

Beyond Riding: Passenger Engagement with Driver Labor through Gamified Interactions

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Abstract

Modern cities across the globe increasingly rely on ridehail services for on-demand transportation and mobility. But for drivers, such marketed affordances give rise to hidden driver burdens and vulnerabilities that evade the oversight of consumers and regulators. To effectively advance worker protections and motivate more socially responsible practices, consumers must understand the realistic labor, logistics and costs involved with ridehail driving. Through think-aloud nine workshops with 19 drivers and 15 passengers, we explore the potential for gamified in-ride interactions to facilitate engagement with real (and lived) driver experiences, surfacing passenger knowledge gaps around latent working conditions, prompting reflection and shifts in perception of their relative power and consumption behaviors, highlighting drivers' preferences for creating more immersive and contextualized service experiences, and identifying design opportunities for safe and appropriate passenger-driver interactions that motivate solidarity. In sum, we advance conceptual understandings of social and managerial relations within a ride, uncover future potential for citizen-led labor advocacy, and offer design guidelines for more human-centered workplace technologies.

CCS Concepts

• **Human-centered computing** → **Empirical studies in collaborative and social computing**.

Keywords

Labor, Algorithmic management, Gamification, Rideshare Platforms

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1 Introduction

Platform-mediated labor occupies a growing proportion of the global workforce. Ridehail services (e.g., Uber, Lyft) are especially crucial to advancing urban mobility [173], work access [134], and stimulating local economies [57, 88]. However, scholars increasingly raise concern around physical [29, 103, 138, 162], financial [20, 152, 172] and psychosocial [8, 13, 136, 150] working conditions. Legal and critical scholars, for instance, criticize how platformic

management abuses workers [78, 97], while its consequences remain unchecked by labor regulations or social safety nets [40, 60].

Besides platforms, consumers also shape working conditions in significant ways: as *managers* of individual interactions when they evaluate and expect service quality of workers [125, 174] and as *labor market regulators* who hold collective political power [61, 62]. To influence, amass and leverage this power to bypass regulatory constraints (such as with Prop 22), platforms spend considerable effort campaigning for consumer support [27, 151]. However, consumers themselves remain unaware of the harsh working realities – Pew Research found that nearly half of Americans have never heard of ongoing debates around the classification of ridehail drivers [2].

In addition to cultivating political alignment with consumers [53, 151], platforms also design interfaces that suppress information-sharing among users [130] – preventing workers and consumers from engaging in mutual support [169]. To alleviate the resulting information asymmetries, a burgeoning body of HCI studies engage with algorithmically-managed workers to expose the hidden and undocumented risks of gig labor (e.g., pay rates [19], deactivation [124], tax or tort liability [28], consumer misbehaviors [139]), offering an array of worker-centered tools to collectivize and resist [19, 20, 72, 77, 171]. Workers also use a host of commercial tools to self-track data to manage their own accountabilities [64]. But while these systems sought to empower laborers through direct interactions with them, workers are reluctant to engage due to their vulnerable positions vis-a-vis platforms. Consumers, on the other hand, hold significantly more capacity, resources and power to influence worker rights and conditions [61, 109]. However, it remains unknown how technologies can surface driving labor in ways that *motivate*, mobilize and catalyze consumers to advocate for and practice more socially-conscious consumption.

In many on-demand gig work settings, the potential to build solidarity between consumers and workers is limited by the lack of opportunities for social interaction between stakeholders, due to physical (e.g., crowdwork) or temporal distance (e.g., food delivery, petsitting). The casual, co-located setting of ridehail creates a unique space where passenger-driver pairs can engage in conversations that foster mutual understanding, rapport and support. However, the temporal constraints and social boundaries of rides – *i.e.* their fleeting duration and awkwardness of engaging with strangers – can prevent the initiation of more meaningful exchanges. Raising the question: how can technology probes motivate passengers to overcome social barriers and engage in more in-depth social interactions and information-sharing with drivers during rides?

Gamification is one approach for motivating an audience to engage with serious but sensitive prosocial causes – e.g., gender-based violence [131], interpersonal racism [153] and HIV prevention [66] – particularly within time-constrained contexts such as platform-mediated rides. While platforms leverage gamification for more managerial purposes [65], transformational and persuasive games (achieved through mechanisms of “*embedded*” messaging, interactive narratives, etc.) offer players immersive spaces to learn about or experience driving conditions over a short time span without being subjected to personally vulnerable positions. This study explores the potential for game-based interventions to serve as boundary objects for initiating, mediating and transforming consumer discourse around the obscured realities of ridehail driving conditions. Following relevant game design techniques and frameworks for transforming player attitudes on serious social issues [32], we worked with ridehail drivers and passengers over a series of co-design sessions to explore whether gameplay interventions can mobilize passengers to engage with, understand as well as care and advocate for latent labor issues of ridehail driving.

RQ 1 Which forms of in-rides games can effectively embed latent ridehail concepts and experiences that drivers prioritize to share with passengers?

RQ 2 How can playable interventions motivate scalable passenger engagement with, understanding of and advocacy for the working conditions of ridehail drivers?

We took an iterative design process to approach these inquiries, beginning with goal delineation that combined broader insights from related ridehail studies and formative interviews (§5.1), followed by implementation of six gamified prototypes (§4) and a series of nine co-design workshops to gather driver and passenger feedback (§5.2). Our results uncover (1) passenger knowledge gaps around (latent) ridehail conditions (e.g., pay, logistics, rating pressures, long-term consequences) (2) early evidence for gamified interventions to mediate in-depth driver-passenger interactions and solidarity around these issues (3) driver preferences for more immersive and personalized play experiences for passengers during rides and (4) design tradeoffs to shape future passenger-driver interactions that motivate passenger-led advocacy for ridehail labor. We close by discussing prospective implications for design, advocacy and technology.

2 Related Work

We begin by overviewing documented stressors of ridehail driving (§2.1), existing approaches to advocacy (§2.1.2), potential for consumers to initiate influence during individual service encounters (§2.2.1) and regulations more collectively (§2.2.2), before diving into how in-ride games (§2.3.3) can transform (§2.3.2) rather than coerce and manufacture driver labor (§2.3.1).

2.1 App-based Ridehail Services

Since their introduction in the US market more than a decade and half ago, app-based ridehail services have proliferated. More than 36% of the US adults have used ridehail services [81] while Uber and Lyft captured \$37.28 and \$4.4 billion [76] in 2023, respectively. Together with delivery work, NBER found transportation services

such as ridehail to comprise the largest component of the gig workforce, as measured by the number of workers [51]. Below, we summarize studies documenting subpar conditions of ridehail driving, as well as investigations seeking to counteract exploitative platform practices via interventions such as worker data-sharing.

2.1.1 Latent Stressors, Labor & Power Asymmetry in Ridehail. Despite increasing consumer adoption of app-based ridehailing services, drivers’ earnings [19, 124], job quality [52, 165] and work conditions [18, 29, 102, 141, 144] have declined severely – leaving them stressed [5, 10, 132], overworked [1, 79] and seeking strategies to resist platform control [23, 106]. Researchers extensively documented how algorithmic management and intense competition creates immense psychological stress for drivers [5, 132] – who also deal with material stressors such as low pay [19, 69], health and safety risks from accidents on the road [29, 102, 141, 150], violence from passengers [103, 144], fatigue [79], job precarity [122, 156] as well as latent long-term consequences, including musculoskeletal and urinary disorders [5, 18]. However, many of these harmful, hidden and delayed effects [18] remain unobservable to passengers. Meanwhile, computing scholars studying labor (out of intentions to center and impact worker priorities [172]) overlooked how consumers are elevated to positions of relative (but uninformed) managerial power. Specifically, platforms leverage strict 5-star rating thresholds to impose reputational pressures [106] that exploitatively discipline drivers [25]. The rating mechanism is central to platform operations [129, 130] and enable (unrealistic) consumer expectations of service quality, including requirements to maintain “*friendly*”, “*positive*” and “*respectful*” attitudes, regardless of how passengers themselves behave [26]. Literature from organizational science [98, 106] show how dominant ridehail platforms such as Uber design interactions that create greater power imbalance between consumers and workers to effectively “*launder*” emotional [22], psychological [115] and immaterial [125] labor from ridehail drivers [157]. Such platform designs empower passengers without providing appropriate context on latent driver labor, giving rise to uninformed and unconscious consumption behaviors.

2.1.2 Technological Advocacy for Ridehail. Scholars at the intersection of HCI and labor studies made several attempts to curb the harmful impacts of algorithmic management [78, 97] and information asymmetries [130] by actively involving workers to participate in the co-design and development of alternative technological (data) probes and interventions. Stein et al. [145] imagined alternative data uses and more plural sociotechnical infrastructures with drivers. Zhang et al. [171] invited drivers to propose algorithmic imaginaries that center worker well-being. Hsieh et al. [70] worked with multiple stakeholder groups to reveal (mis)aligned objectives to advance technology, service and public infrastructure, including more accurate public perceptions of workers. Beyond co-design, recent studies showed the promise for data-sharing tools [19, 20, 72] probes [171], and collectives [71] to elevate worker priorities and advance labor regulations [19]. While these proposed interactions demonstrated shared worker motivations, they require effortful data contributions from drivers, many of whom labor for long hours to balance financial needs [165] with unstable job opportunities [122], making it impractical for them to engage in additional (uncompensated) interactions.

2.2 Role of Consumers in Ridehail Labor

Given the capacity constraints of workers, we turn to the untapped potential of mobilizing consumers as users of worker-advocacy technologies. First, we examine the role of passengers in managing frontline ridehail service (quality) before showing how (as a collective) consumers can offer workers *political leverage over platform decisions*.

2.2.1 Passengers as Co-managers of Ridehail Service. Besides the harmful effects of algorithmic management, **consumers** also play a crucial role in rating systems [62], which are intentionally designed to provide safe, reliable and quality service to paying users [4]. Initially, maintaining quality service was necessary for platforms to amass a sizable consumer base and establish market position [106]; but over time, strict deactivation thresholds [6] became strategic political tools to forge political alliances with consumers, who can help defend against (e.g., Prop 22 [151]) or even preempt [30] emerging regulations that threaten platform operations. Combined with platform nudges [147] and mechanisms (e.g., tipping [41]), the resulting reputational pressures discipline drivers into performing unpaid service – e.g., maintaining a friendly mood [26] or clean car [4], playing comfortable music [125], dressing professionally [106], offering water, snacks or phone chargers [139]. The relative empowerment of passengers also enables abuse and disrespect towards drivers [94, 98, 106], not to mention legally questionable practices – e.g., sneaking in too many people, or alcohol [106]. In response, drivers must undertake yet more emotional labor to absorb or resist unjust treatment [168], or to proactively educate passengers about consequences through in-car fliers or conversation [130].

By redistributing, decentralizing and delegating **managerial oversight** to consumers, platforms (1) sustain competitive pools of drivers [6, 139] and (2) sidestep employer obligations when they circumvent the establishment of explicit service rules [56, 106, 125, 151]. Prior work highlight the power of algorithmic management [71, 145], but overlooked how *consumer* data contributions (e.g., ratings) ultimately source this power [56]. Consequently, drivers are coerced into unpaid emotional labor, akin to traditional frontline services – e.g., call centers [106]) and more face-to-face, yet increasingly algorithmically-managed sectors like hospitality [142, 143].

2.2.2 Collective Consumer Influence on Policy & Regulation. How drivers and consumers perceive a platform’s labor conditions can influence their use, recommendation of [7], or even retaliation against [168] it. Competing (and independent [34]) alternatives with less coercive practices can attract socially conscious consumers [7] and threaten dominant platforms. Thus, consumers hold scalable political power [63] that platforms actively seek to influence.

A comparative political analysis by Thelen [151] showed how Uber built coalitions with consumers to shield [31] against regulatory challenges. When the city London refused to renew their taxi service license in 2017 for its “*lack of corporate responsibility*” [17], Uber successfully mobilized half a million users within one day using its “*tried-and-tested tactic of asking customers for help when it locks horns with regulators*” [35, 43] to obtain license reinstatement. Healy et al. [63] explored how workers might “*gain support from consumers they serve*” [62] to influence not only individual service

interactions (managerially) but also broader platform accountability through collective political power [61].

