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ATTITUDES TO MOBILE PHONE USAGE TO ROAD SAFETY

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Thesis submitted in fulfillment of the requirements
For the award of the degree of
Bachelor of Engineering (Hons) Civil Engineering

Faculty Civil Engineering and Earth Resources
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JUNE 2016

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DEDICATION

This thesis is dedicated to my parents, Md Azmi bin Jarkasi and Normah Bt Ramlan who are always praying and fully support for my success, struggle to give me enough education and always loving me with full of their hearts. Special thanks to all my friends who give me advice, support and help all the way during my study. I would like to dedicate this thesis to my supervisors, Dr Parameswary A/P Sundara who give me a lot of ideas, suggestion and advice throughout my study.

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ABSTRACT

Nowadays, mobile phones have become a common gadget which allows people to access social network sites. As technology advances further, there is a need to be aware of its impact on driver behavior. The use of mobile phones while driving is one of the contributing factors in road accidents. Due to this problem, it resulted in accidents occurring more frequently due to the negligence of the driver's intent to focus instead on a mobile phone in front of it. This is because the response of the body against cell phone use will lead to dangerous driving. This research is more likely to determine the group of UMP community which is the most vulnerable to distracted driving due to the used of mobile phone and also to segregate high- risk and non- high risk groups in the community by using the mobile phone during driving. In addition, this research was carried out through a literature review of the topics that related to the factors that related to the distracted in driving. A questionnaire survey was used to obtain the information needed to meet the requirements of this inquiry. The questionnaire was distributed to 120 respondents of group UMP communities and all of it was responding to the survey. The distribution was involved with three (3) groups of professional which is student, academic staff and non-academic staff. From the questionnaire survey, the analysis shows that four (4) parts had been divided to identify the attitude of mobile phone usage to road safety. All data were analyzed using the software Statistical Package for Social Science 17 (SPSS) to acquire min statistic and standard deviation. From the questionnaire, it found that group that most vulnerable to distracted driving used by mobile phone during driving are male respondent. The most activities distracted during driving are talking to another passenger while driving. It shows that the majorities of the respondent are sometime used their mobile phone while driving. This research shows that most of the group UMP communities are not using their mobile phone while driving and the attitude of mobile phone usage to road safety in UMP campus are not worse.

ABSTRAK

Pada masa kini, telefon bimbit telah menjadi satu alat yang biasa digunakan oleh orang ramai untuk mengakses laman rangkaian sosial. Apabila teknologi meningkat maju, terdapat keperluan untuk menyedari kesannya terhadap tingkah laku pemandu. Penggunaan telefon bimbit ketika memandu adalah salah satu faktor yang menyumbang dalam kemalangan jalan raya. Oleh kerana masalah ini, ia telah mengakibatkan kemalangan berlaku lebih kerap disebabkan kecuaiannya pemandu ketika memberi tumpuan dan bukannya dengan telefon mudah alih di hadapannya. Ini kerana tindak balas tubuh terhadap penggunaan telefon bimbit akan membawa kepada memandu secara berbahaya. Kajian ini adalah lebih cenderung untuk menentukan kumpulan masyarakat UMP yang amat terdedah kepada pemanduan yang terganggu akibat penggunaan telefon bimbit dan juga untuk mengasingkan kumpulan berisiko tinggi dan kumpulan bukan berisiko tinggi dalam masyarakat dengan menggunakan telefon bimbit semasa memandu. Di samping itu, kajian ini telah dijalankan melalui kajian literature daripada topik-topik yang berkaitan dengan faktor-faktor yang berkaitan dengan gangguan ketika memandu. Kajian soal selidik telah digunakan untuk mendapatkan maklumat yang diperlukan untuk memenuhi keperluan siasatan ini. Soal selidik telah diedarkan kepada 120 responden kumpulan masyarakat UMP dan semua itu telah bertindak balas dengan penyiasatan. Pengagihan yang telah terlibat ialah tiga (3) kumpulan profesional yang merupakan pelajar, staf akademik dan staf bukan akademik. Daripada kajian soal selidik, analisis menunjukkan bahawa empat (4) bahagian telah dibahagikan untuk mengenal pasti sikap penggunaan telefon mudah alih untuk keselamatan jalan raya. Semua data yang diperolehi dianalisis menggunakan perisian Pakej Statistik untuk Sains Sosial 17 (SPSS) untuk memperoleh min statistik dan sisihan piawai. Dari soal selidik ini, ia mendapati bahawa kumpulan yang terdedah kepada pemandu terganggu menggunakan telefon bimbit semasa memandu adalah respondent lelaki. Aktiviti yang sering dilakukan ketika memandu adalah bercakap dengan penumpang lain. Ia menunjukkan bahawa majoriti responden adalah hanya kadang-kadang menggunakan telefon bimbit mereka semasa memandu. Kajian ini menunjukkan bahawa kebanyakan masyarakat kumpulan UMP tidak menggunakan telefon bimbit mereka semasa memandu dan sikap penggunaan telefon bimbit dengan keselamatan jalan raya di kampus UMP tidak membimbangkan.

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LIST OF ABBREVIATIONS

AAMI	Association for the Advancement of Medical Instrumentation
JKJR	Road Safety Department
MIROS	Malaysia Institute of Road Safety Research
RTA	Road traffic accident
SPSS	Statistical Package for Social Science
UMP	University Malaysia Pahang

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The advanced technology today nowadays is very useful in facilitate activities among people's life every day. One of the technology that provides the impact in life is a mobile phone. Nowadays, mobile phones have become a common gadget which allows people to access social network sites. As technology advances further, there is a need to be aware of its impact on driver behaviour.

Driver distraction is identified as one of the main causes of road crashes which has been estimated to account for approximately one quarter of car crashes. According to (The Sun Newspaper, 2015), more than 80% of traffic accidents are caused by human error, according to statistics by the Malaysia Institute of Road Safety Research (Miros). The death of 65,850 people in road accidents between 2004 until 2013 has taken its toll .There are no compilations of statistics on accidents due to mobile phone usage available in Malaysia (The Star Newspaper, 2009). The increase of road accidents is in link with the rapid growth in population, economic in development, industrialization and motorization encountered by the country.

General Road Accident Data in Malaysia (1997 – 2014)									
Year	Registered Vehicles	Population	Road Crashes	Road Deaths	Serious Injury	Slight Injury	Index per 10,000 Vehicles	Index per 100,000 Population	Indeks per billion VKT
1997	8,550,469	21,665,600	215,632	6,302	14,105	36,167	7.37	29.1	33.57
1998	9,141,357	22,179,500	211,037	5,740	12,068	37,896	6.28	25.8	28.75
1999	9,929,951	22,711,900	223,166	5,794	10,366	36,777	5.83	25.5	26.79
2000	10,598,804	23,263,600	250,429	6,035	9,790	34,375	5.69	26.0	26.25
2001	11,302,545	23,795,300	265,175	5,849	8,680	35,944	5.17	25.1	23.93
2002	12,068,144	24,526,500	279,711	5,891	8,425	35,236	4.9	25.3	22.71
2003	12,819,248	25,048,300	298,653	6,286	9,040	37,415	4.9	25.1	22.77
2004	13,828,889	25,580,000	326,815	6,228	9,218	38,645	4.52	24.3	21.1
2005	15,026,660	26,130,000	328,264	6,200	9,395	31,417	4.18	23.7	19.58
2006	15,790,732	26,640,000	341,252	6,287	9,253	19,885	3.98	23.6	18.69
2007	16,813,943	27,170,000	363,319	6,282	9,273	18,444	3.74	23.1	17.6
2008	17,971,901	27,730,000	373,071	6,527	8,868	16,879	3.63	23.5	17.65
2009	19,016,782	28,310,000	397,330	6,745	8,849	15,823	3.55	23.8	17.27
2010	20,188,565	28,910,000	414,421	6,872	7,781	13,616	3.4	23.8	16.21
2011	21,401,269	29,000,000	449,040	6,877	6,328	12,365	3.21	23.7	14.68
2012	22,702,221	29,300,000	462,423	6,917	5,868	11,654	3.05	23.6	13.35
2013	23,819,256	29,947,600	477,204	6,915	4,597	8,388	2.90	23.1	12.19
2014	25,101,192	30,300,000	476,196	6,674	4,432	8,598	2.66	22.0	10.64

Table 1.1: General Road Accident Data in Malaysia (1997- 2014)

Sources : Malaysia Institute of Road Safety Research (MIROS)

1.2 BACKGROUND OF STUDY

Mobile phones cannot be used indiscriminately in all places at all times. For example, when using a mobile phone to drive. This fact shows that the diverse range of places that smartphones are used, 71% said they use their smartphone sitting in their car, 51% on public transport, 33% in the bathroom, 78% in the bedroom and 27% while on the toilet.(2013,Eircom Household Survey). The use of mobile phones while driving is extremely dangerous for the driver and other road users. This is because the focus will be interrupted if the driver uses a mobile phone and then can lead to accidents. Many road users do not realize that wilful negligence will be a significant impact that can kill their negligence while driving is a major contributing factor in crashes involving road users.

According to Lam (2000), driver distraction while driving is a significant factor that leads to road traffic accident (RTA). Activities involving mobile phone such as messaging and communication without a proper device could lead to a very serious distract to the driver. In Malaysia, 79% of mobile phone users used their phone for social networking and almost 98% of the internet users are on social media (Device Research, 2014). Moreover, not just dialling and SMS while driving increased the risk of accident but a conversation on mobile phone while driving also contribute to road traffic accident (RTA), (Consiglio,Driscoll, Witte, & Berg, 2003).This is because mobile phones can cause drivers to take their eyes off the road, their hands off the steering wheel, and their minds off the road and the environment condition.

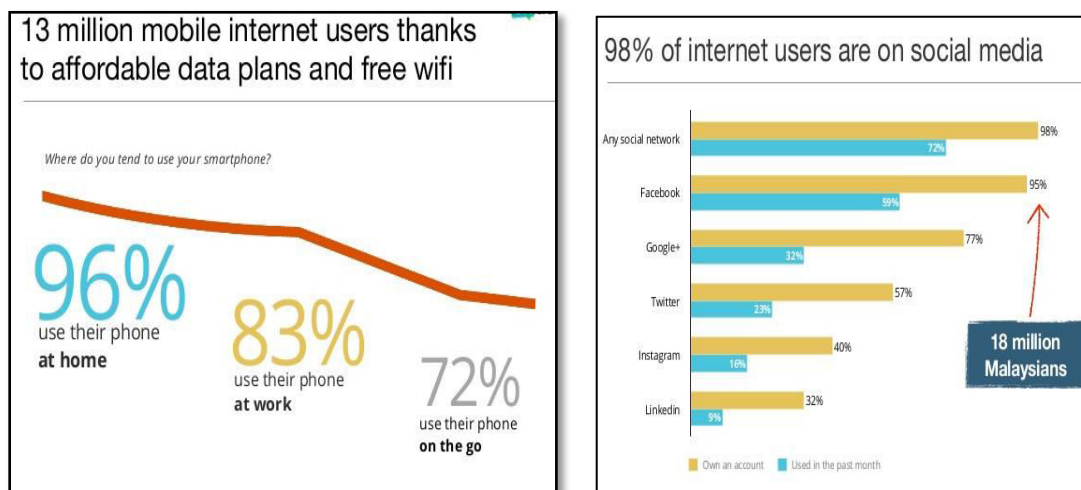


Figure 1.1: Mobile Phone Usage in Social Networking

Although using a hand-held mobile phone is now generally illegal in many developed countries, but the hands-free use is not illegal. This creates the perception that hands-free is safer and less distracting than hand-held use. However the research shows that it is the call itself that is distracting, meaning that having a phone conversation while driving, whether hands-free or not, is dangerous. It is clear that using a hand-held device to text or call involves a physical distraction such as removing a hand from the wheel, however the cognitive distraction of being on a hands-free call still is often overlooked by many. (Driving, Using, Phones, & Risky, 2012). The studies show that drivers using a mobile phone are slower at recognising and reacting to hazards, with a 37% reduction in spatial processing in the part of the brain used for driving. (Just, Keller, & Cynkar, 2008)

The prevalence of mobile phone usage in accident concept would be worth exploring as part of a quantitative survey. Concern on young age groups, mobile phone distraction while driving survey would likely shed light in university campus especially in University Malaysia Pahang (UMP) in Gambang. This is because, UMP Gambang is located near to highway and expressway. Young people are usually devoting the highest numbers of the accident cases (Chliaoutakis, Darviri, & Demakakos, 1999). It has been proven that, the young drivers had the highest tendencies to use a mobile phone while driving compared with other groups of people (McCartt et al., 2006) and this behaviour could lead to road traffic accident, (Isa et al., 2012).

1.3 PROBLEM OF STATEMENT

Mobile phones have become a necessity for the people of today. There are segments of society, especially young people, that their lives can not be separated from your mobile phone. Referring to the statistics report the number of mobile phone users in Malaysia which is issued by the Malaysian Communications and Multimedia Commission (SKMM, 2010) reported that there were 31 million mobile phone users than the population of Malaysia's population of 28 million people . It makes user penetration rate of mobile phone use of 108 percent.

The use of mobile phones while driving is one of the contributing factors in road accidents . According to the Road Safety Department (JKJR) , there are still many drivers who are preoccupied with mobile phone without a hands-free device while driving (Len Yu Kin,2011). Awareness of the dangers of using mobile phones while driving among road users are at an alarming level . It regarded the use of mobile phones while driving as a trivial matter. Therefore ,using the mobile phones in vehicles is serves as driver distraction its can cause drivers to take their eyes off the road, their hands off the steering wheel, and their minds off the road and the surrounding situation. As we all know, driving is a complex process which involves eyes hand-foot coordination (Fuller, 2000). Futile coordination shall contribute highest numbers of the accident cases (Chliaoutakis, Darviri, & Demakakos, 1999).

Nowadays there are drivers use the phone to respond or read the SMS while driving. This is not only happening among car drivers , even motorcycle driver was adopted the same attitude . Read or reply to a message needed more attention than talking on the phone. This resulted in accidents occurring more frequently due to the negligence of the driver 's intent to focus instead on a mobile phone in front of it. This is because the response of the body against cell phone use will lead to dangerous driving. According to (Director General of Road Safety Research Institute Malaysia (Miros), Dr Ahmad Farhan , BERNAMA, 2015) although no statistics released by the Royal Malaysia Police which recorded the number of accidents caused by cell phone use, but the results of other studies conducted among drivers prove negligence on the danger of its use.

