

# Competitive Safety in Uber versus the Taxi Industry\*

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## Abstract

I compare and contrast incentives, procedures, and outcomes for safety at Uber and other rideshare companies with the alternatives at traditional taxi companies. I analyze dissimilarities in light of institutional differences in the nature of competition or lack thereof in the two industries. Though many studies have considered some aspect of Uber's impact on safety, this paper is more comprehensive, covering both driver and passenger safety from multiple angles as well as broader impacts on society's safety, such as drunk driving and "Uber ambulances." I also address whether historical taxi regulation promoted safety or was merely designed to suppress competition.

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## I. Introduction: Driving a Taxi Is Murder

*Taxicab drivers and chauffeurs have the highest homicide rate of any occupation: 17.9 fatalities per 100,000 workers, or thirty-six times the risk of all employed individuals. This group comprises 0.2 percent of employed workers in the United States, but accounts for about 7 percent of work-related homicides.*

—Sygnatur and Toscano (2000)

The above murder rate from 1998 was four times that of police officers. And yet, it understates the risk to taxi drivers. The authors point out that driving a taxi is far more dangerous than these numbers suggest because the Bureau of Labor Statistics (BLS) data lump cab drivers and chauffeurs together, but it is only taxi drivers who are in great danger from picking up strangers off the street (Sygnatur and Toscano 2000). These figures may be more than two decades old, but data from subsequent years, as well as the latest

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\* This article is adapted from my 2019 book, *Rethinking Consumer Protection: Escaping Death by Regulation*.

available data, show that taxi driving has consistently been, and remains, the occupation with, by far, the highest risk of murder in the United States (BLS 2017). Unfortunately, there is little safety data available on cab drivers, and even less on passengers. This fact may tell us something about the safety concern exhibited by taxi companies and their regulators, as I will later discuss.

Of course, the danger is two-edged. Cab passengers are also hopping into a car with a stranger. There are no comprehensive data available on crimes committed by cabbies, but at least three serial killers worked as taxi drivers. David Berkowitz, “Son of Sam,” was a nighttime taxi driver for a time (Pulham 2012), and Derrick Bird, “the Cumbria Killer,” was a self-employed cabbie in Whitehaven, England (Brown 2011). Cab driver Paul Duroseau murdered several of his passengers in Jacksonville, Florida (Ivice 2003). Thankfully, though, serial killers are not commonplace in taxi driving or in any occupation. More commonly, unfortunately, driver sexual assaults against female passengers have been an ongoing taxi problem (Gonen 2016).

At the same time, data published by Uber in 2019 revealed that sexual assault instigated by both drivers and passengers is also a ridesharing problem. However, Uber and other rideshare companies use procedures that seem likely to minimize aggression from both passengers and drivers, as this paper will discuss.<sup>1</sup> More broadly, ridesharing offers the possibility of numerous other safety improvements, largely stemming from electronic records.

Many authors have analyzed some aspect of the safety impacts of Uber and other rideshare companies, often in comparison with traditional taxis.<sup>2</sup> A common thread, discussed in more detail below, is that these studies generally focus on a particular aspect of safety—such as intoxicated driver arrest rates or traffic fatalities—rather than a more comprehensive consideration of both driver and passenger safety. This paper endeavors to fill that gap and also comparatively analyzes the safety procedures of traditional taxi service versus Uber,

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<sup>1</sup> Uber has been the main player in the rideshare industry, has led the industry’s development in the face of frequent government opposition, and has most often been at the center of safety discussions in the industry’s formative years—the focus of this paper. Throughout the discussion, a reference to Uber can generally be taken as a shorthand reference to Uber, Lyft, and other rideshare companies.

<sup>2</sup> See, for example, Barreto, Silveira Neto, and Carazza (2021); Barrios, Hochberg, and Yi (2018); Feeney (2015); Greenwood and Wattal (2017); Lafrance and Eveleth (2015); Martin-Buck (2016); Brazil and Kirk (2015); and Dills and Mulholland (2017).

with an eye toward highlighting safety differences that likely stem from the impact of regulated cartels versus competitive markets.

