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The Impact Distracted Driving has on Fatal Crashes

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Introduction

Distracted driving has been a major problem in the United States and around the globe for quite some time. It is one of the leading causes of fatal car crashes, and its impact on road safety has been the subject of much research and debate. Over the past decade, the rise of technology, including smartphones and other handheld devices, has made distracted driving an even more serious threat to public safety. While texting and driving is one of the more well-known causes of distracted driving, there are plenty of other forms of this dangerous behavior.

According to Centers for Disease Control and Prevention, also known as the CDC, all the different causes of distracted driving can be summarized into three different sections. Those sections are visual, manual, and cognitive. Visual distracted driving occurs when the driver takes his or her eyes off the road. Manual distracted driving happens when the driver takes their hands off the wheel while operating a motor vehicle. Lastly, cognitive distracted driving is present when the driver takes their mind off the road. Some causes of distracted driving can fit under more than one of these categories. For example, texting and driving can cause all three of these types of distraction to occur because the driver is looking at the phone, holding the phone, and may even be thinking about what the text is going to say. Other common forms of distracted driving are eating or drinking, adjusting the radio, using a GPS, or sleeping. However, it is important to know that all forms of distracted driving increase the risk of a car crash.

Many studies have been completed by transportation engineers to help reduce the amount of distracted driving that is happening today. This paper will take a deeper look at fatal car crashes that occurred due to distracted driving, and will review multiple characteristics of those crashes to see if any trends are present.

Methodology

Although distracted driving occurs all over, the data shown throughout this paper will focus on fatal car crashes caused by distracted driving in the state of Ohio from 2018-2020. These years were chosen because they are the most up-to-date data provided. The majority of the data presented in this paper focuses on the driver who was distracted that ended up causing the crash. To obtain precise data and results, all the information about these crashes is from the Fatality Analysis Reporting System (FARS). FARS is a nationwide census maintained by the National Highway Traffic Safety Administration (NHTSA) that is updated yearly. FARS breaks down their crashes into many different tabs to help organize the data they collect from each crash. The three main tabs that this paper focuses on are "accident", "person", and "vehicle." FARS also provides a case number with each crash to help be able to gather information about the same crash from different tabs. All the data that was collected for the use of this paper was found on March 1st, 2023.

The data presented in the following tabs allow people to explore the different factors that contribute to distracted driving, including gender, age, and other driver characteristics. This project will also examine the impact distracted driving in different types of environments, including rural vs urban, weather, and time of crash. The number of vehicles in each crash will also be reviewed to help compare the drivers of each car. The goal is that this project can help inform policy and education efforts aimed at reducing the risk of distracted driving and improving road safety for all.

General Information

Over that three-year period, there were a total of 163 fatal car crashes that occurred because of distracted driving in Ohio. An individual or individuals died in each of these car crashes, yet not everyone who passed away was the distracted driver. Other drivers, passengers, and even some pedestrians lost their lives due to certain individuals driving distracted.

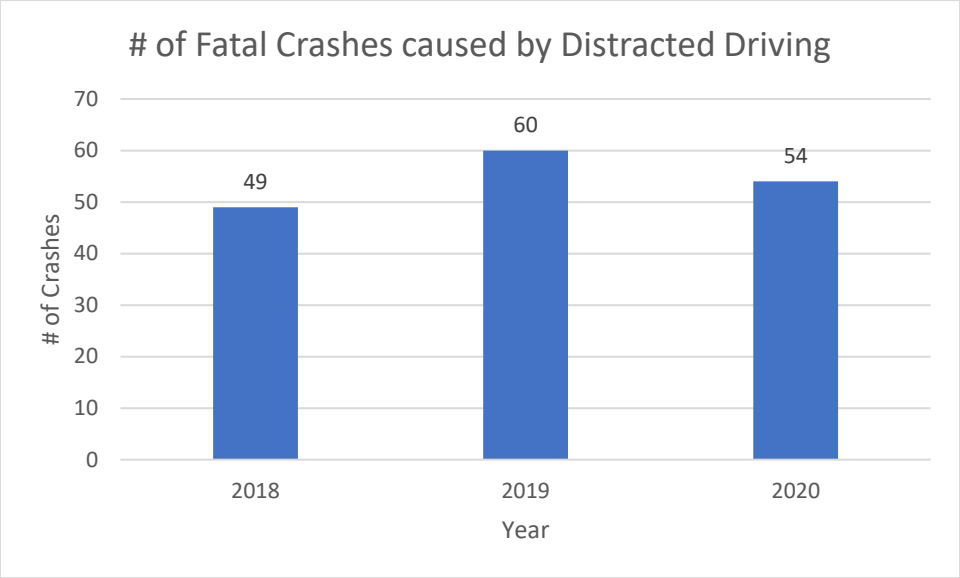

Figure 1 – Number of Fatal Crashes caused by Distracted Driving each year.

Figure 1 breaks down these 163 crashes based on what year they occurred. Although the most crashes happened during 2019, the number of crashes is relatively equal throughout the three years. Even though the amount of travel in 2020 was much less than 2019 due to all the closures caused by Covid-19, there were almost the same number of fatal crashes.

Of these 163 crashes, only 44 of them occurred because the driver was distracted by his cell phone. The other 119 drivers were distracted by other events such as eating, adjusting the radio or climate control, an event or person occurring outside the vehicle, or by a moving object in the vehicle. FARS says that it is possible for a driver to be distracted by more than one event,

such as a driver could be texting on their phone while adjusting the air when rear ending another vehicle.

Characteristics of Driver or Crash	# of Crashes or Drivers	% of Characteristics
Male	113	69%
Female	50	31%
16 - 25 Years Old	41	25%
26 - 45 Years Old	65	40%
46 - 65 Years Old	38	23%
66 + Years Old	19	12%
Rural	74	47%
Urban	85	53%

Table 1 – General Summary of different characteristics of Driver or Crash in Ohio

Table 1 helps break down the gender and age of the distracted driver along with the location of each of the crashes. In order to try and reduce distracted driving in the future it is important to take a deeper look at who is operating the vehicle and putting themselves and others at harm.