Concerns have been raised that use of a mobile phone while driving increases the risk of traffic collisions, property damage, injuries, and fatalities. A variety of groups, including the wireless communications industry and transportation safety groups, have initiated educational campaigns that encourage the prudent use of mobile phones while driving. These safety concerns have also led policymakers to consider whether the use of a mobile phone while driving should be regulated or even prohibited. Mobile phone is commonly used by young drivers (who are already in high risk) compared with the adult drivers. In the US, bans on telephoning while driving whether hands-held or hands free are being introduced increasingly as part of graduated driver licensing arrangements.(Jeanne Breen Consulting, June 2009).

1.4 OBJECTIVES OF RESEARCH

The main goals of this research are:

- i. To determine the group of UMP community which is the most vulnerable to distracted driving due to the used of mobile phone.
- ii. To segregate high- risk and non- high risk groups in the community by using the mobile phone during driving .

1.5 SCOPE OF THE STUDY

University Malaysia Pahang (UMP) in Gambang, will be chosen as the study area for this research.This is because UMP Gambang is located near to highway and expressway.It will be done by surveying the attitudes of UMP's community to mobile phone usage among the range of demographic regardless of age, gender, staff, or non staff over a number of UMP communities.Secondly, identifying the high-risk groups which is then it will be recommended as a target for policy makers with a range of possible policy solutions.

1.6 SIGNIFICANT OF STUDY

The significant of this study is to identify the general attitudes of mobile phone users towards high- risk imposed by UMP communities while driving in pertaining to road safety and also the impact for public policy. Besides, this research will serve as a reference for the future research. It is also beneficial for other researcher to be aware of dangerous of using mobile phone while driving and study more deeply on attitudes mobile phone users for road safety purpose and its implications for public policy to avoid any road accident in the future.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Every year, more than 20 million people are injured and 1.17 million are killed due to road traffic accidents. Developing countries account for over 85% of the deaths, and close to 90% of the disability caused by road traffic crashes worldwide. (A.A. & A.J., 2010)

The overall aim of the report is to review what is known about the effects of in-vehicle distraction on driver performance and safety review the range of techniques that have been used to measure and quantify the effects of distraction on driver performance identify future research needs in the area and recommend countermeasures for minimizing driver distraction. To the knowledge of the authors, the report provides the most comprehensive summary of accumulated literature currently in existence. The first section of the report discusses the impact of technology-based distractions (e.g., mobile phones, route navigation and email/internet) and non-technology-based distractions (e.g., conversing with passengers, eating/drinking and smoking) on driving performance. The relative influence of the various technology and non-technology based distractions on driving performance is also examined and the driving performance variables (e.g., speed maintenance and reaction time) that seem to be most sensitive to specific distracters are identified.

2.2 DRIVER DISTRACTION

Driver distraction is an important risk factor for road traffic injuries. There are different types of driver distraction, usually divided into those where the source of distraction is internal to the vehicle (et.as tuning a radio, or using a mobile phone) and those external to the vehicle (et. as looking at billboards or watching people on the side of the road).

Driver distraction is thought to play a role in 20-30% of all road collisions. (Dews & Stayer, 2009).Distraction is caused by a competing activity, event or object from inside or outside the vehicle. Safety problems related to driver distraction are escalating as more technologies become available for use in motorized vehicles. Such a technology, already widely available and accepted is the mobile phone. At the end of December 2009 there were 5,302,345 mobile subscriptions in Ireland (ComReg, 2009). While it is clear that mobile phones enhance business communication and increase personal convenience, use of mobile phones while driving has become a road safety concern. The vast majority of drivers (39 % to 45%) have been report using their mobile phone at least sometimes while driving, and it is estimated that at any given moment during the day, 2 to 6% of the drivers is using a mobile phone (Road Safety Authority, 2010).

The mobile phone distracts drivers in two ways. It causes physical distraction and cognitive distraction. Physical distraction occurs when drivers have to simultaneously operate their mobile phone (i.e. reach, dial, hold) and operate their vehicle. Cognitive distraction occurs when a driver has to divert part of his/her attention from driving to the telephone conversation. These are the ability to divide one's attention between two simultaneous tasks.

Mobile phones potentially distract driver in several ways:

- Physically: instead of focusing on the physical tasks required by driving (e.g. steering, gear changing), drivers have to use one or both of their hands to manipulate the phone.
- Visually: mobile phones could visually distract drivers in two ways:
 - a) Firstly, drivers have to move their eyes from the road and focus on the mobile phone in order to be able to use it.
 - b) Secondly, while talking on a mobile phone, even if drivers' eyes are focused on the road, they 'look but do not see'.
- Auditory: the focus of drivers' attention moves from the road environment to the sounds of the mobile phone and the conversation. This particularly applies when the sound quality is poor.
- Cognitively: instead of focusing their attention and thoughts on driving, drivers divert their attention and focus on the topic of the phone conversation.

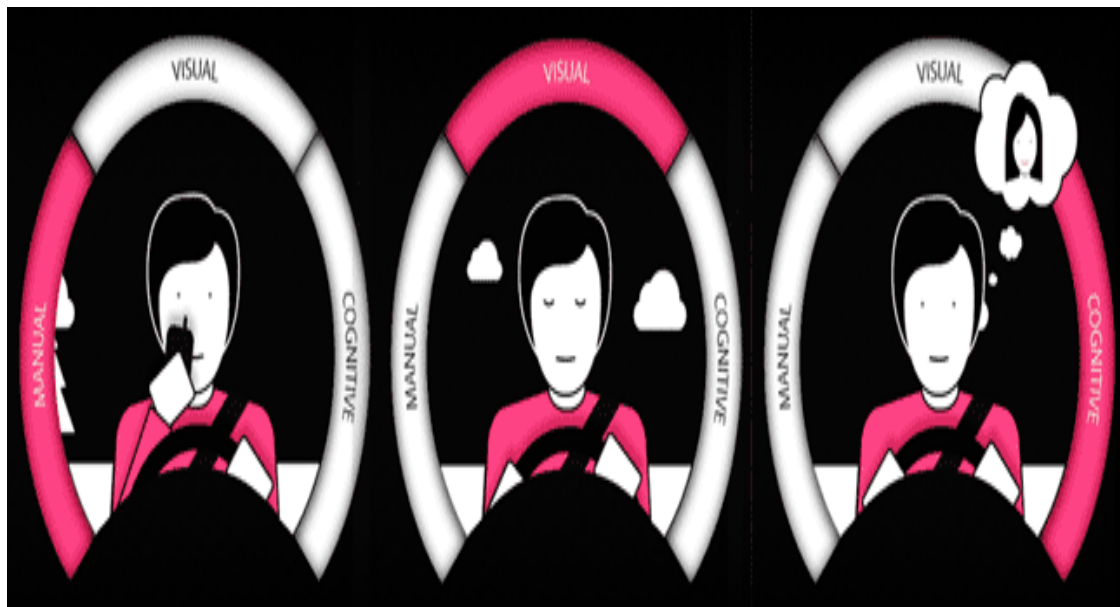


Figure 2.1 : Type of Driver Distraction

2.3 HANDS-FREE VERSUS HAND-HELD

The majority of studies show that the use of hands-free phones can cause as much important to the driver distraction as the use of hand-held phones. It is prohibited to use a hands-free phone while driving because it will make you to lose the proper control of your vehicle.(Consulting, 2009). Hands-free phones and other aid such as speed dialing and voice activation can reduce physical distraction. However, the main negative factor of mobile phone use is cognitive distraction, the diversion of concentration from driving to the conversation itself. The negative impact of conversation on driving performance is the same for both hand-held and hands-free phones.

Talking on a hands-free device is perceived to be much safer (43% say it is safe) relative to talking on a handheld device (6% say it is safe) or texting (1% say it is safe). Note much of the international research indicates that talking on a hands free is not as safe as widely believed, due to the cognitive distraction involved, and there is evidence to suggest that it is in fact as distracting as using a hand held device. (Stats, 2013)

A hands free device is an apparatus used with cell phones that permits the user to talk on the phone without holding it. Hands-free devices often are seen as a solution to the risks of driver distraction because they help eliminate two obvious risks visual, looking away from the road and manual, removing your hands off of the steering wheel. However, evidence suggest that using a hands-free phone is not a secure alternative to hand-held phone use. There are research says that hands-free phones can decrease the physical distraction. However, the real ask of conversation and listening on the phone can affects the cognitive capability of the driver and distracts them from driving safely. (Gps, 2014)



Figure 2.2: Hands free phone usage

2.4 EFFECTS OF TEXTING

Texting has become a social norm since the year 2000 because of the popularity of smartphones, which allow people to communicate faster and easier. So that, text messaging while driving is particularly dangerous. There have been many studies that have linked texting while driving to be the cause of life-threatening accidents due to driver distraction. The International Telecommunication Union states that “texting, making calls, and other interaction with in-vehicle information and communication systems while driving is a serious source of driver distraction and increases the risk of traffic accidents” (Adolph, Martin, 2010). There are about 1.6 million crashes in the US every year involving cell phone use, of which 500,000 cause injuries and 6,000 cause fatalities. Texting while driving is now the top cause of death among teenagers, texting and driving accounts for 11 teen deaths every day in the US. Overall, texting is involved in about 25% of all car accidents in the US, (Garofalo, Mann & Schultz L.P.A., 2015).

In recognition of the increasing use of mobile phones generally, and the trend towards fitment in vehicles, both of which will encourage use in vehicles. Similarly, while the information presented in this document focuses on mobile phones as they are used for conversing and text messaging, it is important to be aware of the rise in use of powerful “smart phones” so that its allow the users to access the e-mail in the Internet, films and games, and the implications for their risk to driving behaviour.

For this study, there are many young drivers that admit to the largely illegal activity of texting while driving. Text messaging has a detrimental effect on safety-critical driving tasks such as lane-keeping, hazard detection and the detection and appropriate response to traffic signs. (Hosking et al., 2006; Reed & Robbins, 2008). When text messaging, drivers spend more time with their eyes off the road than in normal driving. Many drivers admit to texting while driving. A Spanish study indicated that 19% of drivers admitted to texting while driving on the highways and 22.5% on rural roads at least once a month (Consulting, 2009) .

An Australian simulator study conducted in 2006 found that young novice drivers spent about four times as much time looking away from the road when texting than when not texting. This can lead to incorrect lane changes and wandering, and failure to see road signs, hazards and other road users. (Centre for Accident Research and Road Safety - Queensland, 2012)

2.5 COLLISION RISK

Mobile phone use while driving could therefore negatively affect driving performance. The results of epidemiological studies strongly suggest that using a mobile phone while driving can increase the risk of being involved in a road collision up to four times. Probably the most famous and most frequently cited epidemiological study about the risks of mobile phone use while driving is the study of Redelmeier and Tibshirani (Redelemeir & Tibshirani, 1997).

The researchers found that the risk of a collision when using a mobile phone was four times higher than the risk when a mobile phone was not being used. The results of the study also suggested that hands-free phones offered no safety advantage over handheld units. Similar findings were achieved in other epidemiological studies (Laberge-Nadau, et al., 2003), (McEvoy, et al., 2005).

2.6. CHANGES IN DRIVING BEHAVIOUR

Reviews of the scientific literature have summarised the negative effects on driver performance which have been demonstrated in a range of studies using a variety of research techniques (RoSPA, etc ,2002). Research indicates that the use of hands-free and hand-held phones produce similar which have been demonstrated in a range of studies using a variety of research techniques (Dragutinovic N & D Twisk ,2005).Research indicates that the use of hands-free and hand-held phones produce similar impairment in performance compared to normal driving without using a phone. The driver's response to critical events is impaired more than the ability to maintain vehicular control.

- **Slower reactions to traffic signals and more frequently missed signals**

In-car telephoning while driving results in a significant reduction in driver reaction time to traffic signals or other relevant traffic events. The probability of missing important traffic signals is also increased.

- **Slower braking reactions with more intensive braking and shorter stopping distances**

Studies show that braking reaction time is reduced during an in-car telephone conversation by between 0.3 to approximately 0.7 seconds; drivers brake harder with shorter stopping distances.

- **Reduced general awareness of other traffic**

Studies have shown a significant drop in situation awareness in perception, comprehension and projection of other traffic due to the level of concentration demanded by in-car telephone phone conversations.

- **More risks in decision-making**

When using an in-car telephone, studies show that drivers accept shorter gaps, make fewer speed adjustments and adjust less to potentially dangerous road conditions such as slippery roads.

- **Compensatory behaviour**

Some studies have observed that drivers engage in risk- compensatory behaviour during mobile phone use such as reducing speed or increasing headways to offset any perceived potential danger. The pattern of results to date in a recent meta-analysis suggests that drivers may adjust their headways and reduce speeds when using a hand held phone but not with a hands-free device. (Caird Jk, Etc 2008). The new behaviour, however, may not address the actual safety requirements of the driving task in any given situation. (Dragutinovic N & D Twisk ,2005)

- **Lower seat belt use**

Studies also indicate that seat belt use is significantly lower for hand- held mobile phone users than for non-users (Eby Dw & Jm Vivoda ,2003). Mobile phone users while driving also engage in other risky behaviour like drinking and driving more often and exceeding the speed limit more frequently

2.7 MOBILE PHONE USE - CONVERSATION WITH A PASSENGER & LISTENING TO MUSIC

Conversations with passengers in the real world are self-paced in contrast to phone conversations. Phone conversations are generally deliberately initiated conversations and, compared with a conversation with a passenger, are more purposeful and goal-directed with a faster exchange of information. Because the passenger is present during the whole journey, a conversation with a passenger can be conducted in a less urgent manner. In the case of a passenger conversation, the passenger is also aware of the driving situation and can sometimes even help draw attention to dangerous situations. In the case of a mobile phone conversation, the other person is generally not even aware that his/her conversation partner is driving, (Dragutinovic & Twisk, 2005). In a study in 2005 it was found that the normal conversations with a passenger were

suppressed on the most demanding urban roads, for both driver and passenger. On the other hand, the mobile phone conversation prevented suppression from occurring in the passengers' conversations and even encouraged drivers to make more utterances that they would normally do in a normal passenger conversation (Crundall, Bains, Chapman, & Underwood, 2005).

There are two studies comparing the effects of using a mobile phone and listening to music in vehicles. The studies concluded that the distraction of listening to music was far less than using a mobile phone. (Consiglio, Driscoll, Witte, & Berg, 2003), (Strayer & Johnston, 2001).

