

1      **Beyond Riding: Passenger Engagement with Driver Labor through Gamified**  
2      **Interactions**  
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12     Modern cities increasingly rely on ridesharing services for on-demand transportation, which offer global-scale convenience and  
13     mobility to consumers. However, the marketed consumer affordances give rise to burdens and vulnerabilities that drivers shoulder  
14     alone, without adequate infrastructures for regulatory protection or consumer-led advocacy and mutual support. To promote civic  
15     engagement and oversight around driver protections and conditions, policymakers and the public in general require a transformed  
16     perception of the labor, logistics and costs involved in rideshare driving. In this study, we explore the potential for gamified in-ride  
17     interactions to advance passengers' understanding, empathy and advocacy for underexposed rideshare driving conditions and driver  
18     vulnerabilities. Through a series of workshops with 19 drivers and 15 riders, we uncover passenger knowledge gaps around latent  
19     rideshare conditions, design opportunities around consent and content in gamified in-ride interactions, as well as considerations of  
20     alternative interactions and incentives for achieving further awareness among the ridership.  
21

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23

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28     **1 INTRODUCTION**  
29

30     Platform-based gig labor occupies a growing proportion of the global workforce, offering a wide variety of digitally-  
31     mediated services, ranging from driving and couriering to crowdwork and freelancing to home-based and personal  
32     care services. Ridehail in particular (e.g., Uber, Lyft), assume a crucial role in advancing urban mobility [111] and work  
33     access [86], as well as in stimulating local economies [34, 56]. But alongside increasing and celebrated adoption of gig  
34     services, scholars raise growing concerns around the physical [16, 64, 89, 103], financial [10, 69, 97] and psychological  
35     [6, 22, 96, 108] working conditions of gig laborers. Legal and critical scholars, for instance, challenge the platforms'  
36     abuse of power through tactics such as algorithmic management and control [48, 61], as well as the absence of policy  
37     and regulations that require platform provisions of protections and safety nets [23, 38]. Besides platforms, consumers  
38     also shape worker conditions in significant ways, through expectations of service quality and pricing [112], ratings [70]  
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and scaled collective political power [39]. But despite their influence, consumers remain largely unaware of the harsh realities workers face – Pew Research found that nearly half of Americans have never heard of the ongoing debate around the classification of ridehail drivers [2].

Critically, many algorithmic management practices that platforms employ are deliberately opaque and undocumented, obscured from consumer perception and scrutiny. More inconspicuous tactics include (1) psychological strategies like gamification and ratings that manipulatively promote prolonged engagement and surveillance [12, 13, 94] (2) legal evasions of employer responsibilities (e.g., tax or tort liability [15], consumer misbehaviors [90]) as well as (3) undisclosed and unpredictable wage adjustments that reduce and minimize worker earnings [101]. A burgeoning body of work engage with workers to expose the hidden and undocumented risks of gig labor, offering worker-centered tools to collectivize and resist [45, 70, 110]. However, relying primarily on workers to push back against platform tactics and insufficient regulatory infrastructures can add to their vulnerabilities, financially, psychologically and career-wise. Consumers, on the other hand, have more capacity, resources and power to advocate for worker rights and conditions [68], and insights from service design suggest that more empathetic understanding (and rapport in general) between consumers and workers create more meaningful, satisfied and pleasant interactions [35, 106]. But in the casual rideshare setting where passenger-rider pairs are generally strangers, social boundaries prevent consumers from broaching and contemplating these sensitive and uncertain topics.

Gamification is one approach to motivate an audience to engage and empathize with serious but sensitive prosocial causes such as gender-based violence [83], interpersonal racism [98] and HIV prevention [41]. Specifically, persuasive game mechanics delivered through means of “embedded” messaging or interactive narratives offer players immersive and empathetic spaces where they can learn about or experience driving conditions without being subjected to personally vulnerable positions. This study explores the potentials of game-based interventions as a boundary objects for mediating consumer education and discourse around the obscure and delicate dimensions of rideshare driving conditions. Previous works of persuasive games revealed their potential to transform players’ attitudes and perceptions on serious social issues, while creating psychological distance between the player and intended message [17]. Leveraging techniques and frameworks from persuasive game design, we worked with rideshare drivers and passengers in a series of codesign sessions to explore whether gameplay interventions may transform passengers to understand, empathize towards, and advocate for the obscured realities of rideshare driving.

**RQ 1** Which gamified experiences allow effective embedding of ridesharing concepts and experiences that drivers prioritized presenting to passengers?

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

We take an iterative design process to approach these inquiries, starting off with goal delineation via literature review and pilot interviews with passengers and drivers (§3.1), followed by implementation of four gamified prototypes (§5) and a series of codesign workshops to gather driver and passenger feedback (§3.2). Our results show driver enthusiasm for relaying a variety of latent rideshare experiences (e.g., pay, logistics, rating pressures, psychological control) through gamified interactions and their mediated conversations (§6.2). Additionally, participants shared initial reactions to in-ride prototypes (§6.1), revealing design tradeoffs (§6.3) to guide effective embedding of rideshare concepts in future interactions to promote passenger understanding, empathy and advocacy.

## 105 2 RELATED WORK

### 106 107 2.1 Labor, Vulnerabilities and Consumer Knowledge Gaps in Rideshare Driving

108 App-based rideshare services have proliferated in the US market since their introduction more than a decade and half  
109 ago, emerging as the largest sector of the on-demand economy [12], with more than 36% of the US adults having used  
110 rideshare services [51]. Pew research found that consumers with knowledge of the issue around driver classification  
111 were 20% more likely to desire further regulation of rideshare companies, yet the impact of this advocacy is limited  
112 by the lack of awareness – among 10 American adults, more than 4 have never heard about the debate, as of 2021  
113 [2]. Meanwhile, public opinion surveys show consumers’ conflicted opinions about the effects of platform-based gig  
114 work for laborers, with especially high ambivalence towards aspects of working conditions that are hidden from their  
115 purview – e.g., long-term consequences on career [39]. Consumer perceptions of a platform’s working conditions also  
116 affect their use and recommendation of it, especially among users with more social consciousness [4].  
117

118 Despite increasing concern, there remains a knowledge gap between consumer perceptions of gig work such as  
119 rideshare driving and comprehensive understanding of the invisible risks, stressors, and vulnerabilities that drivers and  
120 other workers assume [42, 84, 96], along with unseen immaterial, emotional and logistical labor [78, 100]. Rating pressures  
121 (and their accompanying deactivation thresholds) represent one tactic that platforms leverage to discipline drivers  
122 [13]. Such reputational burdens coerce several forms of unpaid emotional labor from drivers, including expectations of  
123 maintaining a “friendly”, “positive” and “respectful” attitude to please the passenger, regardless of how riders themselves  
124 behave [14]. But while drivers experience immense pressures to satisfy riders, passengers themselves may not be aware  
125 of the heavy implications that ratings carry [72, 78].  
126

127 Workplace gamification is another psychological technique that platforms use to trick and coerce drivers to continue  
128 labor under exploitative conditions [12, 75, 88] – which drivers resist [101]. In rideshare, this takes form through  
129 mechanisms such as the metrics that feed into the “rating game”, Quests and Challenges, badges and points, status  
130 programs with rewards [13, 101]. To compound, information asymmetries deprive driver agency when platforms choose  
131 to withhold key details of a trip – e.g., exact destination and fare [82]. The combination of such algorithmic management  
132 and intense competition (e.g., low wages, social isolation) creates immense psychological stress for drivers [3, 84] –  
133 who also deal with hidden health and safety risks from accidents on the road [63, 91], violence from passengers [64, 92],  
134 fatigue [49] as well as long-term consequences, including musculoskeletal and urinary disorders [3, 9]. However, many  
135 of these harmful but latent effects remain unobservable to passengers, while more delayed effects may also escape the  
136 notice of drivers themselves.  
137

### 138 139 140 141 2.2 Technological Advocacy for & Consumer Perceptions of Rideshare Driving

142 Scholars at the intersection of HCI and labor studies made several attempts to leverage technological probes and  
143 interventions to surface and curb the harmful impacts of algorithmic management, as well as to advocate for and design  
144 alternative infrastructures to prioritize driver well-being. Stein et al. [93] imagined alternative data uses and more plural  
145 sociotechnical infrastructures with drivers to uncover key design objectives surrounding privacy, agency and utility.  
146 Zhang et al. [110] invited drivers to propose algorithmic imaginaries that offer more worker-centered transparency,  
147 incentives and insights to drive well-being. Hsieh et al. [43] worked with multiple stakeholder groups to reveal need  
148 for platform-based changes, technological innovations as well as civic advancements such as more accurate public  
149 perceptions of workers. Recent studies stepped beyond co-design to reveal potential for data probes [110] as well as  
150 data-sharing tools [10, 11, 45] and collectives [44] to advocate and elevate worker priorities. While these approaches  
151 152 153 154 155 156

157 demonstrated workers' shared motivations and offered techniques for collective accountability, sensemaking and  
158 decision-making, such interactions necessarily require effortful engagement and data contributions from workers, many  
159 of whom are locked into laboring for long hours to balance financial needs [107] with instability of job opportunities  
160 [76], making it infeasible for them to engage in additional (uncompensated) interactions.  
161

162 Meanwhile, the ways rideshare passengers perceive and interact with driving conditions remain relatively underexplored.  
163 Moreso than workers (service providers) or platforms themselves, consumer behavior plays an indispensable  
164 role in platform survival [26, 39]. In particular, how consumers perceive the work conditions and quality of a platform's  
165 service directly influence their use and recommendation of the provided service [4], and such perceptions carry im-  
166 mense political power at scale [40], which platforms seek to influence. Recognizing their foundational role, Healy and  
167 Pekarek [39] wonders whether workers can "gain support from consumers they serve, altering the power in this triadic  
168 relationship?" In food delivery, Meijer et al. [68] began probing this space by prototyping an interaction providing users  
169 with their courier's demographic information during waiting time, which shifted users away from affective empathy,  
170 but toward compassionate empathy – an experience that incentivizes further prosocial actions to help others [60]. But  
171 while technology-mediated interactions show promise to foster users' interpersonal empathy for individual workers,  
172 it remains unclear whether they hold the potential to cultivate consumer empathy in a way that motivates them to  
173 further care, take action and advocate for vulnerabilities that affect the broader, scaled ridesharing driving workforce –  
174 objectives related to but opposing the intents of "*consumer empathization*", which rideshare platforms adopt to establish  
175 legitimacy for their businesses [32].  
176

### 180 2.3 Gamification Techniques to Convey Driver Vulnerabilities & Experiences

181 A key barrier to approaching the challenges of rideshare work is the sensitive and private nature of financial and  
182 emotional vulnerabilities [86], which prevent consumers from learning about hidden driving labor and logistics (§2.1).  
183 Gamified environments and gameful designs [50] present an opportunity for safe and inclusive spaces that foster  
184 awareness of such sensitive [54, 98], complex, and overlooked topics [77]. In ridesharing, gamified interactions offer  
185 opportunities to (1) create psychological distance with players so they explore driving conditions in fictional or virtual  
186 spaces without being personally subjected to vulnerabilities, and (2) simulate gamification tactics that platforms impose  
187 to exert psychological control.  
188

189 Games design has historically functioned as a medium for promoting critical thinking and social consciousness around  
190 pressing societal issues, ranging from racism (e.g., *SimCity* [29]) to colonialism (e.g., *Civilization* [71]) to capitalism (e.g.,  
191 *Animal Crossing* [8], *World of Warcraft*, *Second Life* [37]), including specific dimensions such as immaterial labor (e.g.,  
192 *Mario* [81]). Persuasive games intentionally leverage techniques like procedural rhetoric (the use of rules, mechanics and  
193 decisions) to model and portray social systems [7], embedded approaches (e.g., distancing and intermixing) to address  
194 controversial topics, and empathy-building methods like narrative role-play (and role reversal [58]) to affectively and  
195 emotionally engage players in the perspectives of marginalized and constrained groups [18, 28]. In a related context,  
196 Popan et al. [74] attempted to leverage role-playing to foster empathy and mobilization among workers. However,  
197 targeting drivers as the primary player audience not only requires extra effort from already-burdened workers (§2.2), it  
198 also forfeits the opportunity to engage consumers, a population containing both potential driver advocates and future  
199 drivers, in gaining more knowledge around hidden risks and conditions of rideshare driving.  
200

	<b>ID</b>	<b>Age</b>	<b>State</b>	<b>Gender</b>	<b>Income</b>	<b>Platforms</b>	<b>Drives to Commute</b>	<b>Employment</b>
PW1	P1.1	18-29	MA	NB	\$12k - \$50k	Uber (4.94), Lyft	<Once a year	5-10 years
	P1.2	18-29	PA	M	\$12k - \$50k	Uber (4.81)	Never	<3 years
	P1.3	18-29	CA	M	\$100k - \$200k	Uber, Lyft (5)	Everyday	<3 years
	P1.4	18-29	TN	M	\$12k - \$50k	Uber, Lyft (5)	A few times a year	3-5 years
PW2	P2.1	18-29	CT	M	\$50k - \$100k	Uber (5)	Everyday	3-5 years
	P2.2	65+	NV	F	\$50k - \$100k	Uber (5)	Never	10+ years
	P2.3	18-29	IL	NA	\$12k - \$50k	Uber: (4.68)	Never	3-5 years
	P2.4	30-44	NY	M	\$100k - \$200k	Uber (4.9), Lyft	Never	10+ years
PW3	P3.1	18-29	NJ	F	\$50k - \$100k	Uber (4.98), Lyft (5)	Few times / year	<3 years
	P3.2	18-29	MA	M	\$0 - \$12k	Lyft (5)	Everyday	3-5 years
	P3.3	45-64	TX	F	\$50k - \$100k	Uber, Lyft (5)	<Once a year	10+ years
	P3.4	30-44	PA	M	\$12k - \$50k	Uber (4.9), Lyft (4.9)	Never	10+ years
PW4	P4.1	18-29	MA	M	\$50k - \$100k	Uber (5)	Few times / year	<3 years
	P4.2	18-29	NJ	F	\$12k - \$50k	Uber (4.99)	Never	3-5 years
	P4.3	45-64	FL	M	\$100k - \$200k	Uber (4.90) Lyft (5.0)	>Once a week	10+ years

Table 1. Passenger Demographics

### 3 METHODS

#### 3.1 Phase 1: Goal Delineation through Literature Review & Formative Interviews

Given our unconventional and interdisciplinary problem space (i.e. advocate and surface underexposed rideshare driving risks and vulnerabilities), intended audience (i.e. passengers) and goal (i.e. motivate passenger understanding and advocacy for drivers' labor conditions), we followed several key steps and cycles of the (Tandem) Transformational Game Design process [17, 99]. To begin, we delineated our goals of surfacing key conditions of rideshare driving to engage passenger understanding, empathy and advocacy through a review of relevant literature and games (§4.2). 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 rideshare driving conditions (§4.1). Next, we conducted formative interviews with 2 drivers and 3 passengers to garner initial ideas and understanding around latent rideshare 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 to implement.

