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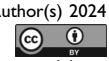

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# Risky business: How food-delivery platform riders understand and manage safety at work

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## Abstract

This study explores the issue of workplace safety among food-delivery workers who use platforms like UberEATS and Deliveroo to secure work. Despite the high exposure to hazardous traffic, extreme weather conditions, and unsafe work hours and locations that these workers face daily, safety remains a low priority for both platforms and governments. This study utilizes in-depth qualitative interviews with 14 platform food delivery workers in Melbourne, Australia, to examine how they understand and manage safety risks at work, drawing on a theoretical framework of necropolitics and liminal precarity. The riders are predominantly migrant workers on temporary visas who face corporeal risks influenced by factors such as road conditions, time pressures, and weather. Despite their awareness of these dangers, the study reveals that platform-induced necropower, driven by economic incentives, significantly impacts those heavily dependent on gig economy earnings, ultimately turning safety into a trade-off between making a living and surviving. However, riders also demonstrate agency by mediating risks through experience, knowledge-sharing, and strategic use of the platform's features to resist potentially hazardous conditions.

## Keywords

food delivery, gig economy, necrocapitalism, risk, safety, Uber

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## Introduction

In recent years, the emergence of digital platforms such as Uber has created new marketplaces where customers can purchase services, while at the same time providing online labour markets where workers can secure an income. The Covid-19 pandemic, with its associated lockdowns and resulting job losses, saw an increase in the usage of these platforms, particularly food-delivery platforms like UberEATS, Menulog, and EASI (Churchill, 2024). In response, many turned to delivery platform work as a temporary solution and an alternative to unemployment (Lew et al., 2021; Muszyński et al., 2021; Polkowska, 2021; Ravenelle et al., 2021). While platform delivery work may be attractive as an alternative source of income, it is important to recognize the limitations of such work arrangements. For instance, platform delivery riders like many in the wider gig economy are classified as independent contractors with limited labour rights and protections (Ravanelle, 2019). Such work arrangements may be marketed as offering greater autonomy and freedom, but the reality is that platform delivery riders are subject to precarious working conditions, for example, hazardous weather and road conditions and a lack of reliable insurance and adequate pay and compensation (Gregory, 2020; Lachapelle et al., 2021; Transport Workers Union, 2020). These challenges are exacerbated by a platform design that encourages risk-taking behaviour (Orr et al., 2022; Papakostopoulos & Nathanael, 2021). Moreover, delivery platform workers are at the mercy of the customers, restaurants and the platforms they work for, which exposes them to greater risks (Orr et al., 2022; van Doorn, 2023). Evidence suggests that one in four riders has been in an accident while working, and one in eight has suffered injuries, including broken body parts and concussions (Transport Workers Union, 2020). In Australia, platform riders are more likely to be young, male and overwhelming on temporary visas (Transport Workers Union, 2020). Despite the high incidence of risk and harm, the existing research tends to downplay riders' agency and experiences of safety although there are some exceptions (see Gregory, 2020). This study aims to address this gap by focusing on migrant platform delivery riders' conceptualizations of safety and risk-mitigation strategies, drawing upon theoretical frameworks such as 'liminal precarity' (van Doorn, 2023) 'necropolitics' and 'necrocapitalism' (Banerjee, 2008; Orr et al., 2022) to understand platform delivery riders' safety. By doing so, this study aims to shed light on the experiences of platform delivery riders and contribute to our understanding of the challenges and opportunities associated with this emerging sector.

## Background

Platform food-delivery work is a form of de-standardized work (Beck, 2000). Delivery riders enjoy both flexibility and mobility in terms of how many hours they work and where they work, but at the same time, they are exposed to facets of precarity – irregular schedules, and unstable and uncertain working environments. As independent contractors, platform riders are both 'free' and constrained at the same time. They constitute a loosely regulated workforce compared with workers in the 'traditional', non-digital labour market, but at the same time, they are subject to a different kind of regulation –

the often-hidden 'rules' of digital platforms, which shape their work. This alongside their circumstances, namely their socioeconomic status and dependency on the income earned on digital platform work determines their safety outcomes.

