Delivery Work and the Experience of Social Isolation

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The isolating nature of platform-based work, particularly gig work involving deliveries, has created unintended consequences over how workers engage with peers, friends, family, and society in general. We performed a qualitative study involving interviews with 21 delivery workers in Bangalore, India to understand how workers experienced and responded to social isolation perpetuated by the nature and daily function of their work. We found that the stigma and individual nature of app-based delivery work restricts access to inter-relational and instrumental support. As a response, workers organized peer networks for both companionship and emergency assistance. We analyze how the cultural context of India heightens these experiences, and offer ideas for mitigating the risks of isolation as a result of gig work.

CCS Concepts: • **Human-centered computing** → **Empirical studies in HCI**.

Additional Key Words and Phrases: Gig work; Isolation; Delivery work; Global South; India

1 INTRODUCTION

The individualization and flexibility afforded by gig work has drastically changed the role employment plays in shaping day-to-day life. Gig work platforms market themselves as offering choice over how much and when to work, accommodating complex personal schedules and part time salaries [38]. But, in exchange for this non-traditional structure, gig platforms bar workers from basic protections, like health insurance, minimum wage, and overtime pay [18, 19, 57, 69]. By having workers choose between flexibility and infrastructural benefits, gig work platforms encourage those in need of immediate income to pursue unstable employment that inherently isolates them from traditional sources of social support [9, 50].

We examine the experience of social isolation in a common, yet understudied, form of gig work—app-based delivery work. Delivery work involves having an app assign workers to deliver items, typically food, from providers (e.g. restaurants) to customers. In these contexts, workers are left to cope with the uncertainties of working as independent contractors without the structural support and protections afforded to traditional employees [8].

By performing work alone and at odd hours of the day, delivery workers are restricted from strengthening relationships with friends, family, and peers. The paper addresses the following question: *How do delivery workers experience and respond to social isolation as a result of their work?*

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We argue that in delivery work, there are fewer opportunities to access social support, which influences overall wellbeing and integration in society [12, 40, 61]. Social isolation is defined as not being able to build meaningful interpersonal relationships, and exclusion from *inter-relational* and *instrumental* support [40]. Inter-relational support fosters feelings of integration, involvement, and acceptance [40, 46], while instrumental support leads to practical outcomes, like tangible help and advice [40, 46]. The notion of social isolation has received little attention in studies of contemporary gig work [67] and in the Global South [53], although a significant body of past work on isolation in the workplace highlights risks of depression, peer rejection, and disconnect from support networks [13]. These challenges are further exacerbated in India where, as in many parts of the world, particularly vulnerable populations are pushed into gig work to make ends meet [4, 20, 39, 42, 45].

Our study took place in the context of India, where gig work platforms have created over two million jobs since 2014 [1]. This, combined with unprecedented unemployment rates [32] and the increasing informal nature of work [68], has poised gig work platforms as a central part of the Indian economy. However, the public perception of gig work affects beliefs about whether it can provide viable careers and employment [29]. Given India's patriarchal society of placing men as the main breadwinners for their families [54], we explore how delivery workers identify, and often isolate, themselves in the context of these larger social structures.

Our findings highlight strategies delivery workers use to combat social isolation—some of these strategies include engagement in and development of peer networks in person and online. We refer to these as positive examples. Other strategies involve internalization of the problems emerging from the various forms of isolation–these include hiding work identities from friends and family or entering into precarious financial agreements, which we interpret as negative responses. We contribute an understanding of 1) the risks to personal and professional wellbeing when isolated and stigmatized by friends, family, and general society, and 2) how restriction from instrumental support negatively impacts the physical security of delivery workers. Understanding these conditions is especially critical during times of crisis, like the COVID-19 pandemic, when vulnerabilities have been further exacerbated among gig workers [10].

2   RELATED WORK

We apply theories of social isolation to frame risks of isolation in gig work. We expand research on gig work by contributing literature on the understudied population of delivery workers, especially in the Global South. While there has been much research on isolation among white collar workers who work remotely, few have explored the experience of workplace isolation in the informal context of gig work. Together, research on gig work, social isolation, and isolation at work provide a foundation for understanding delivery worker experiences in India.

2.1   Independence and Precarity in Gig Work

Gig work, also known as platform work [52], is made possible when a platform facilitates the completion of a task by outsourcing it to an undefined large network of people, typically directly assigning individual tasks through the digital platform [30, 66]. Gig work platforms recruit workers through the promise of independence and flexibility [31] as well as a pathway to entrepreneurship [56]. Yet upon further scrutiny, these platforms have been shown to systematically reduce earnings for workers, and act more like 'shadow' corporations that rely on a transient workforce to become prominent in the economy [21]. Others find that the always-on nature of work caused by targets and incentives leads to burnout [26, 42, 80].

As more people join these platforms, a new class of workers has emerged, brought together by the on-demand and precarious nature of their work [25]. This largely heterogeneous population

[28, 77] can be categorized under digital and location-specific labour [24, 29]. While the former allows workers to perform work remotely through online micro-tasks like crowd work [25] or freelance projects [70], the latter typically requires some form of physical contact with customers [24]. We focus on an the understudied population of location-specific gig labour—delivery work.

2.1.1 Delivery Work. Urban Indian cities have built a strong economy around app-based delivery services in the last few years, primarily to serve the needs of middle- and upper-middle class consumers. Several start-ups have started delivery services for a range of items, including groceries, food, and personal concierge services that will deliver anything from one part of a city to another. Our focus on delivery work is concerned with location-based labor where delivery workers physically engage with a variety of stakeholders (e.g. restaurants, customers) to complete their assigned tasks. The physical nature of delivery work creates unique challenges and risks unlike those experienced in purely digital forms of gig labor [44]. Delivery work is also different from ridesharing because delivery workers have a different last-mile problem, in that they are responsible for handing over goods to an individual, which often requires finding homes in poorly labeled neighbourhoods, or dealing with apartment security, each of which involves uncertainties in managing time taken per job. Delivery workers typically travel with more vulnerable modes of transportation, such as a motorbike or bicycle [31]. Unlike a car, these forms of transportation typically require physical strength to cycle long distances and lack various safety protections on the road [23, 27]. Delivered goods also require specific forms of care (such as food needing to be kept warm, cold, or balanced for spillage) or involve carrying several bags precariously attached to the worker's body, to optimize drop tasks (see Figure 1).

