

WORKERS AT THE MARGINS: RISKS AND
OPPORTUNITIES FOR MARGINALIZED WORKERS IN
DIGITALLY-MEDIATED LABOR

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In the gig economy, workers complete one-off tasks for compensation via digitally-mediated, on-demand labor platforms. While demographic data indicates that many gig workers are economically precarious and belong to marginalized social groups, little is known about how marginalization impacts their experiences. To fill this gap in research, this dissertation presents two qualitative studies on the opportunities and risks presented by the gig economy for workers who are economically and socially marginalized.

The first study examines how workers navigate privacy-related risks in crowdwork in light of their economic dependence on such work. This study demonstrates that economic considerations are a key factor in how workers decide whether or not to complete privacy-invasive tasks, and problematically, that financial need can compel workers to complete risky tasks despite their privacy concerns. Further, I show that managing privacy in crowdwork constitutes a significant amount of unpaid, invisible labor that must also be shouldered by workers.

The second study focuses on workers with disabilities and their experience with a wide variety of gig work, including ridesharing, delivery services, freelancing, and crowdwork. This study finds that gig work can offer disabled workers several benefits that are lacking in traditional employment, but that they also face several disability-related challenges in accessing and completing work. Navigating these challenges involves a large amount of invisible labor, and workers' dependence on

income from gig work can further disenfranchise them and restrict their ability to exercise discretion in the tasks they choose to complete.

Together, this dissertation identifies a key tension: gig work can be a vital source of needed income for workers who face broader economic and social exclusion, but at the same time, marginalization orders and shapes several aspects of how workers complete and experience gig work. I show how the power asymmetries on labor platforms and broader marginalizing forces combine to present workers with both new and amplified risks and challenges. Further, workers have to perform a significant amount of invisible labor to mitigate these challenges, and I show how the burden of this labor is acutely felt by workers who are already marginalized. I also call attention to how many workers can face complicated intersectional challenges based on multiple marginalized identities, such as along the lines of race, gender, sexual orientation, disability, and socioeconomic status.

This dissertation makes three main contributions. First, I provide an empirical understanding of the opportunities and challenges that come with working on digitally-mediated labor platforms for workers who are economically precarious, have one or more disabilities, and/or hold multiple marginalized identities. Second, I add to theoretical understandings of the power asymmetries on labor platforms and their consequences, focusing on the impact on marginalized workers. Finally, based on my findings, I put forth several suggestions for how labor platforms can be designed to be more inclusive for workers with diverse needs and backgrounds.

BIOGRAPHICAL SKETCH

Shruti Sannon grew up between cultures in cities around the world before settling in the United States. In 2021, she earned a PhD from Cornell University, where her research focused on how to design technologies to be more inclusive, ethical, and privacy-protective for users with diverse needs and experiences. Her dissertation research examined the impact of power asymmetries in digitally-mediated labor on marginalized workers' experiences, for which she received grant funding from Microsoft Research and Cornell University's Center for the Study of Inequality. Her work has been published in a number of leading social computing and human-computer interaction venues, including the Association for Computing Machinery conference proceedings for CHI and CSCW.

Prior to Cornell, she worked towards developing more equitable, multi-stakeholder forms of Internet governance at the GovLab, a research center at New York University's Tandon School of Engineering. She also holds a Master of Arts in Communication from NYU, and a Bachelor of Science from the University of Toronto.

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One of my early research experiences at Cornell was in the Interaction Design Lab with Geri Gay. Geri welcomed me into her lab and gave me carte blanche to

explore my research interests, and my time there has had a lasting impact on my research trajectory.

I would also like to thank the many graduate student friends I have made along the way, including my dissertation writing group members, Alexandra Hinck, Kaylee Kruzan, Chris Skurka, and Brett Stoll, for the many discussions, celebrations, and commiserations we have shared together over the years.

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My family and friends have watched and listened—somewhat bemusedly—as I have talked about graduate school in all its eccentricities. My parents, Sarita and Sonny Sannon, and my aunt, Premeeta Janssens-Sannon, have shared in the many highs and lows along the way and have been my biggest cheerleaders (even though they might still wonder what I mean when I say “human-computer interaction”). Thank you for rooting for me.

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CHAPTER 1

INTRODUCTION

“Really the only thing that [gig work] provides for me is flexibility. I would probably tell [potential gig workers] to go find something else. Like, there’s definitely so many better options if they don’t need the flexibility.”

Delivery worker with a disability, Chapter 4

1.1 The Research Setting

A growing number of people are performing work that is entirely mediated by technological platforms that make up “the gig economy” [Smith, 2016]. These platforms tell workers where to pick up and drop passengers, assign them with packages to deliver, and connect them to a variety of online jobs ranging from transcribing receipts to technical writing. What all of these platforms have in common is that they offer piecemeal tasks that are completed on-demand and in-the-moment by workers, and the entire work process is mediated digitally and managed by algorithms.

Contingent labor, where workers are compensated for completing piecemeal tasks and have precarious, temporary working arrangements with their employers, has a long and varied history, from day laborers and at-home textile workers to office temps and freelancers [Alkhatib et al., 2017]. As some of this contingent work has shifted to being mediated by on-demand labor platforms, digital technologies

have allowed for greater control over workers and work processes, making the gig economy a compelling context to study.

In theory if not entirely in practice, on-demand labor platforms are appealing to workers for a variety of reasons. The barrier to begin earning money on most platforms is low compared to most traditional workplaces that require workers to submit resumés and ace job interviews. Workers also have the freedom to be their own boss and the flexibility to set their own working hours and to work from anywhere. Accordingly, the narratives put forth by technology companies about gig work are shot through with promises of independence. Under a photograph of a beaming worker, the website of a popular ridesharing platform declares to potential drivers, “earn on your own terms”.¹

However, it is quickly apparent to many workers that there are conditions to these terms. The ways in which on-demand platforms are structured pose several challenges that workers must navigate. Most individual tasks are low-paid, and workers have to work intensively for long hours to earn a sufficient income [Wood et al., 2019]. Since algorithms control work processes, workers have little decision-making power over what they do [Shapiro, 2018]. The digitally-mediated nature of the work means that every aspect of the work process can be subject to detailed scrutiny, with apps tracking workers’ locations and even logging their keystrokes [Ajunwa et al., 2017]. In addition to the technology companies who run the platforms, customers who use the platforms also take on a managerial role by evaluating workers’ performance on every task, and thus, workers are beholden to customers who can review them at their discretion and can even restrict workers’ access to the platform [Stark and Levy, 2018]. And as independent contractors, workers are not protected by traditional labor laws, and the burden

¹<https://www.uber.com/us/en/drive/>

of managing work-related costs and risks falls squarely on their own shoulders [Scholz, 2012]. These features, among others, establish profound power asymmetries between workers and both the platforms that control their work and the customers who evaluate them.

A wealth of research has examined the motivations of gig workers, and how they navigate the challenges posed by the gig economy. Some of this work highlights that there are marked variations within gig workers, particularly based on whether they do gig work as a full-time occupation or as a supplementary source of income [Manyika et al., 2016, Keith et al., 2019]. Unsurprisingly, much of this research finds that workers who are dependent on the income they earn from gig work feel the stresses of doing precarious work in a way that workers who pick up occasional gigs on the weekend or as a hobby do not.

These broad distinctions among workers are useful, but do not capture the diversity of workers who power the gig economy, particularly those who are economically disenfranchised or marginalized on the basis of social markers of difference. Further, worker demographics only tell part of the story. We still have only a limited understanding of how the opportunities and challenges present in gig work may be different for workers with diverse needs and backgrounds. To address this gap, this dissertation focuses on representing the perspectives of marginalized workers and bringing their experiences into dialog with existing narratives and understandings of the gig economy.

1.2 The Case for Studying Marginalization in Gig Work

People who experience some form of economic or social exclusion—for example, on the basis of race, sexual orientation, disability, or socioeconomic status—can be said to be marginalized [Given, 2008]. Because these individuals or groups of people have been forced into the periphery—or the margins—of society, they have limited access to power and opportunities as compared to dominant social groups.

As a result of this social exclusion from resources, many marginalized workers have commonly held non-standard jobs that are precarious and offer limited benefits, and this trend appears to extend to the gig economy [Ajunwa, 2020]. While all workers must navigate the challenges presented by gig work, this process may be particularly complex for those who face economic or social marginalization.

Consider a worker who delivers food and provides lifts to passengers via a popular on-demand work app in the U.S. She likes that she gets to set her own hours, and she’s saving the money she earns for a vacation. She’s a little annoyed that some passengers that get into her car are rowdy or don’t bother to say hello, but she doesn’t mind because she can quit whenever it becomes too much. Instead, if gig work is her sole source of income, the issues might start to add up as she pours time and energy into gigs: she has to pay for gas and upkeep of her car, she might buy some phone charger cables and bottled water to offer passengers so she gets better reviews (“you’ve got to spend money to make money”), and she might consider driving at more lucrative times—maybe late at night when the bars let out—even if this feels a little more unsafe.

These decisions and challenges may be further complicated if she also faces some form of marginalization or economic disenfranchisement. She may be doing gig

work because she has a disability, and has been shut out of traditional workplaces that are exclusionary or inaccessible. Or she may not have the education or training to access more skilled work. In light of her limited options, when challenges arise during the course of her work, she may feel compelled to push through them, sometimes at the risk of her privacy, health, comfort level, or general well-being.

She may also face new challenges completing gig work on account of one or more marginalized identities. If she is gay or a person of color, she might find that her rating on the platform is being influenced by biased customers, and that as an independent contractor, she has no recourse if she faces harassment during a gig. If she has a disability, she might be frustrated to discover that several task types are inaccessible to her. All of these considerations are additional sources of stress that could make gig work more challenging for her as compared to another worker, and may have concerning consequences for her earnings and work outcomes.

Looking more deeply at variations within workers—particularly those who engage in gig work because of the marginalization they face in broader society and who then have to contend with these marginalizing forces within gig work as well—promises to give us a richer picture of digitally-mediated labor that can inform scholarship on the gig economy as well as policy and design considerations to help empower marginalized workers and make labor platforms more inclusive, equitable, and safe for a diverse range of workers.

1.3 The Aim and Scope of the Dissertation

This dissertation presents two cases that highlight different aspects of marginalization and their impacts on workers' experiences. Based on these findings, I

put forth several arguments about the ways in which the power asymmetries in digitally-mediated labor differentially impact marginalized workers, and how these may be mitigated.

First, I explore how workers navigate work-related risks in light of the economic incentives that underlie their participation in the gig economy. To do so, I look at one particular platform and source of risk: Amazon Mechanical Turk (MTurk), a popular crowdwork platform where workers complete a variety of online tasks, including transcribing receipts, completing surveys, and annotating images. Since this work occurs entirely online, and often requires workers to divulge large amounts of personal information, one of the most salient risks workers encounter while engaging in this work is threats to their privacy and security. Thus, in this study, I focus specifically on privacy risks, an understudied area in the gig economy [Dillahunt et al., 2017], though I suggest that it is likely that the power dynamics that play out around privacy also extend to other risks on work platforms. In Study 1, I seek to understand how workers balance the need to protect their privacy with the need to earn money from crowdwork. By interviewing workers with varying economic circumstances and degrees of financial reliance on crowdwork, this study sheds light on how workers' economic standing and access to alternate employment options impact how they respond to work-related risks as well as their broader experiences with crowdwork.

In the second case study, I set out to understand how additional forms of marginalization can be layered on top of the economic precarity that characterizes many workers' experiences in Study 1. Since disabled people have historically faced low rates of employment, and may be attracted to gig work for its flexibility [Zyskowski et al., 2015], I chose to focus specifically on understanding the oppor-

tunities and risks in gig work for disabled workers, both as compared to traditional work and to non-disabled workers. I quickly found that many disabled workers I interviewed also faced other forms of marginalization: many were economic disenfranchised and/or people of color, and some were also part of the LGBTQ+ community. Thus, I was also able to understand some of the intersectional challenges that arise when engaging in gig work with multiple marginalized identities.

Finally, much of the existing work on the gig economy has looked at a single platform or type of gig work, focusing on only a few popular platforms [Heeks, 2017]. Thus, current understandings of gig work are skewed towards an overrepresented subset of platforms, and do not speak to the broader themes that may be common across platforms. There is a need for research that cuts across digitally-mediated labor platforms to identify the role played by platform characteristics, social relations, and other factors on workers' experiences. Accordingly, in Study 2, to be able to speak to how issues of marginalization play out on on-demand labor platforms more broadly, I expanded my research focus to encompass four main types of gig work: ridesharing, delivery services, online crowdwork, and online freelancing.

1.4 Primary Arguments and Contributions

This dissertation illustrates that marginalized workers have a complicated relationship with gig work where marginalization orders and shapes several aspects of how they complete and experience work.

Gig work provides vital access to income for workers who are financially strapped and have few alternate options due to the marginalization they face in

broader society. To a large extent, these workers are cut off from accessing traditional employment, which is either exclusionary, inaccessible, and/or not adaptable to their needs. This leads to a key tension: while many marginalized workers choose to engage in gig work for the benefits it provides them, they also contend that gig work is a less-than-ideal work arrangement that they engage in out of necessity.

Workers' exclusion from traditional employment heightens their need to make gig work a successful source of income; I posit that this need pervades all parts of their experience doing gig work, including their ability to turn down risky work. In Chapter 3, I show that economic need impacts workers' decisions to protect themselves from privacy risks, and in Chapter 4, I show how workers can push through health concerns to complete work that might exacerbate their disabilities.

Further, I argue that the power asymmetries inherent in digitally-mediated labor impact marginalized workers in two ways: (1) existing work-related challenges can be amplified for marginalized workers, and (2) marginalization can result in workers experiencing new challenges altogether during the course of their work. Workers have to perform a significant amount of invisible labor to mitigate these challenges, and the burden of this labor is acutely felt by workers who are already marginalized.

Finally, by illustrating how workers who have multiple marginalized identities can face compounding risks and challenges when completing gig work, I call for more intersectional research on the gig economy.

In laying out these arguments, this dissertation makes three main contributions. First, I provide an empirical understanding of the opportunities and challenges that come with working on digitally-mediated labor platforms for workers who are

economically precarious and/or have one or more disabilities. Second, I add to theoretical understandings of the power asymmetries that emerge from how labor platforms are structured, and how these impact workers, particularly those who are marginalized. Finally, based on my findings, I put forth several implications for how labor platforms can be designed to mitigate the challenges that are faced by workers, both in the specific contexts of each case study, and more broadly.

1.5 Structure of the Dissertation

This dissertation is composed of five chapters, and is structured as follows.

After laying out the rationale for my research and its contributions in the current chapter, in Chapter 2, I provide more contextual information about on-demand labor platforms and the people who participate in this work. First, I assess the ways in which new forms of digitally-mediated labor are both similar and distinct from the traditional and contingent forms of labor that have come before. Then, I examine how several key characteristics of digitally-mediated labor—such as detailed performance monitoring and algorithmic control—impact workers’ experiences. My focus then turns to understanding the workers themselves: who they are, their motivations for participating in the gig economy, and what we know presently about the experiences of marginalized gig workers. I highlight the need for further research to understand how the various power asymmetries in gig work impact workers who are marginalized, and in doing so, outline the research gap that this dissertation aims to address.

Chapters 3 and 4 represent the two empirical studies on which this dissertation is based. Chapter 3 focuses on how workers navigate privacy-related risks in the

context of online crowdwork, and how the financial incentives to divulge personal information impacts how they protect their privacy and complete work on the platform. Drawing from interviews with crowdworkers on Amazon Mechanical Turk and observational fieldwork, I find that navigating privacy constitutes a nontrivial amount of invisible labor on the platform. More problematically, I show that due to the power and information asymmetries on the platform, workers often complete privacy-concerning tasks despite feelings of discomfort. Workers spoke about being more willing to compromise their privacy when they were in dire financial straits. Those who were able to become comparatively higher earners on the platform were able to be more discerning about the work they completed, and this was true regardless of whether they depended on crowdwork as a primary or supplementary source of income. I offer several suggestions for how crowdwork platforms could be designed to be more privacy-protective for workers.

Next, in Chapter 4, I broaden my focus to consider workers' experiences across four major types of digitally-mediated labor: crowdwork, freelancing, ridesharing, and delivery services. Chapter 4 focuses on the experiences of disabled gig workers, and draws on data from multiple sources, including interviews with workers with a wide range of disabilities, interviews with service providers in the disability employment space, social media data, and fieldwork. I identify the factors that make gig work particularly appealing for disabled workers as compared to traditional work. However, the interviews also reveal several challenges that disabled workers face in accessing and completing gig work, and the invisible labor workers put into mitigating or circumventing these challenges. I offer several suggestions for how work platforms could be designed to be more inclusive and accessible for disabled workers.

Finally, in Chapter 5, I synthesize my findings from both empirical studies. First, I discuss the ways in which economic precarity and marginalization impact workers' experiences, and then reflect on the additionally complex, intersectional risks and challenges faced by workers who hold multiple marginalized identities. Then, I discuss how the power asymmetries that characterize new forms of digitally-mediated labor impact workers from marginalized populations. I end this chapter with overarching suggestions for improving inclusivity in on-demand labor platforms as well as traditional workplaces.

CHAPTER 2

ON-DEMAND LABOR PLATFORMS: A PRIMER

Technologies of management and regulation have taken on a new dimension in gig work, given that the entire work process is mediated and controlled through technology [Jabagi et al., 2019]. I begin this chapter by briefly reflecting on how on-demand labor platforms are similar and distinct from forms of labor that have come before to illustrate why this new context warrants scholarship. I then provide an overview of the wide variation in tasks, platforms, and work conditions in the gig economy. Following this, I describe the various characteristics of on-demand labor platforms and discuss the implications of how these platforms are designed for workers' experiences.

My focus then shifts to the workers themselves. I describe what we presently know about the people who make up the gig economy, including their demographics and their motivations. I then scope the discussion by focusing on two understudied subsets of workers: those who face economic marginalization, and those who face social marginalization. I close the chapter by outlining the research gaps this dissertation seeks to address.

2.1 What's Different about Gig Work?

Reflecting on the ways in which on-demand labor platforms are similar or different to what has come before can help in contextualizing current challenges as well as theorizing about these issues may play out in the future.

In many ways, the gig economy is similar to other forms of labor that have preceded it. It has been likened to the "piecework" of pre-industrial society, where

workers completed one-off, low-skilled tasks and were compensated for their output rather than their time [Kittur et al., 2013, Alkhatib et al., 2017]. Industrialization contributed to the deskilling and standardization of many tasks, which made it easier to measure and control labor processes [Braverman, 1998]. In such industrial piecework, compensation is tied to individual units of production, which places pressure on workers to perform at an intensive pace. Parallels have also been drawn between online gig work and “industrial homework”, where workers use their own tools to complete work from their individual locations, rather than a collocated workplace [Lehdonvirta, 2018]. While technology may have accelerated the shift from hiring employees to hiring temporary workers in several industries, this move has been taking place over the last several decades as a result of managerial decisions to view employees as yet another cost that can be cut [Steward, 2020]. Thus, the emergence of on-demand labor platforms can be thought of as another step within a broader move towards the casualization of labor, where workers are selected “in the moment” to complete tasks and then discarded [De Stefano, 2015].

It is clear that some of the key characteristics of gig work are the same as older forms of labor, including its on-demand nature, the piecemeal rate of pay, and the need for workers to use their own work tools [Stanford, 2017]. As with other temporary workers, such as freelancers and day laborers, work arrangements in gig work are distinct from those of employees in a few key ways: workers are not paid a fixed salary, there is no expectation of a continued relationship between workers and employers beyond the scope of the task at hand, and workers’ schedules and earnings are both unpredictable [Abraham et al., 2017].

Yet, despite overlaps with other forms of work, as Scholz states, “it would be wrong to conclude that in the realm of digital labor there is nothing new under

the sun” [Scholz, 2012, p.15]. In digitally-mediated labor, technology orders every aspect of the worker experience: how workers are hired and assigned tasks, how their performance is monitored and evaluated, how they are compensated, and whether they can access work in the future. This defining characteristic of digitally-mediated labor has several implications for workers’ experiences that warrant examination, which will form the basis for the majority of this chapter.

2.2 An Overview of Tasks, Platforms, and Conditions

There are many types of on-demand labor platforms, and these vary both in terms of the types of tasks they facilitate, and the kinds of work conditions they afford. Since workers choose platforms to work on from a larger ecosystem of work platforms that are available to them—and may work on multiple platforms simultaneously—it is useful to recognize the broad variations in the kinds of tasks and work that workers can elect to perform, as well as the ways in which working conditions can vary across platforms in the gig economy.

2.2.1 Types of Work

Some platforms offer several different types of tasks, while others focus on specific types of work. For example, many ridesharing or delivery platforms are single purpose, since they only connect workers with transportation or delivery tasks. There can still be some degree of variation in tasks on single-task platforms. For example, while all the tasks offered on the delivery platform Amazon Flex involve making deliveries to customers’ houses, workers can choose between delivering

packages from Amazon warehouses or delivering groceries from Whole Foods for Amazon Fresh.

Other platforms facilitate a range of different tasks. Some platforms, such as TaskRabbit, connect workers with a variety of odd jobs, including moving furniture, cleaning houses, and running errands. On crowdworking platforms, workers can do many different online tasks, including transcribing audio, annotating images, and completing surveys. Freelancing platforms, such as Upwork and Fiverr, are also places where workers can apply to complete different online tasks and offer varied services, ranging from technical editing or graphic design to tarot reading. Some platforms that have typically been single-purpose have also begun to facilitate multiple types of gigs; for example, people who work for Uber can now transport passengers and/or deliver food for Uber's food delivery service, UberEats.

Given the abundance of platforms, workers have many types of work to choose from, including driving passengers to their destinations, finding and charging electric bicycles, delivering food or packages, shopping for groceries, transcribing voice clips, and editing technical documents. However, this choice is also constrained by a few factors: whether the platform is taking on new workers, whether it is available and/or popular in the area the worker is located in, and whether the worker has the assets required to participate (such as a car that is newer than 10 years old for most ridesharing gigs). Table 2.1 provides an overview of popular work platforms.

Table 2.1: Popular on-demand labor platforms by type

Type of Platform	Examples
Crowdwork	Amazon Mechanical Turk
Freelancing	Fiverr, Upwork
Ridesharing	Lyft, Uber
Delivery services	Amazon Flex, DoorDash, GrubHub, Instacart, Postmates, Uber Eats, Shipt
Home services and errands	TaskRabbit

2.2.2 Types of Work Conditions

Work conditions also vary widely across labor platforms. Because of the variability in gig work, and labor more broadly, developing an exhaustive typology of work arrangements is impractical [Forde et al., 2017]. That said, gig work can vary along a number of dimensions: whether the work is online or offline, the degree of skill required, differences in levels of pay, how payment is set, the degree of control workers have over their work, and whether the client is a company or an individual [Huws, 2015].

Kalleberg and Dunn suggest that most digitally-mediated labor falls along two main continuums: degree of worker control, and workers’ earnings [Kalleberg and Dunn, 2016]. In such a taxonomy, crowdworking sites such as MTurk are classified as affording low worker control and low earnings, as Turkers do not get to set the terms of the task that is given to them, and when their hourly earnings are calculated, they are often drastically lower than federal minimum wage [Hara et al., 2018]. On the other end of the spectrum, freelancing sites such as Upwork are classified as providing higher wages and higher worker control, as workers are able to set their own fees and can determine how they do their work. Jobs such as ridesharing and home delivery services fall somewhere in the middle: for example, Uber drivers may earn closer to minimum wage than MTurkers, but

they still have little control over the algorithmic decisions around their pricing or where they drive.

2.3 Characteristics of Gig Work and their Implications

Despite the wide variations across gig economy platforms laid out in the prior section, there are important commonalities between them in terms of how they work and shape workers' experiences. In this section, I examine several key characteristics of the gig economy, such as the on-demand nature of tasks and the easily replaceable workforce, the centrality of algorithmic decision-making, the role of reputation and ratings in the provision and evaluation of services, and the classification of workers as independent contractors. In doing so, I discuss how these characteristics impact workers' experiences.

2.3.1 On-Demand Work and Flexibility

Gig work is acquired and completed on-demand, which makes it particularly flexible in two ways: (1) temporally flexible, as workers have some degree of control over when they work and for how long, and (2) spatially flexible, as workers are able to choose where they work, rather than at a traditional workplace [Lehdonvirta, 2018]. Workers cite the ability to be able to work flexible hours at their discretion as a key motivator to do both online and offline forms of gig work [Lehdonvirta, 2018, Berger et al., 2019]. Flexible employment can be beneficial for workers in many ways, such as improving work-life balance [Shockley and Allen, 2007] and allowing people to work around other needs and

constraints in their lives [Bainbridge and Townsend, 2020].

To appeal to workers, gig companies champion this flexibility in their recruitment materials. Lyft compares the flexibility of ridesharing with a corporate nine-to-five, saying *“Sitting in an office isn’t for everyone. A growing number of people prefer the freedom and variety that comes with driving for a rideshare service.”*¹ Amazon Mechanical Turk highlights how gig work can be a productive endeavor that fits into people’s schedules, saying *“make money in your spare time.”*²

However, whether the promise of flexibility holds up in practice is debated. Even though workers are able to set their own schedules, they have to contend with the fact that some days and times are more profitable than others (e.g., weekdays are busier on MTurk, while weekend nights are busier for ridesharing) [Shapiro, 2018]. Thus, to achieve true flexibility, workers may have to sacrifice profitability.

While flexibility is a primary motivator for workers to seek out gig work, flexibility alone does not necessarily equal positive outcomes for workers, as we know from research on flexible scheduling practices in traditional work contexts. For example, while flexibility is associated with increased job satisfaction, it is also associated with work intensification [Kelliher and Anderson, 2010]. Because most tasks pay very little, workers can feel compelled to work long and intensive hours to achieve some semblance of economic stability, suggesting that the extensive benefits of flexibility may be more of a myth [Wood et al., 2019]. For many, the low wages and unpredictability of demand may require working longer hours than at a traditional job.

¹<https://www.lyft.com/driving-jobs>

²<https://www.mturk.com/worker>

Finally, part of what makes gig work so flexible is the fact that work is completed on a piecemeal basis, where workers are enlisted to complete short individual tasks, rather than longer-term work. Workers can fit these short tasks around the demands of their schedule. However, the piecemeal nature of tasks also takes away long-term job security, and increases the precariousness of workers' positions. Precarious employment has a negative impact on workers' psychological and physical health [Grammenos, 2003], and as a result, gig workers can be prone to high levels of anxiety [Berger et al., 2019].

2.3.2 Algorithms and Worker Control

Algorithms function as the primary mechanisms of control in the gig economy, as they assign work, evaluate workers, and monitor work processes [Rosenblat and Stark, 2016]. These mechanisms of control leverage surveillance technologies that collect data about workers, and through automated decision-making processes, manage them from afar [Mateescu and Nguyen, 2019]. Algorithmic management poses several challenges for workers, as I discuss below.

Algorithmic versus worker decisions

Algorithms require data to function [Gillespie, 2014], and the algorithms on gig platforms continuously track workers to make decisions about each individual worker [Möhlmann and Zalmanson, 2017]. Algorithmic management diminishes the amount of control workers have over their work to “minute decisions”, such as which tasks to accept or reject, as compared to more meaningful decisions, such as their hourly wage rate or their methods of work [Shapiro, 2018]. Since human man-

agers are replaced by algorithmic ones, workers are also unable to negotiate their assignments or request accommodations from their supervisors [Tippett, 2018].

In many cases, even when workers can choose what tasks to work on, the selection of tasks that they can access is set by customers; in this way, customers are able to exercise a nascent form of control over workers' decisions [Tippett, 2018]. For example, on MTurk, requesters can set eligibility criteria for their tasks, such as making them available only to workers with task approval rates of 95% and above. At the same time, requesters can also reject Turkers' work, which impacts their task approval rates and their eligibility for certain tasks [McInnis et al., 2016].

In general, the degree of control workers have over their work is typically associated with the degree of skill required by the work [Kalleberg and Dunn, 2016]. Most platforms that afford low control also involve relatively low-skilled work compared to platforms where workers can control some of the work process. For instance, crowdwork often involves short, low-skill data entry tasks (such as verifying receipts or transcribing audio clips), and workers have little control over how these tasks are done. In contrast, freelancers on Upwork typically work on projects of longer durations that require some degree of specialized skill (such as web design), and can set their own prices. However, even on freelancing platforms, there are disparities between workers in terms of control and privilege: for example, high-skilled workers can out-compete and out-earn comparatively low-skilled workers by virtue of having greater individual bargaining power [Wood et al., 2019].

Algorithmic opacity and information asymmetries

Further complicating matters, the ways in which algorithms operate are often opaque. Algorithms function without human involvement at a scale that is difficult

to understand, and the makers of algorithms can choose to deliberately obfuscate their workings [Gillespie, 2014]. This is problematic because algorithms wield a lot of power over workers; for example, they can be used to deactivate workers with low ratings [Rosenblat and Stark, 2016] or to filter work away from them until the platform is no longer a viable source of income [Wood et al., 2019]. Since the rules underpinning these algorithmic decisions are undisclosed, platforms are able to maintain “invisible control” over workers [Tippett, 2018]. Platform interfaces also often provide very little information about the consumers of services, and this lack of transparency makes it harder for workers to make informed decisions about which tasks to accept and complete [Van Doorn, 2017]. For example, Uber drivers are unable to see destinations or fare information before accepting a ride request [Rosenblat and Stark, 2016], and MTurk workers often know very little about the requesters’ identities or the purpose of their tasks [Sannon and Cosley, 2019].

Workers’ responses and resistance strategies

In many cases, workers turn to social media and online forums to collectively make sense of the algorithms underpinning the platforms they work on [Jarrahi and Sutherland, 2019, Möhlmann and Zalmanson, 2017, Lee et al., 2015]. To mitigate the impact of algorithmic decision-making on their lives, workers develop mental models about how the algorithms work, and alter their behavior accordingly. For example, Upworkers engage in various sense-making activities to understand how Upwork’s algorithms work, including opening client accounts to see which aspects of workers profiles are highlighted in searches, and using social media to stay abreast of constant changes to the algorithm [Jarrahi and Sutherland, 2019]. On the basis of these sensemaking activities, they are able to use strategies to circumvent or manipulate the algorithms. For ex-

ample, savvy Upworkers might prefer to split a long-term project into multiple small contracts rather than one single contract, which would allow them to amass more ratings and mitigate the impact of a single bad rating on their overall Job Success Score [Jarrahi and Sutherland, 2019]. Similarly, rideshare drivers resist the impact of algorithms in many ways, such as temporarily deactivating their GPS, cancelling rides with angry customers to avoid receiving a negative rating [Möhlmann and Zalmanson, 2017], or periodically turning their apps on and off [Lee et al., 2015]. However, many workers also feel compelled to make work-related choices that negatively impact their well-being in their quest to win the favor of the algorithms governing their work [Wood et al., 2019].