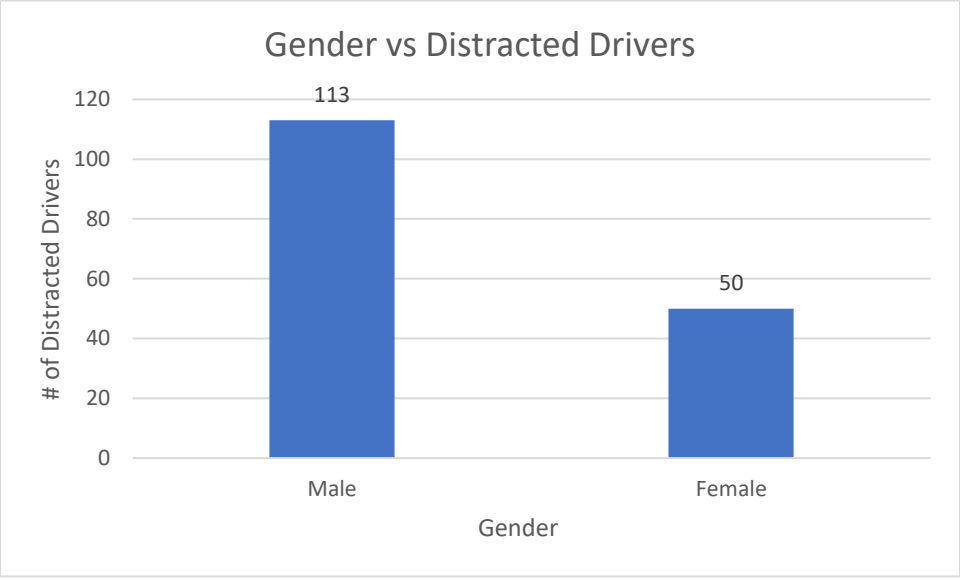

Figure 2 – Number of Distracted Drivers broken down by gender.

Figure 2 shows that approximately 70% of the drivers that caused fatal crashes were male. According to the US Census, the population in Ohio is nearly a 50/50 split between males and females, so this data proves that male drivers are more likely to cause fatal crashes due to them not focusing on the road.

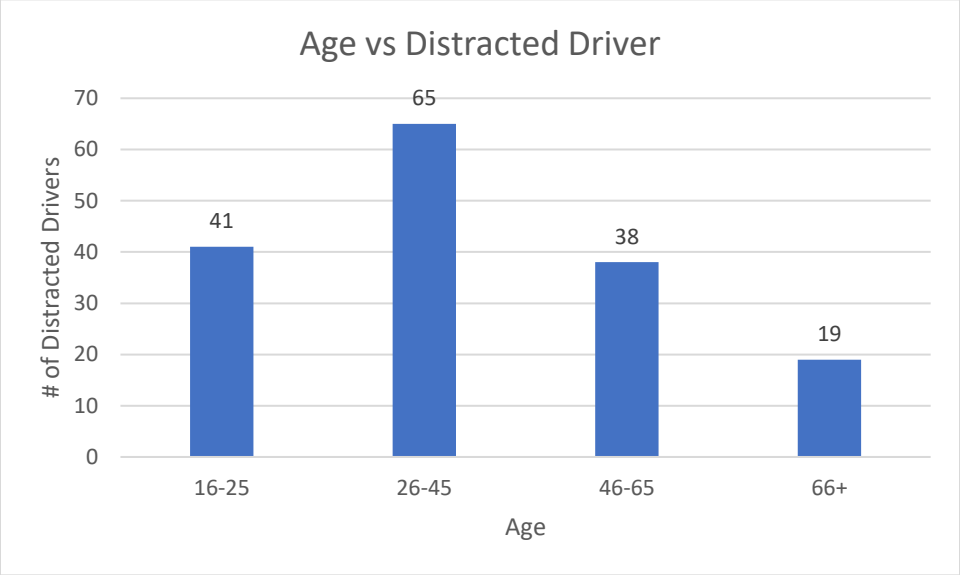

Figure 3 – Number of Distracted Drivers broken down by age.

Figure 3 helps explain what age group is most likely to not be paying full attention to while driving. As shown, the drivers who are 26-45 years old are responsible for the most fatal car crashes. However, even though the age range of the first group is only 10 years, they still are responsible for 41 fatal car crashes in just a three-year period.

Although understating what individuals are more likely to be distracted while driving, reviewing the details of the crash can also help reduce the amount of distracted driving in the future.

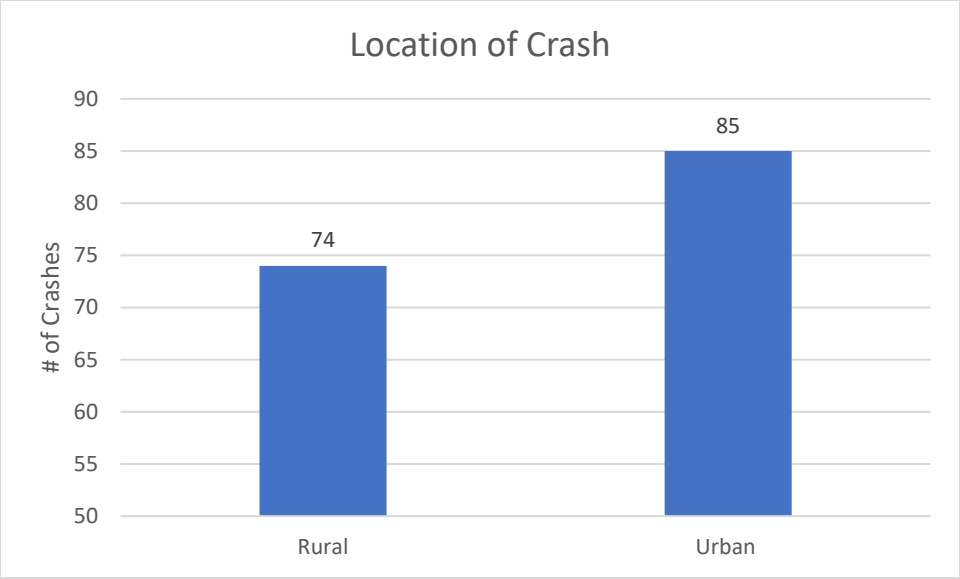

Figure 4 – Location of Fatal crash

Figure 4 shows the number of crashes that occurred in a rural area compared to an urban area. There were more crashes in urban areas, yet there was not a significant difference between the two. Ohio is home to a lot of farmlands, but also has major cities such as Cleveland, Columbus, and Cincinnati. Only 159 of the 163 crashes were reported as rural or urban, the other four crashes took place on trafficways that are not in the state inventory.

