Thrown under the bus and outrunning it! The logic of Didi and taxi drivers’ labour and activism in the on-demand economy

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Abstract
This article examines how taxi drivers adapt to, manipulate and fight against the rise of ride-hailing platforms like Didi Chuxing in China (which purchased Uber China). Chinese taxi drivers entered the on-demand labour platforms before private car drivers. Based on a nationwide data survey, the article argues that the technological power of Didi took shape by reinforcing inequalities facing informally employed taxi drivers prior to the emergence of ride-hailing apps. Drivers, far from being passive app users, have counteracted the changes in the work environment that resulted from platformisation in new and evolving ways, from strikes to algorithmic activism. This study suggests that online platforms are contested spaces where digital labour politics penetrate beyond the purported algorithmic power of the technology. The article enriches researches on on-demand labour by deconstructing the distinction between taxi drivers and private gig drivers and by pointing to the unfolding new grounds for digital labour activism.

Keywords
Chinese taxi drivers, Didi Chuxing, digital labour, on-demand labour, ride-hailing apps, sharing/gig economy

Introduction
The global rise of ride-hailing apps, such as Uber and Lyft, has attracted growing scholarly interest in how on-demand labour is carried out, managed and controlled through algorithms implemented by platforms (Glöss et al., 2016; Malin and Chandler, 2016; Raval and Dourish, 2016; Rosenblat and Stark, 2016). Governments across the world have taken a variety of measures to respond to the regulatory challenges posed by the rapid spread of the online platform economy – an umbrella term to describe recent large-scale economic activities (e.g. peer-to-peer) precipitated by digital platforms that match service and labour providers with different users and consumers. For example, the Chinese government began to issue legal operational licences to ride-hailing platforms in November 2016. However, a regulatory vacuum was created for local authorities to determine drivers’ eligibility and whether the vehicles fulfilled safety and other standards (Zuo, 2016). Recently, the European Union published reports to identify regulatory and legislative gaps in regulating the sharing economy and the costs incurred therein (Goudin, 2016).

When it comes to labour provision via ride-hailing apps, incumbent taxi drivers and private car drivers are often treated as two separate, if not mutually exclusive, groups of drivers. This plausible dichotomy derives from the presumption that ride-hailing apps have disrupted taxi companies’ tight control over access to the ride service market by cracking the market open for private car owners. Platforms like Uber and Lyft claim to grant flexibility to private car owners and allow them to work on their own schedule. The prosocial design (Harvey et al., 2014) of the platform that encourages communication and social interaction with drivers also complicates the character of taxi services (Glöss et al., 2016; Raval and Dourish, 2016). Ride-
Hailing apps seem to render street hails an inefficient means of getting taxi service. In addition, news stories about anti-Uber demonstrations by taxi drivers across the globe have intensified the presumed separation of taxi drivers from ride-hailing platforms (The Telegraph, 2015).

Traditional taxi drivers in China, however, are not outsiders to ride-hailing platforms but rather an integral part of the labour force. Didi (aka Didi Chuxing) appeared in 2012 with the name Didi Dache, where dache means ‘to call a taxi’ in Chinese. In the following 2 years before it offered private car service, Didi primarily targeted taxi drivers and recruited them to be among the first batch of drivers on the app. The number of registered taxi drivers on Didi rose from 150,000 in April 2013 to 350,000 in January 2014 (Horwitz, 2014; Millward, 2014). In 2014, about 40% (or 1 million) of the taxi drivers in China used Didi to attract clients (Gao and Duan, 2015). By the summer of 2014, when Uber was launched in China and Didi and its competitors made a turn towards private car owners, Chinese ride-hailing app users were mostly familiar with hailing a taxi on their phone. Taxi drivers had already provided the infrastructural labour necessary to help build the ride-hailing platform and transform taxi hailing into an app-based behaviour, thereby transforming taxi driving into a platform-controlled digital labour practice (Chen, 2018). A study from the China Internet Network Information Center (2015) showed that by June 2015 Chinese users predominantly used ride-hailing apps for taxi service (85%), doing so far more frequently than for private car service (19%) or ridesharing (17%).

As of May 2017, the number of Didi taxi drivers has reached 1.5 million (Didi, 2017; Ministry of Transport of the P.R.C., 2016). With over 400 million users, Didi now operates in more than 400 cities and has 5 million registered private drivers (Didi, 2017). Didi distinguishes itself from Uber in that it offers a variety of ride options, including a ride via taxi, economy, luxury car, carpooling, designated drivers (who transport the vehicle to a destination on behalf of its owner), Didi’s partner drivers (from a Didi-supported driver programme) and use of a bus (Figure 1).

