



# Analysis of Driver Distraction Behaviour Causing Risk of Accidents in Jordan

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## Abstract

This study investigates into the underlying causes of distracted driving leading to highway collisions among Jordanian drivers aged 18 to 65. Surveys unveiled a concerning statistic, indicating that a notable 64% of drivers involved in crashes were distracted. Among the identified distractions, texting emerged as the most perilous, with mental distractions such as anger or sadness ranking as the primary cause of crashes (20%), followed by interactions with passengers (13%) and phone conversations (11%). Furthermore, the study revealed a disproportionate representation of male drivers and individuals from both younger and older age groups in distracted driving incidents. These findings underscore the imperative for targeted interventions aimed at curbing distracted driving behaviors across diverse demographic segments, thus fostering safer road environments.

*Keywords:* Distracted Driving, Jordan, Traffic crashes, Survey, crash

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## 1. Introduction

Road accidents claim 1.3 million lives per year, making them the eighth-leading cause of fatalities globally (WHO, 2021). Highway accidents are frequently caused by

distracted driving. The National Highway Traffic Safety Administration reports that distracted driving was a factor in the deaths of 2841 persons in 2018 (NHTSA, 2019). More than one out of every four car accidents, according to the National Highway Traffic Safety Administration, involve cell phone distraction at the time of the accident (NHTSA, 2019).

Jordan, a developing nation, is impacted by the rise in traffic accidents every year. Recent years have seen a sharp rise in the number of traffic accidents, which has been made worse by the overall decline in road safety. Road safety has become a more serious issue as a result of the yearly increases in population and fleet size. According to the Jordanian Traffic Institute, the population will be 11.15 million by the end of 2021, with a 5.8% annual vehicle increase rate over the previous five years. The disaster harmed Jordan's economy and will cost 320 million Jordanian Dinars in 2021. There have been a total of 160600 traffic accidents. 11,241 crashes resulted in bodily harm, 589 deaths, and 737 serious injuries. There were 6,325 serious injuries and 10,423 minor injuries reported. According to the Annual Traffic Report, human error was responsible for 96.7% of crashes, while road infrastructure was responsible for 2.6%. Only 0.7% were the result of a vehicle malfunction.

### *1.1 Types of distracted driving*

Driving in Jordan requires an extremely high driver's attention. However, the more comfortable and experienced the driver is with driving, the more they might find themselves more willing to spread their attention span through various distractions.

There are two basic categories of distractions: internal and external. Internal distractions are those that originate inside the car, such as using a cell phone or turning on the radio, and they can have negative effects on alertness and cognitive function if driving for a lengthy period (Alkawasbeh et al., 2021). The second category includes distractions that come from outside the car, such as reading signs or leaflets on the side of the road, observing other drivers or the environment, or being distracted by outside noises like traffic and horns.

According to Orlowske et al. (2009), there are three basic categories of driving distractions: manual, visual, and cognitive. These include both external and internal factors. The distractions that require the driver to remove one or both hands from the wheel and veer off the road are known as manual (or physical) distractions. According to Vegega et al. (2013), some examples of manual distractions include eating and drinking, adjusting the child's seatbelt, smoking, looking through your wallet or pocketbook, handling your phone, and more.

The distractions that lead the driver's eyes to stray from the road are visual ones. Due to the driver's blindness, they are extremely dangerous. Additionally, the driver can only partially see what is happening outside the windshield. According to Orlowske et al. (2009), some examples of visual distractions include checking and adjusting your GPS, changing the radio station, adjusting the temperature controls, looking down for items on the car floor, reading or writing messages on a cell phone, looking outside to look for signs or advertisements, and taking in the scenery.

Drivers who become preoccupied with cognitive distractions lose concentration and may even start to drift away from the road. Talking to other passengers, worrying about unpleasant thoughts, using a cell phone or speakerphone, being intoxicated by drugs or alcohol, experiencing road rage, despair or fury, and daydreaming are a few instances of

cognitive driving distractions. Driving while fatigued or sleep-deprived can also be a kind of cognitive distraction and result in serious and fatal car accidents (NHTSA, 2017).

Some distractions combine the three distinct forms of distracted driving. One of the most terrifying distractions is texting while driving, which combines the three categories of distracted driving: visual, manual, and cognitive. According to research, texting while driving has a negative effect and increases the likelihood of an accident (NHSTSA 2011, WHO 2011).

### *1.2 The effects of distraction on driving behavior*

The driver is the most critical element in traffic crashes. The distraction factor affects the driver's behaviour causing traffic crashes and reflecting the severity of crashes. The human factor is the highest cause of traffic accidents, with 90.8% of all elements (JTI, 2016).