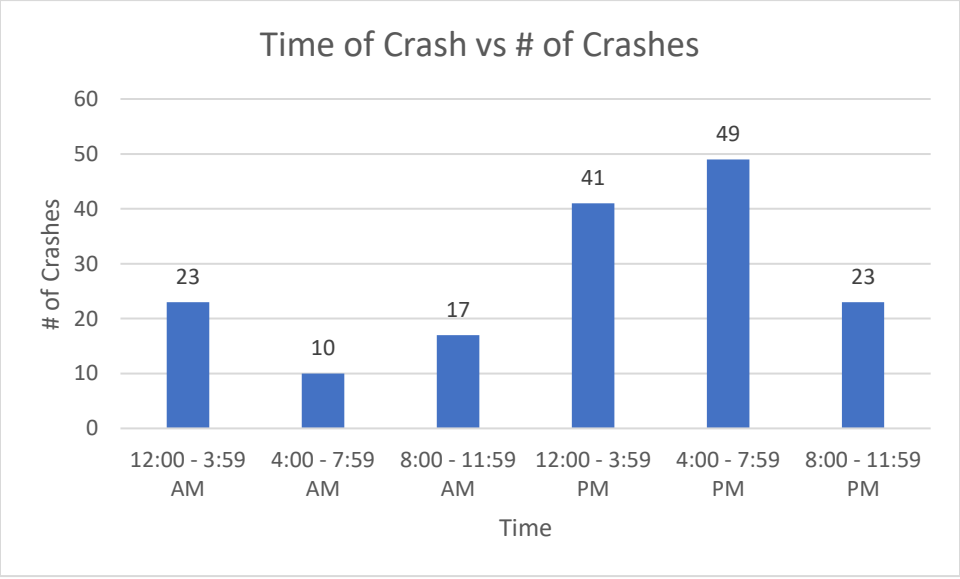

Figure 5 – Time of Fatal Crash

Figure 5 represents what time each of the crashes occurred. The majority of the crashes occurred during the afternoon hours, which could be a result of rush hour and people trying to get home from work quickly. The number of distracted driving crashes that happened during the night hours is also worth mentioning. There tend to be a lot less cars on the road from 12:00 – 3:59 AM compared to 8:00 – 11:59 AM, yet more crashes occurred during the earlier portion of the day.

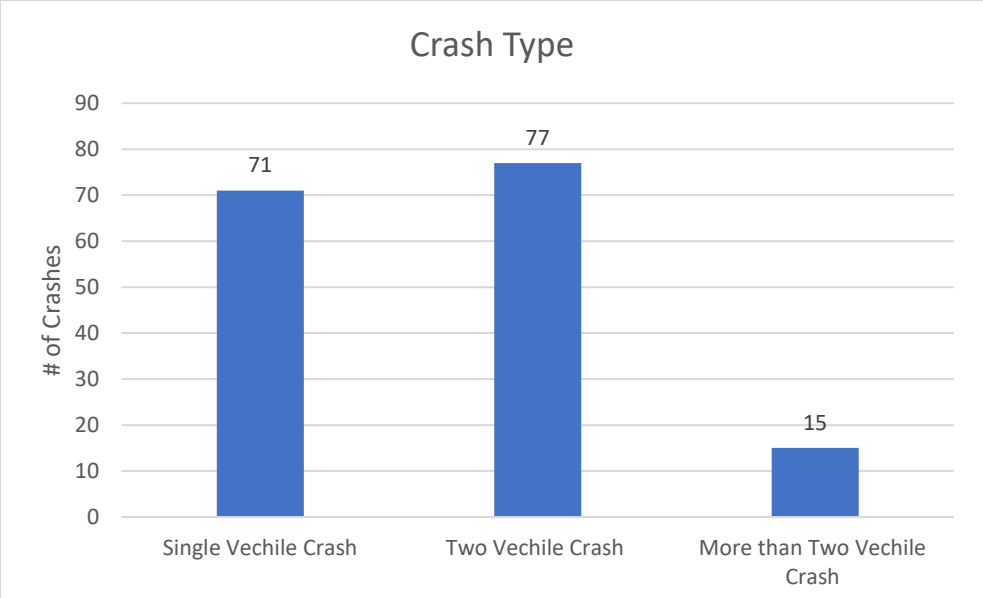

Figure 6 – Amount of vehicles in each crash caused by distracted driving.

The figure above breaks down each crash based on the number of vehicles that were apart of each of them. More than two vehicle crashes are not as common as single or two vehicle crashes. Single vehicle crashes normally occur when the driver drives off the road and collides with an object such as a mailbox, light post, or guardrail.

Data

In order to gather more accurate information and locate more useful trends to help reduce distracted driving in the future, smaller sample sizes are needed. In order to reduce sample sizes, engineers select certain characteristics of the driver while trying to find correlations to the detail of the crash.

Rural Areas

Out of the 74 crashes that happened in rural areas stated above, 52 of the drivers were male, while the other 22 were female. Once again there were more male distracted drivers than female drivers.

