

# Perceptions of Fairness in Technology-Mediated Marketplaces

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## ABSTRACT

Consumers increasingly interact with workers through technology-mediated marketplaces (TMMs)—environments where third-party companies manage interactions, control information, and constrain behavioral choices. We argue that opacity in how TMMs operate can make it difficult for consumers to judge what is fair when interacting with other economic actors. To better understand how consumers perceive and act on fairness in TMMs, we examine the practice of tipping—a consumer behavior in the United States that is strongly associated with assessments of fairness. Through interviews with consumers, we find three distinct ways that consumers discuss fairness in tipping in third-party food delivery: fairness as supporting a living wage, fairness as reciprocity, and fairness in distribution of payments. We discuss how TMMs codify economic interactions and change consumers’ social meaning of a tip, how consumers perceive an obligation to tip drivers differently in TMMs, and how TMMs alter information consumers use to determine accountability.

## CCS CONCEPTS

• **Human-centered computing** → Human computer interaction (HCI); Empirical studies in HCI.

## KEYWORDS

fairness, fair tipping, technology-mediated marketplaces, technology-mediated markets, third-party food delivery platforms, gig economy

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## 1 INTRODUCTION

Online marketplaces in the late 1990’s and early 2000’s were described as disruptive technologies that could reduce uncertainty and transaction costs for users, while enabling new and beneficial forms of exchange [1, 24, 45]. Today, online marketplaces continue to grow and disrupt different areas of social and economic life, and

there is increasing attention on companies that operate online marketplaces and their role in controlling and managing interactions between marketplace users.

As everyday consumer activities increasingly fall under the province of online marketplaces, consumers find themselves interacting with other economic actors through marketplace environments in which third-party companies unilaterally set and control the terms of interaction through code. We describe these as *technology-mediated marketplaces* (TMMs): environments constructed and managed with code where third-parties structure recurrent exchange between buyers and sellers. TMMs operate as complex information systems coordinating actions between multiple actors, often obscuring key aspects of how they operate to consumers. Consumers rely on TMMs to provide available choices and relevant information, which shapes how they interact with workers and other marketplace actors.

Companies which operate online marketplaces for goods and services (e.g., Uber, DoorDash) have come under fire from critics who point to significant fairness problems such as conflicts of interest between marketplace companies and users, a lack of transparency of information, and low pay and lack of benefits for workers [11, 65, 66]. As the gig economy continues to grow and disrupt traditional services, marketplace companies are not the only actors that must grapple with fairness. Consumers also face questions of how to interact fairly with other marketplace users within TMMs [70].

One notable instance where consumers unavoidably face questions of fairness with respect to other actors in TMMs concerns the issue of tipping, which is now a part of many TMMs from food delivery to ridesharing. Tipping is a practice with which many U.S. consumers have strong, predefined expectations and deeply held associations with cultural norms, values, and beliefs [3]. Prior literature studying tipping in non-TMM contexts such as restaurants repeatedly shows that consumers heavily consider fairness when tipping workers. As Azar [4] conveys, “The existence of tipping proves that people care about being fair and about conforming to social norms.” Consumer definitions and evaluations of fairness significantly vary, resulting in a wide range of motivations and rationales for tipping [4]. When considering fairness in tipping, we might wonder if consumers view tipping in TMMs any differently from tipping in non-mediated contexts. Furthermore, perhaps there are aspects of TMMs that affect consumer behaviors and beliefs when assessing fairness in tipping.

Consumer responses to issues of fairness in tipping have been a particular flashpoint in third-party food delivery services, where consumers interact with drivers and restaurants through TMMs. In 2019, DoorDash encountered strong pushback from consumers due to a conflict between consumer expectations and how tipping



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operated within the service [50]. Under DoorDash’s “guaranteed minimum” tipping policy at the time, drivers did not always receive their tips in full. Rather, drivers who received a below-average tip received a top-up from DoorDash, while drivers who received an above-average tip saw their base pay reduced. Following an investigative report by The New York Times [51], consumers reacted strongly against this revelation, despite this policy having already been in effect since 2017 [50, 67]. This backlash led DoorDash to alter their policy so that all tips went directly to drivers, with DoorDash acknowledging that their attempt to reallocate tips had made consumers “feel like their tips did not matter” [50]. Based on DoorDash’s statement, it appeared that the re-allocation of tips went against basic consumer expectations about the function and significance of a tip as a reciprocal reward for good service. DoorDash’s attempt to reorder the social norm of tipping reflects tensions between how TMM companies choose to codify marketplace practices, and the expectations that consumers bring into technology-mediated environments about how they can interact fairly with other marketplace actors.

An examination of the social and economic practice of tipping provides a unique opportunity to examine how consumers seek to act fairly within technology-mediated marketplaces. As Lampinen and Brown [38] argue, the study of marketplaces in HCI requires an understanding of marketplaces as “constructed, human artifacts”—as socio-technical systems where codified marketplace practices interact with social values and everyday norms of fairness. Joining a growing body of work within HCI that examines marketplaces as socio-technical artefacts [38, 39, 46, 47, 58], our study explores how different aspects of technological mediation of marketplaces affect consumers’ perceptions of what constitutes a fair tip, and complicate their attempts to tip fairly. By focusing on a very specific behavior that has been strongly associated with fairness, we can address significant questions for broader HCI research and practice that examines fairness and TMMs.

In this study, we empirically examine how consumers view fairness in tipping when using third-party food delivery services. We begin by examining whether consumers view fairness in tipping differently in third-party food delivery compared to non-mediated contexts. Drawing on these comparisons, we then examine how consumers consider the role of TMM companies in their tipping decisions. Together, our research questions provide a framework for understanding how technological mediation performed by companies is associated with different consumer beliefs about fairness. Using semi-structured interviews, we explore two core research questions:

RQ1: How do consumers describe what is or is not fair when tipping in third-party food delivery, compared to tipping in non-TMM environments?

RQ2: What role do TMM companies play for consumers in determining what is or is not fair when tipping in third-party food delivery?

Our qualitative analysis of in-depth interviews with users of third-party food delivery services reveals three distinct ways that consumers discuss fairness in tipping in third-party food delivery: fairness as supporting a living wage, fairness as reciprocity, and fairness in distribution of payments. We then discuss how key aspects of TMMs can pose problems for consumers who attempt to

act fairly when participating in these marketplaces. First, we find that codification of tipping before service inclined participants to view the tip as a general obligation to support the living wage of drivers, rather than to reciprocate the costs and effort of individual drivers. Second, participants were overtly aware that their tipping decisions were occurring in an environment operated by a for-profit company, actively incorporating their perceptions and attitudes towards TMM companies in their decisions of how much to tip. Finally, consumers also had difficulty assessing the cause of late or incorrect orders, sometimes punishing drivers (with lower tips) for factors outside of their control.

