"We are a forgotten people!": The experience of stress among New York City yellow taxi drivers

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ABSTRACT

Objectives: This study analyzed New York City yellow taxi drivers' perceptions of workplace stressors in the setting of recent taxi driver suicides. It also documents their lived experience of stress and their response to stress.
Methods: We conducted open-ended, life-history informed interviews with current and former New York City yellow taxi drivers in 2022. Interviews were transcribed and analyzed thematically.
Results: Interviews (n = 21) revealed diverse stressors, including financial strain, discrimination, the loss of colleagues to suicide, and media coverage surrounding driver suicides. Drivers experienced their stress as anxiety, depression, helplessness, rage, and sleep disturbance. Few had sought out mental health support, though many would consider doing so if it were available.
Conclusions: By employing a life-history-interview methodology, we identify complex sources of stress among taxi drivers. Our research additionally documents drivers' descriptions of their lived experience of stress and their response to stress. Though many drivers described their stress as overwhelming, few had sought out mental health support. In sum, this research suggests that opportunities exist for intervention to improve the health and wellbeing of this vulnerable, underserved community.

1. Introduction

Taxi drivers are among the most socially, ethnically, racially, and religiously diverse professional groups in the United States. In New York City (NYC), yellow taxi drivers occupy a unique position, serving as an instantly recognizable cultural symbol of the Big Apple even as they incur economic risk in excess to that of drivers in other cities. Economic risk is largely due to their need to purchase taxi medallions – at times costing upwards of $1 million – guaranteeing their right to secure passengers from the city's streets. Throughout the mid-to-late 20th Century, aspiring taxi drivers, often first-generation immigrants, relied on high-interest loans to purchase medallions, lured by the appeal of self-sustaining business ownership and the popular belief that medallions were "a better investment than gold" (Johnston, 2011). Meanwhile, those who could not purchase medallions leased taxis from medallion owners.

However, in 2011, ride-share applications such as Uber and Lyft began to establish a presence in NYC. Within five years, they had transformed the landscape of for-hire transportation. By providing a means whereby passengers could order cars via phone app, they rendered irrelevant yellow taxi drivers' main asset: their ability to secure passengers who hailed them at curbside. Suddenly, the

rights bestowed by medallions evaporated as taxi drivers watched ride-share apps saturate the market – with monthly Uber and Lyft rides surpassing taxi hails by 2017. As a result, yellow taxi drivers saddled with six-to-seven-figure debt became unable to support themselves and their families. Through the mid-to-late 2010s, drivers spoke out over their struggles, though neither their calls for aid nor news reports documenting their plight effected change in the city's transition to a ride-share-dominated driver pool.

National discourse surrounding the plight of NYC drivers took on renewed urgency in 2018 as news outlets began reporting on drivers who had taken their lives in response to the economic and emotional turmoil they were experiencing. *The New York Times* published multiple articles – including "Another Taxi Driver in Debt Takes His Life. That's 5 in 5 Months" and "Suicides Get Taxi Drivers Talking: 'I'm Going to be One of Them'" – announcing the dire conditions endured by the city's once stalwart mainstays (Fitzsimmons, 2018; Stewart and Ferré-Sadurní, 2018). In February of 2018, the crisis was brought to the doorstep of municipal leaders as a NYC livery car driver (a group whose members similarly struggled with the rise of ride-share apps) died by suicide on the steps of City Hall. Before his death, the driver published a Facebook post sharing his hope that his suicide would yield change. "I hope with the public sacrifice I make now that some attention [will be paid] to the plight of the drivers," he wrote. "It is too late for me so who is next? Maybe you and yours?" (Bellafante, 2018).

With growing recognition of drivers' struggles, the city's labor rights leaders mobilized. The resulting protest movement has contributed in significant ways to changes in taxi policy, most recently by advocating for debt relief for medallion owners. Less discussed is the degree to which the movement has facilitated discussion of stress and mental health topics historically viewed as private. In 2021, for example, drivers staged a hunger strike outside City Hall, with news outlets linking the protest to taxi driver suicides. Such publicization of private dimensions of drivers' lives contrasts with data suggesting that taxi drivers are reluctant to share mental health concerns (Marani et al., 2020).