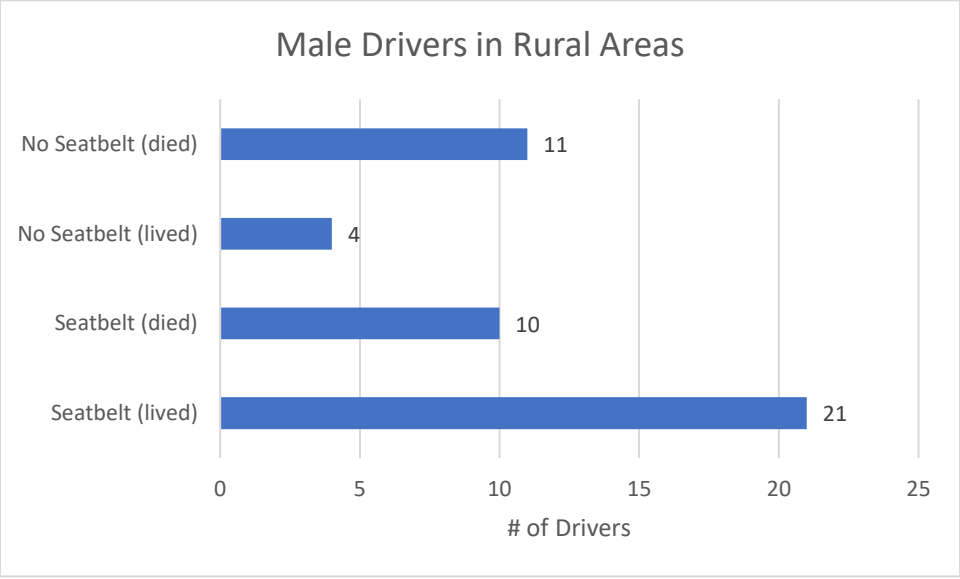

Figure 7 – Behavior of Distracted Male Drivers in Rural Areas

Figure 7 represents the behavior of male distracted drivers in rural areas. The graph shows that 15 drivers were not wearing seatbelts. This helps prove the suggestion that those who drive while

distracted can be considered reckless as they refuse to wear seatbelts as well. The graph also helps show that the drivers who wore seatbelts have a much better chance of surviving than those that do not. The other male drivers that are not listed in Figure 7, that caused fatal crashes in rural areas, were either riding motorcycles or it was not stated whether they were wearing a seatbelt.

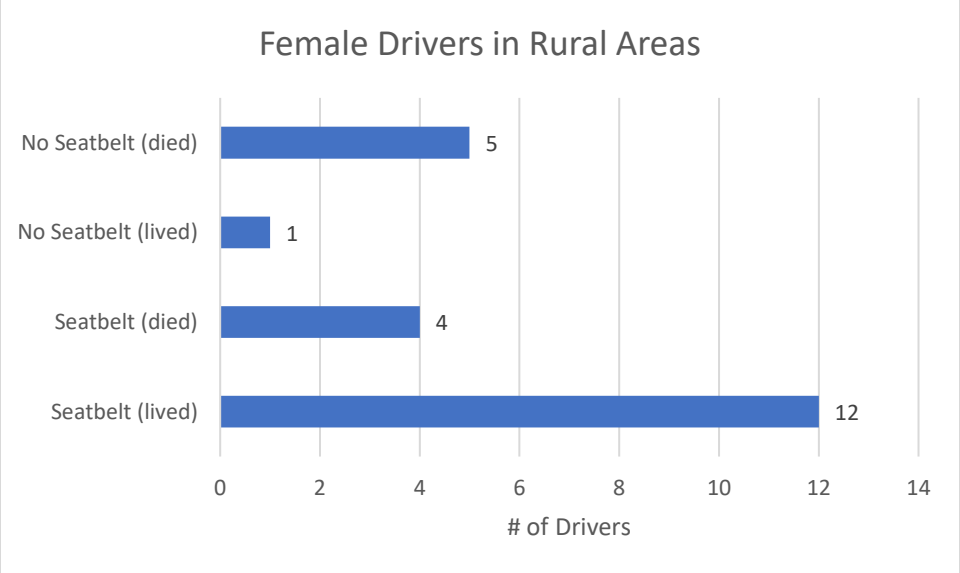

Figure 8 – Behavior of Distracted Female Drivers in Rural Areas.

Figure 8 helps explain the behavior of female distracted drivers in rural areas. The figure helps prove that the amount of female distracted drivers is significantly less than male drivers. Female distracted drivers who did wear their seatbelts had a much greater chance of surviving their crash, which is a similar trend to males as well. Figure 8 also proves that females are slightly more likely to wear seatbelts more than males, which could be one of the reason more males cause more fatal car crashes due to distracted driving.

Urban Areas

Figure 4 shows that 85 fatal car crashes occurred in the state of Ohio due to distracted driving.

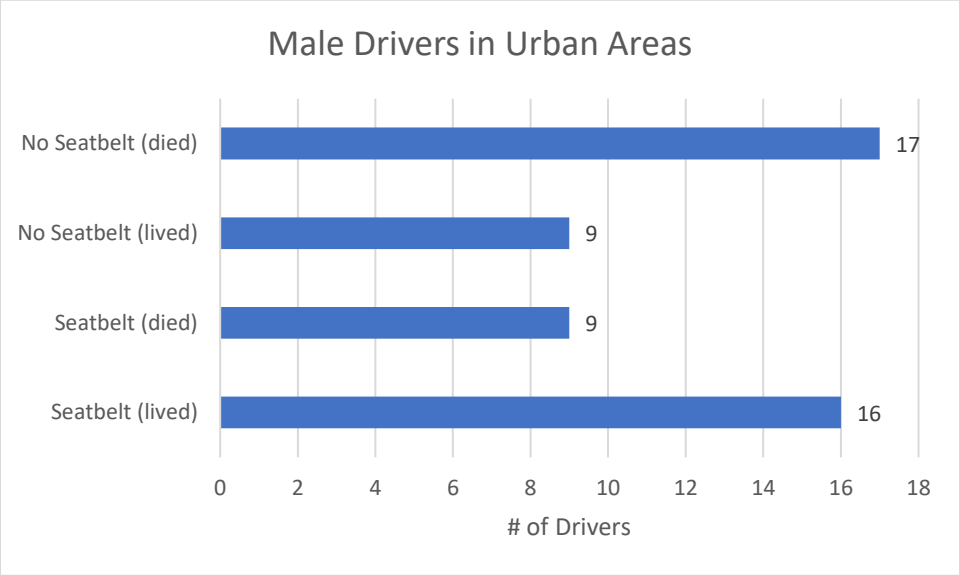

Figure 9 – Behavior of Distracted Male Drivers in Urban Areas.