However, consumers currently lack awareness of the need to further regulate ridehail platforms. In 2021 (only a few months after Prop 22 overturned Assembly Bill 5), consumers with knowledge about driver classification were 20% more likely to support additional regulation, yet over 40% of American adults had never heard about the debate around their non-employee status [2, 60]. Meanwhile, 2022 surveys show *conflicted* consumer opinions about platform-based labor, especially regarding hidden aspects of working conditions – e.g., long-term consequences on career [62]. But Healy and Pekarek [62] also revealed a cooling trend in consumers’ favorable perceptions of platforms, uncovering an opportunity to awaken their citizen identities [31] and mobilize consumer solidarity for workers through their concern for causes such as social responsibility [56], environmentalism [7] or philanthropy [170].

2.3 Gamification to Motivate Citizen Engagement

Prior work attempted to design for consumer awareness, compassion and action [96] in the gig economy. However educating and motivating geographically-dispersed ridehail passengers can be challenging, especially if attempting to do so over the short time span of a single ride. Below, we summarize how platforms design algorithmic games to incentivize driver labor, the potential for gamification to rapidly mobilize passengers for driver advocacy, as well as state-of-the-art games designed for, or related to ridehail.

2.3.1 Gamification: Manufacturing Consent vs Driving Transformation. Platforms employ several gamification techniques to psychologically trick and coerce labor [22, 119, 137] – which drivers resist [159]. Mechanisms include Quests and Challenges that yield monetary prizes, as well as symbolic reward structures such as badges, points and status programs [25, 159]. But while such tactics motivate initial driver engagement, managerially-imposed gamification also take away their “*sense of consent*” and agency to set practical boundaries with work [86, 111]. Worse, the combination of opaque but rapid algorithmic rewards result in paradoxical senses of stressful and frustrating motivation that cannot be resolved by human managers [86, 130]. Such managerial gamification [111] employ techniques such as “*income targeting*” from behavioral economics to trick drivers into “*grinding*” away for long hours [136].

On the other side of managerially controlling workplace games is the possibility of more humanistic and transformative game play [32, 38], where players engage in autonomous and growth-oriented games that guide them in making meaning and learning – for instance, when drivers practice oppositional play to resist workplace games [22, 159]. Transformational game design [32, 154] adopts the latter, less managerial rhetoric and opens up immense opportunities to embed principles from various disciplines (e.g., asymmetric paternalism [21], incentive compatibility from mechanism design) to develop experiences that illustrate alternative choice architectures, which motivate better player decisions and growth that can extend beyond the game environment into real-life choices.

2.3.2 Games to Transform Passenger Engagement with Driver Experiences & Labor. A key barrier to approaching and discussing the

	Replayability	Timed Challenge	Embedded Design			Ridehail-Specific		
			Obfuscating	Intermixing	Fictional Narrative	Ground truth answers	Playable in-ride	Driver-Passenger Interactions
jigsaw: CrossRoads	✓		✓			✓	✓	✓
tada: Dilemmas @ Work	✓			✓				
books: DRIVEN	✓		✓		✓		✓	
question: TRIVIA RIDE	✓	✓		✓		✓	✓	✓
eye-in-speech-bubble: DRIVING QUESTIONS	✓			✓			✓	✓
clock3 TICKING ROADS	✓	✓	✓		✓		Mobile-Only	

Table 1: How game prototypes met game (including embedded) design and ridehail-specific criteria.

challenges and mechanisms of ridehail work is the sensitive and private nature of financial and emotional vulnerabilities that drivers experience [134], which can prevent consumers from probing about hidden driving labor and logistics (§2.1). Gamified environments and gameful designs [80] present an opportunity to build safe and inclusive spaces that rapidly engage player awareness of sensitive [85, 153], complex, and overlooked topics [123].

Games have functioned as a medium for promoting critical thinking and social consciousness for various pressing societal issues, ranging from racism (e.g., *SimCity* [48]) to colonialism (e.g., *Civilization* [112]) to capitalism (e.g., *Animal Crossing* [15], *World of Warcraft*, *Second Life* [59]), including specific dimensions of it such as immaterial labor (e.g., *Mario* [128]). Persuasive games intentionally leverage techniques like procedural rhetoric (the use of rules, mechanics and decisions) to model and portray social systems [14], embedded approaches (e.g., distancing and intermixing) to address controversial topics, as well as immersive methods like narrative role-play and role reversal [92, 167] to affectively engage players in more marginalized and constrained perspectives [33, 47]. Temporal features such as immediate feedback and timed challenges/pressure [9] can foster better and quicker user engagement [11]. In ridehail, gamification offer ideal opportunities to rapidly engage players by

- (1) psychologically distancing the driver and passenger, who can then feel more
 - (a) safe and motivated to explore driving conditions through immersive and (temporally) challenging spaces
 - (b) socially comfortable to discuss legitimate and lived driving experiences with drivers
- (2) simulating gamification tactics that platforms impose to exert psychological control.

2.3.3 State of the Art for Ridehail Games. Presently, we are aware of only one system occupying the space of in-ride interactive games: the Play Octopus Network, which markets itself as the world’s “largest rideshare advertising network” and provides drivers with in-car tablets containing advergames such as trivia that primarily function to engage passenger attention for generating advertising revenue. Another co-design study attempted to mobilize drivers through gamified role-playing [118], which again presupposes additional effort and capacity that most drivers lack. A few browser-based games were designed to capture a broader audience, including the *Uber Game* [46] (which won an Online Journalism Award) and *Cherry Picker* [12], but we remain unaware of any purposeful, passenger-facing games designed for the situated context of a ride.

3 Design Criteria for In-ride Games

To effectively convey latent driving labor and conditions to passengers, we identified relevant criteria from game design and heuristics to support our study goals – summarized below and in Table 1. Through pilot interviews and goal refinement (detailed in §5.1), we also identified three additional ridehail-specific criteria in §3.3.

3.1 Game Design Heuristics

3.1.1 Replayable. One metric for assessing a game’s engagement potential is the player’s desire to play again [36]. Replay can enhance learning and understanding of game content [101], which is crucial first step to our goal of engaging passenger interest in ridehail labor conditions. Replays also promote social interaction among players (e.g., through discussion of its content) [49], which further supports our objective of mobilizing consumers.

3.1.2 (Timed) Challenge. Another playability heuristic central to creating enjoyable experiences (and commonly found among video and mobile games [36, 91]) involves the presence of a meaningful challenge – i.e. difficulties that players must overcome to reach a winning condition. Malone [107] defined that challenging games must contain “a goal whose outcome is uncertain”, while Desurvire and Wiberg [37] also considered temporal factors: “well-paced challenge(s) that makes the game worth playing”. In ridehail games, timed challenges additionally simulate drivers’ realistic time constraints [5]. Despite incorporating challenges, we refrained from incentives such as leaderboards or play invitations to contacts (e.g., friends or family) to avoid trivializing driver vulnerabilities [131, 163].

3.2 Embedded Design Strategies

Kaufman et al. [85] recommends “stealthily” embedding persuasive messaging to ease players into receiving intended messages. Below, we overview ways to apply embedded design strategies – i.e. intermixing, obfuscating and distancing – to more effectively communicate latent ridehail driving conditions.

3.2.1 Intermixing. Interspersing thematic on-message (e.g., ridehail content) and playful off-message (e.g., narrative content) material guides players toward subconsciously internalizing a game’s intended themes in a way that offsets the initial discomfort and reservation that can arise when encountering emotionally-taxing topics [116]. Passengers who resist explicitly acknowledging the effects of their consumption behaviors may prefer interwoven content over overt delivery.

3.2.2 Obfuscating. To further bypass players’ psychological defense, obfuscation conceals the persuasive intent of purposive games by reorienting player attention toward apparent game mechanics and objectives. This technique has been applied to topics such as bias against women in STEM [50], complex social identities [84] and health advocacy [85]. By covertly introducing serious and persuasive material, obfuscation helps passengers avoid feeling pressures from their consumer identities (or associated managerial powers) while still provoking critical reflection.

3.2.3 Psychological Distancing through Immersive Fictional Narratives. Narrative fiction is an effective medium for communicating complex and sensitive social experiences, including gender-based violence [131], interpersonal racism [153], healthcare [73], and climate change [45]. Immersive narrative framings of social experiences also facilitate reflection [74], empathetic growth [54, 108] and prosocial behaviors [105, 166], allowing us to create safe spaces for players to explore sensitive driver topics in the first-person without directly experiencing harmful or disturbing work conditions. *Interactive* narrative fictions further enable designers to implement choice architectures that enable players to make firsthand decisions that influence in-game plots, thus helping build their sense of moral responsibility and self-efficacy [44]. In ridehail, interactive fiction (1) augments player understanding of driver labor while (2) revealing more growth-oriented and socially responsible choices.

3.3 Ridehail-specific Criteria

We conducted pilot interviews with 2 drivers (D1, D2 – recruited from past studies) and 3 passengers (P1-P3) to elicit ridehail-specific criteria to complement our own knowledge of app-based labor.

3.3.1 In-Ride Compatibility. Pilot passengers expressed a preference for “lightweight” and easy-to-pickup games to minimize chances of car sickness, although P2 and P3 also desired realistic

simulations of ridehail driving. Pilot driver D2 suggested using the Octopus tablet currently in their car to incorporate content in more integrated ways while D1 cautioned how embedded content should not come across as a way for drivers to “vent your complaint” to passengers.

3.3.2 Driver-Passenger Interactions. When discussing preferred genres, P2 indicated interest in simulations that shed light on how drivers interact with and “talk to the person[/passenger] in the back-seat”, since they do not enjoy driving. P3 suggested similar interactions where “you have to talk to the driver, or engage with them”.

3.3.3 Ground Truth Answers. To most effectively reconfigure and transform passenger roles, concepts should convey accurate information regarding ridehail labor – since certain concepts relate to high-stakes situations and consequences, including safety and health. Factual and apolitical content makes it easier for players to trust and learn, in addition to reaching larger audiences.

4 Playable Prototypes of Passenger-facing In-ride Games

Drivers of the first two workshops made several concrete and actionable suggestions that informed our decisions to remove two prototypes – **CrossRoads** and **Dilemmas @ Work**, which are described further in the Appendix. Table 2 offers a timeline that illustrates workshop order, including indications of which prototypes were present or under development between sessions. Early driver feedback also inspired **TICKING ROADS** as an additional prototype as well as a driver-facing settings page to indicate (1) discussion topics to avoid and (2) currently preferred interaction levels with passengers, which range from “not at all” to “anytime”. When drivers select less interactive settings, the passenger-facing menu

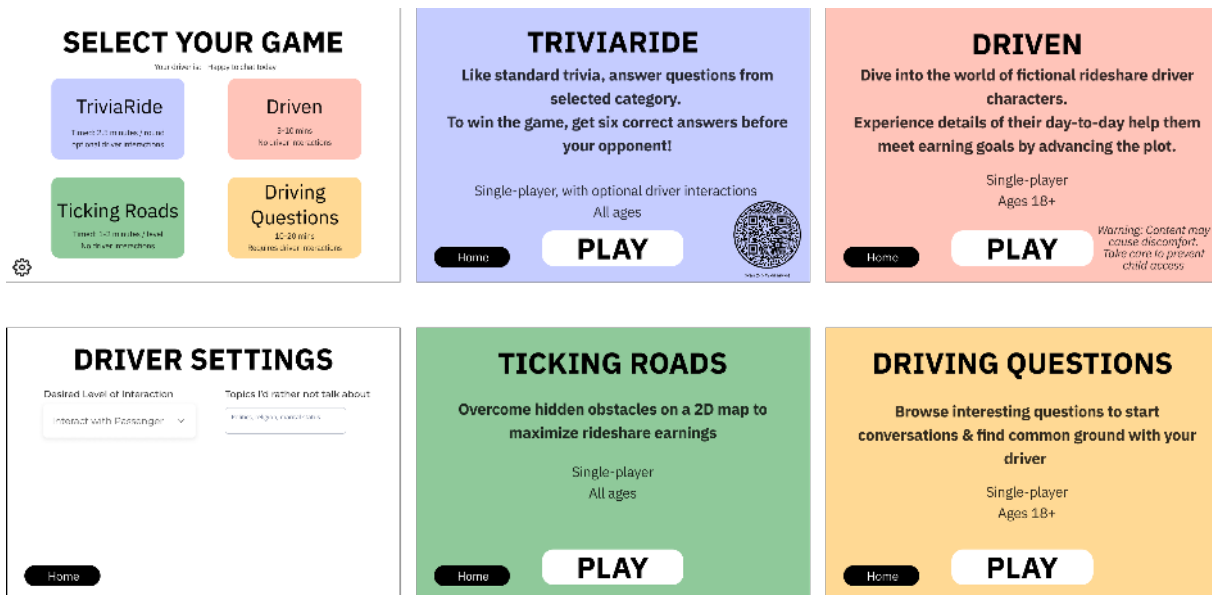


Figure 1: Passenger-facing menu conveys expected content and mechanics, as well as driver preferences for social interaction.