#### 3.2 Phase 2: Iterative Game Prototyping

In Phase 2, we began by implementing three game prototypes based on feedback from Phase 1. Then, we conducted an iterative cycle of co-design workshops that interspersed passenger and driver feedback. Table 6 summarizes how participants perceived each prototype, in chronological order of when they were conducted.

Based on feedback from the formative study, we implemented three preliminary game prototypes (§5) and presented these to drivers across DW1 and DW2, where we inquired about their prioritized issues to share with passengers, probed for initial reactions and hesitation to prototypes and embedded concepts as well as ideas for alternative game designs and concepts to embed that align with the overarching goal. After this first round of driver feedback on initial prototypes, we completed another round of goal delineation [99] by mapping relevant concepts in rideshare driving from the literature (see mapping in supplementary materials) and highlighting concepts that (1) drivers prioritized

	ID	Age	City	Gender	Education	Status	Rideshare Income	Hrs/week	Rideshare 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
	5.4	45-64	GA	M	Bachelor's	FT	Essential for basic needs	25-40	6 years

Table 2. Driver Demographics

communicating to passengers and (2) key issues and vulnerabilities that are under-exposed to riders. Leveraging drivers' feedback around game mechanisms from the first two workshops, we iterated on game mechanisms and prototypes.

Next, we invited passengers in a set of workshops that probed and assessed their initial understanding and concerns around rideshare driving, gathered evaluations of prototypes based on several key heuristics, as well as hesitations and ideas for alternative interactions (both game-based and otherwise) that align with our study goal. To continuously adapt prototypes based on feedback, we also held two more workshops with drivers – DW3, DW4 and DW5.

*Passenger Workshop Protocol.* Each passenger workshop started off with “*Character Card*” introductions where each participant shared their name/location/experiences on a colored sticky note, which we used throughout the subsequent activities to respond to questionnaire-style prompts about their (1) knowledge of rideshare (2) level of empathy for rideshare driving (based on questions from the QCAE [80] and IRI [52]), as well as (3) willingness to advocate for drivers. For each prototype, passenger participants rated the interaction along seven dimensions of: fun, replayability, sneakiness (at embedding rideshare concepts), ride-friendliness, lightweight vs taxing, recommendability and how thought-provoking it was. See supplementary materials for ranking results and detailed workshop protocols.

### 3.3 Recruitment

During formative interviews, we recruited 2 drivers (D1 and D2) based on contacts from prior studies, as well as 3 passengers (R1 - R3) based on convenience sampling from our home universities. For co-design workshops, we reached out to a combination of past participants, subreddits, Craigslist posts and physical flyers in local professional communities.

	Embedded Design			Rideshare-Specific				
	Obfuscating	Intermixing	Fictional Narrative	Replayability	Timed	Ground truth answers	Playable in-ride	Interaction (with driver)
 CrossRoads	✓			✓		✓	✓	✓
 Dilemmas @ Work		✓		✓				
 Driven	✓		✓	✓			✓	
 TriviaRide		✓		✓	✓	✓	✓	✓
 Driving Questions		✓		✓			✓	✓
 Ticking Roads	✓		✓	✓	✓			Mobile-Only

Table 3. Prototypes and how they fulfill literature-based and rideshare-specific criteria

Participants were compensated at a rate of \$60/hour and selected based on eligibility, location and experience levels, indicated by pre-study screening forms. Tables 3.1 and 3.2 summarize rider and driver demographics <sup>1</sup>.

### 3.4 Thematic Analysis

After our workshops, three researchers coded all 12 hours of workshop transcripts (transcribed by Otter.ai) to extract important 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 in codes: existing practices/strategies, frustrations, reactions to prototypes, design objectives, alternative gamified interactions/interventions, current customer perceptions, and additional knowledge passengers should know. The first two and last three categories helped us understand how well our prototypes capture the proper driver experience, while the remainder guided our next iterations of prototyping, where we presented the most recent iteration available to each workshop to run our iterative design process and workshops in parallel. We also used these codes to eliminate less effective prototypes and introduce new features.

### 3.5 Positionality

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. 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 rideshare drivers. One author has part-time experience working for a food delivery platform, while two authors have extensive experience laboring across service occupations.

## 4 GAMIFIED INTERACTIONS TO SURFACE DRIVER VULNERABILITIES

Presently, we are aware of only one system occupying the space of in-ride interactive games: the [Play Octopus network](#) that provides drivers with in-car tablets containing advergames. Marketing itself as the world's "largest rideshare advertising network", games such as trivia on Octopus primarily serve as rider engagement tools that generate advertising revenue. Since our gamified interactions aim to convey hidden driving conditions to riders, we draw from the game design and heuristics literature to identify relevant strategies that can maximally support our study goals of encouraging knowledge dissemination, empathy and advocacy around rideshare conditions. Through pilot interviews

<sup>1</sup>Due to an oversight to record, participant data from DW4 are based primarily on internal notes

365 and reflections on the study aim, we additionally identified three key criteria specific to the rideshare context. Below  
 366 we discuss each design criteria and how they applied to prototypes, summarized in Table 3.5.  
 367

#### 368 4.1 Game Design Criteria & Heuristics

369 4.1.1 *Replayable*. One measure for evaluating whether a game is engaging is the player’s desire to replay [20]. Replay  
 370 can enhance learning around educational contents of the game [62], making it crucial for achieving our intended goal of  
 371 helping passengers achieve further understanding around rideshare driving experiences. Increasing replays of a game  
 372 also promotes social interaction among its players (e.g., discussion of its content) [30], which support our objective of  
 373 promoting understanding and advocacy around ridesharing driving conditions.  
 374

375 4.1.2 *(Timed) Challenge*. Another standard heuristic for game playability centers the level of challenge or difficulty  
 376 involved for players to reach a winning condition. Malone [66] defined that a challenging game must contain “*a goal*  
 377 *whose outcome is uncertain*”, while Desurvire and Wiberg [21] further refined the heuristic by also considering its balance  
 378 with pace: “*well-paced challenge(s) that makes the game worth playing*”. In both video and mobile games [20, 57], the  
 379 presence of a challenging goal is central to creating an engaging and enjoyable experience for the player. For ridesharing,  
 380 a time challenge not only creates well-paced and enjoyable play experience, it can also serve to simulate realistic time  
 381 constraints that drivers face [3]. However, we refrained from incentive mechanisms such as leaderboards or challenges  
 382 to contacts (e.g., friends or family), which carry risks of trivializing sensitive topics such as driver vulnerabilities  
 383 [83, 104].  
 384

385 4.1.3 *Embedded Design*. Kaufman et al. [54] recommends embedding persuasive messaging in more “*stealthy*” ways to  
 386 make players more receptive to the intended message. Below, we overview how we can leverage the three strategies of  
 387 embedded design – i.e., intermixing, obfuscating and distancing – to effectively convey knowledge on latent aspects of  
 388 rideshare driving.  
 389

390 4.1.4 *Intermixing*. By interspersing both on-message and off-message material in a game, intermixing helps ease a player  
 391 into intended themes – offsetting potential discomfort and initial reservations from players when presented with an  
 392 emotionally-taxing topic such as sexism [73]. The combination of thematic and playful content reduces chances of a  
 393 player interpreting interactions as interventions, allowing them to subconsciously internalize the game’s messaging. In  
 394 rideshare, a passenger who resist knowing the effects of their actions and participation in current rideshare platforms  
 395 could be adverse to overt designs that center rideshare driving conditions. However, when driving content is interwoven,  
 396 the interaction changes from a gamified intervention to a more player-friendly game with informative elements.  
 397

398 4.1.5 *Obfuscating*. Obfuscation refers to the technique of concealing the persuasive intent of serious and purposive games,  
 399 reorienting players’ objectives towards more apparent game mechanics and goals to bypass their psychological defense  
 400 against the underlying message and objective. To conceal intents, obfuscation frames serious messages in a way that  
 401 covertly introduces the persuasive material, while still provoking critical reflection within the user. Obfuscation has  
 402 been leveraged to approach many serious and sensitive topics, such as bias against women in STEM [31], the complexity  
 403 of social identities [53] as well as health advocacy [54]. Similar to effects of intermixing, obfuscation can help players  
 404 avoid feeling pressures of their identity as a passenger, which can often impose stressors upon drivers due to their  
 405 relative lack of power in the rideshare context.  
 406

*Psychological Distancing through Fictional Narrative.* In both interactive and immersive forms, fiction is shown to be an effective medium for communicating complex and sensitive social experiences, including gender-based violence [83], interpersonal racism [98], healthcare [46], and climate change [25]. Aligned to goals of this work, fictional and immersive simulation of social experiences also facilitate audiences' reflection [47], empathetic growth [33, 67] and prosocial behaviors [65, 109]. Narrative framings create safe spaces where players can explore through a first-person perspective the sensitive topics of driver vulnerabilities without directly experiencing harmful and disturbing work conditions. *Interactive narrative fictions*, in particular, offer players the agency to make first-hand decisions, which influence in-game plots and experiences thus the players' own sense of responsibility (and subsequent self-efficacy [24]) over decisions — illustrating the persuasive power of procedural rhetoric [1, 19]. In the rideshare context, a fictional game carries capacity to augment passenger knowledge and empathy for hidden labor, logistics and vulnerabilities.

**4.1.4 Rideshare-specific Criteria.** Atop relevant game design criteria from the literature, we also reflected upon formative interview findings with 2 drivers and 3 riders, as well as our own knowledge of design and app-based labor to elicit potential requirements for the rideshare context.

*In-Ride Compatibility.* Passengers in our pilot studies expressed a common preference for “*lightweight*” and easy-to-pickup games that minimize chances of car sickness. Despite this preference, R2-3 also desired realistic simulations of rideshare driving. Driver D2 suggested leveraging the Octopus tablet currently in their backseat to more naturally integrate and implement rideshare-related content.

Before implementation, we verbally considered with pilot passengers ideas of integrating rideshare content with puzzle, trivia, simulation, visual novel, or social party games. Both drivers supported the idea of connecting with and engaging passengers through gameplay, but D1 cautioned how embedded content should not come across as a way to “*vent your complaint*” to passengers.

*Interactions with Drivers.* When discussing preferred genres, R2 indicated more interest in simulations that shed light on how drivers interact with and “*talk to the person[/rider] in the backseat*”, since they’re not a fan of actual driving. Similarly, R3 suggested interactions where “*you have to talk to the driver, or engage with them*”.

*Ground Truth Answers.* To most effectively reconfigure the role of passengers in understanding and advocating for worker conditions, concepts should convey accurate and believable information regarding the rideshare context. The ground truths are apolitical and generalizable, making them easier to disperse as the player learns them, and extends the reach to a larger audience.

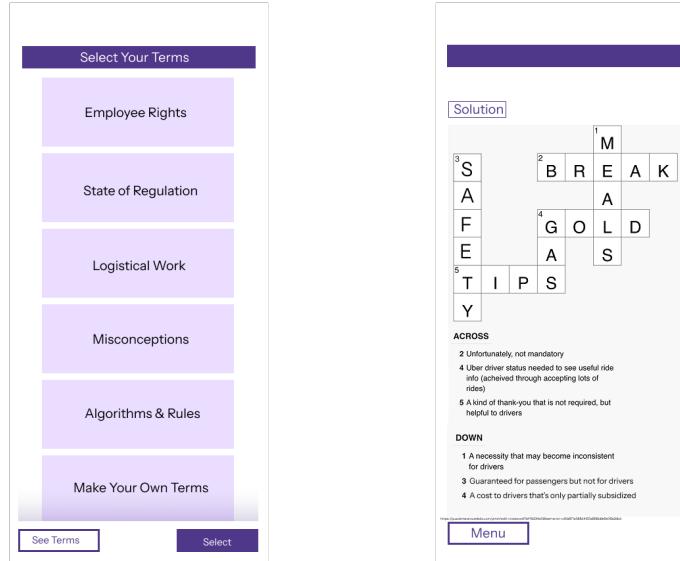
## 4.2 Problem Space: Embedded Rideshare Driving Concepts

In addition to eliciting design criteria during pilot interviews, we also sought to understand key ridesharing challenges drivers wanted to convey to riders through gamified interactions. We report drivers' support for and hesitations around the idea of fostering rider understanding and empathy, as well as passenger preferences and motivations for engagement.

When probed about their experiences talking to passengers about driving conditions, 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 similarly shared how only folks with experience working 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 or occasions for learning about ridesharing conditions.

