

The Risk of Using a Mobile Phone **While Driving**



Foreword

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Mobile phones first appeared in Britain during the 1980s, but were expensive and bulky. However, modern mobile phones are small, compact, easy to use and have become an essential part of life for many people. They enable people to maintain contact with family, friends and business associates. As well as the general communication benefits, access to a mobile phone also provides safety benefits by enabling people to alert breakdown or emergency services when necessary.

However, there is considerable concern that using a mobile phone while driving creates a significant accident risk, to the user and to other people on the road, because it distracts the driver, impairs their control of the vehicle and reduces their awareness of what is happening on the road around them.

Physical Distraction

When using a hand-held mobile phone, drivers must remove one hand from the steering wheel to hold and operate the phone. They must also take their eyes off the road, at least momentarily, to pick up and put down the phone and to dial numbers. While using a hand-held phone, the driver must continue to simultaneously operate the vehicle (steer, change gear, use indicators, etc) with only one hand.

Although the physical distraction is far greater with hand-held phones, there is still some physical activity with hands-free systems. Even though they do not need to be held during the call, the driver must still divert their eyes from the road to locate the phone and (usually) press at least one button.

Cognitive Distraction

When mental (cognitive) tasks are performed concurrently, the performance of both tasks is often worse than if they were performed separately, because attention has to be divided, or switched, between the tasks and the tasks must compete for the same cognitive processes. When a driver is using a hand-held or hands-free mobile phone while driving, she or he must devote part of their attention to operating the phone and maintaining the telephone conversation and part to operating the vehicle and responding to the constantly changing road and traffic conditions. The demands of the phone conversation must compete with the demands of driving the vehicle safely.

This Review examines the effects that using a mobile phone while driving has on driving performance and on accident risk. It comprises:

- a review of published research about the effects of using a mobile phone while driving
- a survey of Local Authorities and Police Forces seeking information about accidents in which mobile phone use has been implicated, and about education and enforcement campaigns
- a survey of laws restricting or prohibiting the use of mobile phones while driving
- a sample of employer policies on the use of mobile phones by their staff while driving for work purposes.

2 The Use of Mobile Phones

In Great Britain, the use of mobile phones has increased dramatically over the last few years. By the end of the 1980s less than 1% of the UK population had a mobile phone. By April 2000, there were approximately 25 million mobile phone subscribers (40% of the potential market) and this is expected to grow to 45 million (75% of the potential market) by 2005.¹

A similar pattern of growth exists in Europe¹ and other countries. In the USA, the number of mobile phone users has grown from 500,000 in 1985² to over 120 million in 2001.³

Drivers' Use of Mobile Phones

Exact figures on the number of drivers in Great Britain who use a mobile phone while driving have not been collected. However, in recent observational surveys at road junctions,⁴ 27,900 drivers were observed, 2% (558 drivers) of whom were using a mobile phone. The vast majority (85%) were using hand-held phones.

A survey⁵ of 1,000 drivers and motorcyclists found that 37% used a mobile phone while driving, one third of whom did so 'often'. However, 88% said that using a hand-held mobile phone while driving should be illegal and 45% said that using any phone, hand-held or hands-free, should be illegal.

High mileage drivers were much more likely to use a mobile phone while driving: 78% of high mileage drivers said they used a phone while driving, compared with 37% of all drivers. They are also much more likely to use a mobile phone 'often' while driving: 45% compared with 12% of all drivers.

Young drivers were slightly more likely (45%) to use mobile phones while driving than all drivers (37%). Female drivers (30%) were less likely to use a mobile phone while driving than male drivers (44%).

An annual motoring survey⁶ found similar results in that 39% of drivers admitted to making phone calls from their cars. Over three-quarters of company car drivers used a mobile phone while driving and over half (55%) of young drivers (under 24 years) also used a mobile while driving. Most drivers who use a mobile phone use a hand-held phone, even though 75% of them acknowledged that this is very often extremely dangerous.

In a 1997 NOP survey carried out for RoSPA⁷, 92% of people thought that it was unsafe for drivers to use hand-held mobile phones, and 55% felt it was unsafe to use a hands-free mobile phone while at the wheel. 70% said they had seen mobile phone users driving in a way which they felt was dangerous.

Surveys² in the USA found that over one quarter (27%) of drivers used a mobile phone while driving on 'most' or 'about half' of their trips, and a further 58% used one on 'less than half' or on 'very few' trips. A more recent estimate³ is that 73% of the USA's mobile phone subscribers use their phone while driving.

Does Using a Mobile Phone while Driving Impair Driver Performance?

A considerable number of studies have examined whether and how using a mobile phone while driving affects various aspects of driving performance. Studies have been conducted in a variety of ways, either during a simulated driving task, on a driving simulator, driving a real car on an off-road track or driving a real car on roads in actual traffic conditions.

As early as 1969, a study⁸ investigated the effects of divided attention on drivers' ability to drive safely. While responding to a verbal reasoning task on a telephone headset, 24 male drivers attempted to drive through gaps of various widths, some of which were wider than their car and some of which were not wide enough. They made more errors in judging the gaps when they also had to use the telephone, although this was only statistically significant for the gaps that were 'impossible'. Drivers also took longer to complete the driving circuit when telephoning, because (the authors suggested) they were trying to gain more time to handle the additional workload. The study concluded that using the telephone while driving had little effect on automatised driving skills, but impaired perceptual and decision-making tasks.