According to Abojaradeh and Jrew (2014), a distracted driver has a slower perception and response time to unforeseen driving-related situations. Distractions make it harder to stay in the right lane and lengthen the time it takes to react to braking, which results in more intensive braking and shorter stopping distances. The complexity of the distracting task, its length, frequency, and traffic conditions all have a role in how dangerous distractions are to driving performance (NHTSA, 2016). According to Dragutinovic and Twisk (2011), the degree to which a distracting task affects driving behavior appears to be significantly influenced by the task's intensity and cognitive requirements.

In their study, it was discovered that there was a strong direct correlation between the driving habits of the drivers and their exposure to accidents (Abojaradeh 2015, Abojaradeh et al., 2014). Additionally, hostile behavior raises the likelihood of being involved in accidents. It was determined that driver behavior is primarily to blame for traffic accidents, injuries, and fatalities.

Driver characteristics are also crucial in defining the degree how which distraction affects driving behaviour. These mainly include age, gender, risk-taking, and commercial drivers (Abojaradeh 2015, Abojaradeh et al., 2014).

The age of the driver is an important factor because distracted drivers are much more likely to impair their ability to drive when they are younger or older. Divide their attention between driving and a side job can be more difficult for young, inexperienced drivers. Older drivers have a tougher time managing two tasks at once due to their impaired visual and cognitive abilities, which lengthens their reaction time behind the wheel (Brace et al., 2007).

The gender of the driver also affects how distracted driving is affected. Men are more likely than women to engage in internal distractions like using a phone while driving, according to studies, albeit the effects of this distraction are yet unknown. Another study on the consequences of text messaging discovered that while male drivers were more likely to text while operating a motor vehicle, female drivers were more significantly affected by the inadequacy brought on by texting. In addition, female drivers were more inclined to slow down when texting and driving (NHSTSA, 2011).

Risk-taking plays an essential part in driving distractions, drivers who get involved in other high-risk behaviors such as aggressive driving or drinking, speeding, or not wearing a seatbelt are also more likely to use distracting devices while driving, which intensifies the effects of any crash. Young drivers are at a higher risk than older drivers (Narine et al., 2009).

In the public and commercial transportation industries, there is a lack of information on driver distraction. Some studies suggest that heavy vehicle and bus drivers, who must perform multiple conflicting tasks while driving, are particularly vulnerable to the effects of distraction. In one American research on commercial vehicle drivers, safety-critical occurrences such as wrecks, near-collisions, activities requiring avoidance maneuvers, and inadvertent lane deviations were examined. Nearly 81% of these incidents included inattentive driving, it was discovered. The main factor contributing to these drivers' crashes is their excessively lengthy driving hours (sleepy driving; Olson et al., 2009).

## **2. Literature Review**

When operating either simple machinery like railway trains or sophisticated machinery like small vehicles, human factors like attention and cognitive capacity have a significant impact on the probability of accidents (Alnhoud et al., 2021; Alkawasbeh et al., 2021). The National Safety Council NSC, 2019, conducted the study. The article, titled "Understanding the Distracted Brain: Why Driving while Using Hands-Free Cell Phones is Risky Behaviour," explains how using a cell phone, whether hands-free or handheld, can cause distraction for drivers and how doing so forces the brain to multitask, which is unsafe while driving. The paper explains how drivers who use cell phones have a propensity to "look at" but not "see" up to 50% of the information while driving. This reduces their capacity to process driving signals and reduces their driving performance. As a result, the driver loses the ability to keep an eye on their surroundings, recognize potential hazards, and respond to unforeseen circumstances.

A study "Analysis of Human and Cultural Factors Causing Risk of Accidents in Jordanian Drivers" was done by K. Jadaan et al published in 2022. The primary goal of this research paper is to investigate Jordanian drivers' traffic safety culture, as well as to identify common aggressive behaviors and their associations with various social factors. Drivers in Jordan were given an online survey questionnaire, and samples were collected in the Amman area in 2019. One in every eight Jordanians has been injured in a traffic accident, and nearly one in every three Jordanians knows someone who has died in an accident, according to research. 75% of participants see aggressive driving as a very serious threat, 60% have honked their horns excessively in the last 30 days, and 36% frequently fail to signal when turning or stopping. According to the survey, the most common behavior for drivers in the last 30 days was "speeding through yellow lights 85%, followed by lack of seat belt use 80%, followed by mobile phone use while driving 78% and followed by speeding on highways 61%. Male drivers were more aggressive, they were more likely to be involved in a car accident, they were 1.3 times more likely to be involved in a vehicle damage accident, and they were four times more likely to be involved in a severe injury accident.