Fig. 1. Delivery worker in Bangalore (credit: authors)

The majority of research on delivery work has taken place in Europe and Australia [23, 27, 31]. In these contexts, workers have experienced lack of agency in deciding their schedule due to increased incentives [31]. Job quality was also found to be heavily dependent on workers' at-home circumstances, such as number of dependents, age, and income requirements [23]. In response, workers in these areas have begun to mobilize for better wages and protections [64, 72, 73]. We contribute to the nascent yet critical area of delivery worker research by studying how local social structures in the Global South exacerbate risks of on-demand labor through the experience of social isolation.

2.2 Social Isolation at Work

The concern with isolation in the workplace has grown over recent years as the individualization of risk and insecurity become common in late-modern work [6]. Workers are taking on more risk and responsibility traditionally absorbed by employers [21, 49], and this challenge is only getting worse with gig work where workers are not afforded protections of traditional employees [8]. While many people have studied the experience of isolation in the workplace [43], few have studied how the nature of one's work influences isolation from friends, family, and society in general. We frame our study in the context of social isolation to understand how the flexibility and independence of gig work may come at a social cost.

Social isolation is defined as the exclusion from meaningful relationships that can offer inter-relational and instrumental support [40]. Inter-relational support refers to activities between people that can provide feelings of integration, involvement, and acceptance (e.g. companionship, emotional support) [40, 46]. Instrumental support refers to activities that have a practical outcome, like providing tangible help (e.g. doing chores, lending finances) [40, 46]. Together, inter-relational and instrumental support constitute two main benefits to social relationships. Lack thereof has been shown to cause feelings loneliness, depression, and low self-worth [58, 62, 78]. While other various personal factors influence the likelihood of social isolation, including age, sex, health conditions, etc. [40], we focus on the effect of one's position in the labor force.

Existing work examining the intersection of isolation and work focuses on the experience of isolation from work colleagues. This is particularly prevalent among teleworking employees, those who work virtually with limited physical interaction with peers [22]. Similar to teleworking, delivery workers are provided assignments digitally and do not perform their work in a central office location. Unlike many teleworkers, the tasks of delivery work are highly individualized and not team based, which might make the nature of delivery work even more isolating than previously studied work environments. Lack of physical interaction with colleagues leads to lower levels of personal networking, informal learning, and mentoring from peers [14, 43], which has been shown to contribute to lower job performance [22]. While the majority of literature on workplace isolation focuses on the disconnect between work peers, we study how the nature of gig work hinders personal relationships outside of work critical for feelings of self-worth and accessing resources.

We expand on literature on isolation at work [15] and social isolation [40] to understand how the structure and stigma of delivery work reduce opportunities for inter-relational and instrumental support. While there are some reports connecting gig work to social isolation [67], few have studied what aspects of the job might cause isolation, the different ways in which workers experience these effects, and how they subvert these risks.

3 METHODS

3.1 Participants

We performed 21 interviews with delivery workers affiliated with three delivery related companies. For protecting participants' anonymity, these are referred to as Foodstop (17 participants), Deliverystop (1 participant), and Gourmetstop (3 participants). Foodstop and Gourmetstop were both predominantly food delivery platforms, while Deliverystop was a platform that also delivered a large range of products from food to car keys, etc. Foodstop and Gourmetstop are seen as competitors in the market. Workers often have experience in working for both apps, but typically not at the same time. All delivery partners in this study were working full time for one of these platforms. Respondents had generally worked as delivery partners from 6 months to four years, and their ages ranged from early 20s to the late 30s. In general, delivery work tends to be done by younger males, who are typically required to have their own vehicles. From our sample, seven

had completed a college degree or higher. Eleven participants were from the state of Karnataka, while ten had migrated into the city for work. Because of the diversity of backgrounds, thirteen interviews were performed in Kannada, two in English, five in Tamil, and one in Hindi. Most participants had performed other types of work before delivery work. However these previous jobs varied widely, including work in the tech sector, sales, farming, and teaching. All participants were male, as is the norm with delivery work in India.

3.2 Data Collection

3.2.1 Context. Recruitment was performed at three common food pickup spots, known as "cloud kitchens." Cloud kitchens are kitchens that are created for delivery apps. In the case of Bangalore, cloud kitchens exist in clusters typically at the base of small malls and work buildings. Most cloud kitchens were affiliated with one delivery platform. We found that delivery workers typically waited around cloud kitchens for potential orders between 3-6pm when order deliveries are slow. These cloud kitchen recruitment locations were located in the neighborhoods of Koramangala, Electronic City, and BTM Layout, places with large upper-class populations who were more likely to place food delivery orders. We chose these three places because they were some of the most popular food delivery sources in Bangalore, and represented three different types of neighborhoods: Koramangala is in the middle of a commercial area with lots of restaurants; BTM Layout is in the middle of a largely residential area with some commercial establishments; and Electronic City is located in a large IT sector office area. The cloud kitchens in BTM Layout and Electronic City had a predominantly Foodstop population of delivery partners, while the delivery workers at Koramangala had workers from Deliverystop and Gourmetstop. Unfortunately, due to the COVID-19 pandemic, we were unable to spend as much time at the other cloud kitchens affiliated to Gourmetstop as originally intended. Recruiting and performing interviews with workers at cloud kitchens ensures that workers do not lose jobs, since the app assigns work based on proximity to the pickup location.

3.2.2 Procedure. One, or sometimes two researchers (authors here), approached workers in person at the cloud kitchens by stating that they were working on a project to better understand the experiences of delivery workers. The primary interviewer in this project had past work experience with delivery workers as a researcher and in collectivization efforts, which helped build rapport during initial conversations. Interviews lasted on average 30 minutes (20-40 minutes) depending on the worker's availability. Our initial interview protocol included questions ranging from their experiences with the daily work issues, including the delivery process to questions contextualizing their work to their daily social, economic, and cultural lives. We performed a first round of interviews with 5 people, during which participants elaborated on the topics of public perception of delivery work, family dynamics, and feelings of social isolation. The rest of the interviews then further focused on how these perceptions affected the way delivery workers lived and worked. We have added our final interview protocol in the appendix. Interviews were performed from mid-January to mid-April 2020. Since our last six interviews occurred during the COVID lockdown, they were performed over the phone and included questions about lockdown-related coping. Respondents were offered 500 Rs ($6.77) compensation for interviews ranging from 20-40 minutes, which was estimated to be about eight times what they would make performing delivery work for the same amount of time. Overall, 15 interviews were conducted in person and 6 over the phone. All interviews were transcribed and translated into English. The study was IRB-approved.