![Figure 1. User interface on Didi.](image)

In contrast to private hires (e.g. express car services) on Didi, taxi drivers using these apps do not have to pay a certain percentage to the platform as a commission. However, their growing participation in the ride-hailing economy has occurred in tandem with a spike in protests and strikes. According to the China Labour Bulletin (2016), Chinese taxi drivers took to the street about 4.3 times per month before the emergence of
ride-hailing apps in China in August 2013. From August 2013 until the period of time just before the performance of this study, as ride-hailing apps started to become more popular, the number of collective actions climbed to 15.9 times per month – in other words, a protest or strike by taxi drivers took place somewhere in China slightly more often than once every 2 days.

To summarise, Chinese taxi drivers reside at the intersection of a growing on-demand platform economy and the established employment structure of the taxi industry. This raises new questions about how to understand on-demand labour in this context. Given that taxi drivers become on-demand labourers now, how have ride-hailing apps affected their working conditions and income, especially after private car owners entered the labour market? Is the Didi platform the single culprit for the spike in taxi drivers’ collective actions? What is the underlying capitalism logic behind Didi in terms of its appropriation of drivers’ labour? Is there anything new about labour activism by taxi drivers in the age of the on-demand economy?

Despite the monumental rise of the sharing/gig economy, none of the studies on digital labour practices have focused on the mediated and platformised work experiences of taxi drivers. This article aims to fill this gap and addresses the above questions through a survey-based study. Combined with an exploration of Didi’s labour model – which (as compared to Uber’s model) forges further hierarchy among drivers with the help of algorithms, the interpretations of the survey data focus on taxi drivers’ (1) adaptation and response to Didi’s labour model, particularly after Didi widened access to private cars, (2) working conditions and (3) techniques of defiance and resistance happening within the platform and beyond. Drivers’ counteractions not only indicate their rejection of the rules defined by the platform but also reflect a more complex landscape of power struggles than the one structured by algorithms and apps. The article concludes with a discussion of what the overlap of taxi drivers and private car drivers may suggest for future digital labour activism.

Methods, background and results

Data for this study were collected from an online survey distributed through two WeChat official accounts dedicated to taxi drivers in June 2016. With more than 800 million active monthly users as of June 2016 (China Internet Watch, 2016), WeChat is the most popular social media platform in China. The two WeChat official accounts selected to distribute the survey had about 200,000 taxi driver subscribers in total.

The author chose a survey distributed via social media as the research method for two reasons. First, the aforementioned research objective and the scale of nationwide protests by taxi drivers merited a comprehensive view of the impact of Didi on taxi drivers and of the latter’s adaptation and reactions to the transition into the on-demand labour market. This objective made a survey the most suitable research method. Moreover, as compared to traditional media outlets, social media in China has proved to be more tolerant to discussions about otherwise sensitive topics like strikes and protests (Qin et al., 2017). Other methods (such as in-person interviews that allow researchers to ask follow-up questions) may impede respondents’ willingness to discuss participation in strikes and sabotage activities.

This is the first nationwide survey conducted on Chinese taxi drivers. The survey contained 26 items, including multiple choice, yes/no/not applicable statements, 5-point Likert scale ratings and open-ended questions. The variables included demographic and geographical information, employment status, income and working conditions, use of information and communication technologies, experience with ride-hailing apps, factors that affect income and reasons that lead to protests and/or strikes. A shareable link was provided for respondents to distribute the survey to their fellow taxi drivers. The survey was also devised to prevent duplicate submissions.

There were 8663 valid responses, covering all provinces, autonomous regions and four municipalities under the jurisdiction of the central government in mainland China. Qualitative data for this study came from comments left by the respondents, including 1886 comments on factors influencing income that were not listed in the survey and another 1498 comments on causes for labour struggles and collective actions that were not listed in the survey. The survey responses were coded and analysed to understand the drivers’ experiences and concerns with ride-hailing apps and their poly to fight for a better livelihood.
Results

A majority (77%) of taxi drivers were 31–50 years old, and about 16% were below 30. About 4% (N = 342) of the respondents were female, which highlights the disproportionate gender distribution in the industry. Half of taxi drivers reported working from 10 to 12 hours a day, and one in 10 drivers worked more than 14 hours per day. A great majority (93%) of taxi drivers earned less than CNY¥5000 (approximately US$730) per month, lower than both the average level of the Transport, Storage and Post Statistics sector (CNY¥6080/month) and the average income level of the employed in urban units (CNY¥5489/month) (National Bureau of Statistics of China, 2016). The findings on low income correspond to other studies on regional taxi drivers (Zeng et al., 2005). Low income is partially caused by a high rate of monthly commission fees for taxi licensing. For 4 of 10 taxi drivers, half of their earnings went to the pocket of the taxi company in the form of monthly licence commission fees (Figure 2).