2.8 AGE-RELATED EFFECTS

The effects of mobile phone conversations on driving performance are more extreme for both younger and older driver. Younger drivers with less experience on the roads find it more difficult to divide their attention appropriately between driving and the secondary task of talking on the phone. Older drivers have decreased visual and cognitive capacities which also makes it more difficult for them to conduct two tasks concurrently, as manifested by an increased reaction time while driving (Brace CL, Young KL, Regan MA, 2007)

Young and or novice drivers (below the age of 25 years) are a high-risk group for road traffic injuries and are greatly overrepresented in crash and traffic fatality statistics. For instance, within the Organisation for Economic Co-operation and Development (OECD) countries, young drivers typically represent between 18% and 30% of all drivers killed, although people in the same age group only represent between 9% and 13% of the total populations in their countries (Young drivers: the road to safety. Paris, 2006). Studies from the United Kingdom, Australia and New Zealand show that male drivers under the age of 30 years is a group particularly likely to exhibit other high-risk behaviours and are also more likely to use mobile phones while driving (Dragutinovic N, Twisk D 2005).

The United Kingdom study cited found that drivers under the age of 30 were almost twice as likely to use a mobile phone as drivers over the age of 30 years (Mobile phone use by drivers,. 2008). Heavy use of mobile phones could increase the high crash risk for these young drivers, who are likely to be more vulnerable to the effects of distraction given their relative inexperience behind the wheel.

2.9 RISK OF CRASH INVOLVEMENT

Anyone using a mobile phone while driving is at increased risk of a serious crash. Young drivers are particularly at risk as there is a greater prevalence of driving while using a mobile phone in this population. A 2010 survey conducted by Association for the Advancement of Medical Instrumentation (AAMI) (AAMI,2000) found that 61% of Australian drivers aged between 18 and 24 years reported that they had sent or received a text while driving (compared with 32% of drivers aged over 25 years). In addition, evidence demonstrates that undertaking secondary tasks while driving, such as using a mobile phone, causes greater problems for inexperienced drivers (who already have a higher crash risk) (The Royal Society for the Prevention of Accidents, 2001).

The are research shows that using car phones while driving increases the likelihood of being involved in a crash resulting in property damage (Redelmeier Da & Rj Tibshirani ,1997) or injury resulting in hospital attendance (Mcevoy SP, Etc , 2005) by a factor of four. Crash involvement increases with an increasing amount of in-car telephone use. Heavy users are twice as likely to be involved in a crash as those making minimal use of mobile phones. Hands-free phones offer no safety advantage over hand-held units. (Laberge-Nadau C, etc ,2003). Gender or age group does not affect the increased likelihood of a crash while using a mobile phone and driving.

2.10 EFFECTIVENESS OF INTERVENTIONS TO REDUCE MOBILE PHONE USAGE WHILE DRIVING

Evaluations of the effectiveness of the banning of mobile phone usage while driving have been carried out in Japan (ROSPA, 2002), Finland (Rajalin, Summala, Poysti, Anteroinen, & Porter, 2005), some US states (McCartt, Braver, & Geary, 2003) (McCartt & Geary, 2004) and in the United Kingdom (Broughan & Hill, 2004). Regarding the effectiveness of the ban on the use of handheld mobile phones, these studies show short-term effects of up to a 50% reduction of use, but the long-term effects are far less positive. The two studies in the US found that one year after the introduction of a ban; the use in the State of New York went back to the same level as before the law (McCartt et al., 2003; McCartt & Geary, 2004).

2.11 BANNING THE USE OF HAND-HELD TELEPHONES

The difficulty of enforcing bans on hands-free mobile phones has led many countries to ban only hand-held phones. However, since studies demonstrate that there are similar effects on driving performance with both types of phones, laws that only prohibit drivers from using hand-held devices could be interpreted to mean that the use of hands-free mobile phones is safe, and convey a false sense of security to those using such devices. Indeed, a study carried out in London, United Kingdom suggests that tougher enforcement on the use of hand-held phones was followed by a quick rise in the use of hands-free phones (Johal S et al, 2005).

The use of hand-held car telephone phones while driving is illegal in over 40 countries as shown in the Table 2.1, most of the countries, Australia, one Canadian province and the United States.

Table 2.1 : Countries that hand-held banned

Overview of existing mobile phone legislation in various countries (source: www.cellular-news.com/car_bans/; as at December/2008).		
Country	Hand-held banned	Notes
Australia	Yes	Banned in all states - fines vary.
Austria	Yes	Fines vary - up to US\$22 per incident
Belgium	Yes	Phones can be used without a hands-free unit when the car is stationary - but not while in traffic (such as at traffic lights)
Brazil	Yes	Ban imposed Jan. 2001
Bulgaria	Yes	Ban imposed May 2002 - fines of US\$15 per infraction
Canada	One province	Banned in Newfoundland (Dec2002) fines up to US\$180
Chile	Yes	
Czech Republic	Yes	
Denmark	Yes	Ban imposed July 1998 - US\$60 fine for infringements
Egypt	Yes	Fines of about US\$100 per offence.
Finland	Yes	Ban imposed January 2003 - US\$55 fine for infringements
France	Yes	Ban imposed June 2003 - US\$42 fine per infraction
Germany	Yes	Ban imposed Feb. 2001 - usage allowed without a hands-free unit only when the engine is switched off.
Greece	Yes	
Hong Kong	Yes	
Hungary	Yes	Fines up to US\$20 per infraction
India - New Delhi	Yes	Ban extended to all use of mobile phones when driving, including use with a hands-free unit - July 2001
Ireland	Yes	Banned, with a US\$380 fine and/or up to 3 months imprisonment on a third offence. Hands-free kits allowed, although that is subject to review.
Isle of Man	Yes	Banned since July 2000
Israel	Yes	
Italy	Yes	Fines of up to US\$124 per infraction
Japan	Yes	Ban imposed Nov. 1999
Jersey	Yes	Ban imposed Feb. 1998
Jordan	Yes	Ban imposed Oct. 2001
Kenya	Yes	Ban imposed late 2001
Malaysia	Yes	
Netherlands	Yes	
Norway	Yes	Fines of over US\$600 per infraction
Pakistan	Partial	Banned in Islamabad
Philippines	Yes	
Poland	Yes	Fines can be as high as US\$1,000
Portugal	Yes	
Romania	Yes	

2.12 BANNING THE USE OF HANDS-FREE TELEPHONES

There has been wide debate about the introduction of legislation banning the use of hands-free telephones while driving in several countries. Safety organisations have called for a complete ban on mobile phone use while driving such as the National Safety Council in the US, the European Transport Safety Council at EU level, and the Royal Society for the Prevention of Accidents, while some industry bodies advocate education over legislation as the appropriate intervention e.g. the Wireless Association in the US. While usually warning about their use while driving, governments have usually cited potential difficulties in securing compliance with hands-free options as the main reason against bans.

In Portugal, restricts the use of hands-free telephones in addition to hand-held telephones. Some jurisdictions in the US support a legislative ban on all telephone use while driving for novice drivers and school bus drivers but not for all drivers. Some countries look to careless or dangerous driving legislation to address problems of hands-free use. For example, while only hand-held use is specifically prohibited in the UK, the use of hands-free phones may still be considered to distracting by the country.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

In this chapter it will be discussed on the methodology that is being used in this chapter. The objective of this study will be executed through the collection of data. It focuses on the method chosen by conducting questionnaire surveys and through literature search. The data collected will be analysed in Chapter 4 and it will then be followed by some discussion and suggestion and eventually a conclusion will be drawn to conclude this study. In general, the aim of this study is to identify the high-risk group of UMP community which is the most vulnerable to distracted driving due to the use of mobile phones.

3.2 RESEARCH DESIGN

There are several phases that must be done in order to achieve the objectives of this research including :

3.2.1 Desktop Study

The earliest task that was completed is study briefing by supervisor. The topic that to be considered had been discussed together and the suitable topic to be revised on had been selected. The selected topic for this project entitled ; ‘Attitudes to mobile phone usage to road safety’.

After selecting the topic, the study area is classified based on the objective of the project. In this study, the area that had been selected is in Universiti Malaysia Pahang (UMP) in Gambang. Then, all the information regarding the topic and the study area that will be involved will be gathered together. The information that receive, will be completed the project research. All the supporting data and the information will be used to determine the scope of the study and as a guideline of the study progress.

3.2.2 Data Collection

- **Participants**

A cross sectional study was conducted among university staff and student in University Malaysia Pahang (UMP) in Gambang. The participation of this study is on voluntary basis. The self-administered questionnaire were self distributed questionnaires to staff and student UMP. All the participants were informed of the purpose of the study and were assured of confidentiality and anonymity. Consent was assumed if the student and staff of UMP completed and submitted the questionnaire.

- **Sources of data**

The source of data are mostly gather from the literature search. It is carried out to establish several knowledge of the research topic. The literature review are obtained with referring to published books, information from the internet, articles in the journals, and some other published research works.

3.2.3 Data Analysis

The questionnaire includes questions regarding participants gender, age and driving behaviour. This includes attitude mobile phone use while driving, changes in distracted driving and whether they had been involved in any accident while using a mobile phone while driving. This survey also investigated the frequency with which drivers used mobile phone to make or answer a telephone call and to send or read text messages (SMS). Participants will be also asked whether they used a hands-free device.

After distributed the questionnaire the data collected and received from the respondents will be studied, compiled and analysed by using percentage method to compare which will suit the objectives and scope of this study. The data analysed will showed the attitudes of mobile phone usage to road safety and the driver distraction that the student and staff of UMP always do during driving.

3.3 METHODOLOGY FLOW CHART

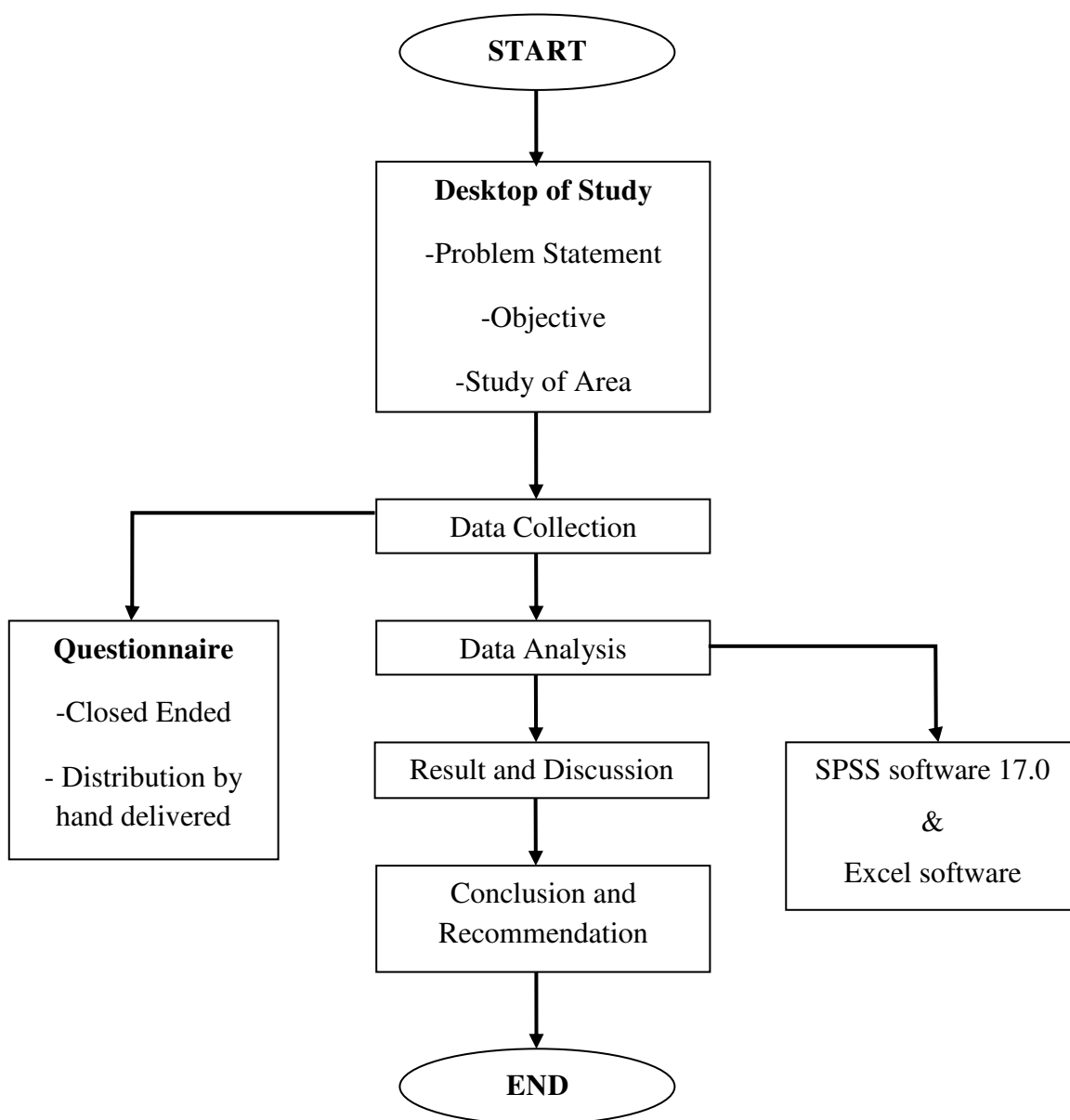


Figure 3.1 : The flow of research methodology flowchart

CHAPTER 4

RESULT AND DISCUSSION

4.1 INTRODUCTION

This chapter presents about the quantitative findings of the research. The purposes of this research are to determine the group of UMP community which is the most vulnerable to distracted driving due to the used of mobile phone Then, to segregate high- risk and non- high risk groups in the community by using the mobile phone during driving. In order to obtain those data, the instruments used for this research is questionnaires which consist of closed-ended questionnaires with multiple choice questions.

4.2 QUESTIONNAIRE DISTRIBUTION

The closed ended questionnaires were distributed to the targeted respondent in order to collect data for analysis. The targeted respondents of this study are academic staff, non-academic staff and student of University Malaysia Pahang (UMP), this kind of method survey is very suitable for this study. The method in distributing the questionnaire is through by hand delivered to the entire respondent. It is very economical and very fast because it will be done within a short time period to collect the data survey. The process for distributing and collecting data had been done within two or three weeks. As the process had been done within shorten period, its make the analysing process and the interpretation of the data become smoothly.

The questionnaire consists of four part which are Part One, Part Two, Part Three and Part Four. Part One is conducted to collect the general information of respondents. Meanwhile, Part Two is designed to identify the frequency of distracted driving among the mobile phone usage in University Malaysia Pahang (UMP). Part Three is to identify the attitude of mobile phone usage while driving. Lastly, Part Four is designed to identify the classification of changes in distracted driving among mobile phone usage at UMP.

