

RESEARCH BRIEF

The Cost of Convenience: Ridesharing and Traffic Fatalities

Based on BFI Working Paper No. 2018-80, "[The Cost of Convenience: Ridesharing and Traffic Fatalities](#)," by John Barrios, assistant professor, UChicago's Booth School of Business; Yael V. Hochberg, professor, Rice University; and Hanyi Livia Yi, student, Rice University

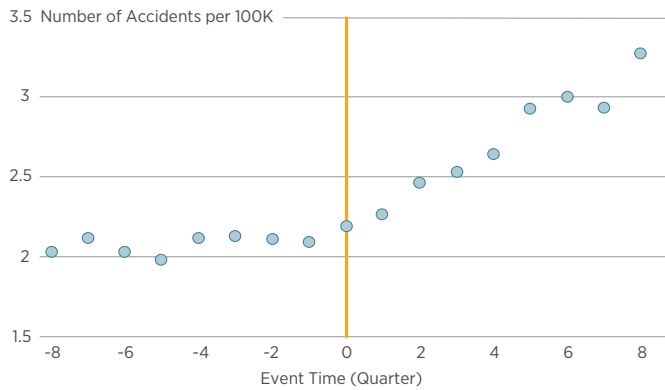
KEY TAKEAWAYS

- ✓ Ridesharing apps have offered new options for riders and drivers alike
- ✓ Ridesharing has also increased the number of vehicle miles traveled
- ✓ While there are clear benefits to ridesharing services, the increased number of vehicles on the road has led to a rise in the number of traffic accidents and fatalities
- ✓ Fatalities have increased about 3 percent annually since the introduction of ridesharing services

When app-based driving services were introduced to US cities, they had an immediate and often significant impact on how people traveled to work, the airport, and around town on personal or social trips. Suddenly, with a few taps on their smart phones, riders could summon a car from almost anywhere and get dropped off curbside almost anywhere else, at rates that often beat traditional taxi services. People who would otherwise have taken a bus, taxi, or train, or who would have walked or used their own car, were now escorted around town in private vehicles.

At the same time, those app-based (or ridesharing) services led a transformational change on the supply side, as most anyone with a car and a smartphone was able, in effect, to become his or her own taxi company. Drivers could determine their own workdays and set their own hours, with many supplementing their existing income by driving part-time.

Figure 1 • Accidents Before and After Entry of Ridesharing Services



Notes: This figure shows the trend of accidents for treated cities in the eight quarters before and after ridesharing entry. The yellow vertical line at event time zero indicates the quarter of ridesharing entry.

The benefits of ridesharing were heralded by many, with special attention focused on the likely decrease in drunken driving, as well as the efficiency and convenience afforded to riders. Critics of the services noted the increased congestion and pollution that occurred when more people demanded auto transportation. This focus on costs and benefits piqued the interest of John Barrios, assistant professor at UChicago's Booth School of Business; Yael V. Hochberg, professor at Rice University; and Hanyi Livia Yi, Rice University student, and they set out to investigate the impact of app-based driving. What they found, as described in "The Cost of Convenience: Ridesharing and Traffic Fatalities," surprised them at first, but upon reflection made sense: More cars on the road meant more accidents, and more accidents meant more injuries and fatalities. Indeed, the authors find that app-based driving services account for about a 3 percent annual increase in traffic-related fatalities, including pedestrians, since their introduction in 2011, or roughly 987 people each year.

On the power of prices

One nearly iron-clad rule that young economics students learn is that when the price of something drops, the demand for that product increases. Later in their coursework, these students would learn about externalities to such market phenomena, both bad and good. For example, increases in demand may not only impact production levels, but also might cause those producers to, for example, emit more pollution. On the positive side, lower prices on, say, personal

computers, means that more people can work more efficiently, making themselves and the rest of society better off.

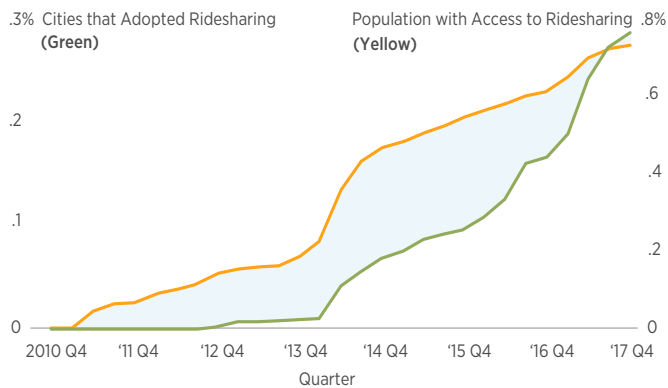
In the market to move people from one place to another, convenience and price are key factors in determining what form of transportation that consumers choose. For some, public transportation is optimal—the extra time that it takes to navigate a train or bus schedule is offset by the relatively inexpensive price compared to owning a car and parking, or taking a taxi. For others, time is a more highly valued commodity, and the price of owning a car, paying for parking, or taking a taxi, are well worth the cost. Every day, people decided how best to move from one place to another given their time and cost preferences.