Section 2 considers the institutional underpinnings of safety outcomes. In section 3, I compare and contrast safety procedures for protecting drivers from assault and/or robbery. Then, in section 4, I investigate passenger safety in the two industries from two perspectives: safety in terms of driving and accident risk, and protection from driver assaults. Finally, section 5 considers three other areas of safety: passenger pick-up procedures, impact on drunk driving, and the possibility of “Uber ambulances.” Section 6 summarizes findings and implications.

## II. Institutional Underpinnings of Safety Outcomes

This section discusses taxi regulation, examining in particular whether it appears to be mainly about suppressing competition or about promoting greater safety. Since background checks for drivers are the taxi industry’s only specific claim for providing greater safety than ridesharing services, I examine their argument. I also consider some unusual aspects of competition in the rideshare industry and how that competition interacts with technology to promote safety.

### *A. Regulation: Cartel Device or Safety Promoter?*

Taxi companies have always argued that their traditional regulated system promoted passenger safety. Critics, including most economists, maintain that taxi regulation is essentially a cartel device, with strong entry restrictions designed to keep prices high (Moore and Balaker 2006). As we will see, the evidence that taxi regulation has generally resulted in higher prices and poorer customer satisfaction seems indisputable. However, it might be possible, at least in theory, that promoting safety through regulation simultaneously resulted in higher prices and lower quality in nonsafety attributes. This is essentially the cab industry’s implicit argument, that Uber’s lower prices came from cutting corners on safety.

Two studies in the early 1980s, one by the US Department of Transportation (Shaw et al. 1983) and one by the Federal Trade Commission (Frankena and Pautler 1984), analyzed the tendency for regulatory tax cartels to form.<sup>3</sup> New York City, the world’s largest taxi market, perhaps best illustrates the problem. In 2013, before Uber

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<sup>3</sup> The strongest studies of the taxi industry were published in the 1980s.

began to change the market, the cost of a taxi license (termed a “medallion”) was \$1.3 million (Byrne 2018).

The most conclusive evidence that taxi regulation inhibited competition and suppressed safety innovation is probably the reaction of consumers finally given a chance to embrace new entry by private drivers not regulated by government taxi authorities. In the first quarter of 2014, taxi-type services dominated the ground transportation market, with an 85 percent market share (Bender 2015). By 2017, Uber had 56 percent of all ground transportation revenues, Lyft had 12 percent, car rental companies had 25 percent, and taxis (including limos and shuttles) had only 7 percent (Goldstein 2018). The collapse of the cab industry, from an 85 percent market share to a mere 7 percent in three years, is a clear indication that consumers rejected the industry’s frantic advice that unregulated upstarts like Uber and Lyft were unsafe and untrustworthy.

In fact, there appears to be no evidence that taxi regulators seriously attempted to promote safety. For example, even before the technological revolution ushered in by Uber and others, taxi companies could have done some things to better protect both their drivers and their customers. Since robbery was the main motive of those who murdered cabbies, companies could have established a policy where drivers carried no cash at night, perhaps with some sort of ticket system for customers without credit cards. Taxi companies, like truck companies, could have placed a prominent “How’s my driving?” sign on the outside and inside of every cab with a toll-free number to call to readily report bad driving, improper advances, or any other problem. Indeed, when Uber and others introduced procedures to prescreen both passengers and drivers, with a strong electronic log of where drivers traveled and with whom, the taxi industry did not rush to copy these innovations but instead tried to suppress them by seeking to ban rideshare companies through regulation (Sundararajan 2016; Tacker 2019).

Consider also the general failure of taxi regulators to record and present hard data about taxi safety.<sup>4</sup> One might hope that it would be common practice for safety regulators (generally part of local governments) to at least gather and keep data about, for instance, complaints of assaults against female customers. It is not.