Amir Hossein Kalantari's research from 2021 Iran the study was titled "Psychosocial factors associated with the self-reported frequency of cell phone use while driving in Iran" and it was carried out there. A survey on the frequency of using a cell phone while driving was conducted online or on paper with 255 drivers in the city of Mashhad (males: 66.3%; mean age: 30.73; SD = 9.89). The findings revealed that almost 93% of drivers use their phones while driving at least once a week, with 32.5% doing so constantly. According to the survey, most people would phone their partners and parents while driving. When it came to texting, a slightly different pattern was seen, with the majority of the texts being sent to partners and friends. Interestingly, the majority of drivers claimed that if there was

a youngster in their car, they would never use their cell phones while driving. According to the report, the vast majority of drivers often use cell phones behind the wheel.

Overall, psychosocial factors like age, the presence of a child, the perceived hazards and benefits of using a cell phone while driving, as well as the perception of one's capacity to use a cell phone safely while driving, were substantially correlated with the self-reported frequency of cell phone use. Extraversion, agreeableness, and conscientiousness were also discovered to be strongly correlated with the reported frequency of distracted driving in terms of personality factors (Amir et al., 2021).

In a 2015 study about accident causes conducted by M. Abojaradeh in Jordan. "Evaluation of Driver Behaviour Mistakes and Their Effects on Improving Traffic Safety in Jordan" The primary goal of the study was to identify a method to lessen the frequency and seriousness of accidents. using a questionnaire to identify the primary factors that lead to auto accidents. The data from the survey questionnaire were used to create regression models, and it was discovered that aggressive behavior increases the risk of exposure to accidents and that driver behavior is mostly responsible for traffic accidents, injuries, and fatalities.

Data for more than 10,200 crashes on nine road segments were obtained from the relevant government agency, but only  $n = 2472$  crashes were used for analysis after controlling for accidents deemed to be distracted driving-related. The findings showed that distracted driving was the second most frequent driver error that led to collisions and was the second leading cause of fatalities and injuries on both rural and suburban roads. Distracted driving appears to be more dangerous on rural roadways. Male drivers, those between the ages of 25 and 39, non-holidays, weekdays, tangent sections, two-way divided roads, not at junctions, level roads, two-lane roads, clear weather, dry surface, daylight, and automobile vehicles all had higher percentages of distracted driving-related crashes on rural and suburban roadways.

Differences between crashes on rural and suburban roadways caused by distracted driving showed that a higher percentage of crashes occurred on suburban roadways for male drivers, ages (40–54) years old, with driving speeds was 40–60 km/h.

The AAA Foundation for Traffic Safety undertook research on the subject of driver distraction in traffic accidents in the United States in 1999. The project's major objective was to pinpoint the main sources of driver distraction and how they can contribute to collisions. Data from the National Accident Sampling System and the Crashworthiness Data System (CDS) for five years were included in the study's descriptive analysis. A sample of 5,000 crashes that the police reported to the CDS. The variables included codes for being alert, looking but not seeing, sleepiness, and particular distractions like eating or drinking, having other passengers around, having moving things in the car, or using a phone.

According to the 1995–1999 CDS data as a whole, 48% of the drivers were determined to be alert at the time of their crashes, 8% to be preoccupied, 5.4% to have "looked but did not see," and 1.8% to be drowsy or asleep. 35.9% of the total were either labeled as unknown or unclassified. Specific distractions experienced by drivers included using a mobile phone 1.51%, eating or drinking, adjusting the radio or CD 11%, other passengers in the vehicle 11%, a moving object in the vehicle 4%, other devices/objects in the vehicle 3%, outside person, object, or event 29%, and "unknown" distractions 8.6%.

The AAA Foundation For Traffic Safety conducted another study in 2001 that looked at different age and gender groupings of distractions as well as the distractions that led to traffic accidents. With a total of 11% distracted collisions compared to 8% for the other

age categories, young drivers under the age of 20 were the group most likely to be engaged in distraction-related crashes. They were also more likely to be distracted at the time of the crash than older drivers. When the unknowns are considered, 17% of young drivers are found to be distracted.

