# Structure

Main target is DiDi, is an RHS

Describe RHS

Utilise algorithm/bigdata to schedule trips and match drivers

Although efficient, stealthily exploiting users: both drivers and traveller using algorithm

Algorithmic exploiting:

Price discrimination

Big data-habit

Shashu

Maximising their own utility, by sacrificing users’ benefit

not providing optimal choice for customers

Collecting info without consent

Code of ethics

The primacy of the public interest

The enhancement of quality of life

Honesty

Competence

Professional Development

Professionalism

Most problems are about primacy of the public interest

The trip time issue is about honesty or competence

Info collection violates quality of life

<https://www.researchgate.net/publication/342826273_Say_No_to_Price_Discrimination_Decentralized_and_Automated_Incentives_for_Price_Auditing_in_Ride-hailing_Services>

**Use LuYoushui**

**Definition of RHS and price discrimination**

RIde-hailing service (RHS), such as Didi Chuxing, Uber,and Lyft, serve millions of users per day to set up rides by their smartphones. RHS allows a user to easily hail a ride and track the driver’s location in real-time [3]. Their advantage over traditional taxi services is due to the

convenience of hailing services [1], e.g. ride requests at the touch of a button, price estimation, and recommendation of frequent destinations, etc. **These services are available because the RHS providers can collect a vast amount of user personal data (such as location traces, identity information).**

Unfortunately, malicious RHS providers may also take advantage of the collected data to acquire illegal benefits [2] via **price discrimination (” personalized pricing”),** in which most customers regard as unfair or manipulative [25]. There is evidence that RHS users are **discriminated based on the racial and/or gender information specified in their profiles** [27]. Despite racial and gender discrimination, some RHS providers such as Didi Chuxing [22] and Uber [2] have been exposed to” big **data killing**” behavior-a typical strategy of price discrimination which is also the primary motivation for our paper.

Although personalized pricing is a marketing strategy, many people regard personalized pricing as unfair or manipulative. In a US survey, Turow et al. [13] “found that [American adults] overwhelmingly object to most forms of behavioural targeting and all forms of price discrimination as ethically wrong.” In another US survey, 78% of the respondents did not want “discounts (. . . ) tailored for you based on following (. . . ) what you did on other websites you have visited” [14]. In addition, personalized pricing may also lead to the users worrying about being personalized, such suspiciousness therefore increases their search costs with a need to search around to make sure they get the best deal [12]. From a macro-economic perspective, it would be bad for the economy if personalized pricing causes users to lose trust in online sellers in general [25], [29]. Moreover, with data protection laws providing general principles of data transparency, however, online users must be able to understand when and which personal data is collected, used, consulted or otherwise processed, as well as the purpose of such processes. Data protection law will be triggered when “personal data” are processed. Under RHS context, when a SP provides service to its user, almost anything that can be done with personal data, such as storing and analysing its user’s data, which falls within the definition of “processing” [30]. Therefore, to comply with the data protection laws, the SPs must, for instance, provide information regarding its user’s identity and “the purposes of the processing” and must provide more information when necessary to guarantee fair processing. Hence, a SP must inform customers if it processes personal data to personalize prices. However, current SPs do not give enough consent notices to their users about how they will process their data. The reason is that the price of a RHS order is determined by many variables such as trip distance, duration, and so on. The SP can bravely manipulate those variables and display them on the user’s app because no user can easily detect SP’s misbehavior since two different orders can rarely share the same variables. Therefore, the SP can simply apply personalized pricing to its users without worrying about being punished. For instance, the SP may pay less to a driver with higher loyalty than the newly registered driver. The SP may also charge more to high spenders than low spenders. (To simplify the illustration of Spas, in this paper, we assume that the SP can use personalized pricing to the rider only, and we use user to denote rider in the rest of this paper.) Therefore, in this paper, we are motivated to foster fairness in RHS settings which not only enables data processing happens transparently on the user level but also increase the health of the online market ecosystem in general.

Also look for the solution about auditing

<https://kr-asia.com/researchers-took-over-800-trips-using-chinese-ride-hailing-apps-heres-what-they-found>

**Use SunJinyun**

**Technical details of price discrimination**

Big data

Personalized service also personalized pricing.

the more expensive their phone is, the more likely it is for them to be picked up by a nicer vehicle,” said the report. On average, iPhone users also receive fewer subsidies and discounts on Didi—RMB 2.07 over the course of the rides booked by the researchers, compared to RMB 4.12 for non-iPhone users.

**Expectations and actual**

**Price and wait time**

**On the driver side**

Yet there is a tradeoff. The researchers found that many drivers who utilize ride platforms feel they are “trapped in the system.” They said rewards often seemed unattainable and fines were issued with little afterthought.