Figure 9 helps represent the characteristics of the male drivers in Urban areas. Over 50% of these drivers were not wearing their seatbelts when they crashed, which is a main reason over 50% of them passed away. This once again also helps prove the prediction that those who drive distracted can be considered reckless because they do not wear their seatbelt even though it is a law.

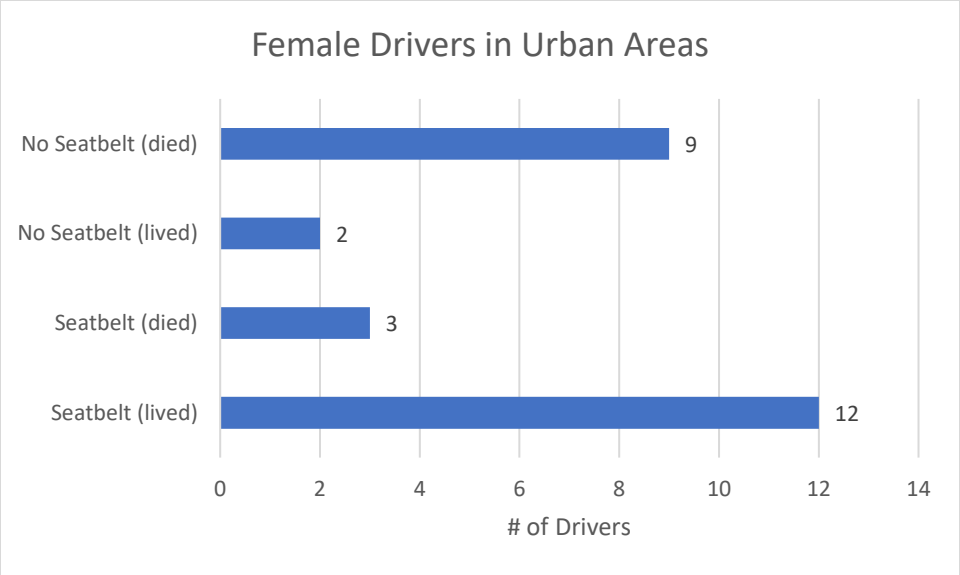

Figure 10 – Behavior of Distracted Female Drivers in Urban Areas

Females in Urban areas are similar to those in rural areas as they are more likely to wear seatbelts than males. Figure 10 also follows the trend that the distracted drivers who wore their seatbelts had a better chance of living. Figures 7-10 show that no matter where the crash occurred, males are more likely to cause a fatal car crash due to distracted driving than woman are.

Crash Time

The general information section proved that the majority of these fatal crashes occurred during rush hour or throughout the night.

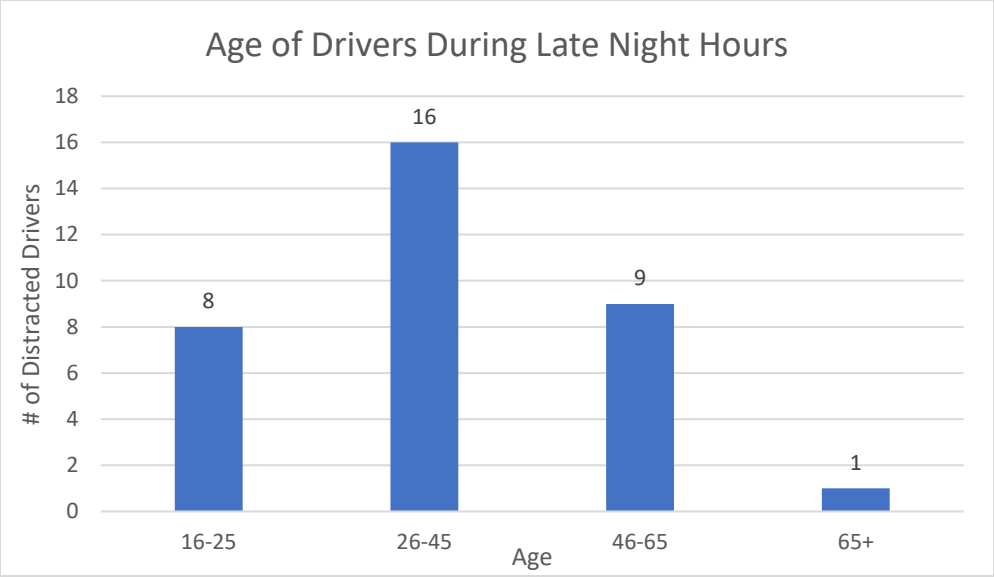

Figure 11- Age of Drivers During Late Night Hours

Figure 11 breaks down the age of the driver that caused the crash between 10:00 PM – 3:59 AM. There was a total of 34 fatal crashes that happened during that time frame. Over 50% of the drivers were under the age of 45, which makes sense because not many individuals over the age of 46 drive that late at night. 24 of the 34 crashes were caused by male drivers.