Additionally, some sorts of distractions were more prevalent in certain age groups, such as adjusting the radio, cassette, or CD in the case of those under 20, other passengers such as young children in the case of those between 20 and 29, and exterior objects and events in the case of those 65 and older. These sorts of distractions, such as "looked by did not see," and sleepy driving, were found in the oldest age group of drivers, 65 and older. Males were shown to be more distracted than females at the time of their crashes, according to a gender analysis. According to the findings, 63% of distracted drivers were men and 37% were women. (AAA, 2001)

A study published in 2009 by the NHTSA researched driver distraction concerning both vehicle safety and behavioral countermeasures to understand and decrease crashes associated with driver distractions. The data provided a perspective on the degree of the driver distraction problem showing that 16% of all fatal crashes in 2008 were caused by driver distractions according to data from the Fatality Analysis Reporting System. The highest age group of distracted drivers was under the age of 20. 16 % of all drivers under the age of 20 involved in fatal crashes were reported to be distracted while driving. 21% of injury crashes were reported as to being distracted while driving; 22 % of all crashes recorded during the study period involved distracting drivers' involvement in secondary tasks (NHTSA,2009).

A study was done in Australia in 2006 about the impact of driver distraction on road safety. The main objective was to calculate the effects and frequency of distractions while driving using a cross-sectional driver survey. One thousand three hundred forty-seven driver participants aged between 18 and 65 years, and data were weighted to reflect the conforming driving population due to distractions. The results showed the most common distracting activities during the driver's trips were: 72% lack of concentration, 69% adjusting in-vehicle equipment, 58% distracted by outside people or objects or events, and 40% talking to passengers. Younger drivers 18 to 30 years of age were more likely to report distracting activities and had more crashes (Dingus et al., 2016).

Several factors may contribute to the difference between this study and the previous studies. Most studies were done in developed countries and were based on police crash-reported data that includes the distractions that lead to the crash. Unfortunately, in Jordan, the evidence is insufficient, and traffic reports do not contain any information about distractions causing traffic crashes. The study was done in 2006 in Australia, and the National Survey on Distracted Driving was done by NHSA in 2012 can be similar to this study since it was done using a survey, but further statistical analysis was needed to estimate exposure rates. Also, the study done by Naghawi and Aldalain in 2015 can be similar to this study. Thus, it only concentrated on young drivers' risk of crashes. Therefore, the online survey was used due to the limitation of the information.

### **3. Objectives:**

The objectives of this paper are:

1) To identify the role of drivers' distractions in traffic crashes, and study the impact of driver distraction on road safety, 2) To analyze the effect of each distraction factor on the driver by finding the weighted mean for the distraction factors, 3) To determine the

relationship between the drivers' distractions relate the relationship between each distraction with other factors like gender and age of the driver, passengers characteristics, and severity of crashes, 4) To identify the primary sources of distractions to drivers and the relative importance of the distractions as potential causes of crashes.

#### 4. Methodology:

##### 4.1 Study Description

The primary objective of this study is to identify and quantify the role of drivers' distraction factors in traffic crashes. The data needed for this study were based on a questionnaire survey that was collected both personally and online in both Arabic and English. The survey had a total of 15 questions, with the first part containing general information about the socioeconomic characteristics of the respondents, also the respondents' view of different distractions impacts while driving, and information about the passengers. The second part was about the driver's involvement in crashes, the distraction factors causing the crashes, and type of the crash.

The factors that this study focused on were: gender, age of drivers, vehicle type, frequency of driving, passengers riding with the driver, crash severity, and the kind of distraction that caused the crash. The most common distracting activities that were studied were lack of concentration caused by mental distractions including being angry or sad, talking/interacting with passengers or children, and being in a hurry and late. Also, phone distractions, including talking, texting, reading messages, and using handheld technological devices GPS. Other distractions like adjusting in-vehicle equipment radio or climate control, smoking, eating and drinking, hunger, being sleepy or ill. Outside vehicle distraction, ads, traffic signs, other vehicles, and pedestrians.



Figure 1. Study Process Flow.

##### 4.2 Method of Sampling

A representative random sample of Jordanian drivers was chosen at random to receive the online survey questionnaire. Respondents could complete it in either English or Arabic because it was made available in both languages. Between April 25 and June 15, 2018, the survey was circulated and conducted. 630 people in total responded to the online survey. This algorithm was used to determine the sample size online after the sample data were examined using Microsoft Excel and SPSS (Garber, 2010). Statistical Package for the Social Sciences (SPSS) emerges as an invaluable tool for the analysis and interpretation of survey results. SPSS serves as a comprehensive platform for statistical analysis, enabling researchers to scrutinize survey data to discern patterns and relationships about accident causation.

$$\text{Sample Size} = n = \frac{Z^2 \times \sigma^2}{E^2} \dots\dots\dots(1)$$

It was assumed that the confidence level = 95%, the margin of error =5%, the population in Jordan = 10.1 million, z-score =1.96.