2.3.3 Ratings and Reputation

Social capital can greatly influence employment prospects in traditional labor settings. In the case of digitally-mediated labor, the need for social capital is amplified, as workers’ social capital—and consequent access to work—is assessed by consumers and proprietary algorithms, giving rise to a “reputation economy” [Gandini, 2016]. On gig platforms, reputational feedback is translated into ratings or scores by an algorithmic intermediary, which can then serve as a proxy for trust between consumers and workers [Gandini et al., 2016]. Since consumer ratings and preferences are one of the main ways to assess workers’ performance, consumers essentially perform the role of middle managers on such platforms [Stark and Levy, 2018], which broadens the gap in power between workers and users of such services.

Ratings impact workers in both direct and indirect ways. First, ratings can directly impact workers’ earning power, as workers who have lower scores may be

less able to compete with other workers. For example, online freelancers' earnings are positively correlated with their reputation scores [Gandini et al., 2016], likely since potential customers take these scores into account when selecting a freelancer for a task. Further, ratings can also indirectly impact earnings by dictating access to specific types of tasks, and workers' ability to stay on the platform altogether. For example, MTurk workers become eligible for better work if they receive a 'Masters' qualification from Amazon, and Uber drivers need to maintain a rating of 4.6 or above to be able to drive for the platform.

The importance of reputation leads to workers "laboring for ratings", which involves a lot of invisible labor, including emotional labor to form relationships with customers [Raval and Dourish, 2016, p.101]. For example, many ridesharing drivers attend to customers' needs to vent or discuss various topics, and provide them with amenities such as mints and water [Raval and Dourish, 2016]. Workers may also feel compelled to work at an untenable pace in order to distinguish themselves from their competitors to earn higher ratings and to acquire new work [Wood et al., 2019].

While it is clear that workers put a lot of effort into winning the favor of customers, they also have to contend with the fact that customers are unaware of how the ratings systems work [Raval and Dourish, 2016]. For example, Uber drivers need to maintain a rating of 4.6 out of 5 to be able to keep driving for the platform. While a customer may think that 4 stars is a good rating, in the context of Uber, any rating below 5 stars could impact the driver's ability to work on the platform. As a result, drivers have to find ways to encourage customers to give them 5-star ratings, including potentially re-educating them about the ratings system while trying not to commit a social faux pas by overtly asking to be rated highly. Simi-

larly, crowdworkers can risk losing access to higher-paying tasks or being banned from the platform if their tasks are rejected by requesters, though requesters are often unaware of the repercussions of rejecting tasks [McInnis et al., 2016]. Workers' ratings can also be impacted by factors outside of their control, such as passengers' mood, which can be a source of frustration [Lee et al., 2015]. Thus, gig work sets up a power dynamic between workers and customers that is not fully transparent and visible to both parties: while workers are clearly reliant on customers' positive evaluations, customers exercise a lot of discretion over these evaluations, and may make them without a full understanding of how these systems work and the implications of their evaluations.

2.3.4 Digital Surveillance

Customer ratings are just one of the many mechanisms utilized by gig platforms to monitor workers' performance. While employers have long used technologies to surveil workers, the use of digital technologies for this purpose has led to "a step change in power, intensity and scope of surveillance" [Graham and Wood, 2003, p.228]. While technologies have traditionally been used to monitor workers (such as through closed-circuit cameras, or location tracking using GPS in trucks), these technologies can now even be carried by workers (e.g., through wearable devices or smart phones) in multiple spaces (when working and at home), and can track vast amounts of data than ever before (e.g., not just location or audio but even physiological measures). The digitally-mediated nature of gig work allows platform companies to capitalize on the granularity and breadth of surveillance techniques that are available to them.

Digital technologies make it easier and cheaper to surveil workers

[Ajunwa et al., 2017], and also provide new ways to control workers and work processes remotely [Rosenblat and Stark, 2016]. For example, freelancers on Upwork can receive payment protection for the hours they work, but only if they allow the platform to take a screenshot of their screens every 10 minutes, and to log their keystrokes to track their performance. These surveillance practices are also not unobtrusive: rather, the interfaces bring to workers attention that their actions are being monitored, which potentially increases their perceived pressure to perform [Ajunwa et al., 2017].

These mechanisms also enable not just technology companies but also customers to surveil or track workers. For example, on Uber, passengers are able to see drivers' names and license plate numbers, and track their routes as they approach pickup locations [Rosenblat and Stark, 2016]. On MTurk, requesters can create entire data profiles about workers by aggregating data collected over multiple tasks [Kandappu et al., 2013]. On Upwork, clients are able to review workers' keystroke and screen activity when evaluating whether their performance has been satisfactory; while Upworkers are able to opt out of this surveillance, doing so means that they are no longer covered by Upwork's payment protection in cases where clients abscond without paying them for their work.

The amplification of surveillance in digitally-mediated labor can have negative consequences for workers. Electronic monitoring increases the pressure on workers to meet targets and places unreasonable expectations on performance, which can lead to overwork and compel workers to find ways to 'game' the system, though this may also prove to be harder to accomplish with digital technologies [Moore et al., 2018, Ajunwa et al., 2017]. Workers may also feel compelled to make decisions that are detrimental to their well-being, such as working through

rest breaks [Levy, 2015] and experience a host of psychological issues, such as stress and anxiety [Howard, 1985].

2.3.5 Worker Classification

In general, workers in the gig economy are classified as independent contractors. The ostensible benefit of this classification is that workers can “be their own boss” instead of having to report to a direct supervisor, and many workers see the lack of a hierarchical work environment as one of the appeals of gig work [Möhlmann and Zalmanson, 2017].

However, this classification—or as some argue, misclassification—of workers also poses several challenges for workers, and further deepens the power asymmetries workers face in the gig economy [Van Doorn, 2017]. Since workers are not classified as employees, they are not covered by traditional labor protections [De Stefano, 2015]. Thus, they receive no benefits (such as paid sick leave or vacation, retirement contributions, social security, or health insurance), have little legal recourse if they face discrimination or harassment, and are not eligible for unemployment benefits.

Through this classification, technology companies are able to absolve themselves and the users of their services from the responsibilities of a traditional employer [Van Doorn, 2017]. Instead, the responsibility to manage the risks and costs of gig work falls on the workers themselves, who must supply their own tools, manage fluctuations in work availability, and so on [Stewart and Stanford, 2017]. By shifting these responsibilities to workers and avoiding the obligation to pay them benefits, technology companies are able to make significant savings in labor costs

[Rogers, 2016].

As independent contractors, workers bear several costs of performing gig work, which ultimately impacts their take-home pay. Some of the costs borne by workers take the form of all the unpaid time and effort that goes into gig work. For example, ridesharing drivers can spend a large amount of unpaid time driving to pick up passengers, and may also have to clean up any mess that passengers make in their cars [Raval and Dourish, 2016]. Similarly, crowdworkers spend unpaid time searching for tasks, and do not receive compensation for tasks that are rejected or that they only partially complete [Hara et al., 2018]. This invisible labor can be sizeable; for example, a survey of crowdworkers found that approximately 20% of the work they put into platform is unpaid [Berg, 2015].

Workers may also directly incur expenses in the course of their work for which they are not reimbursed. For example, in addition to driving-related expenses (such as gas, tolls, and car maintenance), drivers also often have to budget for amenities for their passengers, including mints and water, and may also purchase items to protect themselves on the road, such as a dash camera [Ma et al., 2018].

When all of the invisible labor and additional expenses that go into completing gig work are taken into account, these overhead costs in time, money, and effort further depress the actual earnings on such platforms. The consequent low pay on gig platforms is particularly problematic given that many workers use these platforms to earn needed income.

2.4 Who does Gig Work and Why?

In addition to understanding the effects of various characteristics of the gig economy, it is important to learn about the workers who make up this workforce. Workers in the gig economy vary in terms of both their demographics and their motivations for participating in gig work in ways that many common narratives about gig work overlook. In what follows, I provide a general overview of gig workers, and then examine two types of workers in particular who have been relatively understudied: those who face economic marginalization, and those who face social marginalization.

2.4.1 Demographics and Motivations

Almost one in ten Americans have earned money from an on-demand labor platform [Smith, 2016], and the gig economy workforce is made up of workers of all stripes. According to a nationally representative survey of American households by the Pew Research Center, most gig workers tend to skew young, with 18-29 year-olds being most likely to do gig work than any other age group [Smith, 2016]. In terms of race, 5% of White adults, 14% of Black adults, and 11% of Latino adults in the U.S. report having participated in the gig economy. Gig workers also make up 9% of adults with high school degrees, and 15% of adults who have at least some college education or more. Gig workers also have varying levels of household income, ranging from under \$35,000 to over \$75,000 annually.

Gig workers can either be motivated to do gig work solely for monetary reasons, or for a mix of monetary and non-monetary reasons, such as having something to do in their spare time, and to pick up a new skill [Smith, 2016]. They can also elect

to work either full-time or part-time on gig platforms. When considering workers' motivations for doing gig work, and the role gig work plays in their lives, four main types of worker profiles emerge [Manyika et al., 2016]. Of the people who rely on gig work for their primary income, “free agents” do so out of choice and a preference for gig work as a form of employment, whereas “reluctants” would prefer a more traditional job but do gig work in the face of no other viable alternatives. In contrast, of the people who use gig work to supplement other sources of income, “casual earners” voluntarily engage in gig work for a mix of monetary and non-monetary reasons, whereas the “financially strapped” are economically reliant on gig work to make ends meet despite also maintaining other forms of employment.

The dominant narratives around the gig economy—particularly those pushed forward by the technology companies themselves—have framed the majority of gig workers as “casual earners” who enjoy occasionally dabbling in gig work for fun and a little pocket money. However, as the remainder of this section will show, many workers who face economic and/or social marginalization also take part in the gig economy, and their experiences can be markedly different from casual workers.

2.4.2 Economic Marginalization

The first subset of workers this dissertation focuses on are those who face economic marginalization. These are the “reluctant” and “financially strapped” workers discussed in the previous section—those who engage in gig work out of economic need rather than purely by choice or out of interest [Manyika et al., 2016]. These workers make up a sizeable number of people in the gig economy in the U.S., with one survey finding that 29% of gig workers say that the income from gig work is essential to meet their basic needs [Smith, 2016].

Further, some workers are more likely to be economically reliant on gig work than others. In general, gig work is more common among people without college degrees, and those with a household income of below \$30k, and these workers are also more likely to be financially reliant on gig work than casual gig workers who see the income as “nice to have” [Smith, 2016].

Unlike casual workers who see gig work as a hobby or a source of fun spending money, these workers sign up for gig work because they are driven by economic need. This need can be dire; for example, a third of Turkers report having been unemployed before starting to work on the platform [Berg, 2015]. Workers who are economically reliant on gig work can also be more likely to have other constraints they are working around that might both contribute to their economic marginalization more broadly, as well as make gig work particularly appealing: for example, almost half report needing a flexible work schedule, one in four report having few job opportunities where they live [Smith, 2016], and some find that their employment options are limited due to criminal records or limited education [Rosenblat, 2018]. In contrast, casual workers typically hold other full-time or part-time jobs and see gig work as a fun thing to do in their spare time [Smith, 2016], or as a social outlet [Rosenblat, 2018].

Being reliant on income from gig work and/or doing gig work full-time can be stressful and difficult. In the context of crowdwork, full-time Turkers report longer working hours and lower income than their part-time peers, and also have lower levels of life satisfaction [Keith et al., 2019]. Full-timers are more likely to report high levels of economic anxiety and fear of unexpected expenses as compared to those who use gig work to supplement their income [Edison Research, 2018].

It is worth noting that not all workers who are financially reliant on gig work

as their primary income are necessarily economically marginalized. Workers who have other options for employment but actively choose to do gig work full-time—the “free agents” [Manyika et al., 2016]—often have specialized skills that allow them to engage in the more lucrative types of gigs, such as online freelancing [Dunn, 2018].

Meanwhile, since platform work requires workers to provide their own assets (for example, a car to drive for Uber), and the value of these assets influences workers’ profitability [Davidson et al., 2018], labor platforms may exacerbate inequalities among workers, as those who are economically marginalized and possess less valuable assets can be out-competed by those with assets of higher value.

2.4.3 Social Marginalization

The second subset of workers this dissertation focuses on are those who face social marginalization.

Many of the workers who face economic marginalization may also face social marginalization, given that the two are often interlinked. Many people who face social exclusion on the basis of a marginalized identity are more likely to be low-income or to live in poverty than people from dominant groups. According to U.S. Census data, the poverty rate in the U.S. in 2019 was 10.5%, but the poverty rates for several marginalized groups, including black and disabled people, were significantly higher [Semega et al., 2020].

Socially marginalized groups are over-represented in the gig economy, likely due to the fact that marginalized workers have always performed an oversized share of precarious, low-skilled, and contingent work [Ajunwa, 2020]. On-demand labor

platforms may also make it easier for historically disadvantaged communities to access new sources of income [Dillahunt and Malone, 2015]. Yet, it is also worth noting that the ways in which on-demand labor platforms are structured allow technology companies to conceal the racialized and gendered history of service work that they are reify. Many of these platforms are marketed as providing users with an escape from menial labor, such as cleaning houses and running errands. These platforms reduce or entirely remove any contact users of these services need to have with workers, and in doing so, they render the people actually doing the work invisible [Atanasoski and Vora, 2015]. Through this process, platforms are also able to conceal the fact that many of the workers who do the menial tasks that these platforms offer users freedom from are racial minorities and low-income women [Van Doorn, 2017].

In addition to being over-represented in gig work—and the service industry as a whole—the experiences of marginalized gig workers are markedly different to gig workers from dominant groups. First, there are differences in how lucrative gig work can be for marginalized workers as opposed to non-marginalized workers, and some of this is because there are constraints around the kinds of tasks marginalized workers are able to access. For example, physical tasks that involve low-skilled and low-paid physical labor are disproportionately performed by Black and Latino people [Smith, 2016] and white working class women [Milkman et al., 2020], whereas higher-paid gig work, such as freelancing, is more common among White workers [Smith, 2016]. This difference may be partly due to the disparities in education across racial groups that preclude access to high-skilled work; for example, only 30% of Blacks and 20% of Latinos have attained a Bachelor’s degree or higher, compared to 40% of Whites [Bureau of Labor Statistics, 2017].

Further, platforms are not designed with the diversity of workers in mind, and this can also restrict marginalized workers' participation in gig work. This appears to be particularly true for disabled workers, who have to navigate tasks that are inaccessible for a variety of reasons, such as being incompatible with accessibility software [Zyskowski et al., 2015, Swaminathan et al., 2017, Hara and Bigham, 2017, Lee et al., 2019]. Existing work on gig workers with disabilities has focused on individual platforms, and all but one has focused on crowdwork (for a full review, see Chapter 4); however, it seems likely that disabled workers would face barriers to access and participation on other platforms as well.

In addition to differences in the types of work marginalized workers are able to access, there are also differences in how marginalized workers experience the same tasks as workers who are not marginalized. Research suggests that the discrimination and bias faced by marginalized workers in broader society also extends to the gig economy. One of the main ways this plays out is in terms of worker evaluation. Since the gig economy relies on customers to evaluate workers' performance, and affords customers with great discretionary power in making these evaluations, discrimination can creep into the equation. Race has been found to impact workers' evaluations on multiple platforms: Black Uber drivers receive lower ratings than White drivers [Rosenblat et al., 2017], Black and Asian workers have lower ratings on TaskRabbit than White workers, and the reviews for Black workers on Fiverr have more negative adjectives than those of White workers [Hannák et al., 2017]. Ratings may also play a role in workers receiving new tasks and assignments. Research suggests that bias also exists in how platforms' algorithms display workers to customers in search results: an analysis of search results on TaskRabbit found that Black workers' profiles were ranked lower than White workers [Hannák et al., 2017].

Evaluations can also be impacted by gender, as women receive fewer reviews than men on TaskRabbit, or by the intersection of race and gender, as women who are Black receive less positive reviews overall [Hannák et al., 2017]. Similarly, women ridesharing drivers are more likely to be rated poorly than men when they fail to hold up a standard that is considered to be “women’s work”, such as maintaining the cleanliness of their car [Greenwood et al., 2019]. Since workers’ access to gig platforms is often predicated on maintaining high ratings on these platforms, bias in ratings and reviews can be of great consequence.

As a result of discrimination and restrictions on access and participation, marginalized workers can face disparities in their earnings and other outcomes. In the context of ridesharing, there is a 7% earnings gap between male and female drivers [Cook et al., 2018], and even when accounting for variations in experience, education, and job type, women earn less than men on Upwork [Foong et al., 2018]. Similarly, research on crowdworkers finds that workers who identify as having a disability earn \$2.80/hour, compared to \$3.14/hour earned by non-disabled workers [Hara et al., 2019]. These disparities in earnings do not necessarily directly stem from discrimination—for example, women drive at different times and in different places than men for safety reasons [Cook et al., 2018] and some disabled workers take longer to complete tasks than non-disabled workers or lose time in navigating badly set up tasks that are inaccessible [Hara et al., 2019]. However, the differences in earnings highlight that participation in the gig economy can be comparatively less lucrative for workers who face additional challenges or whose needs are overlooked.

2.5 Research Gaps

While there is a wealth of research on the gig economy, two research gaps emerge from this literature review that this dissertation seeks to address: 1) the treatment of gig workers as a homogenous group that overlooks differences in experiences and disparities in outcomes, and 2) the focus on individual gig work platforms that limits generalizability and overlooks the power asymmetries that cut across multiple forms of digitally-mediated labor.

2.5.1 Worker Heterogeneity

Dominant narratives about the gig economy paint a rosy picture of gig workers as casual earners who dabble in gig work as a source of fun and supplementary income. Researchers have pushed back on this narrative by identifying that many gig workers are economically marginalized; however, research on workers who face social marginalization is still limited.

The research that has been conducted thus far in this area provides compelling evidence that marginalized workers face issues including discrimination on gig platforms, and that these have troubling consequences for their earnings and future participation in the gig economy.

However, much of the work thus far focuses on demographic categories and aggregate outcomes. In addition to recognizing the heterogeneity in the workforce from a demographics perspective, more work is needed to understand all the ways in which marginalization may play a role in workers' experiences, including influencing how they perform work, navigate challenges, and protect themselves from

risks. Research is also needed to understand whether and how the challenges in gig work may be felt differently by workers who are marginalized or disproportionately impact them as compared with other workers.

2.5.2 Platform Heterogeneity

Most work on the gig economy is conducted on individual platforms, and focuses on a select few popular platforms, limiting generalizability [Heeks, 2017]. There are broad variations in gig work, and the popularity and use of any individual platform is likely to change over time. Thus, in general, there is a need for gig economy research that focuses on how the underlying themes and characteristics of platforms impact workers' experiences. Such an approach would also be useful when studying the impact and influence of marginalization in the gig economy. Research is needed to identify how the power asymmetries that emerge from the various high-level characteristics of gig work impact marginalized workers, and how marginalized workers navigate the broader ecosystem of gig work.

The following two chapters contain two empirical studies that seek to address these research gaps. Chapter 3 addresses the first gap by examining how economic need can drive workers to begin crowdwork, but also explores how this need can impact other aspects of how work is performed on the platform, workers' experiences, and their decisions to protect themselves from risk. Chapter 4 addresses both research gaps by focusing on workers who face both economic and/or social marginalization, and examines how their experiences are impacted by the power asymmetries prevalent in a broad range of gig platforms.

CHAPTER 3
NAVIGATING PRIVACY RISKS AND ECONOMIC PRECARITY
IN CROWDWORK

*“Making money while trying to maintain some
privacy. It’s a tightrope.”*

Turker for six years

In this chapter and the chapter that follows, I present two studies that explore the risks and opportunities in digitally-mediated labor. This chapter explores how workers on the crowdsourcing platform Amazon Mechanical Turk navigate privacy-related risks on the platform, and the degree to which they can protect themselves from risk, particularly given their economic motivations for working on the platform.¹

3.1 Introduction

Many digitally-mediated work platforms require workers to disclose personal information, both up front (as with worker profiles in Upwork) and while working (as with Uber drivers’ locations). On Amazon Mechanical Turk (MTurk), a popular crowdsourcing site, requesters can post tasks (“Human Intelligence Tasks”, or “HITs”) that ask workers (“Turkers”) to provide personal demographics, answers to deeply personal questions, or even video of themselves.

¹The research described in this chapter is based on a study conducted with my coauthor Dan Cosley that was published in the Proceedings of the Association of Computing Machinery’s Conference on Human Factors in Computing Systems (CHI) [Sannon and Cosley, 2019].

Although issues of disclosing personal information are not unique to MTurk or to online work, they may be magnified in digital labor due to stark information and power asymmetries. Workers often have limited information about requesters or the content and purpose of a given HIT, and have little recourse if requesters reject their work [Martin et al., 2014]. In contrast, requesters can aggregate Turkers’ personal information by asking for different types of data across multiple HITs [Kandappu et al., 2013]. These factors may make it hard for workers to accurately assess the privacy risks of completing any given task. Digital work is also often precarious and does not offer traditional labor protections, increasing risk to workers while depressing their wages [Scholz, 2012]. This economic power imbalance may also compromise workers’ privacy; although Turkers have higher privacy concerns than average [Kang et al., 2014], they may discount legitimate privacy concerns to earn needed income or to avoid consequences such as being blacklisted [Sannon and Cosley, 2018].

These considerations make MTurk, and digital labor more generally, a compelling context for studying both privacy concerns and privacy-protective behaviors (PPBs). Turkers have reported many privacy concerns and violations around data collection and profiling, unauthorized use of data, invasive stalking and spamming, and deceptive practices such as phishing and scams [Xia et al., 2017]. How Turkers navigate these risks and make decisions about disclosing their personal data during the course of their work, however, is an open question that could both inform the design of crowd work ecosystems and deepen understanding of the unpaid work, or “invisible labor” [Star and Strauss, 1999], required to be an effective Turker.

Crowd workers’ privacy and invisible labor are also topics close to home for

CHI. Many HCI researchers design crowd workflows or use MTurk in studies, and as we will see, Turkers tend to be more willing to disclose personal information to researchers than other requesters. MTurk is estimated to have 100–200k workers, with tens of thousands of new workers joining the platform every year [Difallah et al., 2018]. Thus, we view reducing Turkers’ privacy-related risks and labor as a practically and ethically important issue for the CHI community.

To understand how Turkers navigate privacy issues during their work, we conducted semi-structured interviews with 14 Turkers who had varying levels of experience and financial dependence on MTurk. We show that privacy considerations influence both what work gets done and how, as well as rationales for and costs of the PPBs Turkers use to protect themselves. We discuss how power, invisible labor, and time are all important lenses for understanding privacy and offer suggestions for how crowd work platforms, and the ecosystems of worker-created resources around them, can be designed to reduce both privacy risks and wasteful privacy-related invisible labor.

3.2 Related Work

We begin by discussing how Turkers select tasks, highlighting the invisible labor associated with this process. We then examine the privacy risks and concerns experienced by workers, and the gaps in knowledge our study intends to fill around practices, power, and privacy in choosing and doing HITs.

3.2.1 Choosing and Working on HITs: A Walkthrough

A key decision for Turkers is which HITs to work on, and though Turkers work for many reasons, including fun, the primary motivation is money [Kaufmann et al., 2011]. Thus, pay rate is a key concern, along with the novelty, speed, and repeatability of the HIT [Lasecki et al., 2015]. Workers sort through HITs to find new, high-paying HITs [Chilton et al., 2010], often using Turker-written browser scripts to help find and capture them.

Perceptions of requesters also affect Turkers' decisions about HITs. There are many different types of requesters, including academic institutions and private companies; Turkers develop opinions about both individual requesters and types of requesters as they work. Savvy Turkers vet individual requesters by both writing and checking reviews left by other Turkers on sites such as Turkopticon [Irani and Silberman, 2013]. Issues such as clarity of communication and task design [Martin et al., 2014] and fairness around rejection [McInnis et al., 2016] are important considerations in evaluating requesters. Privacy issues are less often talked about, though exploratory work suggests that academic requesters are seen as more trustworthy [Sannon and Cosley, 2018].

The type of work involved in a HIT can also affect Turkers' decision-making. Surveys are the most popular HITs among U.S. workers [Difallah et al., 2015], but HITs can involve other types of work, including searching the Internet for information, verifying information, interpreting or categorizing data, creating new content, and clicking links to access content [Gadiraju et al., 2014, Difallah et al., 2015]. Some HIT types may pose more privacy issues than others. For example, surveys can collect sensitive personal information, while content creation tasks can ask workers to take pictures or recordings of themselves.

Turkers also organize communities, such as MTurk-related Reddit forums, TurkerNation, and MTurkForum, to communicate about requesters, HITs, scripts, and Turking. About 60% of U.S. workers report using such forums [Yin et al., 2016], which play an important role in knowledge sharing and reducing task completion times [Yang et al., 2018]. Workers also share information about good requesters and high-paying tasks with their networks, giving committed, connected Turkers an edge [Yin et al., 2016].

Overall, Turkers engage in a large amount of invisible labor—that is, work to complete HITs that is unpaid [Martin et al., 2014]—around searching for HITs, working on HITs that are rejected, and beginning to work on HITs but then choosing to abandon them (“returning” HITs) [Hara et al., 2018]. Returning HITs is common: through an analysis of 2,676 workers and 3.8 million HITs, Hara et al. found that 12.8% of all HITs were returned [Hara et al., 2018]—wasted effort that significantly reduced average hourly wages. We suspect that many of these HITs are returned due to privacy concerns about personal information.

3.2.2 Risks and Privacy Issues on MTurk

Turkers are supposed to be anonymous, and MTurk’s Acceptable Use Policy prohibits collecting personally identifiable information (PII) such as email addresses². Still, many tasks require Turkers to provide personal information without a guarantee of confidentiality [Felstiner, 2011], and Turkers have reported quite invasive requests, such as for photographs of their health insurance cards [Xia et al., 2017]. They also express concerns about how their information is collected and used, as

²Turkers generally refer to HITs that request PII as Terms of Service (TOS) violations, as will we in the remainder of the paper.

well as malicious requesters who may spam or scam them [Xia et al., 2017].

Further, individual requests for small amounts of personal information can lead to privacy risks through aggregation. Kandappu et al. launched three seemingly unrelated HITs to collect individually innocuous PII from workers, using MTurk IDs to connect data from the individual HITs to profile a Turker’s birthday, gender, and zip code [Kandappu et al., 2013]. Easy access to this information is problematic, as research using U.S. census data indicates that these three data points alone can be used to identify 87% of the U.S. population [Sweeney, 2000]. MTurk IDs are also linked to workers’ Amazon accounts, meaning workers can often be identified through a regular Internet search [Lease et al., 2013].

Finally, although Turkers are more privacy-conscious than the general population [Kang et al., 2014], they may not always know the risks posed by the site. On balance, they care about remaining anonymous, and most believe (incorrectly) that a requester cannot find out their full name [Lease et al., 2013]. They are also generally unaware that requesters can profile them across tasks, though most would not knowingly complete HITs that aim to profile them [Kandappu et al., 2013]. About a third of U.S. Turkers surveyed did not report any privacy concerns or negative privacy-related experiences; whether these Turkers are generally unconcerned about privacy, unaware of the risks, or prioritize earning money over privacy is an open question [Xia et al., 2017].

3.2.3 Putting It All Together

On balance, research shows that Turkers put substantial effort into selecting and working on HITs and face real privacy risks while doing them. However, research

has not examined how privacy risks influence Turkers' decisions around what HITs to accept and to complete, nor how they respond to requests for personal information. Research on other online contexts, such as social media or online shopping, finds that people engage in a privacy calculus, weighing the benefits of providing their information against the costs to their privacy [Culnan and Armstrong, 1999]. We suspect that this privacy calculus takes on a new dimension on MTurk because decisions about which HITs to complete have real consequences for Turkers' income. Similarly, people in other contexts also engage in a range of PPBs to address privacy concerns [Son and Kim, 2008]; however, it remains to be seen when and to what extent Turkers engage in PPBs, and how the uneven power dynamics and financial dependence on MTurk influence the degree to which they are able to protect themselves on the site.

3.3 Methods

To understand how privacy affects Turkers' decision-making and practices, we conducted semi-structured interviews with 14 Turkers about how they experience working on the site, focusing on issues around privacy and requests for personal information.

3.3.1 Recruitment and Procedure

We recruited U.S.-based participants at least 18 years of age. We originally posted the study as a HIT on MTurk itself, but got no responses, we think because high-paying requests from new requesters are viewed with some suspicion. So, we

advertised the study on two popular MTurk forums: /r/mturk, a Reddit forum for Turkers with over 40,000 subscribers as of January 2019, and TurkerHub (re-named TurkerView Forum in December 2018), another commonly used forum. We considered advertising on other sites as well, but the responses we got were diverse enough that posting on additional forums felt unnecessary.

On both sites, we posted a new thread advertising the HIT, respecting community rules about how requesters can post recruitment messages. The HIT was advertised as “an interview about Turkers’ experiences” to avoid only recruiting Turkers with strong feelings about privacy. Interested Turkers contacted us via private messages on the forums, and after optionally viewing the IRB-approved consent form on our institution’s official website to verify our identity as academic researchers, chose an interview time and were granted access to the study through a qualification (i.e., an exclusive HIT) on MTurk. After accepting the HIT, participants completed the consent form, then received a link to a secure, anonymous chatroom to chat with the first author. Using a text-only, anonymous chatroom allowed us to avoid collecting PII such as email, Skype IDs, or audio. Interviews were conducted between May and August of 2018.