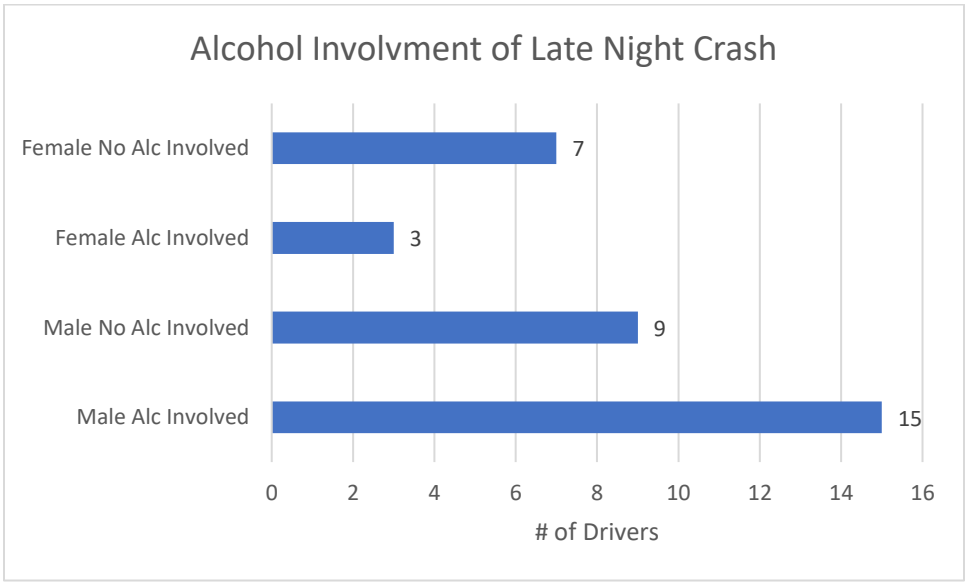

Figure 12 – Alcohol Involvement of Late Night Crash

Figure 12 shows that 18 of the 34 crashes that occurred over night the driver was not only distracted, but also had alcohol in their system. Most of the drivers who were drinking and driving were males. This could be another factor as to why males are more likely to cause fatal crashes due to distracted driving. Drinking and driving can also increase your odds of being distracted because a person's mind does not work as well as it does with no alcohol in it.

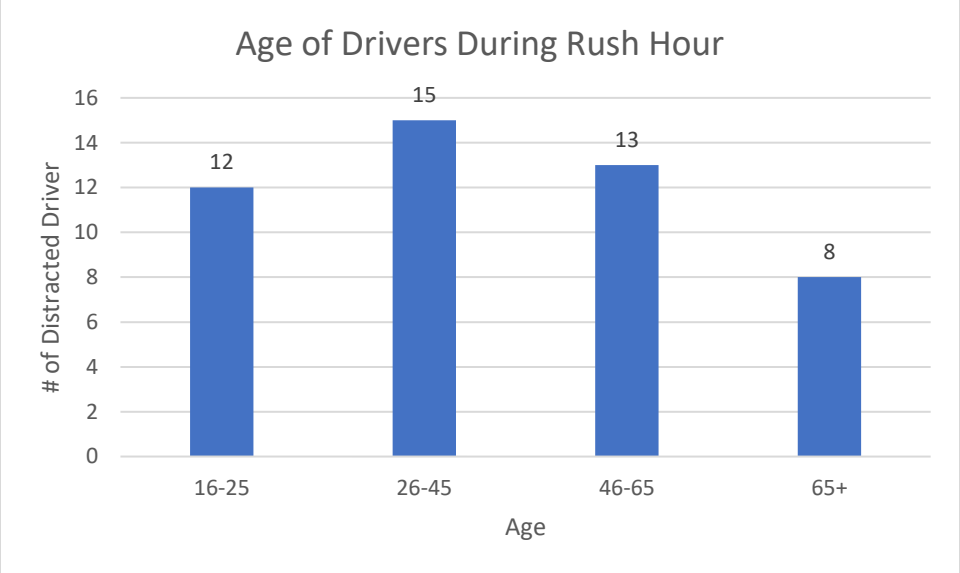

Figure 13 – Age of Drivers during Rush Hour

Figure 13 represents the age of the distracted driver that caused the crash during rush hour. Rush hour is when the traffic volume is the heaviest, which normally occurs in the early morning and late afternoon as people are commuting to and from work. The data shown in this graph defines rush hour between 6:00 – 8:59 AM and 4:00 – 6:59 PM. There was a total of 48 crashes during this time frame, which is nearly one third of the total crashes throughout the three-year period. The number of crashes by each age group is much more constant than it was for the crashes that occurred over night. This is because people of all ages are traveling throughout these hours whether they are going to work, school, or completing errands.

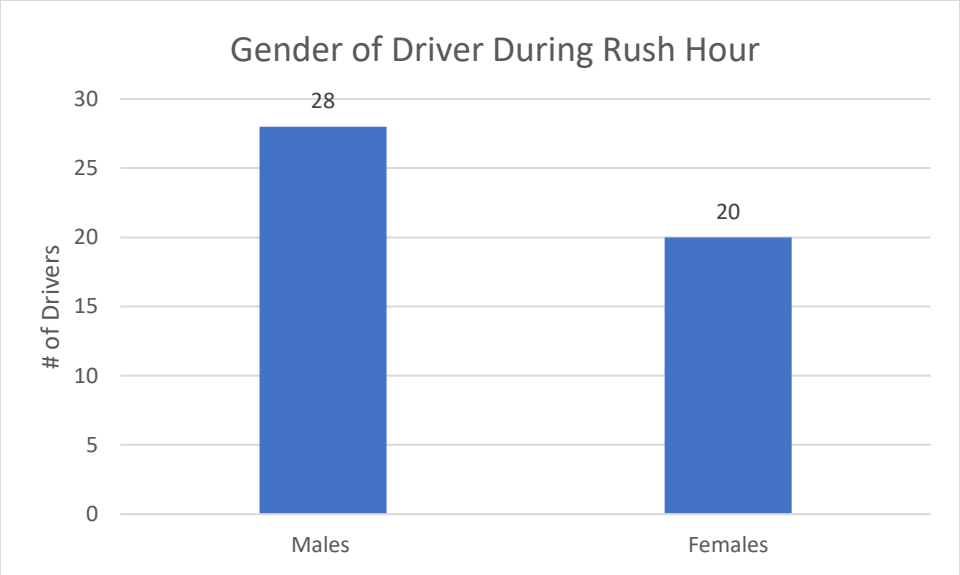

Figure 14 – Gender of Distracted driver during Rush Hour.

Figure 14 breaks down the distracted driver by gender during rush hour. There were still more males than females, yet the gap was not as large as it was for the overnight time frame. The total number of crashes that occurred during rush hour was more than those that happened over night. This could be due to the fact that more cars are on the road during rush hour.

Cause of Distraction

As previously stated in the general information section, only 44 of these crashes were caused by a driver being distracted for being on their phone in any manner. Engineers have been examining where or when people are more likely to be on their cell phones while operating motor vehicles. Six of the 44 crashes happened over night during the 10:00 PM – 3:59 AM time frame. Another 10-cell phone related crashes occurred during rush hour. Most of these crashes

resulted in the driver on their phone rear ending the car in front of them, which is ultimately due to the fact that they were on their phone and not paying attention to the road.