469 The three passengers recognized and reflected on their limited knowledge around the current state of rideshare  
 470 driving, including conditions, policies, and platform logistics. However, in contrast to pilot drivers' perceptions that  
 471 passengers "just didn't care", riders we interviewed expressed curiosities to learn. In fact, all three passengers indicated  
 472 that the inclusion of content related to rideshare conditions would motivate gameplay, with R1 relating that "[he]ll be  
 473 more inclined to try it out" while R3 and R2 shared that "[she] would definitely play a rideshare driver simulator ...where  
 474 your goal is to get from one place to another". Overall, riders expressed interest around how platforms function and the  
 475 appeals of rideshare driving as an occupation.  
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## 478 5 PLAYABLE PROTOTYPES EMBEDDING RIDESHARE CONCEPTS



504 Fig. 1. CrossRoads contains driver-selected rideshare concepts

### 508 5.1 CrossRoads

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

521 While driver D2.1 saw potential in CrossRoads as a “*good distraction*” from work for riders, others found it “*boring*”,  
 522 cognitively demanding, and criticized its lack of a “*social loop*” to interact with the driver, as well as in failing to  
 523 contribute to “*energy I’d want in a fun way*” - D2.2. Combining these concerns with the difficulties of typing on a tablet  
 524 keyboard, we decided to eliminate this prototype after the second driver workshop.  
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526 Fig. 2. Dilemmas @ Work contain black cards representing (rideshare) work dilemmas & white cards with actions to take in response  
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## 543 5.2 Dilemmas @ Work

544 Based off of the popular social party game *Cards Against Humanity* and inspired by related applications of the card game  
 545 towards discussion of contexts such as AI ethics [105], as well as driver-led advocacy [74], we prototyped Dilemmas @  
 546 Work, which adapted the black card deck to represent work dilemmas that drivers and traditional workers might face  
 547 in their everyday labor – leveraging intermixing (§4.1.3). Correspondingly, white cards depicted potential strategies for  
 548 handling the various dilemmas presented in black. Designed for a physical social context, the random dealing of cards  
 549 each round creates a replayable (§4.1.1) experience even among the same group of players. Meanwhile, the objective of  
 550 humorizing the dealing player of each round serves to obfuscate the concepts rideshare vulnerabilities.

551 Participants of the first driver workshop ranked Dilemmas @ Work as the lowest among presented prototypes,  
 552 explaining how its design to operate outside of a ride discourages engagement with the topic: “*I don’t know that I would*  
 553 *see many people actually doing it, if the purpose of this is to educate riders on the driver experience*”, especially since they  
 554 believed “*the impetus for any of these games would be [with how they are played] during a ride*” - DW1.1.  
 555

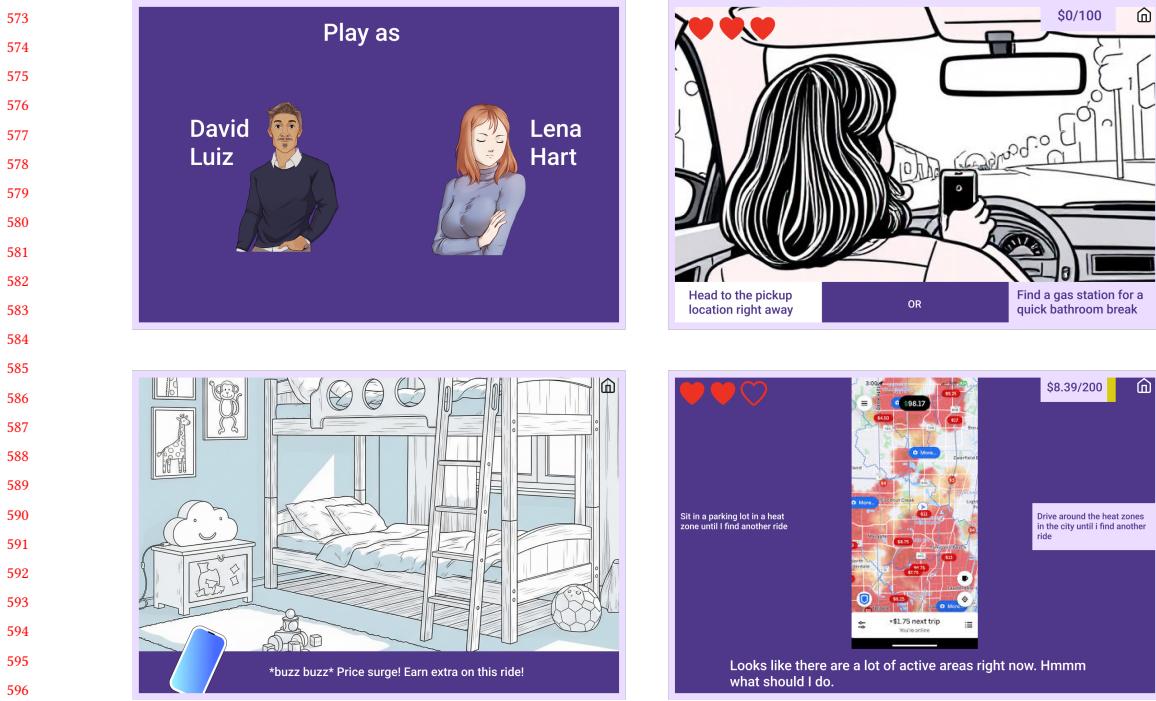


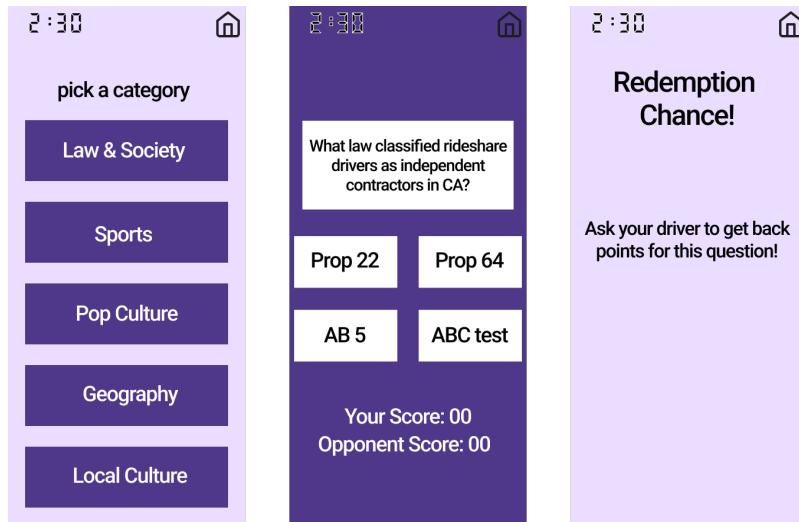
Fig. 3. Driven is visual novel with point-and-click options that advance plotline of two rideshare NPCs

### 5.3 Visual Novel: Driven

Visual novels are digital narratives with interactive decision points that result in branching storylines. In addition to providing space for players to experience rideshare conditions with psychological distance (§4.1.3), the idea was also supported by pilot participant desires for an evocative but also casual and easy to engage experience: “*Those type of games they’re much more about the story ...the messaging ...that would make it easier, more accessible for like everyone, even people who are not used to playing games.*” Our implementation of a choose-your-own-adventure novel starts with two optional characters, both containing story plots centering decisions that the player make on behalf of the rideshare driver character. In both stories, driver characters held objectives to earn income goal money through the app, while balancing stressors with passengers and factors in their own life.

Relatedly, *Cherry Picker* [5] and *The Uber Game* [27] are browser-based experiences simulating daily rideshare driving challenges. While the design of *Driven* was heavily similar and inspired by these, it uniquely presents a first person experience leveraging the persuasive power of procedural rhetoric (§4.1.3) — allowing players more context into more complex and contextual issues such as work-life balance and dynamics of driver-passenger interactions. In addition to psychological distancing, *Driven* also fulfilled criteria of embedding key rideshare concepts, re-playability, and playability during rides. For instance, *Driven* introduces contextual responsibilities such as those arising from family or primary occupation first, priming players to prioritize non-driving goals of drivers, thereby intermixing content and obfuscating the game’s persuasive intent. The divergent branching story lines offers high replayability, affording players a variety of experiences in each new exploration – such replayability drives player engagement with

625 driver-centric perspectives, which we believe can lead to a more transformative experience. Peripherally, passengers  
 626 gameplay within the ride can also prompt further questions, conversations and engagements with the driver. Driven  
 627 touches upon rideshare challenges such as deadheading, work-life balance, and algorithmic management.  
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629 Fig. 4. TriviaRide is a timed challenge with optional driver interactions and embedded rideshare concepts  
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#### 651 5.4 **?** TriviaRide

652 The trivia game initially consisted of four categories: Social Studies, Science, Pop Culture, and the Arts. The original  
 653 game (i.e. TriviaCrack) plays against a hypothetical opponent, with the objective of getting to six correct answers  
 654 first before the opponent. It contained questions about policies and information related to rideshare (e.g., ‘*What law*  
 655 *classified drivers as independent contractors in CA?*’) as well as more general trivia (e.g., ‘*What sport has been played on*  
 656 *the moon?*’). This content integration aims to keep the game fun and approachable, and to prevent overwhelming users  
 657 with rideshare concepts.

658 The nature of TriviaRide requires the use of ground-truths as it relies on a correct/incorrect binary. The facts related  
 659 to rideshare do not require a background in the platforms when re-attempted, allowing the answers to questions  
 660 like ‘*Which location is the most lucrative for rideshare driving at 3am?*’ to be learned quickly while incentivizing  
 661 driver-passenger interaction. In particular, TriviaRide gives players a chance at redemption for questions they initially  
 662 answer incorrectly, through an interface prompt that verbally asks the driver for help. Such driver-passenger was  
 663 motivated by a suggestion from D2.2: “*adding a driver-passenger collab mode would be super cool. Not everything needs to*  
 664 *be complete feel. A game where we solve a puzzle together.*”

665 In later versions of the game, the first-to-six objective was replaced by a timer and point system, following D2.2’s  
 666 recommendation that “*putting a timer would be very good. [It’d provide] the urgency to answer the question*” reaffirming  
 667 the timer fulfills the paced challenge necessary for enjoyable gameplay.

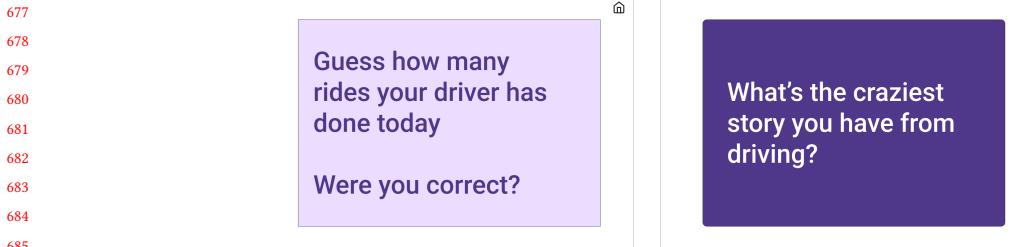


Fig. 5. Driving Questions attempts to bridge the driver-passenger social gap with conversation prompts for both sides

### 5.5 Driving Questions

Inspired by the game *We're Not Really Strangers* (WRNS), *Driving Questions* was conceived when D1.2 suggested more interactions and connections between the driver and passenger, on an emotional level. WRNS is a conversation prompting game where the player takes turns asking and answering questions. *Driving Questions* serves as boundary object to mediate conversation between drivers and riders, keeping conversations related to the driving conditions while allowing the rider and driver to get to know each other as people. We repeatedly updated the content to arrive at less intrusive, as well as more locally grounded and clear questions. Since driver-passenger pairings in rideshare are almost always unique, there is strong replayability. *Driving Questions* fulfills replayable criteria and intermixed embedded design. The game has a limited selection of 18 questions, but its conversational nature makes responses vary with every new driver-passenger combination. Concepts embedded include mental health impact, logistics, take rate.

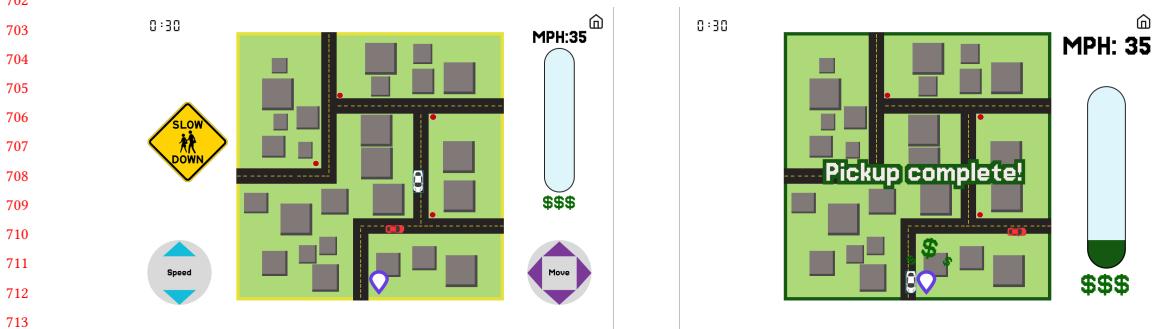


Fig. 6. TickingRoads simulates rider pickup (logistics) and immediate feedback from controlling a car on the map

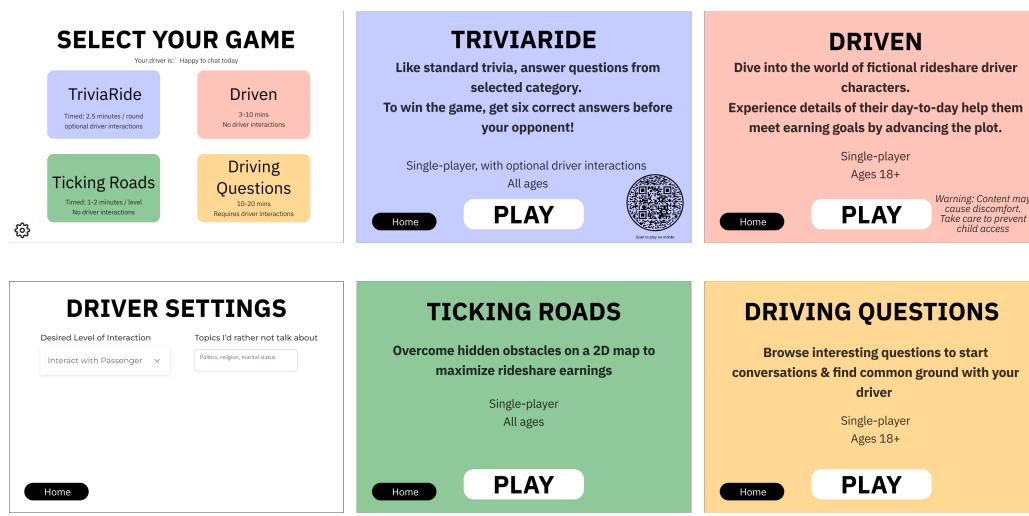
### 5.6 Ticking Roads

*Ticking Roads* is a time management game that surfaces stressors of the road to players through simulations of rideshare obstacles on a map. Players undertake the driver task of picking up passengers at designated locations on the map, and receive feedback when performing actions to deal with such tasks (e.g., move around, speeding up/down, waiting at pick up location). By framing stressors as obstacles and adding timed pressure, *Ticking Roads* diffuses the objective of exposing rideshare conditions with time pressure – leveraging the timed challenge to achieve obfuscation. Although not realistic, *Ticking Roads* also offers a fictional and abridged simulation of logistical stressors and burdens encountered by drivers on the road, thereby creating psychological distance between the player and underlying intention.