Taxi driver deaths, and the proliferation of public discourse surrounding them, has raised concerns regarding driver mental health and the implications of driver stress on public health and urban transport systems. In addition to the preeminent aim of understanding driver mental health to prevent illness and suffering among the driver community, research in both the US and abroad suggests that professional drivers' experience of stress should be considered in urban transport safety planning, as job stress is a potent predictor of traffic accidents (Useche et al., 2018; Mehri et al., 2019).

Despite these concerns, there remain gaps in the current state of knowledge regarding the experience of stress among NYC taxi drivers. The only qualitative study of NYC taxi drivers, published by our group in 2024, focused on drivers' experience of media reporting of driver suicides (Kelly et al., 2024). All other existing studies are limited to cross-sectional surveys. A survey Lui and colleagues conducted between 2016 and 2019, for example, revealed that nearly 9% of NYC taxi drivers reported experiencing mental health challenges and, among these individuals, only 0.5% received treatment (Lui et al., 2023). A cross-sectional study by Mirpuri and colleagues between 2013 and 2016 found that NYC taxi drivers reported high levels of discrimination, perceived stress, and likelihood of anxiety, depression, and chronic pain (Mirpuri et al., 2020). Another survey during the same period, which matched taxi drivers in NYC and Toronto, found decreased rates of health insurance coverage among NYC drivers. However, drivers in both cities were found to have high rates of reported major health conditions (Mirpuri et al., 2018). Similarly, a 2011 survey administered to taxi drivers at NYC's John F. Kennedy International airport found that over half of participants lacked health insurance and nearly half lacked a primary care provider (Gany et al., 2015).

Looking beyond NYC, researchers have employed similar cross-sectional surveys to examine the mental health of taxi drivers throughout the US and internationally. In a cross-sectional survey of drivers in San Francisco, for example, over one third reported symptoms of depression, and researchers identified associations between depressive symptoms and exhaustion, financial struggles, and lack of respect from others (Burgel and Elshatarat, 2019). Another cross-sectional study by Schwer and colleagues documented acts of violence endured by Las Vegas taxi drivers, including fare evasion, abuse, assault, and robbery (Schwer et al., 2010). Cross-sectional surveys administered in Japan and Iran also found evidence of substance use, sleep disorders, and/or depression among taxi drivers (Ueda et al., 1989; Abedi et al., 2024; Faghir et al., 2020). Surveys among taxi drivers in New Delhi revealed that over 60% were living with depression and nearly half were living with anxiety (Rathi et al., 2019). Similarly, surveys conducted in Melbourne found that one third of taxi drivers reported very high levels of distress and over half reported enduring at least one potentially traumatic event (Davidson et al., 2018). Encouragingly, a smartphone-based mental health application introduced by the same research group in Melbourne was found to increase driver knowledge and awareness of mental health challenges (Davidson et al., 2020).

While quantitative studies offer valuable insight into communities' stress and mental health burdens, their utility is maximized when considered alongside qualitative research among similar populations. As Nick Black argues, qualitative research can improve the accuracy of quantitative studies by (i) increasing our understanding of how quantitative data were generated, (ii) identifying the appropriate variables to be studied quantitatively, and (iii) helping to generate hypotheses (Black, 1994). Moreover, qualitative studies can deepen our understanding of communities by providing a means through which community members can express their lived experience in their own words. However, there is a notable dearth of qualitative research studies among US taxi drivers. One 2012 focus group analysis by Burgel and colleagues documented health and safety concerns among drivers in San Francisco, including stress, pain, and concern with employment stability (Burgel et al., 2012). Similar thematic analyses of semistructured interviews with drivers in a large urban area in the Northwestern USA uncovered concerns centering on theft of money, interpersonal violence, and physical violence (Gilbert, 2011). Lastly, a mixed methods study among drivers in Los Angeles, which combined cross-sectional surveys, focus groups, and interviews, uncovered possible associations between work stress and job-related injuries (Wang and Delp, 2014).

Qualitative research among taxi drivers working in international settings provides additional perspective. Two studies involving thematic analysis of interviews and focus groups among taxi drivers in Zanjan, Iran revealed concerns with traffic, economic pressure, and perceived social prestige, and suggested links between economic pressures and driving behaviors (Mehri et al., 2018, 2019). Thematic analysis of semistructured interviews among drivers in Lahore, Pakistan revealed multiple sources of stress, including pressures

from family; poor physical health; lack of awareness of taxi industry regulations; and disrespectful behaviors by customers, management, and society at large (Rasheed, , 2023). Additionally, in their study of taxi drivers in one of Australia's capital cities, Sheahan and Smith found that driver stress was linked with "deviant behaviors" such as speeding, running trips off the meter, and underreporting earnings (Sheahan and Smith, 2003).

