

Rideshare Volume and DUI Incidents in Atlanta, Georgia; Chicago, Illinois; and Fort Worth, Texas

Developed for National District Attorneys Association (NDAA)

by

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Introduction

Every day, 29 people in the United States die on average in motor vehicle crashes that involve an alcohol-impaired driver ([NCSA, 2019](#)). This equates to one death every 50 minutes. According to the National Highway Traffic Safety Administration (NHTSA), there were 10,142 alcohol-impaired-driving fatalities accounting for 28 percent of 2019 overall fatalities, the lowest percentage since 1982, when NHTSA started reporting alcohol data ([NCSA, 2020](#)). This is a 5.3 percent decrease from 2018 to 2019. Alcohol-impaired-driving also carries a significant price tag in addition to the loss of life. The annual cost of alcohol-related crashes totals more than \$44 billion ([Blincoe et al, 2010](#)).

The COVID-19 pandemic has forever changed the landscape of traffic safety creating several challenges for traffic safety professionals. NHTSA and the National Safety Council (NSC) report that early estimates from 2020 indicated the COVID pandemic had influenced driving behaviors in 2020. Although a decline in vehicle miles traveled (VMT) occurred, there was a rise in crashes as risky driving behaviors were found to have increased during this time; in particular, driving impaired, non-belt use, and speeding ([Wagner et al, 2020](#)). The NSC estimates that 42,060 people died in vehicle crashes in 2020, an 8 percent increase over 2019 and the first jump in four years. In addition, the fatality rate per 100 million miles driven spiked 24 percent, the largest annual percentage increase since the council began collecting data in 1923 ([NSC, 2021](#)).

Alcohol-impaired driving laws across the U.S. prohibit driving with a blood alcohol content (BAC) at or above a specified level (0.05 or 0.08 depending on the state). Additionally, zero tolerance laws (e.g., for drivers under the age of 21) have been established where any measurable amount of alcohol detected when driving is illegal. Even though these laws are well known, alcohol-impaired drivers continue to get behind the wheel and alcohol-impaired driving persists as a significant public health and safety issue on U.S. roadways. While the impact of the legalization of marijuana in several states on impaired driving fatalities and serious injuries is relatively unknown, the national roadside survey has shown an increase in drug-positive driving, including cannabis ([Berning, Compton, & Wochinger, 2015](#)). In addition to the legalization of both recreational and medical marijuana, the opioid crisis, and this rise of other drug use – including over the counter (OTC) and prescription drugs has likely contributed to this increase. The COVID pandemic and current social issues certainly have and continue to impact policing, public health workers, traffic safety professionals, and all road users despite decades of efforts to address and reduce the incidence of these behaviors. It is apparent that new strategies to mitigate the rising number of crashes and to reduce risky driving behaviors are imperative to reverse this growing trend. Even though road use, traffic patterns and VMTs are rebounding

closer to pre-coronavirus levels, risky driving behaviors, including impaired driving, continue with deadly consequences.

The share of Americans who say they have used ride-sharing services doubled between 2015 – 15 percent; and 2018 – 36 percent ([Jiang, 2019](#)). Rideshare platforms provide a viable countermeasure to address alcohol- and drug-impaired driving and other risky driving behaviors by offering a safe, alternative method of transportation. NHTSA has reported that night and weekend alcohol-impaired driving fatalities are consistently higher than other days and times of the week ([NCSA, 2019](#)). Ride-sharing alternatives, which are largely available during these proven higher fatality periods, should be seriously considered when seeking mitigation efforts in this regard.

Driving impaired is one of the riskiest driving behaviors that take place on United States (U.S.) roadways. For this reason, alcohol- and drug-impaired driving is considered a priority issue by every state highway safety office (HSO). Risky driving behaviors such as impaired driving, that are deemed as priority issues for States, are listed as such in HSO highway safety plans (HSPs) where state funding and strategies are focused on reducing crashes resulting from engaging in these actions.

State highway safety office (SHSO) countermeasures to reduce alcohol-impaired driving often include messaging to designate a “sober ride” home. Since 2018, the Governors Highway Safety Association (GHSA), has partnered with Lyft to combat impaired driving during the holiday season. Through this partnership, five grants are awarded to SHSOs. The 2019 State recipients were California, Illinois, Maine, Oregon, and Washington. These states distributed Lyft ride coupons and delivered educational and awareness campaign messaging on both social media and paid media platforms ([GHSA, 2020](#)). Overall, the traffic of the Lyft ads along with the number of ads promoted was a success, and all 1,002 Lyft credits distributed were redeemed by the end of the campaign. As a result, these five state agencies were effective in generating public awareness and encouraging residents to use Lyft as an alternative to driving impaired when participating in holiday festivities. 2020 Holiday Season grant awardees were Colorado, Illinois, New Mexico, North Carolina, and Texas ([GHSA, 2020](#)).

According to GHSA, this program was even more critical this year, since motor vehicle fatalities increased as drivers who were on the road during this period were also more likely to engage in risky behaviors including speeding, drunk driving and not buckling up. NHTSA examined fatal and serious injury data collected at five trauma centers during this period and found more than half of drivers tested positive for at least one active drug, including alcohol, marijuana or opioids ([Thomas et al, 2020](#)).

Several studies have examined the relationship between rideshare companies and other alternative transportation and the incidence of impaired driving incidents with varying results. Some research observed a significant decline – up to a 35 percent reduction in at least some types of traffic fatalities following the rollout of Uber and Lyft ([MADD, 2015; Martin-Buck, 2017; Peck, 2017; Greenwood and Wattal, 2017; Dills & Mulholland, 2018 & Moll Law Group, 2020](#);

[Casanova-Powell & Smith, 2020](#)). Other studies found evidence for either no effect ([Brazil and Kirk, 2016](#)) or even an increase in fatalities ([Morrison et al., 2018](#); [Barrios et al., 2019](#)).

A study by Freidman et al, reviewed medical records at a Level I trauma center in New Orleans, Louisiana from 2012 to 2018 and found a significant decrease in the annual average proportion of alcohol related motor vehicle crashes pre/post the availability of ride-sharing services (39 percent vs. 29 percent). This study also showed a decrease in the average annual incidence of fatal alcohol related motor vehicle crashes (11.6 vs 5), a reduction of these crashes for the age category 18 to 29-year-olds (12.7 percent vs 7.5 percent), those that occurred at night (14.7 percent vs 7.6 percent) and the number of DWIs in the area (1,198 vs 612; [Freidman et al, 2020](#)).

Other recent research has found that specific strategies can be used to deploy ridesharing alternatives as a strategy to reduce the incidence of impaired driving. A study by Kurtz et al., found there is potential for on-demand ride hailing alternative transportation to reduce DUI behaviors and arrests among high-risk younger populations. This study focused on adult nightclub patrons who consume alcohol and/or drugs when engaging in a nightclub experience and found key educational, peer support, and structural targets for intervention increased the use of ride-sharing alternative transportation among this population ([Kurtz, et al. 2020](#)).

A study conducted by Kirk et al. investigated differences in the timing of the deployment of Uber across Britain to test the association between the advent of Uber's ride-sharing services and rates of fatal and non-fatal road crashes. This study found that the deployment of Uber in Great Britain was associated with a marginally significant reduction in the number of serious road crash injuries, yet not the number of serious crashes. However, statistically significant association between Uber and traffic fatalities was not observed ([Kirk et al., 2020](#)).

