

Effects of Web-Based Taxi Services in the Reduction of Unemployment and Crime

Aashka Trivedi, Devika Sharma and Nishchitha H. V. Prasad

1 Hypothesis

Uber and other web-based taxi services can be viewed as much more than a convenient way to get from point A to point B. This project builds on the observations of previous literature to quantify the effects of Uber on unemployment and crime. For the same, the hypothesis to be studied in this project is as follows:

The introduction of web-based ride-sharing services such as Uber leads to the reduction of unemployment rates and reported crime rates in the metropolitan areas where it operates in.

Specifically, this report would investigate two major claims of previous studies:

1. Park et. al's [1] claim that a convenient transportation infrastructure can be used to deter crime.
2. Li et. al's [2] hypothesis that sharing economy platforms such as Uber can be used as part of a solution to decrease unemployment rates in metropolitan areas. This hypothesis aligns closely with that of Fos et. al [3], which posits that such a gig economy may be able to insulate areas from the "propagation of economic shocks".

2 Explanation

A detailed explanation of this project's hypothesis is given in this section

Falsifiability

Uber's relationship with both unemployment and crime rates is debatable. On one hand, Uber offers low-commitment, flexible job opportunities, but is also seen as merely a way to supplement income by many drivers. This report aims to quantify the effects that Uber's introduction has on the unemployment rates by studying how these rates have changed. Specifically, we would like to compare the unemployment rates several months prior to Uber's introduction in states in the U.S. and India, with the unemployment rates several months after its introduction.

The effect of Uber on Crime is slightly more complicated. There have been many reports that Uber helps reduce the cases of sexual assault by providing victims a way to get out of dangerous situations. But, there is also an alarming number of sexual assault cases against Uber drivers themselves. This project seeks to thoroughly study these differences, and find empirical evidence why they exist, and what Uber's overall impact on crimes could be.

Interpretability

The motivation for this project stems from two major observations. First, we believe that the macroeconomic forces that govern unemployment can be addressed by the introduction of Uber. Uber is part of what is known as a "gig-economy", or "sharing-economy". These allow for flexible employment, with very little commitment. What this means is anyone who can pass a background check, and who has a drivers license, a car, and time can drive an Uber for as long (or little) as they want to. Our hypothesis is motivated by this key benefit- that people with low skills who have lost their jobs can find a secure, well-paying alternative by becoming an Uber

driver. This is easily tested in two ways. We can measure the positive effect of Uber on unemployment rates by studying the unemployment of metropolitan areas before and after Uber was introduced. To strengthen our findings, it would also be prudent to study the unemployment rates when Uber was not in effect- say, during a global pandemic.

Additionally, we posit that the introduction of Uber reduces the crime rate. This can be because of two reasons. First, Uber removes potential victims from potentially dangerous situations. For example, Ubers are a convenient, safe, and track-able way for women to travel alone. Secondly, Uber may be able to remove the strenuous socio-economic conditions that lead people to commit crimes such as robbery. This ties in with our reasoning that Uber effectively gives employment options to those who need it. Again, this is easily tested by studying the rate of reported crime before and after the introduction of Uber.

Understandability

In order to improve the understandability of our hypothesis, the following glossary is provided:

1. Web-based Taxi Services

Web-based Taxi Services are taxi services functioning entirely on web based platforms such as a mobile application. The web based platform of choice offers an end-to-end system where you can book a cab, track it, communicate with the driver and make the payment.

2. Gig Economy

Gig Economy comes from the term Gig, a slang that refers to a temporary job, a job that may not come up or be offered again. The Gig Economy is a free market system where organisations fill up positions with temporary workers or independent contractors for a defined period of time that maybe as short as a day.

3. Sharing Economy

Sharing Economy, as the name suggests is the economy based on sharing of resources. It is a non traditional business model offering a new way of selling products to consumers, which is usually facilitated by an online platform. An example of Sharing Economy is our company of interest: Uber, which connects willing drivers to the consumers looking for a taxi.

4. App-based Ride Sharing

Ride sharing services refer to services that match passengers looking for a taxi or a 'ride' to the drivers offering it. Ride sharing services offer function via various platforms: telecommunication, website etc. App-based Ride Sharing Services use App as a platform to connect said passengers and drivers

5. Registered booking service provider

A booking service provider is a business that provides Commercial passenger vehicles or takes requests for such vehicles from consumers. The Booking Service Providers are required by law to get their Vehicles and Business registered as a Commercial Passenger Vehicle.