In examining how consumers discussed their tipping practices with workers, we also show how TMMs can distance consumers from workers. Participants expressed a lack of connection to drivers due to a variety of TMM design decisions, including presenting consumers with the choice to tip before delivery, limited information about driver costs and efforts, as well as a heavy reliance on TMM services for coordination which can make it easier to avoid human-to-human communication. The lack of face-to-face interaction was further compounded by no-contact policies implemented due to the COVID-19 pandemic. We find that the anonymity and interchangeability of matching with drivers through a labor marketplace, as well as the low likelihood of repeated interactions, increased social distance between consumers and workers.

## 2 RELATED WORK

### 2.1 Tipping as Social and Economic Behavior

Tipping is a social and economic activity that is frequently examined in psychology, economic sociology, and economics [2, 3, 6]. Tipping is of interest to researchers because it provides ready evidence that people do not always act strictly out of a narrow definition of self-interest, and that non-economic factors—such as the prevalence of social norms, altruism, and perceptions of fairness—can often play an important role in determining economic action. Granovetter [28] alludes to how tipping in restaurants was evidence of “generalized morality” in an anecdotal observation that people tended to still tip in locations they would not visit again. Kahneman et al. [34] find no significant differences in self-reported tips for participants for a restaurant they visit frequently, as opposed to one they did not expect to visit again—a result which has been replicated in other studies [2].

Since tipping is often voluntary, researchers explore how and why people decide to tip. In a review of the tipping literature largely focusing on restaurants, Azar [3] explains that people tip to keep in line with social norms, to demonstrate gratitude, to show an awareness that service workers rely on tips, and to avoid negative feelings such as embarrassment and guilt from under-tipping. He discusses how consumers seek to maximize positive feelings by engaging in either altruism or reciprocity, thereby minimizing negative feelings such as social disapproval or a sense of acting unfairly. Research also indicates that interpersonal connection between servers and customers, such as personal introductions by name [25] and perceptions of friendliness [14, 59], can increase customers’ propensity to tip [3].

Research investigating how social tipping norms and practices may be changing in contemporary gig economy services such as

Uber and DoorDash is more limited. Utilizing a survey vignette experiment, Duhaime and Woessner [19] find that participants assigned to a gig worker scenario tipped less on average than traditional employees for an identical delivery task. Drawing from open-ended survey responses, they suggest that perceptions of greater worker autonomy by consumers is a key factor to them choosing to tip gig workers less. In a review of how digital technologies are affecting tipping across different industries, Warren and Hanson [73] argue that the reasons for different tipping norms in the gig economy can be complex, ranging from the design of the tipping interaction to the service context. Furthermore, they suggest the need for more qualitative work to understand how and why consumers may tip differently when using gig economy services compared to other environments. In our current study, we answer this call by encouraging consumers to thoroughly discuss and unpack their different tipping experiences in both third-party food delivery as well as non-mediated contexts.

Digital gifting is another relevant area of active HCI research that examines reciprocity and social interactions online, and how online systems can facilitate the tipping of money and other digital items. For example, Kwon et al. [37] examine the digital exchange of money, vouchers, photos, and messages and explore how “digital technologies might enhance rituals of gifting”. In a related but different context, Lee et al. [42] study how users seek to attract attention and practice reciprocity by tipping money or digital gifts to livestreamers. Overall, digital gifting research in HCI shows how small acts of unsolicited giving can have symbolic, meaningful impacts on social relationships in a variety of online environments and systems.

Tipping is also discussed in the HCI literature on the gig economy, showing how tipping can be a socially meaningful, symbolic, and reciprocal component of gig worker experiences [27, 53]. For example, in an analysis of subreddit posts for Instacart shoppers, Ramesh et al. [51] discuss how consumer tips were a frequent topic, with shoppers expressing frustration or gratitude with what they perceived to be unfair or generous tips. In a study of changing labor conditions in ridesharing, Glöss et al. [27] interviewed 8 traditional taxi drivers, 17 Uber drivers and 7 Uber users, and discuss how some consumers preferred automated in-app payments over cash as it reduced a sense of social pressure to tip drivers. In this study, we extend the empirical work in this area by detailing and analyzing how consumers process their own changing beliefs and behaviors about tips in third-party food delivery as gifts, compensation, as well as other social and economic meanings.

## 2.2 Digital Mediation, Marketplaces, and Fairness

Foundational work in technology-mediated interaction on the Internet examines the constructed nature of virtual communities, and how affordances and the architecture of the codified environment influences social interaction in these space [18, 26, 36, 43]. Lampinen and Brown [40] describe online marketplaces as important sites of human-computer interaction, tied to “core concerns” of the use of technical systems for “coordinating effort and enabling collaboration”. HCI scholars stress the importance of understanding user values and perceptions of fairness in online marketplaces, and the

role of markets as socio-technical systems. One key line of work in this area examines how online marketplaces can be designed to facilitate social exchange, reciprocity and prosocial behaviors, in contexts such as online gift exchange [39] and online hospitality [41]. This work draws in part from a long tradition in economic sociology and economics that emphasizes the importance of norms and beliefs about fairness to the operation of markets [22, 28, 34].

HCI research shows how the design of marketplaces can better support gig workers, with particular attention paid towards developing systems that allow more information-sharing and solidarity-building between workers. Two notable examples focusing on Amazon Mechanical Turk (AMT) are *Turkopticon*, a system to allow workers to provide information to one another about Turker tasks and to make worker-employer relations more visible [32], and *Dynamo*, a platform to provide collective publics for discussion and mutual support for Turkers [61]. In addition, Zhang et al. [74] examine how ridesharing marketplaces can be redesigned to account for driver’s perceptions of fairness and desires for greater information transparency. Less attention has been paid to the role consumers can play in improving outcomes for workers. Healy et al. [30] argue that consumers are a “critical stakeholder group in the gig economy”, and more work should examine whether consumer perceptions of gig workers are “likely to help or hinder efforts to advance working conditions in the gig economy”. We help fill this gap by examining how marketplace designs and tipping behaviors can influence consumers’ perceptions, evaluations, and overall relationships with gig workers.