A recent study by Fell et al., found that the most successful alternative transportation programs typically have the following criteria ([Fell et al., 2020](#)):

- social acceptance,
- a high level of public awareness,
- low cost,
- year-round availability,
- provide rides to and from drinking venues,
- several sponsors that provide funding,
- convenience,
- perceived to be safe.

Further research is needed to document and demonstrate the effectiveness of rideshare applications. However, application of the techniques and criteria found in these recent studies regarding strategies to implement ridesharing serves as a useful countermeasure to reduce the incidence of impaired driving.

Background & Scope of Work

The National District Attorneys Association (NDAA) appointed Casanova Powell Consulting and Dr. Ryan C. Smith to examine the relationship between rideshare volume and driving under the influence (DUI) incidents in three cities: Atlanta, Georgia; Chicago, Illinois; and Fort Worth, Texas in support of their existing partnership with Lyft.

Founded in 1950, the National District Attorneys Association (NDAA) is a national, non-partisan non-profit membership association that provides training, technical assistance, and services to prosecutors around the country in support of the prosecution profession. As the oldest and largest association of prosecutors in the country with over 5,000 members, our mission is to be the voice of America's prosecutors and to support their efforts to protect the rights and safety of the people by providing its members with the knowledge, skills, and support they need to ensure justice is attained. NDAA, located in Arlington, VA represents state and local prosecutors' offices from both urban and rural districts, as well as large and small jurisdictions. NDAA serves as a nationwide, interdisciplinary resource center for research, training, knowledge building and accountability as it works to promote a fair and equitable administration of justice ([NDAA, 2020](#)).

Lyft was founded in 2012 by Logan Green and John Zimmer to improve people's lives with the world's best transportation and is available to 95 percent of the United States population as well as select cities in Canada. Lyft is committed to effecting positive change for our cities and making cities more livable for everyone through initiatives that bridge transportation gaps, and by promoting transportation equity through shared rides, bikeshare systems, electric scooters, and public transit partnerships ([GHSA, 2020](#)).

Objectives

This study has three main objectives:

1. Obtain and format traffic safety data related to Lyft rideshare volume and DUI incidents in target locations (Atlanta, Georgia; Chicago, Illinois, and Fort Worth, Texas).
2. Determine the relationship between Lyft rideshare volume and DUI "incidents" in these locations.
3. Evaluate changes in DUI trends pre and post-Lyft introduction in these locations.

Analysis Cities

Three cities were selected for analysis for this report: Atlanta, Georgia; Chicago, Illinois; and Fort Worth, Texas. These cities were selected based on their volume of traffic, DWI incidences, and availability of data.

According to the CDC, from 2009-2018, 3,241 people were killed in crashes involving an alcohol-impaired driver in Georgia ([CDC, 2020](#)); 3,148 people were killed in crashes involving an alcohol-impaired driver in Illinois ([CDC, 2020](#)); and 13,592 people were killed in crashes involving an alcohol-impaired driver in Illinois ([CDC, 2020](#)). Georgia's DUI arrest rates have increased by more than 25 percent since 2014 ([Baktari, 2019](#)). Researchers reported that the number of DUI arrests and alcohol-related fatal accidents in Illinois have remained stable or decreased from 2009 to 2019. In 2019 in Illinois, 276 people were killed in alcohol-related crashes, which was approximately 27 percent of the 1,009 total crash fatalities. Additionally, and

26,224 DUI arrests were recorded by the Secretary of State's office in Illinois ([Wise, 2021](#)). NHTSA reported that Texas had one of the highest alcohol-impaired driving fatality percentages in 2018 ([NCSA, 2020](#)). As previously mentioned, early estimates show the COVID pandemic affected motor vehicle crashes and fatalities, however, specific state numbers involving alcohol or drug impairment have not been readily available. Like several states in 2020, Texas showed an increase in fatal crashes despite the drop in traffic volume. The Texas Department of Transportation reported 3,893 people were killed in automobile crashes during 2020, up from 3,623 deaths in 2019. That increase occurred even though traffic volumes were about 50 percent below normal for several months of the year ([Dixon, 2021](#)).

Impaired Driving Laws

Impaired driving laws vary substantially by state. A brief description of the impaired driving laws for Georgia, Illinois, and Texas are included below to provide context into each state's impaired driving legal environment. All states had a .08 per se law for alcohol but varied on their drug policies and rules regarding repeat offenders.

Georgia

A first and second DUI (alcohol or drug impairment) are considered misdemeanor offenses ([O.G.C.A. § 40-6-391\(c\)](#)). A third DUI is considered a more serious, aggravated misdemeanor with the potential to be declared a habitual offender. This can result in the offender losing their license for an extended period. A fourth DUI in a ten year period (since July 1, 2008) is considered a felony offense with penalties including a fine between \$1,000 and \$5,000 as well as a prison sentence of between one and five years. The judge may "suspend, stay, or probate all but 90 days of any term of imprisonment." A defendant may receive credit for time served in jail after he or she was placed under arrest. In addition, to a prison sentence and any fine that may be imposed, a defendant may also be required to serve probation, community service, and ordered to complete a DUI program and go through a clinical evaluation.

In addition to the criminal penalties that may be imposed, a person convicted of a felony DUI will also have administrative penalties including an administrative license suspension. The length of the license suspension and the ability to retain a temporary license depends on the level of offense.

Illinois

["Driving Under the Influence"](#) is defined as operating a motor vehicle while impaired by alcohol, other drugs, including cannabis (marijuana) prescribed for medical purposes, or intoxicating compounds and methamphetamine. In Illinois, drivers are legally considered to be under the influence if they have a blood-alcohol content (BAC) of .08 or more, have a tetrahydrocannabinol (cannabis) concentration (THC) of either 5 nanograms or more per milliliter of whole blood or 10 nanograms or more per milliliter of other bodily substance, have used any other controlled substance, or are impaired by medication. Illinois law allows for the medical and recreational use, if age 21 or older, of cannabis. A driver may not operate a motor vehicle while impaired by the use of cannabis, whether used medically or recreationally.

A statutory summary suspension provides for the automatic suspension of driving privileges of a driver arrested for DUI who fails, refuses to submit to, or fails to complete chemical testing. Failure of chemical testing means a driver has a BAC of .08 or more, a THC of either 5

nanograms or more per milliliter of whole blood or 10 nanograms or more per milliliter of other bodily substance, or a trace of other drugs. Administrative penalties for a first offense include suspension of driving privileges for six months (eligible for a Monitoring Device Driving Permit). Administrative penalties for a second or subsequent offense within five years include suspension of driving privileges for one year. A first conviction is considered a Class A misdemeanor and that carries a minimum revocation of driving privileges for one year (two years if driver is under age 21) and suspension of vehicle registration. A second conviction is also considered a Class A misdemeanor with a mandatory minimum imprisonment of five days or 240 hours of community service; the revocation of driving privileges for a minimum of five years for a second conviction within 20 years; and suspension of the vehicle registration. A third Conviction is considered an Aggravated DUI – a Class 2 felony. Here, driving privileges are revoked for a minimum of 10 years; and the vehicle registration is suspended. Fourth and subsequent Convictions are also considered an Aggravated DUI and Class 2 felony which warrants revocation of driving privileges for life and suspension of the vehicle registration. These violations are also subject to fines ranging from \$2,500 to \$25,000 and imprisonment from up to 1 year for a Class A misdemeanor to a Class X felony of up to 30 years.

