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Distracted Driving Using Mobile Phone

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ABSTRACT

Approximately one-quarter of all automobile collisions in the United States are thought to be caused by a distracted or inattentive driver. As more wireless communication, entertainment, and driver assistance technologies become available in vehicles, the number of distracted driving accidents is projected to rise. Driver distraction is a major concern in North America, Europe, and Japan when it comes to road safety. The importance of driver distraction as a road safety concern, on the other hand, has just lately been recognized. This study presents an overview of current studies on in-vehicle driver distraction, with an emphasis on mobile phone usage, as this technology has garnered the most attention in the literature on driver distraction. The impact of in-vehicle gadgets on driving performance is discussed in this review. The adaptive techniques drivers use to maintain acceptable driving performance when distracted are discussed, as well as the situations under which these adaptive tactics can fail and how driving performance is harmed when they do. Legislation prohibiting drivers from using their cellphones while driving has had minimal effect, presumably due to a lack of regulation and enforcement. As potential preventive measures to decrease accidents caused by distracted drivers, behavior modification programs, enhanced vehicle safety, and public awareness campaigns have been created.

1. Introduction

A situation in which an explicit activity competes for a driver's attention is described as driver distraction, and it has been recognized as one of the primary contributing causes to accidents [1]. Mobile phone usage (for talking and texting), eating, interacting with passengers, and manipulating in-car digital gadgets (e.g., radio, CD player, etc.) while driving are the most common sources of driver distraction within the vehicle. Among all of these causes of distraction, the usage of a cell phone is fairly common [2–4]. Huisingh et al. [5] conducted a cross-sectional research at 11 junctions in Alabama (US) and found that talking on the phone while driving was the cause of 31.4% of distracted driving. Similarly, 14.1% and 3.4% of drivers in Spain and the United Kingdom, respectively, use their cellphones while driving [6, 7]. The growing usage of cell phones while driving has resulted in a significant number of accidents. A significant number of traffic accidents are caused by driver distraction. Statistics

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from the National Highway Traffic Safety Administration (NHTSA) (National Center for Statistics and Analysis, 2016) [8], based on data from the NHTSA's Fatality Analysis Reporting System (FARS) and the National Automotive Sampling System (NASS) General Estimates System (GES), show that distraction-related crashes accounted for 15 to 20% of total crashes in the United States between 2010 and 2014. Based on data from the National Automotive Sampling System-Crashworthiness Data System (NASS-CDS), Knipling (1993) [9] concluded that roughly 25 to 30% of crashes might be ascribed to distraction. Driver distraction was observed in roughly half of the crashes evaluated in the 100-car Naturalistic Driving Study [10].

Driving represents an important and precise function which is requiring attention and care through using the varied psychological feature, physical, sensory, and bodily function skills. Despite driving is not an easy task, there are many drivers who neglect rules, and practice so many activities during their driving. Listening to the radio, conversing with the passengers, and reading are common activities that contribute to drivers 'distractions during driving. The development of technology and wireless communications like mobile phones represented a big role in contributing to the distraction during driving. Moreover, the production of internet technologies, route navigation systems, and entertainment systems in vehicles affect negatively road safety [11]. Therefore, the practices that will affect the performance of the driver during driving will have serious consequences and may increase the proportion of traffic accidents. A numerous factors that contribute to safely driving a vehicle on public roads like skills and abilities. A well-behaved, well-rested, and well-trained driver interacts with the basic, undemanding road environment yet excellent situations and good driving behavior do not always emerge under perfect road traffic conditions. A distraction caused by both vehicle and highway environment is the major issue to make driving performance sub-optimal.

The safe operation of the vehicle and how to handle traffic is the most important task for the driver, which must be handled carefully to avoid accidents. Safe driving activities include making decisions, planning routes, keeping lanes, adjusting and utilizing an acceptable speed, etc. These activities help the driver throughout his major responsibilities. Speaking on a cell phone or similar device while listening to music is an activity that motivates the driver indirectly when he practices his secondary tasks, but not directly. Secondary duties usually conflict with the driver's mental resources for the most part. Accidents are produced by the distraction caused by secondary activities which affect the primary tasks [12].