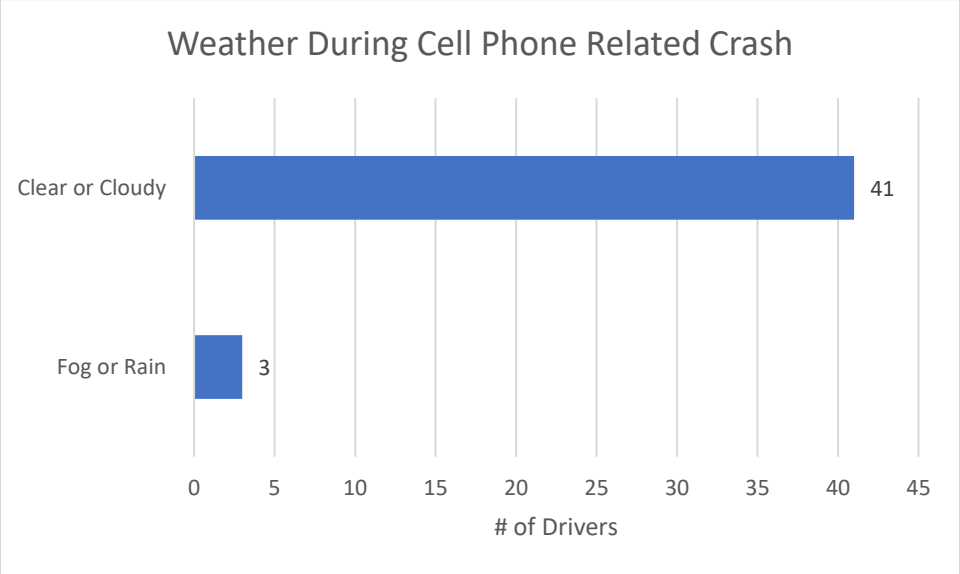

Figure 15 – Weather during Cell Phone Related Fatal Crashes

Figure 15 shows that drivers are more comfortable being on their phone when weather conditions are better. Drivers may be more alert to their surroundings when the weather is not ideal to make sure they do not wreck. However, when the weather does not impact driving conditions, drivers feel more comfortable, which ultimately leads to more crashes.

There does not seem to be a significant trend as to where these crashes occurred. 25 of the crashes were located in urban areas whereas 19 were in rural areas. The amount of damage in the rural areas was more than the urban areas since the vehicles were typically traveling at a higher speed in the rural areas.

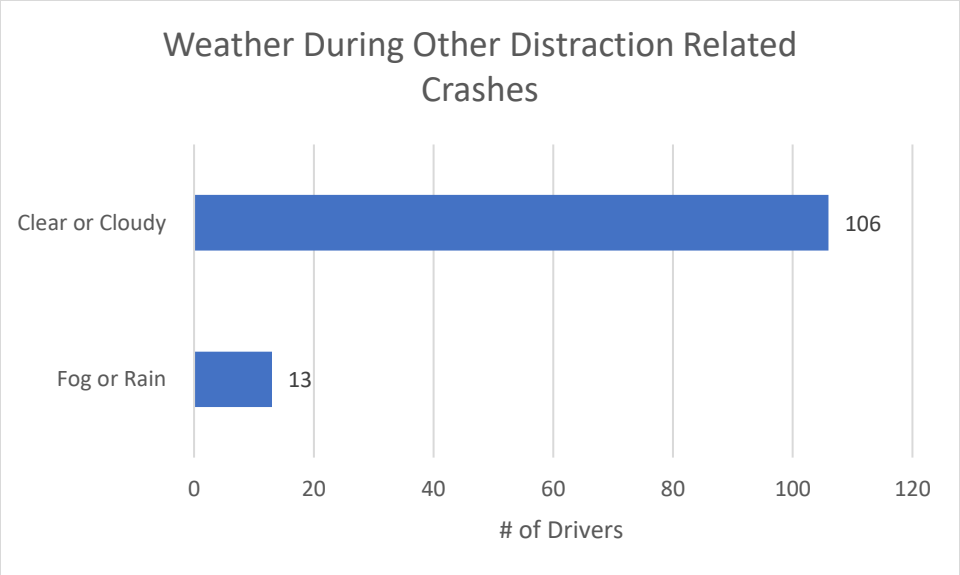

Figure 16 – Weather during Other Distraction Related Fatal Crashes

The figure above shows how the weather was during the fatal crashes that happened because of other distractions not cell phone related. Some of these crashes were caused by the driver adjusting the radio or being distracted by other moving objects outside the vehicle. Figure 16 also helps prove the idea that drivers are more likely to be distracted during better weather conditions rather than when it is foggy or raining. Similarly, to the cell phone related crashes, there is no correlation to where these crashes occurred as it was almost a perfect split between urban and rural areas.

First Contact of Crash

FARS releases data annually that shows what the distracted driver came into contact with first during the crash. There are many possibilities, but they can be broken down into two separate categories. The first category includes all the crashes where the distracted driver came

into contact with another moving vehicle. The second category would be when the distracted driver hit any other object such as a tree, mailbox, parked car, or any other objects.

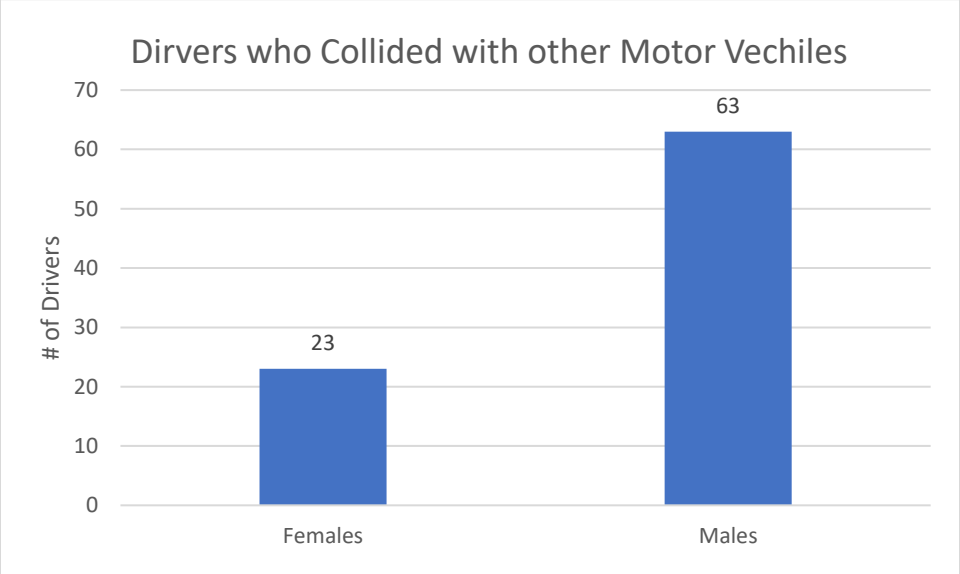

Figure 17 – Drivers who collided with another vehicle broken down by gender.