Texas

A driver is legally intoxicated in Texas ([Texas Penal Code § 49.04, et seq](#)) when a driver's blood alcohol concentration reaches 0.08 percent, however a driver is considered to be in violation as soon as drugs or alcohol affect their driving even if the BAC is not at the legal limit, a driver is considered to be intoxicated if the driver's mental or physical abilities are impaired due to alcohol or other drugs. Penalties for a first offense included up to a \$2,000 fine; up to 180 days in jail upon conviction with three mandatory days, driver license suspension for up to a year. Penalties for a second offense include up to a \$4,000 fine; one month to a year in jail upon conviction, and driver license suspension up to two years. Penalties for a third offense includes a \$10,000 fine; two to 10 years in prison; driver license suspension for up to two years. These fines do not include a state fine of \$3,000, \$4,500, or \$6,000 assessed upon sentencing. Penalties also may include community service, DWI education and treatment programs, mandatory use of ignition interlock device (after 2 or more DWI convictions in 5 years), and increased auto insurance premiums.

Methods

The general analytic approach was to examine changes in impaired driving outcomes with the introduction of ridesharing in three cities: Atlanta, Georgia; Chicago, Illinois, and Fort Worth, Texas. Each of these cities provided data to Lyft in response to a Freedom of Information Act request. There was significant variability in the data provided by these locations, including format, level of aggregation, time periods covered, and DUI outcomes. Data were provided by Lyft on monthly Lyft rideshare volume in each of those locations.

Individual analyses of each location were conducted to account for the variability in DUI outcome measures. Initial analyses at each location focused on descriptive statistics and changes in DUI outcomes following the introduction of Lyft ridesharing in the city. Next, correlations were calculated to understand the strength of the relationship between Lyft rideshare volume and DUI outcomes. Finally, trends in DUI outcomes before and after the

introduction of Lyft ridesharing were examined. Specifically, these analyses focused on whether trends in DUI outcomes improved in these locations following the introduction of Lyft.

Results

Atlanta

The most comprehensive data were provided by the city of Atlanta. This included case-level data on DUI charges and crashes from 2009 to 2017. The dataset included event location, date, number of vehicles, injuries, crash type, weather, violation, and specific arrest charge. All DUI-related charges and crashes were included in these analyses. Rideshare data were provided by Lyft for 2013 (when Lyft rideshare was introduced in Atlanta) through September 2020. Table 1 shows DUI outcomes in Atlanta for all available data years.

Table 1. Yearly Atlanta DUI Outcomes 2009 - 2017

Year	Charges	Crashes
2009	1,714	247
2010	2,241	238
2011	1,923	238
2012	2,070	219
2013	2,155	247
2014	1,943	208
2015	1,541	239
2016	1,305	215
2017	1,028	203

The relationship between these DUI outcome variables and ridesharing volume were calculated using bivariate correlations. The correlation matrix is provided in Table 2. As can be seen in the table, rideshare volume was strongly negatively correlated to DUI charges in Atlanta ($r = -.86$, $p < .01$). There was also a negative correlation between rideshare volume and DUI crashes in Atlanta that approached statistical significance ($r = -.66$; $p = .054$). It is not surprising even a strong correlation would not necessarily reach statistical significance because of the low statistical power of this analysis (each year was treated as a subject). The table also shows the relationship between charges and crashes in Atlanta, as well as means and standard deviations of the study variables. The relationship between rideshare volume, charges, and crashes are further examined below.

Table 2. Means, Standard Deviation, and Correlations for Atlanta DUI Outcomes and Rideshare Volume

Variable	<i>M</i>	<i>SD</i>	1	2
1. Volume	813,747	1,555,502		
2. Charges	1,769	409	-.86**	
3. Crashes	228	17	-.66	.51

***p* < .01

Figure 1 shows the annual number of DUI charges from 2009 through 2017 in Atlanta. The dashed line indicates when ridesharing was introduced (i.e., 2013). During the years prior to the introduction of ridesharing (i.e., 2009 to 2013) there was a 25.7 percent increase in DUI charges. This is compared to a 52.3 percent decrease from 2013 to 2017, the last year outcome data were available for Atlanta.

Figure 1. Rideshare Volume and DUI Charges in Atlanta from 2009 to 2017

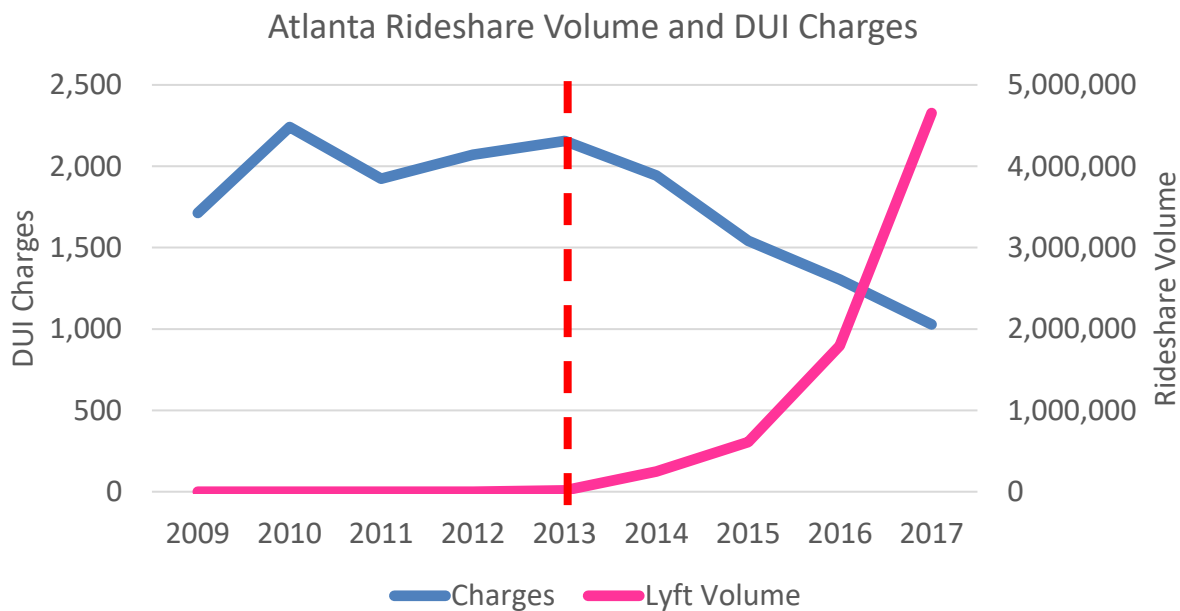
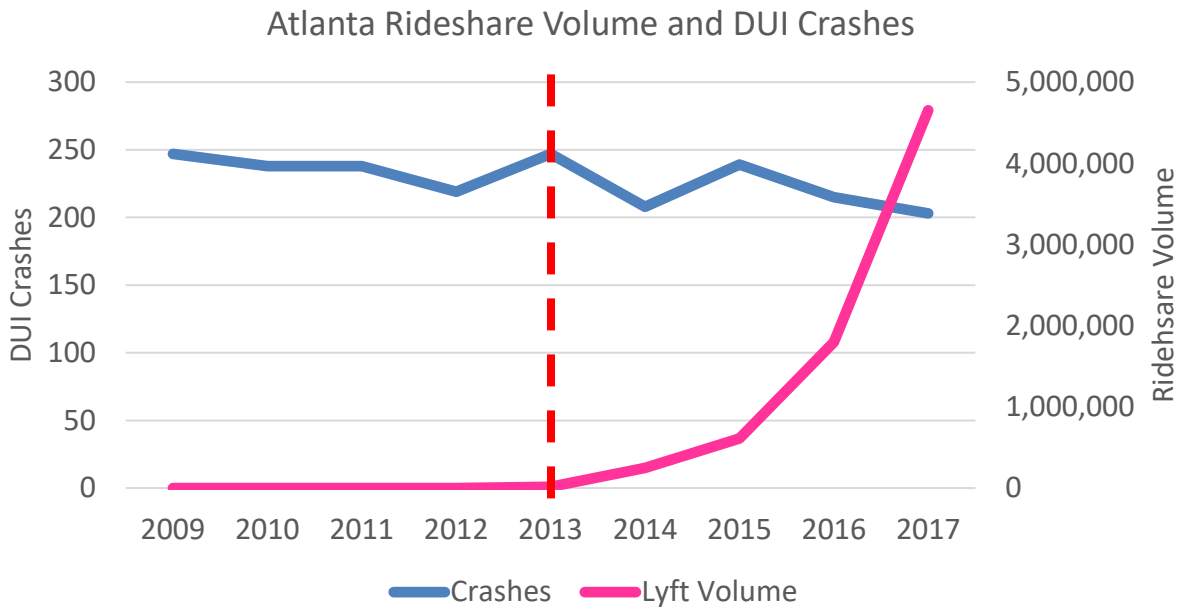