## Unsafe working conditions and workplaces

Platform delivery workers are exposed to unsafe working conditions, including uncertain and irregular working schedules; an ever-changing 'workplace', that is, different locations, and external conditions such as the weather. Different times and working locations have a direct impact on rider safety, for example, during peak hours, there is also denser traffic and more pedestrians. These factors mean higher risks for platform delivery riders, opening them up to an increased risk of accidents (Lachapelle et al., 2021). Urban centres are considered by delivery riders as among the riskiest locations for picking up and delivering food orders because of the complexity of traffic conditions. Additionally, more pedestrians and denser traffic at peak hours make riding (and deliver) more unpredictable, which increases platform delivery riders' risk of accidents (Lachapelle et al., 2021). Despite this, urban centres are still the most common working locations for food-delivery riders, as there is a greater number of restaurants and greater demand for food delivery. These conditions lead to greater exhaustion and make riders more vulnerable to the risks on roads (Goods et al., 2019). On the other hand, increased visibility, such as better street lighting in urban centres, makes it safer to deliver at night in urban areas than in the suburbs (Lachapelle et al., 2021). Areas with poor road conditions, such as uneven road surfaces, potholes and steep inclines, can increase the risks that food-delivery riders are exposed to (Christie & Ward, 2019; Lachapelle et al., 2021). Weather conditions like extreme heat, rain and snow negatively impact food-delivery riders' ability to work and endanger their safety (Lachapelle et al., 2021). Extreme heat can lead to dehydration and heat strokes for food-delivery riders who work for extensive hours (Lachapelle et al., 2021). Rainy and snowy weather can make traffic conditions more hazardous. Weather extremes also result in higher demand for food delivery, which indirectly poses a safety risk because of fatigue (Lachapelle et al., 2021).

## Platforms and safety

Platforms' safety measures and work design play significant roles in shaping food-delivery riders' working conditions, riding behaviours, and safety outcomes. Platforms deploy a range of safety measures including safety training, safety equipment, insurance, and compensation to encourage safety and mitigate safety risks. However, as the evidence base indicates, their effectiveness is mixed. Many delivery riders argue that they do not receive adequate safety training from platforms (Papakostopoulos & Nathanael, 2021). Some see this as a deliberate strategy on behalf of platforms to avoid liability for their safety (Papakostopoulos & Nathanael, 2021). In Australia, food-delivery platforms such as DoorDash, UberEATS, and Menulog have required food-delivery riders to complete online safety modules before activating their accounts (NSW Government, 2021). However, the effectiveness of this training has not been evaluated. In addition

to the inadequate and inefficient safety measures, the work design of food-delivery platforms can impose risks on their riders: for example, the piece-rate payments and algorithmic management. The piece rate payment system means that food-delivery riders are paid per delivery or order. While platforms do not have rigorous regulations on food-delivery riders' working hours, many food-delivery riders extend their working hours to increase incomes in which regular and proper rests are compromised, and fatigue and chronic pain are more likely to occur (Christie & Ward, 2019; Lachapelle et al., 2021). Food-delivery platforms also provide incentives to riders, such as bonuses or a higher percentage of tips, to motivate riders when the demand for food delivery outstrips the labour supply (Christie & Ward, 2019). This usually involves risky situations, such as peak hours in urban areas and poor weather, which make food-delivery riders aiming for economic efficiency more unsafe (Barratt et al., 2020). Due to the flexible and 'independent' nature of the work – flexible working hours and locations without human supervision – algorithmic management is used by platforms to coordinate work and manage labour activities (Duggan et al., 2020). Through technologies such as geolocation and mobile data collection, food-delivery platforms can monitor and evaluate riders' performance based on acceptance and rejection rates, delivery time, and customer feedback (Kellogg et al., 2020). Those with lower ratings will be penalized (Barratt et al., 2020; Kellogg et al., 2020). To avoid this, food-delivery riders tend to prioritize efficiency and customer service, which makes them more stressed and risk-favourable while delivering (Lee, 2010).

## *Economic dependency and safety*

There is a strong correlation between workers' economic dependency on the job and the precarious working conditions they experience (Schor et al., 2020; van Doorn, 2023). Based on the idea of economic dependency, Schor and colleagues (2020) categorize platform workers into two types: dependent workers and supplemental workers. Dependent workers are those who primarily rely on the platform for livelihood, and supplemental workers are those who have other income sources and see gig work as a side hustle (Schor et al., 2020). Dependent workers are financially worse off, and more likely to forgo safety for income (Schor et al., 2020). Further, they are less selective about orders, working hours, locations and conditions, and therefore more likely to be exposed to risky working conditions (Schor et al., 2020). Van Doorn (2023) has found that migrants are more dependent on platforms because of limited work availability in traditional labour markets. Migrant gig workers holding temporary visas have found themselves less competitive in the local labour market due to language difficulties, a lack of local networks (Stevens, 2019) and institutional constraints, such as restrictions on working hours and non-recognition of previous education (Cameron et al., 2019). Consequently, more migrants have moved into the gig economy, with easy entry (MacDonald & Giazitzoglu, 2019). It is found that in Australia, the majority of the injured riders are non-residents (Bertenshaw et al., 2022). Their work safety is particularly at risk since they are usually ineligible for Medicare and many other government welfare protections (Amin, 2020; Lafleur & Mescoli, 2018).