6. Non-employee workers

Non-employee workers or Independent contractors refer to self employed individuals who provide services to another entity. Unlike regular employees, they are not subjected to Health Insurance, Social Security exemption etc.

3 Prior Arts

Our work aims to study empirically whether the introduction of web-based taxi services, such as apps like Uber, make a significant contribution to the decrease of crime and unemployment in states where these apps have been introduced. Our preliminary analysis includes an in-depth study of the literature pertinent to this work. The major findings of previous studies have been summarized in the following subsections.

Uber and Crime

Ride-sharing services such as Uber and Lyft have remarkably changed the transportation scene of recent times. Touting lesser wait times, reliable service, and high availability, these web-based taxi services are almost ubiquitous in most urban cities. But, more than just convenience, studies have shown that these benefits have also contributed to a decline in urban crimes in the cities where the apps are introduced [1, 4].

Weber [4] found that the introduction of Uber in certain cities was associated to a reduction of "personal" crimes (such as assault) of about 5%. He posits that this reduction in crime rates may be due to three major reasons. First, app-based services largely rely on a cashless (i.e., electronic) payment system. This reduces the cash a person has on hand, and therefore reduces the possibility of robbery and/or assault. This observation is in lieu with Wright et al. [5], who state that moving from a cash economy to an electronic one reduces these crimes. This is further substantiated by Uber itself, who credit their impact on the reduction of taxicab-located crimes on their cashless payment system [6].

The second aspect that may have contributed to the reduction of personal crime is, strangely enough, alcohol. Alcohol consumption is associated with increased crime [1, 4, 7], and given that a major use of Uber is to commute to and from bars and other alcohol-serving institutions, these services effectively remove potential criminals (specifically, an assaulter) from the public [1, 4]. Not only does this help in reducing assault, but as observed by Dills and Mulholland [8], the introduction of Uber led to a lower rate of Driving Under Influence (DUI) cases as well as fatal accidents.

Lastly, Weber [4] posits that Uber drivers may act as constant surveillance. Uber drivers are required to be spread out over the city in order to benefit from getting the most rides. This acts as a sort of pseudo-patrolling during high crime hours, where drivers can report suspicious activities to the police.

Another aspect of reducing crime is the effect of ride-sharing apps on sexual assault. Park et al. [1] have found that areas where Uber have more pickups tend to have a lesser likelihood of reported rape incidents. Specifically, they find that "a 1% increase in Uber pickups lead to a decrease in reported cases of sexual assault by up to 48 cases per year in NYC". This may be because of Uber's ability to quickly match transportation supply with demand. Through precise location mapping, the app connects drivers and riders in record time, and this reduced wait-time and high availability may be essential to remove potential victims from dangerous situations as quickly as possible [1, 4, 6].

Uber's study on their effects on Chicago crime rates have also shown that the introduction of Uber led to a decrease of the rate of taxicab-located crimes by around 20% in the city [6]. They credit this to their ability to provide robust identification for both drivers and passengers, along with their feedback system which allows passengers to be more aware of who they are riding with.

While the introduction of these services have resulted in a reduction of personal crimes, Dills and Mulholland [8] and Weber [4] have found that the introduction of Uber has contributed to an increased rate of automobile thefts. Moreover, as reported in the Atlantic [9], there is a concerning amount of sexual harassment and assault cases against Uber drivers themselves- this may be because background checks may not be as thorough. On the flip side, it is harder to quantify the assaults by Uber drivers as most major cities (such as Boston, New York City, and Washington D.C.) do not track where the assault happened on their crime reports [9]. Moreover, it should be noted that Uber drivers face quicker and harder actions after a report of assault in the form of removing access to the app and blacklisting, as compared to the unfortunately slower response to

assaults committed by regular taxicab drivers. Lafrance and Eveleth [9] also contend that there's very little evidence to suggest that app-based ridesharing poses a significant more risk than traditional taxi services, and Park et al. [1] argue that Uber ultimately reduces the number of reported sexual assault.

Uber and Unemployment

A major contribution of Uber and other participants of the "gig economy" is their role in the creation of viable employment options. Services like Uber provide employment with three keen benefits: they provide low barriers to entry, flexible work schedules and have a low skill requirement [2, 10]. As Huang et al. [10] put it, these "digitally enabled" jobs also allow workers to work from wherever they like, whenever they like. More than just convenience, Li et al. [2] have found that the introduction of Uber significantly decreases unemployment rates and increases labour-force participation- and also tends to have a higher occupancy rate than traditional taxi-cabs.