3.3 Analysis

We approach the data analysis with open coding [59] to identify broad themes around the experiences of performing delivery work. This initial round of coding identified high level themes, such as social isolation, vulnerability, and shame. After reviewing literature in each of these areas, we found that frameworks of social isolation most accurately described the worker experiences in the findings. This background research combined with initial open coding informed our research question: How do delivery workers experience and respond to social isolation as a result of their work? Following Machielse's definition of social isolation [40], we applied protocol coding [59] to identify instances where workers expressed experiencing or lacking inter-relational and instrumental support as a result of their job. We then returned to open coding to identify sub-themes identifying the causes of and responses to these moments. Throughout this process, two researchers worked together to first discuss the transcripts, performing the first round of open-coding together. They then worked together to code a portion of the data in the second and third round of coding, while one researcher finished coding the rest of the data after agreement was established. Any disagreements in coding were resolved through further elaboration of the context and participant background.

4 FINDINGS

Interviews with delivery workers unveiled how experiences of social isolation shaped how they related to friends, family, and work peers. First, workers experienced isolation from inter-relational support because the schedule demands of delivery work and stigma associated with gig labor reduces opportunities for acceptance and companionship outside of work. Second, the physical nature of delivery work reduces access to traditional sources of instrumental support, particularly during late-night deliveries when work was considered more dangerous. We document the various ways delivery workers responded to these experiences through the development of peer worker networks and highlight the critical role these networks play in combating risks of social isolation and creating a safer work environment (Table 1).

4.1 Inter-relational Support

Delivery workers become isolated from inter-relational support due to the individualized nature of the work–workers are alone most of the working day, on the road going from site to site. While workers can technically decide what days and hours they want to work, we find that the public perception and incentives of app-based delivery work hinders relationships with friends and family that can provide companionship and acceptance among wider social circles.

4.1.1 Alienation from Friends and Family due to Work Structures. Traditionally, delivery work in India was performed by young men who worked at restaurants and dropped off food for customers. With the advent of app-based delivery work, these workers are no longer affiliated with individual restaurants and now spend the majority of their time on the road without any formal home base. The timing of delivery work leads to fewer opportunities to see friends and family because work incentives (e.g. increased orders, bonus pay) are promoted during times of rest. In order to serve the convenience of the middle-class and 9-to-5 working customers, services are typically requested during peak off-hours: after work, during lunch breaks, as well as holidays, and vacation periods. For instance, P10, a 29 year old who has been a delivery worker for 1.5 years, expressed how the timing of deliveries has pushed him to work odd hours that prevent socialization outside of work.

> *I am unable to meet my friends because they are free during the weekends, while the weekends are where most of our [delivery] work is done...When there is a festival we get a lot of orders and [my friends] go back to their hometown. So, meeting any hometown friends will never happen, those days are gone...Even with family I am not able to spend*

Table 1. Causes and responses to social isolation in app-based delivery work

	Causes	Worker Responses
(Lack of) Inter-Relational Support	• Alienation from friends and family due to work hours and structures • Stigma of delivery work	• Obscuring work identity from friends and family • Avoiding social gatherings • Turning to worker networks for companionship
(Lack of) Instrumental support	• Individual nature of delivery work creates safety risks • Lack of platform and state aid in dangerous working conditions	• Working long hours and staying within proximity of cloud kitchens even in periods of no orders • Worker networks for emergency support

> *time with them. Because the targets are never completed, there is no time. Other than eating lunch, I'm just always working, the full night also working.*

Not being able to engage with family and friends regularly increases the sense of loneliness. Fifteen delivery workers we interviewed expressed a desire to leave delivery work and were on the lookout for better jobs. Yet, previous literature highlights the importance of informal social engagement with friends and friends-of-friends in accessing new employment opportunities [11]. Various participants, like P6, highlighted the unstable work-life balance needed to sustain their families, which often meant rarely seeing them.

> *Roughly if you work for day and night, we can take 30-40,000 INR monthly, but it needs a lot of hard work and patience...It means like morning if we leave home by 11am then at night time we reach home at 4am...We have to travel like a football, from one place to another.*

A monthly take-home of 30,000-40,000 INR is physically demanding for such work and converts to about $400-550 per month. It does not translate easily to an aspirational middle-class life. For P6, this was barely enough to take care of his wife and two children living with him in Bangalore, and his younger brother and mother living in his home state. With five dependents, he expressed that the amount he made every month, working 17 hours a day, was just enough to break even. Because workers are only paid for performing delivery work, and not waiting for work, they must always be "on-the-job," meaning signed on as active on the app, often taking naps in parked cars or waiting near cloud kitchens in hopes of getting enough orders to meet their daily quotas.

4.1.2 Public and Personal Stigma of Delivery Work. But, perhaps even more challenging than the incentive structures was dealing with the negative public perception of working in the gig economy. Practices and attitudes towards manual and service labour in India are rooted in complex hierarchies of the caste system and patriarchy [48]. These impact both the workers' performance and imagination of delivery work. Participants described socially prestigious work as that which had artifacts and outward forms of white-collar work, such as formal dress, a desk in an office, fixed daily hours, and free weekends. Even though many praised the freedom of working on-demand without a formal boss, upon further elaboration, they expressed this informality was negatively perceived among their social circles. For instance, P11 described experiencing a shift in how people

viewed him when he switched from IT work to becoming a delivery worker, leading him to avoid public events with his family.

> When [people] asked me [about my job] then, I was easily able to say I worked for [a technology company]. That was a software company. In this society, that's what they all expect. Someone should do software work. Now, if you are a delivery boy then they will look down on you and they will speak down to you...I was scared in case my friends all saw what I do...Before, whenever there was any function I would go and attend them. Now, we [my family] are unable to go to these functions. When they [my friends] come and ask what jobs I am doing now, I am embarrassed.

Five respondents felt that delivery work was seen as low-prestige, partly because of its association with "unskilled" work that is increasingly visible given the presence of multitudes of uniformed delivery workers on city streets.

Prestige associated with work influences the creation of new social relationships. In few places is this more evident than in one of the central markers of social equation—in discussions of marriage alliances. Some respondents noted familial discomfort when household males became delivery workers or expressed discomfort with marrying their daughters to workers in the gig economy. Some of this discomfort stems from the unpredictability and informal nature of work, which can bar workers from steady income and participation in financial institutions needed to manage a household.

Unlike in other sectors where time spent at work engenders career advancement and higher pay, with delivery work, there is little opportunity for growth. Workers reported income declining over time, attributing much of these changes to new workers joining the platform and platforms algorithmically assigning more jobs to first-time workers to engage them early on, something they themselves enjoyed when they started this work.