Finally, research by Marani and colleagues among taxi drivers in Toronto revealed that unstable employment and low wages were among the factors that contributed to poor physical and mental health (Marani et al., 2020). They found that drivers sought support from primary care providers for physical health matters but were reluctant to discuss mental health during these sessions. As the authors conclude, "Few drivers reported sharing the challenges of their work with their family, friends or colleagues, particularly mental health challenge … Instead, drivers struggled to navigate their work lives on their own" (Marani et al., 2020).

In contrast to these studies, we conducted the first rigorous qualitative analysis of the stress burdens of NYC taxi drivers and the first formal analysis of any kind that directly examines stress related to taxi driver suicide in the setting of transformations in labor markets. Our study goals were to understand NYC taxi drivers' perceptions of stressors affecting their health and quality of life, their lived experience of stress, the strategies they used to mitigate stressors, and the effects of public reporting of driver suicides upon engagement with formal and informal mental health support. In this paper, we focus on sources and experiences of stress, considering these factors within the context of drivers' broader mental health. We adopt the World Health Organization's definition of stress as "a state of worry or mental tension caused by a difficult situation" and the organization's definition of mental health as "a state of well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community" (World Health Organization, 2023; Mental Health World Health Organization, 2022). Our team utilized a semi-structured, life-history-informed interview methodology, providing drivers an opportunity to express their experiences and perspectives by encouraging them to discuss topics most salient to them as opposed to researcher priorities. This qualitative life history approach permitted an organic explication of their lives.

2. Methods

2.1. Study sample

Eligibility criteria for the study included (1) current NYC yellow taxi drivers who had driven a taxi for at least two years or (2) individuals who stopped driving a NYC yellow taxi in the previous year but who drove for at least two years. Participants were recruited in person at the taxi holding lot of NYC's John F. Kennedy International Airport with supplemental recruitment conducted through snowball sampling. We continued conducting and analyzing interviews until reaching saturation, defined as the point at which subsequent interviews no longer elicited new or additional themes. Our process was informed by research suggesting that 10–20 interviews are typically adequate for reaching saturation in qualitative analysis (Guest et al., 2006; Malterud et al., 2016).

Participants took part in a single, anonymous interview conducted in English via Zoom or telephone, with interviews recorded and transcribed. Interviews were scheduled to take 1 h, but interviewees were invited to share their reflections beyond this time if they wished to do so. All interviews were conducted by a member of the research team who received training in qualitative interview techniques, oral history methodology, and strategies for responding to discussions of trauma and suicide. Interviewees received a $20 gift card as a token of thanks for their participation. This research was approved by the Johns Hopkins University Bloomberg School of Public Health IRB (CR00001571).

2.2. Interview strategy

Informed by sociological semi-structured research methodology (Knott et al., 2022), interviews proceeded through six core domains: a discussion of (1) general demographic information, (2) the interviewee's upbringing and the path that led them to become a

Sources of Stress	Experiences of Stress	Responses to Stress
• Taxi medallion-debt • Uber and Lyft • COVID-19 • Discrimination • Violence • Law enforcement • Regulatory agencies • Isolation	• Fear • Anxiety • Sadness • Defeatism • Paranoia • Insomnia • Rage	• Lack of engagement with mental health care providers • Use of alternative health modalities • Lack of strategies for managing stress • Openness to learning new strategies

Fig. 1. Three core themes and partial list of subthemes.

taxi driver, (3) the stresses they experienced as a taxi driver, (4) their responses to stresses, (5) perspectives on media coverage documenting NYC taxi driver suicides, and (6) perspectives on the labor rights movement that has arisen in response to these suicides. Our approach was further informed by oral-history life-history theory, an approach to information gathering borne out of a "recognition that each individual has a life story to tell that is not only worthy of affirmative recognition but also that contributes to knowledge construction" (Field, 2007). This model permitted a free-form discussion of each interviewee's life, facilitating an organic elucidation of power relationships. Thus, while all interviews explored the same topics, the order of discussion and emphasis placed on each differed based upon the flow of conversation. Furthermore, our interview process was intentionally reflective, with team members meeting to discuss completed interviews and adjusting interview questions and approaches for subsequent interviews. This methodology, referred to by some researchers as a dialogic or iterative approach, is commonly employed in qualitative interview inquiries (Agee, 2009; McGrath et al., 2018).