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<sup>4</sup> Uber recently did present some comprehensive safety data (Somerville 2019) but the taxi industry still had not at the time of writing.

An unfortunate episode in Washington, DC, in 2012—seven assaults by taxi drivers against female passengers over a few weeks—highlighted regulators’ lackadaisical attitude. The taxi commission issued a public warning to female passengers and stated that the scope of the problem was unclear. The commission’s spokesperson, Neville Waters, said, “It’s not as if there’s a standard procedure where we get all incident reports. A lot of it depends on the commander of the particular ward. That also doesn’t necessarily mean that all assaults that are occurring in a cab are being captured or that we’re even getting that information” (Lafrance and Eveleth 2015). In other words, the taxi commission, “safety watchdogs” for the community for decades, had never established procedures for monitoring safety and had no clear idea how safe or unsafe riding in their taxis might be. Essentially, they advised women to ride in taxis at their own risk.

In their fight to survive against Uber, the reeling cab industry has desperately clung to the claim that regulated taxis offer superior safety. They have presented no corroborating data at all, which may imply that no data exists or that if data does exist somewhere, it is not favorable to their cause. Moreover, it is revealing how narrow the industry’s defense has been, focusing virtually exclusively on the charge that Uber drivers were far more likely to attack passengers. That charge rests completely on a procedural difference between many taxi regulators and Uber.

### *B. Driver Background Checks*

Taxi drivers often, though certainly not always and everywhere, must pass an FBI background check (which includes fingerprinting), while Uber uses private background checks (which do not check fingerprints). Thus, the industry’s case that taxi regulation is about safety rather than simply running a cartel rests, in practicality, entirely on the opinion that FBI checks of prospective drivers are vastly superior to private background checks (Sundararajan 2016; Tacker 2019). Let us examine this notion.

In 2013, the National Employment Law Project released an extensive study of the FBI’s employment background checks which found that “FBI records are routinely flawed” (Feeney 2015). FBI spokesperson Stephen Fisher explained these defects in FBI background checks, saying, “The big key is it is a voluntary process, so law enforcement agencies are not required to provide us their arrest data and criminal history information. We rely on the agencies

to provide us the most accurate and up-to-date information, as we are just the repository” (Lafrance and Eveleth 2015).

Even if the FBI system was perfect, would there be any real safety gain if Uber used fingerprints rather than named identities? It is surely true that a master criminal could create a convincing false identity that would hold up under normal background check scrutiny, and that only a properly conducted fingerprint check would have a chance of catching this sort of criminal. However, it is hard to imagine why the proverbial evil genius would be so interested in driving for Uber. It seems senseless that a cleverly incognito criminal would plan to commit crimes against his Uber passengers, knowing that there is a clear electronic record of every single passenger he picks up and where he drives them.

Recent trends suggest that city regulators are beginning to acknowledge that FBI checks are not especially useful. For example, Dallas regulators verify that Uber has conducted private background checks. The city also occasionally audits these private companies. Indianapolis concluded that costs outweighed any conceivable benefits to additional checks beyond what Uber normally does (Hirshon et al. 2015). Even more revealing, some governments that previously required FBI fingerprint checks, after observing Uber’s operations, have changed their laws to emulate Uber’s background-check procedures for taxi drivers.

Likewise, taxi companies are at last beginning to do what they should have done long ago—copy not only Uber’s background checks but their entire approach. That is, taxi companies have begun to use apps similar to Uber’s, creating those electronic logs that are so key to ensuring safety as well as the best customer service (Canon 2018; Daysog 2018). The decision by Uber and Lyft, as well as many of their government overseers, to rely on private background checks and skip the fingerprinting appears sensible and is increasingly emulated in what’s left of the taxi business.