Additionally, an interesting effect of such a gig-economy is that it leads to higher wage rates for low skilled workers [2], and these "high income, incentives and hard work accruing rewards" attract low-wage workers [11]. In their study of the effects of Uber and Ola (the two most prominent ride-share apps in India) on the Delhi workforce, Kashyap and Bhatia [11] found that 96% of drivers haven't gone to college, and are typically migrant workers. These ride-sharing apps have given them new avenues of employment- a shift from the typical farming or low-skilled (and low-paid) labour jobs they would have taken. Many Indian drivers also see their cars as a means of investment- anyone with a car, a valid drivers license can become an Uber driver [12].

While an article on Bloomberg contends that Uber drivers do not typically get healthcare benefits, pensions or workers compensations [13], studies have shown that most drivers see Uber as a way of supplementing their incomes [13, 14]. As David Walsh [14] puts it, it allows people to "show up and get paid". This policy is especially attractive to those who may be in-between jobs, as it is flexible and does not require long term commitment [2, 3, 14]. As observed by Fos et. al [3], Uber provides easily accessible, short term jobs, and does much more than simply provide employment- they found that laid off employees who have access to Uber are "less likely to rely on unemployment insurance and untapped credit."

References

- [1] J. Park, M.-S. Pang, J. Kim, and B. Lee, "The deterrent effect of ride-sharing on sexual assault and investigation of situational contingencies," *Information Systems Research*, 2021. [Online]. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2951138
- [2] Z. Li, Y. Hong, and Z. Zhang, "An empirical analysis of the impacts of the sharing economy platforms on the us labor market," in *Proceedings of the 51st Hawaii International Conference on System Sciences*, 2018.
- [3] V. Fos, N. Hamdi, A. Kalda, and J. Nickerson, "Gig-labor: Trading safety nets for steering wheels," *Available at SSRN 3414041*, 2019.
- [4] B. S. Weber, "Uber and urban crime," *Transportation Research Part A: Policy and Practice*, vol. 130, pp. 496–506, 2019. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0965856418311418>
- [5] R. Wright, E. Tekin, V. Topalli, C. McClellan, T. Dickinson, and R. Rosenfeld, "Less cash, less crime: Evidence from the electronic benefit transfer program," *The Journal of Law and Economics*, vol. 60, no. 2, pp. 361–383, 2017.

- [6] “Uber’s impact on taxi crime in chicago,” Feb 2021. [Online]. Available: <https://www.uber.com/blog/chicago/ubers-impact-on-taxi-crime-in-chicago/>
- [7] “Alcohol-related crimes: Statistics and facts,” Oct 2020. [Online]. Available: <https://www.alcoholrehabguide.org/alcohol/crimes/>
- [8] A. K. Dills and S. E. Mulholland, “Ride-sharing, fatal crashes, and crime,” *Southern Economic Journal*, vol. 84, no. 4, pp. 965–991, 2018.
- [9] R. E. Adrienne LaFrance, “Are taxis safer than uber?” Mar 2015. [Online]. Available: <https://www.theatlantic.com/technology/archive/2015/03/are-taxis-safer-than-uber/386207/>
- [10] N. Huang, G. Burtch, Y. Hong, and P. A. Pavlou, “Unemployment and worker participation in the gig economy: evidence from an online labor platform,” *Unpublished manuscript. Available at: http://dx. doi. org/10.2139/ssrn*, vol. 3105090, 2017.
- [11] R. Kashyap and A. Bhatia, “Taxi drivers and taxidars: a case study of uber and ola in delhi,” *Journal of Developing Societies*, vol. 34, no. 2, pp. 169–194, 2018.
- [12] “Driver requirements.” [Online]. Available: <https://www.uber.com/in/en/drive/requirements/>
- [13] S. Holder, “There’s one thing uber hasn’t disrupted: Work.” Jun 2018. [Online]. Available: <https://www.bloomberg.com/news/articles/2018-06-08/a-reality-check-on-uber-s-employment-impact>
- [14] D. Walsh, “How the gig economy can reduce unemployment and debt,” Sep 2020. [Online]. Available: <https://mitsloan.mit.edu/ideas-made-to-matter/how-gig-economy-can-reduce-unemployment-and-debt>