2.3. Analytic strategy

Interviews were anonymized and transcribed, analyzed, and coded. Coding of transcripts involved sorting the data into high-level categories arrived at through team discussion (Miles and Huberman, 1994). We utilized a coding consensus framework whereby team members independently coded the same transcript and met as a group to discuss their codes, identify commonalities, and resolve divergences. The result of this process was a set of agreed upon subject areas or thematic codes present in the interview. We then created a definition for each code to ensure integrity of application across interviews. We strove to identify codes generated from meaning inherent in the data rather than pre-specified categories (Mishler, 1991; Packer, 2011). Using these agreed upon thematic codes, team members proceeded to code subsequent transcripts, meeting periodically to refine codes.

Our constant, comparative method guided the identification of themes and involved moving iteratively between codes and text to derive themes related to experiences of drivers (Boeije, 2002; Glaser et al., 1967; Malterud, 2001). During data analysis, we used several strategies to address trustworthiness, including immersion in the data through multiple close readings, frequent discussion by the study team, and searches for discrepant cases (Morrow, 2005). NVivo qualitative data management software (Version 12, QSR International) was used to facilitate analysis.

3. Results

3.1. Sample characteristics

In sum, we interviewed 21 drivers, ranging in age from 25 to 65 years (mean 51, median 56.5). All but one identified as male, consistent with the demographic distribution of taxi drivers. The taxi drivers had spent between 3 and 35 years driving (mean 20, median 19). Most drivers (87%) were born outside the US, hailing from Bangladesh, Brazil, Bulgaria, Burma, the Dominican Republic, Ethiopia, Haiti, India, Israel, Lebanon, Liberia, Mali, Nigeria, the Republic of Guinea, and El Salvador. A majority (55%) owned taxi medallions and the remainder leased medallions. Of medallion owners, drivers reported having paid between $95,000 and $600,000 (mean medallion price $221,000, median $223,000). The mean interview length was 100 min.

3.2. Stress and response

Here, we present three core themes: (1) sources of taxi driver stress, (2) their lived experience of this stress, and (3) their responses to this stress. Quotes are attributed to drivers using a T1-T21 convention (See Fig. 1).

3.3. Sources of stress

Summary: Drivers described multiple sources of stress, including financial strain, COVID-19, discrimination, treatment by authorities, and feelings of isolation.

Many interviewees identified drivers' inability to afford their medallions following the introduction of ride-share apps as a main contributor to their stress. One driver shared the story of his brother who had worked as a yellow taxi driver before his death. As the interviewee explained, "He told me he had a lot of stress since Uber and Lyft came into the market … His medallion loan monthly payment was $3500 … So, he could not make the payment, so he got a lot of stress. That's why he suicided and I lost my brother" (T1). A second driver shared the story of a colleague owing $700,000 on his medallion, whose hopeful outlook eroded as he awaited aid:

"[My friend] said, 'What we need is to get more of the drivers back to get demand of the taxis.' And that was one of the things that I remember vividly, that he was like, 'I'm not that worried. Things are gonna happen.' But weeks turned to months, months turned into years, and if anything, it was worse. [Ride share] cars were just coming into the city as much as 100,000, and really caused a disruption in the taxi industry" (T7).

Support would not come soon enough for the interviewee's colleague, who died by suicide. Another driver underscored the degree to which medallions contributed to driver stress when he shared, "I sold my medallion because it wanted to kill me" (T3). Here, the driver not only identified his taxi medallion as a source of stress but presented it as an anthropomorphized force conspiring against his wellbeing.

However, drivers also stated that their stress was influenced by more than ride-share applications or medallion mortgages. Many spoke of the challenges posed by the COVID-19 pandemic, when they served as a lifeline for healthcare workers requiring transport to hospitals. Other shared acts of discrimination they had endured, often linking it to anti-immigrant bias. As one driver noted of passengers, "He will find one reason or another to release his anger on you … they felt that taxi drivers in New York is immigrant job … they can treat you the way they want" (T3). Another driver told of an incident following a 2017 terrorist bombing at a UK-based Ariana Grande concert:

"The next day, people threw rocks at my cab, called me a terrorist! … Kids! Like 16, 17 years old, throwing rocks at my car, calling, 'Get the fuck out of my country you terrorist!'" (T14).