All evidence suggests that taxi regulation has not been a significant source of taxi safety, though it clearly has suppressed competition (which, in turn, suppresses safety innovation). The city council of Washington, DC, investigating the failures of taxi regulators there, summed up its findings as follows: “By restricting supply and creating high barriers to entry, there is an unmet demand for taxi service, longer wait times for taxis, more non-responses to phone requests, less clean vehicles, poorer quality of service, and higher fares. Taxicab drivers would refuse service to certain types of

customers (for example, based on race) or to certain parts of the city” (Snead 2015). Viewing taxi regulation as a government-enforced cartel appears accurate.

### *C. The Nature of Rideshare Competition*

Competition between Uber, Lyft, and other upstarts is intense, but the competition among drivers is particularly interesting. Passengers can easily rate their drivers through the app, while prospective passengers can readily see the historical ratings of their potential driver and are free to decline and choose a different driver.

In a real sense, each driver is an entrepreneur competing against other driver-entrepreneurs. It is apt that Uber refers to its drivers as driver-partners. Drivers pay a fee (about 20 percent of the fare) to use the platform, then use their own vehicles and independently choose their hours and routes. Perhaps, by now, many of us take all this for granted. Yet, it is an ingenious and productive system that has essentially brought powerful small-town-like reputation effects to huge cities.

### **III. Comparing Safety Procedures for Protecting Drivers**

With no comparative data, all we can examine are the safety procedures for taxis and Ubers. Uber’s procedures would seem to make its drivers safer from passenger crimes than are taxi drivers. Ubers do not pick up random, unknown passengers off the street, and they are less likely than cab drivers to carry substantial cash since payments are generally automated through registered credit cards. (Drivers will accept cash but are not allowed to make change; the passenger would simply receive a credit.) Every Uber passenger leaves a clear electronic record of who they are, where they hopped in the car, and where the car goes (Stone 2017).

Robbery is the underlying reason taxi drivers are so frequently murdered, where killers are after the cash drivers normally carry (Sygnatur and Toscano 2000). Although there is little data on murder rates of rideshare drivers, the murder risk does not seem to be a significant concern.<sup>5</sup>

An interesting example of how confident Uber drivers are of their safety was illustrated in the *Forbes* article, “The Uberpreneur: How an Uber Driver Makes \$252,000 a Year.” The driver depicted,

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<sup>5</sup> Uber (2019, p. 17) recently shared US safety data showing homicide rates for drivers were about one per 331 million trips (including passengers and bystanders, the rate was 1 in 122 million).

Gavin Escolar, also owns a jewelry store and displays some of his wares on his person and in his vehicle. If passengers comment on the jewelry and are interested, then he brings out more samples, as well as a catalog. Uber fully supports Escolar and all of its driver-partners who mix in their own businesses with driving. After all, there is no concern that hard selling would irritate riders; the customer rating system automatically polices that and any other driver misbehavior. Indeed, Escolar has been highly rated by his thousands of Uber customers, earning a 4.85/5.00 on premium Uber Black and a 4.87/5.00 on low-cost UberX (Youshaei 2015).

Online reputation plays a key role in safety that goes both ways: passengers are also rated by drivers. Before drivers accept pick-ups, they can evaluate the passenger and the location at that time of day and then decide if the scenario represents too much risk. Further, Uber will ban passengers if their behavior has been seriously problematic (Uber 2021).

Consider, also, that Uber provides a virtually automatic outlet to employment for anyone properly qualified who wishes to earn money as a driver. Before Uber, a New Yorker who couldn't afford to buy a medallion, or find a job with a company that had an extra one, could only choose to give rides illegally as a "gypsy cab" driver. This was an especially dangerous job, no doubt far worse than conventional taxi driving. Gypsy cabbies operated in poorer, more dangerous neighborhoods where licensed taxi drivers seldom bothered to venture, and where gypsy cab drivers knew regulators and police enforcing licensing laws were unlikely to find and hassle them. Of course, these drivers had no home office dispatcher instructing or guiding them; they were on their own as they picked up strangers on potentially dangerous back streets. A *New York Times* article detailed the dangerous lives of the city's gypsy cabbies in the article, "Gypsy Cabs: A Hard, Chancy Life on the Side Streets of New York" (Hernandez 1992). Today, people whose life circumstances would have forced them to become gypsy drivers back in the day can often become Uber drivers and potentially be far safer.