The first author conducted all interviews one-on-one based on a semi-structured interview guide. We first asked participants about their overall MTurk experience, including why they started Turking, types of HITs they enjoyed and disliked, and how they decided which HITs to do and requesters to work for. We then asked about the kinds of personal information HITs demand and their thoughts about providing such information. We used the term “personal information” rather than “privacy” at first to avoid activating privacy framings that might shape participants’ responses. We then asked more explicitly about participants’ perceived

privacy risks, how they make decisions about revealing information during HITs, and why they do or don't engage in PPBs. Finally, we asked about the role Amazon and other Turkers have played in their MTurk experience and how that experience, including privacy perceptions, changed over time.

The guide was developed based on our research questions and was informed by participant-observation, a valuable practice for crowd work research [Alkhatib et al., 2017]. The first author worked on 637 HITs over the course of a month to develop a sense of the decisions involved from a Turker's perspective, recording field notes [Lofland et al., 2006] to track emerging issues. These observations helped us probe further during the interviews (e.g., about participants' attitudes about specific types of tasks, such as webcam HITs). Talking about the first author's own Turking also helped build rapport with participants and mitigate requester/worker power dynamics. Interviews lasted about 60 minutes, after which participants completed a brief demographic survey and were compensated \$15. No personally identifiable information, including MTurk IDs, was stored.

3.3.2 Analysis

The first author wrote memos after each interview to capture main points and identify new questions to add to the interview guide [Charmaz, 2001]. For example, the first few interviews suggested time would be a useful lens for understanding Turkers' privacy experiences, leading us to add questions about how participants' privacy concerns and MTurk experiences had evolved.

We used the constant comparative method to see whether emerging themes differed across groups of Turkers (e.g., full-time versus part-time, or new versus

experienced); this allows researchers to identify patterns in the data and ensure theoretical saturation [Glaser and Strauss, 1967]. The co-authors discussed the emerging themes on an ongoing basis. We reached theoretical saturation at ten interviews, after which no new concepts emerged. We conducted subsequent interviews to confirm and deepen the initial analyses.

We conducted a qualitative interpretive analysis of the transcripts [Lofland et al., 2006]. All transcripts were read by both coauthors. Then, the first author assigned open codes to a random subset of 5 transcripts and both authors met to discuss the codes and connections between them and develop focused categories and themes. For example, codes related to PPBs were organized into two main groups: type of PPB and rationales for engaging in them, and reasons not to engage in PPBs. The first author then assigned focused codes to the transcripts in NVivo. As with the interviews, both co-authors regularly discussed the development and analysis of codes, categories, and themes.

3.3.3 Participant Characteristics

As shown in Table 3.1, participants ranged from 22 to 65 years old, with an average of 35 years. Eight participants were women and six were men; twelve identified as Caucasian and two as being multiracial. Education levels included a postgraduate degree (1), some graduate school (2), a bachelor’s degree (1), some college (8), and a high school diploma (2).

We sought participants with varying levels of economic dependence on MTurk to probe how economic necessity drove their choices. Four relied on MTurk for their primary income (e.g., MTurk income made up their rent), while ten used

MTurk to supplement primary income from another source (e.g., MTurk income went towards necessities, such as groceries, or pocket money, such as movie tickets). Of these ten, six were employed full-time, two part-time, one was retired, and one was a full-time student. Most (11) reported a yearly household income between \$20,000 and \$50,000. Most (9) lived in urban areas, with three in suburban and two in rural areas. They had between five months and seven years of experience on MTurk, with a median of 17,280 completed HITs across a variety of work types, including transcriptions, surveys, and audio/video recordings. Collectively, participants had completed almost one million HITs.

Table 3.1: Participant Demographics

ID	Gender	Age	MTurk Income	Experience
P1	F	35	Supplementary	9 months
P2	M	36	Supplementary	7 years
P3	M	24	Supplementary	1.5 years
P4	M	33	Supplementary	6 years
P5	F	51	Primary	1 years
P6	M	65	Supplementary	9 months
P7	F	34	Supplementary	5 months
P8	F	31	Supplementary	7 months
P9	F	28	Supplementary	5 years
P10	F	39	Primary	2.5 years
P11	M	36	Primary	3 years
P12	F	23	Supplementary	5 years
P13	M	22	Primary	1 year
P14	F	37	Supplementary	5 months

3.3.4 Limitations

Our study has several limitations that we outline to help contextualize and interpret our findings. First, we recruited from two popular forums for MTurk workers, excluding workers who do not know about or do not use these forums. We don't see this as a showstopping limitation: prior work suggests that 60% of U.S. workers

communicate in forums [Yin et al., 2016], our participants described their MTurk experience before they started using the forums, and our sample broadly mirrors other studies of MTurk demographics in terms of gender, age, and income [Difallah et al., 2018]. But it does mean that we oversampled from more experienced workers who sought out information and advice on how to be effective, and we miss Turkers who have left the platform, some of whom may have left due to privacy-related concerns.

We also restricted our sample to U.S. Turkers, about 75% of all workers [Difallah et al., 2018]. Thus, our findings cannot speak to other cultures, such as the 16% of Turkers who live in India [Difallah et al., 2018]. We know there are cultural differences in privacy concerns between Indian and U.S. Turkers [Xia et al., 2017] and that Indian Turkers face structural barriers including higher administrative overheads and being unwelcome in U.S. MTurk forums [Gray et al., 2016]. Future work should explore possible cultural differences.

Finally, our sample is limited to people who were comfortable with being interviewed, and thus may miss more privacy-conscious Turkers. Conducting the interviews via anonymous chat may have mitigated this, as several participants said they would not have participated in an audio or video interview because these are more identifying media. While chat took more time than a verbal interview, the use of informal language helped reduce the distance between the interviewer and participants, and the delay in interaction helped us formulate careful follow-up questions. Moreover, while people may write less than they would speak on a subject, participants often responded in full paragraphs and appreciated the chance to talk about their experiences: one participant referred to the interview as “MTurk therapy.”

3.4 Findings

Our findings begin with an exploration of Turkers’ reasons for working on MTurk, and the impact of varying levels of economic dependence on the site on workers’ experiences. Then, we turn our focus to how Turkers complete work and navigate privacy issues, which are organized into three main themes: 1) factors that influence how Turkers judge the acceptability of requests for personal information, 2) the reasons why Turkers engage in or eschew a range of privacy-protective behaviors, and 3) how Turkers’ privacy-related processes change over time. Findings we report below are based on codes and themes that occurred frequently in the dataset.

3.4.1 Crowdwork as an Income Source

This section delves into participants’ reasons for turning to crowdwork as an income source—primarily its low barrier to entry and its flexibility—and then explores how participants’ varying levels of economic dependence on MTurk impacted their experiences.

Low Barrier to Entry and Flexibility

The low barrier to entry on MTurk can help workers have relatively easy access to a source of income.³ For many participants, crowdwork represented an easy way

³In 2019, to sign up for MTurk, workers fill out a relatively straightforward application on the Amazon Mechanical Turk website, and then must wait for their account to be approved. In some cases (including my own), the account can be approved within days. However, others report waiting several weeks or months to be approved to work on the site. It is unclear why some accounts are approved quicker than others, or what constitutes the criteria for approval.

to quickly earn needed income, particularly in the face of few or no other viable options.

Some participants had had little success in finding a traditional job, which caused them to turn to MTurk, such as P11: “In 2015, I’d been unemployed for almost a year, and was getting more and more depressed and it just sort of sprung to mind one day so I signed up.” Similarly, P6 was 65 years old and had found it difficult to find traditional employment—he speculated that it may be due to ageism in hiring—and found crowdwork to be an accessible way to supplement his social security benefits. Generally, participants in these scenarios signed up for MTurk less out of a desire to do the work itself, and more out of necessity; for example, P14 signed up for MTurk when she was “desperate about [her] ever-dwindling finances” after being laid off.

In a similar vein, some participants were cut off from traditional forms of employment due to location and other life circumstances. For example, P5 had quit her nine-to-five job to move to a small town to support her ailing parents. Having moved to a town with a population of 1,200 people, she found that her employment options were limited, and crowdwork offered an accessible—if not ideal—source of income.

In addition to being easy to sign up and start working, crowdwork is also flexible and allows workers to fit work around their lives. This means that crowdwork can be particularly helpful during periods of transitions. For example, P3 used crowdwork to support a period of unemployment during geographic relocation: “I had just moved to a new state, and had no ‘regular’ 9-5. So I turned to MTurk to be a primary source of income for a little bit.” Similarly, P8 did crowdwork because it was easy to balance with her retail job while attending college as an older

student, with the intention to transition into her intended career after graduation.

While some participants had sought out crowdwork to support temporary transitional periods, they did not cease crowdwork once the transition was complete (e.g., when they had found a more traditional job). Instead, since crowdwork is flexible and easily integrated into one's daily routines, these participants continued to work on the platform on the side after their initial need for crowdwork income had reduced. For example, P14 joined MTurk when she was laid off, but continued to work on the platform once she had regained traditional full-time employment as she was able to incorporate MTurk into her new routine.

Levels of Dependence

The degree to which participants were economically reliant on MTurk influenced their experiences working on the platform. MTurk was the primary source of income for four participants who had between one and three years of experience on the platform. Some other participants had also used MTurk as a primary source of income during a period in their lives in the past, but had since transitioned to other work. While the majority of participants used MTurk to supplement income from other forms of employment, they still relied on the income generated from the MTurk for several important purposes, such as paying off debt. While the income earned from MTurk was an important driver for all participants, their experience on the platform was clearly influenced by whether they used MTurk as a primary or supplementary source of income, as I explain below.

MTurk as a primary source of income First and foremost, participants who relied on MTurk for their primary source of income were faced with the challenge

on making enough from piecemeal HITs to cover large bills, such as their rent. This required putting in a lot of effort to reach their target income, given the low payrate of each individual HIT. For example, P5 described her typical day on MTurk, saying,

“I wake up around 5:30 - 6:00 and keep going till close to bed time about 11. It’s not non-stop, I take a lot of breaks, but for the most part I would have to say at least close to 9 hours a day.”

Being economically dependent on completing low-paying HITs that are also repetitive and relatively low-skilled in nature could have detrimental effects on workers’ well-being. For example, P3 recalled his experience on MTurk when he had moved to another state and was looking for employment, saying

“Forcing myself to sit there and do HIT after HIT every day because I needed the money not only became monotonous, it got to the point where it felt like it was hurting my mental and physical health.”

He concluded,

“[MTurk] was a valid source of primary income. I was able to make it through each month with enough to not fall into any debt. However, they weren’t exceptional comfortable months. I wouldn’t recommend it as a primary source of income unless you’re really going through hard times.”

That said, there were a few notable exceptions to the rule. Even though P11 spent 14 hours a day on MTurk (including approximately four hours of invisible labor to find and capture good HITs), he had routinized this work in such a way that it was not onerous to him: “I would usually be sitting around fiddling with guitars in my free time anyway so doing it with my computer on and some scrapers running is no big sacrifice for me.”

Finally, despite its difficulties, being a full-time Turker was easier for people who were technologically savvy, particularly once they had more experience on the platform. Two full-time Turkers (P11 and P13) did not describe the same levels of stress that others had described when they had used MTurk as a primary source of income. Like the other participants, they had also found the initial reliance on MTurk to be difficult and stressful, but after putting in time and effort into learning strategies to earn more efficiently on the platform, they had managed to make MTurk a viable and potentially long-term source of primary income, and were not necessarily looking to transition into traditional forms of employment. For example, while P11 had joined MTurk after a long stint of unemployment, and initially made \$50 a week on the site, his earnings on the platform had significantly increased over time, and he now saw crowdwork as a preferred source of primary income. P13 had earned \$2,000 per month on MTurk for the past four months, which led him to say:

“With how things are going now, I can see myself doing this for a long time... It all depends on how these next few years turn out. So far, I’ve making more than enough to live comfortably and can only see my income increasing over time as I get more closed quals.⁴ Even just the past 4-5 months, I’ve noticed my income steadily increasing as I learn more and more about the platform.”

It is worth noting that even though these more savvy, long-time Turkers were able to make a relatively comfortable living through crowdwork, their earnings on the platform were still precarious in the sense that they fluctuate based on the supply of HITs at any given time, and their ability to gain “quals” (as mentioned by P13) that would allow them to access higher-paying HITs.

⁴Closed qualifications, or “quals”, are HITs that are only accessible by eligible Turkers. Typically, requesters will create closed qualifications that restrict access to their HITs to specific workers based on workers’ performance on prior HITs. These are generally thought to pay better (or be preferable in some way) than HITs that are accessible by all Turkers.

MTurk as a supplementary source of income Ten participants used MTurk to supplement income from other sources (though some of them had used MTurk as a primary source of income in the past).

When participants supplemented income from other jobs with MTurk, they had varying levels of dependence on their income from crowdwork. Some participants held other precarious or low-income jobs in offline spaces. For P10 and P11, MTurk was still the primary source of income since they were able to earn much more on it compared to their offline jobs (home help and guitar repair work, respectively).

Given that these participants had other work-related responsibilities to juggle, MTurk was particularly appealing because it was flexible and easily adapted into their daily routines. For example, P8 was able to access MTurk on her mobile phone while at her offline retail job, and P2 could fill in some hours on MTurk before his night shift at a restaurant.

Rather than dedicating large swathes of time to working on MTurk, these participants turned to MTurk when they needed additional income, and typically spent less time working on the platform than full-time Turkers. For example, P4 explained his relationship with MTurk, saying:

“MTurk goes in waves for me. I’m always kind of active, but the past two months I’ve been saving up to buy things for my new house... so I’ve been working like crazy on MTurk. But then when I don’t need the money that bad I get a little lazy. MTurk is nice as you can always go back to it.”

These participants could also be more discerning about the HITs they decided to complete. For example, P2, who had a full-time job, laid out his criteria for selecting HITs based on pay rate by saying “I do not like working for less than \$5

an hour. I would rather not do any work”. Similarly, these workers did not feel as much pressure to complete a large number of HITs on the platform; for example, P1 would fit in some HITs during lulls in activity at her office job, but was able to be selective about how much work she did on the platform because her husband was the main earner in her household.

Workers who were not economically precarious were also in a position to enjoy crowdwork rather than feel anxious over their earnings, such as by seeing it as a way to “make money while relaxing in bed” (P4). For these participants, MTurk also provided peace of mind: “It’s a comfort to know if I miss work due to unforeseen circumstances, I won’t be in too much of a bind financially... I like that I can start and stop whenever I want” (P9).

3.4.2 Judging Requests for Information

Turkers decided which HITs to complete by gauging several factors, including pay, attributes of requesters, and the nature of the HIT. These factors also influenced how Turkers evaluated the privacy- and risk-related aspects of potential HITs.

Economic Bottom Line

Judging the acceptability of requests for information was a balancing act that often was based on pay: “Making money while trying to maintain some privacy. It’s a tightrope” (P4). A certain amount of money was worth complying with requests for information, as P11 explained: “There’s an amount of pay that makes it worth it to share, an amount that makes it worth it to fudge the name and date just a little, and an amount that isn’t worth bothering with at all.” Money also justified

taking on some risk: “there were one or two HITs that asked for my full name that I did anyway. [They] paid pretty well” (P7).

Money could sometimes trump all other factors, in line with prior findings that Turkers’ primary motivation is to earn needed income [Kaufmann et al., 2011]. For example, P3 described a suspicious but well-paying HIT:

“I had a requester ask me to pour ketchup on my chest while lying down in my bathroom. Can’t imagine what that was for, and I didn’t ask. . . . It’s probably on some creep site somewhere.”

When asked why he completed the HIT, he explained:

“I thought about it in terms of true economics: cost-benefit analysis. It takes me very low effort and only a couple minutes to prepare and film it. Second, it was already in the bathroom so clean up was quick. I finished it in about 15 minutes total so that was around 12–15 bucks an hour pay rate.”

However, other participants were less willing to put a dollar amount on their privacy: “If you feel uncomfortable giving out information, don’t give it out. It’s just a survey and not worth the 50 cents or \$1 they’re giving you” (P8).

Attributes of the Requester

Almost all participants considered requester characteristics when evaluating privacy risk. Requesters from academic institutions were widely trusted, since they were perceived to have been vetted by an IRB: “I find some ‘safety’ with the University based HITs as they usually have more rules to follow from the IRBs” (P1).

Academic requesters were also perceived as having a legitimate purpose for data collection, which set them apart from private companies. Participants also liked that academic requesters were answerable to an IRB, providing some recourse:

“I would not even consider answering highly personal questions for a non-university affiliated requester. Have you seen the foot fetish guy on MTurk? People are weird LOL. At least with university studies I know there’s some accountability via their IRB, and *hopefully* a legitimate scientific purpose to asking the questions they ask” (P13).

However, being an academic requester wasn’t enough; HITs still had to pay enough to justify the privacy costs. For example, P10 decided to provide her mailing address to Harvard due to the university’s reputation, but only because the HIT was well-paid. Further, Turkers were aware that unscrupulous requesters could pose, phishing-style, as academics: “The thing is...how do you know it’s a legit university requester? I could get a Cornell agreement and slap it on my HIT, then scam people. MTurk has no safeguards for workers” (P4).

Requesters could also build trustworthy reputations on MTurk forums: “The great requesters are well known on the forums... these are the ones I usually work on. There are many established requesters we all know about on the forums” (P2). Participants also used Turkopticon (often abbreviated in text as ‘TO’) and TurkerView (‘TV’) to evaluate requesters, and Turkopticon reviews allow Turkers to flag a HIT as a potential Terms of Service (TOS) violation: “On TO, users can designate if a HIT violates the TOS, and I tend to steer clear of those if I think my personal files/accounts could be accessed somehow” (P9).

That said, some Turkers were skeptical of Turkopticon ratings. For instance, P1 did not trust them because they are written by other Turkers who are often in direct competition:

“For the most part good requesters show up in the Green on TO or thumbs up on TV. The great requesters are often in the Red or not ranked at all. Many Turkers won’t give away their great ones for fear the work will get scooped up from them” (P1).

Participants who shared these views had started to disregard Turkopticon ratings, relying on their intuition instead: “I try to be honest and always put positive reviews on requesters I enjoy but it’s hard to rely on TO anymore. I’ve been on here for a long time to be able to tell which requesters would be scamming” (P12). A few of these participants had migrated to another review platform, TurkerView: “TV has more moderation, and ‘bad data’ will be removed” (P13). This work of finding, evaluating, and writing reviews constituted additional invisible labor that was necessary to accurately assess requesters.

Purpose or Creepiness of the HIT

Participants also evaluated individual HITs. Avoiding scams was seen as not too hard:

“There are always a few HITS that try to get you to sign up for referral link services, ‘Sign up and earn \$10 credit’. You can tell easily these are phishing for emails and referral. There are many Cryptocurrency sites people want us to sign up for. A seasoned Turker will spot them easily” (P2).

HITs could also become suspicious halfway through: “I would finish one that looks normal, then come to the demographics page that wants my address, full name and phone number to send me my ‘results’”(P12). Finally, some HITs felt “creepy” even if they weren’t outright scams:

“when I first started there was this HIT asking for pictures of eyes. It paid decently for the work, I guess, and I thought about it but then I was like nope... that’s creepy to me for some reason” (P14).

The perceived purpose of a request also affected how participants evaluated it. Participants were used to providing basic information such as age, gender, and zip code; these requests were seen as acceptable since, as P3 explained, “it’s just for classification purposes.” Most were also comfortable providing other types of personal information if the request seemed for a legitimate purpose: “I don’t mind any of the typical demographic questions, or even if the personal question seems to have a clear link to the survey” (P1).

Some participants also considered risks not just to their own data but to third parties whose data was part of a HIT:

“There was one when I first started out that was some kind of... I don’t know, workers comp investigation company or something? They gave you the full name of a person and then some kind of external link (say, to a Twitter account) and had you check the link for evidence that the person had been active during a certain time period. It was really creepy” (P14).

Turkers can be used in malicious tasks, such as extracting a credit card number from a photo, but Lasecki et al. found that relatively few are willing to knowingly complete malicious HITs [Lasecki et al., 2014]. Similarly, although our participants avoided HITs that were clearly malicious, they did complete HITs that seemed more innocuous, even if they weren’t sure whether the third parties had consented to their data being used, such as HITs involving rating people’s dating profiles: “If I found out [the requester was] doing something uncool with the pictures, I’d definitely feel culpable, but I think the onus ultimately falls on the requester” (P9).

Risks of Compliance and Sensitivity of Data

Participants also assessed the degree of risk involved in complying with any given request, in terms of whether they could be identified, the sensitivity of the information requested, and the consequences of the information being misused or leaked. Requests for demographic information were common and not seen as particularly identifying; all participants were comfortable complying with these requests: “it’s a bit mind-numbing providing the same demographics in HIT after HIT after HIT. . . . They never ask for specifics that would be able to identify me, or at least that’s how I think of it” (P6).

Some surveys asked Turkers to share personal opinions and life events, which participants generally didn’t mind doing anonymously: “I have done studies and been totally honest on everything from depression, medications, sex life. as long as there is no name attached, I am okay with it” (P2). Some were willing to provide such sensitive information in text, but drew the line at audio or video, since these were identifying and thus additionally sensitive in a way that survey responses were not:

“The only time I will stop is when they ask for Webcam access or sometimes access to microphone. I don’t do the voice HITS either. I have never used my voice. I think that is the best way I can protect my unique personality from getting online” (P2).

Participants also worried that video or audio could be used in unanticipated or (as with the ketchup HIT) unsavory ways, although beliefs about how specific requesters would use the data sometimes mitigated these concerns: “I think when I give my voice to Amazon or Google it’s going to put through their machinery and then get lose in an ocean of other voices” (P11).

Finally, some HITs asked for access to Turkers' social media accounts. All of our participants drew the line at this, since it was seen as identifying, too personal, and a violation of MTurk's TOS. Some participants considered social media accounts more identifying than video or audio:

“I've done a couple of Webcam HITs where you just talk to the camera, I'm okay with that. I mean it's not running my footage through a database to find me...lol. Facebook and Twitter link to me personally, and my family” (P4).

3.4.3 The Strengths and Weaknesses of Various PPBs

Evaluations of requests for personal information led Turkers to enact a range of PPBs around HITs, including avoiding risky HITs, returning HITs, telling privacy lies, withholding sensitive information, and reporting HITs. However, PPBs also posed costs, ranging from lost pay to fear of losing access to future work.

Avoiding Risky HITs

When possible, participants avoided accepting HITs they saw as asking for information that was risky or too personal. For example, requests to upload webcam footage often indicate this in the HIT title, allowing Turkers to avoid them if desired: “I avoid HITS that want to access my webcam or want an image of me” (P2). However, many HITs do not list the types of data required to complete them: “[it] happens far too frequently when it's not disclosed beforehand. I've gotten hits where it seems simple and a regular type of study then they ask for webcam access or my address” (P12). Thus, even if Turkers try to avoid certain types of requests, they may need to resort to other PPBs.

Returning HITs

The most commonly reported PPB was to return HITs when faced with concerning requests. This typically happened once participants had begun working on a HIT that later asked for personal information they were not willing to provide: “Researchers will often forget to mention they want you to take a selfie or to share a social media account and I’ll definitely abandon most HITs right then and there” (P11). Sometimes, the issue was not about any one piece of information, but that the HIT required a lot of information overall: “if it’s to where I think they’re asking for too much, I get out of there quick” (P12).

However, returning HITs costs both money and effort: “I do return more than I should. It’s frustrating and a loss, I will then block the requester so I don’t waste my time again. It’s one of the worst parts about working on MTurk” (P1). That said, participants generally saw returning a HIT as better than risking their privacy, with P13 describing the lost time in returning risky HITs as part and parcel of the MTurk experience:

“usually you can tell pretty quickly something is a scam, so not much time will be wasted. However, sometimes you will have your time wasted but that’s just the nature of MTurk. Just return the HIT and find something else to work on that is a valuable use of your time.”

Privacy Lies

Some participants reported telling what Sannon et al. termed “privacy lies”, providing inaccurate personal information to protect their privacy [Sannon et al., 2018]. As in that study, these lies were often close to the truth, such as providing a birthdate that is only slightly inaccurate so as not to jeop-

ardize researchers' data while protecting their identity and asserting their rights under MTurk's TOS: "if I'm asked for my actual birthdate I do fudge that. Technically I think that's a TOS violation to ask that" (P14). Unlike returning a HIT, privacy lies allowed participants to finish a HIT they had already spent time and effort on—and more wasted time justified more blatant lies: "if it's like ten minutes in and I've wasted my time I'll give a wrong phone number" (P4).

However, most participants were reluctant to tell privacy lies for both moral and practical reasons, as found in prior work on other online contexts [Sannon et al., 2018]. Many participants saw them as unethical, preferring to not provide any information: "I feel like if I am not comfortable to give that data [then] I shouldn't. I may do MTurk for money but I still try to be truthful" (P8). Participants also worried about harming academic researchers:

"I never lie about demographic info—I did think about giving a fake name but I've never done that either. I guess because if I do the HIT and it's a survey I'm thinking about the poor grad student who just wants to do their research so I want to help them and give them good data" (P7).

Participants also feared that being caught could pose practical risks, including rejections or loss of access to work:

"The best reason I have to share my real name is that some requesters come back again and again. If they ask for my name twice and 2 years ago I gave them a different fake name than I give them this time, they could know that and block me. If they block me, my account is at risk of being terminated by Amazon and then I'm out \$35-40k/year" (P11).

This highlights one way the power dynamics on MTurk intersect with privacy: workers are limited in terms of the PPBs they engage in, since requesters can cut off access to the market.

Selectively Sharing Sensitive Information

Another strategy participants used was to share only information they would not mind having discovered: “Even though I have revealed personal information in studies, I don’t discuss anything that I would be horrified for people to know if it got out” (P14). Withholding sensitive information helped participants guard against data misuse or leakage: “I made sure that the demographics weren’t too invasive. At most, they’d only know my gender and age if it did happen to be leaked” (P13). A related strategy to reduce harms was to only share information that people in offline networks already know: “anything I share on surveys and stuff I’m comfortable sharing in real life as well. I try to be an open book” (P7).

For some participants, selective sharing meant they were only willing to give a certain amount of information during any single HIT. For example, P4 was willing to share either his first name or webcam footage because either one alone did not seem too sensitive, but both together would be too much:

“If they had my webcam footage I wouldn’t want to give my first name even. If they didn’t have my footage I’d give my first name. [No] info that builds on each other. You can have segmented info only, lol” (P4).

While participants did not mention costs associated with this PPB, we know from prior work that this can be easily sidestepped by data aggregation across HITs [Kandappu et al., 2013].

Reporting HITs

Participants would also report HITs to Amazon for violating TOS, a function built into the MTurk interface. For example, P14 often reported HITs that asked her to

connect her social media account: “it’s a TOS violation for requesters to ask for that info. If it’s egregious I will often report it to Amazon.” Participants did not mention any costs to this PPB, possibly since reporting a HIT within the interface is both easy and normative.

Some participants also reported HITs to other Turkers by posting warnings on MTurk community sites: “I do leave reviews on Turkerview, used to on TO [TurkOpticon] when it comes to privacy issues. I’d also post on the forums. Like ‘be careful guys, this one wants x and x’” (P4). One participant reported a HIT to an IRB where an academic requester asked highly personal questions for very little pay: “think \$1.25 for 60 minutes—I once wrote a nasty email to that requester for taking advantage of people who have experienced trauma, I mean that’s just despicable. I copied her IRB too :P” (P14).

3.4.4 Transitions in Privacy Concerns and Practices

As participants learned how to become efficient Turkers, they experienced shifts in their privacy concerns and practices. Becoming an efficient Turker is an arduous process. Most participants expressed dissatisfaction with their initial experience on MTurk, describing a steep learning curve and expressing frustration with how few resources MTurk provided for Turkers: “there is no support system. Nor is there any training. You get accepted and they’re sort of like, here you go, get Turking!” (P3). This caused new Turkers large amounts of invisible labor: “in the beginning I could easily spend 8 hours hunting down HITs” (P14).

Crossing the divide from newbie to experienced Turker required its own form of invisible labor, in the form of going beyond MTurk and searching for resources

elsewhere on the Internet. Many participants echoed the process described by P4:

“I tried on my own first and made next to nothing. Then I started googling and found some forums. Saw what some people made. started trying scripts. It snowballs. So you start out. You have no idea what to do. You see HITs you do them. You get rejected because you don’t use TO or read reviews. That’s pretty much the cycle nowadays. Then you go on Reddit or the forums and you learn. But everyone screws up at first. I have like 40% of requesters filtered out, because I know better now. But when you start you just try everything. and that’s what screws you over.”

All participants found the broader MTurk community valuable for learning how to become more efficient, sharing information about HITs and requesters, and increasing their earnings:

“Without the help of the other workers on TurkerHub, I would still be convinced that making \$20 a day on MTurk is impossible. Now I can make 100 a day on a good day. They’ve helped me learn so much” (P13).

Forums also helped Turkers learn to use scripts to automate finding and accepting lucrative HITs: “I do not know how I did MTurk before I learned how to use [scripts]” (P5).

These improvements in efficiency and earnings empower Turkers, even those who rely on MTurk as a primary source of income, to be more discerning about choosing low-risk HITs and able to engage in PPBs such as returning HITs:

“I’m satisfied enough with my earnings at this point that I’m not going to worry about wasting 10 minutes here and there on something I don’t submit. . . . But when I was desperate back at the beginning I would do anything for a buck” (P11).

Experience with risky HITs also helped most participants become better at staying safe:

“I suppose it comes as second nature the more I’ve studied into this, it’s easy for me to look out for what looks too sketchy. I think when I first started I’d be ignorant but now I’m more observant” (P12).

This is not to say that Turkers’ privacy concerns necessarily increased over time. Some participants described becoming habituated to providing personal information: “I suppose at the beginning I was more worried about that stuff, but I’ve done it so often it feels routine now” (P3). In contrast, others became more concerned about privacy over time, feeling they had cumulatively provided a lot of information: “I think I’m [privacy] conscious because I put so much out there if that makes sense” (P14). Privacy scandals in the news could also increase privacy concerns: “After the Cambridge Analytical situation, I have become a bit more cautious with my data. I try to avoid being personally identified” (P13).

3.5 Discussion

Overall, we found that participants evaluated several privacy-related factors when selecting HITs, that their decision to engage in PPBs was influenced by the benefits and costs of these behaviors, and that their privacy attitudes and practices evolved over time.