Both quotes capture a sentiment echoed by several drivers: the belief that they endured unique discrimination perpetuated by those who identified as residents of NYC in comparison to those who identified as immigrants. Indeed, in some cases, passengers who discriminated against drivers suggested that their identity as New Yorkers shielded them from critique. Speaking of one such passenger, a driver shared, "He started screaming … I said, 'Calm down, I am driving you a few blocks away.' He said, 'No, I'm a New Yorker. I was born here.' He started screaming at me … and he started hitting me on the back of the head" (T6). Numerous drivers echoed experiences of physical violence, with many reporting stories of passengers spitting on them and, in one instance, throwing dog feces at them.

Interviewees also noted that taxi driver discrimination at times transcended racial identities. As one driver noted, "When I get out of the cab, I am ok, because I am a white man. They don't know. But when I drive a cab, what they see is an immigrant, a low scumbag, uneducated, easy target" (T6). Another similarly reflected on the unique challenges taxi drivers face:

"New York City, it's a very interesting city because there is racism and there is discrimination, ok? But it's a very, very funny way in which it takes place … We are yellow. People here do not look at the taxi driver as an individual … They just look at the yellow color. They see yellow and they already have a picture in their head of what a NYC yellow taxi driver looks like. And because … most of the drivers are of color, they immediately get discriminated against. I'm white. I saw you at Kennedy [Airport] and I am whiter than you. But people don't look at me as a white person. They look at me as a taxi driver" (T16).

Other drivers shared frustrations with the city's police department, which they believed discriminated against taxi drivers. One driver shared a story wherein every car on the road was forced to make an illegal turn. However, when he made the turn in his taxi, he was pulled over by police and ticketed.

"I told him, 'Did you see [the other cars make the turn?]' And the cop told me, literally this is what he said: 'You guys make more money than us'" (T13).

Later in the interview, the same driver recalled a conversation with a second police officer wherein the officer admitted that he had pulled him over because taxi drivers were the "safest [drivers] … to pull over." Numerous drivers echoed this sentiment, arguing that the regulations governing their actions by the City's Taxi and Limousine Commission made it prohibitively expensive for them to fight back. Several drivers also shared that they found taxi driving to be isolating, which contrasts with media representations of a collaborative driver rights movement. One interviewee explained,

"[D]riving a cab in New York City is like being on a battle … Actually, you are the one soldier army! Because no one is with you! There is no army. You are the army, against everybody! You compete with the other cab drivers for business, which is extremely stressful. They are your brothers but you have to fight with them for business" (T6).

Another shared that driver isolation was exacerbated by the actions of passengers:

"Listen, I have passengers how many years? Twenty something years. Nobody talked to me [to say] 'How can we help you guys? You work hard … it's very stressful. I can see from your eyes, from your face, you are exhausted. How can we help?' No! Nobody! No! We are a forgotten people!" (T4)

3.4. *Experience of stress*

Summary: Drivers shared that their lived experience of workplace stress manifests as fear, anxiety, defeatism, paranoia, insomnia, and rage.

Drivers used diverse language to explain their lived experience of stress. One shared, "Sometimes I feel scared. Sometimes I feel lost. You know, sometimes you can't let your emotions take you over. But sometimes you have to … My thoughts are running. I'm nervous a little bit. Not nervous a little bit. I'm nervous a lot. Shaking, trying to add up things" (T21). Others admitted that they had found their stress to be too much to control. One shared a deep sense of defeatism:

"[There is] no light coming from your eyes to think [or] to face that. That's it! It makes you like to surrender! Makes your brain just fall down … That's it. Your work has sadness and then, you know yourself, whatever you say is not going to work" (T5).

A third noted that his stress manifest in road rage, while another shared that his stress had left him paranoid:

"I am paranoid … I think people just concentrate about me, see me, or talk about me … Whatever I do, they're thinking of me … If the police is behind me, I get paranoid the guy is gonna stop me. I don't know, everything I do is watched by other people. That's what I feel" (T4).

In addition to these reflections, multiple drivers shared that their stress made it difficult for them to sleep, with many reporting periods wherein they had slept less than 6 h nightly.