Finally, HCI research frequently emphasizes the importance of examining user beliefs and experiences, and how user beliefs may not match how marketplaces operate in practice. Much of this work focuses on the experiences and perspectives of gig workers. For example, Ramesh et al. [53], finds that the underlying opacity in the Instacart marketplace caused gig workers to form a wide variety of beliefs and strategies of how to maximize their income. Similarly, in their examination of how Turkers interpret the Amazon Mechanical Turk marketplace, Martin et al. [47] stress that, in terms of understanding user behavior, it “does not matter whether [their] reasoning is correct or not”, but rather, “what is important is how the workers understand how the market plays out since such ‘understandings’ can motivate action”. Hwang and Elish [31] further argue that management of user expectations can be used as a method of control in ridesharing marketplaces, where companies may misrepresent expected rider demand to drivers as a way to manage supply and demand.

In their evaluation of HCI literature on marketplaces as socio-technical systems, Lampinen and Brown [40] argue that HCI researchers must continue to consider the design choices in online marketplaces, “. . .not solely in terms of their efficiency, but also their implications for social interaction and the fairness of outcomes.” In response, our current study adds to this line of work by exploring how the structure of tipping in technology-mediated marketplaces can affect consumer beliefs and behaviors about fairness, reciprocity, and solidarity with workers. Furthermore, we take a decidedly consumer-focused approach, expanding our understandings from prior research on gig workers in mediated marketplaces.

**Table 1: Participant Characteristics**

	Sex	Age	State	Freq*	Services used
P1	Male	45-54	California	1-2	DoorDash, Grubhub, Uber Eats
P2	Male	55-64	California	1-2	DoorDash, Uber Eats
P3	Female	55-64	California	1-2	DoorDash, Grubhub
P4	Female	45-54	California	1-2	DoorDash, Grubhub, Postmates
P5	Male	35-44	California	<1	DoorDash, Grubhub
P6	Female	35-44	California	<1	DoorDash
P7	Male	35-44	California	9 or more	DoorDash, Grubhub, Uber Eats
P8	Male	35-44	California	1-2	DoorDash, Uber Eats
P9	Female	35-44	Georgia	1-2	DoorDash, Grubhub
P10	Female	35-44	Arizona	<1	DoorDash, Postmates, Caviar
P11	Male	18-24	California	<1	Grubhub, Uber Eats
P12	Male	25-34	California	1-2	DoorDash, Uber Eats
P13	Male	18-24	California	3-4	DoorDash, Grubhub, Uber Eats, Caviar
P14	Male	25-34	California	1-2	DoorDash
P15	Female	18-24	California	<1	Uber Eats
P16	Female	25-34	California	5-8	DoorDash, Grubhub, Uber Eats, Postmates
P17	Female	18-24	California	<1	DoorDash
P18	Female	18-24	California	1-2	DoorDash, Grubhub, Uber Eats, Postmates
P19	Female	45-54	California	1-2	DoorDash
P20	Female	25-34	California	1-2	DoorDash, Uber Eats
P21	Male	25-34	Florida	<1	Uber Eats
P22	Male	25-34	California	3-4	Grubhub, Uber Eats, Postmates
P23	Male	18-24	California	<1	DoorDash, Grubhub, Uber Eats
P24	Male	45-54	California	<1	DoorDash, Grubhub, Uber Eats
P25	Female	25-34	California	<1	DoorDash, Chowbus

\* Frequency per month

### 3 METHODS

To address our two research questions, we conducted 25 in-depth, semi-structured interviews with users of third-party food delivery services in the United States. This qualitative approach allowed us to examine consumer attitudes, beliefs, and behaviors about tipping in a specific type of technology-mediated marketplace. Below, we describe the sample, interview protocol, coding, and analysis procedures.

#### 3.1 Recruitment

We recruited interviewees at a public university in the United States that maintains a large pool of over 10,000 pre-screened students, employees, alumni, and personnel who are or were affiliated with this university. Using purposeful sampling [16], we interviewed individuals who used third-party food delivery services in the US in 2020. All participants were at least 18 years of age, physically located in the US, and indicated they could be interviewed in English.

We obtained roughly equal numbers of participants (see Table 1) who identified as female (12) and male (13), across four different age groups (18-24, 25-34, 35-44, 45 and older). Out of the 25 participants, 5 participants reported that they grew up partially outside of the United States. Most participants (22) resided in California in 2020.

Participants indicated that they used a range of services offered in the US (e.g., DoorDash<sup>1</sup>, UberEats<sup>2</sup>, Grubhub<sup>3</sup>, Instacart<sup>4</sup>, Chowbus<sup>5</sup>, and Caviar<sup>6</sup>). An approximately equal number of participants stated that they usually access third-party food delivery services by smartphone or personal computer. A majority of participants in our study estimated that they used third-party delivery food services about 1-2 times a month, consistent with a 2019 survey of food delivery usage among American adults [49]. Finally, several participants described higher use of third-party food delivery services in 2020 due to the COVID-19 pandemic.

#### 3.2 Interview procedure

One author conducted interviews in English using the Zoom video-conferencing platform between December 2020 and February 2021. The same author transcribed two interviews verbatim and the remaining interviews were transcribed through a professional transcription service. Each interview lasted between 45 and 90 minutes, with most interviews lasting longer than an hour. Participants also filled out a short demographic survey using an online form before

<sup>1</sup>[www.doordash.com](http://www.doordash.com)

<sup>2</sup>[www.ubereats.com](http://www.ubereats.com)

<sup>3</sup>[www.grubhub.com](http://www.grubhub.com)

<sup>4</sup>[www.instacart.com](http://www.instacart.com)

<sup>5</sup>[pos.chowbus.com](http://pos.chowbus.com)

<sup>6</sup>[www.trycaviar.com](http://www.trycaviar.com)

the interview. Participants were paid an online \$25 Amazon gift card for their time.

We designed a semi-structured interview instrument to elicit participant attitudes, beliefs, and behavior related to tipping. Our aim was to get at participants' perceptions about fairness, tipping, and third-party food delivery service. We first asked participants to describe their last few in third-party food delivery service orders and to explain their reasoning behind their tipping processes. Participants were asked to discuss any similarities and differences between how they tipped in third-party food delivery service compared to other services, thereby drawing out participant's perceptions, motivations, and reflections on their own tipping rationales. Participants were also asked how they believed tipping operated in third-party food delivery, such as how recommended tips are set and how drivers are compensated from tips as a way to initiate discussion about TMMs and to investigate the role that TMMs may play in assessments of fairness in tipping. Finally, the interviewer presented participants with hypothetical scenarios varying how drivers were compensated from tips to encourage participants to contemplate what is or is not a fair tip. Throughout the interview session and in response to participant responses, the interviewer was careful to follow up on any views that participants brought up that were related to fairness.