The biggest threat to road safety is the distraction of the driver [13]. As a result of the modern technology era, many advanced electronic and technological devices have been introduced for use within cars, such as smartphones and MP3 players, which have led to drivers' preoccupation with other functions contrary to their primary functions during driving. Besides, the provision of different uses of mobile phones like (calls and SMS), email, social networking, song lists, maps, navigation, and traffic congestion information leads to increased visual and cognitive distraction for the driver during safely driving [14]. Driving performance is negatively affected when using the mobile phone while driving. According to epidemiological research, using a cell phone while driving increases your risk of being in a car accident by four times. Mobile phone usage while driving is associated with an increased risk of distracted driving, according to a study conducted by Redelmeier and Tibshirani [15]. Researchers found that using a cell phone while driving increases the risk of an accident four times.

The requirements of safe driving are represented by paying attention to avoiding unsafe situations and doing a visually scanning environment by the driver to achieve safe driving. As shown in Figure 1, describes that the condition of the vehicle must be recognized by the drivers, and also the circumstances surroundings should be scanned through primarily visual (but also auditory and haptic) means. After that, drivers will process this in the brain, then problem situations are determined by drawing on their memory. Resolutions are adopted and an action plan is implemented to avoid the occurrence of the incident. Sometimes visual distraction interferes with other behaviors, recognition, perception, and other cognitive behaviors while driving.

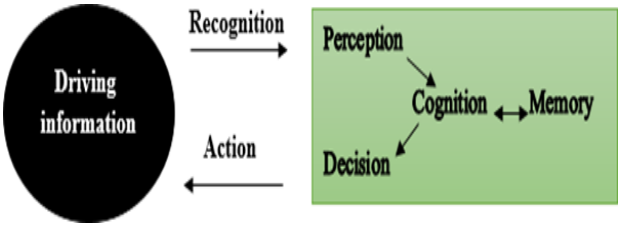

Figure 1. Process of driver cognition [16].

A major global problem is road accidents, which have serious health and economic ramifications. Many forms of data, both subjective and objective, were used in the search for smartphone usage while driving. Through surveys, interviews, driving simulations, real traffic observations, and naturalistic

studies were incorporated by Hickman and Hanowski [17]. Most of the studies and researches mentioned above indicate the dangers of using all uses of the mobile phone (including talking) while driving increase risks. In the developing countries, there are high percent fatalities due to traffic accidents [18]. Numerous studies and researches have concluded that education, public awareness campaigns, and the imposition of strict law enforcement strategies have a significant role to reduce traffic accidents [19]. There are three solutions suggested byAl-Zahrani et al. [20] to reduce the number of traffic accidents and severity; engineering, education, and enforcement. Here, we review the prevalence of distracted driving habits and their consequences, as well as how distractions affect driving skills and how to prevent distracted driving.

2. Driver Distraction and Inattention

Diversion pay attention from driving due to different circumstances is referred to as "distraction". The situation of the main concern is the usage of a mobile phone. The cell phone itself is rather unobtrusive. There is ample evidence that when people concentrate their attention on a single stimulus, they may miss another signal that is unrelated to the first but is separated in visual angle by a few degrees. Distracted driving, such as texting, phoning, regulating the GPS, and watching are identified as ever-growing road safety challenges by several countries by juxtaposing the skyrocket sales of mobile technologies and in-car infotainment systems.