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## 729 5.7 Initial Driver Feedback Implementations

730 Drivers of the first two workshop sessions made several concrete and adaptable suggestions for the prototypes.  
 731 Responding to their feedback, we removed two prototypes (i.e., CrossRoads and Dilemmas @ Work) and added a time  
 732 management game, a conversation prompting game as well as a game selection menu screen.



744 Fig. 7. Menu selection enables passenger selection of games with driver-preference awareness

755 *Menu Selection.* The first two driver workshops revealed a strong demand for passenger-facing selection screen that  
 756 allow riders to choose what game to play, since “*the customer should always have choices*” (D1.1). To accommodate  
 757 this, we added an opening menu selection screen that briefly previews each game’s goals and mechanisms. This also  
 758 addresses riders’ concerns about drivers’ comfort levels with passenger interaction during a ride, since many consider  
 759 how “*some drivers [...] want a situation where they never have to say anything.*” (D1.2)

760 The menu selection displays all four playable games with estimated time spans and driver interaction levels listed.  
 761 Drivers can indicate topics to avoid in discussion, as well as preferred interaction levels with passengers, ranging from  
 762 “not at all” to “anytime” – which is reflected in main selection screen (i.e., graying out of more interactive options when  
 763 drivers choose “not at all”). After selecting a specific game, players are shown a fuller description of the game, giving  
 764 riders agency to select games suitable to their context – this creating more captivating and educational experiences.

## 770 6 RESULTS

### 771 6.1 Towards Driver-Centered & Integrated In-ride Gaming Interactions

772 Below we describe driver rankings of prototypes and corresponding rationales, followed by passenger ratings of  
 773 heuristics for each prototype.

774 *6.1.1 Driver Preferences of & Alignments to Prototypes.* Drivers expressed strong enthusiasm for the potential of  
 775 games to foster passenger understanding and empathy, sharing excitement for creating **purposeful, immersive and**  
 776 **memorable** gamified experiences around rideshare knowledge. For instance, D2.2 emphasized how “*the story game:*

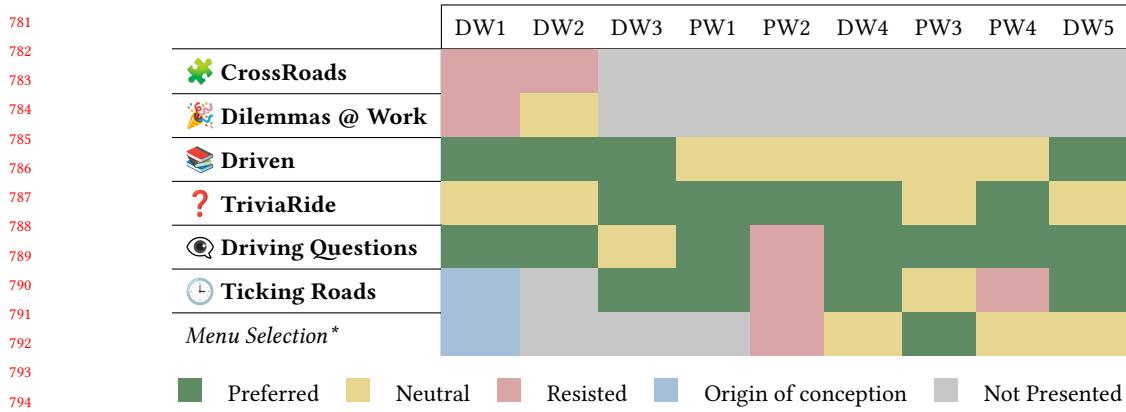


Table 4. Heatmap shows participant perceptions of prototypes across workshops, which are ordered chronologically. DW1-5 represent driver-facing workshops and PW1-4 shows passenger-facing ones. Feedback for the menu selection is also included (\*).

*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 the visual novel Driven highest: "*love the story games because the fact that it builds empathy in in a more subtle way*" (D3.4). An immersive narrative experience additionally supports drivers by creating more focused environments where riders are distracted from time pressures of getting to their destination: "*When a rider is into a story game ...the whole mood in the car becomes more quiet, more relaxed, no pressure, no rush. They are just absorbing something soft and engaging.*" Through this relaxed and non-confrontational approach, drivers shared desires to communicate a variety of lived experiences to passengers, including 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), which drivers would've hesitated to broach otherwise since they "*don't want to make them scared to be in the ride with you*" (D1.1).

For those with exposure to Octopus tablets, drivers shared how existing trivia experiences offered by *Play Octopus* were not designed to fit the rideshare context, therefore preferring alternatives like TriviaRide (ranked highest by D3.1, D3.3, D2.3) that feel more personalized, local and mood-aware. For instance, D2.2 expressed how "*I 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 recommendations and regulations relevant to their location, so as 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 [on] a plane*" (D2.2).

With lighter interactions 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 some light interaction, also between the people on board*" Some passengers may be reticent to directly inquire about key rideshare conditions to their driver. For instance, discussions about pay (a prioritized topic by drivers – §6.2.1) makes passengers such as P3.1 "*feel uncomfortable asking them how much they're getting paid, or their take-home pay*", let alone more personal inquiries about what drivers miss (\$5.5), since "*it can be painful when you leave your home country*" (P2.2). The optional but inviting nature of Driving Questions serves as a boundary object for mediating conversations, even among more

quiet passengers – P3.3 identified as “*an introvert [...] and I have trouble starting conversations [...] but it’s something this game would help me be more talkative, because it gives me things to say*”.

Drivers like D2.2 also saw its potential to engage both quiet and extroverted passengers:

*It’s a game, so people are not forced 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.*

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*” while simultaneously helping passengers “*keeps them off their mind of traffic*”.

Since Ticking Roads was conceived at workshop DW1, only the last three drivers sessions saw this prototype (see Table 6). This was a favorite for driver D5.2, who liked Ticking Roads “*the most [since] it’s more interactive*.” In a similar vein to the reception of Driven, drivers such as those in DW4 found the mechanics and graphics of Ticking Roads as a helpful simulation for capturing driver-side experiences, especially for impatient passenger populations such as busy parents with children onboard, while D3.2 saw its potential to “**reduce rider frustration during delays [and] ...construction. Time [management] 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**.”

### 6.1.2 Heuristic Ratings & Changes to Understanding, Empathy & Advocacy.

*Fun vs Provocation, Replayability & Recommendability.* In terms of replayability, passengers generally found Driving Questions as the most fun (PW3, PW4) and replayable (PW1, PW3, PW4). TriviaRide 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 ...it’s something that that I probably would play elsewhere ...and I really like the idea of having questions that are specific to the area where you’re riding, I found that very inventive*”. Meanwhile, the visual novel Driven was last in fun but top in provocativeness (PW1, PW3, PW4), matching driver fears that its provocativeness trades off with engagement (detailed in §6.3.2). Driving Questions was ranked most replayable by PW1, PW3, PW4 while Driven followed second. Ticking Roads consistently placed last for replayability, mainly due to complexities with its technical implementations, with P4.3 noting how “*controlling issues were a pain, it was kind of wonky*” – surfacing a tension between immersion and implementation effort. Recommendability varied between workshops: while Ticking Roads ranked last in the first session, all three ensuing workshop participants found it most recommendable after a few implementation improvements between DW1 and DW2.

*Rideshare-specific Rankings.* In particular to the rideshare context, we asked participants to rank each prototype in terms of 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 concealing rideshare concepts behind game objectives, 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*”; the visual novel Driven was most ineffective at obfuscation. The conversation-prompting prototype Driving Questions was determined to be most ride-friendly, while TriviaRide came in close second. The lightweight-taxing ranking measurement was interpreted by participants along both dimensions of gameplay mechanics and content, with Driven considered the most emotionally taxing – P2.4 described it as “*frighteningly realistic ...and depressing, and for once it seems like accurate for a lot of people’s*

*situations*". By contrast, TriviaRide was deemed most lightweight, both in terms of content and mechanics, but most thought its rideshare content was most exposed and obvious: "*I noticed ...they were very apparent*" - P2.3.

*Perception Changes around Rideshare Driving.* Leveraging *Character Cards* (§3.2), we surveyed how passengers perceived, empathized with, and desired to advocate for driving conditions both before and after introducing prototypes. When probed about their readiness to drive for rideshare themselves, passenger confidence increased slightly in DW1 and DW4, while DW2 participants all felt unprepared before and after. Estimations of driver take-home rate was unanimously lowered across all four workshops, while guesses at deactivation ratings surged, most prominently in DW3, where ratings were flipped entirely – indicating a significant gap in passenger understanding of how much ratings of drivers weighed in on their job stability, which we further discuss in §6.2.3.

For empathy-related questions (introduced in DW2-DW4), passengers appreciated driver perspectives slightly more after all three workshops, with effects most prominent in DW3. Advocacy questions (also presented in later three workshops) additionally demonstrate improved passenger inclinations to vote in favor of and sign petitions to support policy that improve driver working conditions. See supplementary materials for further details on how passengers placed themselves on these scales.

## 6.2 Consumer Knowledge Gaps & Drivers' Prioritized Concepts

Here we selectively report most prominent themes from driver and passenger workshops. For each, we described content drivers decided to communicate, which included **covert logistical, emotional and immaterial labor** such as vehicle-related responsibilities (e.g., gas, oil changes general car maintenance) or in-ride labor to keep the temperature and mood comfortable, as well as the ride itself safe and stable.

*6.2.1 Pay rates.* A wide variety of stressors plague the daily operations and well-beings of drivers, but none surpassed pay in terms of prioritized topics to communicate to riders. Drivers described rampant passenger misunderstandings around pay rates. For instance, D1.1 relayed how many "*think that, if the fare is \$100 that we make \$85*" or how "*everybody has a 30% number in their head of what Uber takes, [...] which is just simply not the case*". This common oversight motivates drivers to explain hidden costs to their passengers: "*riders think is that drivers are just sitting around and waiting for easy money [...] what they don't see at the dead miles between things, the gas, the maintenance, the insurance [...] A good night isn't always as profitable as as it looks*" (D2.2). D3.2 similarly 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 passenger misunderstanding is their disincentivization to tip: "*they assume a lot of times that they don't have to tip [...] they feel like their charge all goes to the driver*". D1.1 explains how pay overshadows other concerns since adequate compensation may alter their perception of all other stressors they experience:

*"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."*

Corroborating driver observations, passengers (e.g., all members of PW1 & PW3) were also "*surprised about the 30% [take-home rate our drivers estimated.] I didn't realize that it could be that low. That's bad.*" In the case of a more sympathetic rider who has asked drivers about rising take rates, P2.2 observed how "*all the drivers are anxious to answer [...] to ensure] riders know that even though [passengers] are paying more, [drivers] are not making more*". The visual

novel **Driven** was most effective at bringing out reactions towards low pay rates, leaving P3.2 outraged: driving “80 trips for \$65 is crazy!” **TriviaRide** 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 rates (noticed by P1.2), many passengers hesitated to discuss the financial and potential sensitive topic with their driver – see §6.3.2. Although **Ticking Roads** intended to embed impacts of various obstacles on pay through different branches, players did not notice such financial implications – indicating that more obvious tactics or replays are required for the concept to surface.

6.2.2 *Pickup Logistics*. One overlooked factor impacting pay is the time that drivers spent waiting for passengers during pickup. Drivers such as D3.2 discussed the consequences that pickup delays carry for earnings: “*I don’t get paid to wait at pickups, [...] when you keep me waiting like 5-10 minutes, I’m not really getting paid for that time [...] that’s time and fuel I’m losing, with little or no extra pay.*” Besides financial losses, D1.3 details how platform mechanisms fall short to hold passengers accountable to timeliness arrival: “*I’m sure the customer doesn’t really pay that much more in wait time [...] it’s not enough to be prohibitive. [...] It’s almost like they encourage like [platforms] want to encourage that*”, while D3.3 “*second[s] that the waiting time is really expensive, especially when gas prices go up [...] depending on what car we’re using to drive it could just eat into our profits so bad, and I feel like only us drivers really understand that.*” Other road conditions such as parking availability also impact drivers during pickup, D1.2 describes a time when

“*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 – bus only lanes. You can’t drive in those lanes. You can’t stop, you can’t park, you literally just can’t be in those lanes. So I was sitting in that lane waiting [and] of course, the bus came through. I got a ticket.*”

Such difficult pickup logistics for drivers strike a contrast to how taxi dispatch operates, which would never wait around for a passenger to arrive. D1.2 further contextualizes his frustrations with experience in the industry:

“*I’ve worked, a long time ago, in the early 2000s between jobs. I worked for a couple of cab companies. And there’s no way – you got to be kidding me if I show up to pick someone up [and they’re not there] Literally, in 30 seconds, the dispatcher was calling, ‘are they there yet?’ No, and the dispatcher was like, ‘Get out of there. Go down the street. Got another one.’ Like, we would leave you*”

Passengers also expressed curiosity around pickup mechanisms. P3.3, for instance, wonders and worries about how their suburban location impact driver earnings “*I live in a suburb ...and I always wonder, if they’re ...having to drive so far to each location to drive people around, 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.*” Relatedly, P3.3 considered how location affects driver arrival time and her own passenger ratings: “*they come really early sometimes. And I always wonder, do they mark off if you don’t come right out? If we say, come at 5pm and they come in 4:45pm, and we don’t come out, I wonder if they mark off [my passenger ratings]. Because well, it’s not my fault.*” Because driver pickups were one of most underexposed concepts by passengers, it caused passengers like P4.3 to empathize about pick up wait times when under clock pressure in **Ticking Roads**: “*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, uncovering how pickup logistics might represent a tenuous topic of discussion where (passengers may be aware of) driver desires to avoid