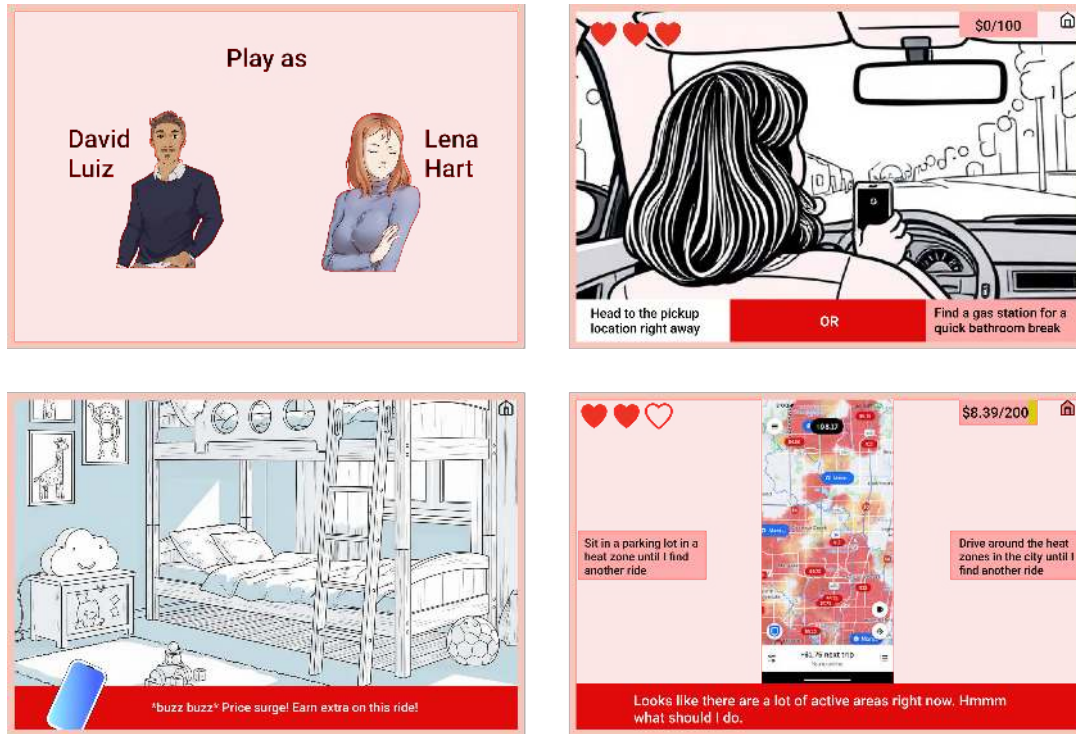


Figure 2: **DRIVEN** is visual novel with point-and-click options that advance plotline of two NPC ridehail drivers.

screen dynamically reconfigures to match – e.g., more interactive games get grayed out when driver chooses “not at all”.

4.1 :books: Visual Novel: **DRIVEN**

DRIVEN is a visual novel (*i.e.* a digital narrative) with interactive decision points that branch into multiple storylines – creating spaces for players to experience ridehail conditions at a psychological distance (§3.2.3). For instance, Pilot passenger P1 shared their preference for *i.e.* “games that are much more about the story ... messaging ... [to] make it easier, more accessible for everyone, even people who are not used to playing games.” Consequently, our choose-your-own-adventure offers two driver characters whose plotlines unfold based on decisions that players make on their behalf.

While **DRIVEN** was heavily inspired by *Cherry Picker* [12] and *The Uber Game* [46], it uniquely adopts a first-person perspective that leverages the persuasive power of procedural rhetoric (§3.2.3) to situate players within more complex issues – e.g., work-life balance, algorithmic management, deadheading, driver-passenger (power) dynamics and interactions. For instance, **DRIVEN** foregrounds driver responsibilities arising from family or primary occupations (main jobs) by subtly intermixing narrative content, thereby directing player attention toward non-driving goals of drivers, and away from the game’s persuasive intent – *i.e.* obfuscation. The divergent branching storylines provide high replayability and varied experiences across play sessions that drive player engagement and transformed understandings of driver-centric perspectives. Peripherally, passengers’ in-ride gameplay can also prompt further questions, conversations or reflections with the driver.

4.2 :question: **TRIVIA RIDE**

Based off of the multiplayer game *Trivia Crack*, **TRIVIA RIDE** is a ridehail variant that challenges players to reach six correct answers before a hypothetical opponent. The game contained a mix of general trivia – spanning categories like Social Studies, Science, Pop Culture, and the Arts (e.g., ‘What sport has been played on the moon?’) – intermixed with ridehail-related policies or facts (e.g., ‘What law classified drivers as independent contractors in CA?’). All

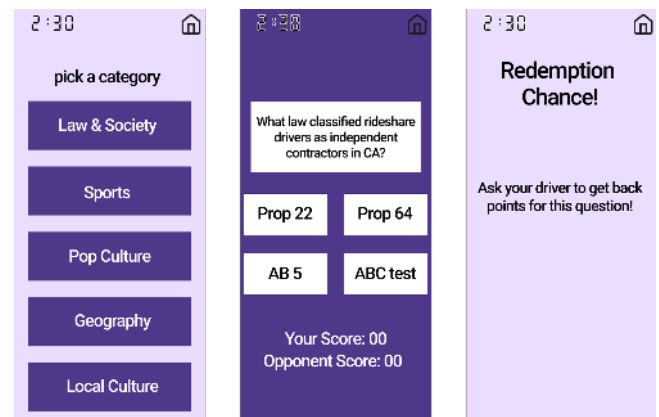


Figure 3: **TRIVIA RIDE** is a timed challenge with optional driver interactions and embedded ridehail concepts.

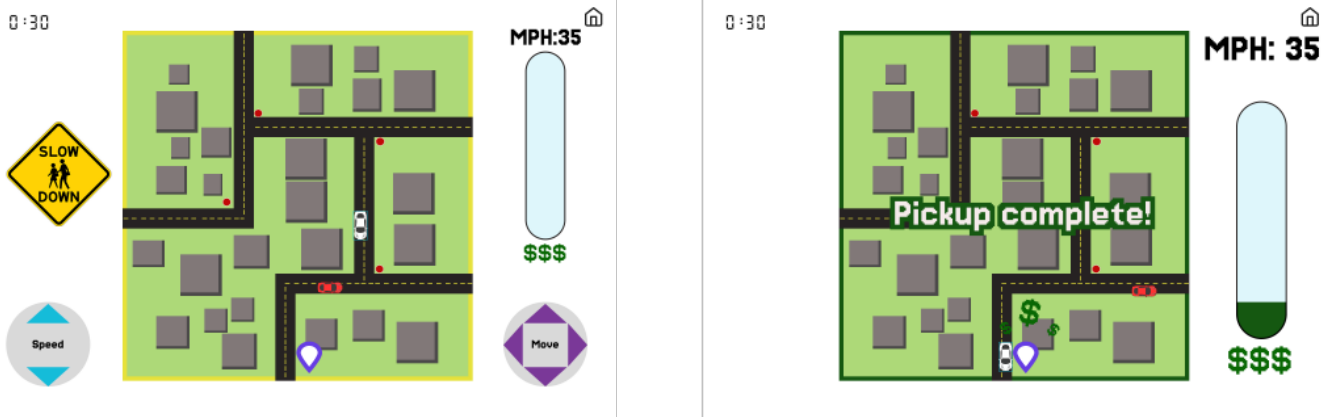


Figure 4: **TICKING ROADS** simulates passenger pickup (logistics) and immediate feedback from “driving” a car on the map.

questions contain a verifiable ground-truth answer, and the ride-hail questions require minimal background knowledge, allowing players to quickly learn from prompts like ‘Which location is the *most* lucrative for rideshare driving at 3am?’.

TRIVIA RIDE also incentivizes driver-passenger interaction by giving “redemption” chances after incorrect responses, delivered through an interface prompt that encourages the player to verbally ask their driver for help. This design was motivated by D2.2’s suggestion that “adding a driver-passenger collab mode would be super cool ... A game where we solve a puzzle together”. In later versions of the game, the first-to-six objective was replaced with a timed, point-based system, following D2.2’s recommendation that “putting a timer would be very good [to provide] urgency to answer the question” – in alignment with the timed challenge criteria (§3.1.2).

4.3 :eye-in-speech-bubble: DRIVING QUESTIONS

Inspired by the game *We’re Not Really Strangers* (WRNS) and driver D1.2’s suggestion for more driver-passenger interactions and emotional connections, **DRIVING QUESTIONS** is a conversation prompting game that serves as boundary object to initiate and mediate conversations during a ride – helping keep discussions topically related to driving labor while allowing the driver-passenger pair to get to know each other as people. We repeatedly updated the content to minimize intrusive content (concepts embedded include mental health impact, logistics, take rate) while intermixing more locally-grounded questions. Since driver-passenger pairings are almost always unique, replayability of **DRIVING QUESTIONS** is

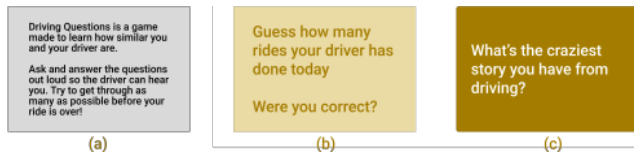


Figure 5: **DRIVING QUESTIONS** bridges the driver-passenger gap by introducing conversation prompts for both passengers (b) and drivers (c).

strong and its selection of 18 conversational questions also increase response variation with every new driver-passenger combination.

4.4 :clock3: TICKING ROADS

Borne from the recommendation of drivers from the first session, **TICKING ROADS** is a time management game (similar to *Diner Dash* and *Overcooked*) that surfaces stressors of the road to players by simulating ridehail obstacles on a map. Players undertake the task of picking up passengers at designated locations and receive immediate feedback when performing actions (e.g., move around, speed up/down, wait at pick up location). By framing stressors as obstacles and introducing time pressure, **TICKING ROADS** diffuses (or obfuscates) the tensions of exposing dangerous road conditions. It also creates psychological distance between the player and realities of driving on the road by presenting a fictional, abridged simulation of logistical burdens that drivers regularly encounter.

5 Methods

Given the unconventional and multi-disciplinary problem space (i.e. raise awareness around realistic ridehail driving conditions), intended audience (i.e. passengers) and goal (i.e. motivate and mobilize consumers to care and advocate for driver labor), we followed the (Tandem) Transformational Game Design process [32, 154].

5.1 Phase 1: Goal Delineation

Starting with a goal delineation cycle, we synthesized relevant and recent **ridehail literature** to surface key but underexposed conditions (§2.1). In parallel, we identified potential techniques and genres from scholarship on transformational, serious and persuasive **game design** that may support our goal of motivating passengers’ perception change around ridehail driving conditions (§3.1). Next, we conducted **formative interviews** with 2 drivers and 3 passengers (§3.3) to garner initial ideas and understanding around latent topics that drivers desire to communicate to passengers, levels of comfort and concern for a passenger-facing game addressing such issues, as well as preliminary reactions around (and suggestions for) potential game genres.

	DW1	DW2	DW3	PW1	PW2	DW4	PW3	PW4	DW5
CrossRoads	✓					✗			
Dilemmas @ Work	✓					✗			
DRIVEN					✓				
TRIVIA RIDE					✓				
DRIVING QUESTIONS					✓				
TICKING ROADS	:seedling:	:gear:				✓			
*Menu	:seedling:		:gear:				✓		

✓ = Presented ✗ = Eliminated :seedling: = Idea Conception :gear: = Under Development

Table 2: Timeline of prototypes presented across workshops. DW1-5 were driver-facing workshops while PW1-4 (in gray) represent passenger-facing ones. Progression of the menu is also included (*).

5.2 Phase 2: Iterative Game Prototyping

After the initial round of goal delineation, we presented three prototypes to drivers across two workshops, followed by a second round of goal refinement before moving on to passenger feedback. Table 2 shows when prototypes were conceived, developed, presented and eliminated while Table 5 shows how people perceived prototypes across sessions.