All data are being analysed by using Microsoft Excel and Statistical Package for Social Science (SPSS 17.0). This SPSS software has helped in analysing all the data involved and make it easier for interpretation of all the result that had been gained. All the collected data and answers from the questionnaire had been classified and categorized to make it easier to be transformed into the software. Based on the result from the analysis, it will be interpreted in order to be used to fulfil the objective that had been set for this project. The result also will help to support the assumption and findings that been made.

Analyse data using Microsoft Excel has helped me in analyzing with store, model and manipulate data sets. Excel spreadsheets organize this data into worksheets, each with a number of rows and columns. Each row or column has one or more cells, with each cell holding a single data value that receive from the survey. It will be provide a range of automated functions for working with these stored data values, including the chart function and also can show the data that have been analyze in pie chart, bar chart, and also column chart.

4.3 RESPONDENT'S PROFILE

The questionnaire surveys were distributed to random sample of respondents in University Malaysia Pahang. Distributed the questionnaire survey to the student, academic staff and non- academic staff who have a driver's license are important because it is used to identify the attitude to mobile phone usage to road safety when driving while using a mobile phone. The total number of respondent involved in this survey was 120 candidates from University Malaysia Pahang, (UMP).

4.3.1 Gender

According to Figure 4.1 shows the percentage for female respondent is more than male respondent which is 52% are from female respondent and 48% from male respondent.

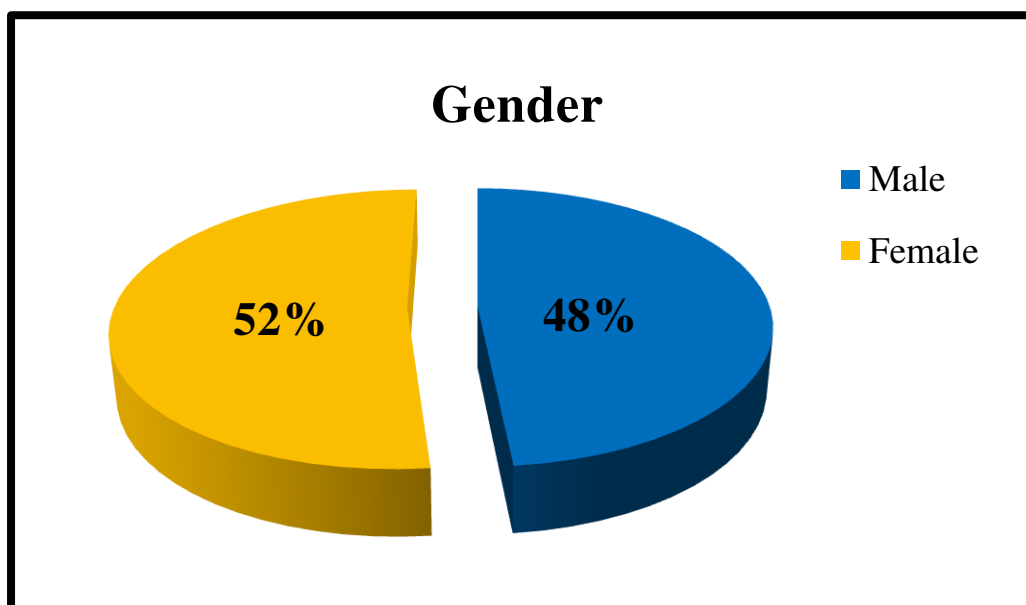


Figure 4.1: Gender

4.3.2 Age

From the obtained data collection in Figure 4.2, it shows that the highest values of respondent's age are between 21 to 30 years old with frequency of number 73 respondent. Next, 40 respondents are range age between 31 to 40 years Then, it followed with 7 respondent that from range age between 41 to 50 years. Last but not least, there 0 respondents from age less than 20 years and above 50 years.

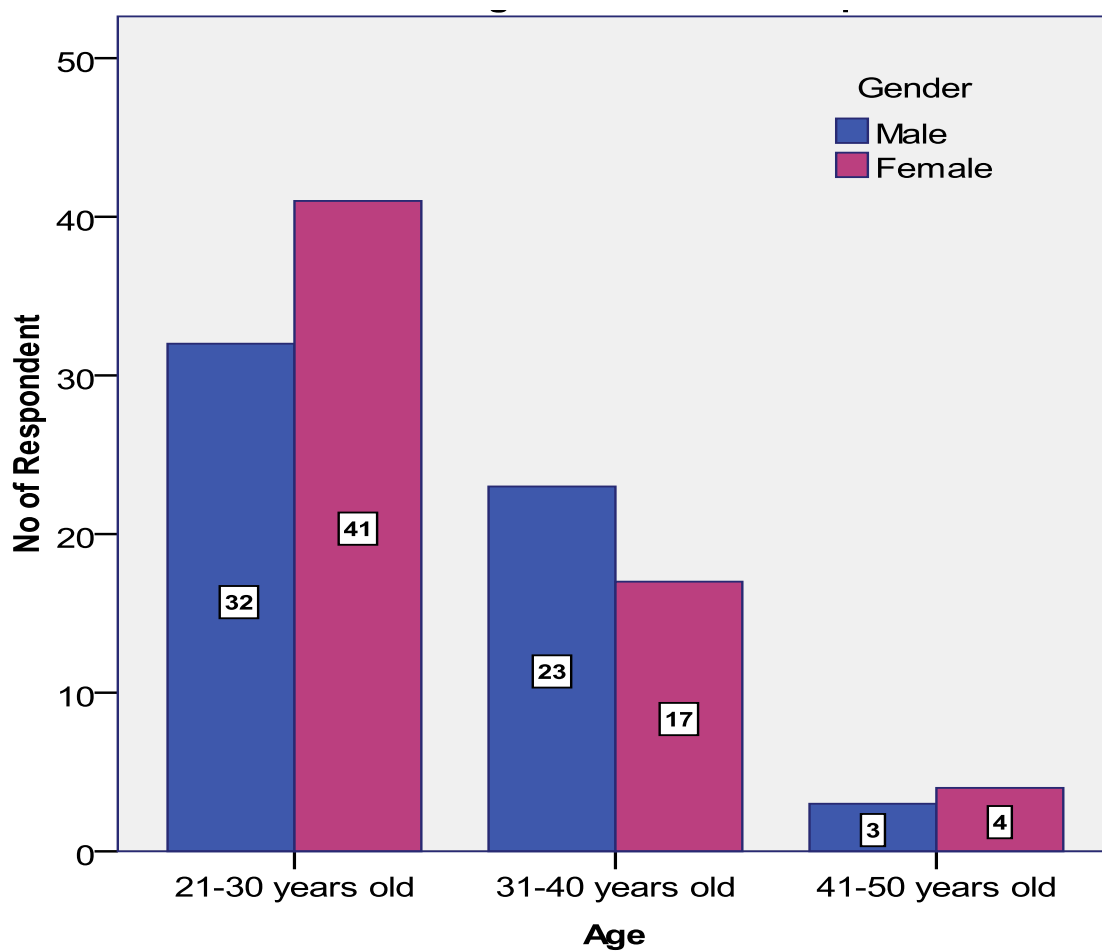


Figure 4.2: Age of respondent

4.3.3 Occupation of respondent

Figure 4.3 shows the occupation of respondent which are student, academic staff, and non-academic staff. The majorities of the respondent are student. There are 60 of respondent out of 120 respondents. Then followed with 30 respondents for each staffs from academic staff and non-academic staff.

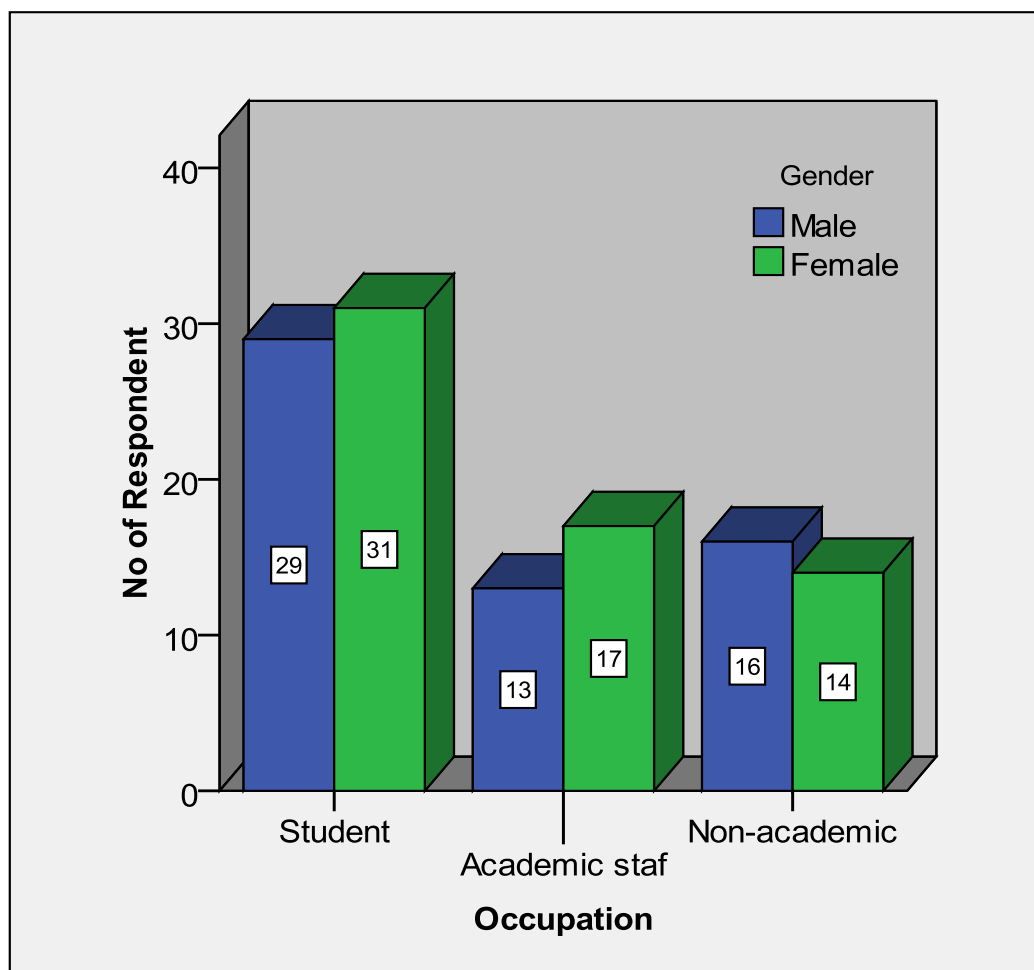


Figure 4.3: Occupation of respondent

4.3.4 Distance from home to workplace/campus UMP

According to Figure 4.4, it shows that the highest percentages of respondent's distance from home to workplace or campus UMP are 49 % that have the distance from 0km to 10 km to UMP with 59 respondents. Then, 33% are distance more than 20km from home to UMP with 39 respondents. Lastly, the lowest percentages of respondents are 18 % which distance 11km to 20 km from home to UMP with 22 respondents.

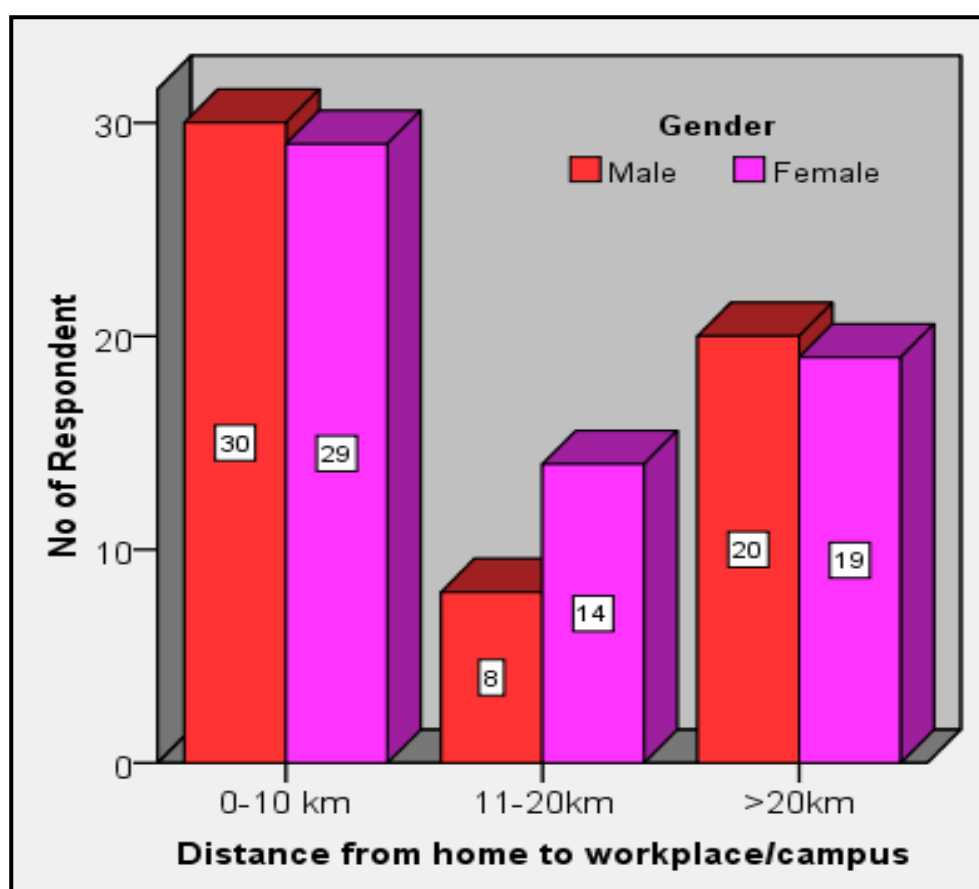


Figure 4.4: Distance from home to workplace/campus UMP

4.4 FREQUENCY OF DISTRACTED DRIVING

Part Two in the questionnaire survey consist the frequency of distracted driving. In this part there was a question that related about the distracted driving using mobile phone usage among the University Malaysia Pahang (UMP) communities. From the questionnaire, there were many multiple choices of answer that the respondent can choose for the options This is because, from the list of answers selected by the respondent it can be used to identify the activities that are done while driving Its also used to identify the most distracted driving occurs in used of mobile phone while driving along the distance from their home to the workplace or campus University Malaysia Pahang.