3.5. Responses to stress

Summary: Several drivers endorsed using alternative and integrative modalities for addressing stress. Only one driver reported receiving ongoing care from a mental health care professional, but many were open to learning new ways to manage stress.

Several drivers relied on alternative medicine modalities such as Ashwagandha, chamomile, ginger, traditional Chinese oils, and meditation to manage their stress. Others struggled to navigate their stress, such as one who shared,

"I have no strategies … no education in mental treatment … I was following my guts … But most of the time, my guts they were telling me wrong. Because I never stopped working … I come from Eastern Europe. Going to shrink means you are a very weak person … So, my whole being told me, 'You are not weak. You cannot go to shrink. What's wrong with you?'" (T6).

Despite their high levels of stress, only one interviewee regularly consulted a psychiatrist. Some, in fact, expressed frustration with discussions of drivers' mental health, arguing that such framings focused a spotlight on driver illness rather than on systemic sources of abuse:

"I don't want people to take it as mental health. Because when you get abused and then they say to you, when you're crying, they say, 'It's mental health,' I don't want that. We got abused by the government. We got abused by the system. And if it becomes a mental health on some other people, with me it is not a mental health. I'm fighting a life of abuse!" (T12).

While some interviewees shared misgivings with mental healthcare, others stated that they would be open to learning strategies for stress management. As one noted,

"It's not that you have a gasket and the gasket in your brain went wild. Something triggered this emotion that you just couldn't control. And it just makes me want to control my emotions more. Because I don't want to get to that point" (T20).

When asked of the utility of potential peer-to-peer stress management programs, most interviewees stated that they could be helpful, though some noted that cultural differences within the taxi driver community could pose challenges. Others posited that such programs would have greater success if they involved drivers' families, who both shoulder and contribute to driver stress.

4. Discussion and conclusion

Each year millions of customers enter NYC taxis, tallying over 1 billion trips between 2009 and 2015 alone (Riascos et al., 2020). And yet despite their prominent place in the history of NYC, and despite recent deaths of drivers to suicide, we lack a clear understanding of drivers' stressors or their response to stressors. This gap in our understanding is underscored by the fact that existing literature investigating stress among NYC taxi drivers is limited largely to a small handful of quantitative studies, with virtually no rigorous qualitative studies allowing drivers to tell their own stories and add their unique voices regarding their sources and experiences of stress to scholarly discourse.

Our qualitative, life-history-informed analysis documents diverse sources of driver stress, including economic strain, discrimination, social isolation, COVID-19, and the loss of colleagues to suicide. Drivers also reported concerning psychological responses to these stressors including anxiety, depression, helplessness, rage, paranoia, and sleep disturbance. Drivers additionally felt ill-equipped to respond to their stress. For some, reluctance to seeking professional help stemmed from a distrust in Western medicine, while others objected to clinical narratives that pathologized struggles they believed were rooted in structural inequity.

Before discussing the implications of this research, limitations need comment. First, while all NYC taxi drivers speak English, some declined participation due to concern about their inability to fully convey their experiences in English. Additionally, as our primary recruitment efforts took place at one of NYC's main airports, our sample includes taxi drivers who chose to secure passengers in this particular setting. Furthermore, due to the nature of qualitative interview studies, we relied upon participants' recall of past events and thus cannot discount the possible influence of recall bias. Our selection process also may have resulted in the inclusion of a higher percentage of drivers who endured stress and thus felt a desire to share their experiences. However, this potential bias may have been counterbalanced by the opposite phenomenon – in many instances, drivers shared that they were so overwhelmed that participating in a 1-h interview would have stressed them far too much. In any case, the goal of this semi-structured interview-based inquiry was to understand the breadth of experiences of stress of NYC taxi drivers rather than to infer from sample to population.

An additional potential limitation of our study relates to our sample size of 21 drivers. We took several steps to inform our process, including frequent team discussions and analysis of data to determine the point at which we had reached thematic saturation. Furthermore, our sample size was consistent with prior research suggesting that approximately 10–20 interviews are adequate for reaching saturation (Guest et al., 2006; Malterud et al., 2016). Additionally, previously published qualitative interview studies among taxi driver populations have utilized a similar sample size (range: 8–17 drivers) (Marani et al., 2020; Mehri et al., 2018, 2019; Gilbert, 2011; Rasheed, , 2023; Sheahan and Smith, 2003). Moreover, the mean interview length in our study (100 min) was longer than the reported interview lengths of prior studies (range: 22–87 min).