Our focus on participants' perceptions of fairness in TMMs is one part of a wider project on tipping behaviors in third-party food delivery services. Our focus on participants' perceptions of fairness in TMMs is one part of a wider project on tipping behaviors in third-party food delivery services. A separate line of inquiry in our interview procedure focused on participant sensemaking about the specific design features in third-party food delivery apps. These are topics we will investigate in future research.

### 3.3 Data analysis

All three authors were involved in the data analysis. Since our interview protocol aimed at surfacing consumer perceptions of fairness and tipping in TMMs, we began our analysis with a process of structural coding [60] that aligned with these topics. Two authors, including the author who served as the interviewer, identified, and excerpted participant responses related to attitudes, motivations, beliefs, and practices around fairness in tipping for all 25 interviews. We also paid special attention to participants' opinions about TMM companies.

The same two authors then independently conducted a first cycle of initial and in-vivo coding [60] to identify a broad range of attributes related to fairness and tipping, adding any emergent codes from the interview transcriptions, and discussing the codes to reach agreement. There were 396 codes; example codes include "transparency of how driver paid", "tipping as reward", and "sufficient wages." In our second analysis cycle, all three authors examined the initial and in-vivo coding and emergent codes. We conducted multiple iterations of pattern coding that resulted in 54 codes such as "distribution of costs", "allocation of responsibility", and "opaque company practices". Finally, these codes coalesced into the major themes that we describe in our findings, including "transparency", "reciprocity", "wage equity", among others. All authors compared the major themes across all 25 interviews, revisiting the transcripts continuously until there was agreement among authors.

### 3.4 Limitations

In utilizing a large public university pool which allowed us to achieve good coverage over a range of ages and people who identified as male or female, one scope limitation of the study is that our sample consists of users who had either completed college or were in the process of getting a college degree. Using a statistically weighted sample, Keeble et al. estimate that in 2018, of all adults aged 18 years or older in the United States who had used a third-party food delivery service in the past 7 days, 52.7% were college-educated or above, 18.4% had some form of post-high school qualification and 28.9% high school completion or lower [35]. While over half of third-party food delivery users are college-educated, more work is needed to examine the fairness perceptions of users with lower levels of formal education.

## 4 FINDINGS

Our empirical findings provide insight into the specific ways that consumers grapple with how to tip fairly in third-party food delivery. We organized our findings according to three high-level themes that emerged from our analysis of how participants discussed fairness about tipping in third-party food delivery vs tipping in non-TMM environments (RQ1), as well as how they perceived TMM companies when thinking about fairness in tipping in third-party food delivery (RQ2). Our first two themes describe fairness norms that consumers considered in their tipping practices: 1) tipping as a way to support a living wage for workers (Fairness as supporting a living wage), and 2) tipping as a way to reciprocate the costs and efforts of individual drivers (Fairness as reciprocity). Our third theme (Fairness in distribution of payments) centers around how participants viewed TMM companies' process of distributing payments, including tips and fees between drivers, restaurants, and the TMM companies themselves.

### 4.1 Fairness as supporting a living wage

Our analysis of how participants perceived wage fairness in third-party food delivery services compared to non-TMM environments yielded several key findings. First, many participants expressed difficulty determining how much to tip to support a living wage in TMMs due to an absence of existing norms, with some expressing concerns over a perceived lack of transparency in how tips affected driver compensation. P14 articulated how he felt unsure about whether he should rely on tips recommended by TMM companies, feeling the "rules" to be "vague" in third-party food delivery:

"I mean, I always felt uncomfortable, you know, I always wanna play by the rules, but then when kind of the rules are vague... I just want to pay and get what I'm supposed to get and not have to play a game."  
(P10)

Some participants also related concerns with a perceived lack of transparency in how tips affected driver compensation in TMMs. P5 felt that higher recommended tips by TMM companies could be used as a way to shift the burden of paying drivers a living wage onto consumers. P5 explained: "[Y]ou can also create a strange situation where, you know, businesses are raking in more profits... than they should be, and not paying their staff properly and then the general public has to pick up the slack." He expressed annoyance at

a perceived need for consumers to “police” TMM companies and their compensation practices. P5 emphasized how he felt that as a consumer, he should not be responsible for ensuring drivers are “being paid properly” given he was “just buying some food”:

“I also feel like, how much needs to be offloaded onto people? . . . Why do I have to make sure the driver’s being paid properly? I mean, come on, I’m just buying some food. So I kind of feel like, yes, repeatedly pushing these things, decisions, and it’s my responsibility to make sure the guy’s getting paid properly. . . I like the idea of more information, transparency, but I’d just like it to be just more ethically straight up, [where] the consumer doesn’t have to police it themselves.” (P5)

P20 expressed similar frustration with the potential use of higher recommended tips by TMM companies to subsidize wages to drivers, but felt an inability to push back against specific company policies. She ultimately saw such practices as the cost of convenience for the consumer:

“It’s just funny, like... all these pricing tactics, you know exactly what the companies are doing, and yeah, as a consumer, you have no choice, right? If you want to use a service, you have to pay for it... Yeah it’s frustrating and it’s annoying, but it’s the cost of using these products for the convenience factor.” (P20)

A second major issue we found was that lower opportunities for interaction (e.g., seeing or talking with drivers) in third-party food delivery shaped how participants related to drivers and their sense of obligation to support their living wage through tips. Participants told us how greater interaction in other services sometimes led them to consider workers’ situations, and their wages, more carefully. For example, P20 described how interacting with drivers in another TMM service, ridesharing, led her to sometimes tip more as a way if supplementing low pay:

“When I used to take Ubers, sometimes you would talk to the drivers and they would tell you certain things. But with [food delivery], there’s no interaction. . . [With rideshare drivers,] they can tell you how much they’re making, which is not a lot of money, or how hard it is, and it makes you feel bad.” (P20)

Participants discussed how, by comparison, food delivery inherently involved minimal interaction between consumers and workers. Importantly, participants pointed to specific TMM policies that they felt made the service feel even more impersonal. P3 contrasted her experiences before and after no-contact policies had been instituted due to the COVID-19 pandemic. She recounted her more frequent interactions with drivers before the pandemic: “I actually used to chat quite a bit with the drivers before because I’d sit out on the front porch and wait for them to appear with the food and then, you know, chit-chat with them a little bit before they headed off.” She added how she sometimes would tip them more if she felt they “were having a bad day.” She highlighted how this more personal aspect to tipping had been eliminated due to no-contact policies:

“[I]t’s very different because that aspect of tipping has been removed by the pandemic. We don’t have

that personal interaction or... perception of someone else’s situation... You know, some days you could tell if they were having a bad day. You know, it’s just on the facial expressions. Um, and so by having the contactless delivery, I don’t actually ever see that.” (P3)

Similarly, P10 described how the option to tip before knowing anything about the driver, as well as reduced opportunities for interaction due to no-contact policies, caused her to feel “no connection” to drivers:

“You have your option to tip before you’re told your driver’s name, you don’t know anything about your driver, and especially during COVID, you don’t even see your driver most of the time. I live in an apartment building, so like my driver has just texted me and said, “Oh, I left your order on the front desk like you said,” so then I go get the order, but I don’t see the driver, I don’t know what kind of car they drive. I, you know, I don’t see them driving up or anything like that. I have no connection to them.” (P10)

Finally, we found that some participants felt a lower obligation to support third-party food delivery drivers due to their association with TMMs rather than with specific restaurants. Discussing how he felt about tipping restaurants as opposed to third-party food delivery drivers, P22 describes feeling a greater obligation to support the “livelihood” of restaurant owners due to more sustained and personal interactions with them. By contrast, P22 described how though he “[felt] sorry for [drivers],” he tended to see them as “part of this machine which are these large institutions.” He expressed what he felt as the interchangeable nature of his interactions with drivers, where he felt TMM companies “are always going to find a driver”:

“Well, the thing is... Uber and Grubhub... are always going to find a driver. These restaurants, you know, they’re owned by actual people. You know, you actually talk to some of these people, and they put their livelihood [sic] and stuff... Yeah, with the drivers, there’s just less connection with the person. Even though I do feel sorry for them because they have to work at such companies, it’s just... they’re part of this machine which are these large institutions.” (P22)

## 4.2 Fairness as reciprocity

A second core theme that emerged is how participants discussed tipping as a way to normatively reciprocate the costs and efforts of individual service workers. P2 described how he viewed tipping generally as a way to “show appreciation for... work done,” a perception that many participants shared. He explained:

“So tipping is about service, right... so if you have a really good waiter who’s attentive... theoretically you tip more. And... you have that interaction throughout the service where you can make judgments and see how things work. That’s, you know, how you tip your bartender, or your waiter or waitress... right?”

Because you have that interaction where you see how they perform.” (P2)

Similarly, P18, who was in her early twenties, related that she used to view tipping as “*an obligation*” where “*you just tipped everyone*.” As she got older, she tended to vary her tips because she felt that “*people who make the extra effort and go the extra mile to make sure that your service went well... deserve to get paid a little more*.”

As participants discussed how they tipped in third-party food delivery services vs. other services, we found several distinct aspects of TMM design that influenced how participants perceived and acted on reciprocity in third-party food delivery, compared to non-TMM environments. First, many participants found it significant that the decision to tip was presented to consumers *before* delivery, i.e., before the service was completed. This was true for all major food delivery services in the United States at the time (DoorDash, Grubhub and Uber Eats) [20, 57, 64], which were also the services most frequently used by our participants. Consumers contrasted this to their experiences using many other services, such as in-restaurant dining or hairdressing, where the tipping decision usually comes after the service. P3 saw tipping before service as an act of faith for consumers, rather than a way for them to reciprocate the costs and efforts of drivers:

“... it’s completely illogical and... you definitely are doing it on faith that the people who are doing it are going to, you know, perform their tasks to the best of their abilities and not like spit in your food. (laughs)” (P3)

P15 explained how paying before delivery predisposed her to view the tip as something fixed, rather than a variable amount based on quality of service such as when tipping for sit-down service at a restaurant:

“I think probably because the payment part happens before you get your food, so I just kind of do it then... and it’s not influenced by my experience, whereas at like a restaurant I’m paying after I’m being served and I have my experience at the restaurant. So I’m more inclined to [tip the same amount using third-party food delivery services], I guess my tips are more variable otherwise.” (P15)

Despite expressing frustration or finding it unusual to be asked to set a tip before delivery, most participants did choose to set the tip when first prompted, with only a few choosing to set the tip to zero and then adjusting it after delivery or tipping in cash. Participants explained that they felt it was inconvenient or troublesome to change the tip after delivery, with some participants being unsure whether it was possible to adjust the tip after service at all. For participants who did change the tip after delivery, they related that they only bothered to do so after what they regarded as exceptionally good or bad service.

Second, participants’ responses revealed how TMM companies can limit marketplace information provided to consumers, making it difficult for them to make assessments of an appropriate reciprocal tip. For example, while a few participants discussed sporadic attempts to compensate drivers for extended wait time at restaurants, most consumers did not actively incorporate this into their

tipping decisions. This was because driver wait time was not provided to users. In order to calculate driver wait times, users would have had to notice the driver’s restaurant arrival time for services which provided that information at the time, and independently calculate wait time based on the driver’s departure. Instead, consumers explained that they relied primarily on information that were directly provided by TMM companies, such as expected arrival time and distance of consumers to restaurants, to gauge driver costs and effort.

Participants related incidents that showed that they had difficulty determining the cause of a late or incorrect order based on limited information provided by third-party food delivery services, thus blurring the responsibility for poor service quality among drivers, restaurants and the TMM company. P22 recounted an incident where he tipped a driver poorly due to an incorrect order. He explained how he felt there “needs to be some kind of consequence,” describing how at the time he did not see the restaurant and driver as “different entities”:

“Well, it’s more... It’s just like anger at that point. Yeah, it’s not really thinking. I guess if I were to really think about it, it’s like the driver has nothing to do with it. Usually I associate the driver with the restaurant... but they’re two different entities. But, uh, yeah, I guess I really never thought about, you know, them not being connected.” (P22)

P11 described a similar conflation of responsibility between the TMM company and driver which led him to tip the driver less:

“It wasn’t the driver’s fault but the app’s fault I think... It was giving me some sort of time estimate, but it kept going up and up and up and I thought that he was still far away and it was like 10 minutes in the future. So I thought he wasn’t here but it turned out he had been here. ...[T]hen I got there... and my order was slightly screwed up and I was just already really frustrated and I felt bad for him but also a little mad... It was obviously more of the app’s fault than the driver’s fault but I was just kind of having a rough day.” (P11)

Interestingly, P2 described initially attempting to determine an appropriate reciprocal tip, but ultimately giving up due to the difficulty of gauging responsibility between restaurants, drivers, and the TMM company. P2 explained: “*I used to ask if it was late, you know... what was the cause of the delay?*” He would then sometimes tip the driver more if he felt they were not at fault and where the driver had been inconvenienced, such as when the delay was due to a long wait time at the restaurant for the driver. P2 explained:

“I used to ask if it was late, you know... what was the cause of the delay? But now I just don’t even bother asking. ...[I]t just got to the point where, you know, any rationale would be [given], you know, [whether] it’s traffic... So I think I just thought like, there’s no correlation between those two.” (P2)

Due to this difficulty, P2 eventually chose to just set the tip at the start and just “*tip everybody the same*.”