<sup>989</sup> “complaining” ([§4.1.4](#)). TriviaRide was not as effective at conveying pickup logistics – possibly showing that fact-based  
<sup>990</sup> short questions are not suitable for illustrating logistics.  
<sup>991</sup>

<sup>992</sup> **6.2.3 Rating Pressures & Passenger Expectations of Service.** Driver ratings constitute another notable variable that  
<sup>993</sup> exerts psychological control in rideshare labor, since drivers with ratings under certain thresholds may experience  
<sup>994</sup> platforms’ elimination through deactivation [[85](#)]. However, passengers with high expectations and little awareness  
<sup>995</sup> around the harsh effects of ratings will often “give low ratings for things out of my control – e.g., traffic delays, being in a  
<sup>996</sup> rush, or even misunderstandings over route choices – so ratings feel personal, but the reality is more complicated” ([D3.1](#)).  
<sup>997</sup> However, drivers point to a plethora of factors, stressors and costs that remain behind the scenes, the invisibility of  
<sup>998</sup> which drives up passenger expectations of service and thus rating pressures:  
<sup>999</sup>

<sup>1000</sup> “Ratings can drop for stuff I can’t control: sometimes I’m reading the vibe and giving folks their space, not  
<sup>1001</sup> just ignoring them. We are not just driving, we are juggling through navigation, personalities and keeping  
<sup>1002</sup> things safe. The app itself is not perfect, it doesn’t show everything we are dealing with, so [passengers]  
<sup>1003</sup> should be a little bit more understanding” - [D3.1](#)

<sup>1004</sup> Drivers across workshops consistently describe passenger misunderstandings that lead to unrealistic expectations of  
<sup>1005</sup> how drivers should manage conditions both inside and outside of the car. Within a car ride, [D3.4](#) relates

<sup>1006</sup> *riders expectation are so high [...] the AC must be perfect all the time, the car must be super clean. They’re*  
<sup>1007</sup> *expecting a premium vibe, but [the] trip is [just] a regular Uber [...and even though] comfort trip pays just*  
<sup>1008</sup> *a little more, but the rider expect luxury treatment.*

<sup>1009</sup> At the same time, drivers must also deal with external road conditions. But riders often expect perfectly managed  
<sup>1010</sup> traffic: “*riders assume I have full control over traffic [for] pickups or that I’m just screwing around if I’m a minute late.*  
<sup>1011</sup> *There’s construction, detours, sixth street chaos and airport gridlock, stuff that slows me down*” ([D3.1](#)).

<sup>1012</sup> In terms of mechanisms, Ticking Roads was most effective at eliciting passenger perceptions around effects of  
<sup>1013</sup> impatient riders, with [P2.3](#) rating the prototype as empathy- “*provoking, because you have a person texting you angrily*  
<sup>1014</sup> *when you’re trying your best. And I could see that being pretty provoking for someone of it’ll teach them to put themselves in*  
<sup>1015</sup> *the drivers’ shoes.*” [P4.3](#) also grew annoyed at the simulated passenger in the time management game who was “*Texting,*  
<sup>1016</sup> ‘*where are you?’ But there’s obviously a car right there, lots of traffic*”. Driving Questions reminded [P1.2](#) of “*one driver ...he*  
<sup>1017</sup> *was telling me about ...all the passengers that he picked up during the night, which are usually all like drunk college kids*”,  
<sup>1018</sup> suggesting that the conversational nature of the interaction can help drivers more comfortably share experiences of poor  
<sup>1019</sup> passenger behaviors. Despite how Driven embedded consequences of receiving bad ratings as a result of interactions  
<sup>1020</sup> with passenger, our prototype did not actually demonstrate tangible consequences (e.g., deactivation, reduced work  
<sup>1021</sup> availability) beyond small pay differences – which may have caused passengers to not notice the embedded concept.  
<sup>1022</sup> Like pickup logistics, we struggled to embed rating pressures within Trivia facts.  
<sup>1023</sup>

<sup>1024</sup> **6.2.4 Platformic Management & Long-term Consequences.** Drivers also reflected on platform mechanisms of psychological  
<sup>1025</sup> control as well as longer-term financial and health consequences of taking short-term risks. Unlike abovementioned  
<sup>1026</sup> stressors that passengers expressed curiosity for, these hidden consequences are designed to remain unobservable  
<sup>1027</sup> to riders. Confirming related works around psychological and algorithmic control, [D1.2](#) describes notifications as an  
<sup>1028</sup> intimidation tactic “[platforms]’ll send out a notification that basically says, ‘We noticed that you’re putting on last rides.  
<sup>1029</sup> As a reminder. You should only use last ride when you’re when on your last ride. Drivers who do this, blah, blah, blah,  
<sup>1030</sup> blah.’ They don’t [actually] point to the terms of service. It’s [expletive], but they do it all the time, and it’s intimidation.”

1041 To aggravate the situation, many drivers without the privilege of choosing alternative means of earnings get  
 1042 blindsided to their vulnerability to manipulation, due to financial needs:  
 1043

1044 “*most drivers they don’t see the s\*\*\*, they don’t understand it, they are just trying to make a wage. ...a lot*  
 1045 *of foreign nationals as well, folks who are from other places, who are just trying to earn a living .... When*  
 1046 *you’re here, just trying to put food on the plate for your family, when you see a warning like that come up,*  
 1047 *you’re not going to f\*\*\* around with your only source of income*” (D1.1)

1049 Besides app mechanisms, drivers also described how platforms incentivize them to take short term risks for small  
 1050 rewards (e.g., bonuses or pay boosts) without considering longer-term consequences. For instance, D3.3 describes  
 1051 sacrificing bathroom breaks to maximize time for bonuses:  
 1052

1053 *Because even those few seconds, even though I pee fast, it can make the difference between capturing it*  
 1054 *and not capturing it. We shouldn’t be facing those choices. Most people, it’s within reason. They can go*  
 1055 *to the bathroom on their job without facing, bonus losses [...] The pay boost isn’t always worth the effort.*  
 1056 *Sometimes it comes down to, do we even have the time to use the bathroom? What if for that I have to go to*  
 1057 *a doctor, having to pay more money than I would’ve even got with a little bonus?”*

1059 In DW1, drivers discussed the tradeoffs of considering cash rides <sup>2</sup>, with D1.1 starting off the topic when discussing  
 1060 how conversations with passengers that expose low take rates will often lead up to the action:  
 1061

1063 “[after] those conversations, you can very easily flip them to cash rides and [expletive] Uber completely,  
 1064 which is what more and more drivers are doing nowadays. Because frankly they’re saving the passenger  
 1065 money, there’s a lot more risk with regard to commercial insurance and the risk side of it, but a lot of drivers,  
 1066 they’re so desperate [...] stuck between a rock and a hard place [...] They take these risks simply because  
 1067 they’re not being paid.”

1069 In addition to D1.1 acknowledging serious insurance and deactivation risks involved with cash rides, D1.2 also  
 1070 supplemented how “*if [he] were to get caught doing that, it is a mandatory impounding of the vehicle [for] the charge of*  
 1071 *providing commercial transportation in a non-commercial vehicle*”.

1073 While passengers may seldom observe the longer-term tolls and costs that rideshare cause for drivers, psychologically-  
 1074 distanced narrative elements in Driven (e.g., pop-up app notifications at home) helped surface a key tension that last  
 1075 over time — family-life balance — which was noticed by every rider who played through (P1.4, P2.4, P3.3, P4.2). In  
 1076 their second playthrough, P2.4 started to expect such platform tactics: “*I feel like they’re gonna ping me and say, ‘Why*  
 1077 *are you taking so long use the bathroom?’*” The modular and timed nature of Trivia made it again unsuitable for  
 1078 addressing psychological control, but drivers such as D1.2 saw a potential for simulations like Ticking Roads to give  
 1079 character to “*the big evil ride sharing company*”. While the conversational nature of Driving Questions could prompt  
 1080 discussion around long term consequences and control, passenger discomfort with potential intrusion may hinder  
 1081 in-depth probing (§6.3.2).  
 1082

### 1085 6.3 Design Tradeoffs around Consent & Content → Future Interactions & Incentives

1086 6.3.1 *Safely Breaking Driver-Rider Social Boundaries.* While Driving Questions presents an opportunity to bridge the  
 1087 social boundary between drivers and riders, it also trades off with privacy as well as both physical and psychological  
 1088 safety. Both riders and drivers expressed inherent hesitancy to initiate conversation. Up front, drivers feared putting  
 1089

1091 <sup>2</sup>strategy where drivers and passengers mutually agree to pay in cash to avoid platform fees

1093 customers on the spot since “*not every rider wants to interact. And if the game feels too personal or like a distraction from*  
 1094 *driving, it can backfire*” (D3.1). Various participants (P1.1-3, D2.2, D3.2-4) emphasized the importance for drivers to  
 1095 maintain safe driving – D1.2 for instance, approved the interaction mode of Driving Questions because “it’s safe[r]  
 1096 when you talk versus the driver ...We don’t want to drive [while] interacting with anything for safety.” Less physically,  
 1097 D2.2 also feared approaching overly heavy or suggestive topics such as “*sexually suggestive or flirty questions? No, no,*  
 1098 *not, not the place [...] It’s gross, it’s unsafe, and it creates a very dangerous precedent, especially for women drivers and*  
 1099 *riders.*” Even for male-identifying drivers like D5.2, it is common to experience passenger-imposed “*sexual harassment.*  
 1100 *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.’*” Shockingly,  
 1101 D5.2 has even been rematched to such a perpetrating rider after reports of these to Uber: “I have reported several times  
 1102 to the Uber people about behaviors, and once I got this offender again as my rider, we were matched again”,  
 1103

1104 In the backseat, passengers like P2.3 observed and respected drivers’ rating pressures that compel them to keep  
 1105 riders comfortable in terms of conversation topic, noting how “*in a car there is that dynamic of: they don’t want to make*  
 1106 *you feel uncomfortable, and if I just bring up a topic that makes them feel uncomfortable, I don’t think that [helps]*” while  
 1107 P2.2 acknowledges  
 1108

1109 “*a fine line between having a genuine interest and prying [...] as passengers, we have to be conscious of the*  
 1110 *fact that these drivers don’t want to offend us, because after all, their rating is at stake, so questions should*  
 1111 *not be intrusive*”  
 1112

1113 6.3.2 *Balancing Lighter Logistics & Heavier Labor Topics.* Passengers took care to minimize belittling or criticizing of  
 1114 drivers. For instance, self-conscious riders such as P1.2 “*don’t really feel that it’s like right for me to criticize the way*  
 1115 *they’re doing their job, because I don’t really know anything about what it’s like being a rideshare driver*”, while P2.2  
 1116 recognized the power differential they held over drivers: “*it is important that we recognize what our position is in the*  
 1117 *rideshare thing, and we don’t offend people or put them on spots*”. Despite the hesitation to upset drivers, passengers  
 1118 felt comfortable discussing more rideshare-specific logistics, including the number of rides the driver has completed  
 1119 or reasons for cancellations (P3.3), time spent between rides (P2.2), or how ratings compare to those of other service  
 1120 platforms (P2.3).  
 1121

1122 For heavier topics, the visual novel was effective at presenting heavy and thought-provoking topics (e.g., harassment  
 1123 or family obligations) in creative and memorable ways (D2.2, D3.1), but also runs the risk of being too long or heavy for  
 1124 the ride. Thus, even though passengers found the visual novel thought-provoking (P1.4, P2.4, P3.2) and “*fun to play in*  
 1125 *the backseat [...] I was pretty invested*”, others found it “*emotionally taxing*” and “*frighteningly realistic*” (P2.4) – making  
 1126 drivers “*worry about it being too much for some passengers, [since] not everybody [is] in the mood for deep [content] or or*  
 1127 *even hearing stories*” (D2.2).  
 1128

1129 Drivers also recognized the potential for games like Driven to engage passenger attention, alleviating their immaterial/  
 1130 emotional labor to keep passengers entertained. Drivers such as D3.1 described combinations of immaterial labor  
 1131 involved, many of which still resemble those found a decade back by Raval and Dourish [78]:  
 1132

1133 “*There’s always a bit of emotional effort in every ride [...]when] I’m not just driving. I’m paying attention to*  
 1134 *your body language, your tone, your energy, from the moment you get [in] [...] If you’re if you’re chatty,*  
 1135 *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*  
 1136 *– e.g., adjusting the music so it fits your mood, making sure the temperature is comfortable, choosing the*  
 1137 *smooth test route so you’re not bouncing around in the back*”  
 1138

1145 D3.2 also shared how engaging games can alleviate the emotional labor that he performs by distracting their attention  
 1146 away from factors like traffic or other time pressures: “*it passes time fast, also especially helpful on short trips or when we*  
 1147 *are stuck in traffic, riders stop checking how long it’s taking.*” However, it’s important to note the tension with upsetting  
 1148 or stressing out passengers who desire a more relaxed environment – both D3.1 and D2.2 considers how “*not everyone*  
 1149 *wants to think hard during a ride, some folks just wanna zone out or scroll their phone and if someone gets questions wrong*  
 1150 *over and over, it might actually stress them out*”, highlighting key design priorities to avoid mechanisms that are “too  
 1151 competitive, too loud, or makes someone feel dumb”.