4.4.1 Activities during driving

Regarding on the data collection, the result is shown in the Table 4.1.It has recorded the statistical value for activities during driving. The highest mean of the activities that respondent always do during driving is 1.9537 which is take a picture while the lowest mean is to talk to other passengers with the value 1.5833

Table 4.1: Statistical value for activities during driving

Variable multiple answer	Frequency	Percentage %	Mean	Std. Deviation
Make phone calls	23	11	1.9537	0.21061
Accept phone calls	39	18	1.8935	0.30917
Send text messages	23	11	1.8889	0.31500
Use your Smartphone for driving directions	30	14	1.8704	0.33668
Talk to other passengers	91	42	1.8241	0.38164
Take a picture	10	4	1.5833	0.49415
Total Respondent	216	100		

From the result shown in Figure 4.5, the highest percentages of the activities during driving are talk to the other passengers in the vehicle during driving with percentage 42%. Then follows with 18% for activities accept the phone call during driving, 14% for used it to get the direction, 11% for make the calls and send the text message during driving.

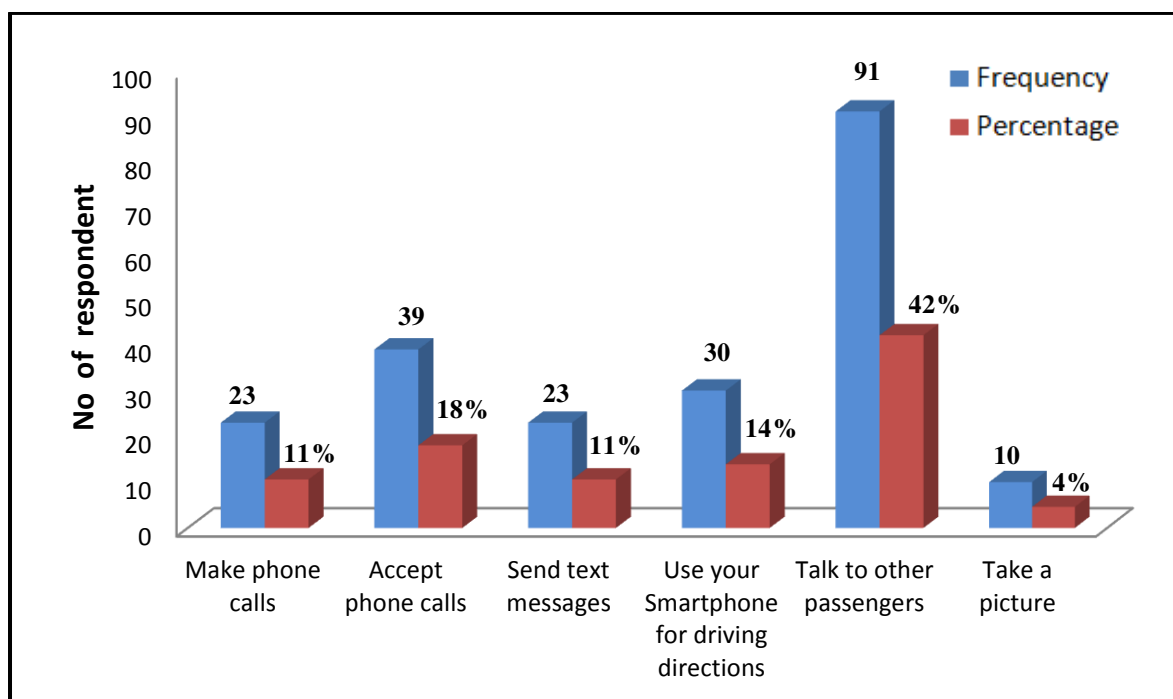


Figure 4.5: Activities during Driving

Figure 4.6 shows that the comparison between gender with the activities during driving. It shows that, the majorities group of UMP communities which is the most vulnerable to distracted driving due to the used of mobile phone is male respondent. The result shows that, 91 respondent get the highest value of respondent due to the activities talk to the others passenger while driving. 47 out of 91 person are male respondent while another 47 person are female respondent. Then follows with the activity accept the call and send a text message while driving. 23 of male respondent are accept a phone call while driving higher than female respondent which is only 16 respondent. For activities send a text message while driving, 13 of male respondent are send a text message more than female respondent.

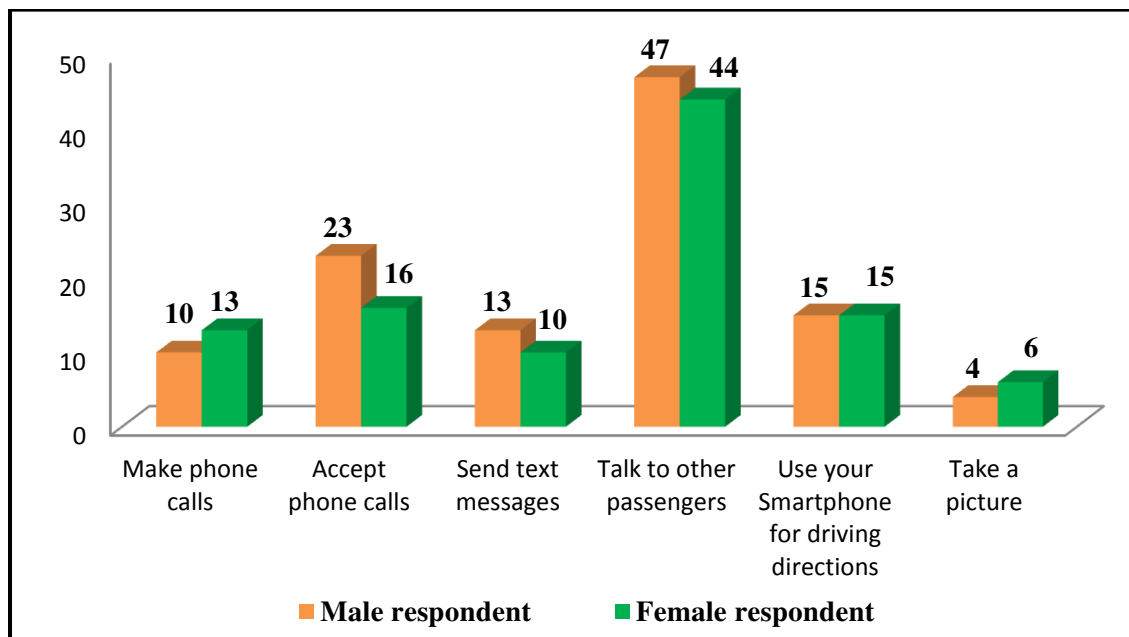


Figure 4.6: Comparison between gender with the activities while driving

4.4.2 Hand free device user while driving

From the analysis data in Table 4.2, there are 74.2% of the respondent does not use their hand free device to talk on phone while driving. Only 25.8% of the respondents are using their hand free device to talk on phone while driving. It shows that the mean of this questionnaire is 1.7417 and the standard deviation is 0.43955

Table 4.2: Statistical value of hand free device user's while driving

Hand Free Device User's While Driving	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	31	25.6	25.8	25.8
No	89	73.6	74.2	100.0
Total	120	100	100.0	100
Mean	1.7417			
Standard deviation	0.43955			

Majorities of the respondent are not using their hand free device while talking with the mobile phone while driving because they feel that it is not necessary to used it. There are majority studies show that the use of hands-free phones can cause as much important to the driver distraction as the use of hand-held phones. It is prohibited to use a hands-free phone while driving because it will make you to lose the proper control of your vehicle(Consulting, 2009). Figure 4.7 shows that the percentage about the using the hand free device while driving among the respondent in UMP communities.

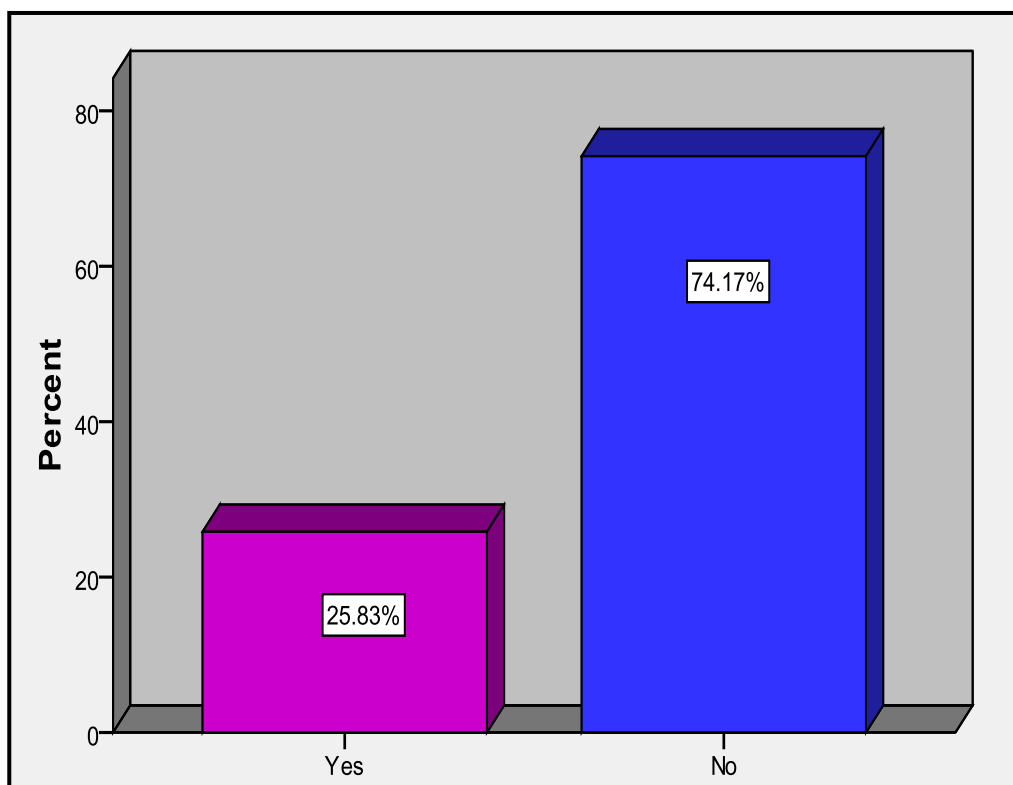


Figure 4.7: Hand Free Device Used While Driving

4.4.3 Browse address book to locate contact number

It shows that in Table 4.3, the mean is 1.65 from the frequency of 120 that participated in this survey. The standard deviation that gets from this questionnaire is 0.47897.

Table 4.3: Statistical value of browse address book to locate a contact during driving

Variable	N	Mean	Std. Deviation
Do you typically browse the address book to locate a contact number while driving?	120	1.6500	0.47897
Valid N (Total Respondent)	120		

Regarding in Table 4.4 and Figure 4.8 , 65% of the respondent in UMP are using their mobile phone to browse the address book to find the contact number on their mobile phone. This will be the one of the driver distraction during driving because it can cause two obvious risks visual, looking away from the road and removing your hands off of from steering wheel.

Table 4.4: Response of browse address book to locate a contact during driving

Browse address book to locate a contract during driving	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	42	35	35.0	65
No	78	65	65.0	100
Total	120	99.2	100.0	

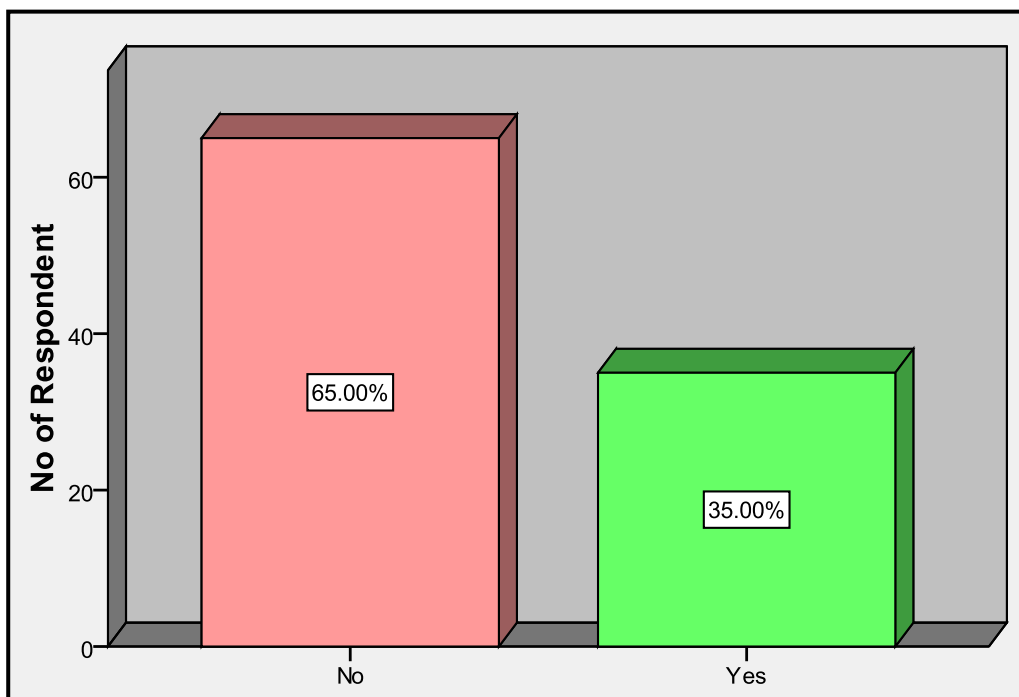


Figure 4.8: Browse address book to locate a contract during driving

4.5 ATTITUDE OF MOBILE PHONE USAGE DURING DRIVING

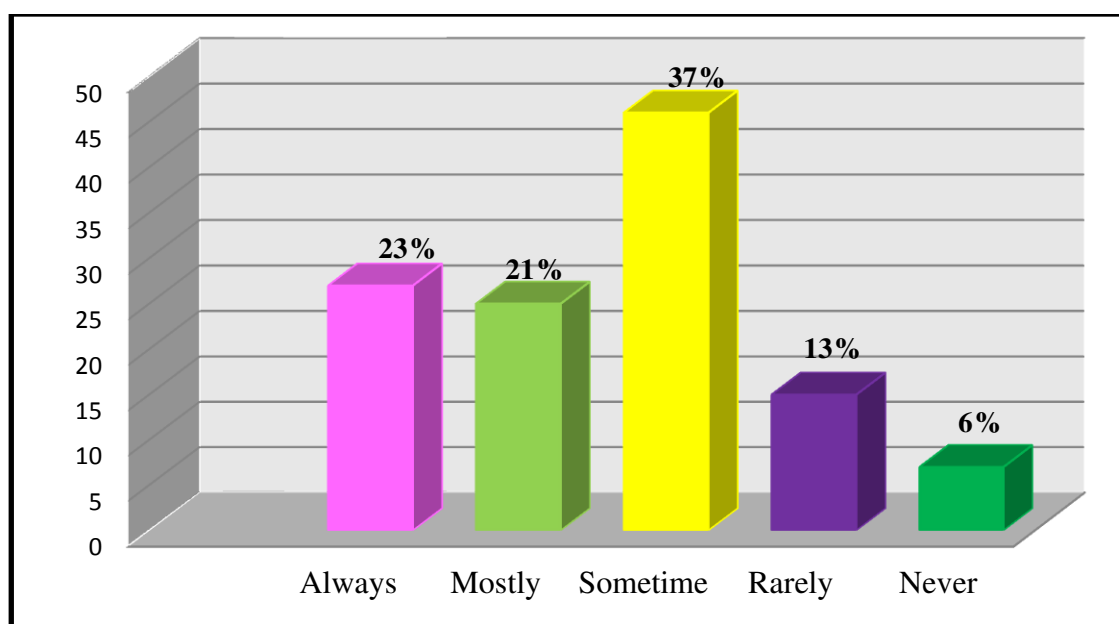
Next part is Part Three which is the part that we get from analysis the questionnaire. This part is regarding the attitude of the mobile phone usage toward the road safety. In this survey, we have been analysing the attitude of mobile phone usage in University Malaysia Pahang (UMP). This part is the most important part which is we can be identified the group that most vulnerable to distracted driving due to the used of mobile phone to achieved our objective for this research.