The figure above shows that around 73 % of crashes that had a second vehicle involved were caused by males. Crashes that included more than one vehicle can be considered more dangerous, as typically more people end up injured or end up passing away.

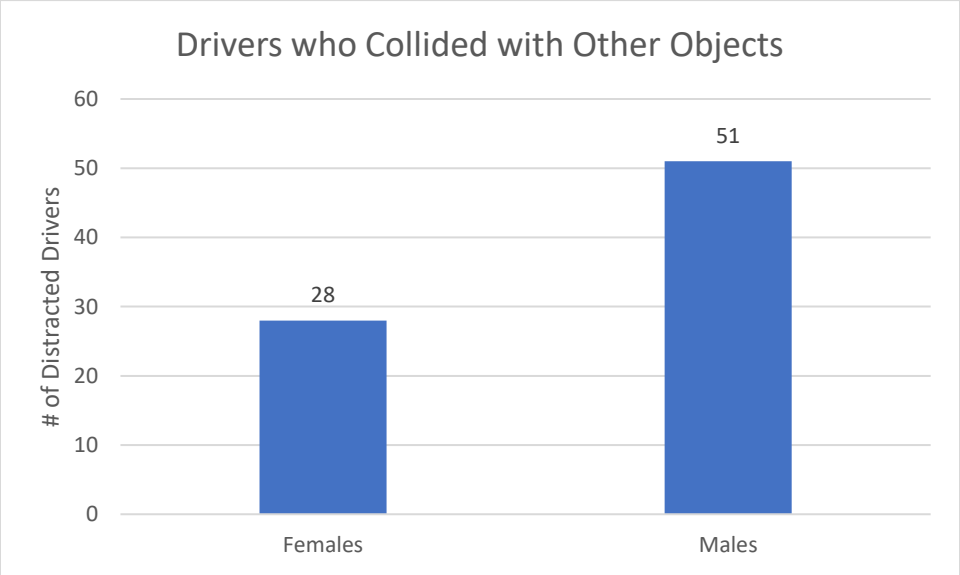

Figure 18 – Drivers who collided with another object broken down by gender.

Figure 18 helps explain the gender breakdown for drivers who crashed into other objects other than moving vehicles. There were still more male drivers than females, but the gap was significantly smaller compared to the data shown in Figure 17.

Possible Solutions

Although the number of fatal crashes caused by distracted driving has remained constant over the past several years, there are multiple possible solutions to help reduce this issue. At the beginning of the new year, Governor Mike DeWine signed a new bill whose goal is to help strengthen distracted driving laws in Ohio (Governor.Ohio.gov, 2023). The new bill will allow law enforcement to pull over and driver that is seen using their cell phone or any other electronic devices while driving. The use of cell phones and other electronic devices will now be considered a primary traffic offense. The pervious law did not allow law enforcement to pull over drivers on their cell phones unless they committed a separate primary traffic violation. Police officers were only allowed to pull over juvenile drivers who were on their phone. The new law does allow drivers to still use their cell phones under certain circumstances such as waiting at a red light or swiping to answer a phone call. If the number of fatal car crashes does not decrease over the next several years, Mike DeWine may review the new bill and determine to make more strict rules. The goal for the new bill signed in January is to make drivers think twice before using their cell phones or other electronic devices, because not only are they putting themselves and others at risk, but they can now get in trouble with the law.

Another way to help decrease the number of distracted drivers on the road is to emphasize the importance of being mentally and physically aware while behind the wheel of a vehicle. The

state of Ohio makes drivers take a mandatory drivers education class in order to get their license. These classes should spend more time focusing on distracted driving and explain to the new drivers all the damage that can come from operating any kind of vehicle while not paying full attention. New drivers should be aware of all the different kinds of distractions that can be present while driving. Some of the different kinds of distractions that young drivers can face that they may not realize can come from the passengers in their own vehicle. Passengers should respect that the driver needs to stay focused on the road, and not do anything that will tempt the driver to become distracted.

The rise of smart vehicles can also help reduce the amount of distracted driving that occurs daily, which ultimately would help limit the amount of crashes caused by it. Some new models of smart cars have self-driving options. These cars, also known as autonomous cars, can operate on their own by using sensors to perceive their surroundings. Most of these cars still require the driver to be aware while behind the wheel, but do not physically require the driver to have their hands on the wheel. As time goes on, and technology continues to advance, there will be more cars that require very little from the driver to get from destination to destination.

Conclusion

Distracted driving has been an issue for transportation engineers for quite some time now. It is one of the leading causes of fatal car crashes, and not only impacts the driver who made the decision, but the general public around them as well. Young adult males are the most common individuals to operate a car while being distracted by either an electronic device or any other distractions that may be present. Young males tend to be considered reckless drivers, which

could be a reason they are the ones causing the most crashes. There is no location where distracted driving is more likely to occur as the 163 fatal crashes caused by distracted driving that occurred in the state of Ohio from 2018-2020 were spread out evenly across urban and rural areas. However, a significant amount of these crashes occurred during rush hour or throughout the night. This can be explained because during rush hour there are more vehicles on the road than normal, and the majority of the drivers who crashed overnight had alcohol in their system. With the help of new laws, updated driver education courses, and smart vehicles the number of fatal car crashes caused by distracted driving is likely to decrease over the next several years. However, as of now this is still a subject of much research and debate to help keep the general public safe on the roads.

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