1152 **6.3.3 Additional Content & Incentives.**

1153  
 1154     *Local Culture & Logistical Labor.* Rider participants yearned to connect with drivers and local events, suggesting  
 1155 in-ride content that would expose such knowledge. Reminiscing about how a photo prompted conversation with a  
 1156 driver, P1.1 suggested more physical cards that present “*little things that maybe a rider could connect to and be like, ‘Oh,*  
 1157 *cool, you also watch Love Island.’*” While drivers were enthused to share rideshare-specific (e.g., “Uber drivers make  
 1158 playlists just for open silences”) and personal information (e.g., “*Did you know your driver once drove a pet pig to a*  
 1159 *party?*”) as well as music playlists (D5.2, D3.1), a few also suggested tailoring “to rider interest or local culture” (D2.2)  
 1160  
 1161         “*Seattle has the most coffee shops in the US, [so it’s] not only about drivers, but also about local city parts –*  
 1162         *weird, but true [facts]. Or we can have brainy or historical thing here, ridiculous laws*” (D3.1)

1163  
 1164     While Ticking Roads simulates the difficulties of navigating to pick up passengers, drivers also suggested other  
 1165 aspects of their labor as content. For instance, D1.2 suggested gamifying micro-decisions such as “*declining rides that*  
 1166 *aren’t good*”, which can improve player competency at discerning exploitative rides. D2.2 considered a game that guesses  
 1167 the rider’s mood, to highlight the emotional labor that drivers perform: “*guess the rider’s mood game based on small*  
 1168 *clues: the way they greeted you, or a storytelling round where the driver shares one situation and the rider has to react,*  
 1169 *interacting with my riders, so it helps highlight how much reading the room is part of what we do*” (D2.2).

1170  
 1171     *Incentive Mechanisms.* In terms of incentives, riders are confounded by how gamified experiences can offer knowledge  
 1172 or help drivers’ conditions in tangible ways. For instance, even though Octopus tablets carry capability for displaying  
 1173 driver profiles, many (P1.1, P1.4) still suggested ways of presenting surface-level information about the driver to spur  
 1174 conversations. Beyond knowledge, passengers like P2.2 described how directing their winnings to drivers (or charitable  
 1175 causes) would incentivize their engagement: “*I would think there should be an option in there where you could play and*  
 1176 *win something for your driver.*” Participants like D5.3 also mechanisms that make “*the games more interesting, by adding*  
 1177 *a leaderboard*” which could even be extended to be multi-platform: “*a leaderboard for the scores – it would even be more*  
 1178 *challenging if you could do Uber against Lyft*” (D2.1). Besides rewards and incentivizing game mechanisms, P1.1 also  
 1179 considered means of punishment to dissuade poor and rude passenger behaviors through heavier weighting of ratings:

1180         *If you’re consistently reported as a rude a rider by drivers maybe you have to pay a fine [...so riders think]:*  
 1181         *Oh, I should probably not be rude to this driver, because then my next ride is gonna cost me more*

1182 **7 DISCUSSION**

1183  
 1184 More than a decade ago, Kittur et al. [55] posed the question of whether we can “foresee a future a crowd workplace in  
 1185 which we would want our children to participate?” Borrowing this lens of envisioning and creating healthier (crowd)  
 1186 workplaces for posterity, this study approaches improved working conditions for rideshare driving through game  
 1187 design, which serve as a medium to (1) visibilize and expose existing conditions to younger ridership demographics and  
 1188

<sup>1197</sup> (2) consider alternative designs that better facilitate interactions and in-depth discussions of on-the-ground rideshare  
<sup>1198</sup> realities, so as to drive further consumer-initiated awareness, advocacy and resistance.  
<sup>1199</sup>

1200

## <sup>1201</sup> 7.1 Connecting Communities to Visibilize & Alleviate Labor

1202

<sup>1203</sup> *7.1.1 For Drivers: More Geographically-Localized & Grounded-to-Rideshare Interactions.* Our study uncovered driver  
<sup>1204</sup> desires for more integrated in-ride interactions for their passengers that better connect them to not only rideshare-  
<sup>1205</sup> specific knowledge and experiences, but also with local facts and events so that they feel more appropriate to the  
<sup>1206</sup> rideshare world (<sup>6.1.1</sup>). In addition to connecting passengers to immediate realities occurring outside the ride (which  
<sup>1207</sup> also included factors such as traffic and weather), drivers also appreciated the ability for immersive simulations (e.g.,  
<sup>1208</sup> TriviaRide or Ticking Roads) to surface (exploitative) aspects of driver labor that platforms fail to take accountability  
<sup>1209</sup> for – conditions that continue to persist despite evidence from more than a decade back [78], despite increased labor  
<sup>1210</sup> consciousness and tech wariness [95]. Moreover, we were heartened to discover that the engaging nature of games can  
<sup>1211</sup> help some drivers alleviate emotional labor of entertaining the passenger (<sup>6.3.2</sup>).  
<sup>1212</sup>

1213

<sup>1214</sup> We hope that such exposure through gamification can help players (and potential future drivers) to develop behaviors  
<sup>1215</sup> and strategies for resisting manipulative platform tactics [81]. However, we also reflect on the work of Raval and  
<sup>1216</sup> Dourish [78], who stated that “*bringing something into the realm of the ‘digital’ does not necessarily ‘disrupt’ or produce*  
<sup>1217</sup> *entirely unprecedented work conditions and labor relations*”. While many of the burdens of taxi driving (e.g., navigating  
<sup>1218</sup> traffic or maintaining in-ride comfort) remains driver responsibilities, we note how various new logistics outside of the  
<sup>1219</sup> ride are absorbed by rideshare drivers – including extra wait times during pickup discussed by D1.2 (<sup>6.2.2</sup>), dead miles  
<sup>1220</sup> accrued between rides (mentioned by D3.3 in <sup>6.2.2</sup>), various car maintenance responsibilities, as well as psychological  
<sup>1221</sup> and longer-term consequences such as health (<sup>6.2.4</sup>).  
<sup>1222</sup>

1223

<sup>1224</sup> *7.1.2 For Consumers: Mobilizing Public Discourse towards End-user Audits.* More uniquely than engaging driver  
<sup>1225</sup> perceptions, our study takes a first stride within the HCI and CSCW to explore the passenger-consumer interaction  
<sup>1226</sup> within the context of a ride, allowing us to shed light on their triadic relationship with platforms [39, 90] as well  
<sup>1227</sup> as preferred modes of interaction through the probe of gamified interactions. Since consumers as a collective carry  
<sup>1228</sup> significant political power in influencing platform decisions and policy [39], we explore ways to “activate” and mobilize  
<sup>1229</sup> methods in designing the “soft action” of gamified interaction [79] to enact change and transformation with regards to  
<sup>1230</sup> how consumers respond to, use and resist disruptive technology. By engaging consumers in the labor advocacy process,  
<sup>1231</sup> we can begin opening up opportunities for end-user audits [59] or collective resistance through choices such as non-use  
<sup>1232</sup> [102]. Additionally, we surfaced opportunities for new interactions and incentives that can promote more aligned and  
<sup>1233</sup> mutually beneficial interactions and understandings between drivers and riders (<sup>6.3.3</sup>).  
<sup>1234</sup>

1235

## <sup>1236</sup> 7.2 Practical Considerations for In-ride Game Design

1237

<sup>1238</sup> *7.2.1 Incentive Sources & Structures.* Compared to the revenue-oriented interactions presented by Play Octopus (which  
<sup>1239</sup> calls itself a “Rideshare Advertising Network”), our prototypes carry additional purposes of raising awareness around  
<sup>1240</sup> driving conditions, directly through content embedded within gamified interactions, or indirectly by facilitating  
<sup>1241</sup> passenger-driver conversations around related topics. Instead of relying on external ads as a source of support –  
<sup>1242</sup> which harm engagement of passengers (e.g., P1.1) – many of our participants (e.g., P2.2) asked about how prizes and  
<sup>1243</sup> rewards would take form. Although not formally documented, we started introducing throughout workshops the idea  
<sup>1244</sup> of rewards and incentives for both drivers and passengers. This was a key theme that emerged across all of our  
<sup>1245</sup> participants, particularly those who had experience with rideshare platforms. One participant (P1.1) mentioned that  
<sup>1246</sup> he would be more likely to use a rideshare platform if there were incentives for drivers to encourage passengers to  
<sup>1247</sup> engage with the platform. Another participant (P2.2) mentioned that he would be more likely to use a rideshare platform  
<sup>1248</sup> if there were incentives for drivers to encourage passengers to engage with the platform.

of embedding and promoting local businesses, who can in turn offer direct prizes (e.g., giftcards) and incentives (e.g., coupons) that benefit their operations and consumers.

Related to incentives, Giesler et al. [32] discusses how platforms intentionally harness consumer empathy with prosumers of the platform – which benefits the platform by setting expectations of tipping. But we see that such expectations likely interact greatly with rating pressures, which imposed unrealistic and uncompensated service expectations of drivers (§6.2.3). Future designers of in-ride interactions should take care to acknowledge and alleviate such pressures – which we found to hinder initiation from both passengers and consumers.

*7.2.2 Privacy & Intrusion vs Empathy.* Besides rating pressures, our results also uncovered fears of intruding on each others' privacy as a major source of tension that prevented driver-passenger interactions. Here we harken back to Sannon et al. [87], who suggested self-protective tactics such as installing dashcams to curb the imbalance of consumer power. Several passengers also suggested alternative means of learning low stakes information about drivers (e.g., favorite TV shows, or the game *Two Truths and a Lie*), suggesting unexplored spaces for designing further mediating interactions that foster senses of togetherness within the ride [36].

### 7.3 Limitations & Future Work

While our character card activity during passenger workshops aimed to achieve early captures of how passenger senses of awareness, empathy and advocacy changed before and after their interaction with gamified interventions, these results are limited by the size of our participant sample. Future works might consider more scalable evaluations of similar tools to more rigorously examine the impact of such interventions on player understanding, empathy and advocacy for driving conditions. Additionally, while we aimed to follow the Tandem Transformational process, none of our prototypes materialized physically, limiting the degree to which we can simulate realistic experiences. Follow up studies might consider exploring the impact of such interactions in more situated spaces using mixed or virtually realities, which show promise for eliciting empathetic responses [58].

## REFERENCES

- [1] Greta Adamo, Mark Mushiva, and Max Willis. 2017. Persuasion and Empathy in Computer Games, An Ontological Perspective. In *The 12th International Conference on the Philosophy of Computer Games*.
- [2] Monica Anderson, Colleen McClain, Michelle Faverio, and Risa Gelles-Watnick. 2021. *The state of gig work in 2021*. Pew Research Center Washington, DC.
- [3] Emma Bartel, Ellen MacEachen, Emily Reid-Musson, Samantha B Meyer, Ron Saunders, Philip Bigelow, Agnieszka Kosny, and Sharanya Varatharajan. 2019. Stressful by design: Exploring health risks of ride-share work. *Journal of Transport & Health* 14 (2019), 100571.
- [4] Daniel Belanche, Luis V. Casaló, Carlos Flavián, and Alfredo Pérez-Rueda. 2021. The role of customers in the gig economy: how perceptions of working conditions and service quality influence the use and recommendation of food delivery services. *Service Business* 15, 1 (2021), 45–75. <https://doi.org/10.1007/s11628-020-00432-7>
- [5] Alex Bitter. 2025. Can you make it as an Uber driver? A new game simulates work in the gig economy. *Business Insider* (August 30 2025). <https://www.msn.com/en-us/money/companies/can-you-make-it-as-an-uber-driver-a-new-game-simulates-work-in-the-gig-economy/ar-AA1Lx9R9>
- [6] Allie Blaising, Yasmine Kotturi, Chinmay Kulkarni, and Laura Dabbish. 2021. Making it Work, or Not: A Longitudinal Study of Career Trajectories Among Online Freelancers. *Proc. ACM Hum.-Comput. Interact.* 4, CSCW3, Article 226 (jan 2021), 29 pages. <https://doi.org/10.1145/3432925>
- [7] Ian Bogost. 2007. *Persuasive games*. MIT press.
- [8] Ian Bogost. 2008. *The rhetoric of video games*. MacArthur Foundation Digital Media and Learning Initiative.
- [9] Alberto J Caban-Martinez, Katerina M Santiago, Paola Louzado Feliciano, Kemi Ogunsina, Hannah Kling, Kevin Griffin, and Natasha Schaefer Solle. 2020. Acute musculoskeletal pain reported among rideshare drivers in the health/safety investigation among non-standard workers in the gig economy (HINGE) pilot study. *Journal of occupational and environmental medicine* 62, 5 (2020), e236–e239.
- [10] Dan Calacci and Alex Pentland. 2022. Bargaining with the Black-Box: Designing and Deploying Worker-Centric Tools to Audit Algorithmic Management. *Proc. ACM Hum.-Comput. Interact.* 6, CSCW2, Article 428 (nov 2022), 24 pages. <https://doi.org/10.1145/3570601>