Where:  $\sigma$  = Standard deviation

E= Margin of error

Z = Confidence Interval

The required sample size calculated = 385 samples, the sample of this study is 630, therefore meets the requirements.

## 5. DATA ANALYSIS AND RESULTS

This chapter presents and discusses the detailed results of the survey analysis for the driving distraction factors that cause traffic crashes. The analysis was carried out as an analysis of the sample. As mentioned before, the analyses were performed on Microsoft Excel and SPSS was used to interpret the survey results.

### 5.1 Sample analysis

Preliminary analysis of the data is presented in the first part of the survey for socioeconomic characteristics of the sample, crash analysis, and respondents' distraction factors.

### 5.2 Sample Characteristics

Data Analysis is done to describe the socio-economic characteristics of the participants from the questionnaire. The sample analysis shows that 322 (51%) of respondents were female, while (49%) 308 were male.

The respondents according to their age group; 292 respondents (46%) were young drivers aged from 18-25; 195 respondents (31%) were ages 25-35; respondents (11%) were ages 35-45; 61 respondents (10%) were middle-aged drivers from age 45-65; and only 12 respondents (2%) were drivers with age over 65.



**Figure 2** presents the survey sample frequencies according to gender and age, and there is a very low respondent rate for drivers older than 65.

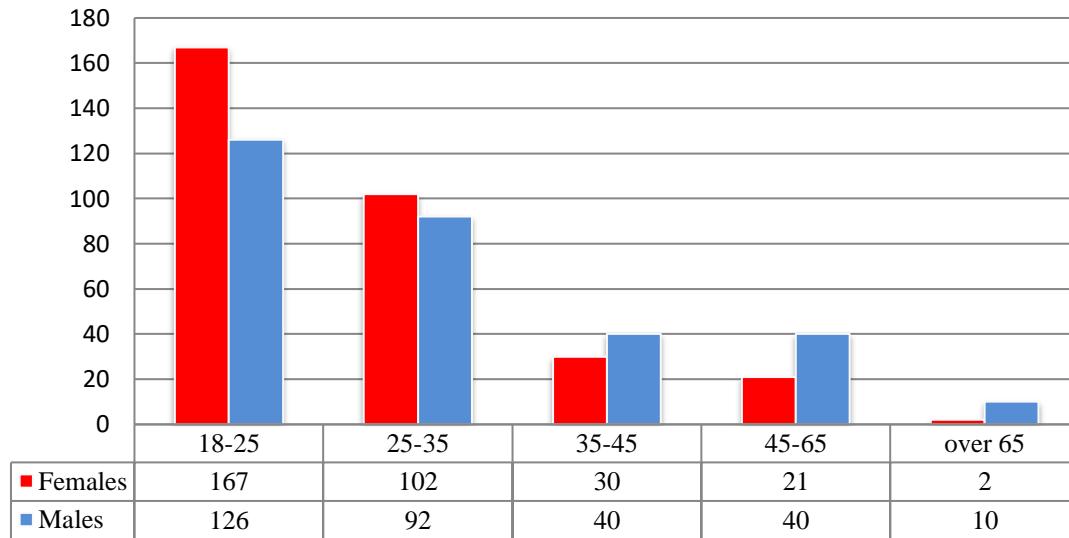


Figure 2. Age groups of respondents

### 5.3 Distraction factors

To understand how drivers, identify each distraction factor while driving, they were given a choice to rate the impact of each distraction factor as drivers. The options were given weight from 1 to 4 to find the weighted mean; not distracting =1, somewhat distracting=2, distracting =3 and very distracting=4, The weighted mean was found using this formula (Garber, 2010).

$$\bar{x} = \frac{\sum(fw)}{\sum f} \dots\dots\dots(2)$$

Where:

$\bar{x}$  = weighted mean

W=weight given

f = frequency

The surveyed sample shows distraction factors for males and females in each age group. All the distractions were analyzed to give a weighted mean for each distraction and show how distracting they are to the driver. The most distracting for both males and females of all ages is sending texts and messages on a mobile phone, with a weight of 3.17. Followed by reading messages and texts on a mobile phone generally, most of the distractions are more distracting for females than males, and especially kids or infants are crying or playing in the car with 2.47 for females and 2.17 for males. This can be explained by how female drivers drive more frequently alone with their children than male drivers. Also, it can be seen that extreme hunger is more distracting for males.

To analyse the results based on the age groups, for young drivers 18-35 the distractions are high then they tend to decrease until the age of 45 they increase again. For ages over 65, all the distractions are more distracting for them than for other age groups drivers.