In Chapter 5, I discuss the implications of how marginalization—in this case, economic disenfranchisement that stems from chronic underemployment or unemployment—impacted how Turkers navigated privacy issues in their work.

In what remains of this chapter, we discuss what we think these findings tell us about how privacy, power, and invisible labor intersect on MTurk, then summarize the key problems Turkers faced along with ideas for how the MTurk ecosystem could help to address them.

3.5.1 Privacy as Invisible Labor

A useful way to think about our findings is to return to the privacy calculus. Turkers' assessments of the costs and benefits of providing personal information are shaped by power dynamics and economic considerations. They evaluate the privacy-related costs of HITs from multiple perspectives, such as assessing the degree of risk they would be taking on by complying with a privacy-concerning data request. These assessments center on Turkers' perception of the sensitivity and identifiability of the requested information as well as the risks of unauthorized use or inadvertent self-disclosure. Turkers' concerns that their data not be used in unauthorized contexts can be understood by the theory of contextual integrity, which postulates that privacy concerns emerge when information that is disclosed according to the norms of one context is used in another [Nissenbaum, 2004].

However, Turkers are limited in their ability to assess contextual integrity risks because of the opacity around requesters' identities and intentions. Moreover, Turkers cannot fully evaluate the privacy risks of HITs up front, since HIT descriptions often do not include the types of information that will be sought—and such requests often come after a Turker has already invested substantial effort. This characterizes one kind of invisible labor for Turkers, who often return HITs when their privacy is threatened halfway into a HIT, losing the effort invested. This likely accounts for at least some of the returned HITs in Hara et al. [Hara et al., 2018],

given that it was the most commonly reported PPB among our participants.

Turkers' evaluations of benefits were also more complex than merely assessing the HIT's pay rate; for example, some also considered the benefits around contributing to scientific research. We initially suspected that Turkers' economic dependence on the platform would be the main influence on their privacy decisions, which is why we recruited people with varying levels of financial reliance on MTurk. Instead, we found that participants' privacy decisions were influenced more by their ability to find and complete well-paying, low risk tasks while maintaining their target income. Participants found this harder when they were new and inexperienced, and reported completing privacy-invasive HITs out of economic need when they first started out on the platform. Gaining experience and expertise on the platform gave them more power to protect their privacy, even if they depended primarily on MTurk for their income.

Developing the ability to better protect their privacy depended on invisible labor, in the form of researching how to be more efficient. While invisible labor can be costly in terms of hourly earnings, Hara et al. theorize that Turkers learn to minimize unpaid work over time [Hara et al., 2018]. Our results provide some support for this: the initial invisible labor of becoming efficient on the site allowed Turkers to be more discerning and careful about their privacy in the long-term, reducing wasted effort downstream and making effort that was wasted more economically tolerable.

These observations lead us to conceptualize privacy as a key form of invisible labor on MTurk, which affects Turkers' earnings (e.g., when they abandon a partially completed HIT due to privacy concerns), and puts the onus on Turkers to learn how to recognize risk as well as become more efficient at finding and com-

pleting safe and well-paying tasks. Overall, our participants expressed a greater sense of being able to protect their privacy (such as by abandoning risky work and forfeiting payment) once they had put in a substantial amount of invisible labor and learned to maximize their earnings on the site.

Our findings connect to Marwick and boyd’s argument that privacy can be a form of privilege, where social position affects one’s ability to assert and enforce privacy claims [Marwick and boyd, 2018]. On MTurk, much of what determines the ability to enact privacy behavior is education and its effects on socio-economic status inside of MTurk: Turkers who engage in the invisible labor of learning about the platform and available resources (such as scripts) are more efficient earners, which provides them with relatively more power to protect themselves. In contrast, new and infrequent Turkers, those who are less technologically savvy or Internet-connected, and those who are less welcome in the forums where Turkers exchange knowledge [Gray et al., 2016] may be particularly vulnerable to privacy risks. We see a need for future work to examine these subpopulations within MTurk. Overall, we suspect that similar dynamics play out in other digital labor contexts with information and power asymmetries (such as Uber, Figure Eight, and Upwork), and would be interested in seeing parallel analyses of such platforms.

The changes we observed in Turkers’ privacy concerns and practices over time also align with models that conceptualize privacy as a dynamic process of informational and boundary management (e.g. [Petronio, 2012, Nissenbaum, 2004]), rather than a static, general attitude. Even participants who self-identified as “open books” made many exceptions, aligning with prior findings that contextual factors influence privacy decision-making [Sannon et al., 2018]. Further, there was no dominant narrative about what caused concerns or how they changed over time.

As Kittur et al. point out, Turkers are a diverse population with varying reasons for working on MTurk [Kittur et al., 2013]; we believe this diversity is reflected in the range of privacy attitudes and practices we observed. We believe these observations emphasize a more general need to emphasize change, context, and individual differences in privacy research.

3.5.2 Ideas for Reducing Privacy Risks

Our work raises natural questions about what the ecosystems around crowd work platforms such as MTurk might do to reduce privacy risks and empower workers, ideally while also benefiting requesters and the platforms themselves. Below we lay out key barriers that came out of our findings along with proposals toward designs that might mitigate them.

Awareness and Communication We found that Turkers use the same kinds of information and sources for reasoning about privacy concerns in HITs that they use for other aspects of decision-making, such as pay rate and requester quality. A natural design idea, then, is to make privacy and personal information aspects of HITs more salient on existing community sites. This could include adding explicit privacy-related elements of review forms on sites like Turkopticon beyond the existing flag for indicating TOS concerns, or creating discussion spaces dedicated to privacy and personal information in existing Turker forums. Making privacy information more salient and accessible may reduce the invisible labor involved in returning HITs due to privacy concerns while limiting the ability of insensitive or unscrupulous requesters to collect personal information.

Onboarding and Education The suggestion above might shift privacy risks toward more vulnerable Turkers, notably newbies, who our participants described as ill-equipped to consider privacy implications. Further, there are serious privacy risks that new Turkers confront right away, including the decision to connect one’s MTurk ID to an existing Amazon ID, the use of one’s main email address, and scam HITs that harvest personal information. Helping new workers navigate these risks is important given the continuous inflow of new Turkers [Difallah et al., 2018], but neither MTurk itself nor (to our knowledge) most Turker-created how-to guides highlight considerations about privacy beyond describing the personally identifiable information restrictions in MTurk’s TOS.

This is another place where community visibility could go a long way by including privacy as an explicit part of newbie FAQs and related resources. We also see a need to reach Turkers who do not use forums, since our participants were much less empowered to protect themselves before they found external resources. An enterprising and generous individual might choose to, in a requester role, post a penny HIT where the task was to read and review orientation-related materials, to try to help new Turkers more rapidly come up to speed. Even given Difallah et al.’s estimate that there are tens of thousands of new workers every year [Difallah et al., 2018], this could be done on the order of \$1,000 a year, likely less. Another path to making this information more widespread is for requesters interested in improving Turkers’ efficiency and welfare to include pointers to Turker resources at the end of their HITs.

Transparency and Trust Turkers operate with limited information about both requesters and HITs, which reduces their ability to assess them, increases invisible labor, and likely reduces trust in both requesters and MTurk. Trust goes a

long way in reducing friction in interactions; many of our participants expressed a preference for academic requesters based on the perception that they are more trustworthy, provide information about the task’s purpose and the researcher, and are accountable to an IRB.

A privacy by design [Cavoukian, 2011] approach to designing crowd work platforms might require requesters to provide verified information about themselves to build such trust and accountability, not unlike verifications for AirBnB hosts and guests. This might benefit requesters, as providing requester information builds trust and leads Turkers to work harder [Marlow and Dabbish, 2014]. Requiring a brief consent form for all HITs could also improve transparency, although Kittur et al. point out that a balance must be struck between providing enough information to allow workers to evaluate a task and creating an informational burden that results in additional invisible labor [Kittur et al., 2013]. Finally, Xia et al. suggested that HITs should list the types of data they collect up front [Xia et al., 2017]. Our study indicates that such upfront disclosures are particularly important for tasks that request information that Turkers are uncomfortable providing, such as links to social media accounts, and would likely reduce the number of HITs that are returned due to privacy reasons. Requesters who adopt this approach might also avoid being negatively reviewed on MTurk forums.

Supporting Desired Disclosure While our participants’ privacy concerns and practices varied in many ways, some kinds of personal information, such as demographics, were seen as relatively low-risk and reasonable for many tasks. Scripts for automatically entering demographic information are occasionally discussed on MTurk forums, but a lack of standard field names, input widgets, and definitions makes it hard for Turkers to implement them.

It might help both requesters and Turkers if MTurk and Turkers worked together to develop tools for providing relatively benign personal information. Workers could locally store personal information and share it as appropriate based on the context of a given request. Tasks could make requests in machine-readable ways that would support some of the transparency and trust ideas above, making it easier for workers to assess the privacy demands of tasks up front and complete tasks more efficiently. One risk is that this could help Turkers create consistent but false profiles; however, our results suggest that at least for requests perceived as appropriate, Turkers are not malicious and tell relatively few privacy lies. Moreover, semi-automated sharing could reduce data entry errors and privacy lies, improving data quality for requesters.

Protection from Reidentification Our participants selectively shared information with requesters as a way to segment their data profiles and protect their privacy. This is probably not very effective; as described by Lease et al. [Lease et al., 2013] and Kandappu et al. [Kandappu et al., 2013], even experienced Turkers are unaware that MTurk IDs are often publicly searchable, or that requesters can accumulate profiles of personal information across multiple tasks through the kinds of requests for personal information we just proposed making easier through autofilling.

Unlinking MTurk IDs from Amazon IDs as proposed by Xia et al. [Xia et al., 2017] addresses the searchability but not the aggregation problem. We propose an alternate idea inspired by “virtual credit cards”, short-duration or single-use credit card numbers tied to a customer’s actual credit card number. Using virtual cards can reduce the risks of both fraud and profiling by vendors; MTurk could in principle do the same for workers, providing HIT-specific virtual

IDs linked to a worker’s private MTurk ID. Doing this has real challenges, though. Requesters have legitimate reasons to track behavior across HITs to prevent duplicate survey filling, compute aggregate work quality or preference information, track changes in opinions or activity over time, and so on. Thus, designing the space of allowable queries that balance requester needs with Turker privacy is likely to be hard. Further, we think it is unlikely Amazon would adopt this design, since the idea of a single MTurk ID is probably baked into the platform, and the benefits of such a design would largely accrue to Turkers rather than being shared between Turkers, requesters, and the platform. However, newer crowdsourcing platforms might use such an idea to help them compete with existing platforms, in part on promises to protect workers’ privacy.

3.6 Conclusion

In this study, we identified how privacy considerations affect how and what work gets done on MTurk. We found that Turkers evaluate many factors when judging whether to comply with requests for personal information in HITs, and that while Turkers engage in multiple PPBs, these involve risk, time, and effort. We posit that navigating privacy is a form of invisible labor on MTurk that is exacerbated by the uneven power dynamics on the site. Chapter 5 discusses the influence of marginalization on workers’ experiences in greater detail.

From the point of view of privacy research, we contribute to the framing of privacy work as a kind of invisible labor, where the ability to protect one’s privacy is realized through the effort Turkers put in to empower themselves to be more effective workers. We suspect that invisible labor may be a fruitful lens to

think about privacy behavior in other contexts as well. Our findings also support the value of considering privacy as a fluid, personal, and contextual process, and provide a case study of how studying the privacy needs of particularly vulnerable populations can reveal universal privacy concerns and issues.

Toward crowdsourcing, we provide additional insight into Turkers' work practices, highlighting the considerations and invisible labor involved in protecting themselves against privacy risks. Our work also reveals the ironic side effect that committed Turkers working hard to empower themselves may inadvertently increase the vulnerability of new Turkers. Our findings also help to understand why HITs are returned, partially explaining a major inefficiency for both Turkers and requesters, and provide the basis for a number of design ideas to mitigate negative privacy-related effects in both MTurk and digital labor markets more generally.

CHAPTER 4
NAVIGATING GIG WORK WITH A DISABILITY

“There will always be someone else to replace me. Why should [gig platforms] deal with someone with a health condition when [they] can get a new guy that’s ready to go to do the same thing without having a health condition?”

Delivery worker with ulcerative colitis

4.1 Introduction

Employment serves as a link between individuals and society, and being employed has a positive impact on people’s self-esteem and mental health [Doyle et al., 2005]. Yet, access to employment for disabled people remains a critical challenge. Disabled people have historically faced low employment rates, and in the United States in 2018, only 38% of disabled people of working age were employed as compared to 78% of those without disabilities [Houtenville and Boege, 2019]. Given the value placed on work in contemporary society, disability activist and scholar Abberley argues that “the social exclusion of disabled people today . . . is intimately related to our exclusion from the world of work” [Abberley, 1999, p.5].

Many efforts have been made to improve access to employment for disabled people, including the passing of legislation such as the Americans with Disabilities Act (ADA) that prohibits discrimination on the basis of disability, including in the arena of employment. However, there is still far to go. People with a range of

disabilities still face many challenges in gaining and maintaining employment, including discriminatory hiring practices, prejudice from managers, and inaccessible workplaces that lack accommodations [Schur et al., 2013].

Digital technologies have given rise to new forms of work, including on-demand labor platforms that are digitally-mediated and algorithmically-driven. While on-demand labor platforms are becoming increasingly popular among the general population of workers, it remains to be seen whether disabled people have equal access to these forms of work, and how their experiences and outcomes compare to workers without disabilities. Research in the context of crowdwork suggests that disabled people do participate in the gig economy, and that the flexibility of this work may be a primary motivating factor for them [Zyskowski et al., 2015].

At the same time, the disenfranchisement and exclusion that workers with disabilities have historically faced in the realm of traditional labor may also extend to the gig economy. Initial research provides evidence that disabled workers do face additional disability-related challenges when completing gig work, such as accessibility issues [Zyskowski et al., 2015] and potential stigmatization [Lee et al., 2019], and that they may also earn less than workers without disabilities [Hara et al., 2019]. Thus, disabled workers likely have to navigate a host of disability-related challenges when participating in the gig economy, in addition to the many challenges faced by all gig workers (as discussed in Chapter 2), such as algorithmic control and the lack of traditional protections.

Thus far, research at the intersection of gig work and disability has focused almost exclusively on the context of crowdwork, and further research is necessary to understand disabled workers' participation in other forms of gig work. Researchers also have yet to understand whether and how disability impacts how

disabled workers navigate obstacles faced by all workers, such as work-related risks. Understanding disability-related challenges more fully, including how these challenges may interact and layer on top of the numerous challenges faced by all gig workers, is an important first step in making the gig economy more inclusive for workers with a wide range of disabilities.

In this chapter, I examine the risks and opportunities of digitally-mediated, on-demand labor platforms for disabled gig workers. This study is informed by grounded theory [Glaser and Strauss, 1967], which is an inductive research methodology that allowed me to explore the experiences of disabled workers while minimizing the influence of preconceived notions. Grounded theory is based on the continuous collection and iterative analysis of multiple, diverse forms of data, and the research in this chapter draws on data from four different sources. First, I interviewed 24 disabled workers to understand their motivations for participating in gig work, the benefits they derived from gig work as compared to traditional labor, and the challenges they faced. I took care to interview workers with a wide range of disabilities, including physical impairments, such as quadriplegia; chronic physiological illnesses, such as ulcerative colitis; and mental health conditions, such as bipolar disorder. Second, I examined popular online communities where workers discuss gig work to determine whether and how workers with disabilities use these spaces. Third, I conducted observational fieldwork by working on two platforms (in the areas of crowdwork and delivery services) to gain a first-hand perspective of the work process. Fourth, I interviewed disability service providers who worked on improving access to employment for disabled workers to understand the key challenges they face in placing their clients in employment positions, and their views on the potential of gig work as an employment option for disabled workers.

This study finds that gig work can be a vital source of income for workers who have been excluded from traditional forms of labor due to their disabilities. At the same time, disabled workers face several challenges when participating in the gig economy around task and platform accessibility as well as performance monitoring and evaluation. Mitigating the challenges requires a great deal of invisible labor, which further disenfranchises the workers who are the most economically precarious. Finally, workers who have other marginalized identities in addition to having a disability can face compounding risks, and this study highlights these experiences and calls for more research on intersectional experiences in gig work. I suggest several ways to engender equitable access to gig work while mitigating its concomitant risks to workers with a range of disabilities; these suggestions emerged from conversations with disabled workers and include ways to improve the accessibility of tasks and to mitigate the impact of discrimination and bias.

4.2 Related Work

I begin this section with a historical perspective of how the definition of disability has been contested and has evolved over time, and what this means for disability research. Then, I provide an overview of research at the intersection of disability and traditional labor, including the challenges disabled people have faced in attaining and maintaining employment. Finally, I explore the existing literature on disabled workers in the gig economy, and identify the research gaps that this study seeks to address.

4.2.1 Defining and Researching Disability

Disability itself is a complicated topic that demands good definitions. Earlier definitions of disability such as the medical model and functional model conflate impairment and disability in ways that can disenfranchise people with disabilities [Hahn, 2000] and lead to assumptions that the goal is to “fix” disability to help people be “normal” [Oliver, 2017].

In contrast, the social model of disability contends that disabilities are the product of exclusionary societal structures and attitudes, rather than the impairments themselves. According to this model, individuals with impairments have disabilities imposed upon them due to systematic oppression and exclusion that stems from how society is structured [Mitra, 2006]. This, in turn, leads to a focus on understanding and improving social structures rather than “correcting” impairments [Haegele and Hodge, 2016]. It also implies a broad rather than narrow definition of disability to support inclusivity and insight into the scope of people’s needs [Burkhauser et al., 2014].

In more recent years, the interdisciplinary field of critical disability studies (CDS) has challenged how impairments and disability are conceptualized [Shildrick, 2012]. Minich has advocated for thinking of CDS as a methodology that “involves scrutinizing not bodily or mental impairments but the social norms that define particular attributes as impairments, as well as the social conditions that concentrate stigmatized attributes in particular populations” [Minich, 2016, para. 6].

Disability also intersects with many other identities, and the disability justice movement promotes an intersectional movement led by people who have been

systematically excluded both within and outside of the disability community, including queer and gender non-conforming disabled people and disabled people of color [Sins Invalid, 2017]. Disability justice affirms the value of all bodies and recognizes that ability, race, gender, sexuality, and other factors are inextricably linked [Ibid]. Similarly, in the context of technology, crip technoscience calls for the centering and recognition of disabled people as “knowers and makers” who have long engaged in the practices of designing tools and remaking the material world [Hamraie and Fritsch, 2019, p.7].

This study is informed by the work in critical disability studies and related fields in a few key ways. In recruiting participants, I sought people who self-identified as being disabled rather than imposing my own pre-defined restrictions on participation. In my analysis, I center the lived experiences of disabled workers, and also examine how the structures and characteristics of gig platforms engender challenges for disabled workers and how these features might be improved. Finally, I also pay attention to the intersection between disability and other identity-based characteristics (such as race and gender) and their joint impacts on workers’ lived experiences.

4.2.2 Disability in Traditional Labor

The systematic social exclusion that people with disabilities have historically faced extends to many arenas of life, including the workplace. Disabled workers are often falsely assumed to be uninterested in or unable to work due to the limitations posed by their disabilities [Barkoff and Read, 2017], and face considerable discrimination in gaining and maintaining employment [Bruyère and Barrington, 2012].

As the result of many decades of activism for disability rights, the late 20th century saw the passing of groundbreaking legislation that put protections into place for people with disabilities in the United States. Section 504 of the Rehabilitation Act of 1973 prohibited discrimination against people with disabilities in federally assisted programs and services. In 1990, the passing of the Americans with Disabilities Act (ADA) was seen as a landmark victory for disability rights. The ADA protects people with disabilities from discrimination in several domains of life, including transportation, communications, and education; Title 1 of the ADA focuses specifically on employment, and prohibits employers from discriminating against qualified people on the basis of disability.¹

Despite these advances in disability rights and protections, disabled workers still face several challenges in the context of labor, including discrimination, inaccessible workplaces, and a lack of disability accommodations. People with disabilities experience these challenges in both stages of employment: (1) the employment process, which involves getting hired for a job that is commensurate with one's skillset; and (2) the workplace experience, which takes place once the job begins [Bruyère and Barrington, 2012].

The Employment Process

Despite the ADA's protections, disabled workers still face considerable discrimination and roadblocks in the hiring process.

The social stigma surrounding disability can negatively impact disabled workers' prospects of being hired [Ysasi et al., 2018]. A nationally representative survey of employers across industries conducted by the U.S. Department of Labor (DOL)

¹https://www.ada.gov/ada_title.I.htm

found that a third of employers noted “discomfort or unfamiliarity” as a reason for not hiring disabled workers [Domzal et al., 2008]. The majority of employers in the same DOL survey were also concerned about the cost of accommodations and healthcare that disabled workers might require.

These reservations over hiring disabled workers translate into their receiving fewer callbacks for interviews and fewer job offers than people without disabilities. A field experiment tested the impact of disability disclosures in job applications and found that applications that disclosed a disability received 26% fewer responses from employers as compared to identical job applications that did not disclose a disability [Ameri et al., 2018].

To avoid such discrimination, workers with disabilities may choose to conceal their abilities during the hiring process when possible. Invisible disabilities can be easier to conceal, and workers with these disabilities can often choose to not disclose their disabilities unless they have been hired and the need arises [Ysasi et al., 2018]. However, this strategy can be of limited use, as workers with visible disabilities do not have the option to conceal their disabilities to avoid discrimination, and those with invisible disabilities may still need accommodations during the hiring process that force disclosure, such as increased time for pre-employment testing.

The Workplace Experience

Once hired, disabled workers can face numerous challenges in the workplace, including stigmatization and the pressure to conceal their disabilities, lower wages and reduced career advancement opportunities, and a lack of accommodations (for a review, see [Schur et al., 2013]); I outline these below.

Disabled workers' opportunities in the workplace can be limited by supervisors' and coworkers' attitudes as well as organizational characteristics (such as a company's norms and practices) [Stone and Colella, 1996]. To navigate interactions with coworkers and supervisors, disabled workers have to make a complicated decision about whether or not to disclose about their disabilities at work. Disclosing disability-related information can help disabled workers to exercise their legal rights, receive workplace accommodations, and challenge ableist thinking [Allen and Carlson, 2003]. However, there are many reasons for disabled workers to conceal their disabilities at work, including preserving their self-esteem and avoiding negative or patronizing responses, avoiding stigmatization, and circumventing negative aspersions from being cast about their productivity [Evans, 2019]. While disclosing about one's disability at work can be a pragmatic choice (e.g., to gain accommodations), many disabled workers choose not to make these disclosures when possible to avoid negative repercussions. While understandable, the need to conceal one's disability at work can be problematic since disability disclosure is also bound up with one's sense of identity, and can be a validating process in its own right [Allen and Carlson, 2003, Sannon et al., 2019]. Being forced to conceal one's identity can lead to a range of negative psychological and social outcomes, including negatively impacting individuals' cognition, affect, behavior, and self-evaluation [Pachankis, 2007, Santuzzi et al., 2014].

Disabled workers also receive lower wages on average compared to non-disabled workers, and can be less likely to receive career advancement opportunities [Domzal et al., 2008]. Instances of wage discrimination can persist even after controlling for the demands of the job and how these demands may interact with workers' impairments [Baldwin and Choe, 2014a, Baldwin and Choe, 2014b].

In addition to challenges stemming from prejudice and discrimination, disabled workers can also have unmet disability-related needs in the workplace that complicate their experience. Accommodations for disabilities in the workplace are still widely unavailable despite the fact that employers also stand to benefit from providing these accommodations in the form of improvements in company productivity and morale [Solovieva et al., 2011].

Disabled workers are also more likely to require flexibility in their work schedules; for example, to be able to attend medical appointments or to work around flare ups of their symptoms. However, most of the jobs that disabled workers end up in do not offer this flexibility [Schur et al., 2013]. The nine-to-five jobs that characterize the traditional workplace are designed with the abilities and resources of the average worker in mind, and are thus inherently exclusionary to the needs of a broad range of people [Abberley, 1999].

4.2.3 Disability in Gig Work

Because of the barriers described above, disabled workers have been historically over-represented in jobs that are contingent or part-time [Schur, 2003] and in blue-collar or service roles [Schur et al., 2013]. It is possible, then, that many disabled workers may also be working on gig platforms, given the on-demand, service-oriented nature of most gig work. However, much of the research on disability in the gig economy has focused on customers with disabilities rather than workers (e.g., [Mapelli, 2017, Kameswaran et al., 2018b, Brewer and Kameswaran, 2019, Ameri et al., 2019]).

Researchers have just begun to examine the gig economy from the perspec-

tive of workers with disabilities. Many of these studies focus on crowdwork, and find that crowdwork is appealing to people with disabilities because it is flexible work, and allows them to avoid some of the disability-related challenges that come with working in a traditional brick-and-mortar workplace, such as inaccessible transportation and social stigma [Zyskowski et al., 2015]. Crowdwork can also provide disabled workers with a sense of autonomy and self-worth, help them gain skills and experience, and aid their transition into more traditional employment [Ding et al., 2017]. For people with disabilities that can involve communication and interactional challenges (such as autism and generalized anxiety disorder), crowdwork is also a way to participate in the workforce while avoiding the social demands of a traditional workplace [Hara and Bigham, 2017].

However, research indicates that crowdworkers with disabilities also face several challenges in completing their work, such as accessibility issues and difficulties working within tight time constraints [Zyskowski et al., 2015]. An assessment of 120 common crowdwork tasks on MTurk found that the vast majority did not comply with Web Content Accessibility Guidelines; common issues included tasks that were unreadable by screen readers and audio clips without captions [Swaminathan et al., 2017]. Similarly, another assessment of crowdwork tasks found that while people with Autism Spectrum Disorder (ASD) were able to complete most crowdwork tasks, these tasks also took them longer to complete than the general population [Hara and Bigham, 2017].

Workers who take longer to complete tasks due to a disability may also earn less overall than workers without disabilities, since individual tasks in crowdwork pay very little, and workers' hourly earnings are contingent on doing many low-paid tasks as quickly as possible [Hara and Bigham, 2017]. Comparative analyses

of crowdworkers' earnings suggest that workers who identify as having a disability earn \$2.80/hour, compared to \$3.14/hour earned by workers without disabilities [Hara et al., 2019].

Only a limited number of studies have examined the experiences of disabled workers in other forms of gig work. Lee et al. found that Deaf and Hard-of-Hearing workers do participate in ridesharing gigs, though they also have a number of concerns doing such work, such as missing dispatch requests on the app (that hearing drivers typically use sound notifications for), and despite in-built accessibility features, they have to develop their own workarounds to navigate these challenges [Lee et al., 2019].

Drivers in this study also faced difficulties in communicating with passengers, and often eschewed using the accessibility features on the app so as to avoid potential stigma from disclosing their disability to passengers [Lee et al., 2019]. Further research is needed to understand how workers' concerns about social interactions and potential discrimination influence how they work on a variety of platforms, and whether the power differential between customers and workers impacts them differently as compared to workers without disabilities.

Finally, while the ADA was a monumental step in providing protections for disabled workers, since gig workers are classified as independent contractors and not employees, they are not protected under this act [O'Callaghan, 2017]. The lack of protections is particularly problematic given the fact that self-regulation in the gig economy thus far appears to have been insufficient in avoiding or mitigating inequalities in worker outcomes that stem from marginalization, such as gender discrimination in earnings [Barzilay and Ben-David, 2016].

4.2.4 Closing gaps in Understanding across Platforms, Disabilities, and Experiences

Existing research on disabled workers in gig work provides us with some clues as to how workers with disabilities can face additional challenges during gig work, particularly around accessibility. However, there are still three key research gaps in our current understanding of disability in the gig economy, which I lay out here and seek to address in this chapter.

First, the focus of most studies on crowdwork leaves out a range of other kinds of higher-skilled online work, or offline work. This is a key research gap considering that disabled workers have historically been more likely to hold both online work-from-home jobs and low-paying blue-collar jobs [Kruse et al., 2010], and these trends may extend to the gig economy. Thus, it is vital to examine disabled workers' experiences across the spectrum of online and offline jobs to develop a comprehensive picture of the potential and the pitfalls of the gig economy for this subset of workers.

Second, disabled workers also have a wide variety of impairments and health conditions, but most studies focus on specific disabilities, which risks centering particular concerns of disabled workers and marginalizing others. As with broadening the range of platforms, studying a wide range of disabilities is critical to deepening our understanding of disabled workers' experiences in the gig economy.

Finally, there is a need to go beyond focusing on the accessibility of tasks and platforms, to look more deeply at how disabilities affect how the work is done and, more generally, how disabilities intersect with the challenges that all gig workers face. As discussed in Chapter 2, there are many other characteristics of gig work

that can pose challenges for workers, such as algorithmic control, detailed performance monitoring, and a hyper-reliance on customer ratings. While all workers must contend with these challenges, we still do not know how these challenges may be amplified or transformed by the broader forces of social marginalization faced by workers with disabilities.

4.3 Methods

In response to the above gaps in research, this study takes an inductive approach to answer the following questions: How do disabled workers experience working on different gig work platforms? How does the digitally-mediated nature of these platforms impact their experiences? What are the risks and opportunities of gig work for disabled workers as compared to traditional work?

I used a grounded theory approach to uncover the answers to these questions [Glaser and Strauss, 1967]. This section begins with my rationale for using grounded theory, followed by a description of the data collection procedures for each of my four data sources, as well as my data analysis procedures. I end by reflecting on my methodological decisions, including the efforts I made to ensure this work was ethically sound.

4.3.1 Grounded Theory Approach

Grounded theory is particularly appropriate for this study because it is an inductive rather than hypothetico-deductive methodology that focuses on systematically developing theory from many sources of data [Glaser and Strauss, 1967]. My goal

was to understand the experience of disability in gig work—whether it be positive or negative, or both—without the influence of preconceived notions; grounded theory provided me with a roadmap to shed light on this phenomenon through the systematic analysis of data.

A grounded theory approach informs every step of a study’s design, data collection, and analysis. When setting up the study, I conducted a basic rather than substantive review of literature on disability and gig work to identify a research gap, while ensuring that I could approach the topic without having developed my own a priori hypotheses [Corbin and Strauss, 2014]. I then set aside, or “bracketed” the findings from this literature review when collecting and analyzing my data [Thistoll et al., 2016].