- [11] Dana Calacci, Varun Nagaraj Rao, Samantha Dalal, Catherine Di, Kok-Wei Pua, Andrew Schwartz, Danny Spitzberg, and Andrés Monroy-Hernández. 2025. FairFare: A Tool for Crowdsourcing Rideshare Data to Empower Labor Organizers. *arXiv preprint arXiv:2502.11273* (2025).
- [12] Lindsey D Cameron. 2022. “Making out” while driving: Relational and efficiency games in the gig economy. *Organization Science* 33, 1 (2022), 231–252.
- [13] Ngai Keung Chan. 2019. The rating game: The discipline of Uber’s user-generated ratings. *Surveillance & Society* 17, 1/2 (2019), 183–190.
- [14] Ngai Keung Chan and Lee Humphreys. 2018. Mediatised social space and the case of Uber drivers. *Media and Communication* 6, 2 (2018), 29–38.
- [15] Miriam A Cherry. 2018. Corporate social responsibility and crowdwashing in the gig economy. . *Louis ULJ* 63 (2018), 1.
- [16] Nicola Christie and Heather Ward. 2019. The health and safety risks for people who drive for work in the gig economy. *Journal of Transport & Health* 13 (2019), 115–127. <https://doi.org/10.1016/j.jth.2019.02.007>
- [17] Sabrina H. Culyba. 2018. *The Transformational Framework: A Process Tool for the Development of Transformational Games*. ETC Press, Pittsburgh, PA. <https://press/etc.cmu.edu/books/transformational-framework>
- [18] Max T. Curran, Jeremy Raboff Gordon, Lily Lin, Priyashri Kamlesh Sridhar, and John Chuang. 2019. Understanding Digitally-Mediated Empathy: An Exploration of Visual, Narrative, and Biosensory Informational Cues. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (Glasgow, Scotland Uk) (CHI ’19). Association for Computing Machinery, New York, NY, USA, 1–13. <https://doi.org/10.1145/3290605.3300844>
- [19] Teresa de la Hera, Jeroen Jansz, Ruud Jacobs, Ben Schouten, Joost Raessens, Martijn Kors, et al. 2021. 1. Persuasive Gaming: From Theory-Based Design to Validation and Back. An Introduction. *Persuasive Gaming in Context* (2021), 7.
- [20] Heather Desurvire, Martin Caplan, and Jozsef A Toth. 2004. Using heuristics to evaluate the playability of games. In *CHI’04 extended abstracts on Human factors in computing systems*. 1509–1512.
- [21] Heather Desurvire and Charlotte Wiberg. 2009. Game Usability Heuristics (PLAY) for Evaluating and Designing Better Games: The Next Iteration. In *Proceedings of the 3d International Conference on Online Communities and Social Computing: Held as Part of HCI International 2009* (San Diego, CA) (OCSC ’09). Springer-Verlag, Berlin, Heidelberg, 557–566. [https://doi.org/10.1007/978-3-642-02774-1\\_60](https://doi.org/10.1007/978-3-642-02774-1_60)
- [22] Kimberly Do, Maya De Los Santos, Michael Muller, and Saiph Savage. 2024. Designing Gig Worker Sousveillance Tools. In *Proceedings of the CHI Conference on Human Factors in Computing Systems* (Honolulu, HI, USA) (CHI ’24). Association for Computing Machinery, New York, NY, USA, Article 384, 19 pages. <https://doi.org/10.1145/3613904.3642614>
- [23] Veena B Dubal. 2022. Economic security & the regulation of gig work in California: From AB5 to Proposition 22. *European labour law journal* 13, 1 (2022), 51–65.
- [24] Arienne Ferchaud and Mary Beth Oliver. 2019. It’s my choice: The effects of moral decision-making on narrative game engagement. *Journal of Gaming & Virtual Worlds* 11, 2 (2019), 101–118.
- [25] Daniel Fernández Galeote, Nikoletta-Zampeta Legaki, and Juho Hamari. 2024. Climate Change at Your Doorstep: An Experiment Using a Digital Game and Distance Framing. In *Companion Proceedings of the 2024 Annual Symposium on Computer-Human Interaction in Play*. 71–77.
- [26] Christian Fieseler, Eliane Bucher, and Christian Pieter Hoffmann. 2019. Unfairness by design? The perceived fairness of digital labor on crowdsourcing platforms. *Journal of Business Ethics* 156, 4 (2019), 987–1005.
- [27] Financial Times. 2017. The Uber Game. <https://ig.ft.com/uber-game/>. Interactive journalism / news game..
- [28] Paul Formosa, Malcolm Ryan, and Dan Staines. 2016. Papers, Please and the systemic approach to engaging ethical expertise in videogames. *Ethics and Information Technology* 18, 3 (2016), 211–225.
- [29] Gonzalo Frasca. 2001. Rethinking agency and immersion: video games as a means of consciousness-raising. *Digital Creativity* 12, 3 (2001), 167–174. <https://doi.org/10.1076/digc.12.3.167.3225> arXiv:<https://doi.org/10.1076/digc.12.3.167.3225>
- [30] Timothy Frattesi, Douglas Griesbach, Jonathan Leith, Timothy Shaffer, and Jennifer DeWinter. 2011. Replayability of video games. *IQP, Worcester Polytechnic Institute, Worcester* (2011).
- [31] Gili Freedman, Melanie C. Green, Max Seidman, and Mary Flanagan. 2021. The Effect of Embodying a Woman Scientist in Virtual Reality on Men’s Gender Biases. *Technology, Mind, and Behavior* 2, 4 (nov 8 2021). <https://tmb.apaopen.org/pub/6yzxhfgt>.
- [32] Markus Giesler, Ela Veresiu, and Ashlee Humphreys. 2019. How Consumer Empathy Drives Platform Success. *Marketing Science Institute Working Paper Series* (2019).
- [33] Varun Girdhar, Chao-Yang Tseng, Shiyu Wang, Ruoxi Yang, Zibo Ye, Michael G Christel, Scott M Stevens, and Morgan Evans. 2024. The INTENT Game: An Interactive Tool for Empathy in Neurotypicals. In *Joint International Conference on Serious Games*. Springer, 433–439.
- [34] Caitlin Gorback. 2020. *Your Uber Has Arrived: Ridesharing and the Redistribution of Economic Activity*. Working Paper RERI WP. Retail, Real Estate, and the Built Environment Initiative (RERI), Wharton School, University of Pennsylvania. [https://www.reri.org/research/files/2020\\_gorback\\_jmp.pdf](https://www.reri.org/research/files/2020_gorback_jmp.pdf)
- [35] Dwayne D. Grempler and Kevin P. Gwinner. 2000. Customer-Employee Rapport in Service Relationships. *Journal of Service Research* 3, 1 (2000), 82–104. <https://doi.org/10.1177/109467050031006>
- [36] Ge Guo, Gilly Leshed, and Keith Evan Green. 2023. “I normally wouldn’t talk with strangers”: Introducing a Socio-Spatial Interface for Fostering Togetherness Between Strangers. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg, Germany) (CHI ’23). Association for Computing Machinery, New York, NY, USA, Article 272, 20 pages. <https://doi.org/10.1145/3544548.3581325>
- [37] Jaron Harambam, Stef Aupers, and Dick Houtman. 2011. Game over? Negotiating modern capitalism in virtual game worlds. *European Journal of Cultural Studies* 14, 3 (2011), 299–319.
- [38] Seth Harris and Alan Krueger. 2015. Modernizing labor laws for twenty-first-century work: the “independent worker”. (2015).

- [39] Joshua Healy and Andreas Pekarek. 2025. The triangular relationship in platform gig work: Consumers, platform beneficence and worker vulnerability. *New Technology, Work and Employment* 40, 2 (2025), 265–284. <https://doi.org/10.1111/ntwe.12310>
- [40] Joshua Healy, Andreas Pekarek, and Ariadne Vromen. 2020. Sceptics or supporters? Consumers' views of work in the gig economy. *New Technology, Work and Employment* 35, 1 (2020), 1–19.
- [41] Kimberly Hieftje, Marjorie S Rosenthal, Deepa R Camenga, E Jennifer Edelman, and Lynn E Fiellin. 2012. A qualitative study to inform the development of a videogame for adolescent human immunodeficiency virus prevention. *GAMES FOR HEALTH: Research, Development, and Clinical Applications* 1, 4 (2012), 294–298.
- [42] Jane Hsieh, Miranda Karger, Lucas Zagal, and Haiyi Zhu. 2023. Co-Designing Alternatives for the Future of Gig Worker Well-Being: Navigating Multi-Stakeholder Incentives and Preferences. In *Proceedings of the 2023 ACM Designing Interactive Systems Conference* (Pittsburgh, PA, USA) (DIS '23). Association for Computing Machinery, New York, NY, USA, 664–687. <https://doi.org/10.1145/3563657.3595982>
- [43] Jane Hsieh, Miranda Karger, Lucas Zagal, and Haiyi Zhu. 2023. Co-designing alternatives for the future of gig worker well-being: Navigating multi-stakeholder incentives and preferences. In *Proceedings of the 2023 ACM Designing Interactive Systems Conference*, 664–687.
- [44] Jane Hsieh, Angie Zhang, Seyun Kim, Varun Nagaraj Rao, Samantha Dalal, Alexandra Mateescu, Rafael Do Nascimento Grohmann, Motahhare Eslami, Min Kyung Lee, and Haiyi Zhu. 2024. Worker Data Collectives as a means to Improve Accountability, Combat Surveillance and Reduce Inequalities. In *Proceedings of the ACM 2024 Conference on Computer Supported Cooperative Work*. <https://doi.org/10.1145/3678884.3681829> To Appear.
- [45] Jane Hsieh, Angie Zhang, Sajel Surati, Sijia Xie, Yeshua Ayala, Nithila Sathiya, Tzu-Sheng Kuo, Min Kyung Lee, and Haiyi Zhu. 2025. Gig2Gether: Datassharing to Empower, Unify and Demystify Gig Work. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems* (CHI '25). Association for Computing Machinery, New York, NY, USA, Article 99, 25 pages. <https://doi.org/10.1145/3706598.3714398>
- [46] Ioanna Iacovides and Anna L. Cox. 2015. Moving Beyond Fun: Evaluating Serious Experience in Digital Games. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (Seoul, Republic of Korea) (CHI '15). Association for Computing Machinery, New York, NY, USA, 2245–2254. <https://doi.org/10.1145/2702123.2702204>
- [47] Ioanna Iacovides, Joe Cutting, Jen Beeston, Marta E. Cecchinato, Elisa D. Mekler, and Paul Cairns. 2022. Close but Not Too Close: Distance and Relevance in Designing Games for Reflection. *Proc. ACM Hum.-Comput. Interact.* 6, CHI PLAY, Article 224 (Oct. 2022), 24 pages. <https://doi.org/10.1145/3549487>
- [48] Mohammad Hossein Jarrahi and Will Sutherland. 2019. Algorithmic Management and Algorithmic Competencies: Understanding and Appropriating Algorithms in Gig Work. In *Information in Contemporary Society*. Springer International Publishing, 578–589.
- [49] Saeed Jaydarifard, Krishna Behara, Douglas Baker, and Alexander Paz. 2024. Driver fatigue in taxi, ride-hailing, and ridesharing services: a systematic review. *Transport Reviews* 44, 3 (2024), 572–590.
- [50] Stian Jessen, Jelena Mirkovic, Cornelia M Ruland, et al. 2018. Creating gameful design in mHealth: a participatory co-design approach. *JMIR mHealth and uHealth* 6, 12 (2018), e11579.
- [51] Jingjing Jiang. 2019. More Americans are using ride-hailing apps. (2019).
- [52] Hyojin Ju, Jungeun Lee, Seungwon Yang, Jungseul Ok, and Inseok Hwang. 2025. Toward Affective Empathy via Personalized Analogy Generation: A Case Study on Microaggression. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems*. 1–31.
- [53] Geoff Kaufman and Mary Flanagan. 2015. A psychologically “embedded” approach to designing games for prosocial causes. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace* 9, 3 (Oct. 2015), Article 5. <https://doi.org/10.5817/CP2015-3-5>
- [54] Geoff Kaufman, Mary Flanagan, and Max Seidman. 2021. Creating stealth game interventions for attitude and behavior change: An ‘embedded design’ model. *Persuasive gaming in context* (2021), 73.
- [55] Aniket Kittur, Jeffrey V Nickerson, Michael Bernstein, Elizabeth Gerber, Aaron Shaw, John Zimmerman, Matt Lease, and John Horton. 2013. The future of crowd work. In *Proceedings of the 2013 conference on Computer supported cooperative work*. 1301–1318.
- [56] Adam Koling, Daniel Erian Armanios, Jeremy J Michalek, Connor Forsythe, and Akshaya Jha. 2024. Ride-Sharing the Wealth: Effects of Uber and Lyft on Jobs, Wages and Economic Growth. (2024). <https://doi.org/10.2139/ssrn.4865183> SSRN working paper.
- [57] Hannu Korhonen and Elina M. I. Koivisto. 2006. Playability heuristics for mobile games. In *Proceedings of the 8th Conference on Human-Computer Interaction with Mobile Devices and Services* (Helsinki, Finland) (MobileHCI '06). Association for Computing Machinery, New York, NY, USA, 9–16. <https://doi.org/10.1145/1152215.1152218>
- [58] Martijn Kors, Gabriele Ferri, Erik D van der Spek, Cas Ketel, and Ben Schouten. 2021. 6. A Breathtaking Journey. Appealing to Empathy in a Persuasive Mixed-Reality Game. *Persuasive gaming in context* (2021), 95.
- [59] Michelle S. Lam, Mitchell L. Gordon, Danaë Metaxa, Jeffrey T. Hancock, James A. Landay, and Michael S. Bernstein. 2022. End-User Audits: A System Empowering Communities to Lead Large-Scale Investigations of Harmful Algorithmic Behavior. *Proc. ACM Hum.-Comput. Interact.* 6, CSCW2, Article 512 (Nov. 2022), 34 pages. <https://doi.org/10.1145/3555625>
- [60] Ken Jen Lee, Adrian Davila, Hanlin Cheng, Joslin Goh, Elizabeth Nilsen, and Edith Law. 2023. “We need to do more... I need to do more”: Augmenting Digital Media Consumption via Critical Reflection to Increase Compassion and Promote Prosocial Attitudes and Behaviors. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg, Germany) (CHI '23). Association for Computing Machinery, New York, NY, USA, Article 66, 20 pages. <https://doi.org/10.1145/3544548.3581355>
- [61] Min Kyung Lee. 2018. Understanding perception of algorithmic decisions: Fairness, trust, and emotion in response to algorithmic management. *Big data & society* 5, 1 (2018), 2053951718756684.