5.2.1 Driver Workshops. Based on feedback from the formative study in Phase 1, we began implementing three game prototypes (§4) and presented these to drivers across DW1 and DW2. In driver sessions, we inquired about issues they prioritized to share with passengers, probed for initial reactions and hesitation to prototypes and embedded concepts, and elicited ideas for alternative game designs and concepts to embed that align with the overarching goal – see supplementary materials for detailed driver workshop protocols. Then, we presented three initial prototypes – **TICKING ROADS** was not yet conceived/developed – through

two initial workshops with drivers (DW1, DW2). Afterwards, we completed another round of goal delineation [154] to

- (1) conceptually map (see supplementary materials) relevant concepts in ridehail driving to refine §2.1
- (2) highlight concepts at the intersection of
 - (a) what drivers prioritize to communicate with passengers and
 - (b) conditions and vulnerabilities that are underexposed to passengers.

Incorporating insights from goal refinement and initial driver feedback, we iterated on game mechanisms and content, and implemented **TICKING ROADS**. To continuously adapt prototypes based on feedback from both stakeholder groups, we held three more driver workshops (DW3-DW5), interspersed among passenger sessions.

	ID	Age	City	Gender	Education	Status	Ridehail Income	Hrs/week	Ridehail Experience
DW1	1.1	45-54	PA	M	High School	FT	Essential for basic needs	N/A	6 years
	1.2	45-54	IL	M	High School	FT	Essential for basic needs	N/A	4 years
	1.3	18-29	CA	M	Bachelor's	FT	Essential for basic needs	25-40	3 years
DW2	2.1	45-64	NC	F	Some college	FT	Essential for basic needs	25-40	One month
	2.2	30-44	NY	M	Associate's	PT	Nice but not essential	10-25	2 years
	2.3	18-29	GA	F	Bachelor's	PT	Essential for basic needs	25-40	3 years
DW3	3.1	30-44	TX	M	Bachelor's	PT	Essential for basic needs	25-40	5 years
	3.2	30-44	WA	M	Bachelor's	FT	Essential for basic needs	40+	6 years
	3.3	18-29	NY	NB	Associate's	FT	Essential for basic needs	25-40	3 years
	3.4	18-29	NY	F	Post-Graduate	N/A	N/A	N/A	2 years
DW4	4.1	30-44	CA	N/A	Associate's	PT	Nice but not essential	25-40	5 years
	4.2	30-44	FL	M	Associate's	FT	Nice but not essential	25-40	7 years
	4.3	30-44	CO	NB	Bachelor's	PT	Nice but not essential	25-40	4 years
	4.4	18-29	TX	NB	Associate's	FT	Nice but not essential	25-40	3 years
DW5	5.1	30-44	PA	M	Bachelor's	PT	Essential for basic needs	10-25	7.5 years
	5.2	30-44	IL	M	Bachelor's	FT	Essential for basic needs	25-40	5 years
	5.3	18-29	PA	NB	Bachelor's	FT	Essential for basic needs	25-40	8 years
	5.4	45-54	PA	M	Some college	N/A	Nice but not essential	N/A	2.75 years
	5.5	45-64	GA	M	Bachelor's	FT	Essential for basic needs	25-40	6 years

Table 3: Driver demographics across five workshops (DW1-5), individual workers are labeled “DW1.1” etc.

	ID	Age	State	Gender	Income	Platforms	Drives to Commute	Employment
PW1	1.1	18-29	MA	NB	\$12k - \$50k	Uber (4.94), Lyft	<Once a year	5-10 years
	1.2	18-29	PA	M	\$12k - \$50k	Uber (4.81)	Never	<3 years
	1.3	18-29	CA	M	\$100k - \$200k	Uber, Lyft (5)	Everyday	<3 years
	1.4	18-29	TN	M	\$12k - \$50k	Uber, Lyft (5)	A few times a year	3-5 years
PW2	2.1	18-29	CT	M	\$50k - \$100k	Uber (5)	Everyday	3-5 years
	2.2	65+	NV	F	\$50k - \$100k	Uber (5)	Never	10+ years
	2.3	18-29	IL	NA	\$12k - \$50k	Uber: (4.68)	Never	3-5 years
	2.4	30-44	NY	M	\$100k - \$200k	Uber (4.9), Lyft	Never	10+ years
PW3	3.1	18-29	NJ	F	\$50k - \$100k	Uber (4.98), Lyft (5)	Few times / year	<3 years
	3.2	18-29	MA	M	\$0 - \$12k	Lyft (5)	Everyday	3-5 years
	3.3	45-64	TX	F	\$50k - \$100k	Uber, Lyft (5)	<Once a year	10+ years
	3.4	30-44	PA	M	\$12k - \$50k	Uber (4.9), Lyft (4.9)	Never	10+ years
PW4	4.1	18-29	MA	M	\$50k - \$100k	Uber (5)	Few times / year	<3 years
	4.2	18-29	NJ	F	\$12k - \$50k	Uber (4.99)	Never	3-5 years
	4.3	45-64	FL	M	\$100k - \$200k	Uber (4.90) Lyft (5.0)	>Once a week	10+ years

Table 4: Passenger demographics across four workshops (labeled PW1-4), with individual passengers labeled “PW1.1” etc.

5.2.2 Passenger Workshops. Next, we probed passengers to gather initial understanding and concerns around ridehail driving, evaluations of prototypes, and hesitations or ideas for alternative interactions that align with our study goal. Each session started with “*Character Card*” introductions where passengers took turns sharing their name/location/experiences on sticky notes of specific colors, which we used to collect responses to questionnaire-style prompts about their (1) knowledge of ridehail labor (2) level of empathy with drivers (based on questions adapted from the QCAE [127] and IRI [82]) and (3) willingness to advocate for drivers. Then, passengers took turns playing a game of their choice (presented via Figma prototypes) and rated their interaction experiences along seven dimensions: fun, replayability, sneakiness (at embedding ridehail concepts), ride-friendliness, lightweight vs taxing, recommendability and how thought-provoking it was. At the end of each session, we re-administered the questionnaire to survey perception changes around, knowledge of, empathy with and motivation to advocate for ridehail labor, which serve as proxy measures to help us gain initial understanding of whether game design can transform users to engage in more solidarity with drivers and socially conscious consumption behaviors. Supplementary materials contain full ranking results and detailed workshop protocols.

5.3 Recruitment

During formative interviews, we recruited 2 drivers (D1, D2) based on contacts from prior studies, as well as 3 passengers (P1 – P3) based on convenience sampling from our home universities. For workshops, we reached out to (1) drivers from past studies, (2) subreddits, Craigslist posts and physical flyers in local professional communities. All formative interviews and workshops were conducted via Zoom. Both participants groups were compensated at a rate of \$60/hour and selected based on eligibility, location and experience levels, indicated by pre-study screening forms. Tables 3 and 4 summarize driver and passenger demographics ¹.

¹Due to an oversight to record the meeting, participant data from DW4 are based primarily on internal notes

5.4 Thematic Analysis

After our workshops, three researchers open coded all 12 hours of workshop transcripts (transcribed by Otter.ai) to extract relevant themes and opinions on improvements for each prototype. Then, we combined all individual driver codes in an affinity diagram to map out common ideas, extracting 8 main categories: existing practices/strategies, frustrations, reactions to prototypes, current consumer perceptions, underexposed knowledge, design objectives and alternative gamified interactions/interventions. The first five categories helped us understand how well the prototypes capture realistic driver experiences, while the remainder guided our next iterations of prototype adjustments – these codes also helped eliminate less effective prototypes and introduce new features. In particular, codes in the category of *reactions to prototypes* informed the construction of Table 5. We considered a prototype “*preferred*” in a workshop if more than half of participants expressed affinity to it. If a session was divided on their sentiments – roughly half positive and half negative – we categorized it as “*neutral*”. Remaining prototypes that received mainly negative reactions were considered “*resisted*”. We halted recruitment and data collection when new themes no longer emerged.

5.5 Positionality

Our study activities (from recruitment, consent and data collection) followed procedures of an IRB-approved protocol. However, working with sensitive topics across two stakeholder groups carries unique dangers that our internal team continuously deliberate on to reach further understanding of our relative positions [148]. We reflect on ways to center driver experiences and reduce replacing their voices and opinions with our own values and epistemologies, paying particular attention discussing vulnerabilities in ways that uplift and empower, rather than silence, suppress or overshadow worker experiences. Towards passengers, we disclosed our intent to raise awareness around ridehail driving conditions at the start of each session. Yet we still acknowledge that even upfront notices

cannot fully eliminate risks of imposing our own values and positions onto passenger participants, which may cause discomfort – especially when using techniques such as obfuscation. Thus we also explicitly reminded participants about their right to opt out at any time throughout the session. Our team members receive training in Computer Science, Media Arts & Sciences, Software Engineering and Human Computer Interaction, where two authors have experience researching and working with ridehail drivers. One author has part-time experience working for a food delivery platform, while two authors have extensive experience laboring across service occupations.

5.6 Limitations

While our *Character Card* activity during passenger workshops aimed to capture early evidence of how passengers perspectives changed before and after experiencing gamified interactions, these results are limited by the size of our participant sample. To avoid triggering psychological reactance from passengers, we chose to use *Character Cards* rather than standard survey tools to measure more political expressions of ridehail knowledge and advocacy. Future works might consider more scalable evaluations of similar tools to rigorously examine the impact of such interventions on player understanding and advocacy for driving conditions. Our US-based investigation can also limit external validity and generalizability – both geographically and culturally. For instance, how do more collectivist (e.g., Asian-Pacific) societies or nations in the Global South (e.g., Chile [3]) receive or resist such mechanisms of control? How would a post-colonial lens of analysis offer different results between migrant workers of the US vs Europe [104]? We hope this work can offer a case study for future comparative analyses with more international as well as culturally-diverse and geographically-diverse contexts.

6 Results

Below we first report how passengers received the game prototypes, early evidence of how they shifted their perceptions of ridehail, and their knowledge gaps that the probes revealed. Next, we discuss driver preferences for purposeful and personalized prototypes that initiate unforced and fulfilling interactions with passengers, as well as driver perspectives on and experiences with common passenger knowledge gaps. Finally, we share how both stakeholder groups reacted to proposed driver-passenger interactions, including reasons for hesitations and ways to better motivate engagement.

6.1 Passenger Receptions to Games, Early Perceptual Changes & Knowledge Gaps

During formative interviews, all passengers reflected on gaps in their understanding of ridehail work, noting that incorporating content related to ridehail conditions would motivate engagement with the game. For instance, P1 related how “[he]’ll be more inclined to try it out” while P3 shared that “[she] would definitely play a rideshare driver simulator ... where your goal is to get from one place to another”. Building on such potential, we next report how passengers received our game prototypes during workshop sessions (§6.1.1), early evidence of how the play experience changed their

perceptions towards ridehail conditions (§6.1.2), and prominent knowledge gaps that the game probes revealed (§6.1.3).

6.1.1 Passenger Evaluation of In-Ride Games. We overview driver rankings of prototypes along (1) playability heuristics and (2) their abilities to provoke critical reflection around ridehail conditions.

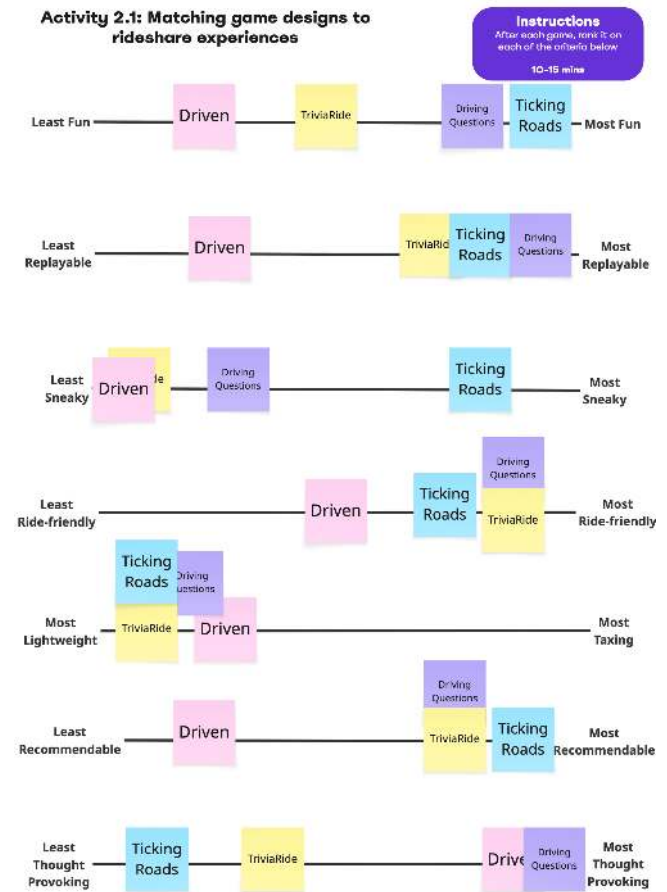


Figure 6: After playthroughs, passengers ranked each prototype along game heuristics, embeddedness (“sneakiness”) and ridehail-specific criteria (ride-friendliness, ability to provoke) – Figure above shows an example from PW1.