## Theorizing safety outcomes among platform delivery riders

This study deploys the concepts of 'liminal precarity' (van Doorn, 2023) and 'necrocapitalism' (Banerjee, 2008) to understand platform delivery riders' safety, particularly those from migrant backgrounds. Liminal precarity elucidates how gig workers who are marginalized in the labour market affectively attach to digital platforms, and thus consent to the risky working conditions (van Doorn, 2023). 'Necrocapitalism' foregrounds risks, harm, and even the death of platform labourers to help us understand that risk and harm are inherent features of platform labour (Orr et al., 2022). This body of theories manifests how risks are localized in food-delivery platforms, and how riders conceptualize, experience, and respond to the risks and safety.

### *Migrant platform delivery riders as necropolitical labourers*

Drawing on a growing body of scholarship that examines the biopolitical dimensions of platforms, platform workers and the platform economy-at-large, scholars Orr et al. (2022) draw on Bobby Banerjee's (2008) work on necrocapitalism and Achille Mbembe's (2019) necropolitics to examine how platform working conditions are shaped. Banerjee's (2008) concept of necrocapitalism elucidates how capitalism and the capitalist market system capitalize on and exploit death and mortality for economic gain whereas Mbembe's (2019) necropolitics explores how the state's power and sovereignty are exercised through the control and management of death, by deciding who lives and who dies, and which population groups get to live. Orr and colleagues (2022) harness these concepts to show how necropower operates through platform delivery work across three dimensions, showing, first, how platform delivery work is built upon corporeal risks and harms; second, how corporeal risks and harms are exacerbated by platform structures; and, third, how the state, through a lack of regulation of platform delivery work (and the platform economy more generally), maintains a necropolitics that targets marginal populations.

Orr and colleagues (2022) argue that there are corporeal harms inherent within the necroeconomics of platform food-delivery work, which are most evident in the mortality and morbidity outcomes of platform delivery workers, but also in their subjectivities as workers. As they observe, the value of platform delivery riders lies not in their skills but in their 'willingness to do labour that puts them at risk of debilitation' (Orr et al., 2022, p. 209). Platform delivery riders are exposed to corporeal risks in their day-to-day working lives, for example, working in highly urbanized centres and cities and/or time-pressured situations where there are higher risks of accidents and injuries (Orr et al., 2022, p. 209). They experience greater risks at the hands of customers for whom they risk their well-being (i.e. delivery during the Covid-19 pandemic). Necropower is also exercised by platforms through the coercive design of the platform infrastructure, which affords platforms control over when, where and how the platform delivery workers work, and indeed whether or not they work at all. Similarly, customers are also afforded some control over platform delivery riders through the platform's rating system, which has an impact on both the quantity of work and earnings of platform workers (Orr et al., 2022, p. 209). Last, necropower is also exercised through the lack of governmental regulation, which

further risks the lives of platform delivery workers as the self-regulating nature of the platform delivery work puts riders at risk for profit (Orr et al., 2022, p. 209).

For food-delivery riders, their ability to work in precarious conditions – whether they are efficient enough to adapt to severe labour competition, unstable demands and incomes, and a lack of life-affirming protections – defines their competitiveness. It indicates that their willingness to take risks or, in other words, their willingness to be injured and debilitated, determines the value of their labour (Orr et al., 2022). They actively choose risky behaviours and expose themselves to the possibility of injury and death for the maximization of platforms' and restaurants' profits, and customers' satisfaction. But what is less clear is how riders respond to the coercive nature of necropolitics in their work, or how they exercise agency as necropolitical labourers to avoid debilitation and death.

## *The liminal precarity of migrant platform delivery workers*

Niels van Doorn's (2023) concept of 'liminal precarity' refers to the affective state of mind of migrant delivery workers who endure the precarity of platform work despite the risks and challenges. Migrant platform delivery workers survive because they perceive the precarity of delivery work as a temporary life stage. Migrant gig riders in global cities are more likely to participate in an informal economy with precarious working conditions for several reasons, and migrants in Australia are no exception. This is because there is little opportunity for migrant workers in the local labour market. The precarity experienced by migrants is compounded by local language difficulties (Polkowska & Filipek, 2020; Stevens, 2019), limited access to government support (Lafleur & Mescoli, 2018), and a lack of local networks (Stevens, 2019), which limit their ability to undertake work in the formal sector. Although platforms 'are more focussed on churning through a steady supply of replaceable migrant labour' (van Doorn, 2023, p. 1972), the lack of local labour market opportunities means that platform labour is an attractive alternative.