Nearly two-thirds of the respondents reported working as contractor drivers for taxi companies that are subsidiaries of (or affiliated with) collective firms (N = 3929) or as self-employed drivers (N = 1614), while the remaining 27% (N = 2311) worked as employees of publicly owned taxi enterprises.

Taxi driving and the emergence of ride-hailing apps in China

The differences between the aforementioned three employment states and the causes of these variations are worth further elaboration. These differences not only reflect variations in ownership of the vehicle and taxi operation licence but are also indicative of job security and access to employment-related benefits, and by extension increased or decreased vulnerability to lower wages and hyper-exploitation. Publicly owned taxi companies own vehicles and have legal operation licences, and drivers are formal employees who generally enjoy all state-mandated benefits and protections (e.g. unemployment insurance and medical insurance). Self-employed drivers own their cars and taxi licences and drive taxis independently (Gao and Duan, 2015).

Private taxi companies that are subsidiaries of or affiliated with collective firms or qualified government agencies are unique in China, in that their status is not comparable to private taxi companies operating in other countries. They are the outcome of China’s socialist economic system, in general, and the multi-headed management and balkanised regulations in the taxi industry, in particular (Jiang, 2009). China’s taxi industry is under strict governmental restrictions on market entry, fare standards and quotas for operating vehicles (You et al., 2009), similar to many other countries (Dempsey, 1996; Maguire and Murphy, 2014). The Ministry of Construction at the national level oversees the regulation of taxis nationwide, but local authorities, including local Construction Bureaus, Transportation Departments and Public Security Bureaus, are responsible for making by-laws or outlining more detailed regulations for vehicles and drivers. Consequently, local private taxi companies often encounter overlapping power yet blurred divisions of responsibilities and accountabilities among different governmental departments and bureaus. Taxi operation rules may vary from city to city. For example, Jiang (2009) found that among the 18 major cities in Henan province, transportation departments were in charge of the taxi business in 11 cities, whereas regulatory power belonged to the construction departments of the remaining 7 cities.
Under this circumstance, bureaucracy and the burden of administrative cost have given rise to a third type of taxi company that affiliates with collective firms or qualified government agencies. These companies have operation licences but are far from transparent when it comes to management and wage level. Therefore, migrant workers (who have travelled from the rural to urban areas for jobs) are the largest source of contractor drivers for these companies. Similar to immigrant drivers in New York City (Hodges, 2012), migrant workers in China also found taxi driving a desirable occupation to blend into an urban society and to earn a decent wage. It is common for them to persuade their relatives and fellow villagers to join the same trade in the city, a practice analogous to chain migration (Ding, 2014).

The multi-headed, multi-tiered management of the taxi industry (and local discrepancies in how the industry is managed), along with rapid urbanisation of the population, has also given rise to a huge grey market in China. Drivers in this grey market may range from drivers for community-based for-hire vehicles (Yang et al., 2010) to ‘blue’ car owners who only take acquaintance- or friend-based rides (Wong, 2017) to operators of counterfeit taxis or unlicensed private cars (gypsy cabs; Chen and You, 2012). Some have estimated that the number of gypsy taxis in Beijing was about 40% greater than that of legal taxis (Chen and You, 2012). Mainly because the supply of taxis has failed to meet growing wave of demand with increased urbanisation of population, gypsy cabs in China consistently survive government-led crackdowns.

The large pool of informal workers and unlicensed ride-service providers sets the stage for the rise of ride-hailing apps in China. These factors are significant when determining the nature of Didi’s platform and its labour model and understanding taxi drivers’ adaptation and responses to the logic of Didi.

**Platform-facilitated taxi rides and the logic of Didi**

As mentioned earlier, Didi and its competitors pursued taxi drivers in an attempt to ‘sign them on’, particularly in the first 2 years of their business. Companies deploy ground promotion teams to distribute free smartphones to taxi drivers (Feng, 2015), demonstrate how to use ride-hailing apps in person (e.g. helping them link to their new Didi account via virtual wallet) and provide on-site technical support for taxi drivers if needed (Chen, 2018).

![Figure 3. Installation of taxi-hailing apps among taxi drivers.](image)

Two-thirds of surveyed taxi drivers (\(N = 4989\)) had installed Didi or other taxi-hailing apps (e.g. Kuaidi, Didi’s major competitor), and two out of five drivers (\(N = 913\)) were registered on multiple platforms (Figure 3).