Fun vs Provocation, Replayability & Recommendability. Passengers found **DRIVING QUESTIONS** the most fun (PW3, PW4) and replayable (PW1, PW3, PW4). **TRIVIA RIDE** came in second for fun, preferred by passengers like P2.1, who found it “a little bit fun – the interface was very simple, and so that made it, not super thrilling. But I enjoy trivia ... and I really like the idea of having questions that are specific to the area where you’re riding, I found that very inventive”.

In contrast, **DRIVEN** was rated as least fun but most provocative (PW1, PW3, PW4) and second most replayable. Due to technical

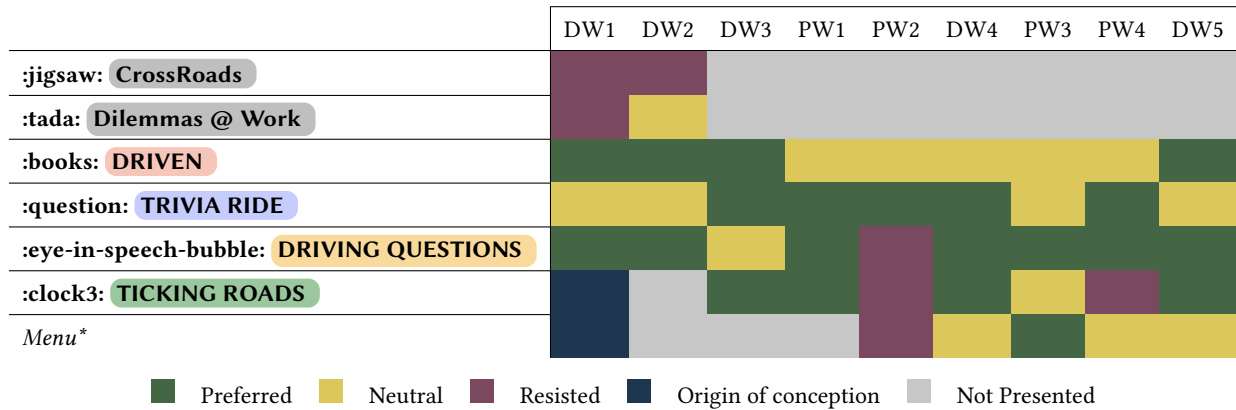


Table 5: Heatmap shows participant perceptions of prototypes across workshops, ordered chronologically. DW1-5 represent driver-facing workshops and PW1-4 shows passenger-facing ones. Feedback for the menu selection is also included (*).

issues, **TICKING ROADS** consistently placed last for replayability – P4.3 noted how “controlling issues were a pain, it was kind of wonky”, which led PW1 to rank **TICKING ROADS** as least recommendable. After we implemented suggested improvements from PW1, passengers in PW2-4 ranked it as most recommendable.

Ridehail-specific Rankings. Regarding ridehail content, we asked passengers to rank each prototype by how (1) “sneaky” it was at embedding driving-related content (a proxy measure for success of obfuscation) (2) ride-friendly it was and (3) lightweight or taxing it was to navigate game mechanisms and content. **TICKING ROADS** was most successful at obfuscation, with P3.4 admitting how “that was pretty sneaky. I’m not gonna lie. I didn’t even realize it. Thought I was [just] driving around” while **DRIVEN** was most ineffective at obfuscation. **DRIVING QUESTIONS** (the conversation-prompting prototype) was considered most ride-friendly, while **TRIVIA RIDE** came in close second. The lightweight-taxing ranking measurement was interpreted by passengers along both dimensions of gameplay mechanics and content: **DRIVEN** was deemed most emotionally-taxing since it is “frighteningly realistic ... and depressing, and for once it seems like accurate for a lot of people’s [driver’s] situations” (P2.4). By contrast, **TRIVIA RIDE** was considered most lightweight, both in terms of content and mechanics, although its ridehail content was most exposed, obvious and not well obfuscated: “they were very apparent” - P2.3.

6.1.2 How Games Evolved Passenger Perceptions & Solidarity with Ridehail Drivers. Leveraging the *Character Cards* (§5.2.2) activity, we surveyed how passengers perceived, empathized with, and desired to advocate for driving conditions both before and after introducing prototypes. Supplementary materials show how passengers placed themselves on these scales across all four workshops. Below, we report changes in their (1) knowledge around ridehail conditions as well as (2) empathy with and willingness to advocate for drivers – which we consider as proxy measures for solidarity.

Shifts in Passenger Knowledge of Ridehail Driving. When probed about their readiness to drive for ridehail themselves (i.e. *How prepared do you feel to be a full time rideshare driver?*), confidence increased slightly in PW1 and PW4, whereas all passengers in

PW2 felt unprepared before and after. Estimations of driver take-home rate was unanimously lowered across all four workshops, suggesting that prototypes helped passengers reach **more accurate understandings of platform take rates**. Meanwhile, passenger estimations of deactivation rates surged – especially in PW3, where ratings flipped entirely – see Figure 7 – indicating a **significant knowledge gap around how heavily ratings impacted the job stability of drivers**. Passenger willingness to recommend ridehail driving remained largely unchanged.

Early Indicators of Change in Passenger Empathy, Solidary & Advocacy for Ridehail Labor. Empathy-related questions (i.e., “I find it easy to put myself in my rideshare driver’s shoes”; “I can usually appreciate my driver’s viewpoint, even if I don’t agree”) were introduced after the first passenger workshop (i.e. PW2–PW4). Across these sessions, passengers showed slightly higher sensitivity to driver perspectives, with effects most prominent in PW3. In the later three workshops, we also added two items to probe passenger willingness to advocate for ridehail drivers. Across all sessions, **passengers became more motivated to vote in favor of “a ballot question related to rideshare drivers’ labor rights”** with those in PW2 and PW3 expressing absolute agreement by the end of their sessions. In response to the follow-up question (whether they would “sign a petition or attend a community meeting to support it”) all passengers showed slightly higher inclinations to advocate.

6.1.3 Passenger Knowledge Gaps Surfaced by Game Prototypes. Based on how passenger reacted to embedded ridehail content, we next present prominent knowledge gaps that our prototypes helped surface. For instance, P3.1 “feel uncomfortable asking them how much [drivers are] getting paid, or their take-home pay”, let alone more personal inquiries about what drivers miss (§4.3), since “it can be painful when you leave your home country” (P2.2). However, the optional yet inviting nature of games like **DRIVING QUESTIONS** serve as boundary objects for mediating such conversations, even among more quiet passengers – P3.3 identified as “an introvert [...] and I have trouble starting conversations [...] this game would help me be more talkative, because it gives me things to say”.

Pay rates. All passengers of PW1 & PW3 were “surprised about the 30% [take-home rate our drivers estimated.] I didn’t realize that it

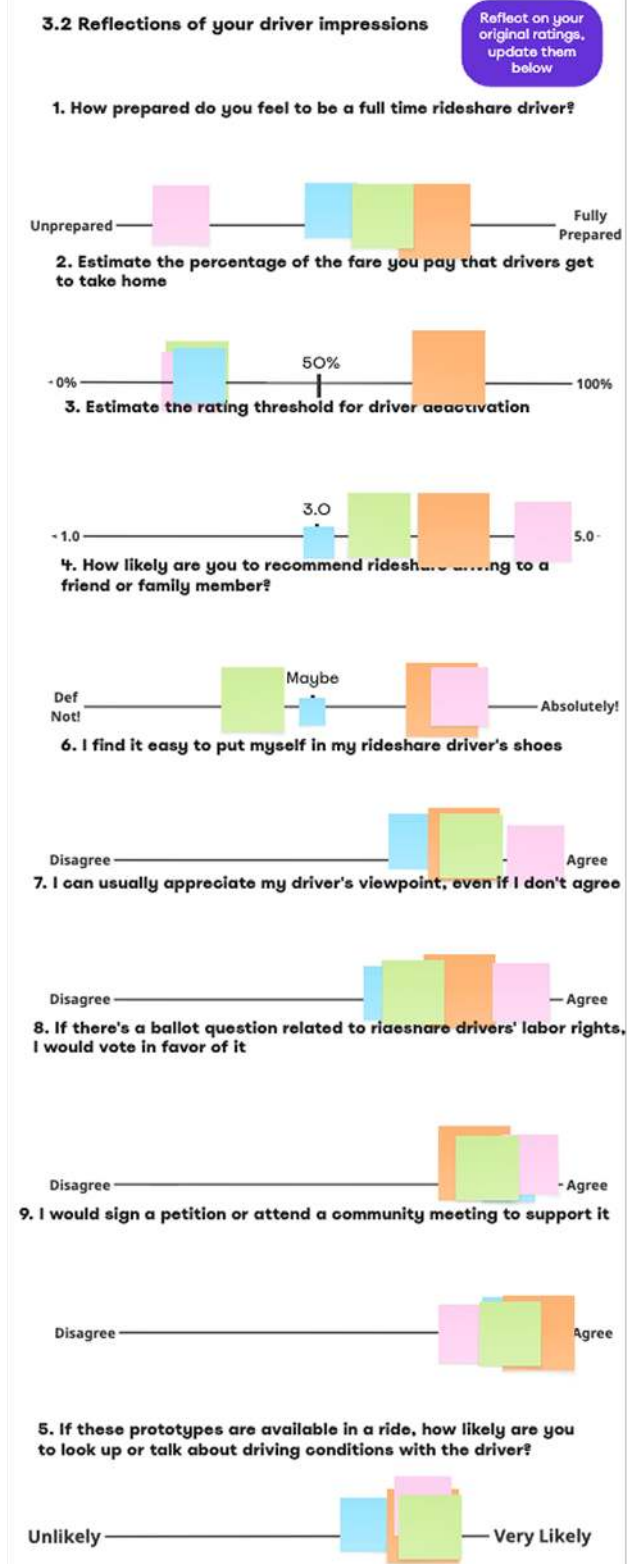
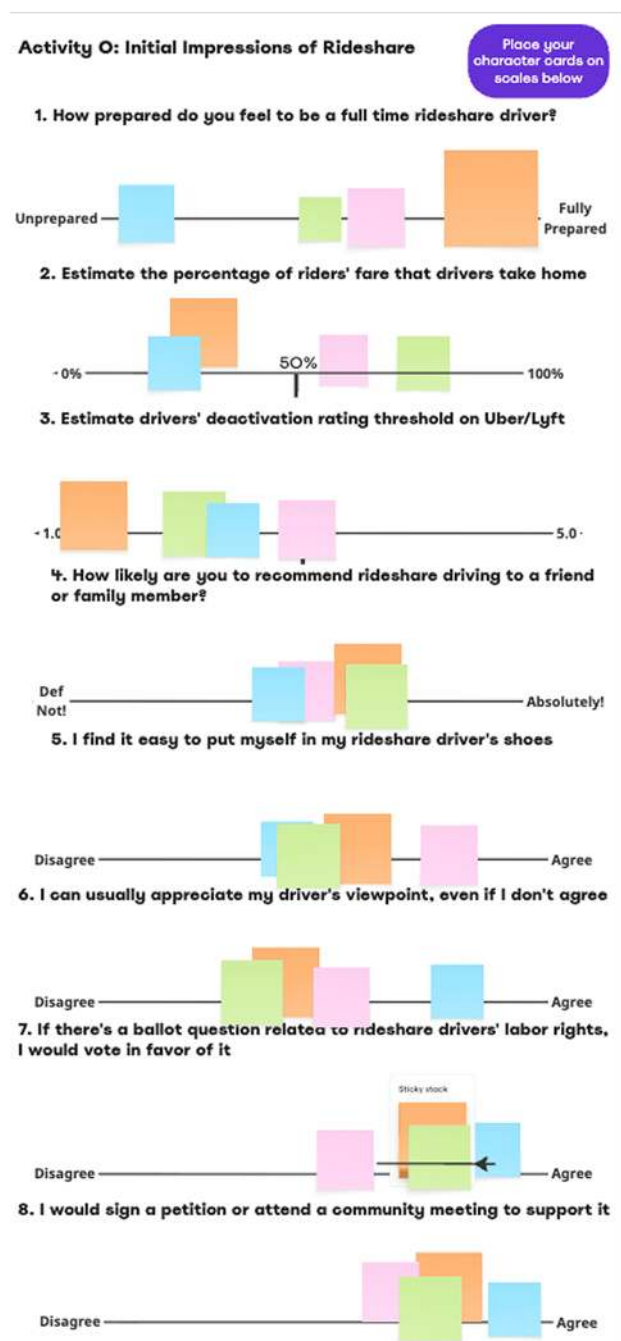