Figure 2 shows the annual number of DUI crashes from 2009 through 2017 in Atlanta. While there was some variance across years, the total number of DUI crashes was identical from 2009 to 2013 (when ridesharing was introduced; *n* = 247). Following the introduction of ridesharing, the number of crashes decreased by 17.8 percent from 2013 through 2017.

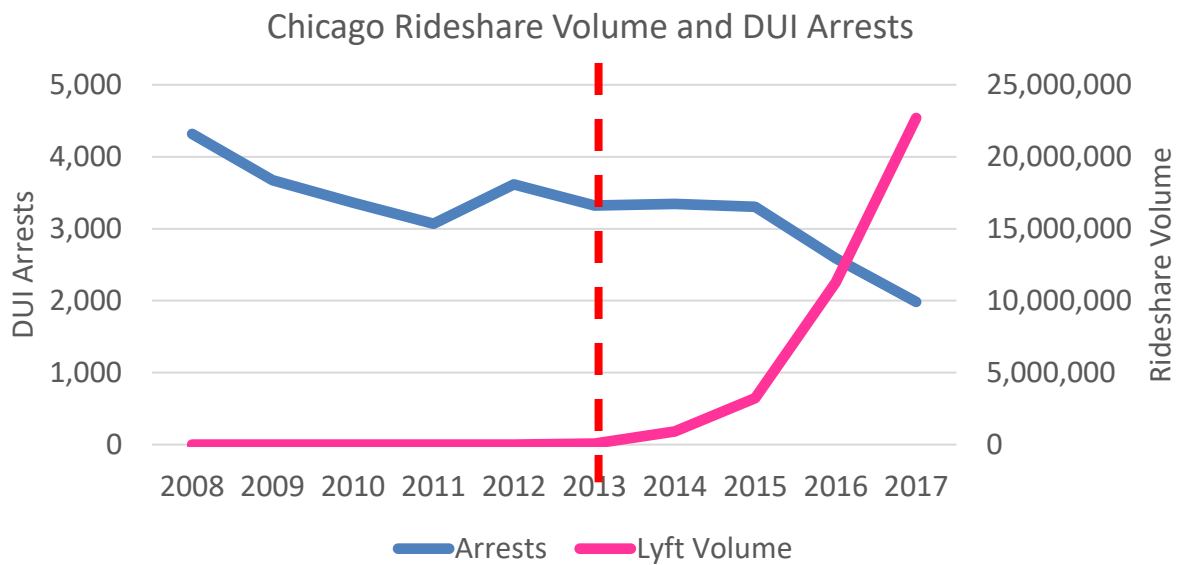
Figure 2. Rideshare Volume and DUI Crashes from 2009 to 2017



Chicago

The city of Chicago provided the number of annual DUI arrests from 2008 to 2017. Figure 3 shows the change in DUI arrests and rideshare volume over this time period. The dotted red line indicates the year Lyft was introduced in Chicago (i.e., 2013). During the period prior to rideshare from 2008 through 2013, there was a 23.0 percent decrease in DUI arrests from 4,318 to 3,323. Following the initiation of rideshare in Chicago there was a 40.3 percent decrease from the 3,323 arrests in 2013 to 1,983 arrests in 2017. The correlation between charges and rideshare volume was strong and statistically significant ($r = -.85, p < .01$).

Figure 3. DUI Arrests and Lyft Rideshare Volume in Chicago from 2008 to 2017



Fort Worth

Fort Worth provided two sets of outcome data. Annual DUI/DWI arrests by the Fort Worth Police Department were provided for 2008 through 2017. Reported crashes with a positive alcohol or drug test result were provided from 2012 through 2017. These crashes were further broken down into the categories of unknown, incapacitating injury, non-incapacitation injury, possible injury, fatality, and not injured. Analyses were conducted on all available data years (i.e., starting with 2008 for arrests and 2012 for crashes). Total crashes and fatalities were analyzed from the crash dataset. Lyft provided its ridesharing data from 2014, when it was introduced, through 2020. Specific outcome data are provided below in Table 3.

Table 3. Annual DUI Outcomes for Fort Worth

Year	Arrests	Crashes	Fatal Crashes
2008	2,580	-	-
2009	2,304	-	-
2010	1,889	-	-
2011	1,511	-	-
2012	1,918	523	43
2013	1,544	412	35
2014	1,469	373	39
2015	1,486	407	29
2016	1,272	340	40
2017	1,359	359	26

The relationship between these DUI outcome variables and ridesharing volume were calculated using bivariate correlations. The correlation matrix is provided in Table 4. As can be seen, rideshare volume was negatively correlation to all DUI outcome measures (i.e., arrests, crashes, and fatal crashes). While each of these correlations was greater than .45, these values did not reach statistical significance. Again, this is likely due to the low statistical power of using aggregate annual data where the effective sample size is equivalent to the number of years analyzed. There was a strong significant correlation between arrests and crashes indicating that both outcomes are highly related in Fort Worth. The relationship between rideshare volume, arrests, and collisions are further examined below.

Table 4. Means, Standard Deviations, and Correlations between Study Variables in Fort Worth

Variable	<i>M</i>	<i>SD</i>	1	2	3
1. Volume	92,643	202,039.6			
2. Arrests	1,733	430.8	-.46		
3. Crashes	402	65.3	-.52	.99**	
4. Fatal Crashes	35	6.7	-.60	.46	.41

***p* < .01

Figure 4 shows the annual number of arrests from 2008 through 2017. The dashed line indicates when ridesharing was introduced. As can be seen in the figure, there was a substantial reduction in the number of arrests in Fort Worth over this time period. In fact, the number of arrests decreased by 47.3 percent over these ten years. This included a 43.1 percent reduction in arrests preceding the introduction of Lyft and a 7.5 percent reduction in the number of arrests post-Lyft.