- [62] Zhongxiu Liu, Christa Cody, Tiffany Barnes, Collin Lynch, and Teomara Rutherford. 2017. The Antecedents of and Associations with Elective Replay in an Educational Game: Is Replay Worth It? *International Educational Data Mining Society* (2017).
- [63] Paola Louzado-Feliciano, Katerina M Santiago, Kemi Ogunsina, Hannah E Kling, Lauren A Murphy, Natasha Schaefer Solle, and Alberto J Caban-Martinez. 2022. Characterizing the health and safety concerns of US rideshare drivers: A qualitative pilot study. *Workplace health & safety* 70, 7 (2022), 310–318.
- [64] Ning F. Ma, Veronica A. Rivera, Zheng Yao, and Dongwook Yoon. 2022. “Brush it Off”: How Women Workers Manage and Cope with Bias and Harassment in Gender-agnostic Gig Platforms. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems* (New Orleans, LA, USA) (CHI ’22). Association for Computing Machinery, New York, NY, USA, Article 397, 13 pages. <https://doi.org/10.1145/3491102.3517524>
- [65] Zexin Ma. 2020. Effects of immersive stories on prosocial attitudes and willingness to help: testing psychological mechanisms. *Media Psychology* 23, 6 (2020), 865–890.
- [66] Thomas W Malone. 1982. Heuristics for designing enjoyable user interfaces: Lessons from computer games. In *Proceedings of the 1982 conference on Human factors in computing systems*. 63–68.
- [67] Raymond A Mar and Keith Oatley. 2008. The function of fiction is the abstraction and simulation of social experience. *Perspectives on psychological science* 3, 3 (2008), 173–192.
- [68] Wo Meijer, Bent Verhoeff, Himanshu Verma, and Jacky Bourgeois. 2023. Fast Drink: Mediating Empathy for Gig Workers. *Proceedings of the 2nd Empathy-Centric Design Workshop* (2023), 1–6. <https://doi.org/10.1145/3588967.3588975>
- [69] Joy Ming, Dana Gong, Chit Sum Eunice Ngai, Madeline Sterling, Aditya Vashistha, and Nicola Dell. 2024. Wage Theft and Technology in the Home Care Context. *Proceedings of the ACM on Human-Computer Interaction* 8, CSCW1 (2024), 1–30. <https://doi.org/10.1145/3637428>
- [70] Joy Ming, Hawi H Tolera, Jiamin Tu, Ella Yitzhaki, Chit Sum Eunice Ngai, Madeline Sterling, Ariel C Avgar, Aditya Vashistha, and Nicola Dell. 2025. Exploring Data-Driven Advocacy in Home Health Care Work. In *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems* (CHI ’25). Association for Computing Machinery, New York, NY, USA, Article 97, 17 pages. <https://doi.org/10.1145/3706598.3713086>
- [71] Souvik Mukherjee. 2017. *Videogames and postcolonialism: Empire plays back*. Springer.
- [72] Varun Nagaraj Rao, Samantha Dalal, Eesha Agarwal, Dana Calacci, and Andrés Monroy-Hernández. 2025. Rideshare transparency: Translating gig worker insights on ai platform design to policy. *Proceedings of the ACM on Human-Computer Interaction* 9, 2 (2025), 1–49.
- [73] Pablo Ortiz and D. Fox Harrell. 2018. Enabling Critical Self-Reflection through Roleplay with Chimeria: Grayscale. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play* (Melbourne, VIC, Australia) (CHI PLAY ’18). Association for Computing Machinery, New York, NY, USA, 353–364. <https://doi.org/10.1145/3242671.3242687>
- [74] Cosmin Popan, David Perez, and Jamie Woodcock. 2023. Cards against gamification: Using a role-playing game to tell alternative futures in the gig economy. *The Sociological Review* 71, 5 (2023), 1058–1074.
- [75] Rahmanto Prabowo, Yudho Giri Sucayah, Arfive Gandhi, and Yova Ruldeviyani. 2019. Does gamification motivate gig workers? A critical issue in ride-sharing industries. In *2019 International Conference on Advanced Computer Science and Information Systems (ICACSIS)*. IEEE, 343–348.
- [76] Uma Rani and Nora Gobel. 2022. Job instability, precarity, informality, and inequality: Labour in the gig economy. In *The Routledge handbook of the gig economy*. Routledge, 15–32.
- [77] Yolanda A. Rankin and India Irish. 2020. A Seat at the Table: Black Feminist Thought as a Critical Framework for Inclusive Game Design. *Proc. ACM Hum.-Comput. Interact.* 4, CSCW2, Article 117 (Oct. 2020), 26 pages. <https://doi.org/10.1145/3415188>
- [78] Noopur Raval and Paul Dourish. 2016. Standing Out from the Crowd: Emotional Labor, Body Labor, and Temporal Labor in Ridesharing. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (San Francisco, California, USA) (CSCW ’16). Association for Computing Machinery, New York, NY, USA, 97–107. <https://doi.org/10.1145/2818048.2820026>
- [79] Noopur Raval, Rida Qadri, Richmond Y. Wong, Tamara Kneese, and Alex Hanna. 2022. Considerations for Building Solidarity among Academic and Tech Workers: Thinking through access, positionality and limits to collective action. In *Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems* (New Orleans, LA, USA) (CHI EA ’22). Association for Computing Machinery, New York, NY, USA, Article 153, 3 pages. <https://doi.org/10.1145/3491101.3516511>
- [80] Renate LEP Reniers, Rhiannon Corcoran, Richard Drake, Nick M Shryane, and Birgit A Völlm. 2011. The QCAE: A questionnaire of cognitive and affective empathy. *Journal of personality assessment* 93, 1 (2011), 84–95.
- [81] Scott Rettberg, Hilde G Corneliusen, and Jill Walker Rettberg. 2008. Corporate ideology in World of Warcraft. *Digital culture, play, and identity: A World of Warcraft reader* (2008), 19–38.
- [82] Alex Rosenblat and Luke Stark. 2016. Algorithmic labor and information asymmetries: A case study of Uber’s drivers. *International journal of communication* 10 (2016), 27.
- [83] Eftychia Roumelioti, Federica Gini, Antonia Laura Philipa Jakobi, Annapaola Marconi, Boglárka Nyúl, Maria Paola Paladino, Gianluca Schiavo, and Massimo Zancanaro. 2023. Standbyme: a gamified educational platform to raise awareness on gender-based violence. In *Companion proceedings of the annual symposium on computer-human interaction in play*. 108–113.
- [84] Tina Saksida, Michael Maffie, Katarina Katja Mihelič, Barbara Culiberg, and Ajda Merkuž. 2024. Casually cynical or trapped? Exploring gig workers’ reactions to psychological contract violation. *Journal of Managerial Psychology* (2024). <https://doi.org/10.1108/jmp-10-2023-0624>
- [85] Easton Saltsman. 2017. A Free Market Approach to the Rideshare Industry and Worker Classification: The Consequences of Employee Status and a Proposed Alternative. *JL Econ. & Pol'y* 13 (2017), 209.

- [1457] [86] Shruti Sannon and Dan Cosley. 2022. Toward a more inclusive gig economy: Risks and opportunities for workers with disabilities. *Proceedings of the ACM on Human-Computer Interaction* 6, CSCW2 (2022), 1–31.
- [1458] [87] Shruti Sannon, Billie Sun, and Dan Cosley. 2022. Privacy, Surveillance, and Power in the Gig Economy. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems* (New Orleans, LA, USA) (CHI '22). Association for Computing Machinery, New York, NY, USA, Article 619, 15 pages. <https://doi.org/10.1145/3491102.3502083>
- [1459] [88] Noam Scheiber. 2022. How Uber uses psychological tricks to push its drivers' buttons. In *Ethics of data and analytics*. Auerbach Publications, 362–371.
- [1460] [89] Juliet B Schor, Christopher Tirrell, and Steven Peter Vallas. 2024. Consent and Contestation: How Platform Workers Reckon with the Risks of Gig Labor. *Work, Employment and Society* 38, 5 (2024), 1423–1444. <https://doi.org/10.1177/09500170231199404> arXiv:<https://doi.org/10.1177/09500170231199404>
- [1461] [90] Juliet B Schor, Christopher Tirrell, and Steven Peter Vallas. 2024. Consent and contestation: How platform workers reckon with the risks of gig labor. *Work, employment and society* 38, 5 (2024), 1423–1444.
- [1462] [91] Brett Shannon, Lee S Friedman, Andrew Hellinger, Kirsten Almberg, and Johnathon Ehsani. 2024. Work-related crashes in rideshare drivers in the United States. *Journal of safety research* 89 (2024), 13–18.
- [1463] [92] Emily Steel. [n. d.]. Uber's Festering Sexual Assault Problem. *The New York Times* ([n. d.]). <https://www.nytimes.com/2025/08/06/business/uber-sexual-assault.html> Updated 2025-08-07.
- [1464] [93] Jake M L Stein, Vidminas Vizgirda, Max Van Kleek, Reuben Binns, Jun Zhao, Rui Zhao, Naman Goel, George Chalhoub, Wael S Albayaydh, and Nigel Shadbolt. 2023. 'You are you and the app. There's nobody else': Building Worker-Designed Data Institutions within Platform Hegemony. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg, Germany) (CHI '23). Association for Computing Machinery, New York, NY, USA, Article 281, 26 pages. <https://doi.org/10.1145/3544548.3581114>
- [1465] [94] Daniel Susser, Beate Roessler, and Helen Nissenbaum. 2019. Online manipulation: Hidden influences in a digital world. *Geo. L. Tech. Rev.* 4 (2019), 1.
- [1466] [95] Joice Tang, McKane Andrus, Samuel So, Udayan Tandon, Andrés Monroy-Hernández, Vera Khovanskaya, Sean A. Munson, Mark Zachry, and Sucheta Ghoshal. 2023. Back to "Back to Labor": Revisiting Political Economies of Computer-Supported Cooperative Work. In *Companion Publication of the 2023 Conference on Computer Supported Cooperative Work and Social Computing* (Minneapolis, MN, USA) (CSCW '23 Companion). Association for Computing Machinery, New York, NY, USA, 522–526. <https://doi.org/10.1145/3584931.3611285>
- [1467] [96] Kelvin Taylor, Pieter Van Dijk, Sharon Newnam, and Dianne Sheppard. 2023. Physical and psychological hazards in the gig economy system: A systematic review. *Safety science* 166 (2023), 106234.
- [1468] [97] Julia Ticona, Alexandra Mateescu, and Alex Rosenblat. 2018. Beyond disruption: How tech shapes labor across domestic work and ridehailing.
- [1469] [98] Alexandra To, Hillary Carey, Riya Shrivastava, Jessica Hammer, and Geoff Kaufman. 2022. Interactive Fiction Prototypes for Coping with Interpersonal Racism. *CHI Conference on Human Factors in Computing Systems* (2022), 1–14. <https://doi.org/10.1145/3491102.3502044>
- [1470] [99] Alexandra To, Elaine Fath, Eda Zhang, Safinah Ali, Catherine Kildunne, Anny Fan, Jessica Hammer, and Geoff Kaufman. 2016. Tandem transformational game design: A game design process case study. In *Proceedings of the International Academic Conference on Meaningful Play*.
- [1471] [100] Niels van Doorn. 2017. Platform labor: on the gendered and racialized exploitation of low-income service work in the 'on-demand' economy. *Information, Communication & Society* 20, 6 (2017), 898–914. <https://doi.org/10.1080/1369118X.2017.1294194> arXiv:<https://doi.org/10.1080/1369118X.2017.1294194>
- [1472] [101] Krishnan Vasudevan and Ngai Keung Chan. 2022. Gamification and work games: Examining consent and resistance among Uber drivers. *new media & society* 24, 4 (2022), 866–886.
- [1473] [102] Nicholas Vincent, Hanlin Li, Nicole Tilly, Stevie Chancellor, and Brent Hecht. 2021. Data leverage: A framework for empowering the public in its relationship with technology companies. In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*. 215–227.
- [1474] [103] Tracey Warren. 2021. Work-life balance and gig work: 'Where are we now' and 'where to next' with the work-life balance agenda? *Journal of Industrial Relations* 63, 4 (2021), 522–545. <https://doi.org/10.1177/00221856211007161>
- [1475] [104] Jenny Waycott, Greg Wadley, Stefan Schutt, Arthur Stabolidis, and Reeva Lederman. 2015. The Challenge of Technology Research in Sensitive Settings: Case Studies in 'ensitive HCI'. In *Proceedings of the Annual Meeting of the Australian Special Interest Group for Computer Human Interaction*. 240–249.
- [1476] [105] David Gray Widder, Laura Dabbish, James D. Herbsleb, and Nikolas Martelaro. 2024. Power and Play: Investigating "License to Critique" in Teams' AI Ethics Discussions. *Proc. ACM Hum.-Comput. Interact.* 8, CSCW2, Article 399 (Nov. 2024), 23 pages. <https://doi.org/10.1145/3686938>
- [1477] [106] Jan Wieseke, Anja Geigenmüller, and Florian Kraus. 2012. On the Role of Empathy in Customer-Employee Interactions. *Journal of Service Research* 15, 3 (2012), 316–331. <https://doi.org/10.1177/1094670512439743>
- [1478] [107] Alex J Wood, Mark Graham, Vili Lehdonvirta, and Isis Hjorth. 2019. Good gig, bad gig: autonomy and algorithmic control in the global gig economy. *Work, employment and society* 33, 1 (2019), 56–75.
- [1479] [108] Philip F Wu, Ruoshu Zheng, Ying Zhao, and Yixi Li. 2022. Happy riders are all alike? Ambivalent subjective experience and mental well-being of food-delivery platform workers in China. *New Technol. Work Employ.* 37, 3 (Nov. 2022), 425–444.
- [1480] [109] Ossy Dwi Endah Wulansari, Johanna Pirker, Johannes Kopf, and Christian Guetl. 2019. Video games and their correlation to empathy: How to teach and experience empathetic emotion. In *International Conference on Interactive Collaborative Learning*. Springer, 151–163.

- 1509 [110] Angie Zhang, Alexander Boltz, Jonathan Lynn, Chun-Wei Wang, and Min Kyung Lee. 2023. Stakeholder-Centered AI Design: Co-Designing  
1510 Worker Tools with Gig Workers through Data Probes. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg,  
1511 Germany) (CHI '23). Association for Computing Machinery, Article 859, 19 pages. <https://doi.org/10.1145/3544548.3581354>
- 1512 [111] Yingjie Zhang, Beibei Li, and Sean Qian. 2023. Ridesharing and digital resilience for urban anomalies: Evidence from the New York City taxi  
1513 market. *Information Systems Research* 34, 4 (2023), 1775–1790.
- 1514 [112] Ahmed Ziyad, ZU Rehman, Zahara Batool, and Ammad Hassan Khan. 2020. Influence of service excellence on consumer satisfaction of ridesharing  
1515 industry. *International Journal for Traffic and Transport Engineering* 10, 4 (2020), 468–481.
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1517  
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1519  
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1521  
1522  
1523  
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