#### **IV. Comparative Passenger Safety**

Let us now consider passenger safety in terms of accident risk from the driver's handing of the vehicle as well as the risk of being assaulted by the driver.

### *A. Driving Safety*

The incentives for safe driving are likely much stronger for Uber drivers than for taxi drivers. Uber's GPS system and electronic recordkeeping make it easy to monitor driver speeds. Uber also makes use of smartphone gyrometers that can more exactly measure car movements such as sudden stops or swerves (Warren 2016). Traditional taxis have used none of this technology. Uber customers can conveniently report bad driving and give their driver a bad online rating right through their phone app. It's much more of a hassle for cab riders to do likewise. More fundamentally, in Uber's system, no driver is guaranteed a customer. Rather, the customer can evaluate the driver's online reputation and either decline or accept the ride offered. Traditional taxi customers take either the luck of the draw on the street or with whomever the taxi company sends. Except in the most extreme cases, there are no reputation effects for drivers to worry about (Sundararajan 2016).

A possible safety plus for taxis is that their drivers have to be commercially licensed and may receive additional training, while Uber drivers need only a standard driver's license. However, there is no empirical evidence that commercial licensing improves driving safety. Even if one accepts that it takes greater driving skill to get a commercial license, the greater issue is driver habits and attitudes.

Think of this analogy: Truck drivers with the "How's my driving? Call this number" sign are constantly monitored by every driver on the road. Similarly, Uber drivers are constantly monitored electronically by the Uber corporate "home office" as well as by passengers who can easily report unsafe driving. This system is akin to having a "how's my driving" sign on the back of the driver's seat. It likely makes Uber's drivers safer, which probably explains why the taxi industry has never specifically argued that its driving is safer.

Furthermore, although taxi regulation varies from city to city, Uber and other rideshare platforms generally enforce stricter rules in their background checks than the government does (Uber 2019, p. 11). Uber and government regulators are concerned about the same general issues in an applicant's driving and criminal history, but governments are generally only worried about issues over the previous five years, while Uber and Lyft analyze the last seven years. Thus, for example, someone with a DUI conviction six years ago would have no problem working as a taxi driver but would not be qualified to be a driver-partner with Uber (Feeney 2015).

Furthermore, Uber uses continuous driver screening technology to monitor for new offenses (Uber 2019, p. 11).

An empirical analysis of drivers in San Francisco found rideshare drivers to be much safer motorists than cabbies, as one would expect given taxi drivers' inferior incentives for safety. The study was conducted by Zendrive, a California-based company that uses smartphone technology to help increase driver safety for businesses and some insurance companies. For several months in 2014, Zendrive employees rode with both taxis and rideshare companies, secretly recording data via their phones. Cabbies were far more lead-footed, speeding 50 percent more of the time than rideshare drivers on average, and 250 percent more during peak hours. Rideshare drivers actually sped slightly less than average drivers, perhaps reflecting their concern for their online reputations. "During non-peak hours, rideshare is both cheaper and safer than taxi," Zendrive found. "During peak hours, price-conscious passengers should probably take a taxi [if they can find one]. However, passengers that care most about safety should still prefer a rideshare service, as the safety gap is even bigger then" (Zendrive 2014).