Figure 4. DUI Arrests and Lyft Rideshare Volume in Fort Worth from 2008 - 2017

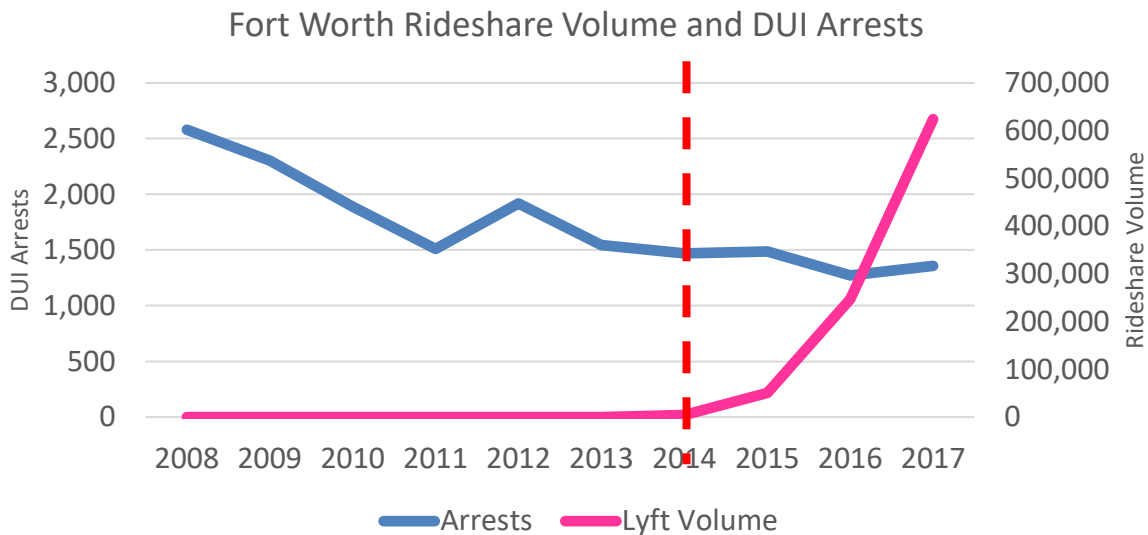
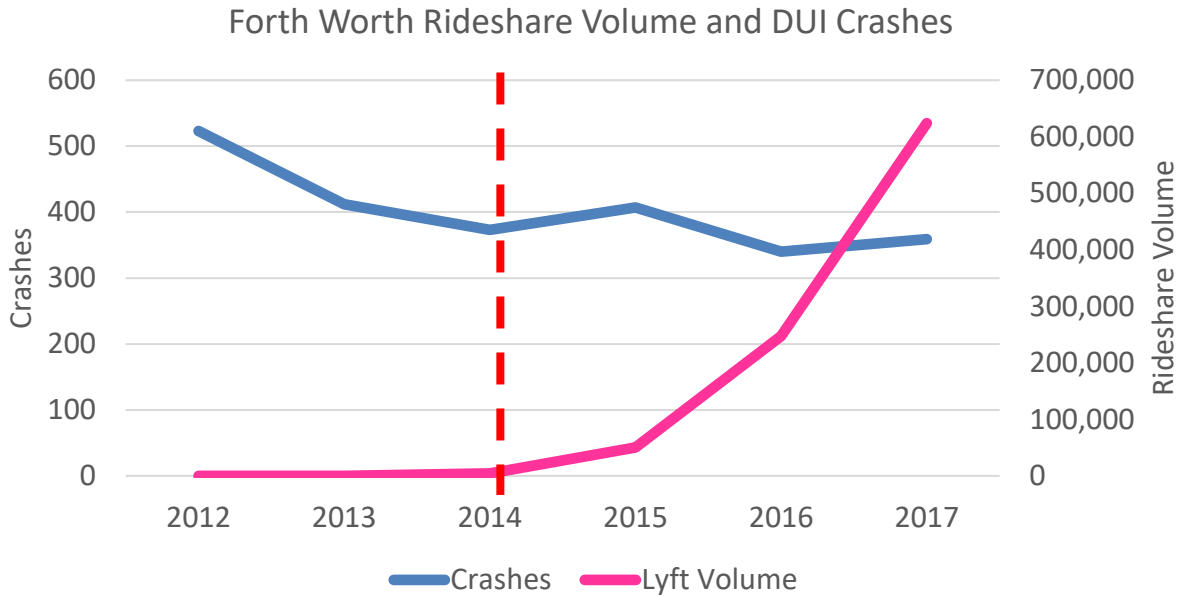


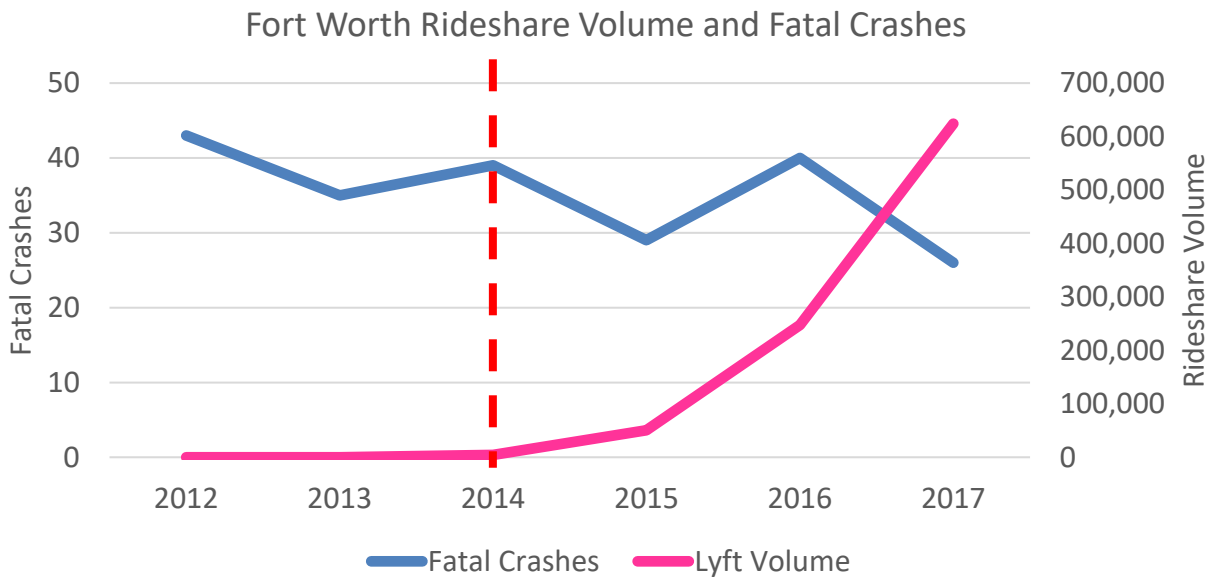
Figure 5 shows the annual number of alcohol- and other-drug-involved crashes in Fort Worth. Again, data on crashes were only provided from 2012 through 2017. Overall, the number of DUI crashes decreased by 31.4 percent over this period. This included a 28.7 percent reduction in crashes preceding the introduction of Lyft (i.e., 2012 – 2014) and a 3.8 percent reduction in crashes post-introduction (2014 – 2017).