“Everyone is doing this for the money, but the algorithms behind the software are strict, and the maximum income of drivers has been capped by the platform,” said a driver surnamed Zhang.

Various penalties may impact a driver’s income in the long run. For instance, if a driver cancels a ride order on Didi, their ranking will be lowered. It could take a week of good performance to recover their score.

<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3250075>

(Han, Gao, & Deng, 2018)

“Shashu” refers to algorithmic price discrimination by online platforms where longer-term customers are charged less favorable prices.Some observers hold that this type of price discrimination is against the Anti-Monopoly Law of thePeople’s Republic of China (AML), and ought to be investigated accordingly.

<https://www.hindawi.com/journals/mpe/2020/5620834/>

(Sun, Xu, & Shi, 2020)

**Increasing attention is being paid to the pricing decisions of ride-hailing platforms**. These platforms usually face market demand fluctuation and reflect supply and demand imbalances. Unlike existing studies, we focus on the optimal dynamic pricing of the platforms under imbalance between supply and demand caused by market fluctuation. Dynamic models are constructed based on the state change of supply and demand by using optimal control theory, **with the aim of maximizing the platform’s total profit**. We obtain the optimal trajectories of price, supply, and demand under three ride demand situations. The effects of some key parameters on pricing decisions, such as coefficient of demand fluctuation, service quality, and fixed commission rate, are examined. **We find the optimal dynamic price can improve the match of supply-demand in ride-hailing market and enhance the revenue of platform**.

As an innovation of the mobile Internet era, ride-hailing platforms (e.g., Uber, Lyft, and DiDi) have played a significant role in improving vehicle use efficiency, increasing transportation service supply, facilitating taxiing, and promoting employment. **As such, ride-hailing platforms have been rapidly popularized and have subverted the traditional taxi market, completing millions of trips every day** (Ma et al. [1]). By July 2018, Uber had completed over 10 billion ride-hailing transactions globally and was active in over 80 countries and 700 cities (Uber [2]). **The total market value of the global ride-hailing industry is projected to grow to $285 billion by 2030 (MarketWatch [3])**, which will bring huge economic benefits to ride-hailing platforms. Ride-hailing platforms rely on freelance drivers who decide when and for how long to work (Hu and Zhou [4]). The platforms use mobile Internet to integrate the online and offline functions, match the demand of riders with the supply of drivers, reduce the empty load rate of drivers, save the cost of communication between drivers and riders, and **improve the convenience and efficiency of travel** (Cramer and Krueger [5]). Compared with public transport, the benefits of ride-hailing are convenience, time-saving, and comfort, which has won the favor of some ride-hailing passengers. In addition, when the weather is bad, time is tight, and travel location is remote, users can conveniently use a mobile phone platform to access a ride-hailing service.

**Demand-supply**

The ride-hailing platform’s application usually shows that there are more than a dozen people in the queue with an average wait of 20 minutes or that the driver is far away, etc (Xinhua news [6]). To solve these difficulties, some ride-hailing platforms try to dynamically adjust the price to match the supply and demand (Yan et al. [7])

demand fluctuation

<https://chinamediaproject.org/the_ccp_dictionary/big-data-swindling/>

<https://one.oecd.org/document/DAF/COMP/M(2018)2/ANN10/FINAL/en/pdf>

Personalised pricing

Information disclosure

<https://primoa.library.unsw.edu.au/primo-explore/fulldisplay?vid=UNSWS&docid=TN_cdi_crossref_primary_10_1515_gj_2018_0048&context=PC&query=any,contains,Algorithmic%20Price%20Discrimination%20on%20Online%20Platforms%20and%20Antitrust%20Enforcement%20in%20China%E2%80%99s%20Digital%20Economy&_ga=2.200242478.189084230.1636796493-1231917719.1623972548>

Big data swindling

**Enhancing**

[**https://kr-asia.com/key-stat-didi-reports-60-million-daily-trips-globally-for-2020**](https://kr-asia.com/key-stat-didi-reports-60-million-daily-trips-globally-for-2020)

**滴滴规模很大**

**Algorithm**

[**https://www.sciencedirect.com/science/article/pii/S2352146516308730/pdf?md5=352eceae5f3e170823f9ba33bdc29203&pid=1-s2.0-S2352146516308730-main.pdf**](https://www.sciencedirect.com/science/article/pii/S2352146516308730/pdf?md5=352eceae5f3e170823f9ba33bdc29203&pid=1-s2.0-S2352146516308730-main.pdf)

[**https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0229674**](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0229674)