In order to safely drive, a driver must pay undistracted devotion to the driving duty as even distraction momentarily can cause a crash. Anything on the road has the potential to distract a driver. Two common risk-taking actions done by young persons and the general populace are distraction and inattention by the driver. The two share some similarities but contain distinctive elements of behaviors of unsafe driving. According to [14] who stated that the connection between driver inattention and distraction is not clear, and maintained that they ought to be treated as two distinct types of unsafe driving. The term "driver inattention" is defined as "no attention or inadequate attention to events essential to safe driving," which, in essence, means the divergence of cognizance away from driving to an opposing activity in a way that raises the chance of a collision by the authors [21]. Though, recent investigations have enlarged the decisive boundaries by Regan et al. [21] of driver distraction disagreed with Hallet et al. [21] on the definitions of driver distraction as it depended primarily on the interface between safe driving and opposing activities, but mostly bring about a detrimental consequence on safe driving. It doesn't account for activities that do not have an effect on safe driving [22]. There are numerous activities that compete with driver inattention and distraction and lead to an accident, and they may be generally split into internal and exterior distractions. Internal distractions include things like talking on the phone, reading, and watching television [22]. Internal distractions include the state of the driving force, which diverts attention away from the task at hand, as well as tiredness, tension, and the tendency to daydream. In addition, it encompasses automaticity and fundamental cognitive process visual disorder, in which a person has had recurrent exposure to identical traffic conditions or surroundings to the point where they become less alert to the traffic conditions, as critical as they were the first time the individual encountered the traffic conditions. Drivers are confronted with a variety of difficulties as a result of their use of mobile devices. These include:

- The decrease in concentration levels and situational alertness.
- The driver's ability to effectively survey the route for changes in traffic flow and potential impediments is limited due to the driver's line of vision being focused on the mobile device.
- Failure to follow proper driving etiquette, such as tailgating or driving in an awkward road position.
- Slow reaction times during bad situations, which might lead to a 50% drop in response rates.

Using mobile phones can result in drivers taking off their eyes or using mobile phones may end up in drivers starting off their eyes off the road, their minds off the road with their hands off the handwheel, and therefore the encompassing state of affairs. It is this sort of distraction, which is referred to as psychological feature distraction, that tends to have the biggest impact on overall driving behavior. Smartphone use while driving has been linked to a variety of impairments, including increased latency (particularly during braking reactions, but also in response to traffic signals), a reduced capacity for staying within lanes, shorter following distances, and an overall decrease in driver awareness. In-vehicle distractions are distractions that occur within the vehicle but are not under the driver's control [21].

In this case, conversing with other passengers, seeking for goods, mistreating the vehicle's media player, operationalizing a global positioning system, and utilizing a portable device are all possibilities. A large number of these distractions need the driver to divert attention away from the act of driving in order to be effective, both physically (such as eye movement) and cognitively (such as ideas in the driver's head) (such as conflict with a passenger). Driver distraction (in all of its manifestations) is responsible for a significant fraction of all traffic-related injuries and deaths in the United States. In 2015, statistics show that driver distraction was one of the most often cited causes of accidents in the United States [23]. Traffic signs are less visible to drivers who are talking on their mobile phones, whether they are held in their hands or in their hands-free mode.

- Are significantly less conscious of what is going on in the world around them on the road.
- React more slowly, brake more slowly, and stop for a longer period of time.
- Lose control of the vehicle and do not drive in an even or steady manner.
- The car in front of you is more likely to 'tailgate'.
- Stress and frustration levels have increased.
- They have a higher propensity to enter potentially hazardous traffic gaps.

2.1. Physical Distraction

For the purpose of holding and operating a cell phone, drivers must withdraw one hand from the steering wheel. Eyes are taking off from the road momentarily to drop or pick up the mobile and operate. When putting mobile phones to use, the driver must continue to control the car (change, steer, indicators, and change gear, use indicators) with just one hand while still using the device to communicate with passengers. However, despite the fact that physical distraction is considerably more prevalent with mobile devices, there are some tasks that can be performed with hands-free solutions. Though hands-free need not be held while placing a call, the user still takes eyes off-road to and onto the phone may press a button or two.