Finally, participants' responses also reflected how mediation performed by TMM food delivery services can facilitate avoidance of drivers and a *lack* of reciprocity when social interaction might be undesirable for consumers. P25 relayed how she would often deliberately avoid calls from drivers to avoid leaving her apartment, leaving drivers to wait for an exiting car to open the gate into her complex. She described subsequent attempts to avoid or reduce interaction with drivers after such incidents: *"I don't meet them. I just say [through the app] like, 'Leave the food at my door.'"* When asked if she adjusted her tip up due to their difficulties in getting to her apartment, she described such inconvenience as part and parcel of the work of drivers. Ultimately, she did not feel a need to reciprocate any added inconvenience to drivers with higher tips:

"It's part of work, right?... I mean it's like doing any kind of work, you're gonna encounter troubles. And this is part of the routine. Why... I mean there's nothing worth complaining about. It's just part of your work (laughs)." (P25)

### 4.3 Fairness in distribution of payments

Our final theme is how participants felt about the fairness of how TMM companies distributed payments, including tips and fees, between drivers, restaurants and the TMM companies. Our analysis yielded several key findings. First, some participants reasoned that high fees and mark-ups paid to TMM companies translated to a lower necessity to tip drivers. P11 explained:

"So, I think in the beginning I saw, like, double fees, like almost twice as much, and I was not incentivized to tip. My thought process was, they're already getting paid by Uber Eats. Why am I paying them more when they're already making money on this service?" (P11)

Similarly, P1 felt strongly that since he was already paying a mark-up in menu prices, he should not need to tip drivers as much. This led him to tip less in third-party food delivery than when ordering delivery directly from a restaurant. He explained his view: *"The Uber driver, regardless if I tip him or not, is going to get paid. Their base is going to be a lot more than the mom and pop pizza driver. They're already getting more because of the markup in the price of the food."*

Second, we found participants had divergent views about the fairness of how TMM companies were distributing payments. On one hand, many participants felt that TMM companies were likely to be taking a large share of payments which they felt to be unfair. P23 and P25 referred specifically to the practice of TMM companies charging fees to consumers as well as restaurants, a practice which P25 described as "double-dipping." P23 expressed a similar view:

"Especially during the pandemic, a lot of food delivery services are like, 'Oh, you should support your local restaurants by using our food delivery service.' ...It seems disingenuous to me to charge a service fee while also charging the restaurant. Like you're taking money from every single person in the equation here." (P23)

On the other hand, while some participants did feel that TMM companies took a large share of payments, they did not feel this to be necessarily unfair or disproportionate. P20 felt it difficult to assess a 'fair' TMM share of payments based on the relative contributions of the TMM company vs. restaurants and drivers, emphasizing what she perceived as its inherent subjectivity:

"[M]y gut feeling is companies are out there to make money, and so I would think (laughs) they put their incentive first—it's for them to make money. I don't know how it's distributed, but they can argue it many different ways that they are the service provided, they provide the platform, they made it so that everything is possible so then they deserve to take the biggest cut. And whatever spare is, it's all relative, right?" (P20)

P15 also did not feel that TMM companies were taking a particularly unfair share of payments. She invoked a broader economic argument to explain her lack of concern, feeling that drivers and restaurants would not work with TMM companies if they did not receive *"a decent amount"*:

"I think the platforms obviously wanna make money, so they're probably gonna try to squeeze out as much profit [as] they can, but also they have to pay the drivers and the restaurants a decent amount, because otherwise they're not gonna wanna work with them so much." (P15)

Finally, while many participants expressed frustration at what they felt to be a disproportionate share of payments going to TMM companies, they described different responses to this perceived practice. P1 imputed a lower obligation to tip, feeling that higher tips to third-party food delivery drivers would just end up primarily benefiting the TMM company and its "shareholders." He explained:

"Am I going to give more money to that person? At the pizza joint? Yes. Versus the person with the Uber delivery driver? Yes, I would rather give my money to the person working directly for the restaurant. Because it's the restaurant that's directly benefiting, and that person versus, you know, this corporation, this Uber, DoorDash, Grubhub... I want to help out, you know, mom-and-pop pizza shop. I don't want to help out who the new CEO of Uber is." (P1)

Other participants, like P18 and P23, related a grudging acceptance of the increased share of payments they felt were going to TMM companies. P18 expressed a sense of powerlessness towards this practice, describing how she felt that feeling, as a single consumer, she felt she was *"not in [a] position"* to change it. P23—who tended to tip at least the preset default—felt that consumers simply had to accept *"paying more"* if they wanted to make sure restaurants and drivers were being compensated fairly. He explained:

"There's like this giant tech firm in the middle now. . . and so just having one more player, it means that the cost goes up. So the only way to bring the final cost in line with what people expect is by taking money from drivers and restaurants. So I think people just need to get used to paying more." (P23)



## 5 DISCUSSION AND IMPLICATIONS

In this section, we discuss our findings in light of related HCI work, as well as implications for consumer perceptions of fairness in technology-mediated marketplaces. We discuss key aspects of TMM environments that complicate how consumers determine a fair tip: codified interaction, third-party mediation by for-profit companies, and difficulties in assessing accountability. Finally, we discuss how TMMs can distance consumers from workers, and the potential effects on consumer-worker solidarity.

### 5.1 How TMMs influence and complicate fairness in economic action

*5.1.1 Codified interaction and the changing social meaning of tipping.* Our findings show how the *social meaning* consumers attach to an everyday, commonplace practice—that of fair tipping as reciprocity for service—can be altered by codification in TMMs. By codifying tipping as a pre-service step, third-party food delivery companies fundamentally change the process of tipping from an act of reciprocity into one of obligation to provide a living wage. In true reciprocal exchange, “there is a general expectation of some future return, its exact nature *is definitely not stipulated in advance*” (emphasis ours) [5]. This is a critical requirement of reciprocity, as the uncertainty about receiving something (such as a tip) in exchange for a service is precisely what leads to fairness, trust, affect, and solidarity between people over time [15]. Thus, replacing true reciprocity (post-service tip) with codified obligation (pre-service tip) can inhibit the development of positive social relations between consumers and drivers. This finding supports prior work in HCI showing how rigid formalization of reciprocity within online systems can be antithetical to the spirit of interpersonal interaction in technology-mediated environments [39].