#### *5.4 Cause of crashes*

The respondents were asked to specify the cause of the crashes they were involved in. Table 2 and Figure 3 show the frequency and percentage of the distractions that caused the crashes. 64% of all crashes had a distraction factor as a cause of the crash, and 36% of the crashes had other reasons for the crash. This result shows that distractions are prevalent among drivers and are a cause of many crashes among drivers. The top distracting cause of distracted crashes with a frequency of 20% was mental distraction including anger sadness, or other emotions; as shown in Figure 2, this is a pervasive distraction for drivers in Jordan because of the congested roads they can become emotional or aggressive while driving, and they also overthink about life stresses. The second most common distraction (13%) of distracted crashes was interacting or talking to other passengers, and this can cause a mental distraction for the driver, The third top reason that caused crashes was talking on a mobile phone (11%), unfortunately talking on the mobile phone is very common among drivers, which leads to many crashes.

The fourth reason was being in a hurry, running late with (10.7%), this reason can be part of the mental distraction because being late mentally distracted drivers causes them to speed and drive aggressively. The next distractions were sending texts or messaging on mobile phones (7%), and reading texts on mobile phones (6%), texting and messaging can lead to severe crashes since they distract the driver both mentally and physically. The next distraction was being sleepy or tired (6%), and this distraction can cause very dangerous traffic crashes because it takes the driver's attention entirely off the road. The next distraction was being lost and searching for directions (4%), and this stresses the driver mentally because they get worried about being late and getting lost.

The next distraction was talking or interacting with children in the back seat with 11 (3%) of crashes. This distraction is prevalent among drivers with small children or infants in the car that cry scream or fight with each other, causing a mental distraction or a physical distraction if they turn around to check on the backseat passengers.

The next distraction is reaching for objects in the vehicle (3%), which distracts the driver visually because they might look down to reach for an object. The next is an external distraction; Looking outside the windows, or scenery (3%), when drivers look out of the window or try to read something out of the car like ads or traffic signs that distract them visually. The least were adjusting the CD player or car radio, tape, (3%), eating or drinking or smoking (2%), using navigation for driving directions (1%), a flying bug in the car (1%), extreme hunger 2 (1%), drugs or medicine (1%) and other vehicles honking their horns (1%).

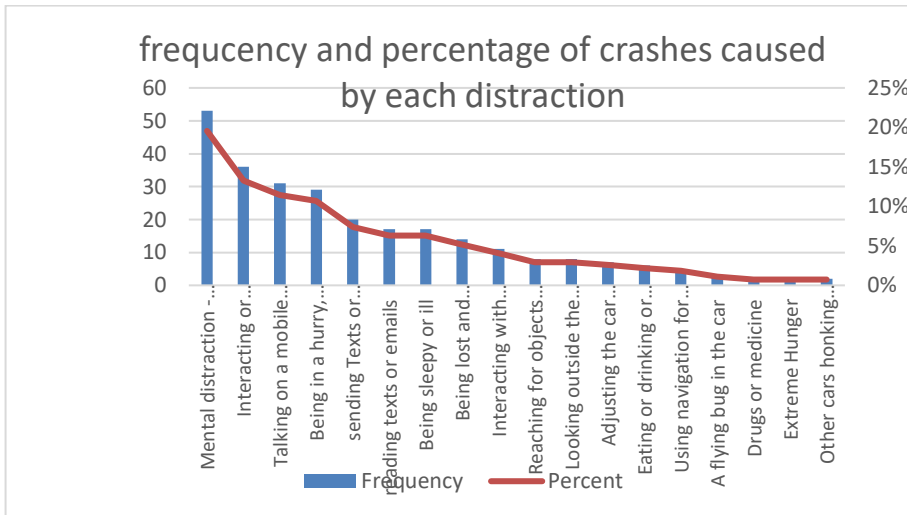


Figure 3: Distracted crashes

The survey results shows the frequency of crashes that each driver was involved in and the distractions according to age and gender. For ages 18-25 for males and females, the most distracting cause of crashes was mental distraction with 21% for females and 23% for male drivers. Followed by talking to passengers with 17%, while for females 13% talking on the phone percentage was higher than male drivers 6%.

For ages 25-35, the most distracting for females was being in a hurry 18% followed by mental distractions. As for males, it was talking on the phone with 18%, followed by mental distractions with 16% of crashes.

For ages 35-45, the top reason for crashes for females was talking on the mobile phone with a high 31%, followed by being in a hurry at 23%. For male drivers, it was a mental distraction and being angry or sad with a high 26% of crashes.