Figure 7: *Character Cards* (with each color representing a passenger) helped us survey passenger understanding, empathy and willingness to advocate before and after each workshop. Example above show (changes in) responses from PW3.

could be that low. That's bad." P2.2 (a more sympathetic passenger who regularly asked drivers about rising take rates) observed how "all the drivers are anxious to answer [...] to make sure] riders know that even though [passengers] are paying more, [drivers] are not making more". **DRIVEN** was most effective at bringing out reactions towards low pay rates, leaving P3.2 outraged: driving "80 trips for \$65 is crazy!" **TRIVIA RIDE** was also clear at communicating low pay rates, with P2.3 and P3.1 noticing a question about most profitable hours of operation. While **DRIVING QUESTIONS** carried potential to spark driver-passenger discussion around pay (P1.2), many passengers hesitated to discuss the sensitive financial topic. Although **TICKING ROADS** was designed to show how obstacles influence drivers' earnings, players generally did not notice these financial effects — indicating the concept may need to be presented more clearly or reinforced through replays.

Pickup Logistics. The time that drivers spent waiting for passengers during pickup is a commonly overlooked factor that affects driver pay. P3.3 exhibited concern about how their location may impact driver earnings "I live in a suburb ... and ... I don't think they're getting paid between the different ones. ... I always wonder if they're making a lot less money and just driving basically for free between the places." The time pressure in **TICKING ROADS** guided passengers like P4.3 to empathize about wait times at pickup: "that must be frustrating for the the driver to wait for the person to come up." Similarly, P4.2 noticed through the plot of **DRIVEN** how drivers must decide on an exact pickup location when directions from the app are not clear: "when drivers are going to somewhere that has an entrance and an exit, and knowing where to pick up someone." With **DRIVING QUESTIONS**, P2.2 was the only one who noticed a question centering wait times during pickups, even though all players went through the same set of questions. Given its need of ground-truth answers, we struggled to embed factual content on pickup logistics within **TRIVIA RIDE**.

Rating Pressures & Passenger Expectations of Service. In terms of mechanisms, **TICKING ROADS** was most effective at eliciting passenger reactions to behaviors of impatient riders, with P2.3 rating the prototype as "provoking, because you have a person texting you angrily when you're trying your best ... it'll teach them to put themselves in the drivers' shoes." Similar drivers' frustrations about road conditions, P4.3 also grew annoyed at the simulated passenger in the time management game who was "Texting, 'where are you?' But there's obviously a car right there [among] lots of traffic". **DRIVING QUESTIONS** reminded P1.2 of "one driver ... [who] was telling me about ... all the passengers that he picked up during the night, which are usually all like drunk college kids", suggesting how the conversational game might motivate drivers to share experiences of poor passenger behaviors. Despite how **DRIVEN** embedded consequences of receiving bad ratings as a result of interactions with passenger, the prototype did not actually demonstrate tangible consequences (e.g., deactivation, reduced work availability) beyond small pay differences — which may have caused passengers to miss the embedded concept. **TRIVIA RIDE** also did not embed concepts on rating pressures.

Platformic Management & Long-term Consequences. While passengers may rarely observe the longer-term tolls and costs that ride-hail cause for drivers, psychologically-distanced narrative elements in **DRIVEN** (e.g., pop-up app notifications at home) helped surface the key and long-term tension of family-work balance, which was noticed by every passenger who played through (P1.4, P2.4, P3.3, P4.2). In their second playthrough, P2.4 started to anticipate extractive platform tactics: "I feel like they're gonna ping me and say, 'Why are you taking so long use the bathroom?'" The modular and timed nature of **DRIVEN** again made it unsuitable for addressing psychological control, even though D1.2 saw potential for simulations like **TICKING ROADS** to give character to "the big evil ride sharing company". While the conversational nature of **DRIVING QUESTIONS** could prompt discussion around long term consequences and control, passenger discomfort with potential intrusion may hinder in-depth probing.

6.2 Towards Driver-Centric & Integrated In-ride Gaming

Next, we overview driver receptions of game prototypes, including their preferences for immersive and personalized environments that help passengers feel more at ease and willing to engage with the driver. Then, we describe how drivers observed passenger knowledge gaps, including *covert logistical, emotional and immaterial labor* that range from general car maintenance (e.g., gas, oil changes) to in-ride services — e.g., keeping comfortable temperature and mood while ensuring safety.

6.2.1 Memorable, Contextualized but Unobtrusive Games. Drivers expressed strong enthusiasm for the potential of games to create purposeful, immersive and memorable gamified experiences around ridehail knowledge. For instance, D2.2 emphasized how "the story game: it actually rocks — taps into emotions, memories and creativity, and then it's relatable and often openly hilarious" and imagined cases of "making [passengers] go 'yeah, man, I never thought about it like that'", causing many (D1.1, D2.1, D2.2, D2.3, D3.4) to rank **DRIVEN** highest: "love the story games because [...] it builds empathy in in a more subtle way" (D3.4).

An immersive narrative experience also help drivers create an environment that distracts passengers from time pressures of reaching their destination. D3.2 imagines how "When a rider is into a story game ... the whole mood in the car becomes more quiet, more relaxed, no pressure, no rush. They're just absorbing something soft and engaging." But alongside immersion, D2.2 also cautioned against cognitively demanding interfaces, instead preferring "style choices that spark a bit of fun without demanding too much attention", while D3.1 warned about the "risk of getting halfway through something, and then, boom, you are there [the ride] stop[s], and it actually ends awkwardly. So for me, the sweet spot would be not keeping the stories short, flexible and rider-led". Through this relaxed and non-confrontational approach, drivers shared desires to communicate latent knowledge like pickup logistics (D1.2, D3.1, D3.2), long hours (D2.1, D2.3), unreasonable passenger expectations (D2.1) and behaviors (D2.3, D1.3), traffic (D1.3, DW4) — some of which would've otherwise been difficult to broach since "[we] don't want to make [passengers] scared to be in the ride with you" (D1.1).

Drivers who previously used Octopus tablets noticed how its existing trivia content was not designed for ridehail contexts, leading them to prefer alternatives like **TRIVIA RIDE** (ranked highest by D3.1, D3.3, D2.3) that feel more **personalized, local** and **mood-aware**. For instance, D2.2 “*want games that feel like they belong in the rideshare world, not like they were copied from somewhere else and shoved into my car*”, suggesting instead interactions with “*more personalization, more mood awareness, more empathy, fun*”. Numerous participants (D2.2, D3.1, P2.1, P2.4, DW4 members) also suggested location-specific content, to “*add a local city flavor, trivia about Seattle [...] we have landmarks nearby, or [...] which coffee shop this quote is from – it makes the ride feel connected to where we are, and breaks the ice faster than [games on] a plane*” (D2.2).

With a lighter interaction like **DRIVING QUESTIONS**, drivers saw potential to start off **unforced conversations** around topics of mutual interest. For instance, D3.2 discusses how this prototype “*changes the mood ... spark[s] some light interaction [between drivers and passengers and] also between the people onboard*”, in addition to engaging both quiet and extroverted passengers:

It's a game, so people are not forced to to play it. So this is just one way in which you will create the conversation. If the rider feels like he/she is not compatible to play the game, then it's okay. But if one is ready for that, then absolutely, there are some people who are extroverted ... and I think this would match quite well with my riders. - (D2.2)

For drivers like D5.5, such connection with (introverted) passengers generates an **intrinsic sense of fulfillment**: “*I really love seeing where they say that they prefer to be quiet, and you could still get a conversation out of them – makes me feel like I'm doing my job, plus more*” since conversations “*keeps [passengers'] mind [off] of traffic*”.

Since **TICKING ROADS** was conceived at workshop DW1, it was only presented in DW3–5 (see Table 5), but became a quick favorite for drivers like D5.2, who found it relatively “*more interactive*.” Drivers in DW4 also saw its mechanics and graphics as engaging simulations of driver experiences, especially for populations under (time) pressure such as busy parents managing small children onboard. However, D2.2 stresses that the interactions should engage passengers without disrupting their ability to focus on driving: “*as someone who is behind the wheel all day, I'm gonna think about mood, safety and how natural it all feels. If a game fits seamlessly into the ride, awesome. If not, then it just adds noise, pressure or openness*.” In general, drivers saw potential for **TICKING ROADS** to quickly capture attention, which **ease passenger anxieties and pressures**, with D3.2 observing how it can “*reduce rider frustration during delays [and] ... construction. Time[d] games give the rider something else to think about, so it lowers complaints and makes the ride feel more like a break than a hassle*.”

6.2.2 Driver Reflections on Latent Labor Conditions. Across workshops, drivers leveraged game prototypes to consider, think aloud and reflect on experiences and labor that typically remain concealed from, or gets overlooked by passengers. While these are ordered by drivers' expressed priorities, we note how they are also ordered to **show more surface-level, salient and cognitively-obvious symptoms of algorithmic control first, followed by more**

nuanced, subtle and underlying psychological reasons that cause harmful conditions, demonstrating the ability of game probes to elicit drivers' latent fears and rationales. In their experiences talking to passengers, pilot drivers like D1 shared how “*Very few [passengers] – maybe one or two – out of the couple thousands of rides I've done have asked me what my pay for that ride versus what they were paying. So I think [they] probably don't know [or] don't care*”. D2 also thought that only folks who worked on “*a gig app ... or if there's somebody in their immediate circle of life (friends or family) that does it*” are likely to know anything about it, suggesting that passengers lack motivation, spaces and occasions to learn about latent ridehail conditions.

Pay Rates. Drivers face a wide variety of stressors in daily operations that plague their well-being, but consistently prioritized pay as the most important misconception to clarify for passengers. For instance, D3.2 shared how they would “*love [for passengers] to know that I don't really get the full fare they are paying. [...] Uber, first of all, take their cut, then I cover fuel, car maintenance, time – all these are swallowed by [what's broadly considered] service*.” A direct result of this gap is lack of motivation to tip: “*[passengers] assume a lot of times that they don't have to tip [...] they feel like their charge all goes to the driver*” (D2.1). In sum, D1.1 explains **how pay dominates all other concerns** since adequate compensation can alter drivers' perceptions of all other stressors:

“If we are investing our energy, our time, our efforts, frankly, we just don't [want] a feeling of being taken advantage of [...] of being manipulated [...] of being not cared about. I want to feel like somebody gives a [expletive] about me for the energy I'm putting in, [like] I'm making the money I'm making.” – (D1.1)

As a result of low pay (“*they take these risks simply because they're not being paid*”), D1.1 further describe how some drivers protest by “*flip[ping passengers] to cash rides*”², even though doing so carries serious insurance and deactivation risks, as well as “*a mandatory impounding of the [ir] vehicle [for] the charge of providing commercial transportation in a non-commercial vehicle*” (D1.2).

Pickup Logistics. Drivers such as D1.3 detail how **platform mechanisms fall short to ensure timely passenger arrival** during pickup: “*the customer doesn't really pay that much more in wait time [...] not enough to be prohibitive [...] It's almost like ... [platforms] want to encourage that*”. However, D3.3 explained how pickup delays lead to wasted gas and lost time that drivers could have used for additional trips: “*the waiting time is really expensive, especially when gas prices go up [...] it could just eat into our profits [so bad], and I feel like only us drivers really understand that*.”