Didi (n.d.) claims, ‘it helps taxi drivers improve their income by increasing the number of their rides and reducing their idle time’. However, 4 out of 10 surveyed taxi drivers reported a significant drop in their income after beginning to work as on-demand taxi drivers via ride-hailing apps, and more than half of them (56.8%) reported an intensification of work stress (Figure 4). Although one in two drivers saw no changes in working hours, the other half reported a significant increase in working hours. Nonetheless, one factor has been important for this decline in income. The survey was conducted after the subsidy to taxi drivers came to an end and after Didi had already established its express car and limousine booking service. Taxi drivers’ perception of reduced income may result from the competition with private cars, or an irrational comparison with the money they earned in the heyday of taxi-hailing subsidies, or the combination of both.
Ride-hailing apps impose additional requirements on drivers’ responsiveness and communicative ability in carrying out ride services (Raval and Dourish, 2016). The need to coordinate pickups (often by phone as the driver approaches the said destination) and to carry on conversations within the vehicle also increases the demand for communicative labour. All these contribute to an intensification of work stress for drivers. The taxi drivers pointed to the inclusion of private cars on ride-hailing apps as the factor that most influenced their income, followed by unlicensed ‘black’ or illegal taxis, monthly commission fees to taxi companies and traffic jams (Figure 5). With respect to the factors perceived as most influential on income, no significant difference was found between taxi drivers registered on ride-hailing apps and non-registered taxi drivers ($p > .05$).

Interestingly, despite the fact that a majority of taxi drivers admitted to using ride-hailing apps, they did not identify as ‘platform-enabled’ on-demand drivers. As the forerunners of ride-hailing apps and the early beneficiaries (Tsinghua Media Survey Lab, 2015), taxi drivers displayed a neutral or even positive attitude towards the platform technology, yet often held a grudge against the way Didi has taken advantage of them. Further analysis of the qualitative data from drivers’ responses demonstrates that taxi drivers’ attitude towards ride-hailing apps and the experience of intensified work stress cannot solely be attributed to the platform technology or the algorithmic control of their work process. They are also related to how their labour was valorised by Didi’s constructed labour hierarchy and the broader social structure that had shaped their precarious and informal work status in the first place.

![Figure 4](image1.png)

**Figure 4.** How do taxi drivers feel about their job after using taxi-hailing apps?

![Figure 5](image2.png)

**Figure 5.** Factors that affect driver’s income.
Algorithmic valorisations of on-demand labour

Recent research on Uber drivers has revealed otherwise obscure algorithmic power in the work process. Rosenblat and Stark (2016), in particular, have demonstrated how Uber exercised its control and management of labour process through algorithms like surge pricing and Uber’s mandate for drivers to maintain 4.6 stars or above on its customer rating system. Others have also raised questions about ethics involved in algorithmic distribution of work, as well as the fairness and transparency of ride fares determined by a black-box-like surge pricing algorithm (Chen et al., 2015; Hwang et al., 2015; Rosenblat and Stark, 2016).

Indeed, algorithms are constitutive of the work environment for drivers on the ride-hailing platforms the same way as conveyors for workers at the assembly line. Studies on ridesharing drivers’ work experience contradict Uber’s portraying of the driving as a ‘pleasurable’ experience (Raval and Dourish, 2016: 104) which is characterised by ‘freedom’, ‘flexibility’ and ‘entrepreneurship’ (Rosenblat and Stark, 2016: 3777), for one. The covert algorithms conceal the labour exploitation (Rosenblat and Stark, 2016).

More importantly, the coupling of the discursive framing and algorithms points to the mounting power that digital platforms (and the corporate forms behind their implementation) have in determining the value of certain types of labour and skills in ride services. In other words, algorithms begin to play a role in labour valorisation or at least become the means by which differential valorisation of labour is achieved on the ride-hailing platforms. The significance of navigation knowledge that once took years of experience for taxi drivers to acquire seems to be shrinking for Uber drivers (McGregor et al., 2015). However, the requirement for emotional labour (Hochschild, 2003) is intensified. Ridesharing drivers are coerced to display proper and rightful emotions depending on the given circumstance (Raval and Dourish, 2016) and for minority drivers, in particular, to perform ‘identity work ... to track white, middle-class norms’ (Rogers, 2015: 97–98).

Surge pricing, commonly seen on Uber, Didi and other regional leading ride-hailing apps like Grab in Southeast Asia, is an example of the algorithmic valorisation of labour, which operates based on the ratio of the demand to supply in real time. Didi’s model also involves algorithmic valorisation of drivers’ labour on a collective scale. Taxi drivers (regardless of their different employment status) are lumped into one category on Didi, separated from the other ride services that are valorised differently and made available for private car owners (including formerly illegitimate taxi drivers on the grey market; Figure 6).