For ages 45-65 for females, the top crash reasons were talking to a passenger and talking on the phone with 22%, and for males its mental distraction with 25% of crashes.

For ages over 65, there were no females that were involved in any crash, and for males, the response rate was meager, and the top reasons were being lost and asking for directions and mental distraction, being sleepy or ill and a flying bug in the car.

Figure 4 present the severity of the crashes and distraction that caused the crash. The most frequent crashes were caused by Mental distractions. The distractions that caused deadly crashes were mental distractions and talking to passengers, being sleepy or ill, talking on the mobile phone, being lost, mental distraction, being in a hurry, and looking out the window.

The top distraction to cause serious injuries was talking on a mobile phone. However Talking, sending, and reading messages on a mobile phone were the significant causes of minor injuries. For vehicle damage crashes, the top reason was mental distraction followed by interacting and talking to passengers.

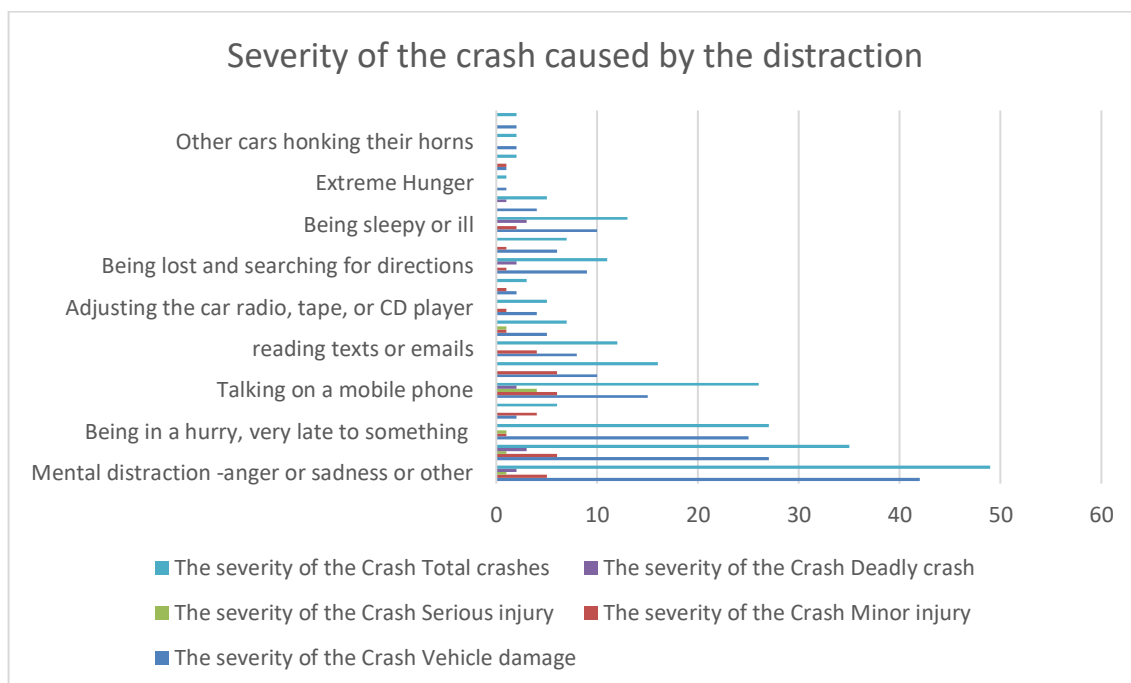


Figure 4: Severity of the Crash Vs. drivers Distractions

### 5.5 Comparison of results with other studies

The provided paragraph outlines a specific study on distracted driving in Jordan, and when compared with similar traffic studies, certain patterns and variations become evident. In the NHTSA study from 2009 cited in the paragraph, the reported percentage of distracted drivers was notably lower at 33%, suggesting a significant increase in distracted driving incidents over time in Jordan (Schroeder et al., 2013). Moreover, the highest cause of distraction in the Jordanian study is the use of mobile phones, particularly among male drivers aged 35-45, constituting 31% of crashes. This aligns with studies conducted in other regions, such as Australia, where mobile phone-related distractions were also identified as a leading cause, albeit with a higher percentage of 72% (Dingus et al., 2016). The prevalence of crashes due to talking to passengers in Jordan (17%) is lower than the reported 40% in the Australian study (Dingus et al., 2016). However, both studies share a common finding, highlighting the heightened crash risk among younger and senior drivers in comparison to middle-aged drivers, and emphasizing the universal impact of distractions on different age groups (Feng et al., 2016).