Another possible advantage of taxi procedures is that taxi vehicles are regularly inspected for mechanical safety, while Uber drivers generally own their vehicles and make their own maintenance decisions. Again, we have no data on mechanical failures of taxis versus Ubers, so we have no way of judging whether mechanical checkups are useful. However, a number of studies have examined whether mandatory state inspections of private vehicles reduce accidents. These studies find that government inspections have zero impact: they do not reduce driving accidents or casualties at all (Fleming 2015; Feeney 2015; Poitras and Sutter 2002). Most governments have therefore abandoned these inspections. Feeney (2015) points out that in 1975, thirty-one states and the District of Columbia required regular vehicle safety inspections, but as of 2015, only seventeen states did.<sup>6</sup> Since these inspections are so ineffective generally, there is no reason to suppose that inspections of taxis do any good.

Yet, the fact that Uber drivers own their vehicles may in itself lead them to better maintain their vehicles than cab drivers who

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<sup>6</sup> Studies cannot conclusively explain why mandated mechanical inspections of vehicles are so useless. Probably, people simply modify their driving to offset any mechanical weakness—such as driving slower and stopping earlier if the brakes aren't quite tip-top.

typically are driving company cars. Also, Uber requires that drivers use relatively new cars, while taxi companies do not (Hyde 2019). In addition, just as passengers continuously monitor how safe their Uber driver is, they also monitor the safety performance of the vehicle. A car that skids on bald tires or has piercingly squeaky brakes will likely be noticed and reported. Thus, in addition to driving around with an implicit “How’s my driving?” sign, each Uber operator also has an implicit “How safe, dependable, and clean is my vehicle?” sign. Again, Uber drivers’ strong concern for their personal reputation seems to be a key feature in promoting safety, and efficiency in general.

### *B. Comparative Passenger Safety from Driver Assault*

*I was scared and frustrated I had to think about things a man alone on the town wouldn't have to think about. I had so trustingly lined up and gotten in a random cab. There was no way of easily warning another lone woman who might also take a ride with that guy that night, or that week, or ever. No way to complain about inappropriate advances. There was no app for that and no way to trace him if he didn't deliver me back to my hotel, either. He was just a random cab driver in a taxi line and no one thought anything of it.*

—Sarah Buhr, a writer for TechCrunch, on her terrifying taxi experience (Buhr 2016)

Sarah Buhr explains the safety advantage of Uber in her article, “Regulators Should Favor Lyft and Uber, Not Taxis for Safety Reasons” (Buhr 2016). Once again, electronic records make a difference. It will be clear whom the Uber driver picked up, when and where they were picked up, and where the car went. Conversely, the taxi driver can pick up someone anywhere, from an anonymous airport line or on a secluded street where there are neither witnesses nor electronic trails, with no one knowing the passenger was picked up or where she was taken. Further, Uber suspends drivers as soon as the company receives a complaint from a customer alleging assault, then opens an investigation. By comparison, many taxi commissions, such as Washington’s, suspend taxi drivers only after criminal charges are filed (Lafrance and Eveleth 2015).

## **V. Other Impacts on Safety**

Let us now turn to the safety aspects of the passenger pick-up system itself, Uber’s impact on drunk driving, and the degree to which Uber may substitute for ambulances.

### *A. Prompt, Well-Planned Pick-Ups Are Safer*

One clear safety advantage of Ubering rather than taxi riding is the far more rapid and organized response of Uber. For example, a short wait time for a ride is of the essence for a woman alone with a broken-down car in an unsafe neighborhood. Also, there is never a need to roam the street hoping to hail an Uber. In fact, since the app tracks the driver, there is no need to wait outside at all.

Also, Ubers arrive far more speedily than taxis. For instance, a 2014 study in San Francisco found that Uber arrived in less than ten minutes 93 percent of the time, while only 35 percent of dispatched taxis made it that quickly. Uber riders never waited over twenty minutes, compared to 22 percent of passengers who called taxis and 33 percent of passengers who hailed a cab on the street (Rayle et al. 2016).