Many migrant workers who were the main breadwinners for their families described relocating from different parts of the state to perform delivery work in the city, only to hide their job identity from those back at home. P14 described how he hid his identity as a delivery worker from his family for six months. When asked why, he spoke of the stigma associated with delivery work, a job he specifically took to pay back loans for his brother's education.

> They [my family] said the previous company work was good [as a mechanic]. There was a future in that they said. They said to sit and think about my future. But it didn't work out there, and the salary wasn't good...I had a lot of problems paying for my younger brother's Master's degree fees, it was very high. My father was not able to work. There's no one else who is earning. I am a one man army for my family. I am the only one.

The incentive aspect of gig work motivated many people to switch from relatively higher security, but lower overall pay, professions such as retail sales, teaching, auto repair etc., to delivery work. Overall, delivery workers described working at odd hours and often leaving their familial support structures for the chance at higher income, only to find unstable and declining pay.

4.1.3 Worker Networks for Companionship. In the absence of companionship and acceptance from friends, family, and general society, workers developed friendships with work peers through a range of technological and non-technological means. Although the algorithmic regime of delivery apps aims to optimize the time taken for each delivery, thereby reducing opportunity for idling and casual interactions between jobs, workers got connected to each other through online message groups (e.g. WhatsApp) or meeting each other in person at food pickup locations. P12 describes the mental break this companionship affords.

> *Yes we have a Whatsapp [group], but it's not led by Foodstop. It is mainly Foodstop workers . . . [We talk about] personal things, if someone needs to take two days off or if someone has a financial problem. I mean, we have made a sub-group that's even closer for friends. For our boys, the ones we speak to more we've made a separate group for them. In that group, we share whatever is bothering us. If there is anything, we put it on the group and it is very active.*

In conversations, it also emerged that these interactions, however fleeting, were interwoven into the delivery work experience. The engagements with peers while waiting for a pick up or drop off seemed to play a significant role in worker's sense of socialization and well-being. Respondents talked about discussing locations of drops, the number of deliveries one completed, or the kinds of customer interactions one had. Yet, it wasn't any specific engagement that was particularly useful. Rather, being part of a community gave a sense of reduced social isolation. These online messaging groups had anywhere between 30 to 100 people.

4.2 Instrumental Support

Worker networks provided more than just opportunities for friendship. They were also critical for on-the-job safety and emergency support. Workers describe how the individual nature of work, often being performed at odd hours of the day, increases chances of physical danger and reduced access to traditional forms of instrumental forms of support from the platform and state.

4.2.1 Individual Nature of Delivery Work Creates Safety Risks. Workers must bear the physical risks of constantly driving around the city in heavy traffic on a motorbike and carrying packages that need to be handled carefully because of food contents. This way of working may allow for greater flexibility and independence, but ultimately endanger workers when incentivized to make deliveries at night and in secluded locations. Workers are incentivized to perform night time deliveries when platforms offer to pay as much as two thirds more per task.

Even though workers can make significantly more during these hours, they are hesitant to take jobs because of the risk of "blast zones." Workers describe "blast zones" as situations where customers request Cash on Delivery (COD), typically late at night, and to be delivered to an isolated or vague location. In these cases, workers are either swindled out of payment or worse, attacked by a group of people who steal their phone, motorbike, and/or delivery orders.

> *Like late nights mostly we have incidents. Most of our friends have lost their mobile phones, they got beaten up. So these kinds of things are there, but our customer support at night time, they don't respond...If we cancel that one it becomes a dispute, meaning in the sense it will affect us in getting the incentives. -P6*

Workers are often incentivised by the platforms to work later at night, but were not given any additional safety mechanisms from the platform during these particularly dangerous hours. Workers were also disinclined to rely on other institutional mechanisms, such as law enforcement, because they felt that the police were less likely to take their side and instead accuse them of misdeeds [65]. The lack of instrumental support from the state was exacerbated during the COVID-19 lockdown, when the Karnataka state government produced a stimulus package for those working in the unorganised sectors, but did not include gig workers [41]. Instead, delivery workers were further denied any allowances to pause work for safety reasons because they were defined as essential service providers [2], allowing platforms to expand services and demand more from workers [51].

4.2.2 Worker Networks for Emergency Support. In response to the lack of instrumental support from the platform and state, workers' WhatsApp groups served as peer emergency networks. Workers sought feedback about delivery locations, risks of cash on delivery, whether they should

take certain jobs, and even offered each other financial help when needed. Despite being a delivery worker for almost 1.5 years, P8 is still fearful over performing delivery work alone and utilises his peer networks for protection.

> If there is a problem with a location or something then we have made a WhatsApp group. So if there is any issue, if there are fake orders which are very common at night–when they put cash on delivery–we ask if we should go there or not. We make sure the address is clear. If the restaurant's name is nowhere and the location is neither here nor there, like if there is a restaurant with three or four names, then we ask one of our friends and find out.

When it comes to instrumental support, workers often group together especially during times of physical distress. As P10 described, there is an unwritten agreement among delivery partners to always defend other delivery partners "irrespective of who is wrong." He described,

> If someone gets into an accident, no one will care if they have to deliver orders, and within five to ten minutes they will all come together [and help the worker in need]....Not just me, but anybody here who has anything happened to them, they will come to speak for them. Here sometimes when boys get into any type of problems, everyone goes fast to help them. Everyone has a very helping nature as it is very much the same for everyone because we all face the same problem.

With the work being performed all around the city, workers must coordinate on-demand support networks wherever they go. The seemingly mundane online chats between workers in which they constantly report where they are going and asking who is traveling where is reframed as a highly coordinated effort to also preserve each other's wellbeing and safety. This social support can range from offering to fill someone's gas tank nearby if they are low in cash to defending another worker in physical disputes.

These networks are particularly important when workers get into accidents or are attacked. While some platforms provide accident insurance in case of an emergency, workers must first pay out of pocket. For workers who provide for their family by living paycheck to paycheck, meeting these unexpected payments may not be affordable. Even worse, covering these costs may also mean not being able to meet loan or debt payments, which can instigate significant penalties [20]. Some have taken extra precautions by creating informal partnerships with other drivers in a kind of "buddy system." P11, who performs a significant part of his delivery work between 12-3am, described how he rides with another delivery worker to minimize the risks from working alone.

> When I am doing an order I have a friend there... At midnight or even 3am then we will all do it together. If I am not there, then he will take leave, and if he is not there, then I will take leave. Like this, we are rotating every night. We also have a [WhatsApp] group, so if there is anything, I will put it on the group.