Experiencing liminal precarity is 'an act of wishful thinking' for migrant workers in that precarity is a temporary phase of transition to a better future (van Doorn, 2023, p. 174). Platform work is understood as a stepping stone for migrant workers to achieve their future aspirations (Meeus et al., 2019). Platforms buy migrant workers more time by providing mobility and stability (van Doorn, 2023). In this sense, migrant food-delivery riders enjoy the flexibility to work for as long as they desire and a sense of financial security (van Doorn, 2023). They also enjoy a physical sense of security. In van Doorn's (2023) study, platforms' surveillance of gig workers gives some of them a sense of protection. The type of 'routine' work eases migrant workers' anxieties about unemployment and the future, giving them a sense of security (van Doorn, 2023, p. 169). Furthermore, gig work provides a sense of certainty in that it is a fallback job that they can return to if future endeavours are not successful (van Doorn, 2023). Migrants perceive gig work both as a life raft when moving to a new country and as a form of 'mutual exploitation'. They have some degree of control and agency over the job – for example, they can quit and rejoin the platform at any time – which makes the precarious working conditions bearable and acceptable (van Doorn, 2023, p. 166). Therefore, migrant gig workers' perception of precarity becomes an 'affective space of reprieve'

(van Doorn, 2023, p. 170), with the 'intensified risk-taking' absorbed 'under the understanding, or pretence, that the stuff one puts up with will be temporary'.

## Data and method

Following existing research, this study employs a qualitative research methodology (Goods et al., 2019; Merriam, 1998) to explore riders' work safety in Australia. Qualitative data was collected through 14 semi-structured interviews using a deductive approach (Hansen, 2020). Participants were recruited from online forums such as Facebook and Twitter using an online survey (n = 100) collected between June and August 2022. The survey asked respondents a series of demographic questions (i.e. age, gender, platforms worked on). Participants opted into the interviews by providing their contact details for the research team to contact and arrange interviews. Interviews were conducted on Zoom and transcribed by the research team. Participants were also asked to elaborate on their answers in the surveys on their work experience and work safety and were remunerated for their participation. Data from the transcripts was analysed using thematic analysis (Hansen, 2020) to identify the main themes riders talked about regarding safety. While the majority of thematic analysis studies are inductive (Hansen, 2020), the analysis was partially informed by a priori themes based on a review of the key literature on food-delivery riders' work safety, to narrow down the focus and integrate the research questions into the process of data collection and analysis (Fereday & Muir-Cochrane, 2006). We identified several key themes: how food-delivery riders assess the risks of physical conditions and platforms' infrastructure, and how they practise and experience safety at work. The research was conducted following the ethics protocols of The University of Melbourne. The project was given ethics approval in April 2022 (Ethics ID: 23893).

### *Sample*

Of the 100 respondents who completed the survey, 20 agreed to participate in a one-hour interview but ultimately only 14 ended up completing an interview. This sample is in line with previous research, which has found food-delivery work to be largely carried out by men (Churchill & Craig, 2019) and migrants (Goods et al., 2019). The age of the participants ranged from 19 to 39 and the average age of participants was 29.7 years. The majority (90 per cent) of the sample identified as men. The majority of respondents were migrants: 40 per cent were international students, a further 40 per cent were migrants with temporary visas and 20 per cent were Australian citizens. All but one participant worked on the UberEATs platform and 70 per cent of the sample worked on multiple platforms, including DoorDash, Menulog, EASI and HungryPanda. All participants worked and lived in Melbourne, Australia.

### *Data analysis*

Data was analysed through a thematic analysis in a deductive approach using pre-coded themes. It helps us to better manage and organize related data for later interpretations

(Fereday & Muir-Cochrane, 2006). Based on the focus of this research and existing literature (Goods et al., 2019; Lachapelle et al., 2021; Papakostopoulos & Nathanael, 2021), six themes are identified, including (1) food-delivery riders' working experience, (2) the influence of physical environment on food-delivery riders' work safety, (3) riders' conceptualization of safety, (4) safety measures and safety culture in the food-delivery industry, (5) food-delivery platforms' work design and responsibilities, and (6) food-delivery riders' experiences of incidents and risky behaviours. These themes inform the potential safety risks, risk management, and safety outcomes for food-delivery riders in Australia. This research is bound to a deductive approach based on an 8-month research period. A combination of inductive and deductive thematic analysis can be deployed for future research to develop more themes relevant to the field of gig riders' work safety (Fereday & Muir-Cochrane, 2006).