We observe that the opacity of key design choices in TMMs can shape or inhibit consumers’ attempts at fair tipping behavior. For example, some TMMs in our study did codify the ability for consumers to adjust their pre-service tips *after* delivery. However, most consumers told us that they did not choose to do so even if they could because the availability of the option was not made clear or convenient to access. Only in cases of exceptionally good or bad service did some participants make the additional effort to learn how to adjust their tips fairly to exercise ‘true’ reciprocity with their driver. Additionally, most participants eventually went along with tipping before delivery even if they initially expressed confusion or frustration with having to make a tipping decision before observing worker effort or service quality.

Gig economy researchers in HCI and adjacent fields note that over time, the sharing economy has shifted away from attempts to facilitate social exchange, altruism and reciprocity, to a more transactional model based on convenience and efficiency [54, 66]. Our findings align with this body of work and provide insight into how the design of TMMs can hasten this type of shift. TMMs that prioritize convenience and efficiency for consumers by codifying tipping early in the ordering process break the assumptions of reciprocity—with important repercussions for how consumers determine what is or is not a fair tip for workers. First, decisions by TMM companies to codify an efficient experience can come at the cost of more reciprocal, nuanced social interactions that allow

consumers to make informed, fair tipping choices. Second, since tipping within a given society is largely dependent on norms [3], these subtle codification processes can effectively eliminate the ability for individuals to apply their own cultural norms of fairness in food delivery and related TMMs. As TMM companies codify tipping into streamlined ordering processes, they may prevent avenues for reciprocity and force consumers to continue to modify (or even lose) their existing cultural norms of fair tipping.

*5.1.2 Consumer perceptions of TMM companies as for-profit, third-party mediators.* Our work shows how consumer perceptions of TMM companies as for-profit mediators can directly affect fair tipping practices. Participants in our study not only considered how their tips affect drivers, but how their tips might directly or indirectly benefit TMM companies. This led participants to modify their interpretations of a “fair” tip in different ways. For example, P1 chose to tip third-party food delivery drivers less than drivers who were directly employed by restaurants because he believed a higher tip would just end up benefiting TMM corporations. Others, such as P18 and P23, always chose to tip the preset default (or more) due to expectations that drivers were likely to be vulnerable to exploitation by TMM companies. These findings imply that the mere presence of a TMM company as a for-profit, observing intermediary led to altered perceptions about what constitutes a fair tip for drivers.

HCI has increasingly examined the way companies use surveillance in the gig economy and that worker awareness of monitoring affects worker actions [48, 62, 63]. Many participants in our study expressed an overt awareness that their tipping actions were occurring in an environment visible to and managed by a for-profit TMM company, whose interests might not necessarily align with consumers and drivers. This heightened awareness led some consumers to view their tips not as a dyadic exchange between consumers and drivers, but as an interaction monitored and evaluated by TMM companies.

The impression of a TMM company with ulterior, for-profit driven motives can also have a chilling effect on fair tipping practices when consumers consider how much of a tip and other fees might go to the TMM company. In some cases, we found that the desire to support drivers with tips was openly offset by a desire not to benefit TMM companies. The implication is that these decisions can ultimately result in negative economic outcomes for TMM actors other than drivers, including restaurants. For instance, P1 reported tipping more at mom-and-pop restaurants compared to when they used a TMM. Furthermore, some food delivery TMMs allow consumers to pick up food orders, but still ask consumers to tip restaurant staff. When orders are handled by the TMM, consumers may choose to tip restaurants less than they normally would, due to perceptions that their tips would primarily benefit TMM companies. Looking to the future, it is important to examine how consumers tip and seek to act fairly in environments where they may have greater trust towards third-party mediators, such as in gig economy cooperatives which offer an alternative institutional model to TMMs operated by for-profit companies [9, 17].

*5.1.3 Assessing accountability in managed complex systems to determine fair action.* Our study of consumers illustrates that judging

what is fair when tipping relies on determinations of accountability. However, the TMMs in our study did not provide consumers with a breakdown of services logistically involved, or the chain of responsibility and accountability. In seeking to provide a frictionless service without extraneous information, TMMs can hide causal attributions that would otherwise help consumers to determine a fair tip. Reasons for delays are not typically communicated to consumers, such as cancellations from prior assigned drivers, restaurant ordering systems that only start orders when drivers arrive to pick them up, or delays in food preparation at restaurants [35, 55, 72].

Prior research shows that consumers who engage in questions of fairness in order to rate, review, or tip workers need information to make informed decisions [12, 54, 68, 69]. In our study, both P11 and P22 recounted how they previously penalized drivers for poor service with lower tips, which on extended reflection, they reasoned may not actually be the responsibility of the driver but that of either the restaurant or the TMM company. The implication is that TMMs that help make the delivery process seem ‘effortless’ can potentially create misattribution, then affecting drivers in the form of lower tips. Our findings imply that opacities about logistics in TMMs could result in gig workers suffering loss of opportunity to make money, regardless of consumer intentions to make fair evaluations about workers whether it be through reviews, rates, or tips.

In HCI and adjacent fields, discussions of accountability and attribution of blame in complex managed systems frequently arise [7, 10, 13, 21, 29]. Prior studies show how responsibility for an adverse outcome can be attributed between users and designers of the technical system as well as non-human actors [13, 21, 71]. Elish [21] provides a cautionary example within the context of automated vehicles, describing “moral crumple zones” where drivers can often bear the brunt of automated system failures. For example, when an accident occurs in an automated vehicle with a human driver in the seat, Elish argues we should not necessarily look to the driver as the culpable party, but to the entire technological system that allows such accidents to occur. Our study shows how similar difficulties in assessing accountability can occur in TMMs, due to the complex coordination required between different parties. TMM companies have incentives to provide limited information to consumers to prioritize efficiency, but individual drivers may bear the costs of *any* system failures in the form of lower tips.

Our study demonstrates the need to develop ways to surface accountability to consumers, for example, by providing clear information about who is responsible (e.g. restaurant delays due to peak business hours, traffic conditions) for breakdowns in service. As TMMs continue to expand into other business sectors, consumers will likely have to make assessments of accountability and fairness with limited information. Consumer interests are also implicated when accountability is not clear in TMMs. For example, in industries ranging from e-commerce to vacation rentals, there are current legal conflicts where individuals do not know who to hold accountable for defective products or property damage [44, 56]. Some companies create indemnity for themselves in their terms of use, but these terms are often not transparent or easily accessible to consumers. As Rachel Weintraub, the legislative director and general counsel for the Consumer Federation of America states,

“...the average consumer has no idea that...an online marketplace might open them or their families up to risks” [56].