These workers described layers of support, combining this ride-along practice while staying updated in online chat groups with other drivers. Even though both cannot work at the same time, this partnership allows them to keep each other company while preserving their collective safety.

However, the informal nature of these groups sets boundaries of their own—language and regional affiliation being key in what allowed for new friendships. Unlike in a number of blue collar jobs, in which people could speak and engage with others from their home states or in some lingua franca if the work was physically co-located, delivery work was largely done by Kannada speakers from within the state due to their obvious advantage with directions, reading street signs, or interacting with customers. This meant that migrants who worked in this space had carved out groups of their own. For example, P13 created a WhatsApp group to aid migrant workers from Tamil Nadu with on-the-job questions and issues.

A lot of people like me have come to Bangalore without knowing the language, only knowing Tamil and joining this job. And now I know Kannada and all languages. And I know how it is like to work in Bangalore, how people are in this city, who will rob us, who will do what to us...And because of that I thought we should help them.

Many did not anticipate the physical risks they would be taking in order to participate in delivery work. Removed from many support structures and benefits available to traditional employment, delivery workers adopted strategies to collectively support each other in order to minimize at least some of the on-the-job risks.

5 DISCUSSION

Few developments have changed consumption patterns in metropolitan middle and upper-middle class India more than app-based delivery services. From the near ubiquity of motorbikes with color-coordinated riders ferrying groceries, restaurant couriers, and casual door-to-door drops, to the large number of television and print advertisements for delivery services, these have come to present a metaphor of a new consumption culture. While the recruitment for this work is driven by a discourse of professionalism—uniforms, technological management, cashless payments—the reality of day-to-day work in this space creates underprivileged wage earners disciplined at once by technology as well as the cultural redlines of the Indian class system.

We find that while app-based incentives repeatedly emerge as a temporal driver of sign-ups, the subsequent and inevitable shock at the decline of earnings over time experienced across multiple riders exposes the caprice of the decision to hop onto the platform. The COVID-19 crisis has also laid bare the extremity of their exposure to short-term demand, as riders faced catastrophic decline in earnings [3], despite delivery services being among the few services to continue to operate, dangerously, through this period.

The impact of gig work must be understood within the cultural and structural context of the geographies where they are taking place [5]. We see that the dominant ways in which corporations and even the mainstream discourse have often projected gig work, as part-time engagement for seeking additional income or other forms of fulfillment, do not hold true in our study context. Rather than allowing for greater professional independence through on-demand income, these professions become workers' primary economic pursuits, and in turn isolate them from support networks. Likewise, notions that engaging with gig platforms expands horizons as workers get to try their hands at new work may also be overstated.

We identify two dimensions along which class hierarchies isolate workers: inter-relational and instrumental. Workers experience isolation through the stigma of gig work. In the complex Indian class system, the uniformed appearance is not necessarily a signifier of workplace pride. The same artifact that acts as an advertisement for a product's wide uptake, as streets are flooded with men wearing their delivery brand jackets, may act as a reminder to the worker of being part of a under-valued occupation. For them, it is increasingly clear that delivery work may define an aspirational ceiling in a gig work driven future with neither the protections, nor the skill-development and possibilities for progression that traditional blue collar professions offer.

5.1 Effect of Stigma on Inter-relational Support

Inter-relational support is critical for feeling accepted, valued, and integrated in society. Part of fostering this companionship is through the mundane–such as delivery workers sharing information about where they are picking up food, experiences with customers, neighborhoods they have serviced, and the banter that accompanies that. Connecting with others by sharing everyday experiences has been found to mitigate feelings of social isolation in other contexts as well, such as

among older adults who feel isolated from family [7] and care workers who also work in particularly stressful circumstances [76].

Unlike in workplace isolation research in other settings, we find that a critical part of isolation in delivery work is alienation from friends and family that occurs as a result of stigma associated with the work. Stigma refers to any persistent individual or group attribute which evokes negative or punitive responses [37] and works against self worth and self valuations [74]. As we find here, the physical nature of delivery work impacts its perception, as does it's discourse as something that is ad-hoc, temporal, or a source of extra income, which consequently presents it as a stop-gap to something more permanent [26]. The social taint is emphasized in the unwillingness of families to propose marriage alliances with men working in delivery, as well as reports from respondents of their own family members requesting them to change jobs, even if it leads to greater financial hardship. In response, some workers further isolate themselves, physically and emotionally.

As more people flock to delivery work out of necessity, it is critical to develop these platforms as places of professional growth rather than stagnation in order to combat impressions of stigma [26]. Gig work platforms may market themselves as short term activities [26], but the reality is that many people are forced to stay in these jobs for years in order to pay off loans and debt [20]. Delivery workers have aspirations to advance socio-economically and are open to learning associated skills, like how to speak a new language or how to run a business, if such opportunities are free or affordable. For example, gig-based beauty work platforms provide low-cost opportunities for their on-demand workers to learn new skills in the field, such as transitioning to becoming a make-up or hair stylist, and in the process highlight 'professionalization' which pushes workers to be more entrepreneurial [55]. Such work can give a sense of second-order skills that workers can take forth with them. Similarly, other platforms train crowd workers to become managers of crowd work teams, giving them a greater sense of leadership and responsibility [36]. For delivery work as currently structured, especially post-COVID, the focus is on reducing customer interaction as far as possible, restricting delivery workers to simply the task of taking things from point A to B, with little opportunity to even pick up skills to rise up a career ladder in supervisory roles. Platforms can change this by affirmatively creating pathways to growth in their organizations.

Outside of opportunities to combat stigma, there is a need to extend policies that prevent overwork by raising wages and reducing punitive action for non-working days. Workers spoke of being forcibly logged out if they didn't log in regularly. This, combined with not being compensated for waiting-for-orders time, means work days that are logged as only an hour long could actually be multiple-hour events. Such policies may force platforms to limit the number of new worker sign-ups, but would at least provide some sort of stability for existing workers in order to maintain their daily livelihood and corresponding relationships.

5.2 Delivery Worker Networks as Source of Instrumental Support

Similar to other low-wage work [17, 35, 79], delivery workers must perform significant additional labor to coordinate safer and fairer working conditions. Previous research on low-wage workers highlights the individual labor that time-tracking and customer-relations management systems place on workers to document their hours and access fair wages [17, 35]. In the case of delivery apps, algorithms place similar burdens by incentivizing workers to log long hours and accept deliveries late at night when there is higher risk for robberies and attacks.