Grounded theory is predicated on the notion that “all is data”: everything a researcher encounters is data, and the researcher must continually compare these diverse data to understand the conceptual patterns in what is being studied [Glaser and Strauss, 1967]. Accordingly, I considered four diverse sources of data when learning about the experience of disability in gig work: I conducted semi-structured interviews with disabled workers as well as with disability service providers, I examined posts about working with disabilities on popular online communities for gig work, and I gained a first-hand perspective of gig work through observational fieldwork. By triangulating my findings through the use of multiple data sources, I was able to develop a more comprehensive understanding of workers’ experiences.

As per grounded theory, my data collection and analyses occurred simultaneously and were interlinked; I analyzed my data as I collected it, and used my emerging analyses to inform further data collection in an iterative process. I pro-

vide a detailed description of how the analysis was carried out in a later section. First, I describe each of my four data sources in further detail.

4.3.2 Semi-structured Interviews with Gig Workers with Disabilities

To understand workers' motivations for engaging in gig work, and the benefits and challenges it presents to them as compared to traditional work, I conducted semi-structured interviews with 24 workers with disabilities. My sample included workers with a range of disabilities who engaged in many different types of gig work.

Recruitment

I recruited participants on Reddit, a popular community-based social media website, since many gig work communities have active subreddits where workers come together to talk about their experiences. Reddit is a popular online space for many gig work communities, though some workers use other popular worker-organized forums (such as TurkNation for Turkers). For the sake of consistency, and the fact that many gig work subreddits allowed posts from researchers, I chose to recruit exclusively on Reddit.

I posted recruitment messages in several subreddits representing different types of gig work (e.g., r/mturk, r/amazonflexdrivers, and r/lyftdrivers) inviting people to sign up for an interview. In posting these messages, I made sure to follow the rules of individual subreddits, including messaging the moderators for permission

to post when necessary. To be eligible to participate, people had to be gig workers and self-identify as having a chronic illness and/or disability, broadly construed, be over 18 years of age, and be located in the United States. I restricted my sample to workers in the U.S. to scope my inquiry, given that there are likely to be large differences around disability and employment access in different geographies, and since even within the U.S., I expected to see a large amount of variation in people's experiences based on a number of factors, such as disability type, socioeconomic status, age, other identity markers (such as gender, race, and sexual orientation), technological savvy, and location (e.g., urban versus rural). The recruitment message and sign-up process both stated that I was happy to accommodate any needs around accessibility, such as providing a text-based option to participate instead of an audio call.

Procedure

Interviews were conducted from January through July 2020. Most interviews took place on the phone or via an audio-only Skype call, and three took place via synchronous text chat, which was secured by end-to-end encryption.

Each interview began with an informed consent process. Participants had accessed an online consent form made available during the recruitment process; I went through the form with them and obtained verbal consent before beginning the interview, including emphasizing the voluntary nature of the interview and assuring participants that they could stop at any time or choose not to answer any question that made them uncomfortable. I also highlighted that I was interested in learning about their experiences with gig work regardless of whether these were good or bad, so as to reduce any perceived pressure to respond in a certain manner.

Finally, I received consent to record audio for the interviews that took place over the phone or Skype, after which I began recording each interview.

Initial interviews were fairly unstructured, and I asked participants general questions about how they started doing gig work and why, and the benefits and challenges of this work. Beginning with a more unstructured approach aided the process of discovery, and I was able to identify key avenues to explore. As is often the case with grounded theory, these unstructured interviews became more focused as I identified key areas for further data collection, and I soon developed a semi-structured interview guide to help cover the necessary areas for theory development [Bluff, 2005]. I conducted most of the interviews based on this semi-structured interview guide, while allowing conversations to flow freely and deviate from the guide whenever needed to explore new relevant concepts as they emerged. When new concepts emerged, I included questions about these in future interviews; in this way, the interview guide was iterative and evolving.

Most interviews followed a general pattern. First, I asked participants to tell me a little about themselves, including what motivated them to try gig work, how they decided which type to try and to work on, and where applicable, to compare and contrast their experiences with different types of gig work and traditional labor. Then, I asked them broadly about the benefits and challenges of gig work in their experience. At this point, participants often brought up their disabilities, and I asked them to provide a little background on their diagnoses and the role their disability played in day-to-day life as well as in the context of gig work. The focus of these questions was to learn about how their disabilities impact gig work and vice versa (if at all), including whether they disclose their disabilities during gig work, their experiences doing gig work as compared to traditional work, and

any additional disability-related considerations. After this, I asked about their perceptions of risks while working on the platforms and about the precautions they took to stay safe, broadly construed.

The COVID-19 pandemic began halfway into my data collection, and I began to ask participants how it had impacted their work. Since the interviews focused on understanding participants' prior and current experiences with gig work, the COVID-19 crisis did not negatively bias my data; rather, it allowed me to get an additional glimpse into how a public health emergency can further impact precarious workers, many of whom belong to a high-risk population.

I also asked participants about their participation in gig work forums, whether these spaces had been helpful in any way, and if so, how. Finally, I asked them if they had suggestions for how gig platforms could be improved in terms of the challenges they had highlighted in relation to their disabilities, if any. I then turned off the audio recording and asked any remaining demographic questions that had not come up during the interview (e.g., race and approximate household income). Interviews took approximately one hour, and participants received \$20 USD as a token of appreciation, either via PayPal or an Amazon gift card.

Worker Demographics

I interviewed 24 people with disabilities who worked on gig platforms that represented four common types of gig work: delivery services (8), crowdwork (7), ridesharing (5), and online freelancing (4). Several worked on multiple platforms within the same type of gig work (e.g., on ridesharing apps Uber and Lyft), or across multiple types of gig work (e.g., delivery services and ride-sharing). Participants had varying levels of experience with gig work, ranging from three months

to seven years.

Participants had a range of disabilities.² The majority of the participants I interviewed had physical disabilities (including chronic illnesses, such as multiple sclerosis and chronic obstructive pulmonary disease; mobility impairments, such as quadriplegia and muscular dystrophy; and visual impairment). Several had mental health conditions (such as bipolar disorder, major depressive disorder, and post-traumatic stress disorder); these were often co-morbid with physical disabilities. Fourteen participants had multiple disabilities.

Participants ranged from 19 to 70 years in age. Twelve were women, eleven were men, and one was non-binary. In terms of race, fifteen participants identified as White, and nine identified as people of color (6 Latino, 1 Black, 1 Asian, and 1 Biracial (Native American/White)). Several participants reported another identity marker associated with marginalization, such as being in the LGBTQ+ community or being a veteran.

Participants' annual income ranged from \$6,000 to \$100,000, though the majority reported an annual income of \$25,000 or less. For most participants (19), gig work was their main or only source of income. While five participants currently received one of two public benefits—Social Security Disability Insurance (SSDI) or Supplemental Security Income (SSI)—many had either received these benefits in the past or had applied for them and been rejected. In addition, a number of participants also received other income-based benefits, such as food stamps.

Five participants also earned income from either full-time or part-time traditional work in addition to gig work, though most of these still relied on gig

²Categorizing people's disabilities is a complicated process since people can have multiple types of disabilities, there is marked variation within disabilities, and disabilities can also be dynamic and change in presentation over time [Bruyère and Barrington, 2012].

work to help pay monthly bills or disability-related expenditures (such as buying a motorized wheelchair or clearing medical debts). Some participants also received financial assistance from family members.

Participants lived across the United States, from urban centers such as Los Angeles and New York City and suburban areas outside cities, to largely rural areas such as a remote farm in New Mexico. They also represented several states from all four official regions of the U.S. as defined by the Census Bureau: the Northeast, the Midwest, the South, and the West, including the non-contiguous states of Alaska and Hawaii. This geographical diversity was particularly helpful in shedding light as to how the structural issues in various states and counties impact disabled workers, such as in terms of access to public transportation and to traditional work, as well as how other markers of marginalized identities impact workers with disabilities (such as being visibly LGBTQ+ in a conservative area).

4.3.3 Interviews with Disability Service Providers

In addition to academics, many activists, civil servants, and non-profit workers have spent decades working at the intersection of disability and employment. To access the expertise of people working in this sector, I also interviewed several disability service providers whose work focuses on improving access to employment for disabled workers. Disability service providers are individuals who work at state-operated, not-for-profit, or for-profit organizations that offer a range of services for people with disabilities, including employment services such as skill assessments, career advice, and job training and placements. These providers can be instrumental in facilitating employment between employers and workers with disabilities [Bruyère and Barrington, 2012].

Recruitment and Procedure

To recruit participants, I searched online for non-profit organizations and social service organizations that provided disability employment services in the U.S., and emailed the relevant employee at each organization. Since states in the U.S. vary widely in terms of the challenges they face in disability employment, I sampled people from states that varied significantly in terms of their disability employment rate based on data from the U.S. Census Bureau's American Community Survey [Erickson et al., 2018].

Interviews took place over the phone in June and July 2020, and lasted approximately 30 minutes each. Following a semi-structured interview guide, I began interviews by asking participants about their work in the disability employment space, and about the challenges disabled workers face in finding employment. Then, I asked them about the suitability of gig economy jobs for disabled workers, whether they had clients who did these jobs, and what their experiences had been like. I also asked them for their thoughts on whether and in what ways gig work was beneficial or harmful for workers with disabilities and whether they would recommend these types of gigs to future clients. I also asked them to weigh in on some of the findings from my interviews with disabled workers, including their thoughts on the suitability of online versus offline gigs for disabled workers, the different challenges workers face in rural versus urban areas, and the benefits and challenges of gig work versus traditional work.

Characteristics of the Disability Service Providers

I interviewed seven disability service providers; six worked in the non-profit sector, and one worked at an academic research center. Most worked directly with people with disabilities by providing support services throughout the employment process (e.g., reviewing suitable jobs with candidates, helping with resumes and the application process, navigating disability benefits, and providing support after candidates are placed). One participant worked at a non-profit organization that develops partnerships with potential employers to help them become more inclusive for disabled workers, such as by broadening their hiring pools and making their workplaces more accessible.

4.3.4 Disability-Related Posts in Gig Work Communities

In addition to understanding the experiences of disabled workers through interviews with workers and disability service providers, I also wanted to uncover whether disabled workers talk about their disabilities in gig work forums, and the general themes in these posts.

To do so, I analyzed disability-related posts made in 19 subreddits representing various forms of gig work, including ridesharing (e.g., r/lyftdrivers), delivery services (e.g., r/instacartshoppers), crowdwork (r/mturk), and freelancing (r/Upwork).³ Posts were collected by searching these subreddits for the following keywords related to disability: “disorder”, “disability”, “SSI”, “SSDI”, “I’m dis-

³For the interviews with disabled workers, I recruited from at least one subreddit representing each of the four main types of gig work; my choice of subreddit was influenced by ease of access, particularly around individual subreddits’ rules about researcher posts. For this analysis, however, I expanded the data collection to encompass many more subreddits per gig type than I originally recruited in, in order to collect a rich and broad dataset of posts.

abled”, “medical condition”, “medical issue”, and “chronic pain”. Data was also collected using several other keywords, but these either returned very few results (e.g., “chronic illness”), or were largely unrelated to disability, and were removed from analysis.

Data was collected in April 2020 using the Pushshift Reddit API [Baumgartner et al., 2020] and adjusted with the Python Reddit API Wrapper (PRAW) to reflect the most current scores for recent Reddit submissions. Data collection was not constrained by dates and the dataset represents all historical posts made in the specified subforums on Reddit using the keywords (subject to any errors in the Pushshift API). Data collection resulted in a total of 306 posts, which were independently coded by two researchers to assess relevance ($\kappa = .87$). Posts were coded as relevant if they were in any way related to working on a gig platform with a disability. Most irrelevant posts were either a) questions from customers of gig services (e.g., a passenger in a wheelchair asking about how to ensure a car is wheelchair-accessible), or b) posts by gig workers about customers with disabilities (e.g., discussing how drivers should handle service dogs in their cars). After removing irrelevant posts and duplicate posts (posts that were cross-posted to multiple subreddits simultaneously), the final dataset consisted of 125 posts.

4.3.5 Observational Fieldwork

The above methods were also supplemented by extensive observational fieldwork, where I spent time (a) temporarily working on two gig work platforms, Amazon Flex and Amazon Mechanical Turk, and (b) regularly reading a variety of gig work subreddits over a period of three years, starting in 2017. By immersing myself in this world, I was able to get a sense of workers’ perspectives and issues faced in

various communities, though it is worth noting that this immersion was privileged in that I did not share the sense of economic precarity that often goes hand-in-hand with gig work and makes up a large part of workers' experience.

The effects of this immersion in the field spilled over into my interviews with disabled workers, where my knowledge of and experience with gig work helped me build rapport with my participants, and also helped me ask more targeted follow-up questions since I shared some basic common ground with my participants (e.g., how the platforms worked, what typical tasks entailed, and common issues that came up on each app).

4.3.6 Grounded Theory Analysis

Data collection and analysis occurred as iterative processes guided by the constant comparison method, where I compared each 'incident' in my dataset with others for conceptual similarities and differences [Corbin and Strauss, 2014]. To aid this process, I took extensive memos after each interview. Memos are a crucial component to developing grounded theory [Corbin and Strauss, 2014], and memoing allowed me to compare collected data, identify directions for theoretical sampling, and reflect on emerging codes and concepts.

My recruitment and selection of interview participants was guided by theoretical sampling, which is a central tenet of grounded theory and involves sampling based on the concepts that emerge from the data [Corbin and Strauss, 2014]. As I identified new concepts in my data, I sought interview participants who would vary in terms of those concepts and thus engender new insights. For example, I spoke with a gig worker who lived in a remote, rural area who faced challenges in

accessing work due to both location and disability. This interview highlighted that location may be a salient concept in the study, and as a result, I sought out other participants who lived in rural areas to examine variations in their experiences, as well as participants in urban and suburban areas to understand how disabled workers' experiences may be similar or different based on location.

Finally, Becker advocates that “to understand the ‘hows’ of a process, you want to find the odd cases that ‘upset your thinking’ ” [Becker, 2008, p.87]. In this vein, I continuously searched for “negative cases” that would conflict with my existing findings. Finding negative cases allowed me to develop new concepts to account for differences and broaden my theorizing; for example, an interview with a high-skilled and high-earning crowdworker led me to reflect on how to account for such outliers in my understanding of who gig workers with disabilities are and why they do gig work.

I kept track of emerging codes and concepts in memos throughout the data collection process. I reread the interview transcripts, field notes, and social media posts in my dataset and applied initial codes to them to ensure that I had captured the range of concepts in the data. When appropriate, I used in vivo codes that reflected disabled workers' own words so that my analysis could stay close to the data, rather than imposing my terms and language upon them [Manning, 2017]. I refined my codes as I gained more information from interview participants, social media forums, and my observations from fieldwork.

Alongside this process, I also conducted axial coding, where I developed higher level conceptual categories based on connections between the concepts identified through open coding. The purpose of this focused coding is to “pinpoint and develop the most salient categories in large batches of data” [Charmaz, 2006, p.46].

During the selective coding phase, I compiled all relevant codes into a codebook and re-coded the dataset.

I continued gathering data (by conducting interviews and reading relevant materials) until I reached theoretical saturation in my analysis. Saturation was reached once collecting more data no longer surfaced new concepts, and the existing categories and concepts were well developed in terms of their dimensions and variations [Corbin and Strauss, 2014].

4.3.7 Ethical Considerations

In this section, I discuss the ethical considerations involved in constructing and completing this study. All research materials and procedures were approved by Cornell University's Institutional Review Board.

Aiding Participation

During recruitment, I made it clear that I was happy to accommodate any needs around accessibility, and ultimately interviewed people via phone and text. During these interviews, some participants took longer to respond to questions due to specific impairments. For example, a participant with Tourette's Syndrome required breaks during his vocal tics. Another participant with muscular dystrophy asked for a typed interview because she did not want to talk on the phone while using a breathing machine, but because she used an on-screen keyboard rather than a traditional keyboard, it took her longer to respond than a typical typed interview. In all these cases, I assured participants that there was no pressure to respond quickly, and thanked them for their patience in taking the time to share

their experiences with me.

Safeguarding privacy

Since working with a disability is a sensitive topic where disclosure can result in stigmatization, I took several precautions to protect the privacy of my interview participants, as well as of the people who posted the social media traces that I analyzed. First, all participant characteristics are reported in aggregate to reduce the possibility of identifying any one participant. Second, I did not ask participants to share more information than was necessary for the research. For example, I did not ask participants about how they acquired their disabilities. Third, all identifying information (such as email addresses for compensation) was kept separate from the interview data so that these could not be connected. Finally, while social media posts on Reddit are publicly available, any quotes that I include in this dissertation have been paraphrased to reduce their searchability.

Sensitive topics and power dynamics in research

In my role as a researcher, I was aware of the unequal power dynamics between me and my participants. I began interviews by emphasizing that all participation was voluntary, and that they did not have to answer any question that felt too personal or made them feel uncomfortable. I also took care to note the language they used for their disabilities and adopted that language in my own questions.

Occasionally, when participants brought up incidents that seemed particularly sensitive during the interviews, I reminded them that they could go into as little detail as they wanted to, so that they did not feel pressured to disclose more than

they were comfortable with. Participants usually thanked me for this reminder, but they were all still willing to share many sensitive aspects of their experiences with me.

Many interviews involved the retelling of painful experiences, such as facing discrimination and stigma. Some participants had experienced acutely negative and traumatic incidents, such as being the target of sexual harassment, homophobia, and racism. In all of these cases, I took care to pause and acknowledge their emotions, and to respond in an empathetic manner that prioritized their well-being over the gathering of data for this project.

I also assured participants that I was interested in their experiences with no agenda of my own. Much of the discussion of the gig economy tends to be binary—in companies promoting it, media covering it, and often in scholarship critiquing it—focusing either on positive or negative aspects of the work. While many gig workers are vociferously vocal about the problems that plague gig work (such as the low pay and lack of worker protections), they can also disagree with overly narrow and entirely negative framings of this type of work that paint gig workers as exploited or in need of rescue. Discontent with and scepticism about this type of media coverage is regularly voiced in community forums, and I assured my participants that I wanted to portray their experiences fairly with no agenda of my own to cast the gig economy as either a panacea or harbinger of doom.

Overall, it seems my efforts were successful. Many participants voiced that they were glad that their experiences were being heard, and also expressed interest in being contacted about follow-up studies and the findings of the study. Several participants said that the interview was an opportunity for them to reflect on their experiences with someone in a way that they didn't get the chance to in day-to-

day life, which is a noted potential benefit of participating in research interviews [Brannen, 1993]. At the end of the interview, about a fifth of participants either said compensation was not necessary or that the interview was worth participating in regardless of compensation. In these cases, I assured them that I would like to compensate them as a gesture of appreciation, and did so.

Sensitive topics and self-care

Conducting qualitative research on sensitive topics can engender a lot of complex feelings for researchers. Researchers who study difficult content matter report developing attachments to participants that can weigh heavily on them after the study is complete, and mental exhaustion from engaging deeply with hard-to-hear content [Dickson-Swift et al., 2007]. Talking about sensitive topics with participants can also cause the boundaries between researcher and participant to become blurred [Dickson-Swift et al., 2006], which can make detaching from the work additionally hard.

Researchers can use several strategies to minimize the impact of discussing difficult content matter on their mental and emotional well-being [Dickson-Swift et al., 2007]. After each interview, I made time for self-care and took rest breaks to process difficult content. I also spaced out the interviews to reduce the risk of burnout. Throughout the research process, I relied on my academic and personal networks for social support and to debrief about my experience.

Writing about Disability

Terminology around disability remains a debated issue with several geographical and academic divides [Mankoff et al., 2010]. “People-first” language was introduced to center the individual rather than their disability (e.g., saying “people with disabilities” rather than “disabled people”); however, some argue that this terminology overlooks the fact that disability is a key part of many individuals’ identities, and that trying to decenter disability in terminology implies that disability is something inherently negative [Sinclair, 2013, Ladau, 2014]. Thus, the current convention in critical disability studies and many activist circles is to use identity-first language (e.g., “disabled people”) when appropriate [Shildrick, 2012], and following Shildrick’s example, I primarily follow this convention and occasionally use both types of terminology based on contextual appropriateness as well as the preferences of the people I interviewed.

4.4 Findings

I begin this section by exploring what drives disabled workers to choose gig work over traditional forms of work, and how these decisions are influenced by disability. Then, I discuss the role of income from gig work for disabled workers, followed by how they choose platforms to work on.

Then, I explore how disabled workers’ experiences with gig work are influenced by the various characteristics of gig platforms, and how the challenges of gig work can be exacerbated for some of these workers. There are many differences across workers with disabilities, and those who hold multiple identities that face discrim-

ination are likely to face additional challenges during gig work; thus, I then take an intersectional approach to understand how race, gender, sexual orientation, and socioeconomic class interact with disability to influence workers' experiences.

An examination of the gig economy in 2020 would be remiss if it did not consider the changes and challenges wrought by the COVID-19 pandemic, and thus, I turn my attention to how workers with disabilities made decisions about whether and how to work during the pandemic. Finally, I consider the kinds of support systems that workers draw on, and how these impact their experience.

4.4.1 Why Gig Work?

To understand the experience of gig workers with disabilities, we first must answer the question: why do disabled workers choose to engage in gig work as compared to traditional work? Are their motivations to do gig work influenced by their lived experiences with disability, and if so, how?

There are three main reasons that workers I interviewed decided to do gig work: it has a relatively low barrier to entry, it offers many forms of flexibility that are helpful for workers with disabilities, and it allows workers to earn needed income. In what follows, I discuss each of these characteristics and how they interact with disability.

Low barrier to entry

Gig work has a relatively lower barrier to entry than traditional employment. Instead of spending weeks looking for a job and then going through the interviewing

and hiring process, many gig workers are able to sign up and start working within a few days or hours.

Easy access to work is particularly helpful for disabled workers who can face obstacles in finding traditional employment. Some participants had gaps in their employment history because of disability-related events, such as flare-ups of illnesses, surgeries, and hospitalizations; these served as a roadblock when re-entering the workforce. For example, P8 had chronic fatigue syndrome and clinical depression; she was 70 years old, and had large gaps in her work history when she had been unable to work. She chose to start working for GrubHub, which has overall worked well for her, explaining that it was attractive because “[Gig platforms] don’t ask you, ‘What was your last job?’ or ‘How long did you work here? What’s your resume and everything?’ You know, and like, for me, not having worked in six years. . . It’s great not to have to be judged by that.”

Having access to work can improve workers’ psychological well-being, particularly for those who haven’t been able to earn at all in the past. For example, P18 lived with his parents, and explained his motivation to work on MTurk by saying, “So I’m 26 and I feel like it’s ridiculous for my parents to provide for me at this age. And it’s hard for me to get a job outside due to my medical condition”. Given society’s emphasis on work as a requisite for being a productive member of society, being able to earn some amount of income can be a reaffirming experience.

That said, it is worth noting that the gigs that are easiest to get into are also the lowest paid. MTurk, where the average pay is \$2 an hour [Hara et al., 2018], only requires a smart phone or computer. Delivery and rideshare services are higher paid than crowdwork, but also require a more valuable asset: a car.⁴ Finally,

⁴To work on popular ridesharing platforms, just any car will not do: drivers need to have, at minimum, a 4-door car that is 10 years old or newer.

the highest paying gig—freelancing—requires the most skill, but can also be the hardest to break into. For example, Upwork freelancers have to set up a profile, and may need to put together a portfolio and secure some high-rated reviews to be able to compete with other freelancers to acquire clients.

However, in general, the workers I interviewed were drawn to either online or offline gig platforms, and explored platforms within one of these categories. Many of the workers who did manual gig work were not aware of online gig platforms—particularly higher-paying ones, such as Upwork—and were uncertain of their abilities to engage in that form of work. A few participants I spoke with had explored working on Upwork, but they had found it too overwhelming to learn and had eventually chosen to do other gigs instead.

Mitigating discrimination in traditional employment Many disabled workers face obstacles in entering traditional workplaces due to discrimination [Bruyère and Barrington, 2012], and several workers I spoke with had stories of being discriminated against during hiring processes for traditional jobs. For example, P13 was blind; she had a college degree and internship experience, but still had not been able to find a job in her field for three years and now worked on MTurk. She described her experiences with finding traditional work, saying “I think nonprofits tend to hesitate with hiring me especially due to my disability, but even for-profit companies don’t want to deal with accommodations. My eyes definitely look ‘off’ and I do use a cane, so I think it’s very visible. Of course they aren’t aware of it until the in person interview. They always tend to be a little surprised from what I can tell.” Like some other participants I spoke with, gig work was not her ideal choice of work, but the ease of entry into gig work allowed her to sidestep the discrimination she experienced in accessing traditional work.

Flexibility

Gig work exhibits multiple forms of flexibility, all of which were especially useful for workers with disabilities.

Flexibility of time The nine-to-five schedule of many traditional jobs is designed with the average worker in mind, and excludes those who are unable to work these hours [Abberley, 1999]. All of the workers I spoke with said that the ability to set their own working hours was one of the biggest appeals of gig work. This flexibility allowed them to adjust their work to their fluctuating health needs, and mitigated the risk that they would over-extend themselves at the cost to their health, as P2 explained, “it’s easy to customize around your own schedule, which is important for me because, you know, every single day I’m not sure exactly how I’ll feel until I wake up. Whether I’ll be able to work or not.” This flexibility, which he had been unable to find elsewhere, had allowed P2 to start earning income to supplement his public benefits after a long stint of unemployment:

“The flexibility is amazing. If I could find an office job where I was able to pick, you know, three or four hour increments a few days a week, I would happily go work in an office too. Or even in a kitchen. I used to be a chef before I got hurt. And if there was anywhere I could go, just you know, pick up shifts, cook, I would, but the flexibility really doesn’t exist in any kind of traditional work space.”

Flexible hours also allow workers to work around disability-related activities and routines, such as regular doctor visits, physical therapy, and monthly infusions. For example, P24 said,

“I get infusions every four weeks and bloodwork every two weeks. So trying to have more of a regular job, I would be constantly taking time

off, constantly having somebody pick up my shift. So that's another reason why I really like doing freelance, is because I can work around my schedule."

While many traditional workplaces do allow temporary absences for health-related reasons, many disabled workers find that these accommodations do not match their needs, and receiving accommodations requires complicated decisions about disclosing one's disability to supervisors, and opening oneself up to potential discrimination [Allen and Carlson, 2003]. Instead, in gig work, workers are easily able to control when and how much they work, since work absences do not have to be explicitly covered by other workers, as in a traditional job.

While all workers agreed on the benefits of flexibility, multiple workers weighed these benefits against the costs of gig work. For instance, P20 described their thinking about the trade-off between safety and flexibility in driving for Uber as follows:

"There are definitely drawbacks to it, not least of which in areas of personal safety, but on the balance, I've found that the positives outweigh the negatives enough that I do continue to work in that sector. . . . I really desperately needed the flexibility."

Thus, the fact that gig work satisfied disabled workers' need for flexibility should not obscure the fact that this flexibility often came at a price. While workers made this trade-off, many chose gig work not because it was an ideal choice for them, but because they did not have other viable options that would allow for this crucial disability-related need. P7 compared herself to non-disabled workers, saying,

"What about somebody who works for Instacart, but doesn't have some [health] issues? I mean, I would probably tell them to go find

something else. Like, there’s definitely so many better options . . . if they don’t need the flexibility, then yeah, I’d probably say just get a normal nine-to-five.”

Flexibility to control income Being able to control the number of hours worked also had a second important benefit for many workers with disabilities. Several participants received one of two types of governmental benefits due to their disability: Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI). In addition to requiring evidence of a qualifying disability, individuals must provide evidence that they are unable to engage in “substantial gainful activity” (SGA).⁵ Those who are able to earn above a certain income threshold are considered to be engaging in SGA, which renders them ineligible for disability benefits. In 2020, the threshold for SGA for most people with disabilities was \$1,260 per month.⁶

A few participants had applied multiple times for either SSI or SSDI, and had been rejected. Those who did receive these benefits had gone through a long administrative process to be approved, and they were all cognizant of the requirements to retain their benefits.⁷ Gig work allowed these participants to control the hours they worked—and by extension, their income—in a way that they could not easily achieve in a traditional workplace, where their hours may be dictated by a supervisor. Participants were extremely careful to not exceed the income limits, and would stop working if they came close to earning the maximum income for that week or month. However, even though some participants talked about how

⁵<https://www.ssa.gov/oact/cola/sga.html>

⁶The SGA threshold is higher for blind individuals (set at \$2,110 per month in 2020), who are also eligible to receive SSI regardless of SGA.

⁷Two participants also received Veterans Disability Compensation, which is a benefit provided to veterans for injuries or illnesses that were incurred or aggravated during military service. Unlike SSI and SSDI, Veterans Disability Compensation does not have income restrictions, and as a result, these two participants did not have to keep track of their income.

gig work allowed them to control their income, their earnings from gig work were so low that exceeding their allowed income was not an immediate threat for many of them.

Flexibility of location Spatial flexibility—or the ability to work from anywhere—is also one of the key draws for gig workers in the general population, especially for those who may have geographical constraints that limit their access to work [Lehdonvirta, 2018].

For many disabled workers, spatial flexibility is even more important. For example, P11 was a quadriplegic wheelchair user who lived in an isolated area; being able to work on MTurk had allowed him to access income without having to leave his home:

“I live on a farm. So going outside in a wheelchair, I tend to get stuck in the sand. And since I’m a quadriplegic, my body doesn’t sweat, so I’m real susceptible to heat. So when it’s hot outside, I’ve got to stay inside.”

In other cases, workers did not need to work from home due to a disability, but had difficulties in accessing work outside of the home for various reasons. Navigating inaccessible transportation is a major challenge for people with disabilities and can prevent them from accessing traditional work. For example, P13 was blind and had to navigate multiple buses to reach her workplace during an internship; she was often late, and eventually, she was asked to leave. Similarly, P18 had Tourette’s syndrome and had been turned down for restaurant server jobs near him due to his motor tics, but he was also unable to drive to workplaces further away from him because of his motor tics. Both P13 and P18 had turned to MTurk as a means of earning income from home.