Thrown under the bus by Didi’s tech-washing

Taxi drivers expressed discontent because ride-hailing apps whitewashed illegal taxis – a process that might as well be called ‘tech-wash’. The blame that taxi drivers place on private hires for their reduction in income also corresponds to their long-standing hostility towards illegal operations on the grey and black market. The grey market is in place to meet diverse transportation needs from affordable commutes to upscale business limousines (Wong, 2017; Yang et al., 2010). From taxi drivers’ point of view, when ride-hailing apps began to allow private car owners to be registered drivers on the apps, an express pass was granted to all vehicles operating underground. This may not be true for all private car drivers on Didi, but the feelings of betrayal distort taxi drivers’ emotional reaction. As one driver put it, ‘Is there any essential difference between private cars hailed on the platform and illegal taxis?’ Some taxi drivers placed private cars on ride-hailing apps into the same category as electric pedicabs and motorbikes taxis, which have been banned more and more by municipal governments
in China. Notably, many government officials have expressed their high-profile opposition to Didi’s recruitment of private cars to operate as express cars via the app, including the Minister of Transport (*Beijing Times*, 2015; *Chinese Newsweek*, 2015).

Drivers’ descriptions of a declining income level (shown in Figure 4) also often reiterate different factors listed throughout the survey, implicating a common struggle to make ends meet that goes beyond the technological level. Nearly a quarter of the comments (N = 426) mentioned life struggles in terms like ‘exhaustion’, ‘overwork’, ‘health problems’ and ‘no off-days’. Drivers were particularly frustrated when they needed relief in the case of sickness or had to take care of their family members:

No off-days. When I had to take care of family issues or take days off, I had to pay monthly commission fees. (Driver A)

A majority of full-time private drivers on the apps used to work on the grey market. Suddenly, they were whitewashed. The media are all for [ride] sharing.... You tell me how angry I should be. I have to tolerate the harsh management of my company. I have to pay expensive monthly fees....[In contrast], at least they don’t have to pay commission [to the apps] on off-days. (Driver B)

Drivers’ feelings of being thrown under the bus by Didi’s whitewashing of illegal taxis and their indignation with mandatory monthly fees cannot be fully understood if separated from their informal employment status. Comments also frequently referred to the lack of social security, benefits, pension, public holidays, paid leave and back-up shift drivers, as well as predatory monthly commission and mandatory miscellaneous fees. More importantly, taxi companies often offload the responsibility of vehicle insurance onto taxi drivers, which, along with insufficient employment benefits and low wages, forced most drivers out of comprehensive car insurance coverage. Thus, drivers were anxious about accidents and traffic fines. In addition to worries about potential expenses caused by an accident, their anxiety was often expressed as a combination of concerns over anticipated loss of time (work) resulting from the aftermath of an accident or bureaucracy at the local transportation and police offices:

Driving a taxi is dangerous. If an accident occurred, [I would be] facing an enormous loss! I may not be able to recover from the debt, even if I drove a taxi for the rest of my life! (Driver C)

It’s difficult [to find breaks] for meals or to go to bathroom. I have to pay fines out of my own pocket for parking fees or even for changing shifts. (Driver D)

At present, a minor accident is unbearable. I have purchased car insurance but do not dare take advantage of it. For accidents that cost less than CNY¥2000, I am inclined to solve the dispute amongst ourselves [without filing claims]. I
drive extremely carefully, or I might be caught in accidents. [Even if] the other party were at fault, I could not afford to waste any time [in dealing with it]. Taxi drivers begin their shift every day as if sprinting at the firing of a starting gun. No time for meals or bathroom breaks. When will this kind of life end? (Driver E)

With the rise of the on-demand economy, ‘uberworked’ (Scholz, 2016) and ‘uberised’ (Faustman, 2014; Gray, 2016) are metaphors invoked to describe the predicament and prospects of permanent temporary workers and the declining wages that have befallen a growing number of service workers across the world because of corporate platforms. Uberisation for some signals the arrival of platform capitalism that is dictated by the rule of extracting maximum value while shouldering ‘zero-liability’ (Van Doorn, 2017: 4) and responsibility for the welfare of the workers (Scholz, 2016).

It has been the norm for a majority of Chinese taxi drivers to work under contingency before Didi dominates their work life. Contingency also relates to their work pace. Taxi drivers have been mandated to carry out affective labour to handle ‘random’ (Davis, 1959) and sometimes emergency situations on the road that are often out of their control (Raval and Dourish, 2016). They describe facing stress and anxiety over wasting time for work because of non-work-related incidents (e.g. dealing with accidents and caregiver duties). ‘Making time’ is part of the job (Sharma, 2014: 64). This is emblematic of taxi drivers’ lack of power to negotiate fair pay for their time – that is, their ‘temporal worth’, as suggested by Sharma (2014: 8). Sharma also contended that distinct experiences of time and its meaning by different subjects are ‘in large part structured and controlled by both the institutional arrangements they inhabit and the time of others – other temporali[es]’ (Sharma, 2014: 8). Disruptions in working time and the need to spend extra time or money to deal with accidents or fines, as well as the investment of extra hours to balance out the time spent on family care giving, are evidence of the temporal politics associated with taxi drivers’ largely informal and precarious work status. For Chinese taxi drivers, algorithmic valorisation of their labour is implicated in their systematic lack of control over their ‘temporal worth’.

