/pdf/11673_2022_Article_10200.pdf.

Francis, Dania V. and Christian E. Weller. “Economic Inequality, the Digital Divide, and Remote Learning During COVID-19/.” *The Review of Black Political Economy,* vol. 49, no. 1, 2022, pp. 41-60. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8914302/pdf/10.1177_00346446211017797.pdf.

Grant, Crystal. “Algorithms Are Making Decisions About Health Care, Which May Only Worsen Medical Racism.” *American Civil Liberties Union,* 24. Feb. 2023. https://www.aclu.org/news/privacy-technology/algorithms-in-health-care-may-worsen-medical-racism.

Lake, Robin and Alvin Makori. “The Digital Divide Among Students During COVID-19: Who Has Access? Who Doesn't?” *Center on Reinventing Public Education*, 22. Nov. 2021. https://crpe.org/the-digital-divide-among-students-during-covid-19-who-has-access-who-doesnt/.

Smith, Genevieve and Ishita Rustagi. “The Problem with Covid-19 Artificial Intelligence Solutions and How to Fix Them.” *Stanford Social Innovation Review: Informing and Inspiring Leaders of Social Change,* 5 June 2020. https://ssir.org/articles/entry/the_problem_with_covid_19_artificial_intelligence_solutions_and_how_to_fix_them.

“Understanding the Digital Divide in Education.” *School of Education Online*, 26. Oct. 2022. https://soeonline.american.edu/blog/digital-divide-in-education/.