In response to the danger of performing delivery work and lack of traditional sources of instrumental support from the platform and state, workers have formed online emergency networks through online group chat apps to serve the immediate needs of their peers. Such coordination can be critical when workers deliver in "blast zones," where the likelihood of attacks is higher. For an algorithm, the means of mitigating such risk may just be to consider the cost of lost goods. But, how

does a worker quantify the anxiety of fulfilling an order in an unsafe zone when the alternative is to decline the job and lose their ranking?

The tactics of coping used by delivery workers are comparable to collaborative activities seen in other gig work communities like crowd work, where workers share when good gigs are posted and offer each other technological support when getting started [25]. What we observe here is similar to what Ticona's work on service workers has shown [75]. Communication technologies, such as WhatsApp are used as a strategy against platform control and a means to develop friendships with peers at a distance. But, unlike these other professions, the physically isolating nature of delivery work places additional strain on workers to coordinate information about how to complete jobs and respond to potential last-minute emergency responses.

One way forward is to identify how to connect the most vulnerable delivery workers (i.e. migrants, new recruits) with peer support networks. Previous work on onboarding newcomers to digital communities provides advice for how to help people feel welcome and learn community norms [34, 47]. Others have described pairing newcomers up with experts to access on-the-job training [71]. However, it seems that informal networks are already highly effective among delivery workers. We encourage further research on how these groups form and what factors influence their use, like privacy and accessibility.

These challenges emphasize that distributed forms of collectivizing are even more important during times of crisis when workers are restricted from meeting in person. Existing work on collectivizing online in gig work has described the design of tools that support crowd workers in mobilizing around issues, such as co-writing letters in protest [60]. HCI researchers studying social movements emphasize the importance of allowing for storytelling in promoting activism [16]. Others studying collective action online more broadly highlight the importance of working together to identify a problem, generate and select ideas, coordinate, and assess action [63]. Research aiming to build tools that support collective action in delivery work could leverage these previous approaches, as well as historical union tactics [33], in the design of similar initiatives or systems. Further work must also be done to understand how digital means of communicating could resonate with government entities, with whom collectives of delivery workers in India interface most. In addition, more work must be done to understand how digital technologies could coordinate collective efforts in contexts where workers are using out-of-date mobile technologies, have unreliable wifi connection, and speak different local languages.

6 LIMITATIONS AND FUTURE WORK

We acknowledge the limitations associated with studying a single city, like Bangalore. We intend that the work provide an in-depth study of a particular region in the Global South. We believe this approach allowed us to engage more deeply with the experiences of workers. Although this limits the generalizability of our findings, we believe the risks of isolation identified in the findings are also experienced with other gig work populations, given the similarity in platform rules and individual nature of work. Second, even though we recruited through a variety of cloud kitchens (common food pickup spots), the majority of workers we spoke to worked for one delivery work platform, which could bias the data.

In the future, we would like to perform additional research on collective action activities in the gig economy. Our findings on the central role of peer networks in combating isolation only unveils the surface of these activities. Further research would help uncover how workers are organizing, and what role technologies play in this process. These efforts could lead to additional ways to understand how network building activities compare between different types of gig work and in different parts of the world.

7   CONCLUSION

Our study interrogates the contours of social isolation that accompany performing delivery work in a metropolitan Indian setting. Workers experience social isolation because working hours are not conducive to maintaining relationships outside of work, while the stigma deters engagement in general. In addition, the platforms provide minimal instrumental support for workers and often incentivise them to take jobs that put them in physical danger. It is therefore important that we understand how such forms of isolation affect the behaviours and coping mechanisms of people who undertake this work. Though many workers have created their own relationships with other workers by forming worker networks through WhatsApp and other social media, thus facilitating companionship and emergency support, the structure and functions of platform work nonetheless expose them to continued precarious work conditions. Our work is a call for greater institutional protection for delivery workers that limit social isolation and the associated risks. We propose that progress in this direction will come from efforts to collectivize and engage platforms in enabling more productive and stable work conditions.

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REFERENCES

[1] 2019. Niti Aayog tries to counter bleak unemployment data, says Ola Uber helped create over 2 million jobs. https://www.cnbctv18.com/economy/niti-aayog-says-ola-and-uber-helped-create-over-2-million-new-jobs-pegs-total-new-jobs-at-8-million-2142841.htm Accessed: 2019-10-16.

[2] 2020. Amazon, Flipkart, Zomato fall under 'essential services' but their delivery agents are being stopped by the police. https://www.businessinsider.in/business/ecommerce/news/amazon-flipkart-zomato-fall-under-essential-services-but-their-delivery-agents-are-being-stopped-by-the-police/articleshow/74792756.cms Accessed: 2020-03-24.

[3] 2020. "The Personal and Social Risks That India's Food Delivery Workers Are Taking During COVID-19". https://thewire.in/business/covid-19-food-delivery-workers Accessed: 2020-4-12.

[4] EY Americas. [n.d.]. "How the gig economy is changing the workforce". https://www.ey.com/en_us/tax/how-the-gig-economy-is-changing-the-workforce Accessed: 2018-11-20.

[5] Ira Anjali Anwar, Joyojeet Pal, and Julie Hui. 2021. Watched, but Moving: Platformization of Beauty Work and Its Gendered Mechanisms of Control. *Proceedings of the ACM on Human-Computer Interaction* 4, CSCW3 (2021), 1–20.

[6] Ulrich Beck, Scott Lash, and Brian Wynne. 1992. *Risk society: Towards a new modernity.* Vol. 17. sage.

[7] Robin Brewer and Anne Marie Piper. 2016. " Tell It Like It Really Is" A Case of Online Content Creation and Sharing Among Older Adult Bloggers. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems.* 5529–5542.

[8] Alexia Fernández Campbell. 2019. California is cracking down on the gig economy. https://www.vox.com/policy-and-politics/2019/5/30/18642535/california-ab5-misclassify-employees-contractors

[9] Callum Cant. 2019. *Riding for Deliveroo: resistance in the new economy.* John Wiley & Sons.

[10] Sean Captain. 2020. What it's like to be a delivery worker during the COVID-19 pandemic. https://www.fastcompany.com/90480629/what-its-like-to-be-a-delivery-worker-during-the-covid-19-pandemic Accessed: 2020-06-01.

[11] Vicky Cattell. 2001. Poor people, poor places, and poor health: the mediating role of social networks and social capital. *Social science & medicine* 52, 10 (2001), 1501–1516.

[12] Sheldon Ed Cohen and SL Syme. 1985. *Social support and health.* Academic Press.

[13] Thomas W Colligan and Eileen M Higgins. 2006. Workplace stress: Etiology and consequences. *Journal of workplace behavioral health* 21, 2 (2006), 89–97.