By contrast, D1.2 contrasted late pick-ups with their prior experiences working for multiple cab companies, whose dispatchers directed drivers to “*get out of there*” and “*get another [rider]*” if a passenger doesn't arrive within “*literally, in 30 seconds*”. Beyond human influences, external road conditions (e.g., parking availability) can also delay pickups:

“I had to pick up someone, it was center of the city, and there's literally is no parking, it's red lanes on both sides

²strategy where drivers and passengers mutually agree to pay in cash to avoid platform fees

– bus only lanes. You can't drive in those lanes. You can't stop, you can't park [...] So I was sitting in that lane waiting [and] of course, the bus came through. I got a ticket.” – (D1.2)

Rating Pressures Coerce Unpaid Services & Labor. Another significant factor exerting psychological control in ridehail labor are passenger ratings of drivers, since strict thresholds can put many drivers at risk of deactivation by platforms [133] – making “ratings feel personal” (D3.1) and thus coerced into performing a variety of **unpaid labor to maintain ratings**. Inside of a ride, drivers frequently described how passengers expect “a premium vibe” (D3.4), “control over traffic” (D3.1), whereas drivers grapple with a variety of unpredictable factors, stressors and costs. Outside the car, D3.1 also point out external factors: “construction, detours, sixth street chaos and airport gridlock”.

“Ratings can drop for stuff I can't control: sometimes I'm reading the vibe and giving folks their space, not just ignoring them. We are not just driving, we are juggling through navigation, personalities and keeping things safe. The app itself is not perfect, it doesn't show everything we are dealing with [...] I'm paying attention to your body language, your tone, your energy, from the moment you get [in] [...] If you're if you're chatty, I'll match that. If you're quiet or stressed. I'll try to keep things calm and give you space so it's little things – e.g., adjusting the music so it fits your mood, making sure the temperature is comfortable, choosing the smoothest route so you're not bouncing around in the back.” – (D3.1)

Long-term Consequences of Algorithmic Control. Corroborating related work on psychological and algorithmic control, D1.2 described how platforms intimidate drivers with warning notifications (e.g., “You should only use last ride when you're when on your last ride”) to discourage use of features that make driver supply less predictable. Unfortunately, D1.1 also discuss how many financially vulnerable drivers who primarily depend on ridehail earnings for a living cannot afford to challenge such tactics: “most drivers they don't see the s**, they don't understand it ... a lot of foreign nationals ... [because] when you're here just trying to put food on the plate for your family, when you see a warning like that come up, you're not going to f*** around with your only source of income”.

Beyond app mechanisms, **platforms also incentivize drivers to take short-term risks for small rewards** (e.g., bonuses or pay boosts) without regard for longer-term consequences. For instance, D3.3 described how drivers sometimes sacrifice bathroom breaks to maximize time toward bonuses:

Those few seconds, even though I pee fast, it can make the difference between capturing it and not capturing [the ride]. We shouldn't be facing those choices. Most people, it's within reason. They can go to the bathroom on their job without facing bonus losses [...] The pay boost isn't always worth the effort. [...] What if for that I have to go to a doctor, having to pay more money than I would've even got with a little bonus?”

6.3 Designing Prosocial Interactions that Motivate Driver-Passenger Solidarity

To motivate and approach healthier interactions between passengers and drivers, participants shared several barriers, tradeoffs and incentives that can inform future designs of in-ride engagements between the two stakeholder groups.

6.3.1 Respectfully Navigating Driver-Passenger Social Boundaries. While **DRIVING QUESTIONS** presents an opportunity for further social interactions between drivers and passengers, both stakeholders expressed reservations to initiate conversation, surfacing how interactions trade off with safety.

Driver Vulnerability to Harassment. Reflecting recent reports of harassment problems for both drivers and passengers [144], participants such as D2.2 expressed concern around suggestive topics: “sexually suggestive or flirty questions? No, no, not, not the place [...] It's gross, it's unsafe, and it creates a very dangerous precedent, especially for women drivers and riders.” Even male-identifying drivers like D5.2 shared common experiences of passenger-imposed “sexual harassment. I've gotten that a lot. Like: ‘hey, I'll give you this money and you do this to me, or let me do this to you.’” In fact, D5.2 has even been rematched to a perpetrating passenger: “I've reported several times to the Uber people about behaviors, and once I got this offender [that I once reported] again as my rider – we were matched again”

Safe & Socially Appropriate Spaces. Up front, drivers feared to cause **social awkwardness** or instigate potential **compromises to safety**: “not every rider wants to interact. And if the game feels too personal or like a distraction from driving, it can backfire” (D3.1). Safety resonated with several participants (P1.1-3, D2.2, D3.2-4,) – D1.2 for instance, expressed approval with the varied interaction modes available in **DRIVING QUESTIONS** because “it's safe[r] when [the passenger] talk versus the driver [...] We don't want to drive [while] interacting with anything, for safety.” In the backseat, passengers like P2.3 reciprocated driver needs to keep the conversation comfortable and topically appropriate, noting how “in a car there is that dynamic of: they don't want to make you feel uncomfortable, and if I just bring up a topic that makes them feel uncomfortable, I don't think that [helps]”. The socially-conscious passenger P2.2 acknowledged:

“a fine line between having a genuine interest and prying [...] as passengers, we have to be conscious of the fact that these drivers don't want to offend us, because after all, their rating is at stake, so questions should not be intrusive”

In addition to fears of crossing personal boundaries of drivers, passengers also took care to **minimize chances of belittling or criticizing drivers**, out of awareness for their vulnerabilities: P1.2 “don't really feel that it's like right for me to criticize the way they're doing their job, because I don't really know anything about what it's like being a rideshare driver”. P2.2 reflected on their own relative power as a consumer more explicitly: “it is important that we recognize what our position is in the rideshare thing, and we don't offend people or put them on spots”.

To help them approach heavier topics, passengers (P1.4, P2.4, P3.2) found **DRIVEN** effective at presenting thought-provoking content (e.g., harassment or family obligations) in creative and memorable ways – “*fun to play in the backseat [...] I was pretty invested*” (D2.2, D3.1) – but it can also be too long, heavy or “*emotionally taxing*” for a single ride (P2.4). For instance, D2.2 “*worry about it being too much for some passengers, [since] not everybody [is] in the mood for deep [content] or or even hearing stories*”. However, passengers felt more comfortable discussing **lighter, ridehail-specific logistics**, including the number of rides the driver completed and reasons for cancellations (P3.3), time spent between rides (P2.2) or how ratings compare across service platforms (P2.3). When combined with captivating game mechanics, more casual topics also help alleviate driver responsibilities to lighten the mood, by drawing passenger attention away from pressing factors such as traffic or pressures of arriving on-time to destination: “*it passes time fast, also especially helpful on short trips or when we are stuck in traffic, riders stop checking how long it’s taking.*” – (D3.2). However, overtly engaging or competitive gaming environments might also risk upsetting or stressing out passengers who desire a more relaxed environment – D3.1 and D2.2 consider how “*not everyone wants to think hard during a ride, some folks just wanna zone out or scroll their phone and if someone gets questions wrong over and over, it might actually stress them out*”, highlighting priorities to **avoid overly stressful or challenging game mechanisms** that are “*too competitive, too loud, or makes someone feel dumb*”.

6.3.2 Motivating Socially Responsible Passenger Engagement. Instead of continuously raising expectations for service quality, we discuss alternative ways that passengers and drivers desire to engage. Topically, these include conversations on personal interests, local cultures or logistical labor. Other incentives that motivate passenger engagement include monetary contributions to drivers or charitable causes, as well as more punitive rating mechanisms that admonish passengers for irresponsible consumption behaviors.

Connecting via Driver Interests, Labor & Local Culture. Passengers yearned to connect with drivers and local events, pointing to in-ride content that could surface such knowledge. For instance, P1.1 recalled how a photo once sparked a conversation with a driver, and proposed physical cards featuring “*little things that maybe a rider could connect to and be like, ‘Oh, cool, you also watch Love Island.’*” Drivers were generally enthused to share ridehail-specific insights (e.g., “*Uber drivers make playlists just for open silences*”) and personal information (e.g., “*Did you know your driver once drove a pet pig to a party?*”) as well as music playlists (D5.2, D3.1); a few also suggested tailoring “*to rider interest or local culture*” (D2.2)

“Seattle has the most coffee shops in the US, [so it’s] not only about drivers, but also about local city parts – weird, but true [facts]. Or we can have brainy or historical thing here, ridiculous laws” (D3.1)

While **TICKING ROADS** simulates the challenges of navigating to pick up passengers, drivers suggested other aspects of their labor as gameplay content. For instance, D1.2 suggested gamifying micro-decisions such as “*declining rides that aren’t good*”, which can improve player competency at identifying exploitative rides. D2.2 envisioned games where the player acts as the driver to guess

a passenger’s mood, to foreground emotional labor that drivers perform: “*guess the rider’s mood game based on small clues: the way they greeted you, or a storytelling round where the driver shares one situation and the rider has to react [...] so it helps highlight how much reading the room is part of what we do*”.

Incentive Mechanisms. In terms of motivating further engagement and play, passengers expressed a desire for more tangible ways to act and help alleviate driver labor and working conditions. For instance, even though Octopus tablets can display driver profile information, P1.1 and P1.4 suggested additional ways of presenting surface-level information about drivers to spark conversation. Beyond knowledge-sharing, passengers like P2.2 proposed that directing their winnings to drivers (or charitable causes) would incentivize their engagement: “*I would think there should be an option in there where you could play and win something for your driver.*” Drivers like D5.3 suggested mechanisms that make “*the games more interesting, by adding a leaderboard*” which could even be extended across platforms: “*a leaderboard for the scores – it would even be more challenging if you could do Uber against Lyft*” (D2.1). In addition to positive rewards, P1.1 also considered the use of penalties to dissuade poor and rude passenger behaviors, such as giving greater weight to instances when drivers rate passengers poorly:

If you’re consistently reported as a rude a rider by drivers maybe you have to pay a fine [...so riders think]: Oh, I should probably not be rude to this driver, because then my next ride is gonna cost me more (P1.1)

7 Discussion

More than a decade ago, Kittur et al. [87] posed the question of whether we can “*foresee a future a crowd workplace in which we would want our children to participate?*” Building on this lens of healthier (crowd) workplaces for posterity, we discuss implications for how design of technology-assisted labor can better afford transparency and human agency, renewed approaches to social accountability and advocacy, as well as directions for how future interventions can support workers and their allies in both endeavors.

7.1 Design Implications for Algorithmically-Mediated Services

Our study surfaced new opportunities to promote more aligned and mutually beneficial interactions between drivers and passengers (§6.3.2). However, advancing and realizing worker-consumer solidarity in practice – e.g., socially responsible consumption, multi-stakeholder unity and altered platform design decisions – will require core changes to how we all perceive and manage these services, at multiple scales. At the level of individual service interactions, designers might consider tacit ways of reminding consumers to engage in more aware, intentional and responsible micro-decisions that carry managerial function [7] – e.g., *whether to tip drivers before or after a ride* – we suggest in §7.3 future directions for training drivers to resist harmful micro-management by algorithms. More collectively, consumers can begin looking for more local means of advocating and influencing protective driver regulations [61] – described further in §7.2.

Examining Consumer Interactions to Visibilize Labor. Ma et al. [104] showed how platform designers experience internal conflict that arise from value differences between their moral identities and platforms' business objectives, corroborating the claim by Giesler et al. [53] that platforms intentionally cultivate expectation-setting consumer behaviors such as tipping. Here we observe a triadic power relationship between algorithmic managers (or AMs [143]), consumers and workers (ordered from high to low) [62], which can inform the design of an entire ecosystem of algorithmically-mediated services. With the exception of Maffie [106], we are unaware of previous lines of research within the US that conducted grounded, qualitative analysis on the consumer-AM side of this triangle, which can inform future designs of human-AI co-management or co-creation in general. We encourage future work to more closely analyze the sociomaterial working relations of algorithmically-mediated labor to better document, raise awareness for and manage (in)visible worker accountabilities [146].