The observation that female drivers in Jordan are more susceptible to mobile phone distractions than their male counterparts aligns with findings from Dragutinovic and Twisk's study (2011), indicating a consistent trend across various regions. Similarly, the comparison to the AAA Foundation study, which found that 63% of distracted drivers were male and 37% were female, underscores the higher collision risk for male drivers reported in the AAA study (AAA, 2001). Overall, these comparisons highlight both commonalities and variations in distracted driving patterns across different regions, contributing to a broader understanding of the factors influencing road safety worldwide.

## 6. SUMMARY

Data for this study were collected using an online survey for Jordanian drivers ages 18 to 65 and over. The significant finding of this study was that 64% of drivers involved in a crash were distracted. The driver's distractions data was analyzed, and the participants were asked about the most distracting factor while driving. A weighted mean for distraction factor was found, and the highest distraction factor for drivers was sending a text with 3.12 out of 4, followed by reading messages with 2.97 and being sleepy and tired with 2.52.

The top frequent distraction for the crashes was mental distraction such as anger or sadness with 20% of all crashes, followed by interacting and talking with other passengers with 13% and talking on the phone with 11%. It was found that male drivers had a higher involvement in distracted crashes than female drivers. Also, young drivers and senior drivers had a higher crash risk than middle-aged drivers. The top cause of crashes for young drivers was talking and interacting with passengers, and for older drivers was being lost and searching for directions.

The primary sources of distraction to drivers are mental distractions, and they have relative importance as potential causes of crashes, including being in a hurry, daydreaming, life stresses, anger, sadness, and talking to passengers and interacting with young children. Phone distractions increase exposure to crashes, causing manual, mental (cognitive), and visual distractions, and the analysis shows that it has a more adverse impact on female drivers than male drivers.

## 7. CONCLUSION

The study shows that 64% of the respondents involved in a crash were distracted, and 36% had other reasons for the crash, indicating that distracted driving in Jordan is very dangerous and commonly practiced.

It was found that drivers view texting and reading messages on their mobile phones while driving as the most distracting and dangerous activity while driving, even though it's still widely practiced in Jordan.

The topmost frequent distraction to causes crashes is mental distraction almost 20% of all distracted crashes and that can be due to the stresses of life and rage of drivers. The second most frequent cause of crashes in this study was talking to passengers was a total of 13% talking to passengers. The third rank for distracted crashes was talking on the mobile phone 11% of all crashes. Noting that 31% of crashes for male drivers ages (35-45) were caused by talking on the phone. Younger drivers and senior drivers are at higher crash risk than middle-aged drivers and are impacted more harmfully by distractions. Generally, it was found that secondary-task engagement distractions had a more negative impact on young adult drivers and senior drivers than middle-aged drivers. The most frequent cause of fatal crashes was being sleepy or ill and being distracted by other passengers. The top reason for serious injuries was talking on the phone.

The role of drivers' distractions in traffic crashes is dangerous and common among drivers. It also increases the risk of exposure to crashes and can cause severe and fatal crashes.

## 8. Recommendations

The proposed remedial measures are to form the basis for safer roads in Jordan.

Plan for public awareness campaigns at Schools Education: more educational awareness programs should be made in Jordan for all ages to inform them about the dangers of distracted driving and traffic crashes in Jordan and to raise awareness about the impact of driver distraction.

Social media and communication: Public campaigns with messages and videos should be expanded to address distracted driving-related traffic accidents. Enforcement: To enforce existing rules and future legislation requiring drivers to take more control over their vehicles, the fine for using distracting devices, particularly mobile phones, should be increased. Distracted crash records: the traffic police department should investigate the cause of the crash and record it in police reports to include the specific distraction factors contributing to crashes.

Vehicle technologies include the use of technologies that prohibit distracting items from being used while a vehicle is in motion and the development of early warning systems by automakers to prevent crashes that could be caused by driver distraction.

Provide officers with the specialized training necessary to locate violators who conceal distracting gadgets for highway distracted driving enforcement (patrolling). There should be more legal action taken against distracting objects and activities. Also, more surveillance should be applied because they can have a significant impact on decreasing the driver's distractions. More research and studies should be done on elderly drivers in Jordan. Improved guidelines for license referral, the establishment of a re-licensing program, the preparation of an older driver handbook, and improved medication labeling for drugs that can harmfully affect driving ability are needed.

Further research should be done on mental distractions, and the psychological aspects of drivers, since this study showed that mental distraction had a significant impact on drivers' increase in exposure to crashes. A study is recommended to be conducted for commercial drivers to estimate the relative risk of crash exposure and find the effects of distractions on commercial drivers.

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