Figure 5. Annual Crashes and Lyft Ridesharing Volume in Fort Worth 2012 – 2017



Alcohol- and other-drug-involved fatal crashes were also specifically examined as shown in Figure 6. During this time period, fatal crashes decreased by 39.5 percent. Fatal crashes decreased 9.3 percent in the two years preceding the introduction of Lyft (i.e., 2012 – 2014). The number of fatal crashes further decreased by 33.3 percent following the introduction of Lyft (i.e., 2014 – 2017).

Figure 6. Annual Fatal Crashes and Lyft Ridesharing Volume in Fort Worth 2012-2017



Overall Results and Summary

The differences in data provided by each of the cities, as well as other key differences in each city (e.g., when Lyft was introduced), make comparisons across each of these locations challenging. While these differences make aggregate analyses infeasible, there were strong themes that could be identified in the results of each of these three cities when considered in combination. In fact, the results were largely consistent across all three locations.

Across all three cities, every DUI outcome decreased following the introduction of Lyft. This included arrests, crashes, and fatalities. The relationship between rideshare volume and these DUI outcomes were further examined using bivariate correlations. Again, there was a moderate-to-strong negative correlation between rideshare volume and each of the DUI outcomes. This means that as rideshare volume increased in these cities, the number of DUI events (i.e., arrests and crashes) decreased. Despite the low statistical power, many of these correlations reached or approached statistical significance.

Finally, longitudinal trends in DUI outcomes were examined before and after the introduction of Lyft. While it is quite notable that DUI outcomes decreased following the implementation of Lyft in all locations, it is also valuable to consider how these decreases compared to city-level trends prior to the introduction of Lyft. This provides context around whether the decreases in DUI outcomes are likely capturing existing downward trends or represent a change in the trends.

The strongest results for changes in trends over time were observed for Atlanta. In this city, there was a 25.7 percent increase in DUI charges from 2009 – 2013 prior to the introduction of Lyft. This is compared to a 52.3 percent decrease in DUI charges following the introduction of Lyft. Furthermore, while there was no net change in the annual number of DUI crashes from 2009 – 2013, there was a 17.8 percent decrease in the number of these crashes following Lyft's introduction. Thus, these DUI outcomes went from increasing or staying the same to decreasing post-Lyft.

Across the ten years of data provided by Chicago (i.e., 2008 – 2017), there was a continual downward trend in the number of DUI arrests. However, the decrease in DUI arrests nearly doubled from 23.0 percent prior to the introduction of Lyft to 40.3 percent post-introduction. The average number of DUI outcomes in Fort Worth also trended downward over the years available for analysis. For both DUI arrests and crashes, there was a greater decrease prior to the introduction of Lyft (43.1 percent and 28.7 percent) as compared to following the introduction of Lyft (7.5 percent and 3.8 percent, respectively). Yet, it remains notable that these outcomes continued to decline, albeit at a slower pace, following the introduction of Lyft. The number of fatal crashes in Fort Worth is smaller than both the number of DUI arrests and crashes, and, thus, extra caution should be given to interpreting these values. Nonetheless, while there was a 9.3 percent reduction in fatal crashes in the years prior to the introduction of Lyft, this increased to a 33.3 percent reduction post-introduction of Lyft.

Discussion

Importance of Rideshare

With the recent increase in risky driving trends due to the COVID pandemic, including driver impairment by alcohol and drugs, we have lost important life-saving ground in our efforts to get to zero deaths on our roadways. There has also been an increase in states moving to legalize and decriminalize recreational and medical cannabis. According to Czeisler et al. (2020), communities have faced mental health challenges related to COVID-19–associated morbidity, mortality, and mitigation activities. Elevated levels of adverse mental health conditions, substance use, and suicidal ideation were reported by adults in the United States in June 2020 at a time when access to care was limited ([Czeisler et al., 2020](#)). This likely contributed to the increase in drinking and driving behaviors during this time. Traffic safety professionals are concerned that these behaviors will not subside. In addition, some states and lobbyists are looking to continue the availability of alcohol “to-go” and curbside sales. Changes in policy, paired with the increased use of prescription and over the counter drugs, highlights the increased public safety threat of driving under the influence of alcohol and drugs on U.S. roadways.

Rideshare services, more now than ever, offer an affordable, convenient, and accessible alternative, and riders are responding in a positive way. An annual economic survey conducted by Lyft, found that 71 percent of riders reported they are less likely to drive substance-impaired due to the availability of Lyft. As previously mentioned, NHTSA has documented that most alcohol impaired driving fatalities occur on nights and weekends, this information aligns with the frequency of Lyft’s reported ride use where the majority of Lyft rides take place outside of commute hours, such as nights and weekends. In addition, according to a recent analysis by Lyft, more Lyft pick-ups and drop-offs occur in areas where entertainment and nightlife establishments occur and during the evening ([Hutchinson, 2020](#)). Previously mentioned research by Kurtz showed that pairing marketing and messaging to utilize ride-sharing alternatives to these demographics can reduce the incidence of impaired driving which supports the analysis of data presented in this report.

Discussion of study findings

It is important to note that through 2018, national trends have also shown decreases in alcohol impaired driving. Specifically, alcohol impaired-driving fatalities in the past 10 years have declined by 2 percent from 10,759 in 2009 to 10,511 in 2018 ([NCSA, 2018](#)), with an additional 5.3 percent decrease from 2018 to 2019 ([NCSA, 2020](#)). Across the U.S., alcohol-impaired drivers involved in single-vehicle, nighttime crashes dropped from 49 percent in 2009 to 40 percent in 2018 (9 percent difference; [NCSA, 2018](#)). As with a prior study by [Casanova Powell and Smith](#), “Rideshare Volume and DUI Incidents in Target California Communities”, an important aspect of this study was to investigate if reductions in DUI outcomes with the introduction of Lyft simply captured this national trend or if greater improvements in DUI outcomes were experienced following rideshare introduction. This again was the primary goal of conducting pre-post analyses in this study.

Accordingly, trends in DUI outcomes with the introduction of Lyft ridesharing were examined in three cities: Atlanta, Georgia; Chicago, Illinois, and Fort Worth, Texas. Results were largely

consistent across cities and supportive of a decrease in negative DUI outcomes following the introduction of Lyft ridesharing. Across all cities, there was a notable decrease in each of the assessed DUI outcomes following the introduction of Lyft. Furthermore, as rideshare volume went up in these locations, there was an associated decrease in these outcomes. In fact, this decrease was statistically significant for DUI charges in both Atlanta and Chicago. These two cities also experienced substantial changes in the annual trends of DUI outcomes following the introduction of Lyft. For example, Atlanta went from averaging a 25 percent increase in DUI charges prior to the introduction of Lyft to a 52.3 percent reduction post-introduction, and the decrease in charges in Chicago nearly doubled post-Lyft (23.0 percent versus 40.4 percent). Findings did differ in Forth Worth with DUI arrests and crashes decreasing following the introduction of Lyft, but not at as largely as the pre-introduction time period. However, fatal crashes in Forth Worth did decrease at a greater magnitude post-Lyft as compared to pre-Lyft (33.3 percent versus 9.3 percent).