2.2. Cognitive Distraction

Each task's performance is typically worse when cognitive (mental) tasks are carried out separately than when they are carried out simultaneously. It is important to split or shift attention across tasks such that they are competing for the same psychological processes. Using a hand-held or hands-free portable phone while driving should split the attention of the driver, requiring that they focus 50% of their attention on operating the phone and holding a conversation, while the other 50% of their attention must be devoted to driving and dealing with the rapidly changing road and traffic conditions. The stress of phone voice communication should be balanced against the stress of driving safely.

3. Audio Activity of Mobile Phones

One of the most common distractions is audio entertainment systems, and 95% of drivers are fond of listening to audio gadgets such as radio, MP3, and CD players [24]. Drivers may develop mental distractions being caused by car audio systems. These distractions are socially acceptable because they are capable of reducing stress during driving and also assist in the prevention of sleeping resulting from boredom. Drivers are also in the habit of using mobile phones while driving. In many countries around the world, 40% of drivers in Canada and 30% of drivers in Sweden and also in the UK make use of mobile phones during the time they are driving [25]. The neurological response mechanisms that are associated with such acts are determined by the nature of the associated stimuli.

Mobile phone audio activities like music consist of responses to passive listening, one on one discussions are associated with responding to active listening, and sending text messages while driving is associated with responding to cognitive and physical distractions. The process of passive listening occurs from the stimulation of the primary auditory cortex which is located inside the brain in what is called the temporal lobe which carries out all auditory inputs [26]. Therefore, when stimulation occurs in the primary auditory cortex, this may add to cognitive load thereby causing neutral activities to decrease in the part of the brain that is responsible for the carrying out of the task of driving. Three elements make up active listening, they are; comprehending, retaining, and responding. Some recent findings have revealed that being engaged in tasks that are secondary such as taking part in a conversation may interrupt the driving performance [27].

American automobile association had established that using a cell phone when driving put the risk of crashing fourfold in the increase. Several distractions like having a conversation with others inside the car and listening to music are also very dangerous [28]. The most recent research available shows that using a mobile phone while driving impairs one's response time, and as a result, politicians have passed legislation prohibiting its usage. Driving and talking on mobile phones was banned in ten

states in the USA as of February 2012 while 35 states have banned sending and reading text messages while on the wheels. In Wisconsin for example, there are no laws preventing the use of cellphones while driving, and it has no laws restricting drivers from sending text messages [29].

Studies on epidemiology gave estimates of two to six-fold crashes for phone use when driving [30]. However, these studies took record of only the time when phones were primarily used only for speaking. The use of hand-free devices which have been made mandatory in a lot of countries does not provide any safety advantage over hand-held phones [30]. In addition, government laws state that two-way radios, hands-free phones, and satellite navigation devices can be legally used while driving, but if police observe and are convinced that the driver is preoccupied and failing to control their vehicle sufficiently, the driver may still be prosecuted for this behavior.

Drivers are potentially distracted by the phone in numerous ways which includes auditory that shifts the driver's attention from the road atmosphere to the voice or sounds coming from the phone. This is very great when the phone conversation is poor quality. There are also empirical findings that established that visual activities like sending text messages are more dangerous than receiving or making calls when driving [31]. On the other hand, Castro and Horberry [32] affirmed that drivers' mean speed usually decreases whenever they are having interactions with an entertainment system like radio and CD players.

Talking with a passenger in a car is less dangerous compared to talking to someone on a cell phone because the passengers inside the car can regulate their conversation with the driver with respect to immediate driving conditions and can warn the driver of any imminent road hazards. Conversations on a phone cannot do this [33]. Hence, the use of hands-free phone devices can neither eliminate nor reduce driving distractions emanating from the use of cell phones. Undeniably, adjusting a cassette player, CD or radio accounted for the major causes of crashes that are distraction-related recorded in the United States. There isn't much recent information on new technology distractions, but it's reasonable to assume that they will have some negative consequences for safety.