This section showed Didi’s model distinguish itself in its exploitation of China’s existing labour context (including taxi drivers’ precarious conditions) and the role played by algorithms to fortify this logic. Although most taxi drivers in China are well aware of their contingent work conditions, it does not mean they accept their precariousness or for that matter Didi’s logic without resistance and counteractions. Indeed, in addition to protest and strikes, drivers practised tactics against the logic of Didi that sometimes goes into the platform and other times involves using other technologies.

New tools to dismantle the new system: from demonstration to algorithmic activism

Although news coverage has it that Chinese taxi drivers joined their global counterparts in protesting against ride-hailing apps (China Labour Bulletin, 2016), our analysis showed that the causes of strike were more correlated with taxi drivers’ enduring vulnerable position and employment status rather than with technology. Not all protests are directly against Didi platform. Taxi drivers also strike for more government regulations of unlicensed taxi service and taxi-only ride-hailing apps. In addition to a refusal to work, the techniques taxi drivers deployed for resistance and counteractions include using a variety of technologies at the level spanning from algorithms to a larger media landscape. All these point to an emerging ground for labour activism in the digital economy that is increasingly under the sway of ‘black box’ algorithms and corporate platforms.

Fifty-five percent of the taxi drivers (N = 4803) reported that they had previously participated in strikes, and 2% of the respondents used to be strike organisers. The most common causes for collective actions corresponded to factors that drivers identified as most influential on their income, namely, (1) private hires on the ride-hailing apps, (2) unlicensed ‘black’ or illegal taxis and (3) monthly commission fees charged by taxi companies. The feeling of being used or mistreated by ride-hailing platforms made registered app drivers more likely than non-app drivers to blame ride-hailing apps. The former also participated in strikes more frequently than non-app drivers.

Significant factors that correlated with drivers’ participation in collective actions included their employment type, work experience and duration of working hours. While drivers working for publicly owned taxi companies were least likely to go on strike (49%), contractor drivers had the highest participation rate (60%). Drivers with more than 3 years of experience were more likely to participate and organise strikes than those with less than 3 years of work experience.

An analysis of the drivers’ comments confirmed that the causes for collective actions were more structural than technological. Keywords like ‘company’s management’ and ‘governmental inaction’ appeared most
frequently. One-third of the comments \( (N = 379) \) pointed to the opaqueness of policy and inactions on behalf of regulatory offices. In addition to monthly commissions, more than 20% of taxi drivers expressed their suffering from the ‘overlord clauses’ imposed by companies (e.g. installation fees for security devices) and the unwritten rule for new drivers to bribe veteran taxi driver leaders in order to be hired by the company – this grey money is referred to in the industry as ‘tea and drinks fees’:

Government regulation is very important. The government is partially responsible for the problem of platform-facilitated private hires and illegal taxis. Strikes were caused by governmental inaction. [We are] taxi drivers, not terrorists! If the government took the initiative to safeguard drivers’ interests, who would prefer to lose work time? Who would be willing to be arrested? All taxi drivers have elderly and/or minor family members. If it were not for being cornered, who would resort to such extreme actions as a strike! It’s the fight for survival! (Driver F)

Taxis are mobile and connected working spaces for drivers, which themselves have become a medium that, as Sharma (2008) argues, ‘both alters and is implicated in the “pace, pattern, and scale of social life” while it operates as a raced and classed form of affective labour under contemporary capital’ (p. 458). Smartphones on which ride-hailing apps run play a crucial role in enabling Chinese migrant worker–turned taxi drivers to negotiate and redefine the ‘pace and pattern’ within and beyond the vehicle space. For example, drivers may chat in dialect with their fellow villager co-workers over the phone while driving. The conversation in dialect and connection in airwaves that may be incomprehensive for passengers construct what Ding (2014) called a ‘mobile homeland’. The overlay of a mobile homeland onto a pre-defined workspace helps redefine the meaning of the vehicle and the social dynamic within.

More than 90% of drivers \( (N = 7913) \) reported using smartphones during their work, much higher than the national average of 58% (Poushter, 2016). Getting ride requests (48%) is among the top three activities, after engaging in social activities (80%) like making phone calls or instant messaging and for navigating (56%).