As with the Casanova Powell & Smith study in California, due to the lack of true experimental control and the large number of variables that impact traffic outcomes, a causal attribution cannot be given to the role of ridesharing in directly producing the improvements in DUI outcomes that were observed across all three study cities. However, the results are consistent with research hypotheses that ridesharing would be associated with traffic safety improvements. The results provide early support for the safety benefits of ridesharing and should encourage further research in this area.

Limitations

Certain limitations of this study and approach should be acknowledged. The purpose of this study was to examine the correlational relationship between impaired driving incidents and the presence of Lyft in these cities. This study is not intended to identify a causal relationship between the use of Lyft's rideshare services and the frequency of impaired driving outcomes. There are several factors that were not examined for the purposes of this study that can influence the number of impaired driving incidents. Some of these factors include vehicle miles traveled (VMTs), law enforcement engagement, countermeasures and messaging that may have been conducted during these times, socioeconomic influences, sex, age, and other demographics.

Data were only provided for Atlanta, Georgia; Chicago, Illinois; and Fort Worth, Texas. Control cities were not used for pre-post comparison purposes. Data obtained for this study did not include individual Lyft usage and related DUI events since it is not possible to solely examine Lyft's relationship with traffic outcomes at the individual level.

Despite these limitations, this and the previous study provide additional information to the limited empirical knowledge about the association of rideshare services with traffic outcomes. Future research should investigate these relationships to further expand our understanding of rideshare services.

Recommendations

Several studies shown that rideshare platforms are related to reductions in impaired driving arrests, fatalities, and crashes, while other studies show no effect. This study adds to that body of literature and is a crucial early step in understanding the potential value of ridesharing in reducing DUI harm. Although reductions in DUI incidents were observed with the introduction of Lyft in all three cities, the correlational results cannot be used to determine a causal relationship. It is possible and likely that other factors may have influenced these reductions. It is recommended that further research is conducted using additional data which, at a minimum, includes vehicle miles traveled, law enforcement engagement, and economic factors.

The research team applauds Lyft's dedication to improving public safety and providing their rideshare data in an effort to promote and support this research. The research team encourages all rideshare programs to engage in similar data sharing to allow for greater understanding of rideshare benefits and to conduct more robust studies to identify the impact of rideshare platforms on impaired driving incidents.

References

- Baktari, J. (2019, December) Worst States for DUIs. Accessed: 3-20-21. Retrieved from: <https://www.usdrugtestcenters.com/research-articles/14/worst-states-for-duis.html>
- Barrios, J.M., Hochberg, Y. V. & Yi, H. The Cost of Convenience: Ridesharing and Traffic Fatalities (March 17, 2019). Chicago Booth Research Paper No. 27, Available at SSRN: <https://ssrn.com/abstract=3259965> or <http://dx.doi.org/10.2139/ssrn.3259965>
- Beitel, G. A., Sharp, M. C., & Glauz, W. D. (2000). Probability of arrest while driving under the influence of alcohol. *Injury prevention : journal of the International Society for Child and Adolescent Injury Prevention*, 6(2), 158–161. <https://doi.org/10.1136/ip.6.2.158>
- Bergen, G., Shults, R., & Rudd, R.A. (2011). Vital signs: alcohol-impaired driving among adults--United States, 2010. *MMWR. Morbidity and mortality weekly report*, 60 39, 1351-6 . <https://pubmed.ncbi.nlm.nih.gov/21976118/>
- Berning, A., Compton, R., & Wochinger, K. (2015, February). Results of the 2013-2014 National Roadside Survey of alcohol and drug use by drivers. (Traffic Safety Facts Research Note. Report No. DOT HS 812 118). Washington, DC: National Highway Traffic Safety Administration. https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/812118-roadside_survey_2014.pdf
- Blincoe LJ, Miller TR, Zaloshnja E, Lawrence BA. National Highway Traffic Safety Administration. The economic and societal impact of motor vehicle crashes, 2010. (Revised). U.S. Department of Transportation, Washington, DC; 2015. Available at: <http://www-nrd.nhtsa.dot.gov/pubs/812013.pdf>
- Brazil, N. & Kirk, D.S., Uber and Metropolitan Traffic Fatalities in the United States, *American Journal of Epidemiology*, Volume 184, Issue 3, 1 August 2016, Pages 192–198, <https://doi.org/10.1093/aje/kww062>
- Casanova Powell, T.D. & R. Smith (2020) Rideshare Volume and DUI Incidents in Three California Cities. Developed for National Association of District Attorneys (NDAA). http://ndaa.org/wp-content/uploads/NDAA_Lyft_FinalReport.pdf
- Center for Disease Control and Prevention (2020, July) Sobering Facts: Alcohol-Impaired Driving Georgia. Accessed 3-9-21. Retrieved from: <https://www.cdc.gov/motorvehiclesafety/pdf/impaired-driving-new/CDC-impaired-driving-fact-sheet-Georgia.pdf>
- Center for Disease Control and Prevention (2020, July) Sobering Facts: Alcohol-Impaired Driving Illinois. Accessed 3-9-21. Retrieved from: <https://www.cdc.gov/motorvehiclesafety/pdf/impaired-driving-new/CDC-impaired-driving-fact-sheet-Illinois.pdf>
- Center for Disease Control and Prevention (2020, July) Sobering Facts: Alcohol-Impaired Driving Texas. Accessed 3-9-21. Retrieved from: <https://www.cdc.gov/motorvehiclesafety/pdf/impaired-driving-new/CDC-impaired-driving-fact-sheet-Texas.pdf>

Czeisler M^É, Lane RI, Petrosky E, et al. Mental Health, Substance Use, and Suicidal Ideation During the COVID-19 Pandemic — United States, June 24–30, 2020. *MMWR Morb Mortal Wkly Rep* 2020;69:1049–1057. DOI: <http://dx.doi.org/10.15585/mmwr.mm6932a1> external icon.

Dixon, G. (2021) Texans spent much of 2020 stuck at home. So why did so many people die in car crashes? March 19, 2021. Accessed 3-21-2021. Retrieved from: <https://www.star-telegram.com/article249945714.html>

Dills, A. & Mulholland, S. (2018). Ride-Sharing, Fatal Crashes, and Crime. *Southern Economic Journal*. 84. 10.1002/soej.12255. DOI: [10.1002/soej.12255](https://doi.org/10.1002/soej.12255)

Fell, J., Scolese, J., Achoki, T., Burks, C., Goldberg, A., and DeJong, W. (2020) The effectiveness of alternative transportation programs in reducing impaired driving: A literature review and synthesis. *Journal of Safety Research*. Online access. Accessed 9-21-20. <https://doi.org/10.1016/j.jsr.2020.09.001>

Governors Highway Safety Association (GHSA) (2020, September) Lyft and GHSA Partner with States to Deter Impaired Driving During the Holidays. Accessed 9-23-20. Retrieved from: <https://www.ghsa.org/resources/news-releases/LyftGrants19>

Hutchinson, E. (2020). There's no excuse for driving impaired. Apr 24, 2019. Accessed 9-20-20 <https://medium.com/sharing-the-ride-with-lyft/theres-no-excuse-for-driving-impaired-38c37ce29c92>.