## Findings

The overwhelming majority of participants were migrants on some kind of temporary visa, which meant that they needed to earn money because they were not eligible for government support or were unable to rely on their families for support. Many discussed the difficulties of being a migrant in Australia and finding work, which made them highly dependent on platform delivery work (Schor et al., 2020) because it was seen as a good source of income (van Doorn, 2023). This dependency shapes much of their experiences in the gig economy and, importantly, their decisions and 'choices' surrounding safety and economic well-being.

### *Choosing the right vehicle: The trade-off between efficiency and safety*

Platform delivery riders have a choice between various types of vehicles for delivery work: cars, electronic bikes (e-bikes), unmotorized bikes, and motorcycles. However, riders saw some vehicles as 'safer' than others – for example, cars were seen as safer than bikes. At the same time, some vehicles were understood by participants as better for maximizing earnings, for example, e-bikes. Participants in the study weighed up the advantages and disadvantages of all vehicle types when it came to both safety and earnings potential, but almost all participants made their choice of vehicle based on earnings potential, even when it was clear that there were some risks and hazards with particular vehicles.

Among the study participants, bikes were seen as more economical because they were more affordable to purchase and maintain. Furthermore, they were seen as easier to use and did not require a licence, which is advantageous for international students and migrants who are not familiar with local traffic rules. Moreover, riders talked about how traffic regulations on bikes were 'looser' than for other vehicles, which made them ideal for platform delivery work, especially in crowded areas.

> [It] all depends on where you deliver.… [In the city] it would be better to do on a bike because traffic rules and regulations are looser … if you're [working] in the suburbs it's better to use a car. (Henry, 28, car driver)

But while bikes were seen as advantageous in some contexts, they were not universally preferred by platform delivery riders. For example, Evan (19, bike rider), said that riding a bike required a certain physique because it was more physically demanding, which often led to fatigue, especially for long-distance deliveries and hilly road conditions, which impacted his ability to earn. Generally, bikes were seen as less efficient, which has a direct impact on earnings. To compensate, riders' health and well-being was put at risk to increase their earnings:

> It's important for the rider to stop when you are tired, because for a motorcycle or car, you can possibly do two-hours [of] delivery [work], but for a bicycle, someone needs self-control to stop. It might be difficult, especially for people wanting to earn money. (Evan, 19, bike rider)

In contrast to bikes, e-bikes were seen as faster and requiring less physical exertion, which made them preferable to manual bikes. Study participants also talked about how the lack of licensing or regulation made e-bikes easy to obtain and use. E-bike riders were able to easily accelerate with the throttle, which increased their efficiency but made them more dangerous on roads, especially for inexperienced riders. There was little safety knowledge and awareness among e-bike riders.

Participants who used bikes and/or e-bikes in the study encountered similar safety issues. Both viewed Melbourne as not necessarily (e-)bike-friendly, as many roads in Melbourne do not have specific lanes for bikes and e-bikes. Both Alice (28, bike rider) and Kevin (24, e-bike rider) felt insecure and confused on roads and were forced to ride on pedestrian lanes to stay safe, which may trigger road rage from pedestrians, putting them at risk.

> When I use a bike, I get confused about where I should go: do I have to follow the car road or the pedestrian road? … I will go to the pedestrian end because I play safe.… Sometimes, people get angry with them [bike riders] because they use the same lane. My friends say sometimes they just use the bike while walking, but people still get angry at them. (Alice, 28, bike rider)

Participants felt that bike/e-bike riders received fewer orders and earned less than motorcycle and car drivers. Half of the study participants wanted to use a motorcycle for delivery work, but most participants could not afford a motorcycle. Motorcycles were seen by study participants as safer compared to other modes of transport because of the requirements around helmets and the provision of specific lanes, even though motorcycles were faster and thus potentially more dangerous. The speed of motorcycles also meant that participants considered them the most efficient and potentially better for maximizing their incomes in comparison to (e-)bikes. Some participants, like Andrew (32, motorcycle rider and car driver), felt that platforms tended to allocate more orders to motorcycle riders, which consequently increased both their incomes and time pressures.