Flexibility of effort Many types of gigs are not too cognitively demanding. This can be helpful for workers who have to expend time and energy managing their disabilities. For example, P14 had type 1 diabetes, which he monitored continuously through the day, and one of the appeals of MTurk for him was that it required little effort: “You know, if I have five minutes, I can do it and use it. If I know that it’s gonna be a day I’m heavily involved in work and health management, then I adjust how much I work on mTurk. I mean, there’s something to be said about quick and easy and efficient.” While he had specialized skills, he chose to supplement his full-time job by working on MTurk instead of a higher-paid gig, such as Upwork, because the tasks were more “mindless” and did not require his full attention.

The fact that gig work is easy to start and stop and does not require much effort can also help workers who face dips in motivation. For example, P21, who drove for Lyft and had clinical depression, said “[Lyft] just made it easier for me to work. Because if I was too depressed, I just wouldn’t work, but even when I’m like, most depressed, I could just sit in my car and be on my phone at the airport.”

Flexibility of social interaction Gigs vary in terms of how much social interaction they involve, and being able to control one’s degree of social interaction can be helpful for certain workers.

Since gig work is done independently by physically separated workers, it can be a good fit for people who would like to minimize social interaction, as seen in prior work on autistic Turkers [Hara and Bigham, 2017]. P12 had bipolar disorder and earned about \$30 a week on MTurk; when I asked her what made the work worth it, she replied, “I can do it myself and be by myself.”

In contrast, some disabled people can become socially isolated [Macdonald et al., 2018], and gig work can provide them with an opportunity to interact with others. P8 had clinical depression, and talked about the loneliness of living by herself after her husband had passed away. Working for Grubhub had given her a reason to get out of the house, and had improved her general outlook on life: “this has been really good for me . . . I’m able to see people, I’m able to laugh . . . the job is helping me to be more active and I’m getting healthier and more positive with the job.”

Flexibility of movement Gig work can also helpful for certain workers who require flexibility of movement. Some participants could not sit nor stand for long periods of time, which made it difficult for them to do both strenuous or sedentary jobs. These workers found that gig work gave them the flexibility to cater to their physiological needs, whereas a traditional workplace would not provide them with the freedom to move around at will. This flexibility could also help their pain levels, as P5 explained, “With Instacart, I do like how it gives me an opportunity to get out, move around the grocery store... that’s good for my legs and for, you know, some of the pain that I experience with EDS.”

The need for primary or supplementary income

As with the Turkers I interviewed in Chapter 3, workers with disabilities had varying levels of reliance on the income they earned from gig work, which often aligned with whether gig work was the main work they engaged in or whether they also held an alternate form of employment. People can do gig work to pay for essential expenses (such as rent or groceries) or non-essential expenses; in addition

to these, workers also did gig work to pay for disability-related expenses, such as medical bills and medical equipment.

As in Chapter 2, the general population of gig workers can be divided into full-time and part-time gig workers, and these classifications often correlate with workers' economic dependence on gig work. However, there are more variations in how disabled workers engage in and depend on gig work.

Some workers with disabilities work primarily on gig platforms, with no other source of income. These workers are locked out of traditional work due to its lack of accessibility and accommodations. For these workers, gig work makes up their main source of their income because of the benefits it provides relative to traditional work. However, since gig work is often low-paid, relying exclusively on full-time gig work meant that their yearly income was relatively low. Freelancers were exceptions to this rule: for example, an experienced technical writer in her fifties was able to earn \$95k a year on Upwork while only working part-time, so as not to strain her health.

Other disabled workers who work primarily on gig platforms do have alternate sources of income as well. These workers may have either from governmental benefits (e.g., SSI, SSDI, or food stamps) or financial support from family. For example, P7 earns \$8,000 a year, mainly from Instacart and Postmates. He had received SSI in the past, but the approval process was lengthy (over a year) and difficult (he had to get a disability lawyer). He no longer receives SSI, but his father now matches his earnings from gig work, so that his total income is \$16k a year. Many disabled workers I spoke with did have such 'safety nets' in place, but even after factoring in these additional sources of support, their yearly income was no higher than \$25,000.

In contrast, like the general population of gig workers, some disabled workers have full-time jobs, and use gig work as supplementary income. However, unlike part-time gig workers in the general population, who can also hold non-monetary reasons to do gig work, disabled workers who do gig work part-time may have a heightened need for supplementary income from gig work. For example, many participants with full-time jobs had large medical debts (such as from hospitalization bills) or expenses (such as needing to purchase a motorized wheelchair).

Gig work is also popular among younger workers, and several participants were in college or taking certification courses to gain specialized skills that would help them reduce the impact of disability on their livelihood. Thus, they did gig work part-time while juggling schoolwork, with the hope that they would be able to access higher-paying work in the future. These workers varied in terms of whether they held health insurance or not, which also influenced their dependence on income from gig work.

4.4.2 Challenges on the Job: Doing Gig Work with a Disability

As described in Chapter 2, all gig workers face many issues with gig work, including low pay, frustration with customers and rating systems, concerns about privacy and safety, and the lack of protections and benefits. While gig workers with disabilities face all of these challenges as well, they can also experience new or amplified challenges for a range of reasons. In this section, I look at the challenges that disabled gig workers face when doing work, and how these challenges are engendered or amplified by various characteristics of gig work. These chal-

lenges can be broadly categorized as (1) inaccessibility issues within the gig work ecosystem, and (2) issues around performance evaluation.

Inaccessible Ecosystems

There are two main ways in which inaccessibility manifests in the ecosystem of digitally-mediated labor. First, specific tasks can be inaccessible, and navigating these tasks while on the job can be a challenge for disabled workers. Second, tasks are assigned and managed by algorithms that do not consider accessibility or workers' abilities. In what follows, I discuss these challenges in detail, including the factors that give rise to them and their consequences for workers.

Navigating inaccessible tasks Gig work platforms are typically not set up with accessibility in mind. As a result, workers can encounter a host of issues when navigating work that they either cannot complete at all or that requires workarounds to complete.

Some tasks are completely inaccessible to some segments of workers with disabilities. This mostly applies to online gigs, as disabled workers who do offline gig work generally have already self-selected a platform that is mostly within their abilities. For example, a worker with a mobility impairment may decide to drive for a ridesharing platform because they are able to stay seated in a car, and the task itself does not have any additional requirements for mobility. In contrast, a worker who does online gigs has many options to sift through to find a task that matches their abilities; for example, a deaf worker may choose to work on MTurk because they are able to complete most HITs on the platform, but there are still a large number of HITs that require listening to audio clips that they may not be

able to access.

Within online gig work, accessibility issues pertaining to specific tasks seem less common in freelancing than in crowdwork, based on my analysis of online forums and interviews. This may be because freelancers complete specialized tasks that they are skilled in, and they also have more control over how they work than crowdworkers. In contrast, crowdworkers face many accessibility issues, since they complete one-off tasks for third-party requesters who control how tasks are set up, often without accessibility in mind. As found in prior work [Zyskowski et al., 2015], Turkers with disabilities can face issues around accessibility as well as completing tasks with short time limits. As in many other online contexts, Turkers with visual impairments in particular can have trouble accessing HITs that are not conducive to being completed on screenreaders. This not only impacts visually impaired workers; in my sample, workers with motor disabilities also experienced accessibility issues, such as being unable to use an on-screen keyboard during HITs that required full-screen mode. Thus, even when the work involved in a HIT is within the scope of a worker's ability, the HIT may not work with workers' assistive technologies.

Turkers are unable to avoid many inaccessible tasks because of a lack of transparency about what each task entails. As with the privacy risks that I discussed in Chapter 3, accessibility issues often do not become apparent until partway through HITs. For example, a Turker may begin completing a survey HIT only to find that, further in, some of the radio buttons are not recognized by their accessibility software. When workers encounter an accessibility issue during a HIT, they have one of two options available to them, but both come with their associated costs. The worker can attempt to complete it despite issues with accessibility; in this case, the

task will likely take them longer to complete than workers without their specific disability, or require external assistance. On the other hand, the worker can choose to close the HIT without completing it; however, as shown in Chapter 3, returning HITs is additional invisible labor that workers take on in terms of wasted time and effort.

Since many HITs do not pay well, some workers can choose to go after HITs that do, even when the required work is somewhat beyond the scope of their abilities. For example, many workers from both studies in this dissertation believe that the HITs that require workers to make audio recordings or to transcribe audio content pay higher than other types of HITs. One worker with Tourette's syndrome found it difficult to make audio recordings of his speech because of his vocal tics. To access these HITs, he had developed a strategy to continuously mute and unmute his mic while recording to hide these tics. That said, he was also concerned that his work would be rejected by requesters, and had on occasion included a note disclosing his disability during the HIT in a bid to avoid rejection.

Developing and implementing such workarounds could be costly in terms of time and energy. For example, a quadriplegic Turker was unable to use a keyboard and used speech recognition software to work, but also wanted to access higher-paying audio transcription HITs. To do these, he listened to the videos that required transcribing, and then dictated them using his speech recognition software. He reflected on the effort it took to complete these kinds of HITs, saying: "I was happy I got approved. But it took me like 45 minutes. For most people, I think they could do it in ten or twenty with the keyboard. I had to play the video for a couple of seconds, stop it, indicate with my voice, because you can't dictate speech while there's sound from the video at the same time. So going back and forth."

Navigating inaccessibility in the system Like online platforms, offline platforms rarely present information about accessibility concerns related to a given task. Thus, the task assignment algorithms used by most offline platforms often assign tasks that are a poor match for workers' accessibility needs. In this way, the relative lack of choice workers have in searching for and choosing tasks has additional negative consequences for workers with disabilities.

The reduced ability to select specific types of tasks is a more common issue in offline gig work as compared to online gig work. At minimum, crowdworkers and freelancers are both able to peruse a list of available tasks and choose which ones to complete. While online workers can run into issues when the task turns out to be inaccessible, they can still generally control the types of tasks they choose to begin. In contrast, offline gig workers may see a list of tasks to choose from, but these are “minute decisions” [Shapiro, 2018], such as whether or not to accept a time block to work, or to accept a passenger's request. Workers are not able to make more important decisions, such as choosing their routes or tasks according to their needs and constraints. Instead, these decisions are made by algorithms, and workers have limited information about the tasks they select until they are underway.

The lack of control over task assignment is a common complaint regarding offline gigs. This issue is raised in many gig work forums where posters vent about being assigned tasks that are either unpleasant or impractical for their individual situations, such as being assigned a long package delivery route that begins at a warehouse but ends far away from one's house instead of near it. This was also one of the main challenges I faced while making deliveries during my observational fieldwork.

There are several decisions involved in the task assignment process, including where the task will take place (e.g., downtown or suburban), and what it will involve (e.g., several heavy packages versus a few light envelopes). These decisions are often made by non-transparent algorithms that assign workers based on factors other than workers' preferences. The fact that workers do not have control over these decisions can be especially difficult for disabled workers given that they are often working within additional constraints compared to non-disabled workers.

Some types of tasks have a large range of physical or cognitive demands, such that some individual tasks may be doable by a given worker but others are not. Thus, some workers have to choose to eschew certain types of tasks altogether—even when they can complete some of these tasks—because they lack the ability to select individual tasks that suit their abilities. For example, P2 delivered for Amazon Flex but could not carry heavy objects. There are multiple types of tasks within Amazon Flex, including 'logistics' deliveries, that involve delivering packages to customers, and grocery deliveries from Whole Foods. Delivering groceries can frequently involve carrying heavier objects than standard package deliveries. Thus, P2 chose never to sign up for Whole Foods deliveries, saying:

“Whole Foods definitely is way more profitable, but it's just kind of not worth the risk for me and if I get an order with 500 gallons of water, that presents a huge challenge. And I will pass up extra money to just kind of have the sure thing with the logistics blocks.”

In P2's case, he was able to do some Whole Foods deliveries, but did not have the ability to choose which ones he did (e.g., light versus heavy loads). In contrast, P22 could not do some tasks at all, because of how the task was set up. He drove for Uber, and the Uber app allows drivers to also deliver for UberEats simultaneously to earn more money. However, delivering for UberEats posed an

accessibility challenge, as he described:

“I can’t even do UberEats because I’m not getting out of my car, walking up and down stairs with my oxygen tanks in order to grab somebody’s hamburger, you know. With Uber, I can stay in my car. . . . There’s no way to set it to where I can say, I’ll take your food to you, but you have to come to my car and get it.”

Having the ability to customize the task to his needs (such as by indicating that he could do curbside deliveries) would allow him to participate in UberEats. However, since he was unable to alter any aspect of the delivery process, he was excluded from working on the platform altogether. In both P2’s and P22’s cases, the inability to control and customize tasks and task selection meant that workers lost out on lucrative tasks (Whole Foods deliveries) or the opportunity to maximize their earnings (driving for Uber and UberEats simultaneously).

In cases where platforms do afford workers with some degree of control over some aspect of the work, disabled workers can use this to their advantage. For example, P10 had a mobility impairment, and navigating stairs was the main challenge she faced in making food deliveries. Thus, she preferred delivering in suburban areas where it was more likely that she would be delivering to houses rather than apartment buildings. Doordash allowed her to select a general neighborhood for delivery, while Postmates did not. Thus, the ability to choose where she delivered allowed her to participate on the platform when she otherwise would not have been able to.

Having limited control over tasks has repercussions beyond workers’ earnings. Since workers do not have the ability to fine-tune the types of tasks they accept, accepting a task can mean potentially putting their health at risk. For example, P3 had stage 3 endometriosis, and delivered packages for Amazon Flex. On Ama-

zon Flex, workers are able to select a time block for work, but cannot choose their routes. This was a problem for P3, because driving on bumpy rural roads exacerbated her pain, and she would prefer to deliver in suburban areas. She explained the impact on her health:

“So I think they should have more options as to, ‘do you want to do rural? Do you want to do suburbs or city areas?’ Because that would help out a lot. Not just with our frustration, but also you’re not jiggling the insides, agitating them, making them swell up and increasing the pain.”

Several workers I spoke with wanted some way for their disability to be considered in task assignments, but most platforms do not have an option where workers can note their disability to tailor the tasks they are assigned or for needs around accessibility.⁸ This forces workers to experience accessibility issues over and over again, resulting in large amounts of lost labor. While workers wanted their needs met by the platforms, they were also concerned that voicing these needs would open them up to potential discrimination based on disability. For example, P2 had chronic pain and osteoarthritis, and said, “If I were to go to Whole Foods and have five cases of water, 20 gallons of water again, yeah, I would absolutely say I can’t do this. I want to decline.” At the same time, workers were also conscious of their tenuous position in the gig economy given that they were easily replaceable. When reflecting on turning down inaccessible tasks, P2 also said, “I have no doubt that Amazon would just cut you off. They’ve got a pool of other people they can

⁸A notable exception is that drivers on Lyft and Uber are able to self-identify as “deaf or hard-of-hearing” on the apps to alert passengers about their disability and receive visual notifications for assigned rides. While this feature might be a step forward in terms of accessibility, deaf drivers still have trouble noticing assigned rides, and they can eschew using the feature altogether to avoid potential stigmatization from passengers [Lee et al., 2019]. It is also worth noting that many hearing drivers on social media talk about co-opting this feature for their own purposes (largely to avoid having to talk to passengers). It is still unclear how this feature helps deaf and hard-of-hearing drivers and whether they pay a penalty for using it in terms of ratings and reviews.

hire.”

Thus, supplanting worker control with algorithmic management can have additional complications for disabled workers by restricting their ability to tailor tasks to match their abilities. As a result, workers are faced with a dilemma: they can either risk their health to complete tasks that they would prefer to avoid, or they can avoid these tasks altogether and lose the ability to maximize their earnings. Further, algorithms that dictate how work is assigned can also negatively penalize disabled workers who need accommodations.

Performance Monitoring and Evaluation

One of the key characteristics of gig work is that workers’ performance is monitored and evaluated by customers and algorithms. In the section, I discuss the challenges that arise from the power imbalance between workers and the customers/platforms that evaluate them.

Customer Evaluations Customers hold an inordinate amount of power over workers in gig work. As discussed in Chapter 2, the fact that customers can monitor and evaluate workers’ performance at their discretion is a source of frustration for many workers [Van Doorn, 2017]. Prior research also shows that customers have many expectations for gig workers, who perform a wide range of invisible labor as part of the gig [Raval and Dourish, 2016]. Customers’ evaluations of workers are extremely consequential, as they can impact workers’ pay rates, the tasks they can access, and even their ability to work on the platform. For disabled workers, the power imbalance between workers and customers can be particularly challenging when the need to navigate their disability arises during interactions with customers.

There can be a mismatch between customers' expectations about what certain tasks involve and how they should be completed and workers' abilities. Given that most customer-facing gigs involve short, one-off interactions, disabled workers are placed in the difficult position of having to navigate disability-related limitations on their ability with strangers who are evaluating their performance. This challenge is exacerbated by how people view disability in society; for example, it is common for people to have their disabilities questioned or delegitimized [Sannon et al., 2019].

As a result, disabled workers can be penalized in a number of ways for not performing certain tasks that customers expect of them, or deviating from the norm expected by customers in some way. First, workers can be subjected to unpleasant and/or ableist attitudes. For example, P17 was an Uber driver who wore a visible leg brace. Passengers constantly asked him to help them lift heavy objects. Disclosing about his disability did not shield him from negative customer reactions. He told me about one of many incidents where a passenger had asked him to lift a heavy box:

“You know, I explained to him I have, you know, a disability in my ankle. I really can't walk. And he just got very, you know, just very upset. And he goes, ‘Well, this is what you Uber drivers are supposed to do’.”

Perhaps more problematically, not matching customers' expectations for a task can also impact workers' ratings and earnings. The same Uber driver reflected on passengers' demands and behavior in the college town where he drove, saying:

“Students will tip, they will, but only when you bow down to their every command, which most of the time I can't. So like when I do say I can't carry the box . . . I can tell my rating gets impacted, my tips get impacted, because I wasn't able to assist the student.”

Workers who receive too many low ratings risk being deactivated; this risk is especially problematic given that many disabled workers do gig work in the face of few other viable options.

To avoid being the target of discrimination or judgement from customers, workers can avoid disclosing about their disabilities, though this can be detrimental to their health and well-being. For example, another driver, P3, used a walking cane for endometriosis; below, she described how she navigates requests from passengers to lift objects:

“Some days, it’s manageable. And then some days, I just have to clench my jaw, and just breathe in real deep and hoist it. And then kind of just appear normal walking around, because I don’t want them to think that just because I’m hurting... [PAUSES] The judgment is what it is. I don’t want them to judge me for that.”

In this way, some disabled workers can feel compelled to meet customers’ expectations to avoid the judgement and discrimination that they face in their everyday lives, even when it means risking their health.

Concerns about customers’ reactions and potential prejudices can also impact how workers choose platforms to work on. For example, P14, who made it a habit to keep checking his continuous glucose monitor every 15 minutes, chose to do online crowdwork rather than ridesharing work because he thought it could be a problem if passengers saw him checking his phone and assumed he was distracted.

Customers also expect work to be completed quickly, and many disabled workers take longer to do things and need breaks, and much of gig work is predicated on speed [Wood et al., 2019]. In this way, this work excludes and penalizes people who cannot work as quickly and consistently as others. These pressures are

additionally difficult to navigate with a disability, which is paradoxical given that many disabled workers turn to gig work for flexibility. P4 described the difficulties of managing deadlines in freelancing:

“It’s mainly just about, like client understanding, like, a lot of clients want what they want, and they wanted it yesterday. And when you have a bunch of clients like that and you’re juggling a chronic illness, it’s kind of like, you know, some of the balls are gonna drop, or you can’t take as much work on. As you know, you might have been able to if people were more flexible about deadlines.”

Workers can choose to disclose about their disabilities to customers in order to explain slower work times in hopes that they will be understanding, though this was not common practice among workers that I spoke with. This is likely because while this strategy can be successful for workers, it also comes at the risk of potential discrimination. For example, P24 had experienced overt discrimination during traditional job interviews because she used a wheelchair, and as a result, she ensured that her wheelchair was not visible in her Upwork profile picture and work email.

Not only can customers rate workers at their discretion with great consequence, but they can also track them with a high degree of granularity. For example, the Upwork time tracker provides clients with a screenshot of workers’ screens every 10 minutes, as well as a log of their keyboard and mouse activity. Many delivery platforms allow customers to see workers’ locations and movements.

Decisions made off of the basis of granular tracking can penalize those disabled workers who require breaks or take longer to complete certain tasks. For example, P1 had type 1 diabetes, and walked with a cane to make deliveries on foot for Postmates. He said:

“The customer can see where you are at all times. And like I would start off going at a certain pace, and then my blood sugar would drop, or I’d start having a lot of pain. And I would slow down and then I would be able to end up finishing the job, but like, sometimes the customers will call me or call Postmates and be like, ‘I don’t know what’s happening. This person isn’t moving anymore.’”

Many workers are hyper-aware that they are being tracked, and some will try to mitigate negative impacts of being surveilled by customers. For example, P9 sometimes had to take bathroom breaks while making food deliveries because he had ulcerative colitis. He said:

“I just have to stop while I’m driving to the customer and just pull over somewhere. And I would just say [to the customer via the app], ‘there’s been a delay’, I would just make, I would have to make an excuse, like ‘oh, there’s a delay, sorry about it.’ And then go on from there.”

While updating customers was a strategy that generally worked for him, detailed surveillance puts a spotlight on any worker behavior that is out of the ordinary (where ordinary is defined by ablebodied standards), and in doing so, puts the burden on disabled workers to mitigate any negative repercussions they may face.

On most work platforms, workers do not have the power to select specific customers or set their expectations. Freelancing is an exception to this rule, and freelancers have more control over the work they do and who they work with. This control can be helpful in a few ways. First, the ability to set one’s own rates can give freelancers the ability to tailor their work to their needs; for example, P4 often charged a flat-rate for work rather than an hourly rate to reduce the time pressure to get work done quickly. However, some disabled workers can also feel compelled

to work for lower rates to ‘make up’ for slower turnaround times, and P4 often worked for less than her skills could earn.

Second, Upworkers can set their own turnaround times for tasks, and can manage customers’ expectations by overestimating the time required for tasks. In this way, they are able to build in flexibility, though this is more true for workers who are highly skilled and thus more competitive, rather than workers who are easily replaced by others with comparable skills: “I do have really premium skills that clients are willing to make tradeoffs for. So I don’t do work on tight deadlines. I always build in buffer for myself in case I have days when I can’t work.” (P6)

Third, Upworkers with business savvy and/or specialized skills can be more discerning about the clients they take on. This can help freelancers adapt the work to their health needs, as P24 explained: “I really cherry pick my clients to make sure that they are somebody that is not going to be dead set on an exact date and time with a deadline, because I know that I can’t fulfill that.” Finally, unlike P4, who lowered her rates to appease customers because of slow turnaround times, P23 actually raised her rates, saying “the more I charge, the better the clients are to work with.”

Overall, workers with disabilities have to contend with customers’ expectations about how, when, and what work is done, and when there is a mismatch between their abilities and these expectations, they are subject to prejudice, negative interactions, and lower tips and ratings. Customers’ ability to monitor workers in fine detail can create additional stress for disabled workers, who may feel compelled to engage in a number of strategies to mitigate any negative consequences from not meeting customers’ expectations. For example, they may feel compelled to put their health at risk or to disclose their disability so as to avoid a negative rating.

It is worth noting that disabled workers do not only have negative interactions with customers. While delivery workers and crowdworkers do not have any direct face-to-face interactions with customers, some of the ridesharing drivers I spoke with enjoyed the social aspect of ridesharing. For example, P22 drove while being visibly on continuous oxygen therapy, and saw his passengers as a source of social support: “They’ve been really supportive, saying like, ‘good for you. You know, you’re trying to work. You don’t have to sit at home’.”

Similarly, the impact of a mismatch between customers’ expectations and workers’ ability can vary. For example, while one driver who used a leg brace had regular negative interactions with customers because he could not help them with physical tasks, another driver who used a cane found that customers were generally understanding of his physical limitations, and did not negatively review him for it.

In some cases, developing a rapport with customers can allow workers to circumvent the negative consequences of not being able to meet customers’ expectations. For example, two freelancers had nurtured long-standing relationships with their clients; they were able to leverage these relationships when they needed occasional health-related extensions.

Algorithmic Evaluations Beyond customers, workers with disabilities also had concerns about how the platforms themselves monitored their choice of and speed in completing tasks, worrying that deviations from expected behavior might affect their options down the road.

Gig workers commonly develop folk theories about how platform algorithms function. Some workers I spoke with theorized that the algorithms penalize long stints of inactivity by directing work away from workers when they rejoin the

platform. This can be a concern for workers who need to take time off of gig work for longer periods of time for health reasons. In a similar vein, P7 worked fewer hours on Instacart based on his health, but felt that he was penalized because of he had completed fewer jobs compared to other users:

“You know, you’re only getting like, four or five ratings a week, somebody else gets like, a hundred, they’re still gonna get more orders and they’re gonna get better orders. Yeah, it knows how many you do in a day. Like, they are a money-making business. I mean, they want to know how much money you’re making them a day. If you’re making them more money, they’re gonna help you make more money, I guess. Just doesn’t really help out people like me very much.”

Similarly, disabled workers can be nervous about being negatively evaluated by algorithms if they turn down too many tasks, even if these decisions are due to their disabilities. For example, P10 had a mobility impairment and had to decline deliveries to places that were not accessible, but said “Like you could obviously decline [an offer], but if you kept on constantly declining it . . . [that] can lower your rate. . . . Postmates has been a little bit iffy about that.”

Workers can feel the need to perform at an increased pace to win the favor of the algorithms that govern the platforms. This pressure can cause them to discount their health-related needs. However, over time, P2 described how this pressure can ease: “when I first started out, I felt tracked by the app and really pushed myself to be very efficient and not waste time. . . . Now, I’ve become a lot more comfortable in being able to take time to take care of myself and do stretching, get out of the car and move for a little bit.”

Other workers who are unable to work at an increased pace can make a conscious decision to reduce their earning potential so as to not be penalized for working slowly. For example, P10 chose to deliver single food delivery orders at

a time instead of “stacking” multiple orders, so that he could take his time delivering each one. He knew this was a less efficient way to manage deliveries and could halve his earnings, but it reduced the risk that he would be penalized by the platform for being slower than other workers.

4.4.3 Disability and Intersectionality

Many disabled workers are also marginalized because of additional factors beyond their disabilities. While advances in disability rights have come from the activism of people from many diverse backgrounds, public discussions of disability often remain centered on the white, middle-class experience [Frederick and Shifrer, 2019]. However, a monolithic understanding of disability obscures the experience of workers who face marginalization on several other fronts, such as race, gender, sexual orientation, and socioeconomic status [Frederick and Shifrer, 2019].

Kimberlé Crenshaw spoke to these layers of discrimination when she coined the term *intersectionality* to highlight how black women are doubly marginalized on the basis of race and gender [Crenshaw, 1989, Crenshaw, 1990]. According to Crenshaw, intersectionality is “a prism, for seeing the way in which various forms of inequality often operate together and exacerbate each other” [Steinmetz, 2020].

This intersectionality was evident in the narratives of several workers I interviewed. The following three cases highlight the ways in which some workers with disabilities face multiple, interconnected layers of discrimination based on race, gender identity, sexual orientation, and socioeconomic class.⁹

⁹In Chapter 5, I will discuss intersectionality in greater detail by drawing on findings from this section as well as from Chapter 3.

Gender Identity and Sexual Orientation

I interviewed a Lyft driver in their twenties who identified as gay and non-binary, and who had post-traumatic stress disorder, panic disorder, and generalized anxiety disorder. They “struggled tremendously” with maintaining traditional employment, and turned to Lyft for the flexibility it offered, such as the freedom to take time off based on their mental health needs.

However, once in the position of doing gig work, the participant, being “a small person who’s read on the surface as female”, commonly faced physical and sexual harassment from customers. To limit these interactions they used a number of strategies, including not driving at night, making appearance-related decisions to present as cisgender and straight, and telling privacy lies [Sannon et al., 2018] in response to passengers’ questions. They also felt compelled to hide their anxiety disorder from passengers. But regularly taking these precautions was draining and a burden that traditional employment might not have presented. They described their strategies to stay safe as “a certain level of constant vigilance that I don’t feel like most people experience.” It also meant that they had to put up a facade to do gig work, saying “there’s very little of myself in what I do.”

This worker related an incident that powerfully highlights the complexities of doing gig work for disability-related reasons, when that very work can exacerbate one’s disability due to other forms of discrimination. The incident occurred while driving a passenger, and unfolded as follows:

“And then [the passenger] asked me, ‘are you –’, and he used a couple of expletives for gay people. And I actually do identify as homosexual, but I did not reveal that at that point. But he decided from my non-answer that I was, and he spent the rest of the ride espousing his views that the answer to that was corrective rape. . . . So I just kind of

delivered him to his destination and was grateful that he got out of the car without further incident. But I later discovered that he had pleased himself in my back seat as well and left behind the evidence.”

For this driver, being the target of homophobia and sexual harassment during the course of their work exacerbated their mental health conditions. They needed several days to recover from the incident above:

“The next day, I went out to go to work, I just got up, I went out to go to work, and I was driving out. I got about five minutes away from my house before I had a panic attack and turned around and went home. I knew that I was not gonna be able to do it.”

In a traditional workplace environment, harassment could be reported and investigated; however, neither the Lyft platform nor the online community of Lyft drivers provided recourse or support. When this worker reported this incident to the platform, they were simply told that they would be unmatched from the passenger so that they would not have to transport him again. When they turned to an online gig work community for support over the incident, they received several negative responses (such as “if you don’t like it, quit driving”), which led them to stop posting on the forum.

The primary reason this participant decided to do gig work was because they were unable to hold a traditional job due to their disability. The income they earned from gig work was vital as it not only paid for essentials (such as rent), but also was meant to finance a future relocation to a more progressive area to avoid the daily harassment they faced based on their gender identity and sexual orientation. Yet gig work exposed them to additional harassment on the basis of these identities, and this harassment in turn exacerbated their mental health conditions.

Race

I interviewed a delivery driver with Ehlers-Danlos syndrome, who needed a new form of income after being laid off from his job. He preferred working at a traditional desk job, but for speed and ease, began working for Instacart, Postmates, and Lyft while navigating the job market.