[14] Cecily D Cooper and Nancy B Kurland. 2002. Telecommuting, professional isolation, and employee development in public and private organizations. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior* 23, 4 (2002), 511–532.

[15] David S Davis. 1984. Good people doing dirty work: A study of social isolation. *Symbolic Interaction* 7, 2 (1984), 233–247.

[16] Jill P Dimond, Michaelanne Dye, Daphne LaRose, and Amy S Bruckman. 2013. Hollaback! The role of storytelling online in a social movement organization. In *Proceedings of the 2013 conference on Computer supported cooperative work*. 477–490.

[17] Lynn Dombrowski, Adriana Alvarado Garcia, and Jessica Despard. 2017. Low-wage precarious workers' sociotechnical practices working towards addressing wage theft. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. 4585–4598.

[18] Sarah A Donovan, David H Bradley, and Jon O Shimabukuru. 2016. What does the gig economy mean for workers? (2016).

[19] Veena Dubal. [n.d.]. "A Brief History of the Gig" Where does the gig economy come from? https://logicmag.io/security/a-brief-history-of-the-gig/ Accessed: 2020-5-4.

[20] Veena Dubal. [n.d.]. Uber's new loan program could trap drivers in cycles of crushing debt. https://www.theguardian.com/commentisfree/2019/dec/05/uber-loan-program-debt Accessed: 2020-06-01.

[21] Gerald Friedman. 2014. Workers without employers: shadow corporations and the rise of the gig economy. *Review of Keynesian Economics* 2, 2 (2014), 171–188.

[22] Timothy D Golden, John F Veiga, and Richard N Dino. 2008. The impact of professional isolation on teleworker job performance and turnover intentions: Does time spent teleworking, interacting face-to-face, or having access to communication-enhancing technology matter? *Journal of Applied Psychology* 93, 6 (2008), 1412.

[23] Caleb Goods, Alex Veen, and Tom Barratt. 2019. "Is your gig any good?" Analysing job quality in the Australian platform-based food-delivery sector. *Journal of Industrial Relations* 61, 4 (2019), 502–527.

[24] Mark Graham. 2017. *Towards a fairer gig economy*. Meatspace Press.

[25] Mary L Gray and Siddharth Suri. 2019. *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass*. Eamon Dolan Books.

[26] Brad Greenwood, Gordon Burtch, and Seth Carnahan. 2017. Unknowns of the gig-economy. *Commun. ACM* 60, 7 (2017), 27–29.

[27] Denis Grégoire. 2017. Delivering for FoodTech: at your own risk. *HesaMag,(16)* (2017), 17–21.

[28] Jonathan V Hall and Alan B Krueger. 2018. An analysis of the labor market for Uber's driver-partners in the United States. *ILR Review* 71, 3 (2018), 705–732.

[29] Debra Howcroft and Birgitta Bergvall-Kåreborn. 2019. A typology of crowdwork platforms. *Work, Employment and Society* 33, 1 (2019), 21–38.

[30] Jeff Howe. 2008. *Crowdsourcing: How the power of the crowd is driving the future of business*. Random House.

[31] Mirela Ivanova, Joanna Bronowicka, Eva Kocher, and Anne Degner. 2018. *Foodora and Deliveroo: The App as a Boss? Control and autonomy in app-based management-the case of food delivery riders*. Technical Report. Working Paper Forschungsförderung.

[32] Srirang Jha and Amiya Kumar Mohapatra. 2019. Jobless Growth in India: The Way Forward. *Available at SSRN 3476599* (2019).

[33] Vera Khovanskaya, Lynn Dombrowski, Jeffrey Rzeszotarski, and Phoebe Sengers. 2019. The Tools of Management: Adapting Historical Union Tactics to Platform-Mediated Labor. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–22.

[34] Robert E Kraut and Paul Resnick. 2012. *Building successful online communities: Evidence-based social design*. Mit Press.

[35] Kristian Helbo Kristiansen, Mathias A Valeur-Meller, Lynn Dombrowski, and Naja L Holten Moller. 2018. Accountability in the blue-collar data-driven workplace. In *Proceedings of the 2018 CHI conference on human factors in computing systems*. 1–12.

[36] Anand Kulkarni, Philipp Gutheim, Prayag Narula, David Rolnitzky, Tapan Parikh, and Björn Hartmann. 2012. Mobileworks: Designing for quality in a managed crowdsourcing architecture. *IEEE Internet Computing* 16, 5 (2012), 28–35.

[37] Yu-Ming Lai, CPH Hong, and Cornelia YI Chee. 2001. Stigma of mental illness. *Singapore medical journal* 42, 3 (2001), 111–114.

[38] Vili Lehdonvirta. 2018. Flexibility in the gig economy: managing time on three online piecework platforms. *New Technology, Work and Employment* 33, 1 (2018), 13–29.

[39] Ning F Ma and Benjamin V Hanrahan. 2019. Part-Time Ride-Sharing: Recognizing the Context in which Drivers Ride-Share and its Impact on Platform Use. *Proceedings of the ACM on Human-Computer Interaction* 3, GROUP (2019), 1–17.

[40] Anja Machielse. 2006. Theories on social contacts and social isolation. In *Social isolation in modern society*. Routledge, 31–54.

[41] Vinay Madhav. 2020. Karnataka announces 1610 crore relief package to labourers in unorganised sector. https://www.deccanchronicle.com/nation/current-affairs/060520/karnataka-announces-1610-crore-relief-package-to-labourers-in-unorgani.html Accessed: 2020-10-06.

[42] Brenton J Malin and Curry Chandler. 2017. Free to work anxiously: Splintering precarity among drivers for Uber and Lyft. *Communication, Culture & Critique* 10, 2 (2017), 382–400.

[43] Greg W Marshall, Charles E Michaels, and Jay P Mulki. 2007. Workplace isolation: Exploring the construct and its measurement. *Psychology & Marketing* 24, 3 (2007), 195–223.

[44] G McClenahan. 2017. We Don't Hate the Gig Economy, But it Must Change'. , 7–9 pages.

[45] Linda McDowell. 2019. Looking for work: youth, masculine disadvantage and precarious employment in post-millennium England. *Journal of Youth Studies* (2019), 1–15.

[46] Ludwien Meeuwesen. 2006. A typology of social contacts. In *Social isolation in modern society*. Routledge, 55–78.

[47] Jonathan T Morgan and Aaron Halfaker. 2018. Evaluating the impact of the Wikipedia Teahouse on newcomer socialization and retention. In *Proceedings of the 14th International Symposium on Open Collaboration*. 1–7.