## *Occupational hazards: How platform riders responded to poor working conditions and platforms*

Consistent with previous research, study participants described extreme conditions, including weather, traffic, delivery time and location, as posing risks and hazards to

their work safety (Lachapelle et al., 2021). This was particularly the case for migrants who are not acclimatized to the Australian weather and climate. Participants Jack (26, bike rider) and Henry (28, bike rider) talked about how the weather, particularly extreme heat during summer, made the physical work of platform delivery work more exhausting. On the other hand, wet and rainy conditions increased safety risks, making roads slippery and reducing visibility, which increased the risk of accidents. Some also mentioned strong winds, which made it easy to lose balance, especially for those carrying the delivery bags, and difficult for food-delivery riders to control their bicycle.

Although participants identified a number of the risks caused by weather and climate conditions, some, like James (39, bike rider) and George (36, bike rider), had strategies to deal with these issues. Participant Henry (28, bike rider) avoided working in extreme weather:

> I usually tend not to deliver when it's raining heavily, a little rain is fine, but if it rains heavily … I don't tend to deliver because of the roads.… It's better to stay home … (Henry, 28, bike rider)

However, the demand for food delivery increases on hot days and rainy days, and to counter these conditions and to persuade reluctant riders like Henry, platforms offer incentives, for example, extra money per ride to motivate riders, which is very attractive for riders who need the money. Incentives motivate not only experienced riders who are more confident in their risk management and see it as 'normal' for this job (Andrew, 32, car driver) but also riders who are more dependent on this job and want to earn more.

According to Anthony (26, bike rider), incentives are a form of 'positive manipulation' for platforms to control riders' working behaviours through rewards. Although participants recognized that incentives are usually provided in risky conditions, such as in poor weather, busy areas, or peak hours, many of them were still encouraged by them. For example, Jason (34, bike rider) described that he was highly motivated to work in heavy rain when the platform EASI offered him a 160% increase on his usual fees. Participants like Evan (19, bike rider) and Jack (26, bike rider) also talked about platforms' 'heat map': a map marking areas in different colours, indicating the demand and showing different rates of bonus. They observed that demand and bonuses in Central Business District (CBD) are always the highest, especially during peak delivery hours, which was a way of incentivizing riders as well. Anthony (26, bike rider) also felt that incentives are 'personalized' for platforms to exploit riders' working capacity rather than promoting their safety. For example, he talked about 'quests', which were work rewards that encouraged more work:

> Quests has been personalized a bit, but still not personalized considering the work health and safety. It is personalized depending on this worker's capability, like if the platform knows this worker can go faster. (Anthony, 26, bike rider)

While some participants like Evan (19, bike rider) and Jack (26, bike rider) found wages were only reasonable with the incentives, many participants were not motivated by incentives to accept orders they were unwilling to take on. For example, Jack (26, bike rider) would not take long-distance delivery work even with incentives. Similarly, James (39,

bike rider) and Henry (28, bike rider) would not push themselves to pursue incentives because they saw food delivery as a side job.

Traffic is another prominent factor affecting the safety of food-delivery riders. Heavy traffic, busy intersections, and big crowds were commonly recognized by participants as risky situations, when accidents and road rage incidents are more likely to occur. Participants who used bikes/e-bikes found tram tracks dangerous because they could lose balance while crossing them, and they had trouble predicting when the tram would come. In response, riders slowed down and walked with their vehicles, which was safer, but on the other hand, it compromised their efficiency.

For study participants, safety was highly dependent on when and where they worked. Different locations had different safety considerations and dimensions for the participants in this study. The CBD is not always friendly for food-delivery riders. Participants like Jack (26, bike rider) and Kevin (22, bike rider) saw the CBD as riskier due to there being more cars. For example, car drivers in the CBD often open the door suddenly sometimes hitting them. On the other hand, the CBD can be safer because of the lower speed limit for cars compared to the suburbs (Jack, 26, bike rider).

Participants saw working at night time as riskier because of the greater possibility of being robbed or their vehicles being stolen. The risk of vehicle theft was perceived to be higher in suburban and regional areas among participants:

> At night, it's really dangerous for us to deliver because the streets are dark when we're driving to the suburbs. If you leave the car, the risks of your car getting stolen or you getting robbed are really high. (Andrew, 32, car driver)

> In the evening, I like to deliver in the suburbs.… It's better than in CBD … [where] I need to lock my bike and it takes more time to get to the apartment. But to … [a] house, I don't need to lock my bike. (Alice, 28, bike rider)

Participants also talked about how different times of the day impacted their safety. For example, some participants made a distinction between 'peak traffic hours' and 'peak delivery times'. According to George (36, bike rider), peak traffic hours usually occurred between 5 a.m. and 6 a.m., while peak food-delivery hours occurred between 12 p.m. and 2 p.m. for lunch, and 6 p.m. to 9 p.m. for dinner. However, safety and efficiency were negatively impacted during traffic peak hours because of the heavy and unpredictable traffic, especially during the evenings when people pay less attention to the traffic. As a result, some riders preferred to work during the lunch rush because there was less traffic which made deliveries easier, quicker, and ultimately safer. Riders like James (39, bike rider) and George (36, bike rider), still worked during the evening and night time because there were more orders and higher payments even though it was less safe.