In general, he was able to adapt gig work around his disability-related needs, though it required a little effort. For example, lifting heavy items could cause him pain, so he was careful to reduce the number of “heavy” orders he accepted on Instacart. He also took his disability into account in terms of how many shifts he picked up, often eschewing back-to-back shifts to avoid potential injuries, despite the subsequent loss in potential earnings.

As a black man, he also had to navigate race-related challenges at work. Making deliveries in a conservative state, he was concerned about his safety: “People are trigger happy out here, especially if they see a black man coming up to the house.” To protect himself, he carried a knife, wore nicer clothes, didn’t deliver after dark, and even contacted customers via the app before he approached their houses. These considerations required hypervigilance on his part, in addition to the effort involved in completing the gig itself, including the disability-related steps he took to protect himself from injury.

Further, while time pressures to earn income drove this participant into gig work, he felt that race-based discrimination from customers prevented him from earning as much as white delivery drivers. By looking up other workers’ earnings online, he found out that his tips were lower than other drivers in his area. In this way, the power imbalance between workers and customers may be more pronounced

for workers of color, whose earnings may be negatively impacted by customers' biases.

This participant had to take several precautions when doing gig work, both due to his disability and his race. Because he was black, he faced additional challenges while doing gig work that a white worker—either with or without his disability—may not have faced.

Socioeconomic Status

I interviewed an Uber driver in his forties, who had worked in a restaurant kitchen as a chef until he developed chronic obstructive pulmonary disease (COPD). As his illness increased in severity, he began to receive continuous oxygen therapy, which involved being constantly connected to an oxygen tank. This hampered his mobility and made it difficult for him to continue his work as a chef, and he eventually had to leave his job. He qualified for SSDI because his disability prevented him from working, but he still needed to supplement the income he gained from these benefits.

His options for alternate employment were constrained by both his COPD and his socioeconomic status.¹⁰ Due to his COPD, he preferred to stay at home, saying “If I leave, I have to take my tanks with me, and they’re just a burden. So I don’t go to too many places.” Thus, he would have been well-suited to a sedentary job, including those that would allow him to work from home where he would have been relatively unencumbered by his oxygen tanks. However, when I asked him

¹⁰There are many schools of thought on how best to define and measure socioeconomic status, but in general, the term is intended to capture an individual’s “life chances” based on the resources they possess and their current position in society, such as their education, assets, income, and occupation [Lynch et al., 2000].

whether he had explored doing this type of work, he explained why this wasn't a realistic option for him:

“Because of how severe my COPD is, the best I can probably do is an office job. And I'm 48 years old, I have no training in office work. I can't type on a computer. I don't have a computer. I don't know nothing about computers.”

He had a high school education, and most jobs he was qualified for required too much manual labor or extended movement. He had not been able to find a job within his skillset that would be compatible with his disability.

Given his limited employment options, he began driving for Uber, and took several precautions to make it more compatible with his disability. He typically stashed his oxygen tank between the car door and his leg to keep the passenger seat free, and made sure that he carried a spare oxygen tank in the car at all times. The day I interviewed him, he was not working because he had to wait for his replacement tanks to be delivered.

Thus, he worked as an Uber driver because alternate forms of employment were inaccessible to him based on both his disability (since the jobs he was eligible for were not set up to accommodate people who require continuous oxygen therapy), and his socioeconomic position (since they required access to technology as well as specialized skills and education that he did not possess).

However, it is worth mentioning that despite the low pay and the challenges of driving with COPD, he emphasized that Uber had been a positive force in his life: “On the whole, I call Uber a godsend sometimes. Because if it wasn't for Uber, I would literally have no options.”

4.4.4 The Impact of the COVID-19 Pandemic

The COVID-19 pandemic began partway through the study, leading me to ask participants how their work and lives had been affected. As expected, there was a clear divide between online and offline gig workers. Most online workers I interviewed had not been directly affected by the pandemic, though some of them were concerned that the demand for online gig services may decrease as a result of lay-offs and tightening financial budgets.

In contrast, choosing to do gig work during the pandemic would place offline gig workers at heightened risk for contracting COVID-19. This was especially concerning since many of workers I spoke with were already classified as high risk for COVID-19 (for example, due to a number of autoimmune illnesses such as Type 1 diabetes, or immunosuppressant medications). When faced with the decision about whether or not to continue working during the pandemic, offline gig workers' decisions were influenced by the degree to which they had alternate forms of support, and their economic dependence on gig work.

Pausing work during the pandemic Several offline gig workers had stopped working to avoid being infected with COVID-19. For many, this was a complex calculation where they not only weighed the impact that contracting COVID-19 would have on their health, but also on their finances. For example, P7 said,

“So I was just kind of like working as much as I could until it was like not safe to, and then I just pretty much had to be like, Okay, well I don't have the money to go to the emergency room or pay the \$200 for deductible if I end up having to go that route, so it's not really worth it. Because if that were to happen, my immune system is not great, I don't know if I'd survive it or not like, I don't have money to afford it.”

P21, who was at higher risk due to diabetes and obesity, paused working because she was concerned that negative customer interactions would be heightened during the pandemic: “I’m a woman of color, and I’m darker, so they still see me as inferior. People always want to argue with me. So I’m not gonna put myself at the risk of having someone yell at me over a face mask because they don’t want to wear it.” Some workers like P21 who paused working were able to lean on support from friends, family, and public service, though these were rarely sufficient and many workers described being in dire financial straits. For example, P21 described the repercussions of stopping gig work, her only source of income, by saying:

“I basically didn’t pay my bills for like a month and a half because, you know, if I’m not working, I’m not paying bills. But I got some help from my brother, we split the cell phone bill, he paid it for a month, my fiancé gave me some funds for some of my bigger bills, I ignored my credit cards. The stimulus check¹¹ came after a while.

Working during the pandemic I also spoke with disabled workers who were still doing offline gigs during the pandemic. A few of these workers did not have an elevated risk for COVID-19 based on disability. However, I also spoke with people who had decided to continue working despite being at high risk, including a rideshare driver with COPD who was on continuous oxygen support, and a food delivery worker who was 70 years old. These workers depended on income from gig work and could not sustain long periods of time without it, but also thought they could minimize their risk to an acceptable level by taking precautionary measures. They took several steps to ensure their safety while working, including buying their own personal protective equipment (PPE) and regularly disinfecting their cars. That said, many gig workers—those I interviewed and those in online gig

¹¹The U.S. sent most taxpayers \$1,200 checks in April 2020 to ease the financial impact of the pandemic.

work forums—were frustrated that they had to buy their own PPE despite platform companies’ promises to provide this equipment.

4.4.5 The Role of Support Systems

Workers’ experiences were also influenced by external sources of support, which took three forms: online support, offline support, and (lack of) support from technology companies.

Online Support

Like other work has shown [Yin et al., 2016, Ma et al., 2018], gig workers commonly congregate on online forums to exchange tips, vent, support each other and build community. Most of the workers I interviewed found the forums to be helpful, especially to learn strategies to find lucrative tasks, increase efficiency, and maximize earnings. However, several participants also said that worker forums could be toxic or hyper-competitive spaces, and did not spend much time on them.

One potentially negative aspect of online forums is that they invite workers to make comparisons between their experiences and others. This can lead to unpleasant discoveries; for example, P13 spent about 40 hours on MTurk (including both finding high-paying HITs and completing them), and was upset to find that her earnings were much lower than some other Turkers:

“I’m only making \$45–55 on average a week. . . . I joined the subreddit and noticed that there are people making upwards of \$500 a week on Mturk and I was floored. That certainly has not been my experience. It makes me so mad. lol. I thought most people made the same amount I did.”

While participants had not posted on the forums about their disabilities, my exploration of the subreddits found that several disabled workers do use online forums to talk about disability-related topics. These posts seem to stem from varying motivations, and provide a further glimpse into the experience of doing gig work with a disability. I outline the different types of disability-related posts on worker forums below, along with the types of feedback and conversations they engendered.

Types of Posts Posts on gig work forums where the posters talked about their disabilities typically appeared to seek either informational or social support.

Posts that sought informational support varied in their focus on disability. Some posters solicited general advice about gig work, such as how to become more efficient working on the platform. In these cases, posters might have mentioned their disability as the reason why they did gig work or were reliant on gig work income, but disability was not the focus of their post. Many posters also solicited advice that was specifically about doing gig work with a disability. A common question that was posed on forums was whether a specific type of gig was suitable in light of the poster's disability. For example, a poster with a mobility impairment posted on a delivery services subreddit to find out how physical the work is, and whether other delivery workers thought he would be able to make deliveries with his disability. Some posts were about how to manage health issues during gig work. For example, a disabled worker in delivery services asked for advice on how to avoid situations where he would have to stand for a long time in restaurants when picking up orders, as this exacerbated his chronic back pain. A segment of these posts were also about how to navigate SSI/SSDI benefits while earning an additional income from gig work, as receiving these benefits can be jeopardized if people cross a

particular threshold of income. These posters asked specific questions about how to report gig work earnings to Social Security, and whether doing gig work would make them ineligible for much-needed benefits.

Beyond informational needs, gig work forums are spaces where workers commonly congregate to vent about the challenges of doing gig work and seek social support. Many disability-related posts echoed this trend, though these posts also contained specific details about how gig work was additionally hard to do in light of a disability or how doing gig work had worsened workers' health. For example, several posters with depression and/or generalized anxiety disorder talked about how the stress of doing gig work had worsened their symptoms. When talking about the challenges they encountered, many of these posters also expressed frustration that gig work was one of the only avenues open to them to earn income given their disabilities. These posters seemed to be stuck between a rock and a hard place; for example, a poster vented about being rejected for SSI benefits and having no choice but to complete surveys on MTurk for very low pay since he was unable to work at "a real job".

Types of Responses Posts with disability-related content received a wide range of responses on gig work forums.

Posts in which disabled workers sought practical advice or vented about their experiences received many positive comments from other workers, who made suggestions for how challenges could be overcome, and commiserated over similar experiences. For example, a poster asked if they could work on Instacart with chronic pain, and workers talked about the frequency with which they needed to carry heavy orders to give the poster a sense of the work, and also suggested

alternate gigs that may be more suitable, such as ridesharing.

However, disability-related posts also received many negative comments, where other workers questioned or criticized the poster's experience or minimized their difficulties, or defended the gig platform. Posters also received ableist responses where commenters questioned their disabilities altogether, and suggested that the poster either put up with their disability-related issues or quit the platform. For example, a disabled driver asked whether Uber would allow a companion in the car while driving, and received several negative comments, including one that said the poster could not be disabled because they were able to drive, and thus no accommodations were warranted.

Thus, while it is clear from prior work, including my own in Chapter 3, that online forums are useful source of information and community for gig workers, these experiences are not shared by all workers. The forums may exclude or negatively impact workers who need support the most—such as those who are actively seeking out advice about disability-related challenges.

Offline Support

Many workers that I interviewed had starting working on gig platforms based on recommendations from family and friends, and some of them also had access to various forms of offline support, as I outline below.

Financial Support Some participants received financial help from their families, and several lived in households where they were not the primary earner. For example, one participant had been homeless until her uncle invited her to stay with

him, while two participants had always lived with their primary caregivers. Others lived with spouses or partners, some of whom were the primary earners for the household. Those who had financial support were often less reliant on gig work—or felt less anxious since they had a safety net—versus those who were more on their own. This is because the income from gig work—while still important—did not go towards the largest household-related expenses, such as rent.

Physical Support A few participants needed physical support from time to time, particularly to help navigate accessibility issues during gigs. For example, P11, who is quadriplegic and uses speech recognition to work on MTurk, occasionally asked his primary caregiver to help out with particularly onerous HITs:

“I started one where they wanted you to play a computer game for about 10 minutes, but you had to get so far. And I couldn’t do speech recognition because it wasn’t fast enough. Finally I had to call my mother and she came to play the game for me. Luckily, she was here.”

Similarly, some workers who do offline gig work bring along a friend or a significant other to help with physical tasks (such as driving or heavy lifting). Several disabled workers posted on gig work forums for advice on whether they were allowed to have such help, and emphasizing their need for such support. By and large, ridesharing and delivery service gigs do not allow workers to have someone accompany them. For example, Uber’s Community guidelines state, “When driving with Uber, no one other than the requesting rider and the rider’s guests are permitted in the vehicle.”¹² That said, based on conversations on Reddit, it seems that at least some workers—both with and without disabilities—do have someone accompany them on their gigs, whether it be for fun or for needed support.

¹²<https://www.uber.com/legal/en/document/?name=general-community-guidelines&country=united-states&lang=en>

Gig Company Support

A common frustration among gig workers is that technology companies offer them limited support, and interactions with Support representatives can be unhelpful. Several workers that I interviewed echoed this problem. For example, several ridesharing drivers I spoke with had experienced varying levels of sexual harassment while working. When they contacted Support, the company's resolution was to unmatch them with the passengers who had harassed them. These workers were frustrated that the ridesharing platforms had not offered them any restitution or offered solutions to prevent such harassment in the future, and that—to participants' knowledge—the platforms had also not penalized the passengers.

Similarly, technology companies also offered limited support when workers' issues were related to their disabilities, such as discrimination from customers, or the need for a health accommodation. The lack of recourse when faced with overt discrimination was frustrating, as P17 explained:

“this one kid gave me a one star rating because I wouldn't help him move a box. He told me he's gonna get me a one star rating. And I explained to Uber, I said, ‘I think I'm going to be rated unfairly’, explained the whole situation. And they were just like, ‘thanks for the feedback’, and did nothing about it, but I was clearly discriminated against.”

Workers with disabilities also discussed unhelpful interactions with Support on gig work forums. For example, an autistic driver turned to Reddit because he was frustrated that he was being negatively reviewed for not talking with passengers, and that contacting Uber about the issue had not been helpful. He received several suggestions from other drivers to mitigate this issue (including to turn the radio on, or to enable the ‘deaf or hard-of-hearing’ option to avoid having a conversation).

In this way, workers can sometimes find other forms of support to make up for the lack of support from the technology companies themselves.

4.5 Discussion

A key reason many disabled workers enter gig work is because of the many challenges they face in traditional employment, where the hiring process can be discriminatory, and the work processes themselves can be set up in a way that is exclusionary of workers' needs and abilities.

Gig work allows disabled workers to bypass some of the challenges posed by traditional work. First, it is easy to sign up and start earning on gig platforms. Second, and crucially, gig work offers multiple forms of flexibility that are vital for many disabled workers; for example, workers can set their own hours, work from anywhere, and control the amount of income they earn to maintain their eligibility for disability-related benefits.

However, the opportunities afforded by gig work come hand-in-hand with several costs, some of which have an outsized impact on workers with disabilities. Many of these challenges stem from power asymmetries in how gig work is structured, and in Chapter 5, I discuss these asymmetries (and their broader impacts) in detail, along with related findings from Chapter 3. In this section, I focus on some of the main challenges around exclusion and discrimination that disabled workers face in gig work and their repercussions, and offer some suggestions as to how these challenges can be mitigated.

4.5.1 Exclusion, Discrimination, and Invisible Labor

This chapter has shown that workers with disabilities experience challenges in gig work that stem from both the sociotechnical structures of the platforms themselves, and the broader social structures in which these platforms operate. Workers must navigate several challenges related to the tasks and platforms, such as accessibility issues, algorithmic task-setting and evaluation, and the need to assess the health risks of any given task based on limited information. They also have to manage interactions with the users of gig work services, who are able to monitor and evaluate workers at their discretion.

In Chapter 3, I illustrated how managing privacy-related risks constitutes a form of invisible labor for workers. In a similar vein here, I contend that disabled workers engage in multiple forms of invisible labor to manage the inaccessible, exclusionary and discriminatory sociotechnical structures and processes they encounter in gig work. First, when choosing tasks to complete, workers must expend cognitive energy assessing whether the tasks will be accessible or might exacerbate their disability. Second, since these decisions are made in the face of limited information, workers can begin tasks only to find that they are inaccessible partway through the work. Workers can then be forced to abandon these tasks halfway, and all the time and effort they have put in until that point makes up more unpaid, invisible labor. Third, to avoid losing out on these earnings, workers expend further invisible labor in developing elaborate workarounds to find ways to access and complete inaccessible tasks. Given the lack of in-built support or training in gig work, some disabled workers also have to put in unpaid time actively seeking out support and advice on how to develop these strategies, such as on gig work forums. Finally, while many workers engage in both physical and emotional invisible labor for cus-

tomers that is beyond the scope of the task at hand [Kameswaran et al., 2018a], workers with disabilities are also tasked with the additional labor of navigating disability-related tensions with customers, including concealing their disabilities to avoid potential discrimination. Together, these forms of invisible labor are an additional burden that disabled workers must take on in order to participate in gig work.

4.5.2 Suggested Remedies

In what follows, I offer several suggestions for how gig work platforms can be designed to mitigate disability-related challenges for workers. It is worth noting here that it is vital that design suggestions for workers with disabilities do not reproduce the structural inequalities that they face, and also do not focus on changing or ‘fixing’ disability. Attempts to ‘solve’ disability-related challenges with technology—particularly design efforts that exclude disabled people—can also lead to the creation of “disability dongles” that are neither wanted nor used by the people that they are created for [Jackson, 2019]. In contrast, the design suggestions I offer here emerged from conversations with disabled workers, where they not only discussed the challenges they faced but also spoke about features that they wished could be implemented or improved.

Improving Task Accessibility

Inaccessible tasks reduce workers’ earning potential on work platforms, and increase the invisible labor they have to perform. Prior work finds that many crowd-work tasks can be inaccessible [Zyskowski et al., 2015]. This study replicates and

builds on these findings by showing that workers with disabilities also do other types of gig work besides crowdwork, and that accessibility issues emerge during online freelancing and a variety of offline tasks as well. These accessibility issues can be mitigated through a number of design choices that make work platforms more inclusive for workers with varying needs and abilities. In what follows, I discuss three options for improving accessibility: increasing task transparency, matching tasks to abilities, and providing workers with increased control over task-related decisions.

Transparency and Task Selection Several workers expressed a desire for greater transparency around the requirements of individual tasks so that they could make informed decisions about whether or not to begin them. For example, a food delivery worker who used a wheelchair part-time made her decisions about which deliveries to accept based on whether she thought the destination would be wheelchair accessible. However, since she was making these inferences based on limited information (such as the general neighborhood indicated on a map), she still encountered inaccessible locations from time to time. When I asked her how this experience could be improved, she said, “One way is for apps to show you straight away if the place is from an apartment or if it’s in a house.”

Currently, many apps provide limited information about tasks, such as just the time block that is available, the projected compensation, or the general neighborhood where the work will take place. As a result, several other workers had been in similar positions where more transparency around tasks would have allowed them to avoid situations that were either inaccessible or would exacerbate their disabilities.

One of the design suggestions that came out of Chapter 3 was that crowdwork tasks should provide an upfront description of the types of personal information required so that workers can assess potential privacy risks. Similarly, when workers are deciding whether or not to select a task, providing them with a more detailed description of the task would help them make an informed decision about whether to accept it.

In the context of crowdwork, platforms could collect and display metadata about the abilities required to complete a task (such as the ability to see images or listen to audio) [Zyskowski et al., 2015]. In the context of offline delivery gigs, this might mean that work platforms provide workers with information about the locations involved (including accessibility-related information, such as whether the pick-up and drop-off locations are wheelchair-accessible) and the task itself (e.g., the quantity, size, and weight of the delivery).

Since some gig contexts—such as crowdwork and freelancing—rely on customers to post tasks directly to the platform, platforms could also provide customers with accessibility-informed guidelines for tasks that customers can follow (for example, customers who are inclined to use visual CAPTCHAs in their tasks could be shown how to use alternatives that are accessible). To help customers post tasks that are transparent about their requirements, platforms could include a list where customers can check off the types of activities required in their task (for example, listening to an audio clip).

Control over Workflow and Adaptable Gigs While transparency about tasks could help workers avoid problematic tasks, many workers wanted the option to be able to adapt tasks to their abilities so that a wider range of tasks would be

open to them. Providing workers with a little more control over how tasks are done would allow them to circumvent certain disability-related challenges. For example, some of the rideshare drivers I interviewed were unable to work on food delivery platforms because their mobility impairments prevented them from easily entering and exiting their cars. These drivers wanted the option to make curbside deliveries that would allow them to stay in their cars. Providing workers with this type of flexibility would not negatively impact the task itself (i.e., customers would still receive their deliveries). The adjustments that have been made to work processes in gig work due to the COVID-19 pandemic show that these processes can be feasibly adjusted. For instance, several food delivery apps have shifted to curbside delivery to prevent exposing workers and customers to the risk of infection, and this shift does not seem to have had any negative consequences. Continuing this feature after the pandemic would make this type of work more accessible for people with mobility impairments.

Similarly, as in prior work on crowdwork [Zyskowski et al., 2015], some workers find it difficult to complete timed tasks with tight deadlines with a disability, and this held true for workers who perform offline gigs as well. A delivery worker who was concerned about his need to take disability-related breaks between or during deliveries suggested, “Maybe have something on the application where I’m able to have some breaks in between while I’m on a trip where I need to use the restroom.” Another delivery worker used Doordash mainly because the platform allowed her to pause accepting new orders during a delivery time block without penalty. Allowing workers to make minor adjustments to their work process in this way would make the work more flexible and reduce the impact of timed tasks for people with disabilities.

More broadly, these two examples illustrate how providing workers with a little more control over how they complete tasks would make work more accessible.

Allowing for Worker Preferences Several workers I spoke with brought up the need for an option to indicate any physical impairments or limitations on gig platforms, which would help algorithms tailor their task assignments and avoid offering them inaccessible tasks. However, they were also concerned that disclosing about their disabilities on work platforms would open them up to discrimination or could cause them to lose access to work altogether; consequently, they were uncertain whether they would actually use this functionality if it were available. For example, one groceries delivery worker who could not lift heavy items said, “Amazon and Whole Foods should have some option to indicate [a disability] in-app so that heavy orders are just automatically not assigned to less able people. Um, but I also feel like at that point, I probably just wouldn’t hire less able people.”

An alternate solution that could circumvent potential bias while still allowing for tailored work assignments could be to focus on workers’ preferences rather than requiring them to disclose their disabilities. To enable this, platforms could recognize the variation across tasks (e.g., in terms of routes, weight of packages, and so on) and allow workers to select the types of tasks that they are willing to do. For instance, on Instacart, some deliveries are tagged as “heavy orders” and have slightly higher pay rates. Currently, this feature only provides transparency: workers who are unable to lift heavy items can avoid accepting these orders.¹³ However, an alternate design choice could allow workers to pre-select the types of tasks they are willing to do (e.g., heavy versus light deliveries, or urban/suburban

¹³The “heavy item” designation was only somewhat helpful to the Instacart workers I spoke with, since they also reported encountering regular delivery orders that contained heavy items, such as several gallons of water.

versus rural routes) so that they are matched to tasks that are better suited to their needs and abilities.

In the context of crowdwork, Zyskowski et al. suggest that platforms could employ recommender systems to present workers with tasks that employ the same abilities as ones they have been able to complete successfully [Zyskowski et al., 2015]. A similar approach could be useful in offline contexts. Further, these algorithms could also take workers' preferences into account by asking them to rate each task that they are assigned (such that workers could flag tasks that they do not want to complete again), and directing work to them accordingly.

Mitigating Unfairness, Bias, and Negative Interactions

Gig workers with disabilities also have to contend with the unfairness and bias that emerges from being evaluated by algorithms and customers, as well as negative interactions with customers.

The algorithmic control and evaluation of workers in gig work means that there is no human manager in the equation that workers can appeal to when their performance is impacted by extenuating circumstances. Workers can face algorithmically-dispensed penalties when their disabilities impacted their work schedule; for example, some rideshare drivers reported needing to cancel scheduled rides due to flare ups in their symptoms, and these cancellations negatively impacted their standing on the platform. Similarly, some delivery workers had begun their shifts only to discover that they had been assigned too many heavy items that would exacerbate their chronic pain, but felt unable to decline the order at that point because their account would be penalized. Recognizing that workers may need additional flexibility at certain points in time, and building in support

for these occasions, could make gig work more inclusive. Several workers had contacted platforms' Support teams and found these to be unhelpful; instead, Support teams could receive training to allow a certain number of cancellations based on extenuating circumstances.

Just as workers suggested that algorithms could take their disabilities into account when assigning tasks, several workers I interviewed also thought that some form of disclosure about their disability could be useful to facilitate interactions with customers. The main issue these workers perceived was that customers expected workers to do additional forms of labor beyond what was in the scope of the task. For example, prior work finds that rideshare drivers fulfill a number of roles for passengers [Kameswaran et al., 2018a, Rosenblat and Stark, 2016]. My interviews suggest that disabled workers may be disproportionately impacted by these customer expectations if their disabilities preclude them from meeting these expectations. To avoid negative repercussions from not meeting customers' expectations for disability-related reasons, a rideshare driver who frequently received negative reviews for not being able to lift passengers' luggage wanted to disclose his mobility impairment to customers up front: "Lyft does have an option where if you're hard of hearing, you can put that . . . but that's the only thing you can put, which is kind of crazy to me, like, you should be able to put other stuff."

However, even the workers who suggested that the ability to disclose their disabilities up front could be helpful were concerned that it could lead to increased bias from customers. This concern has also been echoed by deaf or hard-of-hearing rideshare drivers who currently have access to a 'deaf' option they can select in-app, and many choose not to avail of the option so as to avoid prejudice [Lee et al., 2019].

The desire for some form of upfront disclosure, and the concern around bias stemming from such disclosures, have two implications for disability disclosures on apps. First, since some workers did express the desire to make these disclosures, the addition of an optional field that allows these disclosures prior to the start of a customer interaction could be helpful. Rather than providing several types of disabilities that workers can select (such as the current system that allows workers to identify as deaf or hard of hearing on rideshare platforms), which could lead to some disabilities being excluded, this disclosure field could be an optional text box that workers can use their own phrasing to fill out. This would give workers the ability to test out different types of disclosures and to control the degree of disclosure while protecting their privacy (for example, a worker who does not feel comfortable disclosing their specific type of disability could still indicate additional tasks that they will not do).

The consequences of disability disclosures should also be examined by future research; for example, research is needed to determine whether drivers who use the 'deaf or hard of hearing' option receive more negative reviews or experience more negative interactions than drivers who do not use this option.

Second, safeguards could be put into place to protect disabled workers from discrimination from customers. Another driver who was pondering the usefulness of upfront disclosures said, "...but then that's gonna make them rate the driver lower unless Uber puts protections in to make sure that they're not unfairly rated. Definitely flagging someone would be nice." Workers should be able to flag customers for harassment or discrimination, which could then be reviewed by the platform. Currently, workers can flag customers on some platforms, but to little consequence, as in this incident related by a driver: "They won't say we're sorry

you were discriminated against, blah, blah, blah, and it affected your rating. They just say, nope, we'll unmatch you from this rider. And I'm stuck with that." Instead, platforms could put processes into place where workers receive more support when they encounter incidents of harassment and discrimination, including potentially banning the customer from the platform, and compensating workers for their negative experience.

Unlike offline gig contexts, crowdwork and freelancing are two types of gig work where workers are able to choose who they work for. Chapter 3 showed that Turkers vetted the privacy practices of requesters by looking at their profiles on review sites such as Turkopticon, and they also tended to trust academic requesters more than others. Similarly, vetting customers was a way for some crowdworkers and freelancers to avoid negative repercussions stemming from disability-related issues. For example, some freelancers were discerning about the clients they took on, since they found that better clients—those who offered higher pay rates and developed a rapport with workers—were also more likely to be understanding about disabilities. A freelancer I interviewed suggested that this vetting process could be institutionalized at the level of the platform in order to not just protect disabled freelancers, but all freelancers: “Better vetting would probably also help disabled freelancers because if clients are better vetted, we wouldn't have to worry as much about if we miss a deadline, having a super negative reaction, or having an issue with a deliverable. And I know that that's something that we've been asking Upwork for years, is to start verifying the identities of clients, and better vetting of them.” The vetting process could also benefit clients by allowing them to distinguish themselves as inclusive on the platform. Workers could also be allowed to rate clients on inclusivity and accessibility metrics; this would help other workers make decisions about whether to work with these clients, and reduce the overall

amount of invisible labor performed by workers.

Bridging Knowledge Gaps in and about Gig Work

In addition to designing gig platforms to be more inclusive, it is worth noting that technology apps do not exist in a vacuum, and that “accessibility is achieved through the interplay of the social and technical” [Kameswaran et al., 2018b, p.19]. Even the most accessible app may still stumble without addressing and mitigating the social barriers in the context in which it exists.

One important social barrier that still needs to be overcome is that there are marked knowledge gaps that must be bridged to help disabled people access varied forms of employment, including gig work. Most of the disability service providers I spoke with were primarily focused on helping people with disabilities find traditional forms of employment, including service work, rather than digitally-mediated gig work. They also highlighted the difficulties in reaching disabled people who are currently unemployed, and establishing an effective pipeline for them to enter employment.

Prior work finds that many disabled people are not aware of crowdwork as an employment option [Zyskowski et al., 2015]. Similarly, many of the disabled workers I spoke with were not aware of the range of gig work options that were open to them. Instead, many workers had discovered gig work through recommendations from family or friends, and once they began gig work, they typically continued to work within the same category of work (such as crowdwork, or delivery services), even if they tried multiple apps within that category.

This approach worked for some workers, who were happy with their overall gig

work experience and did not see much point in switching gigs or experimenting with new gigs. However, there were also several workers who earned very little on platforms and had more negative experiences than positive; these workers would especially stand to benefit from increased awareness about other types of gigs that may be more suitable for their needs, and from mechanisms that would ease their transition into other types of gig work. For example, I spoke with a blind worker who had been unsuccessfully looking for traditional work for multiple years; she was unhappy with her limited earnings doing low-skilled and low-paying tasks on MTurk, and frustrated that she was unable to use her Master's degree. She could likely have used her skills and graduate training to earn more money on a freelancing website, but she was not aware of platforms such as Upwork. When I mentioned these options to her, she was surprised and interested in potentially increasing her earnings by doing more skilled work from home, but she was also uncertain about how to start pursuing this type of gig.