4.5.1 The often used mobile phone while driving

Referring Table 4.5, its show that the highest mean of the attitude of mobile phone usage in UMP campus of often answer the call while driving is 1.9578 in ‘never answer the call’ while the highest mean of often make the call while driving is 1.9639 in ‘mostly make a phone call during driving.’

Table 4.5 : Statistical value of often used mobile phone while driving

Variable	Frequency	Percentage %	Mean	Std. Deviation
Often answer the call during driving				
Always	27	23	1.8373	0.37016
Mostly	25	21	1.8494	0.35874
Sometime	46	37	1.7229	0.44892
Rarely	15	13	1.9096	0.28757
Never	7	6	1.9578	0.20158
Often make a phone call during driving				
Always	9	7.5%	1.9458	0.22713
Mostly	6	5.0%	1.9639	0.18721
Sometime	45	37.5%	1.7289	0.44586
Rarely	36	30.0%	1.7831	0.41336
Never	24	20.0%	1.8554	0.35274

**Figure 4.9:** Often answer the call during driving

The highest percentage of the respondent shows in Figure 4.9 is 37% more than the ‘always answer the call during driving’ with percentage 23%, follows with range ‘mostly answer the call’ with percentage 21% and the lowest percentage is ‘never answer the call during driving’ with percentage 6%.

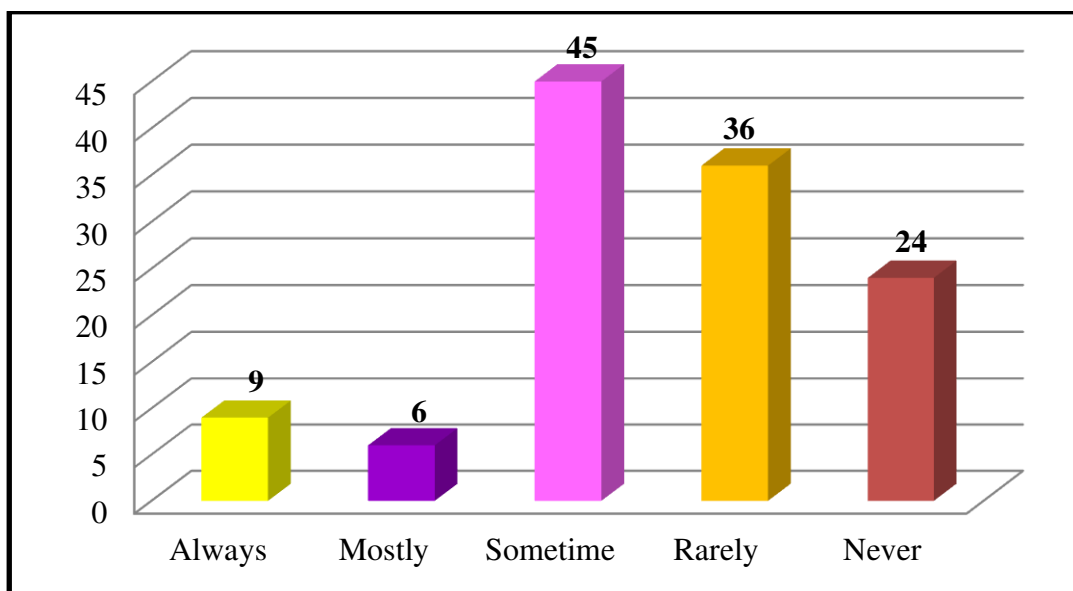


Figure 4.10: Often make a phone call during driving

Referring in Figure 4.10, majorities of the respondent are ‘sometime’ only make their call while driving with frequency of 45 people. Follow with ‘rarely’ make the call during driving with frequency 36 people, ‘never’ make a phone call 24 people and lastly ‘mostly’ make the call during driving with frequency 6 people.

Next is about the often send a text message while driving. According Table 4.6, it shows that the higher percentage that often send a text message while driving is ‘sometime’ where the value of percentage is 36% and it is quite near with the ‘rarely’ send a text message while driving. By the ways, its followed by 24% that was rated in ‘never’ send a text message, meanwhile 4% rated is the lowest percentage that often send a text message which is ‘always’ send a text message.

Table 4.6: Statistical value of often send a text message while driving

Often send a text message while driving	Frequency	Percentage (%)
Always	5	4
Mostly	14	12
Sometime	43	36
Rarely	29	24
Never	29	24
Total	120	100

So in this part, its show that the majorities of the respondent are only ‘sometime’ used their mobile phone while driving based on the highest percentage for all factors in answer a call during driving, make a phone call during driving and sending a text message while driving. The highest percentage for answer a call during driving is 37%, make a phone call is 45% and lastly part sending a text message while driving is 36%.

4.5.2 The way that used mobile phone while driving

The second factor of the attitude of mobile phone usage among the UMP communities is the way that the mobile phone usage used their mobile phone while driving along their home to UMP campus. This factor can be used to segregate the group of high risk and non high risk in the communities by using the mobile phone while driving.

Table 4.7 shows that the statistical value of the way when the respondent used mobile phone while driving. Its show that there are three factor which is the way when answer a call during driving, and the way when make a call during driving

Table 4.7: Statistical value of the way when used the mobile phone while driving

Variable	Frequency	Percentage %	Mean	Std. Deviation
The way that usually do when answer a call during driving				
Hold Phone In Your Hand	63	44.7%	1.6205	0.48674
Squeeze The Phone Between Your Ear And Shoulder	16	11.3%	1.9036	0.29601
Use A Hands-Free Earpiece	11	7.8%	1.9337	0.24950
Use A Built-In-Car System (On Star Sync, Or Built-In Bluetooth)	7	5.0%	1.9578	0.20158
Used the cell phone's speakerphone feature	44	31.2%	1.7349	0.44270
The ways that usually make a phone call while driving				
Manual dialing	37	25.2%	1.7771	0.41745
Voice-dial (speaking a name or phone number)	7	4.8%	1.9578	0.20158
Speed dial or favorites	25	17.0%	1.8494	0.35874
Scroll through saved numbers and select	33	22.4%	1.8012	0.40030
Ask someone to do the call	45	30.6%	1.7289	0.44586

Referring Table 4.7, the highest mean between the factor of the way when used the mobile phone during driving is 1.9578 which is same mean for both factor, It is used a built in car system (on star sync, or built in Bluetooth) for the way when answer a call during driving and used a voice dial (speaking a name or phone number) for the way make a phone call while driving.

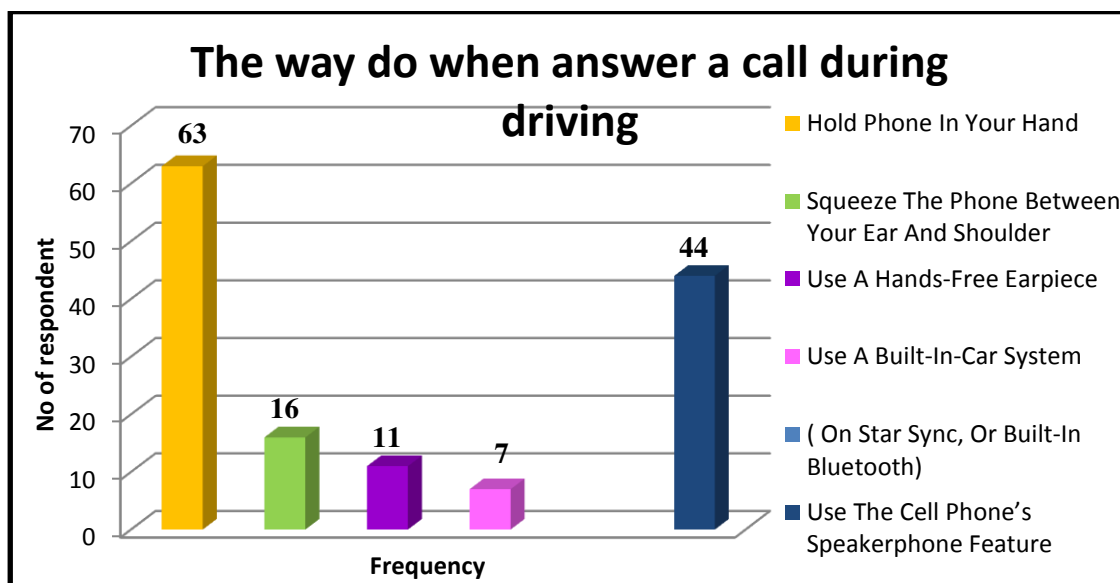


Figure 4.11: The way used to answer a call during driving

The highest value for the ways answer a call during driving is 63 respondent which is shows in Figure 4.11.They are only hold the phone at their hand during they are answer a call. In that case probably the reason why mostly of the respondent are used that way when want to answer a call with hold the phone with their hand because it is the simple and the faster way that they can answer the call while driving.

This way is the dangerous way because it will cause the risk of being involved in a road accident. Focus of the driver is not on the road or traffic and it becomes difficult to handle phone and vehicle at one time. This way also is the one of the physically distracted driving because it instead of focusing on the physical tasks required by driving (e.g. steering, gear changing), drivers have to use one or both of their hands to manipulate the phone.

Figure 4.12 showed that the ways that usually make a phone call while driving is the way 'ask someone to do the call' that gets the highest percentage which is 30.6%.This way is the best way that all the mobile phone usage need to practiced it. This is because it can avoid the accident among the mobile phone usage. Then its follows with the manual dialling 25.20%, the way they scroll the saved number and then select to make a call with 22.40% and lastly the lowest is the way the used is voice dial with value 4.8%.

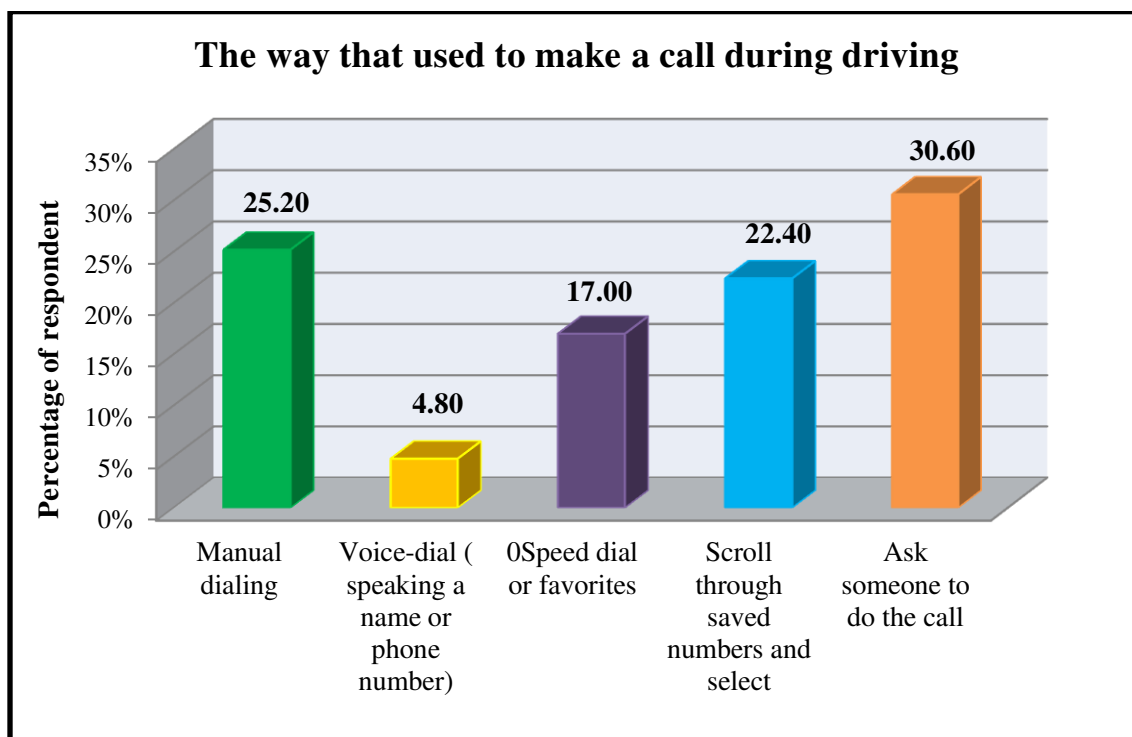


Figure 4.12: The way that used to make a call during driving

Table 4.8: Statistical values of the way do when send a text message while driving

Gender	The way that USUALLY do when SEND a text message during driving					Total
	Continue to drive while completing the message	Pull over to a safe location to send the message	Hand the phone to a passenger to make your messaging	Use a Voice Command feature (speech dictation)	Never	
Male	27	10	6	3	12	58
Female	21	7	16	3	15	62
Total	48	17	22	6	27	120