The introduction of ridesharing services upset that market balance. People on the margin who were willing to spend a little more to save time, now had a new option to consider. Have a meeting downtown? Grab a rideshare car and skip the hassle of driving in traffic and parking, while you get work done in the backseat. Trip to the airport? Order a car and get dropped at your terminal door faster (and likely cheaper) than you can by driving and parking. Going out on the town? The answer is obvious: open an app and ride without worry.

From this perspective, or what the authors describe as a naïve model, there would be no reason to assume an increase in fatalities. People who would otherwise drive were now in someone else's car, and many of those who would have driven impaired were now safely in the backseat of a sober driver. In this world, the substitution from the introduction of ridesharing services is essentially one-for-one: one driver (sometimes impaired) moves from one vehicle to another. Everyone is better off.

However, this naïve model does not describe reality. First, rideshare drivers often drive alone, from fare to fare and from neighborhood to neighborhood in search of new riders. This means there are more cars on the road, at those times, than there otherwise would be. Additionally, rideshare companies often subsidize drivers to stay on the road to ensure an adequate supply of cars.

Figure 2 · Most US Residents Have Access to Ridesharing Services



Second, as described above, rideshare users encompass more than just other drivers, they also include those who would otherwise have taken public transportation, walked, or biked, for example. So, the number of people in cars increases with the introduction of ridesharing. The authors cite surveys in the full paper that support this insight. For example, recent surveys from nine major metro areas report that more than half of rideshare riders would otherwise not have traveled by car. Moreover, a survey conducted by the University of California at Davis of over 4,000 residents in seven major metros areas found that only 39 percent of respondents would drive themselves, carpool, or take a taxi if ridesharing had not been available. The rest substitute from rail, biking, walking or not traveling at all.

The authors' analysis includes a model that incorporates rational choice theory into decision-making by riders and drivers, and an empirical analysis on the effect of ridesharing on accident

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rates. The starting point for such analysis is the date at which ridesharing was introduced in a city. Importantly, these data do not provide accident rates for ridesharing vehicles vs. non-ridesharing vehicles—ridesharing companies do not provide accident data. However, this distinction is not critical: the primary question is whether accident rates increased after the introduction of ridesharing in a city, and not which cars were involved.

The result of the authors' analysis is striking. Figure 2 shows the quarterly average accident rate per 100,000 people in rideshare cities before and after the introduction of rideshare services (event time). As the figure shows, the pre-event trend for accidents is relatively stable at just over 2 accidents per 100,000 people. That rate trends upward, though, soon after the introduction of ridesharing, to roughly 3.5 per 100,000. Fatalities, a subset of accidents, increase about 3 percent, and that rate persists throughout the week, on weeknights, the weekend, and weekend nights.

To inform their findings, the authors conduct a number of analyses on data relating to everything from Google searches for ridesharing apps to the incidence of accidents involving bike riders and pedestrians. The latter case provides an opportunity to more directly examine the externalities of ridesharing, because bike riders and pedestrians are neither using a rideshare service or driving their own car. In cities that have introduced ridesharing, bike and pedestrian fatalities from accidents involving cars have increased at a similar rate to all driving fatalities. More cars mean more accidents with bike riders and pedestrians, and more deaths, giving powerful emphasis to the term “negative” in negative externalities.

Finally, the authors consider the overall costs and benefits of ridesharing, and based on Department of Transportation estimates for the value of a statistical life, show that the increase in fatalities due to ridesharing comes with a cost of \$10 billion. These costs do not include accidents that do not result in fatalities. The authors also cite research that tallies the benefits of ridesharing (roughly equal to the cost of additional fatalities), and conclude that more research is needed to better determine welfare costs and benefits.

Conclusion

Following years of public education programs to encourage seat-belt use and to discourage impaired driving, as well as other programs to reduce traffic accidents and fatalities, the number of US roadway deaths stood at 32,885 in 2010, its lowest level since 1949. That number increased to 37,461 in 2016. This research reveals that the introduction of ridesharing services accounts for a roughly 3 percent annual increase in those fatalities, or 987 people each year.

Needless to say, this increase in fatalities caused by the introduction of ridesharing companies (and the subsequent rise in vehicle miles traveled) imposes real, and hard, costs on society. Those costs are certainly higher when non-fatal accidents are also considered. However, the authors note that there are also clear benefits to ridesharing, and they argue strongly for more research to better define costs and benefits and to better understand the externalities from ridesharing services. Finally, the authors stress that their estimations are based on short-term data and acknowledge that ridesharing use may alter over time (more pooled rides, for example) in ways that could reduce the growth rate of accidents and fatalities.

CLOSING TAKEAWAY

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NO. 2018-80 · MARCH 2019

The Cost of Convenience: Ridesharing and Traffic Fatalities

bfi.uchicago.edu/working-paper/201880

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