Technological literacy has led some drivers to acknowledge the positive impact of ride-hailing technology instead of opposing it across the board. They pinpointed on the power relations behind Didi’s ability to take advantage of them. Rather than drawing a simplistic equation between ride-hailing apps and their poor work condition and declining wages, taxi drivers insisted upon the government regulation as the means of improving their work conditions. A common appeal is to urge the government to play a more proactive role in regulating the ride-service market:

[We need] ride-hailing apps designed for taxi drivers. Illegal taxis and private cars facilitated by ride-sharing platforms must be clamped down on! (Driver G)

Laws ought to prohibit private car service at their will. [There is] no guarantee for personal safety. Private hires must abide by law and go through a series of certified trainings and performance evaluations to preclude those with bad habits. Otherwise, passengers’ safety is at risk. (Driver H)

Social networks on mobile phones became the most important channel for transmitting information about strikes and collective activism. Three out of the top four information sources were on social media platforms (Figure 7). The remaining sources – through fellow villagers and friends – demonstrated the overlap of occupational circles with social networks. Information pertaining to collective actions and pictures on social media are often created and spread by drivers themselves. Such ‘worker-generated content’ (Qiu, 2016) has empowered taxi drivers to create their own narratives surrounding work life and struggles, which are often missing from the mainstream media.

Taxi drivers are not alone in their use pattern of mobile technologies and social media for political empowerment. Qiu (2016) pointed out that the Chinese working class has created ‘an enlarged media ecology of resistance’ for ‘collective empowerment’ by using social media such as QQ and WeChat (p. 631). Sun (2014), in his study on migrant workers’ photography practices, similarly argued that the use of digital technology and the formation of political consciousness are ‘mutually constitutive’ and reinforce one another (p. 155).

This ‘mutually constitutive’ (Sun, 2014: 155) relationship between technological literacy and political action drove taxi drivers to delve deeper into the system and start manipulating the algorithms of ride-hailing apps. Among ride-hailing app-user drivers, about 40% in total have reported either installing bot apps \( (N = 1719) \) or registering
their vehicles on multiple devices ($N = 505$; Figure 8). Bot apps are applications that help drivers automatically circumvent Didi’s rules and algorithms. Different bot apps are developed for different purposes that range from rejecting ride requests at the driver’s will without facing punishment from Didi to catching the ride request with the highest fare (Figure 9). Both Bot apps and multiple devices allow drivers to compare ride-service requests in real time and choose the best deal from simultaneous orders.

Their ability to be ‘multi-homing’ (Waldman, 2015) – to work on multiple platforms simultaneously – was made possible by their informal status. The lack of institutional support and formal social welfare policies associated with their informal status have forced taxi drivers to rely on their extended families and other social resources to get jobs or to establish their own social safety net (Ding, 2014; Qiu, 2009). However, informality may also imply a low reciprocal degree of commitment to employers, which sometimes can be converted to a means of gaining advantage. For example, when Didi provided generous subsidies to private hires in 2015, some taxi drivers in Shenzhen quit their jobs and founded their own vehicle fleet company to provide express car and private car service (Didi Express Cars, n.d.).

Taxi drivers’ virtual migration to upstream ride-service jobs is an open rejection of the algorithmic valorisation of their labour set by Didi. With their practice of multi-homing and using bot apps, algorithmic activism is taking shape in their deliberate efforts to manipulate and to gain an advantage over the digital platform.

These defiant techniques of gaming the system also complicate the temporal politics within the vehicle, as taxi drivers are able to expose themselves to multiple ride requests at the same time – that is, parallel temporality and pace. These measures create an alternative temporal unit worth for each ride request. Admittedly, manipulating the system does not necessarily lead to more income for taxi drivers, and managing multiple devices and accounts may be partially responsible for drivers’ rising stress. Yet, taxi drivers’ aim to avoid being at the mercy of an unknown algorithmic power and platform monopoly resonates with broad digital activism across sectors like...
resistance seen in call centre workers (Bain and Tnaylor, 2000) and crowd workers (Irani, 2015). The relationships of control, exploitation and counteractions in these mediated work environment are far from being one way and from the top down. The ‘enlarged media ecology of resistance’ (Qiu, 2016) extends to the algorithmic level, and scholars and activists alike may find common ground among workers across industrial sectors and across national borders.

Conclusion
This is the first nationwide survey of work conditions in the on-demand ride-service economy in a developing country. Although exploitation by taxi companies has been well documented, how the momentum behind established socio-economic power relations has been carried into the app-based ride-hailing business is less well exposed. Chinese taxi drivers’ labour and activism challenge the broad claim that digital platforms alone have disrupted the taxi industry or that algorithms dictate drivers’ work. A nuanced approach is in order that takes socio-technological power into account and goes beyond the design per se.
The article also demonstrates that the locality in which platforms arise and become predominant in the market remains significant for understanding the power dynamics among platform technologies, on-demand labourers and existing social and economic structures. Didi’s ascendency to monopoly status in the ride-hailing market in China represents a notable trend for platform capitalism – namely, that it thrives on turning informal labourers into platform labourers in developing countries.