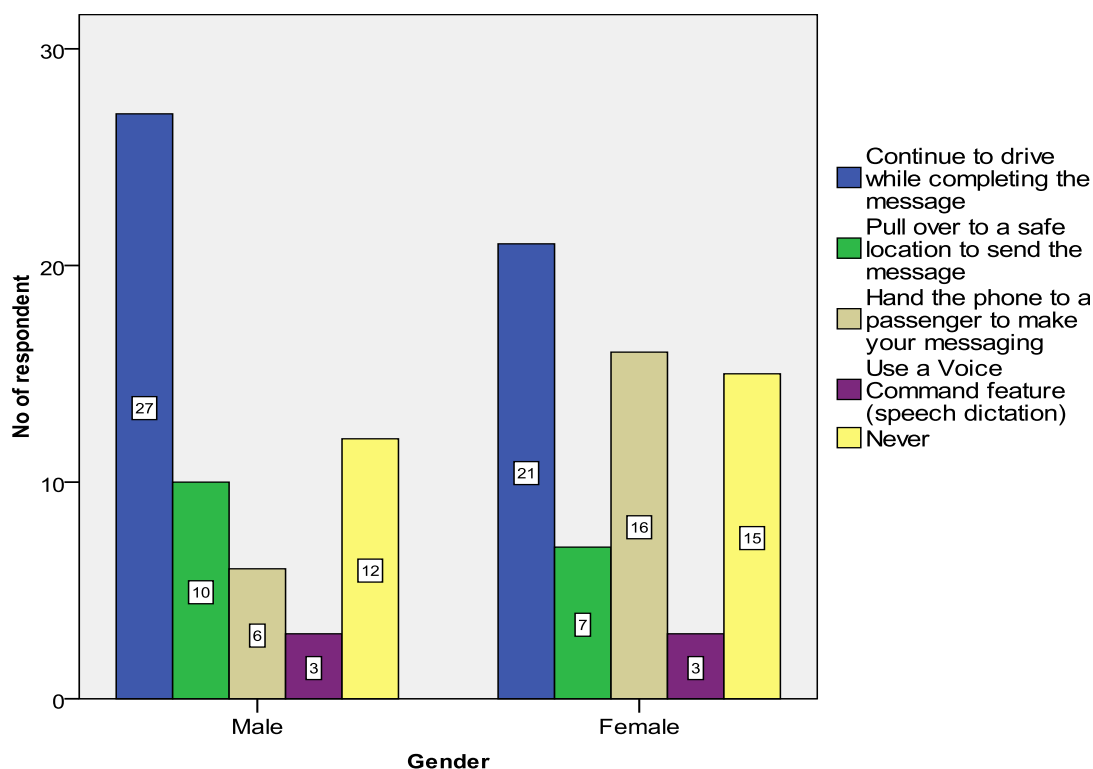


Figure 4.13: The ways do when send a text message while driving

From the tabulated data that receive from the SPSS software, it have been analyse between the genders that the ways usually do when send a text message while driving. From the Table 4.8 and Figure 4.13 its show that the majorities of the respondent are sending their messages during driving with the way ‘continue to drive while completing the message.’ The value of respondent male is 27 people higher than the female with 21 people. So its shows that the male respondent is the mostly send the message while driving with the way continue to drive while completing the message.

So in this part of the ways that respondent always do during driving when the respondent want to make a call, they will ask someone to do the call during driving if there are other passenger next to them. Then when want to answer a call while driving, majorities of the respondent are used the ways with hold their mobile phone during answer a call. For sending a text message, majorities of the respondent will continued to drive while completing the message. Mostly the respondents that do all this ways are male respondent.

4.5.3 The Different when using mobile phone while driving

The third factor of the attitude of mobile phone usage among the UMP communities is the different when the respondent are using their mobile phone while driving among their home to UMP campus. This factor are divided into two part which is the different happen when respondent are talking a phone while driving and the different happen when send a text message while driving.

Table 4.9: Statistical values of the different happen when talking on phone during driving

The different when you are talking on phone during driving	Frequency	Percentage %	Mean	Std. Deviation
No different	20	14.7	1.8795	0.32651
Drive slower / Drive faster	73	53.7	1.5602	0.49786
Changes lanes more / less frequently	28	20.6	1.8313	0.37560
Apply the brakes suddenly	2	1.5	1.9880	0.10943
Other	13	9.6	1.9217	0.26948
Total	136	100		

Table 4.9 shows that the highest value of mean for the different happen when talking on phone while driving are apply the brake suddenly at the road with the value is 1.9880 .Figure 4.14 shows that 73 out of 120 respondent that choose the answer are drive slower during talking on a phone while driving. This is the different that we need from the analysis to gain the analysis of the attitude of mobile phone usage of the respondent in UMP campus. From this analysis we know that the majorities of the respondent are drive slowly when they talking on the phone during driving. Because of that, it will be a factor that can distribute the road accident and the driver will not give their full attention while driving.

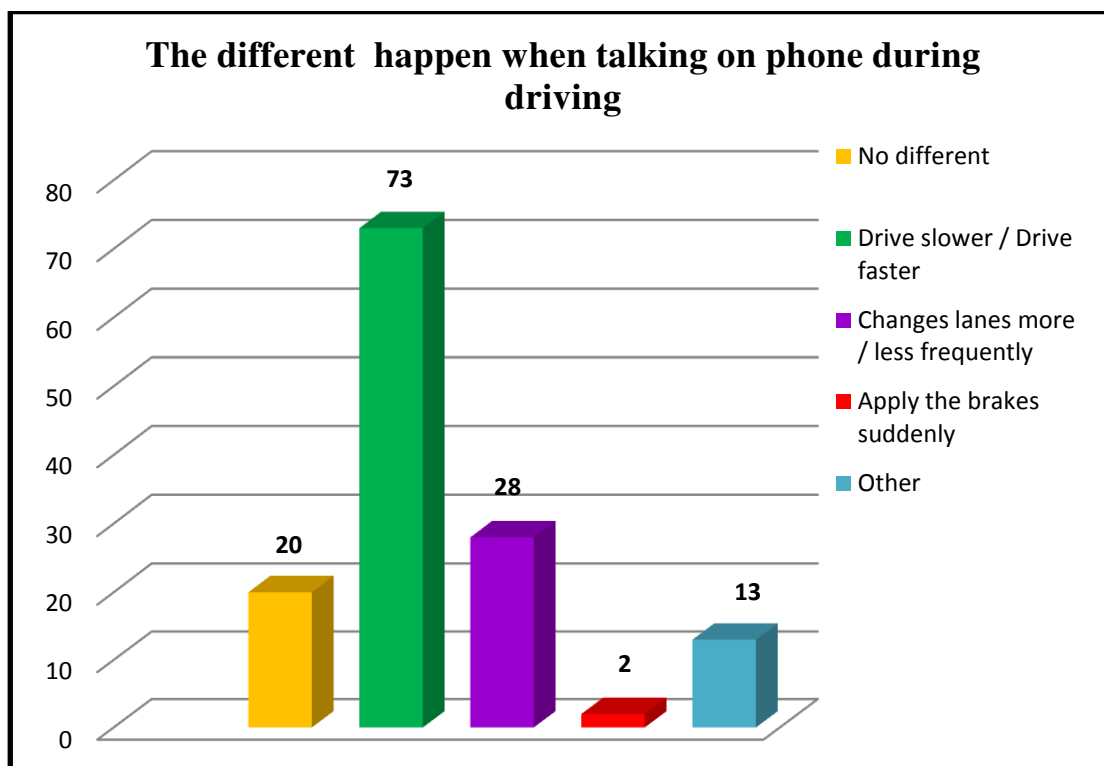


Figure 4.14: The different happen when talking on phone during driving

Next is the different happen when respondent send a text message while driving. Based on the analysis from the SPSS software, the result shows the analysis between the genders that send a text message while driving in Table 4.10.

Table 4.10: The statistical value of gender with the different happen when sending a text message while driving

Gender	The different when you are sending text while driving					Total
	No difference	Drive slower / drive faster	Change lanes more/ less frequently	Apply the brakes suddenly	Other	
Male	10	32	6	1	9	58
Female	6	35	11	3	7	62
Total	16	67	17	4	16	120

From the Figure 4.15, it shows that the mostly gender that drive slower when they are send the message during driving are female respondent with the value of 35 respondent higher than male respondent that are only 32 respondent. Mostly of the respondent are drive slower than usual because they are focus typing the message while driving. Because of that, it will be a factor that can distributing the road accident because the driver are not given a full attention while driving.

There have been many studies that have linked texting while driving to be the cause of life-threatening accidents due to driver distraction. The International Telecommunication Union states that “texting, making calls, and other interaction with in-vehicle information and communication systems while driving is a serious source of driver distraction and increases the risk of traffic accidents”(Adolph, Martin, 2010).

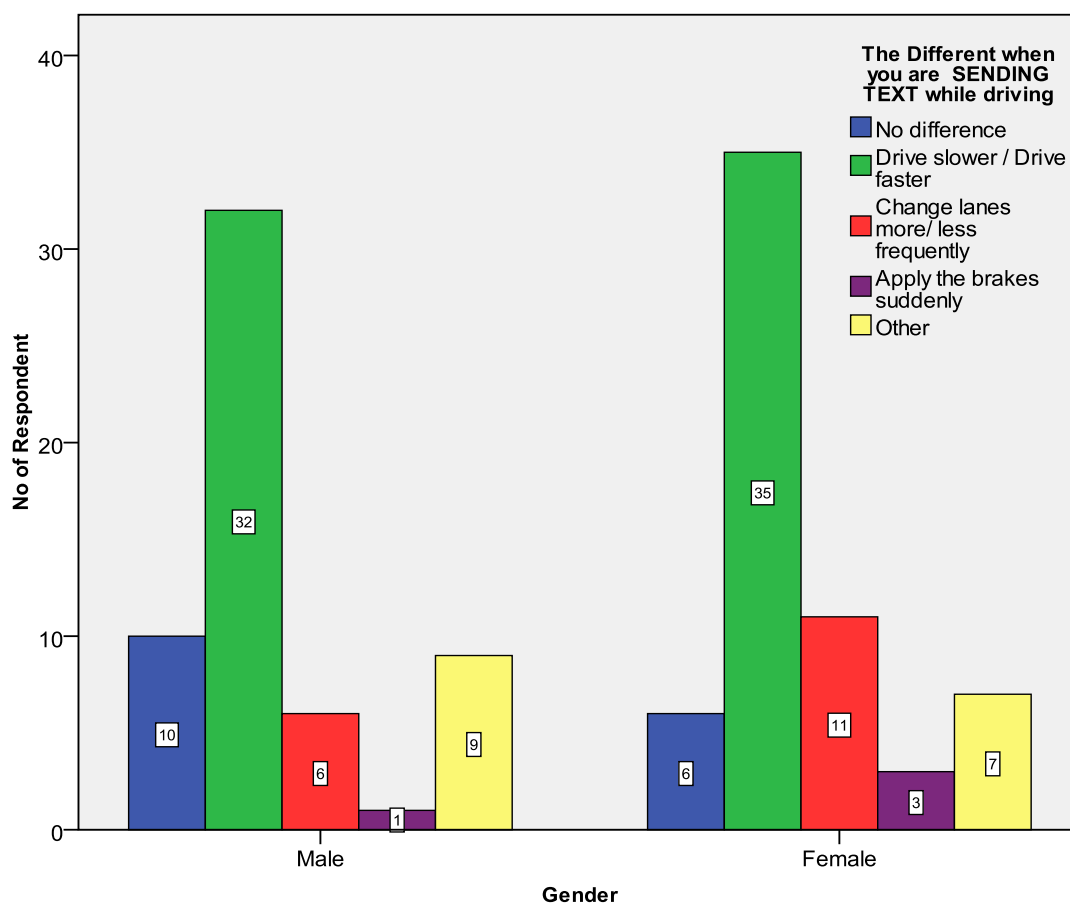


Figure 4.15: The different happen when send a text message while driving

4.6 CHANGES IN DISTRACTED DRIVING

In this research at Part 4, it is used to avoid the distracted driving by using a mobile phone while driving. The main objective is to identify whether the respondent had been change or not in distracted driving. It is also used to segregate the high risk and non-high risk group in the community by using the mobile phone while driving. Therefore, threr are two question that had been choosed to identify the changes of the respondent due the distracted driving and to segregate the high risk and non-high risk group in the UMP community.

4.6.1 Changes in distracted driving in the past 30 days

Based on the SPSS data, Table 4.11 shows that in this question, there are five situation of the changes in distracted driving in past 30 days. There are changes of increased, decreased, stayed at the same, a new driver and lastly is never used a phone while driving.

Table 4.11: Statistical values of the changes in distracted driving in past 30 days

Gender	In the past 30 days, what was your frequency of making and receiving phone calls while driving ?					Total
	Increased	Decreased	Stayed the same	New Driver	Never used a phone while driving	
Male	7	12	28	2	9	58
Female	5	15	27	5	10	62
Total	12	27	55	7	19	120

Figure 4.16 shows that the majorities of the respondent are stayed at the same situation using their mobile phone while driving in the past 30 days. There are 55 out of 120 respondent are stayed at the same situation. 28 of the respondent are male respondent while others 27 respondent are female respondent. Then, 27 of the respondent are decrease used their mobile phone while driving and the lowest respondent are new driver that are only 7 respondent.

From the observation it shows that the majorities of respondent in UMP campus are not always used their mobile phone while driving. They are only sometime used if it is emergency and have the importance thing only.