4. Visual Activity on Cell Phones

Visual distraction can be described as a situation whereby drivers move their eyes away from the road they are plying for a significant period of time. Such examples include reading a caption on a billboard or reading a text message on a mobile phone. Visual distractions when driving are numerous and the first is a situation where the visual fields of the driver are blocked away from areas where he should be seeing while driving like sides, the fronts, or the vehicle's rear. The second distraction is a situation where the driver personally neglects sides, the fronts, or the vehicle's rear as a result of his concentrating on other objects in or out of the vehicle, which prevents safe driving. Another reason for swerving might be due to distractions occurring from within or outside the car, causing the driver to get disoriented. All these forms of distractions can prevent safe driving on our roads.

Driving and talking on a mobile phone usually cause a serious distraction for a driver, and rather than the eyes being focused on the road, their minds are elsewhere because they are 'looking but not seeing'. In Japan, drivers are only allowed to make calls with car phones that have pre-recorded numbers and such phones must be hands-free portable phones (Road Traffic Act, revised). It must be noted that permitting some certain behavior does not bring about regulation attentiveness. When driving, several nations across the world only permit the use of hands-free cellular phones. Specifically, this issue interferes with the process of recognition depicted in Figure 1.

Sending and receiving text messages while driving is one of the visual activities connected with mobile phones, and it has certain performance implications. These associated negative impacts surpassed the negative impacts of making conversations on the phone while driving [34]. Reading of navigational system and signs are visual distractions that necessitate shifting the eyes from the road; eating while driving is a manual distraction that involves removing the hands from the steering wheel, and conversing with passengers is a cognitive distraction that involves taking the mind away from driving. Sending and receiving text messages involves the above stated three types of distractions. . All three of these factors contribute considerably to an increase in the likelihood of a car accident. Institute of Advanced Motorists (IAM) [35] studied in 2012 using a simulator the impact of sending and receiving messages on driving performance using a Facebook mobile application.

In their study, the scientists discovered that when drivers utilized mobile applications and spent less time looking at the road, their performance suffered significantly. (Drivers spend 40% to 60% of their driving time looking at their phones); a 37.6% increase in response time; and an increase in lane drifting occurrences. One of the approaches employed in the past to eradicate sending and receiv-

ing text messages while driving was banning the act and categorizing it as a primary or secondary offense.

There are indications from research findings that drivers are well informed that driving and at the same time watching television, making phone calls, scanning paper maps, as well as thinking are all dangerous [36]. Visual distraction comprising glancing at adjacent automobiles, pedestrians, and traffic signs was shown to be the cause of 70% of automotive accidents in a 1980 study [37] that resulted in death and injury. Visual distractions while driving usually have great effects on vehicular movements like maintaining a steady lane position. It is also a failure to give each driving task the required attention. Driving responsibilities are generally different from one moment to the next. A specific shift in the driving task is generally initiated by the driver (top-down) or as a result of changes in driving conditions (bottom-up). There is therefore an increased risk of visual distraction when some non-driving information or actions are carried out. This causes an inappropriate diversion of attention and prevents the driver from receiving important information or performing a required shift in tasks, both of which are essential for task completion.

Numerous driving procedures include gathering information from outside the moving vehicle and using that information to rotate the wheel or do other actions. The cycle time (the time gap between receiving feedback) connected with each activity varies depending on the job at hand. There are several examples of turning right or left depending on traffic conditions, but generally speaking, driving straight over an extended route with less traffic results in an extended cycle time. It's easier to collect data and conduct operations when the cycle time is greater. With a shorter cycle time, however, it is possible that the essential information or task switches will be missed. As a result, the time it takes to complete an operation varies depending on the task. Several research including hands-free cellphones, which have no manual component and just need some visual demand to operate, as well as mobile devices, have been conducted to distinguish the impacts of manipulation tasks and communication. It was established afterward that, many other factors usually have an effect on drivers' overall performances. The discussion between the driver and passengers can be the reason of distraction. Strayer et al.[38] evaluated the hypothesis which states that conversations with cell phones have a grave impairment on driving performances by retreating attention away from the visual scene, which brings about what can be referred to as inattention blindness. An active involvement with a mobile phone conversation proved to generate substantial interference with driving, according to a driving simulator research. The impact of discussion on driver performance generally results in what's known as delay recognition and rapid reaction to critical and dangerous traffic situations. Thus, both texting and conversation while driving weaken the event perceiving abilities of drivers, which usually causes dangerous driving conditions.