Didi shares the Uber model in extracting values from drivers’ labour and outsourcing infrastructure to private car owners (Malin and Chandler, 2016), but Didi’s accumulation logic differs from Uber in that it has implicated itself in the informal market in China, appropriating taxi drivers’ labour and increasing their vulnerability while transforming the quotidian activity of getting a ride. Taxi drivers’ labour is normalised in this construction of Didi as the main ride-hailing platform and the symbol of the Chinese sharing economy (China Internet Network Information Center and Internet Society of China, 2017). As Doorn points out, ‘in the world of platform labour, inequality is a feature rather than a bug’ (Van Doorn, 2017: 10). The platformisation of ride service that renders getting a ride via smartphone as a habitual action in China entraps taxi drivers by normalising the act of working for and through a ride-hailing platform. This explains why the number of registered taxi drivers on Didi kept growing, even after Didi threw them under the bus by recruiting private car owners and diversifying its transportation services. When ride hailing by phone becomes an everyday practice, taxi drivers were deprived of alternatives, except for continuing to cling to the ‘bus’.

As taxi service and private car services are in juxtaposition on the same ride-hailing platform, fundamental questions may be raised about the employment hierarchy manufactured by capitalism. Rampant ‘techniques of contingency’ have eroded the ‘distinctions between the employed, the waged, the wageless, the underemployed and the unemployed’ in post-Fordism developed societies (Adkins, 2016: 1–2). Some might question whether China is a post-industrial society, given hundreds of millions of Chinese workers belong to the manufacturing sector. That a majority of taxi drivers and their hidden competitors on the grey market began in a state of informality and precariousness, and remains in this state after the inception of ride-hailing apps, suggests that contingent work conditions and a shift towards increasingly contingency are not entirely specific to post-industrial societies. They are not only the norm in countries like China but also the norm that compels one to confront the assumed separation of taxi drivers from hailed gig drivers in the on-demand economy. Indeed, separation between all precarious workers and platform worker may be dubious and counterproductive for critiquing how capitalism operates differentially for vulnerable work force in the developing countries. The deconstruction of platform labour shall not be restricted to the case of Didi and the on-demand economy in China. Approaching platforms as a differential machine that works in tandem with
other domination forces may allow scholars and labour activists to find more commonality among workers for mobilisation in the platform-governed digital economy.

Last but not least, it is important to remember that ride-hailing apps are latecomers to the mediated environment of taxis, or rather to the taxi medi(Sharma, 2008). As Sharma (2008) wrote, ‘The taxi is a mobile space of human labour, an intimate zone of human encounter, and increasingly a site of multi-media convergence that motors between the circuits of capitalist production’ (Sharma, 2008: 457). Although Chinese taxis are seldom dispatched from a command centre, as the taxis studied by Sharma, they do mediate and provide an interface for labour politics and struggles within and beyond this space. Thus, techniques deployed by taxi drivers to outmanoeuvre apps highlight their use of a range of opposition technologies, yet also reveal the ability of taxi drivers to work around and manipulate their marginality and informality. Their redefinition and reconstruction of differences and commonality have broader implications for digital labour activism across the line imposed by platform algorithms to divide taxi drivers and private car service providers. This paves the way for future in-depth analysis on digital labour struggles across platforms.

Acknowledgements
I am grateful for comments and suggestions from three anonymous reviewers and Jack Linchuan Qiu, which helped me improve the article significantly. I am indebted to Mary Gray, Lana Swartz, Katrin Tildenberg, Nora Draper and Airi Lampinen for their inspirations and suggestions on how to situate the study in the field of digital labour studies during the AoIR 2016 Pre-Conference: Workshop on Labor. Thanks to Nancy Baym for organising the workshop. I also thank Yingying Feng, Dipan Tian and Xinyue Zhang for their assistance in collecting survey data and analysing part of the statistical data.

Funding
This article benefits from the Seed Money for Project on Digital Labor supported by the Faculty of Social Science at the Chinese University of Hong Kong, Hong Kong SAR.

Notes
1. To avoid confusion, I use Didi as the representative ride-hailing platform throughout the article unless otherwise stated. Didi and Kuaidi, the top two apps, both relied on taxi drivers to establish a user base before expanding the business to private hires. There were about a dozen taxi-hailing apps before Didi and Kuaidi became a duopoly on the ride-service market.
2. WeChat Official Accounts are information dissemination channels provided by WeChat to individuals, government, media or corporates. China legalised taxi-hailing apps in August 2016, which took effect in November.
3. The unlicensed or counterfeit taxis in China are referred to as ‘black cars’, which are different from leased business limousines in the United States or London Black Cabs.

References


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