Nonetheless, we recognize that there are limitations to drawing conclusions about the broader taxi driver population from a limited data set, particularly given the diversity of cultural identities and experiences of drivers. Future studies may attempt to address these limitations through subgroup analyses of different taxi driving communities, the administration of surveys in languages other

than English, recruiting taxi drivers working in different locations within NYC, focusing on recent rather than distant events, and using calendars and other tools to help participants organize temporal events.

To date, relatively little research has been conducted examining the stress burden and broader mental health of NYC taxi drivers. Existing research is largely limited to quantitative analyses, which have uncovered high levels of discrimination, perceived stress, and likelihood of anxiety, depression, and chronic pain. Our study expands upon these findings by revealing additional sources of stress, including stress pertaining to the death of fellow drivers to suicides. In addition, rather than utilize predetermined survey language to assess for symptoms of depression or anxiety, we allowed drivers to describe their experiences in their own words. These perspectives may inform future research and interventions to address driver needs.

Similarly, by adopting a life-history informed semistructured interview design, we captured diverse driver opinions not easily elicited by predetermined surveys, including the perspectives of drivers who reject disease-based medicalization frameworks in favor of systemic or structural frameworks for describing their suffering. More broadly, our research adds to a small but growing body of literature utilizing qualitative techniques to study taxi driver experience in cities throughout the US and world, and serves as the first qualitative, interview-based, life-history-informed analysis of NYC taxi drivers that seeks to characterize their sources and experience of stress.

Our research may inform the development and implementation of programs to support the mental health of taxi drivers. For example, our findings suggest that many drivers are open to learning strategies for managing workplace stressors. Furthermore, many stated that peer-to-peer mental illness support programs of the sort implemented among first responders could be helpful for taxi drivers (Pressley et al., 2023). Future initiatives could pair peer-to-peer networks with smartphone-based educational applications like those successfully implemented in Melbourne (Davidson et al., 2020).

Crucially, given the diversity of the taxi driving community, initiatives may have the greatest likelihood of success if they are organized within each community and sensitive to each community's needs. Additionally, for some driver communities, programs may have greater success if they involve drivers' family members. As noted, our research furthermore suggests that efforts to develop interventions should acknowledge some drivers' fears that such initiatives may ignore the structural roots of suffering. As Herrawi and colleagues argue, when marginalized communities experience increased stress, mental health professionals often reply by recommending increased screening to identify psychiatric illness. "Certainly, we should provide clinical care to those in need," they argue. "[B]ut this intraindividual approach depoliticizes the experience of emotional suffering and fails to address the ways in which racism, discrimination, poverty, and inequality profoundly contribute to the development of mental health conditions" (Herrawi et al., 2022).

Our analysis shines a sharp but narrow light on the needs of a community whose members are at once ubiquitous and invisible – a cultural symbol of New York City prominently featured on postcards and in movies but largely overlooked in mental health literature. Future research is needed to characterize NYC taxi driver experiences, including the results of city initiatives aimed at decreasing medallion debt burdens in addition to non-medallion-based sources of driver stress, including discrimination, violence, isolation, and lack of access to mental health resources. Expanding beyond taxi driver communities, our findings may inform work with other groups who face disruptions in labor systems and who lack sufficient access to mental health resources, including food servers, retail workers, truck drivers, and construction laborers (CBInsights, 2017). Our motivating goal in understanding taxi driver stress must, first and foremost, be to address the needs of this often-forgotten community. However, the lessons we learn may apply to other vulnerable labor groups facing economic upheaval, as NYC yellow taxi drivers may prove to be the proverbial canaries in the coalmine alerting us to what lies ahead.

CRediT authorship contribution statement

Matthew Kelly: Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Bessie Liu:** Writing – review & editing, Investigation, Formal analysis. **Hana Minsky:** Writing – review & editing, Investigation, Formal analysis. **Paul Nestadt:** Writing – review & editing, Supervision, Methodology. **Joseph J. Gallo:** Writing – review & editing, Supervision, Methodology, Investigation, Formal analysis.

Statements and declarations

The authors have no competing interests to declare that are relevant to the content of this article. All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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