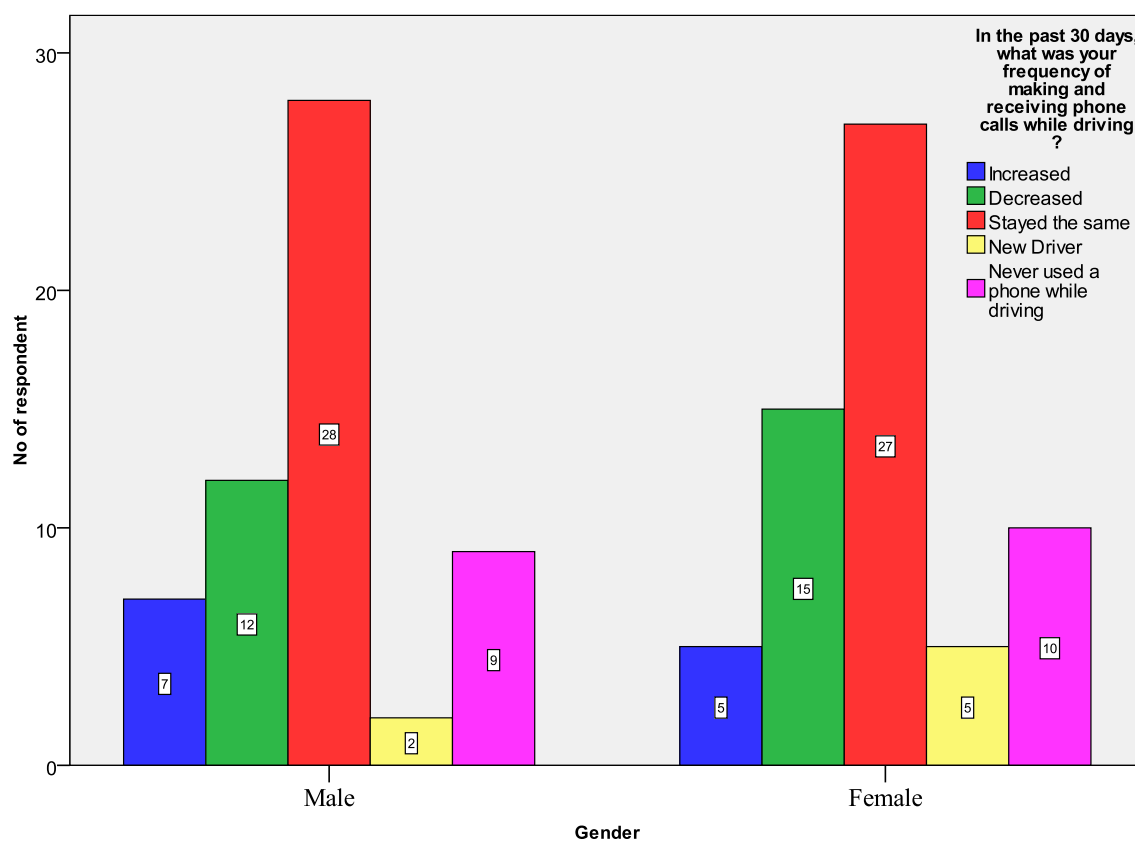


Figure 4.16: The changes in distracted driving in past 30 days

4.6.2 Involved in traffic accident by using mobile phone

From this research, there are respondent that had been involved in the traffic accident because of using the mobile phone during driving. Table 4.12 were shown the percentage among the respondent in University Malaysia Pahang. There are 95.9% of the respondent are not involving the accident because using the mobile phone. Only 4.1 % are involving in traffic accident because used the mobile phone but there are not serious injury because of it.

To achieve the objective of the research, data in Table 4.12 shows that 5 out of 120 respondent that had been involved in accident because of using mobile phone are category as the high risk group. Then another 115 respondent that was not involved in accident are category as non-high risk group in the community by using a mobile phone while driving.

Table 4.12: The percentage of Involved in traffic accident by using mobile phone

Variable	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	5	4.1	4.2	4.2
No	115	95.9	95.8	100.0
Total	120	100	100.0	

Table 4.13 showed the data that had been analysed from SPSS software. From this data, we can determine the different between the gender, distance from home to UMP campus and also the different range age between the respondent that had been involved in accident. Majorities of the respondent that had been accident because of using mobile phone are drive from distance 11 to above 20 km with 4 respondents. For distance from 0 to 11 km, only one respondent that involved the accident because of using the mobile phone.

Table 4.13: Statistical value of the respondent that had been involved in traffic accident by using mobile phone

Involved in traffic accident by using mobile phone	Gender		Distance from home to workplace/campus			Age		
	Male	Female	0-10 km	11-20km	>20km	21-30 years old	31-40 years old	41-50 years old
Yes	4	1	1	2	2	2	3	0
No	54	61	57	19	39	73	35	7
Total	58	52	58	21	41	75	38	7

Figure 4.17 and shows that the different between the gender, distance from home to UMP campus and the age of respondent that involved in traffic accident by using mobile phone. It shows that majorities of the respondent that involved in traffic accident are 5 out of 120 respondent. 4 out of 5 respondent that was involved in accident because of mobile phone are male respondent while another one respondent are female. The range of age that are in high risk of group communities is range age between 21 to 40 years old

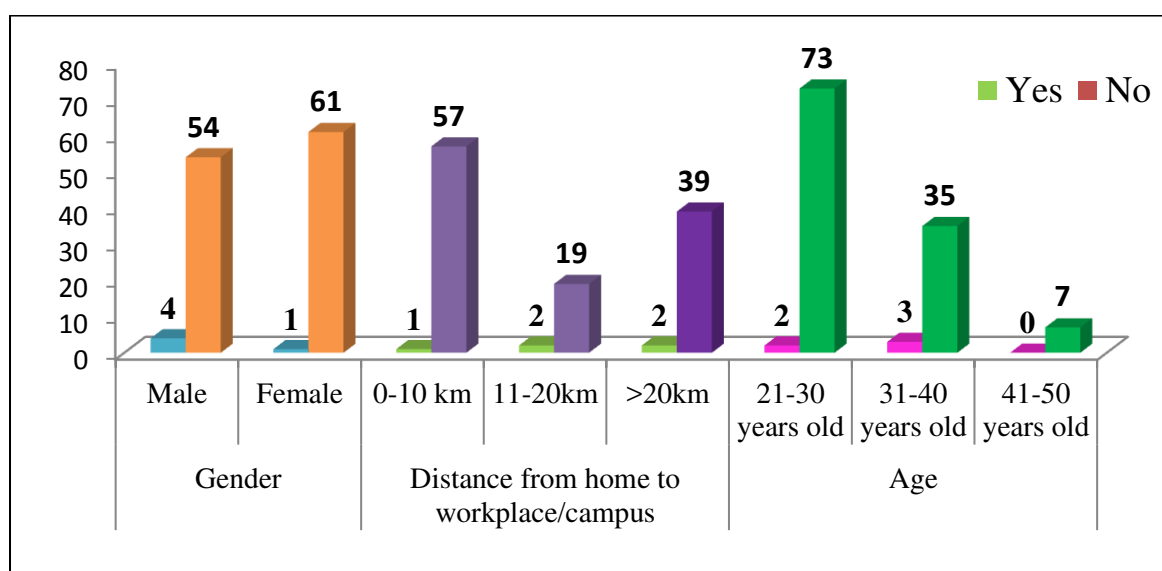


Figure 4.17: The different between gender and the respondent that had been involved in traffic accident by using mobile phone

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

This chapter includes the conclusion and recommendation to the mobile phone usage to road safety. The purpose of the research was first to determine the group of UMP community which is the most vulnerable to distracted driving due to the used of mobile phone. Apart from that, the second objective of this research is to segregate high- risk and non- high risk groups in the community by using the mobile phone during driving. In addition, the conclusion on the qualitative analysis result of this research will be addressed. Therefore, this research will be as the references for further research and reading. Last but not least, recommendation section also will be included in this chapter for further studies soon.

5.2 RESEARCH SUMMARY

This study is intended to investigate the attitudes to mobile phone usage toward the road safety. In this research, there are two objectives that have been established and from that, the questionnaire survey was distributed for data analysis purpose. From that, the aim and objectives were accomplished by the method use and it is successful.

The result of the study has shown that the attitude of the mobile phone usage to road safety in UMP communities. From the result that had been analyses, the most distracted activities while driving in UMP communities is talking to the others passenger during driving. So it shows that, the majority of the UMP communities is not using their mobile phone while driving.

As the data obtained from the part in attitude of mobile phone while driving in this survey, the majority of the respondent is sometime using their mobile during driving. This is because the majority of the respondent is sometime used their mobile phone to answer a phone call, to make a call during driving and also send a text message while driving.

The first objective of this study was to determine the group of UMP community which is the most vulnerable to distracted driving due to the used of mobile phone. Most of the participants have had a driving license and drive by their own car from home to UMP campus. From the analysis data, it shows that, the majority group of UMP communities which is the most vulnerable to distracted driving due to the used of mobile phone is male respondent. This is because, from the data obtained it shows that the activities that the respondent done while driving mostly is male respondent.

There were 120 questionnaires was distributed and only 5 out of 120 respondents that involved in an accident because of mobile phone. This showed that there are high- risk groups in the community by using the mobile phone during driving in UMP communities. The high- risk group is the respondent that was involved in an accident due of used mobile phone while the other 115 respondents who are not involved in the accident are category in non-high risk group. Mostly the respondent involved in an accident is in range age 20 to 40 years old and comparison between gender out of three male and two female. Most of them that involved in accident are mostly sending the message to their mobile phone while driving. The way they sending their message are continued to drive while completing the message. It showed that the difference happens when the respondent sending the message while driving is driving slower during driving than usual because they are focus typing the message while driving. Because of that, it will be a factor that can distributing the road accident because the driver are not given a full attention while driving.

5.3 RECOMMENDATION

Based on this research, in order to minimize the using of mobile phone usage during driving the attitude of mobile phone usage to road safety must identify first. From that the best suggestion will be proposed to prevent the accident on the road. Although this research has focused on the evidence of driving while talking on the phone, it is clear that any activity such as dialing, typing or reading a text message or e-mail, or other activities that used the visual distraction are unsafe.

To prevent the accident because of using the mobile phone while driving, it is necessary to silence the phone. It is very tempting to respond to the text alerts, calls, and other notifications that sound off while you're driving. So reduce the urge by putting the phone on silent. If your car has Bluetooth, make sure it's set up, but keep phone calls on the road limited to emergencies. So it can be the method that can be used to avoid using the mobile phone while driving.

Additional, the mobile phone use should be recorded in accident reports in order to be able to really estimate the share of mobile phone crashes in the total number of crashes. So, that it will be easy to identify the record of the accident that caused by mobile phone. It's also can make drivers more aware of the dangers of mobile phone use and of other various distracting activities; drivers could be unaware of the decrements in their driving performance (Dragutinovic & Twisk, 2005).

Other than that, it is necessary to develop the best practice public education campaigns to reduce mobile phone use while driving. Education campaigns should attempt to minimize the perceived benefits of the behavior, increase public disapproval for it and highlight the preventable risk of this unsafe driving practice. Young drivers and those who drive a vehicle for work purposes should particularly be targeted.

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APPENDICES A1

Part 1: Respondent Profile

Gender a) Male b) Female

Age a) < 20 b) 21-30 c) 31- 40 d) 41-50 e) >50

Occupation a) Student b) Academic staff c) Non – academic staff

Distance from home to workplace/campus

a) 0-10km b) 11-20 km c) >20 km

Part 2 : Frequency of Distracted Driving

Please state your answer and you can choose more than one answer to the following statements by circle (o) on one of the answer.

1. **What activities do you do during driving?**
 - a) Make phone calls
 - b) Accept phone calls
 - c) Send text messages
 - d) Talk to other passengers in the vehicle
 - e) Use your Smartphone for driving directions
 - f) Take a picture
2. **Do you typically use a hand free device to talk on phone while driving?**
 - a) Yes b) No
3. **Do you typically browse the address book to locate a contact number while driving?**
 - a) Yes b) No
4. **How do you make calls or send the text messages?**
 - a) With voice activated call
 - b) Browse address book
 - c) Ask somebody to browse or make the contact

Part 3 : Attitude of Mobile Phone Usage While Driving

Please state your answer and you can choose more than one answer to the following statements by circle (o) on one of the answer

ANSWERING AND MAKING CELL PHONE CALLS WHILE DRIVING

- 1. When you RECEIVE a phone call while you are driving, how often do you ANSWER the call?**
 - a) Always
 - b) Mostly
 - c) Sometime
 - d) Rarely
 - e) Never

- 2. What are the reasons you are more likely to ANSWER a call while driving?**
 - a) I answer all calls
 - b) How important I think the call is
 - c) Expected call

- 3. When you answer a call while driving, what do you do?**
 - a) Answer and continue to drive while completing the conversation
 - b) Answer and promptly pull over to a safe location
 - c) Answer and inform the caller you will call back later
 - d) Pull over to a safe location first and then answer the caller
 - e) Hand the phone to a passenger to answer if you have one

- 4. Which of the following do you USUALLY do when you answer a call while driving?**
 - a) Hold the phone in your hand
 - b) Squeeze the phone between your ear and shoulder
 - c) Use a hands-free earpiece
 - d) Use a built-in-car system (On Star, Sync, or built-in Bluetooth)
 - e) Use the cell phone's speakerphone feature

- 5. When you are driving, how often are you willing to MAKE a phone call?**
- a) Always
 - b) Mostly
 - c) Sometime
 - d) Rarely
 - e) Never
- 6. What are the reasons you are more likely to MAKE a call while driving?**
- a) How important/urgent I think the call is
 - b) Work-related
 - c) Personal or social
 - d) If I need directions or other information
- 7. Which of the following ways do you usually MAKE a call while driving?**
- a) Manual dialing
 - b) Voice-dial (speaking a name or phone number)
 - c) Speed dial or favorites
 - d) Scroll through saved numbers and select
 - e) Ask someone to do the call
- 8. How, if at all, would you say you're driving is different when you are TALKING on the phone?**
- a) No difference
 - b) Drive slower / Drive faster
 - c) Change lanes more/ less frequently
 - d) Apply the brakes suddenly
 - e) Other
- 9. How do you make the call while driving?**
- a) Dialing during driving
 - b) Pull over, call until finish, then continue driving
 - c) Pull over to a safe location first and then make the call
 - d) Hand the phone to a passenger and ask them to make a call for you

TEXTING OR E-MAILING WHILE DRIVING

1. **When you SEND a text message while you are driving, how often do you do the texting?**
 - a) Always
 - b) Mostly
 - c) Sometime
 - d) Rarely
 - e) Never
2. **If you SEND a text message or email while driving, how do you do during driving usually?**
 - a) Continue to drive while completing the message
 - b) Pull over to a safe location to send the message
 - c) Hand the phone to a passenger to make your messaging
 - d) Use a Voice Command feature (speech dictation)
 - e) Never
3. **What makes it more likely you will SEND a text message or e-mail while driving?**
 - a) Who I'm messaging
 - b) How important I think the message is
 - c) Work-related
 - d) Personal or social
 - e) Boredom
4. **How would you say your driving is different when you are SENDING TEXT OR EMAIL MESSAGES?**
 - a) No difference
 - b) Drive slower / Drive faster
 - c) Change lanes more/ less frequently
 - d) Apply the brakes suddenly
 - e) Other

Part 4: Changes In Distracted Driving

Please state your answer to the following statements by circle (o) on one of the answer

- 1. In the past 30 days, has your frequency of making and receiving phone calls while driving increased, decreased, or stayed the same?**
 - a) Increased
 - b) Decreased
 - c) Stayed the same
 - d) New Driver
 - e) Never used a phone while driving

- 2. Have you ever been involved in a traffic accident involving the use of a cell phone either by your or another driver?**
 - a) Yes
 - b) No

- 3. If yes, how serious was it?**
 - a) No injury
 - b) Injury
 - c) High injury