## *Practising 'good safety': Riders' management of risks on the roads*

Participants evaluated and avoided potential risks based on their knowledge of the areas they were working in. As Alice (28) described, '*it's always about the area*', as participants' knowledge of the location and their previous experiences help them to recognize potential risks and develop different strategies. They tended to avoid areas with poor road

conditions, including roads with curved surfaces, poorly maintained, with many constructions, or busy traffic. Alice (28) exemplifies this approach:

> I will always see the area. If it's Fitzroy [a suburb of Melbourne, Victoria], I'll never take it … because there is a lot of transportation, many restaurants.… I don't really like the road conditions, it's not that flat, the roads are poorly maintained, a lot of construction on the road. That makes me feel uncomfortable.

Participants also found working in unfamiliar areas riskier. For Anthony (26), delivering alcohol to unfamiliar locations had the potential of engaging with hostile, under-aged, or intoxicated customers. To counter this, he checked the customer's ID, and whether the customer was intoxicated. He would pass the delivery through the passenger side and not leave his car if he felt unsafe. Others like Alice (28), folded her bike and took the tram home when she delivered to unfamiliar areas at night.

Participants were heavily dependent on navigation technology like Google Maps or the platforms' own map technology when delivering to unfamiliar areas, which were sometimes inaccurate, compounding safety risks. Kevin (22, bike rider) described how Google Maps sometimes directed him to the bike lane in parks at night. Because it was dark, there was a higher possibility that he might hit other people. There were also times when he found no bike lanes in the park as indicated by Google Maps. On the other hand, participants like James (39, bike rider) and Henry (28, bike rider) found navigation technology safer and more reliable than human knowledge, providing more detailed information like speed and traffic. George (36, bike rider) also mentioned that Google Maps tends to give safer routes but with longer distances. Therefore, riders needed to balance safety and efficiency in deciding when and how to use the navigation technology in unfamiliar areas.

Participants' perceptions of safety and risk management were also influenced by their working experiences. Experienced food-delivery riders like Anthony (26, bike rider) tended to have better safety awareness and measures. However, experienced food-delivery riders like Andrew (32, bike rider), who had worked as a rider for over two years at the time of the interview were more confident and only rejected orders when the payments were unreasonable. Other participants with lesser experience, like Alice (28, bike rider), learned safety measures from her friends, for example, riding on pedestrian lanes when there was no bike lane to stay safe.

## Discussion

This research highlights how necrocapitalism operates to shape safety outcomes for platform delivery riders in Melbourne, Australia. The platform delivery riders in this study are necropolitical labourers who are exposed to and experience corporeal risks and harms in their everyday working lives (Orr et al., 2022). Platform delivery riders experienced corporeal risks not only in highly urbanized centres like the Melbourne CBD as identified by Orr and colleagues (2022), but also across Melbourne suburbs. Moreover, platform workers in this study identified corporeal risks and harms at a more immediate, local level, highlighting the challenges they face working in certain road conditions. They

also faced corporeal harms and risks because of the temporal dimensions of this work. Not only did platform delivery riders inhabit time-pressured situations to ensure deliveries were made on time (Orr et al., 2022), but the risks were exacerbated by the time of the day, which platform riders identified as 'peak' delivery and traffic hours. The climate also added to the risks where wet and rainy days or hot weather pushed riders to make deliveries even when they were hesitant.