[48] David Mosse. 2018. Caste and development: Contemporary perspectives on a structure of discrimination and advantage. *World Development* 110 (2018), 422–436.

[49] Gina Neff. 2012. *Venture labor: Work and the burden of risk in innovative industries*. MIT press.

[50] Caroline O'Donovan and Ken Besinger. 2019. The Cost of Next Day Delivery. https://www.buzzfeednews.com/article/carolineodonovan/amazon-next-day-delivery-deaths Accessed: 2020-06-01.

[51] Press Trust of India. 2020. Coronavirus Lockdown: Swiggy Expands Essential Services to Over 125 Cities. https://www.deccanherald.com/business/business-news/coronavirus-lockdown-swiggy-expands-essential-services-to-over-125-cities-824907.html Accessed: 2020-10-06.

[52] Geoffrey Parker and Marshall Van Alstyne. 2012. A digital postal platform: Definitions and a roadmap. *MIT Center for Digital Business, Working Paper* (2012).

[53] Sachin R Pendse, Naveena Karusala, Divya Siddarth, Pattie Gonsalves, Seema Mehrotra, John A Naslund, Mamta Sood, Neha Kumar, and Amit Sharma. 2019. Mental health in the global south: challenges and opportunities in HCI for development. In *Proceedings of the 2nd ACM SIGCAS Conference on Computing and Sustainable Societies*. 22–36.

[54] Ujvala Rajadhyaksha. 2012. Work-life balance in South East Asia: the Indian experience. *South Asian Journal of Global Business Research* (2012).

[55] Noopur Raval and Joyojeet Pal. 2019. Making a" Pro":'Professionalism'after Platforms in Beauty-work. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–17.

[56] Alex Rosenblat. 2018. *Uberland: How Algorithms Are Rewriting The Rules Of Work* (first ed.). University of California Press.

[57] Alex Rosenblat and Luke Stark. 2016. Algorithmic labor and information asymmetries: A case study of Uber's drivers. *International Journal of Communication* 10 (2016), 27.

[58] Dan Russell, Carolyn E Cutrona, Jayne Rose, and Karen Yurko. 1984. Social and emotional loneliness: an examination of Weiss's typology of loneliness. *Journal of personality and social psychology* 46, 6 (1984), 1313.

[59] J Saldaña. 2013. The coding manual for qualitative researchers [Kindle edition]. *Retrieved from: Amazon. com* (2013).

[60] Niloufar Salehi, Lilly C Irani, Michael S Bernstein, Ali Alkhatib, Eva Ogbe, and Kristy Milland. 2015. We are dynamo: Overcoming stalling and friction in collective action for crowd workers. In *Proceedings of the 33rd annual ACM conference on human factors in computing systems*. 1621–1630.

[61] Barbara R Sarason, Irwin G Sarason, and Gregory R Pierce. 1990. *Social support: An interactional view*. John Wiley & Sons.

[62] Melvin Seeman. 1972. Alienation and engagement. *The human meaning of social change* 467 (1972), 527.

[63] Aaron Shaw, Haoqi Zhang, Andrés Monroy-Hernández, Sean Munson, Benjamin Mako Hill, Elizabeth Gerber, Peter Kinnaird, and Patrick Minder. 2014. Computer supported collective action. *interactions* 21, 2 (2014), 74–77.

[64] Joe Shaw and Mark Graham. 2017. An informational right to the city? Code, content, control, and the urbanization of information. *Antipode* 49, 4 (2017), 907–927.

[65] Abhinav Singh. 2020. Swiggy, Zomato on the defensive after Bengaluru top cop's tweet on delivery partners. https://www.theweek.in/news/biz-tech/2020/01/24/swiggy-zomato-on-the-defensive-after-bengaluru-top-cops-tweet-on-delivery-partners.html Accessed: 2020-10-06.

[66] Aaron Smith. 2016. Gig work, online selling and home sharing. *Pew Research Center* 17 (2016).

[67] Rebecca Smith and Sarah Leberstein. 2015. Rights on demand: Ensuring workplace standards and worker security in the on-demand economy. *National Employment Law Project* (2015).

[68] Ravi Srivastava. 2012. Changing employment conditions of the Indian workforce and implications for decent work. *Global labour journal* 3, 1 (2012), 63–90.

[69] Andrew Stewart and Jim Stanford. 2017. Regulating work in the gig economy: What are the options? *The Economic and Labour Relations Review* 28, 3 (2017), 420–437.

[70] Will Sutherland and Mohammad Hossein Jarrahi. 2017. The gig economy and information infrastructure: The case of the digital nomad community. *Proceedings of the ACM on Human-Computer Interaction* 1, CSCW (2017), 1–24.

[71] Ryo Suzuki, Niloufar Salehi, Michelle S Lam, Juan C Marroquin, and Michael S Bernstein. 2016. Atelier: Repurposing expert crowdsourcing tasks as micro-internships. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. 2645–2656.

[72] Arianna Tassinari and Vincenzo Maccarrone. 2017. The mobilisation of gig economy couriers in Italy: some lessons for the trade union movement.

[73] Arianna Tassinari and Vincenzo Maccarrone. 2020. Riders on the storm: Workplace solidarity among gig economy couriers in Italy and the UK. *Work, Employment and Society* 34, 1 (2020), 35–54.

[74] Neil Thomas, Bronte McLeod, Nev Jones, and Jo-Anne Abbott. 2015. Developing internet interventions to target the individual impact of stigma in health conditions. *Internet Interventions* 2, 3 (2015), 351–358.

[75] Julia Ticona. 2015. Strategies of control: workers' use of ICTs to shape knowledge and service work. *Information, Communication & Society* 18, 5 (2015), 509–523.

[76] Julia Ticona and Alexandra Mateescu. 2018. Trusted strangers: Carework platforms' cultural entrepreneurship in the on-demand economy. *New Media & Society* 20, 11 (2018), 4384–4404.

[77] Julia Ticona, Alexandra Mateescu, and Alex Rosenblat. 2019. Beyond Disruption How Tech Shapes Labor Across Domestic Work & Ridehailing. Data & Society.

[78] RS Weiss. 1973. The loneliness of social isolation.

[79] Earnest Wheeler and Tawanna R Dillahunt. 2018. Navigating the job search as a low-resourced job seeker. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. 1–10.

[80] Alex J Wood, Mark Graham, Vili Lehdonvirta, and Isis Hjorth. 2019. Good gig, bad gig: autonomy and algorithmic control in the global gig economy. *Work, Employment and Society* 33, 1 (2019), 56–75.