Some of the workers I interviewed spoke to this need for support and training. A worker who chose to work from home due to her disability had made freelancing a viable source of income, but this had been a difficult process. To improve employment options for workers in similar situations as she had been, she suggested, "Job skill training geared towards people with autoimmune issues would be immensely helpful. I graduated with my [Associate in Arts degree], but I've learned everything on my own over the years. Teaching people how to acquire these skills and how to land freelance jobs would be so beneficial."

Accessing higher-paid work that also fits within workers' needs and constraints—such as freelancing—can be particularly challenging. Some workers had tried platforms such as Upwork, going as far as to set up profiles and bid for

work, but had been overwhelmed by the effort required up front to establish a credible profile and amass reviews, and had consequently left the platform. Most of the freelancers who had been successful at making Upwork a viable source of income had also found the learning curve to get started on the platform to be quite steep. However, workers may also benefit from being able to easily access lower-paid work. For example, I interviewed an Uber driver on continuous oxygen therapy who would have preferred to work from home but who did not own a computer and perceived any sort of sedentary work to be outside of his skillset. He was not familiar with crowdwork, but doing crowdwork on his smartphone could provide him with a way to supplement his income on days when he is unable to drive.

Together, my interviews with disability service providers and disabled workers who are currently doing gig work suggest that there is a need to raise awareness among workers with disabilities about the potential suitability of gig work employment, while also making clear the concomitant challenges and how to mitigate them.

4.5.3 Limitations

My sample was limited in a few ways; addressing these limitations could be a fruitful direction for future research. There is immense variation in disabilities and how they are experienced. While I spoke with people with a range of different disabilities, my findings do not capture all experiences. Second, my findings are based on workers who were willing and able to talk with me, and I may have missed some important voices, such as workers who left the market or considered but never entered it. I believe I was able to mitigate this to some degree by offering multiple

ways to participate, and also interviewing disability service providers and reading online gig work forms. Finally, my recruitment was limited to workers who frequent online forums for gig work, and there may be important differences between my sample and workers who do not utilize these online resources. However, several of my participants had been doing gig work for a long time but were relatively new to gig work forums, and thus, I was able to get a sense of workers' experiences with gig work both before and after they had accessed these online resources.

4.6 Conclusion

This study shed light on the opportunities gig work offers disabled workers as compared to traditional employment, while also highlighting the many challenges they face in doing gig work. I found that the challenges that emerge from gig work features such as algorithmic control and performance evaluation can have an outsized impact on disabled workers, who have to expend a nontrivial amount of invisible labor to mitigate these challenges. I also illustrated how workers who have other marginalized identities in addition to having a disability can face compounding risks that warrant recognition. To address the issues highlighted in this study, I drew on the interviews with workers to put forth several design suggestions for how labor platforms could be more inclusive for workers with a range of needs and abilities.

CHAPTER 5
MARGINALIZATION, INTERSECTIONALITY, AND POWER
ASYMMETRIES IN THE GIG ECONOMY

“I wouldn’t recommend [gig work] as a primary source of income unless you’re really going through hard times.”

Formerly unemployed Turker, Chapter 3

I begin this chapter by discussing some of the key considerations that emerge from studying the experiences of marginalized workers. Then, I bring together findings from Chapter 3 and 4 to illustrate how the various forms of power asymmetries on work platforms disproportionately impact workers who are marginalized. I end by reflecting on the design implications of my findings.

5.1 Gig Work as an Economic Necessity

The gig economy promises to provide workers with flexibility, autonomy, and an easy source of income. Many workers seek out gig work because of the appeal of these characteristics. For example, someone might choose to supplement the income from their full-time job by doing HITs on MTurk in their spare time. Another person may drive for Lyft full-time because they do not want to report to a supervisor and enjoy the freedom of working for themselves. Some of the workers I spoke with—particularly in Chapter 3—fell into this category.

However, not all workers are the same. One of the key distinctions that researchers have drawn between workers is whether they do gig work full-time versus

part-time. As I discuss in Chapter 2, full-timers are economically dependent on the income they earn from gig work, and can thus feel the pressures of such contingent work more acutely than part-timers.

In this dissertation, I have focused on one particular set of workers who are economically dependent on income from gig work: those who choose to do this work not because they find the flexibility or autonomy inherently appealing, but because they have limited or no other viable options to earn income, or are shut out of traditional work in some way. I argue that it is important not only to identify that these workers exist, but to study the ways in which the forces that drive them to engage in gig work impact how they experience the power asymmetries inherent in gig work. Understanding their motivations in greater detail, including the extent to which their needs are met by the gig economy, can illustrate how these workers navigate the challenges of gig work differently to other workers. Incorporating the perspectives of these workers can also deepen our understanding of the gig economy more broadly.

These workers need gig work for two main reasons that both stem from broader experiences of marginalization in society, as highlighted in Chapter 3 and 4. First, they face difficulties in accessing and completing traditional work. For example, they may be located in remote or rural places with little industry or be unable to find a job after being laid off. They may also face discrimination in the hiring process due to a disability, or have to contend with inadequate social structures (such as inaccessible public transportation, or a lack of accommodations in the workplace). As a result of marginalization stemming from long-term unemployment or difficulty finding traditional work, these workers can face reduced life satisfaction, social integration, and poor mental health [Pohlan, 2019]. Gig work poses rela-

tively fewer barriers to entry, and thus provides them with a way to access income when disenfranchisement has excluded them from other venues.

Second, the flexibility of gig work is a must-have for many marginalized workers for reasons beyond simply enjoying a flexible schedule. For example, a worker who is of low-socioeconomic status and has limited upwards mobility may need the ability to fit additional odd-jobs around a traditional job that is low-paid, such as a minimum-wage retail job. In Chapter 3, some Turkers accessed MTurk using their smartphones during lulls in their service industry jobs. Similarly, in Chapter 4, many disabled workers were unable to work traditional, scheduled shifts because they needed more flexibility than these afforded them: some needed flexibility to attend medical visits (such as to receive regular infusions), some had illnesses with unpredictable flare ups, and others had physiological limits on how much work they could do at one stretch of time without risking their health. Gig work allowed these workers the flexibility they had not received in traditional workplaces that was imperative for them to be able to participate in the workforce.

Overall, part of the reason these workers turn to gig work as a primary means of income is because traditional work is exclusionary and not adaptable to their needs. Thus, their experiences of being disenfranchised in society are partly why gig work is a relatively gainful opportunity for them in a way that it would not be for workers who are not similarly marginalized. While some of these workers expressed thankfulness that gig work had given them the opportunity to earn much needed income, it was not an ideal option for any of them. When workers experience marginalization that is layered on top of economic dependence on gig work, they can face significant disadvantages in the course of their work.

One of the main ways this plays out in gig work is the degree to which work-

ers can be discerning about the work they do and protect themselves from risk. Reliance on gig work as the *only* source of potential income creates a tension for workers between earning money and doing work that could put them in harm's way. Several Turkers in Chapter 3 spoke about being “desperate for a buck” when they first started relying on the platform for income. As a result, how much a HIT paid was a primary factor when they were deciding whether or not to complete a privacy-concerning HIT, leading them to ignore the risks of disclosing personal information. Similarly, many disabled workers in Chapter 4 experienced a tension between protecting their health and maximizing their earnings. When faced with tasks that were inaccessible or difficult to complete, some workers chose to push through them at the cost to their health. Others continued to do offline gigs during the COVID-19 pandemic. In all of these cases, if a worker decided to protect his or her privacy, safety, or health, it often meant forgoing potential earnings that could not be replaced by other sources. Choosing between income and self-protection is likely a difficult decision for many workers, but for workers who have dire need for income from gig work and cannot simply quit and take up an alternate job, this decision is more of a foregone conclusion.

5.2 Intersectionality in Gig Work

These decisions can be additionally complicated for workers who face multiple forms of marginalization, and who, as a result, must navigate new intersectional risks and challenges when completing gig work. Many workers that I interviewed in Chapter 4 faced complex, layered risks on the basis of disability, race, gender identity and expression, sexual orientation, and/or socioeconomic status.

Some workers faced marginalization based on economic disenfranchisement and socioeconomic status as well as a disability; their experiences were often markedly different from workers who were marginalized on the basis of disability alone. For example, a worker I discussed in Chapter 4 drove for Uber because he had a high school education and no training to get a desk job, even though he said he would be ideally suited to a sedentary job on account of his COPD and need for continuous oxygen therapy. As a result, he earned less than \$25k a year from SSDI and Uber, and was still driving during the COVID-19 pandemic to earn income despite being at high risk for the coronavirus due to his respiratory condition. His socioeconomic status coupled with his disability made his experience markedly different from another worker I spoke with who also worked from home due to a disability. In the latter's case, being a highly specialized technical writer enabled her to earn \$95k part-time on Upwork. While she was cut off from participating in traditional workplaces due to a lack of accommodations for her disability, she was able to leverage her skills and education to be financially stable.

Other workers faced multiple forms of identity-based marginalization. These workers may seek out gig work in response to one set of needs, but may consequently find that another identity that they hold makes gig work additionally difficult. For example, in Chapter 4, I discussed a Lyft driver who had PTSD, panic disorder, and generalized anxiety disorder who drove for Lyft because they had been unable to hold a traditional job. Since they did not have health insurance, their mental health conditions were untreated at the time of our interview, and the income they earned from gig work was vital to their everyday life. While this aspect of their experience mirrored other disabled workers who I had interviewed, they also faced new and complex challenges on account of identifying as non-binary and gay. They were frequently sexually harassed during gigs, which took a toll on

their mental health and exacerbated their existing conditions, and also had to engage in additional invisible labor to mitigate risks to their safety. I spoke with a number of people of color and women who held similar concerns about safety and had experienced harassment or discrimination on the basis of multiple marginalized identities. In contrast, workers who were white men generally did not have safety concerns or experiences with harassment; while they faced disability-related challenges while working (such as receiving negative ratings from passengers for not lifting heavy items), they did not face additional sources of discrimination on account of their race, gender identity, or gender presentation.

In addition to being an additional burden to navigate for workers, in some cases, intersectional challenges and risks can force workers to cease working on gig platforms altogether, either temporarily or permanently. For example, the Lyft driver who identified as non-binary temporarily stopped driving after being threatened and harassed. Similarly, another driver with a disability had felt compelled to stop working during the COVID-19 pandemic because, as a woman of color, she experienced several negative interactions with passengers, and she was concerned that passengers would argue with her over the directive to wear masks during rides.

Based on these findings, I argue that a homogenous view of ‘the gig work experience’ obscures the wide variation within workers, and overlooks the experiences of those who are further marginalized on the basis of race, gender, sexual orientation, disability, and other factors. It is vital that researchers, designers, and policymakers take the needs and experiences of marginalized workers into account when studying the gig economy so that their proposed theories, technological designs, and policies are more equitable and accessible.

5.3 Power Asymmetries and Unequal Impacts

Not only is it important to represent the voices of marginalized populations through intersectional research, but Choo and Ferree argue that it is also necessary to identify the processes that create and replicate structural inequalities [Choo and Ferree, 2010]. One of the key structural inequalities experienced by marginalized workers that I have already discussed is that they are often systematically shut out of opportunities in traditional workplaces—for example, because these spaces are typically exclusionary of workers who cannot work a 9-to-5 due to a disability, or of workers who do not have access to transportation or are located in remote areas. In the context of gig work, inequality is also reproduced in the design of gig platforms, which are set up without consideration for workers with diverse needs.

In Chapter 2, I discussed the many ways in which power asymmetries are perpetuated on gig platforms: workers are subject to algorithmic management and detailed monitoring, they have limited information about work processes, they are reliant on customer ratings, and they are excluded from traditional protections as independent contractors. In this section, I discuss how these power asymmetries disproportionately impact marginalized workers.

Based on my findings in Chapter 3 and 4, I argue that workers who are marginalized experience these power asymmetries differently as compared to workers who are not marginalized in two ways: (1) the existing challenges in gig work can be amplified for marginalized workers, and (2) marginalized workers can experience new challenges altogether during the course of their work on the basis of social markers of difference. In what follows, I discuss each defining characteristic of gig work that contributes to the power asymmetries experienced by workers,

with a focus on how the impacts of these asymmetries have an outsized impact on workers who are marginalized.

5.3.1 Algorithmic Control and Evaluation

Algorithms dictate many aspects of the work process, but the ways in which they function are often opaque to workers. This makes it necessary for workers to expend energy in deciphering algorithmic logics, and also makes it harder for them to resist algorithmic decisions.

The opacity around what is involved in any given task obscures any concomitant risks workers might face. This is of particular consequence for marginalized workers, as they often have the most to lose when faced with risks. Many of the risks to health and privacy that marginalized workers feel compelled to take due to economic need are exacerbated because opaque task designs prevent workers from knowing, assessing, and managing those risks up front.

Many task-related decisions are executed by algorithms, such as the routes and packages assigned to individual delivery drivers. Many workers are frustrated that algorithms make these choices on their behalf. However, for marginalized workers, the inability to control these tasks can give rise to new challenges altogether, such as around safety and ability. For example, disabled workers are unable to pre-select tasks that are accessible and within the scope of their physical abilities (such as opting to deliver only light delivery packages), and are also unable to customize tasks to better match their abilities (such as opting to deliver curbside instead of to a customer's door due to a mobility impairment). Similarly, women and people of color can feel unsafe delivering in certain neighborhoods, and the inability to

control this aspect of delivery tasks can be additionally challenging for them. In some cases, since workers are unable to exert some degree of control over the type of work they complete, they ultimately become excluded from doing these tasks altogether.

When algorithms evaluate workers' performance, workers do not have the ability to discuss nuances about their performance. For example, in a traditional work context, a worker might be able to discuss extenuating circumstances that negatively impacted their work performance on a particular day with a human supervisor, who may err on the side of leniency. This leniency is not offered by algorithmic managers. While problematic for all workers, workers who are marginalized may have to contend with algorithmic penalties on top of other challenges that they have to navigate, such as around health or safety. For example, I interviewed some workers who needed to cancel scheduled tasks because of severe flare-ups of their illnesses, or who were inactive on a platform for a while due to health issues. In these cases, their ratings were penalized by algorithms, and they also took longer to receive high-paying tasks once they rejoined the platform.

5.3.2 Customer Evaluations

Workers are also subject to customers' evaluations of their performance. As discussed in Chapter 2, many workers are frustrated that customers are able to rate them at their discretion. Marginalized workers who face discrimination on the basis of various markers of social difference can encounter two main challenges due to the reliance on customer evaluations in gig work: they can be negatively impacted by customers' prejudices, or face pressure to meet customers' expectations and be negatively reviewed if they fall short.

There are no safeguards in place to ensure that discrimination and bias do not seep into customer evaluations. Prior work suggests that, in at least some gig economy contexts, women earn less than men, and also receive harsher ratings than men [Greenwood et al., 2019, Foong et al., 2018]. My research builds on this work to find that workers also face bias on account of race and disability. Customer biases can impact workers' experiences completing gig work through negative social interactions as well as through potentially negative ratings.

The concern of potential bias and discrimination can also influence marginalized workers' interactions with customers. I spoke with several workers of color and workers with disabilities who were concerned that they would be reviewed poorly by customers on the basis of their race or disability. For instance, some workers took care to avoid revealing their disability to avoid discrimination, such as a freelancer who ensured that her wheelchair was not visible in her profile picture. Others faced the difficult decision of whether or not to disclose their disabilities to customers—risking potential discrimination—to receive accommodations, such as flexible deadlines on Upwork, or to avoid negative consequences, such as a poor review for not lifting a suitcase as a rideshare driver. Similarly, several workers of color were concerned that their interactions with customers could be tinged with bias, either in the form of negative ratings or unpleasant social interactions. They took several steps to mitigate these risks, such as wearing nicer clothes, and being overly agreeable with customers. In this way, even when workers do not directly face discrimination, they have to put in a significant amount of invisible labor into minimizing and avoiding potential discrimination.

To receive high ratings, workers also feel pressure to meet customers' high expectations. For example, rideshare drivers lift suitcases for passengers and provide

them with amenities, as well as expend emotional labor to make interpersonal connections with passengers. The norm among workers to deliver additional services and the high expectations customers place on workers act as a vicious cycle that excludes workers who are unable to play the game. For example, drivers in dire financial need may not be able to make additional investments to offer amenities such as phone chargers and water bottles to passengers. I spoke with several drivers who had difficulties meeting passengers' expectations because their disabilities prevented them from lifting heavy items into and out of the trunks of their cars. In this way, while dealing with customers' expectations can be challenging for all workers, it can place undue pressure on marginalized workers who are precluded from meeting these expectations due to some constraint, be it financial or physiological.

The power customers wield over workers in the form of ratings can also compel some workers to prioritize meeting customers' expectations over their own privacy, safety, or health. For example, in Chapter 3, Turkers were concerned that engaging in privacy-protective behaviors could risk their work being rejected by requesters. Similarly, in Chapter 4, workers with disabilities regularly pushed past physical pain to avoid negative reviews or judgements from customers. These pressures are likely to be more keenly felt by those who are reliant on income from gig work or struggle to meet their income targets on the platform. For example, in Chapter 3, Turkers who were not in dire financial need were able to be more discerning about the HITs they completed, and did not place a monetary value on their privacy. Workers who are able to be more discerning are usually more skilled or experienced, and when they pass up problematic tasks, these tasks are likely to be ultimately taken up by the most in-need workers on the platform who cannot be as discerning in the work they complete.

Challenges stemming from customers' prejudices or high expectations can have an outsized impact on marginalized workers. Since many of these workers are cut off from alternate forms of employment, they engage in gig work out of necessity. If they are unable to maintain consistently high customer evaluations, they can lose access to one of the only forms of employment available to them.

5.3.3 Protections and Connections as an Independent Contractor

Since workers are classified as independent contractors, they do not have the protections that are in place in traditional workplaces, and they also have little recourse when they run into issues or are treated unfairly. These issues are concerning for all gig workers, but can be additionally problematic for marginalized workers, who may be more likely to face challenges or unfair treatment during the course of their work.

In Chapter 4, I found that marginalized gig workers face bias and harassment that impacts their experiences on the basis of race, gender identity, sexual orientation, and disability. For example, workers reported feeling unsafe due to their race or gender, facing harassment due to their gender or sexual orientation, and being negatively reviewed due to disability-related constraints that were not related to the task at hand. In all of these cases, in a traditional workplace, workers are typically protected by anti-discrimination laws that protect them from the negative consequences of bias. Gig workers do not have these avenues open to them. As a parallel to Human Resources, gig workers can report such incidents to the Support team on most platforms, though my research on gig work forums and

my interviews with workers suggests that these interactions often do not result in successful or productive resolutions for workers.

The burden to stay safe and mitigate risk during work also falls squarely on the worker. This is difficult for all workers, but may have an outsized impact on marginalized workers who are already in dire financial need or more susceptible to risk (e.g., due to a disability). For instance, the Turkers I interviewed in Chapter 3 had to take several steps to stay safe while navigating privacy risks on the platform, and they also shouldered the additional task of making the platform safer for other workers, such as by using the “report” function to flag Terms of Service violations, posting about privacy-violating tasks on MTurk forums, and reviewing problematic requesters on worker review sites such as Turkopticon. This burden of enforcing privacy violations requires a significant amount of labor, the costs of which may be more acutely felt by workers who are in dire financial need and can ill afford to spend additional time on unpaid activities.

Similarly, in Chapter 4, I interviewed several people who were doing offline work during the COVID-19 pandemic, such as ridesharing and delivering groceries; they had chosen to work despite facing elevated risks because they needed the income. However, they had all needed to invest in buying their own personal protective equipment (PPE), such as masks, gloves, and disinfectant wipes. In a more traditional work context, the burden of supplying these basic necessities should fall on employers, but in gig work, workers—many of whom are already financially constrained—have to shoulder these additional expenses.¹

By virtue of being independent contractors who are physically dispersed, work-

¹As I note in Chapter 4, while some platforms had rolled out initiatives to distribute PPE to gig workers, many workers had not received these, as per my interviews and perusal of posts on social media.

ers do not have offline communities that they can easily tap into for support. While workers may be able to gather around the water dispenser in an office to discuss common issues, gig workers have to put in the effort to organize their own communities. There are several communities for gig workers online; however, they may not be open to workers of all stripes. For example, online MTurk forums have been exclusionary to workers outside of the United States [Gray et al., 2016]. My research suggests that these forms of exclusion may also extend to other marginalized workers. For example, some workers I interviewed had not found the forums to be helpful, and one worker received overtly negative feedback when she posted about being sexually harassed by a passenger due to her sexual orientation. My review of social media posts by workers with disabilities also indicates that these posts commonly receive discouraging and aggressive comments in addition to helpful and supportive feedback. For example, commenters can invalidate or question posters' disabilities, or tell them to stop complaining or quit working for the platform. Like some of the workers I interviewed, at least some subset of workers turn away from the forums after negative interactions. In this way, marginalized workers may have access to fewer support systems to deal with the challenges of gig work.

Being physically dispersed may not only limit workers' access to support systems, but may also exacerbate the social exclusion that some workers already face on the basis of marginalization. For example, some disabled people can become socially isolated because of structural inequalities that limit their participation and inclusion in social life. Since gig work is a fundamentally solitary activity without coworkers or community, it can perpetuate this isolation for those marginalized workers who are already cut off from social interactions. The way this plays out is likely dependent on the type of gig work in question. For example, I interviewed a 70 year old food delivery worker with depression who had been extremely lonely,

and she was excited to do gig work because it allowed her to interact with people and gave her a reason to leave her house. In contrast, I also spoke with an MTurk worker in his twenties who was also lonely and stayed at home due to a disability. When I interviewed him, he reflected on how it was nice to talk to a human after a long time, and that he would have done the interview without compensation just for the social interaction. Workers who work exclusively online—such as crowd workers—are likely to be more at risk of social isolation than workers who do gigs offline. While social isolation is a concern for all workers, workers who have experienced marginalization in broader society are likely to feel this isolation more acutely than workers who have more opportunities for social interaction and inclusion.

5.3.4 The Nature of On-Demand Piecework

Despite all of the challenges outlined so far, the on-demand, one-off nature of tasks in the gig economy can make this work appealing to workers. However, this characteristic is not without its disadvantages.

The many piecemeal tasks that make up gig work all individually pay very little. This can lead workers to intensify their efforts to complete enough tasks to earn a sufficient income through gig work. For marginalized workers, completing a sufficient number of tasks can be a challenge for reasons that may not apply to non-marginalized workers. Not all workers can invest enough time into gig work to make it a viable or comfortable source of income. For example, I interviewed some disabled workers who could not work longer than a set number of hours without adversely impacting their health. Similarly, some disabled workers take longer to complete tasks due to certain physical impairments, and thus they earn

comparatively less than non-disabled workers for the same amount of time worked.

While the flexibility of gig work is a key appeal for workers, there are limits to this flexibility. For instance, some workers with disabilities encountered challenges when they needed to cancel scheduled tasks due to a flare-up of symptoms, and cancelling work, even for health reasons, could lead to negative ratings. While all workers are subject to harsh penalties for any perceived issue in their performance, marginalized workers who need this flexibility may be disproportionately impacted by these policies.

Similarly, while workers ostensibly have a wide, flexible range of times that they can choose to work, this flexibility comes with a key caveat that, for many gigs, it is more lucrative to work at certain time periods than others. However, some workers may be limited in their ability to work the shifts that are most lucrative on account of challenges they face due to a social identity. For example, Friday and Saturday nights are commonly a lucrative time to drive for ridesharing platforms, as the demand for ridesharing is high when people are exiting bars and nightclubs. However, some workers do not feel safe driving during these times on account of their race or gender, or the intersection of both. Thus, due to marginalization or other identity-based reasons, these workers face elevated risks when doing certain types of work as compared to other workers, and have to forego maximizing their profits in order to ensure their safety.

5.4 Implications for Labor Platforms

Understanding the ways in which power asymmetries adversely impact the experiences of workers—with outsized impact on workers who are marginalized—provides

some instructional implications for how labor platforms can be structured to be more equitable and inclusive for all workers. I have already discussed design implications at the end of Chapter 3 and 4 that relate to the specific context of each study. In what follows, I briefly discuss a few key overarching implications for labor platforms that would be beneficial for all workers but could also rectify some of the ways in which marginalized workers are additionally disadvantaged.

Increased Transparency

Making work processes more transparent would be helpful for all workers. For those who are marginalized and have additional considerations that they need to take into account in order to complete tasks, greater transparency would provide them with the agency to adapt work to their particular situations and to protect themselves from risks. Upfront transparency would also reduce the invisible labor these workers have to expend in trying to navigate these decisions with limited information, and would prevent them from facing penalties from cancelling tasks that they are unable or unwilling to complete.

Increased Worker Control

Improving transparency goes hand-in-hand with increasing workers' control over their work. Workers need to have some degree of control over work-related decisions in order to better match work to their needs and abilities; for marginalized populations who may have additional needs around how they complete work (e.g., in terms of accessibility or safety), having the ability to adapt some aspects of their work to their needs would make work platforms more inclusive of a wider range of people.

Examining Evaluation

Workers are currently monitored and evaluated by algorithms and customers and have little recourse when their evaluations are unfair. There need to be some checks and balances in place on the evaluation process of workers' performance. For example, workers should be supported in arbitrating issues of conflict with customers, or be able to flag biased reviews so that they can be reviewed and potentially removed from their record.

Providing Additional Protections

Given their status as independent contractors, workers do not receive traditional labor protections, and have to shoulder the responsibility of protecting themselves from work-related risks. Labor activists and workers have brought several lawsuits against gig companies in an attempt to reclassify gig workers as employees [Cherry, 2016]. However, while many gig workers have pushed for this reclassification, they are also concerned about negative repercussions from being classified as employees, such as potentially losing the flexibility to dictate their own work schedule [Dubal, 2019]. Any regulatory efforts must recognize that maintaining this flexibility is not simply a “nice to have” feature that is expendable in the negotiation for more financial security. Instead, flexibility is a crucial feature of gig work for a subset of workers, including the many workers with disabilities that I interviewed. The inclusion of these workers in the broader workforce is predicated on this flexibility, as explained by one of my interviewees who said, “there are a lot of people who are sick, who are caretakers, who would not be able to work at

all if they were forced into a W2 job.”²

The lack of protections and benefits can also be additionally difficult for marginalized workers. For example, I interviewed many disabled workers who did not have health insurance and had to negotiate risks to their health while working, such as during the COVID-19 pandemic. In the absence of outright reclassification, workers still need to have access to resources (such as PPE during the pandemic) so that they do not shoulder the financial burden of protecting themselves while carrying out work-related duties.

5.5 Improving Inclusion in Traditional Work

Understanding why gig work can be an attractive—albeit less than ideal—option for marginalized workers also provides insight into how traditional workplaces could copy some of the strengths of gig work to become more inclusive of a wider range of workers.

As both chapters have demonstrated, many workers who are disenfranchised in some way choose to do gig work for the flexibility it offers, such as the timing and location of work. In many cases, the reason workers have to do gig work is because this flexibility is often not offered in traditional workplaces. Providing workers with greater flexibility (e.g., to work from home) in traditional workplaces would significantly improve inclusion. One of the workers I interviewed had a Master’s degree in social work but had been unemployed for three years after graduating with her degree. She was frustrated that the way traditional work was set up

²In the U.S., workers who are classified as employees typically receive a W2 Form from their employers that reports their annual wages and the taxes withheld from these earnings.

rendered it essentially inaccessible to her, saying, “I can just as easily manage people’s case files from home, but they want in-person exchanges, which is fine, but they offer no room for leniency for blind people. We have one of the highest rates of unemployment in the country.”

Increasing flexibility would not only be instrumental in including access to work for workers with disabilities, but it would also provide opportunities for non-precarious work for workers in rural or remote areas. It is worth noting that people with disabilities have been advocating for accommodations to work from home for years. The COVID-19 pandemic has demonstrated that working from home is a feasible option for many industries. Retaining some of these flexible options after the pandemic would be a key way to improve inclusion in the workplace.

5.6 Conclusion

This dissertation has presented two studies on how various forms of marginalization and the power asymmetries in digitally-mediated labor come together to create challenges for workers.

In the first study, I showed that a significant amount of invisible labor when doing crowdwork is comprised of privacy management practices. This study demonstrated that economic considerations are a key factor in how crowdworkers decide whether or not to complete privacy-invasive tasks. Problematically, my findings indicated that crowdworkers can feel compelled to complete tasks despite their privacy concerns in order to earn needed income. I also highlighted several ways in which the power asymmetries in crowdwork cause workers to risk their privacy during work or limits their ability to engage in privacy-protective behaviors, including

the low pay rate of individual tasks, limited transparency around each task, and the fear that obscuring or withholding personal data could cause completed work to be rejected.

The second study highlighted that the relationship between disabled workers and gig work is fraught with tension. Gig work provides them with the opportunity to earn income that is both easy to access and flexible to work for, and helps them avoid some of the discrimination and exclusionary practices they have faced in traditional workplaces. However, this study also showed how disabled workers face a range of challenges in accessing and completing work in a wide variety of gig economy jobs. I highlighted that many of these challenges stem from power asymmetries in gig work that disproportionately impact disabled workers. This chapter identified two main types of challenges that disabled workers must contend with. First, they have to navigate challenges around accessibility that stem from features such as algorithmic control and a lack of transparency around tasks. Second, they also face penalties on the basis of disability due to the performance monitoring and evaluation practices in gig work. Further, how many disabled workers experience inequalities in digitally-mediated labor is not only shaped by disability, but also by other identities that intersect with disability, including race, gender, sexual orientation, and socioeconomic status. I argue that the challenges disabled workers face are particularly problematic given that many of them are economically disenfranchised or shut out of accessing alternate forms of employment. Their consequent dependence on income from gig work can further disenfranchise them and restrict their ability to exercise discretion in the tasks they choose to complete.

Together, I demonstrated how economic need and disability both further complicate how digitally-mediated labor is experienced, in terms of the jobs people do,

how they do them, and how they make decisions about protecting themselves from risk. I highlighted that workers at the intersection of several identities that face marginalization—such as being low-income, having a disability, or being a racial or sexual minority—can face compounded and additionally complicated challenges in digitally-mediated labor. As a result, I argue that the unique needs and experiences of marginalized workers must be taken into account when designing and regulating on-demand labor platforms to make the gig economy inclusive, equitable, and safe for all workers. I illustrated how several power asymmetries on work platforms exacerbate challenges faced by marginalized workers, and offered several suggestions for how these can be mitigated to improve the experience for a diverse set of workers.

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