### *B. Uber's Impact on Drunk Driving*

The convenience of summoning a driver quickly with an easily operated phone app, knowing upfront what it will cost, not needing to fumble with cash or credit cards, and often saving money versus a taxi seems likely to encourage tipsy or exhausted customers to Uber home rather than drive themselves. Drunk passengers are a substantial portion of Uber's nighttime customers; guidelines on the best way to handle them are common topics among driver forums. Uber also offers a standard \$200 compensation for cleaning when a drunk passenger vomits in the driver's car (Campbell 2014).

Uber's market pricing, which allows prices to surge when demand jumps and/or supply is restricted, is a key aspect of reducing drunk driving in peak periods. The ultimate peak period for drunkenness is, of course, New Year's Eve. Demand is off the charts; simultaneously, supply is severely limited because many would-be drivers prefer to celebrate the season themselves. In the old days of the taxi cartel—with a fixed price that was normally too high, but way too low on New Year's—it would be almost impossible to get a cab. However, with Uber's system, the price surges to induce drivers to be available and to put up with inebriated passengers. For instance, in Miami Beach in the early hours of January 1, 2016, Uber's price was nearly ten times the normal level (Munzenrieder 2016).

Many formal studies confirm a substantial drop in DUI arrests once Uber is well established in a city. In one analysis of ten major cities just before Uber entry compared to two years after Uber entry,

DUI arrest rates declined in all ten cities. However, the decline rates varied widely, from 37 percent in Las Vegas to 14 percent in Los Angeles (Chicago Car Accident Lawyers 2018). Obviously, local conditions strongly influence the DUI arrest rate. For instance, in the ebb and flow of politics, cities may crack down harder on DUI drivers at certain times.

Traffic fatalities may offer a clearer impact measurement. One study focused on traffic fatalities in the one hundred most populous metropolitan areas but found no significant effect from Uber (Brazil and Kirk 2016). However, most studies do find an impact. One found that Uber's entry into California was associated with a significant drop in the rate of motor vehicle homicides from 2009 to 2014 (Greenwood and Wattal 2017). Another study found both fewer traffic fatalities and the usual decline in DUI arrests post-Uber (Martin-Buck 2016).

In perhaps the most comprehensive study to date, Dills and Mulholland (2017) analyze the impact of Uber's entry into 150 cities and counties over a three-year period. They find no significant impact for about the first six months of Uber operations. After this start-up period, and the rise in consumer use and acceptance, they find a monthly reduction in fatal traffic accidents of 0.5 percent, a 1.6 percent decrease per quarter at the mean.<sup>7</sup> After Uber had operated in a county for at least four years, fatal accidents declined by an average of 3.4 percent to 8 percent annually, for a total decline of 17 percent to 40 percent. These methodologies and results suggest that these safety benefits may increase over time as more and more consumers become comfortable using Uber.

Unsurprisingly, with one notable exception, Uber's entry into a market is not associated with any increase in crime. Taxi companies have alleged that Uber drivers are more likely to assault passengers, but there is no such increase in this study. The taxi cartel, in a left-handed compliment to Uber for getting drunk drivers off the road, has charged that the presence of Uber encourages more drinking binges and related crimes since drinkers know Uber can get them home. If this accusation were true, then we would expect the study to find an increase in disorderly conduct arrests—but it does not. In fact, there is a slight decrease in disorderly conduct arrests, perhaps because of fewer arguments about who should or shouldn't drive. Nor is there an increase in assaults or robberies.

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The one clear increase in crime after Uber's entry is car theft. This outcome makes perfect sense. Incapacitated people who would have driven home often take an Uber instead—reducing traffic deaths, but leaving their vehicles in unsecure areas (Dills and Mulholland 2017). Thus, the one negative result from Uber's entry, more car thefts, actually seems to reflect a broader success in reducing drunk driving and vehicular deaths. An increase in stolen vehicles is probably a price worth paying for that result.