Sending and receiving text messages with a smartphone while driving is detrimental to having good driving behavior. As a low-cost mode of mobile communication, text messaging is projected to become more popular among drivers, increasing the risk of traffic accidents. Teenage drivers are more prone than older drivers to be distracted by their cellphones while behind the wheel. These young drivers are also vulnerable to the negative consequences of distractions as a result of their inexperience behind the steering wheel. It is also very important to be informed of the increase in the use of more sophisticated smartphones that are equipped with access to the internet, emails, games, and films, and the associated negative implication and risks to good driving behavior. According to the Strategic Highway Research Program Naturalistic Driving Study (SHRP 2NDS), contact with mobile phones increases collision chances when odd ratios are present. Text messaging raises the chance of a crash by*6.1% [39].

5. Gender and the Risk of a Crash

Men are more likely than women to be engaged in major collisions and traffic infractions, and the chance of being involved in a crash is continuously connected to gender, according to additional study [40, 41]. There are several reasons for these gender differences. Firstly, male drivers have more road exposure than female drivers because males drive more than females regardless of vehicle type [40, 42, 43]. American men are driving much more miles than American women, according to the US Department of Transportation's Federal Highway Administration [44]. Men drive 40.9 miles per day on average, whereas women drive 31.5 miles per day on average; this gender disparity was consistently seen across all age groups as well. The second point to mention is that male drivers are more likely to engage in dangerous behaviors that increase the probability of being involved in a traffic collision, such as excessive speeding, driving under the influence of alcohol or drugs, or failing to stop at stop signs [45–47]. Thirdly, male drivers were less likely to use safety devices such as seat belts [48]. However, There were some problems in vehicle control and

mastering traffic situations [49, 50] that occurred by female drivers, and are more likely to be engaged in accidents as a result of mistakes in judgment [51]. Females appear to be more likely than males to restrict mobile phone usage while driving, while males appear to be more confident in their ability to maintain vehicle control when using a cell phone [52]. Furthermore, when compared to female drivers, male drivers tend to underestimate the danger of a collision caused by cell phone use [21, 53]. Despite the fact that several studies have discovered gender differences in vehicle crashes induced by mobile phone use, there has been little study on gender differences in crash avoidance performance while using a cell phone. A emphasis on differences between men and women while approaching high-risk driving scenarios, according to Lonczak et al. [54], is essential in driving-related programs or courses. Consequently, research into gender differences in critical driving situations should assist road safety program planners in developing better prevention programs aimed at in-vehicle cell phone users by taking advantage of differences in performance when men and women talk on their phones while driving, according to the authors.

6. Age and Experience of the Driver

Cell phone use while driving has a greater impact on performance for younger and older drivers alike. Younger drivers who have less road experience find it more difficult to properly split their attention between driving and using a cell phone. Furthermore, older drivers aged 50 to 75 years found it more difficult to execute two tasks concurrently due to diminished visual and cognitive skills, as indicated by an increased response time when driving [55–57].