The platform delivery riders in this study were aware of these risks. They internalized them as an everyday part of their job. Many participants in the study continued to work despite hazardous physical working conditions. Some were even injured in accidents while delivering, and many were exposed to potential threats and harm. Despite this, most continued to work. In this way, they constituted the ideal necropolitical labourer by showing a willingness to risk debilitation and death to deliver (Orr et al., 2022). Platforms exercised necropower on platform delivery riders by using incentives and rewards to encourage riders to deliver under these conditions, exacerbating the potential for corporeal risks and harms. Importantly, this research shows that the strength of necropower and platform coercion works more strongly on those who are more dependent on platform work (Schor et al., 2020), especially on platform earnings. Those more dependent on income from the platforms were more responsive to incentives and rewards and thus took greater risks. Most platform delivery riders in Australia are on temporary visas (Transport Workers Union, 2020) and the majority of participants in this study were international students, who enjoy very few working rights and are unable to access government support. The 'regulated deregulation' (Ferreri & Sanyal, 2018) or the 'legalized deregulation' (Beck, 2000) of the gig economy can be both advantageous and disadvantageous for migrants. For example, flexibility enables migrants to overcome restrictions on work hours (van Doorn, 2023), but on the other hand, as independent contractors, they have few labour protections or rights. The high dependency on gig economy incomes means that delivery riders are turned into neoliberal subjects whose decision-making behaviours are economized (Brown, 2015) by harnessing their desires to earn and leveraging the knowledge that they will do whatever it takes to continue earning as they choose income and efficiency over safety. The idea of safety as a kind of 'choice' between making a living or not surviving meant that riders were highly susceptible to risky situations, which actively encouraged risky behaviours, such as speeding and taking shortcuts to improve efficiency and maximize earnings. This is also evident in how platform riders approached choosing a vehicle for food-delivery work. Many weighed up safety against efficiency, choosing the more risky vehicle that would provide them with greater economic rewards.

Migrant platform riders engaged in this risky platform work because of their overwhelming need to earn money and make a living. Platform delivery work is unskilled and is relatively easy to access, thus it provides migrants like those in this study with financial security, which helps them to overcome anxieties about unemployment and is seen as a stepping stone to greater security (van Doorn, 2023).

Here, we can see evidence of van Doorn's (2023, p. 18) liminal precarity, in which migrant platform workers occupy that 'in-between space of intensified risk-taking', where the benefits and disadvantages of delivery work are weighed up, but also contextualized within, the migrant workers' wider life course experiences.

While workers often succumbed to the necropower of platforms, this did not mean that they did not exercise agency over their working lives or resist the necropower of platforms. This is one of the key findings of this research. For example, platform delivery riders mediate risks based on their working experience and knowledge from peers, which helps them resist the risky conditions imposed by platforms' disciplinary techniques. While dependency shapes the reach of necropower on riders, platform delivery riders' tenure, experience and knowledge moderates its impact. While algorithmic management systems monitor and assess riders' performances, sometimes resulting in the punishment (i.e. fewer orders) of platform riders who are less efficient in delivery times, platform riders in this study talked about how they used the platform's design to avoid risks. For example, some riders in this study used the platform's functionality and design features to report 'feeling unsafe' or 'order is damaged' to circumvent potentially risky situations without penalty or punishment.

### *Limitations*

The sample of participants may potentially be biased because of the recruitment methods used in this research. This research used an online survey to recruit participants so migrants from non-Western, non-English-speaking countries may have been prevented from participating in this study. A wider sampling frame for future research may overcome these issues.

## Conclusion

When Australian platform food-delivery riders are at work, they are at risk of debilitation and/or death (Orr et al., 2022). One in every four platform riders in Australia has experienced an accident while working (Transport Workers Union, 2020) – but despite this, the safety of platform riders remains a peripheral concern for customers, platforms and governments. The majority of this workforce are migrants – international students or temporary visa holders – who embody a necropolitical labour force, a high-risk labour force who are easily replaceable and whom the state has very little interest in protecting. Platform riders are very aware of the risks and harms of platform delivery work and they see it as an inevitable part of their job, viewing their safety as their responsibility. But their desire for earnings and ultimately a better life sustains them and pushes them to carry on despite the risks, in the hope of a better, future life. However, our analysis reveals that the prioritization of income and earnings compromises riders' agency and undermines the effectiveness of their risk-mitigation strategies. The prioritization of earnings speaks to the challenges of migrants, particularly international students and temporary visa holders in Australia, who have limited working rights and access to government support. Addressing the living conditions of these populations may reduce their reliance on platform delivery work and reduce harm. Notwithstanding these issues, greater regulation of the platform economy is needed that enshrines better working conditions and places greater responsibility on the platforms that reap the rewards of the necropolitical labour described in this article. While some platforms provide online safety modules before workers can activate accounts (NSW Government, 2021), more research is

needed to test their efficacy. And, lastly, further regulation of vehicles is needed, given that e-bikes and scooters are obtainable without licences. These endeavours are critical starting points for improving the safety and well-being of platform riders.

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