### *C. Uber Ambulances?*

In the cities they serve, Uber drivers generally arrive much faster than ambulances. In a 2015 Manhattan study, it took an average of six minutes for an ambulance to arrive after being called. Uber showed up in two to three minutes. However, the Uber time advantage is actually a couple of minutes greater since the ambulance phone call, not measured in this case, takes much longer than hailing an Uber with the app. Similar speed advantages of Uber over ambulances were also documented in London. The advantage of having a widely dispersed army of drivers available almost instantaneously at the press of a button has led to discussion among health care professionals of perhaps providing basic medical training to willing Uber drivers, and maybe some equipment such as defibrillators, and possibly even issuing them emergency lights and sirens. Conceivably, Uber might one day revolutionize ambulance service as it has taxi-type services (EMS1 2015).

Already, Uber has emerged as an occasional substitute for an ambulance. In a national study, Leon S. Moskatel and David J. G. Slusky find that ambulance usage drops at least 7 percent when Uber enters a city. Uber arrives faster, is far cheaper, and will go to a preferred hospital, whereas ambulances normally go only to the closest hospital. Of course, in many medical emergencies, a full-service ambulance is necessary. Moskatel and Slusky (2017) envision a possible future system with a video link to a 911 doctor who would evaluate the level of service and expertise a patient needed and send the appropriate vehicle and personnel. Uber has made strong statements that their services are no substitutes for ambulances, but as Thulin (2018) points out, that is standard procedure for any business in our litigious society. In fact, the driver-partner status of Uber seems ideally suited to providing light-duty ambulance service. Instead of a few ambulance drivers sitting at home base, why not

have a number of them dispersed in the city, perhaps picking up normal passengers until emergency services are needed?

## VI. Conclusion

The taxi industry and its allies alleged that Uber drivers were inherently more dangerous than cab drivers were, but never presented data to back this claim up. Nor is there evidence, or even significant anecdotes, that taxi regulators have ever done anything to significantly enhance safety, or even consistently monitor it. In a cartel-monopoly that restricts supply so stringently that a taxi license can be worth over \$1 million, as it was in New York, little concern for safety and zero safety innovation are understandable.

Taxis everywhere could long ago have embraced some safety innovations—like a toll-free number for complaints and a cashless systems for late night service—well before the advent of smartphones. Uber, of course, brought in the cashless system, with an app even better than toll-free calls for complaints, as well as a prescreening and identification system so neither drivers nor passengers were strangers, and electronic records to track trips. Furthermore, drivers have no automatic right to pick up a passenger, nor does the passenger have a right to a particular driver. Instead, they each choose whether to accept the other before committing to the transaction.

All aspects of driver and vehicle safety are continuously monitored by riders with the Uber app in hand, as well as by Uber's corporate office. Similarly, individual drivers and Uber as a whole monitor each passenger, who may be banned by Uber in extreme cases, and just avoided by cautious drivers in cases of moderate misbehavior. Uber is truly a marvelous innovation for safety and for product quality in general. This technology brings a sort of small-town individual responsibility to the modern world marketplace.

After all, what we commonly call “corporate misbehavior” is actually individual misbehavior. Often, nefarious deeds are very much against corporate policy and completely contrary to the company's interests. Such misbehavior is an example of the well-known principal-agent problem, also referred to as *shirking* in this context. Workers (agents) have a tendency to act in their own selfish interests rather than in the interests of the owners (principals). Uber, unlike taxi providers, has used technology and its own policies to make every driver-partner a principal in their own right. Each driver has to compete for each customer in every instance since the passenger

makes a selection rather than having a driver assigned to them. In essence, this system gives consumers double protection, as Uber uses technology to monitor driver behavior to protect its reputation and brand value while every driver is simultaneously cognizant of protecting their own reputation and brand value.

Uber and similar companies have procedures that appear clearly superior to those of traditional taxi firms—as evidenced by the collapse of the taxi industry as consumers rushed to embrace Uber. The triumph of Uber and other rideshare companies over an entrenched, government-regulated taxi system can be seen as a triumph of private safety regulation over political regulation.

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