Friedman, Jessica MD; Hendrix, Vera MD; Fustok, Judy JD; Reza, Tara MPH; Madda, Prathima; Smith, Alison MD, PhD; Mayer, Scott MD; Duchesne, Juan MD; Greiffenstein, Patrick MD; Schroll, Rebecca MD Correlation of ride sharing service availability and decreased alcohol-related motor vehicle collision incidence and fatality, *Journal of Trauma and Acute Care Surgery*: September 2020 - Volume 89 - Issue 3 - p 441-447
doi: 10.1097/TA.0000000000002802.
https://journals.lww.com/jtrauma/Abstract/2020/09000/Correlation_of_ride_sharing_service_availability.4.aspx

Governors Highway Safety Association (GHSA) Lyft. Accessed 3-22-21. Retrieved from: <https://www.ghsa.org/members/lyft>

Governors Highway Safety Association (GHSA) (2020, November) Lyft and GHSA Award Grants to Help States Offer Motorists an Alternative to Driving Impaired During the Holidays. Accessed 3-20-21. Retrieved from: <https://www.ghsa.org/resources/news-releases/Lyft-Grants20>

Governors Highway Safety Association (GHSA) (2020, September) Lyft and GHSA Partner with States to Deter Impaired Driving During the Holidays. Accessed 9-23-20. Retrieved from: <https://www.ghsa.org/resources/news-releases/LyftGrants19>

Jiang J. More American are using ride-sharing apps (2019). Available from: <https://www.pewresearch.org/fact-tank/2019/01/04/more-americans-are-using-ride-sharing-apps/>. Accessed 10 March 2021

Kirk, David & Cavalli, Nicolo & Brazil, Noli. (2020). The implications of ridehailing for risky driving and road accident injuries and fatalities. *Social Science & Medicine*. 250. 112793. 10.1016/j.socscimed.2020.112793. https://www.researchgate.net/publication/338529950_The_implications_of_ridehailing_for_risky_driving_and_road_accident_injuries_and_fatalities

Kurtz, S.P. and M. E. Buttram (2021) Ride hailing app use and drunk/drugged driving among young adult nightclub patrons, *Traffic Injury Prevention*, 22:1, 20-25, DOI: 10.1080/15389588.2020.1839060 <https://doi.org/10.1080/15389588.2020.1839060>

Martin-Buck F. Driving safety: an empirical analysis of ridesharing's impact on drunk driving and alcohol-related crime, 2016. Retrieved from: <http://www.frankmartinbuck.com/Ridesharingpercent20andpercent20Alcohol-Relatedpercent20Crimepercent20bypercent20Frankpercent20Martin-Buck.pdf> (accessed 22 Sept 2020).

Moll Law Group (2020, September). Ride-Sharing Impact on Drunk Driving. Accessed 9-22-20. Retrieved from: <https://www.molllawgroup.com/ride-sharing-impact-on-drunk-driving.html>

Morrison, C. N., Jacoby, S. F., Dong, B., Delgado, M. K., & Wiebe, D. J. (2018). Rideshare and Motor Vehicle Crashes in 4 US Cities: An Interrupted Time-Series Analysis. *American journal of epidemiology*, 187(2), 224–232. <https://doi.org/10.1093/aje/kwx233>

National Center for Statistics and Analysis. (2020, December). Overview of motor vehicle crashes in 2019. (Traffic Safety Facts Research Note. Report No. DOT HS 813 060). National Highway Traffic Safety Administration. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813060>

National Center for Statistics and Analysis. (2020, October). Early estimate of motor vehicle traffic fatalities for the first half (Jan–Jun) of 2020 (CrashStats Brief Statistical Summary. Report No. DOT HS 813 004). National Highway Traffic Safety Administration. Available at <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813004>

National Center for Statistics and Analysis. (2020, June). State Alcohol Impaired-driving estimates: 2018 data (Traffic Safety Facts. Report No. DOT HS 812 917). National Highway Traffic Safety Administration. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812917>

National Center for Statistics and Analysis. (2020, June). Early estimate of motor vehicle traffic fatalities for the first quarter of 2020. (CrashStats Brief Statistical Summary. Report No. DOT HS 812966). National Highway Traffic Safety Administration. <https://crashstats.nhtsa.dot.gov/Api/Public/Publication/813053>

National Center for Statistics and Analysis. (2019, December). Alcohol-impaired driving: 2018 data (Traffic Safety Facts. Report No. DOT HS 812 864). Washington, DC: National Highway Traffic Safety Administration. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812864>

National Center for Statistics and Analysis. (2019, October). 2018 fatal motor vehicle crashes: Overview. (Traffic Safety Facts Research Note. Report No. DOT HS 812 826). Washington, DC:

National Highway Traffic Safety Administration.
<https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812826>

National District Attorney's Association (2020, September). About NDAA. Accessed 9-22-20.
Retrieved from: <https://ndaa.org/about/aboutndaa/>

National Safety Council (NSC) (2021) Monthly Preliminary Motor-Vehicle Fatality Estimates – December 2020-December motor-vehicle deaths up 8percent from last year. Accessed 3-5-21.
Retrieved from: <https://injuryfacts.nsc.org/motor-vehicle/overview/preliminary-monthly-estimates/>

National Highway Traffic Safety Administration, Presence of Drugs in Drivers
https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/13839-drugged_facts_flyer_101918_v8_002.pdf

Peck, J.L. New York City Drunk Driving After Uber. *CUNY Academic Works: Economics Working Papers, Working Paper Series*. 2017
https://academicworks.cuny.edu/cqi/viewcontent.cqi?article=1012&context=gc_econ_wp

Sarkar S., Andreas, M., de Faria F. Who uses safe ride programs: an examination of the dynamics of individuals who use a safe ride program instead of driving home while drunk. *American Journal Drug Alcohol Abuse*. 2005;31(2):305-25. PMID: 15912718.
<https://pubmed.ncbi.nlm.nih.gov/15912718/>

Safety.com (2020, January). Does Ridesharing Reduce Drunk Driving Incidents? Accessed 9-18-20. Retrieved from: <https://www.safety.com/ridesharing-reduce-drunk-driving-incident/>

Texas Penal Code <https://statutes.capitol.texas.gov/Docs/PE/htm/PE.49.htm>

Thomas, F. D., Berning, A., Darrah, J., Graham, L., Blomberg, R., Griggs, C., Crandall, M., Schulman, C., Kozar, R., Neavyn, M., Cunningham, K., Ehsani, J., Fell, J., Whitehill, J., Babu, K., Lai, J., and Rayner, M. (2020, October). Drug and alcohol prevalence in seriously and fatally injured road users before and during the COVID-19 public health emergency (Report No. DOT HS 813 018). National Highway Traffic Safety Administration.
<https://rosap.nhtl.bts.gov/view/dot/50941>

Uber & MADD (2015) MORE OPTIONS. SHIFTING MINDSETS. DRIVING BETTER CHOICES. Online Access. Accessed 9-20-20. Retrieved from: <https://newsroom.uber.com/wp-content/uploads/2015/01/UberMADD-Report.pdf>

Webb, C. N. (2020, May). Geospatial summary of crash fatalities (Report No. DOT HS 812 607). Washington, DC: National Highway Traffic Safety Administration.
<https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812607>

Wise, J. (2021). 2021 Illinois DUI Fact Book. Secretary of State Office.
https://www.cyberdriveillinois.com/publications/pdf_publications/dsd_a118.pdf