Towards Dignified, Autonomy-Preserving & Fulfilling Work. Platforms were heralded for their affordances of flexible and independent work. Much prior research attempted to measure and improve gig workers' degraded senses of job satisfaction [4] and well-being [115, 172]. But underlying these surface level objectives are missing but central worker motivations of autonomy, dignity [67] and agency [111] – the lack of which can cause enormous psychological harm. How to design more purposive and negotiable platform mechanisms that satisfy intrinsic worker fulfillment and create meaning at work? DW5 members mentioned fears of displacement by autonomous vehicles [135]: what are underlying human motivations for resisting them [114]? Can AVs fulfill core service needs of flexibility or convenience? We took care to use the term *ridehail* rather than *rideshare* to (1) emphasize the lack of symmetric power-sharing between stakeholders and (2) bridge the gap between US-based and global scholars [56, 62, 90, 151]. Historically, taxi services evolved from for-hire horse-drawn carriages in the 1600's [42]. But while traditionally licensed taxi operators owned fleets of taxicabs, does this driver-carriage-rider metaphor fit ridehail services?

7.2 Mobilizing Public Discourse, Consumer-led Labor Advocacy and End-User Auditing

"Consumers' sympathies have not yet been decisively won by platforms or yet lost to the cause of improving gig work conditions" – Healy and Pekarek [61]

Crucially, ridehail offered a unique context where the consumer and service-provider are physically and temporally co-present for engaging in interpersonal interactions, and our study offer the first attempt within HCI and CSCW to explore possibilities of reshaping the passenger-consumer interaction within a ride [62, 139]. Since consumers as a collective carry significant political power in influencing platform decisions and policy [62], we expand the locus of resistance [24] to "activate" gamified interactions [126] as a method of "soft action", with the objective of motivating behavioral change in how consumers respond to, use and resist disruptive technology. By engaging consumers in labor advocacy, we open up opportunities for bottom-up sousveillance audits by end-users [39, 83, 95, 100] (see §7.3 for technical possibilities) or designs (e.g.,

nudges, asymmetric paternalism) that encourage more collectively resistant and intentional choices (e.g., socially conscious behaviors that support competitor alternatives [110, 170] or non-use [160]).

Despite the presence of competitors, platform choices to collude can still inhibit regulatory progress (such as in the case of Prop 22 [151]) – this is the juncture where consumer-led refusal is critical [160]. Compared to the revenue-oriented interactions presented by Play Octopus, our prototypes carry additional purpose of raising awareness around driving conditions. Instead of relying on external ads as a source of support – which harm passenger engagement (e.g., P1.1) – many passengers (e.g., P2.2) inquired about potential prizes and rewards. During workshops, we informally introduced the idea of embedding and promoting local businesses, who can offer direct prizes (e.g., giftcards) and incentives (e.g., coupons) that in turn benefit their operations – enabling more local (and thus scalable) resistance [121].

Legally, tablets like Play Octopus cannot be formally banned from ridehail vehicles [75], since they provide drivers additional earnings when enough passengers engage. Depending on the region, regulations of their presence could put platforms in danger of misclassification lawsuits. However, platforms' intentional emphasis to treat workers as "independent contractor" users (or prosumers [158]) also means that regulation can turn towards consumer protections as a means to advance driver rights [89]. As ridehail internationalizes [56, 62, 90, 151], how should wide-spanning academic (e.g., computing, labor, organizational management) and geographic communities remain in conversation with one another? As labor increasingly modularize [155], what opportunities for democratic policy creation [93] can allow workers to liberally voice concerns and share insights of working conditions [72] across generations, without fears of platform retaliation? How can emerging agentic and generative capabilities help catalyze social accountability and worker-consumer solidarity?

7.3 Uniting Communities with Power-Aware, Pro-Social & Creative Technologies

Atop their potential to garner collective influence, we discuss how future technologies can contribute to more connected and sustainable gig communities, as well as ways to augment human meta-cognition and intuition so drivers (and workers more broadly) can better detect, monitor and resist algorithmic management.

Connecting Communities to Scalably Surface Labor. Our study uncovered driver desires for more in-ride interactions that better integrate passengers with ridehail-specific knowledge while connecting them to local facts and events (§6.2.1). Beyond connecting passengers to immediate physical realities (e.g., traffic, weather), drivers also appreciated how immersive simulations (e.g., **TRIVIA RIDE** or **TICKING ROADS**) surfaced exploitative labor practices, which persist despite empirical evidence from more than a decade back [125] as well as rising labor consciousness and tech wariness [149]. But while we intended to follow the Tandem Transformational process, our prototypes did not materialize physically, limiting the degree to which we can simulate realistic experiences to socially connect stakeholders. Follow up studies might consider how emerging techniques can surface additional driver (and gig) labor at different scales.

However, we must preface these ideas by cautioning the reader to first consider necessary guardrails of applying emerging (generative) technologies, to ensure physical and psychological safety of users across age groups. How can mixed or virtual realities [92] and video generation simulate individual worker narratives by capturing [16] or re-enacting [68] labor accountabilities [64]? What insights can social simulations reveal on collective behaviors [99], or policy formulations [93] of driver communities? Beyond tablets, passengers expressed preferences for mobile software so they can engage on their own devices. How can lightweight mediums such as speech [55] (especially when combined with conversational agents [161]) facilitate more socially appropriate interactions? Mobile interactions also offer affordances such as social media-like interactions (e.g., discussions [113], chat rooms³) as well as the collection and organization of multimodal data (e.g., spatial [58], audio, video) from a variety of multi-media sources (e.g., new articles, videos, discussions and blogs [24]).

Creatively Engaging Drivers' Meta-Cognitive Capabilities to Promote Driver Dignity. We hope that exposure through immersive gamification can help players (including potential future drivers) to develop behaviors and strategies for resisting manipulative platform tactics [128]. But what are sustainable ways to help drivers regain autonomy, agency and control over algorithmically-controlled actions? Cameron [22] showed how more resourceful drivers engage in playful acts of resistance, which she termed relational games. Example strategies that drivers employed to win this game included psychological distancing to resist managerial nudges (e.g., notifications, badges) and selectively choosing profitable rides to “make out” with net positive earnings. As tactics of algorithmic management evolve, what are other creative interventions we can build to train workers' metacognitive abilities (e.g., planning [117], monitoring [140], reflecting [120]) so they can more actively reflect on, track and resist algorithmic control?

8 Conclusion

This work demonstrated the possibility for playable in-ride interventions to motivate consumer-led advocacy for labor conditions of ridehail drivers. We contribute a novel direction for worker advocacy that bridges the computing and labor communities. Future work can draw upon its insights to (1) gain more in-depth understanding of algorithmically-managed labor relations and organizations (2) foster and mobilize scalable consumer solidarity and advocacy (3) build creative interventions that train human workers to resist harmful algorithmic control.

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³E.g., the weekly X space hosted by Drivers Coast 2 Coast

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Appendix

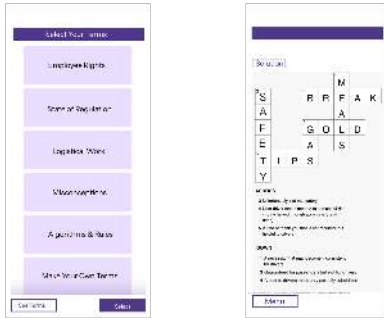


Figure 8: **CrossRoads** contains driver-selected ridehail concepts

jigsaw **CrossRoads**

Resembling standard crossword puzzles, **CrossRoads** embeds ridehail-related terms and clues to expose such knowledge to passengers. In addition to incorporating ground-truth ridehail concepts, **CrossRoads** contain mechanisms allowing drivers to pick and define their own terms and clues, affording them agency to select ridehail topics most relevant to their own experiences while improve replayability of the game for passengers across rides. The puzzle nature of the crossword orients players to focus on character order as opposed to the ridehail-related terms, but the small screensize of mobile and tablet devices limits content and therefore potential to introduce intermixing. In this prototype, we embedded concrete definitions of concepts (fulfilling requirement for ground truth answers) related to driver rights, regulations, algorithmic management strategies, and logistical burdens.

While driver D2.1 saw potential in **CrossRoads** as a “good distraction” from work for riders, others found it “boring”, cognitively demanding, and criticized its lack of a “social loop” to interact with the driver, as well as in failing to contribute to “energy I’d want in a fun way” - D2.2. Combining these concerns with the difficulties of typing on a tablet keyboard, we decided to eliminate this prototype after the second driver workshop.



Figure 9: **Dilemmas @ Work** contain black cards representing (ridehail) work dilemmas & white cards with actions to take in response

tada **Dilemmas @ Work**

Based off of the popular social party game *Cards Against Humanity* and inspired by related applications of the card game towards discussion of contexts such as AI ethics [164], as well as driver-led advocacy [118], we prototyped **Dilemmas @ Work**, which adapted the black card deck to represent work dilemmas that drivers and traditional workers might face in their everyday labor – leveraging intermixing (§3.2.1). Correspondingly, white cards depicted potential strategies for handling the various dilemmas presented in black. Designed for a physical social context, the random dealing of cards each round creates a replayable (§3.1.1) experience even among the same group of players. Meanwhile, the objective of humoring the dealing player of each round serves to obfuscate the concepts ridehail vulnerabilities.

Participants of the first driver workshop ranked **Dilemmas @ Work** as the lowest among presented prototypes, explaining how its design to operate outside of a ride discourages engagement with the topic: “I don’t know that I would see many people actually doing it, if the purpose of this is to educate riders on the driver experience”, especially since they believed “the impetus for any of these games would be [with how they are played] during a ride” - DW1.1.

Passenger Protocol

- (1) **[Character Card Activity]** Let's start off by sharing how long you've been a rider, how frequently you ride, what platform(s) you use, and where?
- (2) What do you know about rideshare?
 - (a) What aspects of rideshare driving do you know of that are maybe surprising or concerning?
 - (b) Other than driving, what other responsibilities do you think drivers have when working for their platform?
 - (c) Reflecting on your experiences as a passenger, what rides are most memorable? Did you learn anything about rideshare driving that was interesting or surprising?
 - (d) What makes you tip a driver more, or give 5-star ratings?
 - (e) On the other hand, what types of rides make you most stressed out or annoyed?
- (3) Introducing Game Prototypes
 - (a) *Ranking Game Heuristics*
 - (i) Rank the games based on which you thought were the most fun. How you define fun is up to you, but please explain your rationale.
 - (ii) Rank the games based on whether you could see yourself(selves) playing more than once?
 - (iii) Please rank the games based on how well-integrated you thought the concepts of ridesharing were (most sneaky)? Would you have noticed the concepts if we didn't point them out? How did it impact the gameplay?
 - (iv) Rank based on how easy the games would be to play in an uber ride – potentially on an Octopus-like tablet
 - (v) Rank based on the amount of collaboration/interaction you could have/would want to have with the driver in each game.
 - (vi) Rank based on which games are the most casual/easiest to pick up/stop at any point – easiest on the mind.
 - (vii) Rank each one based on how likely you would be to recommend the games to a friend?
 - (viii) Rank which ones make you more curious about rideshare driving conditions. Which ones serve as a launch point and make you want to learn more about them?
 - (b) *Embedded Concepts*
 - (i) Does this game capture the rideshare
 - (ii) What other aspects of ridesharing are you curious about? Could you imagine it as a part of the games?
 - (iii) Last row are for important concepts that don't yet fit with the existing game prototypes concept(s) accurately?
- (4) Reflections
 - (a) Other than gamified experiences, what are other interactive modes of communicating driving conditions that you'd be receptive to?
 - (b) Were there any particular concepts that would be better implemented in this format rather than in a game?
 - (c) Take this time to revisit your character card rankings from the beginning, how did these change?
- (5) Which driving conditions issues are you most curious or concerned about?

Driver Protocol

- (1) Why rideshare?
 - (a) Why did each of you start rideshare, and how long have you been driving?
 - (b) What are you hoping to learn or gain from the workshop today (can be from us or the other drivers)?
 - (c) Now (as a group) choose the question that you would all like to share with passengers the most. Why this question?
 - (d) How often do riders talk to you about these with you?
 - (e) By contrast, which issues are not necessarily good ideas to be discussed with passengers or in a game?
- (2) Introducing Game Prototypes
 - (a) Does this game capture the rideshare concept(s) accurately?
 - (b) What other aspects of ridesharing can you imagine this game to include?
 - (c) How does your experience shape the way you ordered the pieces of information?
 - (d) Would you want to subject passengers to similar decisions or experiences (even if simulated) as you?
 - (e) Are you interested in knowing more about drivers who identify differently than you? Why [what insights would this tell you if you knew this]?
- (3) Reflections
 - (a) Jot down your thoughts, concerns and additional ideas about these proposed gaming experiences
 - (b) Choose the concern that you think would be the biggest blocker to riders adopting this game. How come?