Drivers of all ages were examined in an Australian research to see if there was a connection between distraction inside and outside the car and their chance of being involved in an accident [58]. There was research done on fatal and injury collisions including New South Wales police data from 1996 to 2000, and crashes were categorized as happening from distractions both inside the car and outside it. All of the following distractions occurred in the vehicle: using a hand-held phone, ministering to passengers, tuning the radio, adjusting the CD player, and smoking. According to the data, drivers between the ages of 25 and 29 had the highest likelihood of being involved in a fatal or injury collision while using a hand-held phone out of all the age groups analyzed. When it comes to other in-vehicle distractions, the likelihood of being involved in a fatal or injury collision rose with increasing age, according to the research. According to Lam, the result that 25-29 years old have a greater collision risk when using a cell phone than other age groups might be attributable to variations in exposure to mobile phone use between age groups rather than differences in attention sharing abilities between the two groups of drivers. According to predictions, drivers aged 25 to 29 years will be more likely to crash because they will be using their mobile phones at a higher rate than older drivers while behind the wheel.

According to Lam's (2002) findings [58], older drivers are more vulnerable to the effects of a distraction than younger drivers, and McKnight and McKnight (1993) [59] and Reed and Green (1999) backed up these findings [60]. The researchers found that drivers between the ages of 50 and 80 have a greater impairment in reacting to traffic signals when talking on a mobile phone than drivers between the ages of 17 and 25 and drivers between the ages of 26 and 49. Driving responses to traffic signals were considerably reduced when drivers in the youngest group were engaged in a casual phone conversation, according to the study. Researchers Reed and Green (1999) discovered that driving competence diminishes with age, with older individuals (60+) experiencing greater losses in their ability to maintain speed and lane position than younger ones (aged 20 to 30).

Older drivers, according to recent research, are more susceptible to the dangers of in-vehicle distraction than their younger counterparts. But when it came to using speech recognition technology, the younger to middle-aged drivers (mean age: 23 years) showed no signs of performance deterioration. McPhee et al. (2004) [61] observed that older people were less accurate and slower at detecting target signals in a traffic scenario than younger to middle-aged drivers while they engaged in a simulated discussion.

According to Horberry et al. [2], older drivers' driving performance was degraded more than younger drivers' when interacting with an entertainment system or a mobile phone; however, older drivers attempted to compensate for this degradation by reducing speed, either consciously or unconsciously, as a result of this discovery. Future research should examine whether or not these compensatory efforts are sufficient to counterbalance the deterioration in their driving ability and reduce their collision risk in the long run.

7. Driving Legislation

Many countries have made efforts to regulate the usage of mobile phones, including the United States. Special high-risk categories, such as young drivers,

have been targeted by specific legislation in some countries, whilst other nations have applied to ban the use of all mobile phones (both handheld and hands-free), and yet other countries have decided not to legislate at all. National, state, and provincial authorities should enact laws restricting the usage (and kind of use) of mobile phones, which will be contingent in part on the capacity to police the laws consistently. Policies on legislation must be made on the basis of the most up-to-date scientific knowledge accessible to the policymaker at the time.

Legislation banning cellphone use by drivers has been enacted by at least 35 nations, as well as several states and districts within countries. A number of other countries are considering laws banning cellphone use by drivers. Hand-held telephones may only be used when not operating a vehicle, while hands-free devices are prohibited while driving.

Only Japan has produced a study on the impact of its regulations on car accidents involving distracted drivers. The study's findings reveal a significant decrease in cell phone-related accidents (-52%), the number of persons injured in such accidents (-53%), and the number of people died in such accidents (-20%).

In the United Kingdom, using a cell phone while driving is not considered a particular violation. Drivers who do so, however, may be charged with a variety of reckless or hazardous driving offenses. According to the Highway Code, drivers must maintain complete control of their vehicles at all times. In order to prevent using hand-held mobile phones while driving and using hands-free communication devices, this traffic sign advises drivers to follow the guidelines outlined on it. There have been many attempts to pass legislation prohibiting the use of hand-held mobile phones, but none of them have succeeded. The British government feels that the police already have adequate authority to deal with distracted drivers, but it is still considering whether additional law is required. In the United Kingdom, public opinion polls show that the necessity for regulation is widely accepted. According to the RAC (2002) Motoring Survey [62], 42% of drivers believe that the government's top priority for reducing accidents should be to ban cell phones. Only 5% felt they were the sole cause of car accidents, and 90% said it was their responsibility to avoid phone usage while driving.