## 5.2 How the design of TMMs shape how consumers relate to workers

HCI researchers have drawn attention to how technical systems can reduce the visibility of human labor and reduce empathy and solidarity that can be established between end users and workers, typically focusing on the experience of workers [7, 29, 32]. In speaking to consumers and how they considered drivers in their tipping decisions, our analysis shows several ways in which TMMs can act to distance consumers from workers. As previously discussed, a pre-service tipping prompt reduced opportunities for social signaling and symbolic, reciprocal exchange between consumers and drivers, where, as P11 put it, the consumer is asked to tip before “*know[ing] anything about [their] driver.*” In addition, limited information about costs and efforts of drivers further reduced a sense of direct reciprocity towards drivers. Reliance on a third-party company to coordinate the entire delivery and tipping process made the service feel impersonal and detached for consumers. Importantly, the impersonal nature of these interactions was exacerbated by no-contact policies implemented during the COVID-19 pandemic.

We find that the anonymity and interchangeability of matching with drivers through a labor marketplace, as well as the low likelihood of repeated interactions, increased social distance between consumers and workers. P22, for example, described how he felt “*Uber and Grubhub... are always going to find another driver,*” in explaining why he had a tendency to view drivers as “*part of this machine which are these large institutions.*” Similarly, participants did not express a concern with retaliation from drivers on subsequent orders due to low tips, as they were unlikely to meet the same driver again.

As service workers become embedded in large-scale TMMs, consumers may feel a reduced sense of connection, and tend to see service workers as mechanical parts of broad economic processes or, as P22 put it, part of “*these large institutions.*” While several participants suggested that TMM companies might be taking a large share of payments by using tips to subsidize wages and by charging multiple fees to both consumer and restaurants, they also felt it difficult to judge, on a macro-level, whether this share was disproportionate or ‘unfair.’ Other participants, like P15, invoked a similarly broad economic argument that drivers could leave if they were not paid enough.

The necessity of considering the role of TMM companies in a broader economic context complicates the moral calculus consumers perform when determining how much to tip. This creates ambivalence about whether a tip is primarily an act of direct reciprocity between consumers and drivers, or a more detached and abstract act to support fair living wages in the labor market. The muddled purpose of a tip is not just a mere complication for individuals—the *normative changes* in the meaning of a tip have significant implications for labor economics and for the expectations that govern the relationship between workers and consumers [3, 19]. In their vignette and field experiments, Duhaime and Woessner [19] describe normative shifts in tipping, where consumers tip workers more when they perceive the workers to be employees, rather than

as general gig-workers doing a task at a set price. Thus, consumers in their study appear to view ‘gig-drivers’ as interchangeable workers, rather than as individuals who should be compensated through direct reciprocity based on quality of service. Changing social norms about how to tip different types of workers can have lasting consequences, as “marketization and gigification of tasks increasingly enables both managers and customers to view workers as another means of production, rather than fellow human beings” [19].

Greater social distance between consumers and workers can even open the way for consumers to deliberately engage in harmful actions against workers in TMMs. P25, for instance, deliberately avoided calls from drivers to avoid leaving her apartment, asking them to leave food at the door. Tip baiting, where consumers offer high tips to attract drivers but remove them after delivery, has been widely documented in food delivery services like DoorDash and Instacart [8, 52]. HCI research further shows how some consumers exploit loopholes at the cost of workers, for instance, by falsely tagging items as missing or damaged in order to claim false refunds [53].

The consequences of how TMMs are shaping consumer-worker relations are unclear, and we should be cautious about drawing overly broad implications. However, Frank [23] provides an insightful example of how globalization, by placing greater distance between consumers and workers, fundamentally altered the nature and success of consumer-worker alliances. Frank discusses how the shift of production across national borders reduced the ability of consumers and workers to build solidarity, in contrast to when workers and consumers were familiar to one another and interacted within the same geography. Through the specific example of tipping in third-party food delivery, a different form of distancing between consumers and workers may be unfolding due to the inability of consumers to view, assess and directly reciprocate the labor of workers through tips.

Finally, our analysis surfaces how TMMs can allow (or not allow) opportunities for direct interaction or possibility of repeated interaction, which also affect how consumers perceive and interact with workers. Taskrabbit, for example, notably reconfigured its business model in 2014 from facilitating repeated interactions between consumers and workers, towards one where the TMM performed more matching and consumers had less control over who they hired [54]. In this case, the TMM might codify matching between consumers and workers based on various market considerations, at the direct expense of the social dynamics that help to build worker and consumer relationships. Thus, understanding how TMMs influence consumer and worker relations is about more than just fair tips. The long-term success of modern labor rights movements in the gig economy may largely depend on the degree of connection and solidarity between consumers and workers—whose interactions can be codified and observed in technology-mediated marketplaces.

## 6 CONCLUSION

Our paper illustrates how consumers perceive fairness in tipping in third-party food delivery services and how aspects of TMMs affected their assessments of fairness. With the codification of tipping, consumers tended to view tipping as an obligatory act

rather than one based on reciprocal interaction between drivers and consumers. Second, we show how consumer perceptions of TMM companies actively factored into who they associated the tip would benefit. Finally, we find that the opacity of TMMs conceal complexities such as reason for delays or poor service quality, which added an additional obstacle for consumers to determine how to tip fairly.

Jackson et al. [33] describe the process of ‘stabilization’ or ‘closure’ through which emergent technological artifacts and practices take on their more settled and durable forms”. Our study provides a snapshot of this process, as consumers grapple with how to tip fairly in third-party food delivery. Consumers may accept the new normal, as most of our participants did in choosing to tip before service. We may see increasing latitude for TMM companies to shape economic and social behaviors and determine trade-offs and outcomes between workers, consumers, and other stakeholders.

As consumers and other economic actors grapple with evolving norms about fairness in technology-mediated marketplaces, TMM companies have a strong incentive to shape what economic and social practices become normalized. We urge HCI researchers and practitioners to take an active role in contesting what socio-economic norms and practices about fairness we are willing to change, which become ‘stabilized,’ and which are eliminated altogether. As with so many other socio-technical systems, from groupware to social media, we have an opportunity and an obligation to help shape technology-mediated marketplaces beyond the financial interests of TMM companies.

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