8. Increasing Public Awareness

One of the comprehensive strategies to tackle mobile use is campaigns to educate the public and increase their understanding of driving while distracted. Integrated mobile phones became part of our life. Thus, achieving the necessary cultural change toward acknowledging the hazards of using cell phones while driving is more difficult to do as a result of this. Drink driving has become a social taboo behavior in a number of nations as a result of efforts to improve road safety and address the issue of alcohol use. Therefore, the government should contribute to public awareness campaigns to reduce these risks. Also, prevent consumers and manufacturers to increase the demand for raising those technologies in the car. Increased public awareness, as a result of campaigns, will also assist to inform people of the hazards of using hands-free phones, which may be just as distracting as using a hand-held phone.

9. Conclusion

Technology development has significant benefits to society but at the same time, there are a lot of effects that contribute to change our life for the worst. In addition, individuals must be educated and an ethical framework must be developed to go with them. Smartphones one of the major concerns over the world which is many people used now. Legislators have specifically targeted mobile devices because they consider them to be a new sort of distraction. It requires a higher level of dedication. When a mobile phone calls while you're driving, you'll answer it because you feel a feeling of importance or urgency to answer the call. You'll be distracted while driving, which will increase your chances of having an accident.

There are dramatic effects on drivers' behavior as well as driving operation due to using a mobile phone during driving. This is due to cognitive distraction, in which the drivers' attention will be divided between the discussions in which they are participating and other activities and concerns connected to driving. According to Choudhary and Velaga [4], using a mobile phone in India is considered a crime under the country's laws and regulations. Because of a lack of strong enforcement of these restrictions, drivers will continue to use their cell phones while driving and will never be aware of the serious consequences of doing so [3].

Using hand-held or hands-free – mobile phones while driving has been shown to increase the risk of accidents when compared to when drivers do not use a cell phone. There are numerous factors that influence the relative impacts of distracted driving, including the type of phone used, the driver's age, and the driver's gender; moreover, using a mobile phone while driving raises the chance of an accident for all drivers. Another physical and cognitive dis-

traction that degrades driving abilities has been proved in numerous tests to be texting, which has also been proven in other research. Young drivers are the big percentage that uses mobile phones while driving, and they represent the major part that will be exposed to the effects of distraction that will result from this use. Using text messaging while driving is a problem that has a significant effect on driving behavior due to the increasing number of drivers that use this activity compared with other activities because text messaging is cheaper than talking on a mobile phone.

Raising public understanding of using a mobile phone during driving is through apply public awareness campaigns to encourage safe driving actions and control on risks represent important factors of tackling mobile phone use as part of a comprehensive strategy. Mobile phones have become one of the most essential integrated aspects of our daily work and personal life, which has made it more difficult for individuals to accept the risks of using them while driving. The remedies do not include prohibiting just hand-held mobile phones; this would not solve the problem, and it may raise hazards since people will believe that hands-free devices are safe. Thus, people should be aware of the risks of using hands-free sets as same as hand-held phones, which are also another type of dangerous distraction if used during driving. Mobile phones are means known of immense public utility, this will increase commercial interactions and improve communication in society. Mobile phones are widely used because of their low prices, which provide significant benefits in terms of communication ease throughout the world, particularly in countries where fixed-line telephone systems are inefficient or prohibitively expensive. As a result, they play a significant role in driver distraction and traffic crashes while driving, necessitating the implementation of measures to limit their usage while driving. To mitigate their impact, legislative measures, innovative enforcement methods, some level of industry collaboration or control, and a shift in public attitudes about what behavior is "acceptable" behind the wheel are necessary.

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