A 1985 study involved 60 male truck drivers who undertook a long distance (7 hour) simulated driving exercise during which they had to respond to voice communication at regular intervals and their perceived fatigue levels and alertness were measured.⁹ Voice communication seemed to help maintain the drivers' alertness but increased their fatigue and seemed to induce higher stress levels.

A study¹⁰ using a driving simulator found that dialling a long telephone number significantly interfered with the driver's ability to follow the road in an optimal manner, and led to a significant increase in accident risk. Manually dialling a long number caused more problems than adjusting the car radio, although memorised numbers and voice activated dialling caused fewer problems. This study found that placing the phone on the dashboard within the driver's visual field reduced, but did not eliminate, the increased accident risk.

In a 1988¹¹ study, 20 drivers were asked to dial a long telephone number when driving in a straight line at 40 mph on an unused airport runway. The results showed that even in ideal, traffic-free situations, 2% of drivers would veer out of a

12-foot wide lane, and 12% would veer out of a 10-foot wide lane, when dialling a telephone number. In more complex, real-life driving conditions (roads with bends and junctions, rougher road surfaces, poorer visibility) it is likely that the incidence of lane deviation would be considerably higher.

Interviews with nine people who regularly used a hands-free mobile phone for work-related calls while driving¹² revealed that they did not believe that using the phone affected their driving performance because they could adapt their speed or end the call if necessary. However, when they participated in simulated driving tasks of varying complexity on a computer (not a driving simulator) and had to respond to mobile phone calls, their performance was significantly worse during both simple and more complex phone conversations. So, although they did not believe using the phone affected their driving, in reality it did.

There is evidence that older drivers require more glances to instrument panels to retrieve necessary information, require more time to complete instrument tasks and require more time to move their eyes between the road and an instrument display. Therefore, using a mobile phone while driving may cause more problems for older drivers than younger ones.¹³

A study¹⁴ of 40 drivers (half male, half female) on an advanced driving simulator, investigated the effects of using a hands-free mobile phone while driving on an easy, straight route and on a difficult, winding route. Using the mobile phone while driving increased drivers' reaction times and reduced their speed level, but only when the driving task was easy. The drivers' lateral (lane) position was also affected on the easy, straight road in that the subjects drove closer to the side of the road. No difference was found concerning the variation in lateral position. Using the mobile phone increased the mental workload of the drivers on both the easy and difficult routes. Surprisingly, using the phone impaired driving performance more on the former than on the latter, perhaps because the subjects appointed the telephone task as the primary task when driving was easy. When the driving task became more demanding, the subjects may have regarded driving as the primary task and the telephone task as secondary.

Twelve drivers drove a car in three different traffic conditions (light motorway traffic, heavy major road traffic and city traffic) while using either a hand-held or hands-free mobile phone.¹⁵ Their mental workload increased when using a mobile phone, but this effect decreased as they became

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more accustomed to using the phone while driving. Surprisingly, the variations in lateral position (swerving) were less while using the telephone than when not, especially while driving on the motorway. This may indicate that drivers increased their alertness to compensate for using the phone. However, using a mobile phone delayed the drivers' adaptation to the changing speed of the vehicle in front and lengthened their reaction time to the appearance of brake lights of the lead vehicle (although the latter was not statistically significant). Dialling a telephone number in city traffic conditions significantly impaired steering wheel movements. As with other studies, this one concluded that using a mobile phone while driving had little effect on simple, automatic driving skills, but did impair drivers' traffic skills and responses to other vehicles.

The effects of receiving a call on a hands-free mobile phone while driving on a real motorway under moderate traffic conditions were monitored in one study.¹⁶ This study did not reveal evidence that receiving the calls impaired the drivers' behaviour. Neither vehicle control, manoeuvring (lane change, overtaking) nor speed choice were influenced by telephone use. However the drivers' perceived workload was increased when using the phone and was described as 'moderately high effort to attain adequately safe driving'. The authors argued that even the combination of easy driving with simple verbal tasks can increase drivers' mental workload to a level where they begin to feel unsafe.

Another study¹⁷ involved 24 drivers driving on real roads while holding a conversation (a role-play negotiation) on a hands-free mobile phone, holding a conversation with a car passenger, and a control condition of just driving. Holding a conversation at the same time as driving increased the drivers' mental workload and their stress and frustration levels. The drivers also took longer to complete their driving routes while holding the conversations, possibly because they reduced speed to be able to devote more of their concentration to the conversations. The stress caused by negotiating on the mobile phone was significantly higher than that caused by negotiating with the passenger.

Research which included both laboratory tests and driving a car on urban and rural roads examined how using a mobile phone while driving affects the phone conversation (rather than the driving performance).¹⁸ The participants had significantly greater difficulty in remembering and correctly interpreting information from the phone calls when they

were driving than when they were not driving, and than when talking to a passenger in the car.

In another study, 150 subjects observed a video of driving sequences containing situations to which drivers would be expected to respond.¹⁹ Each situation occurred when the subjects were placing a mobile phone call, conducting a simple conversation on a mobile phone, conducting a complex conversation, tuning a radio, and with no distraction. All the distractions led to significant increases in both the number of situations to which the subjects failed to respond and the time it took to respond to them. Complex phone conversations created the greatest distraction and simple conversations the least. The likelihood of a driver failing to notice and respond to a highway-traffic situation ranged from 20% when placing a call or holding a simple phone conversation to 29% for holding a complex phone conversation. Subjects over 50 years old were significantly more likely to fail to respond than younger (17-25 years) subjects.

Using a driving simulator,²⁰ twelve drivers operated a manually-dialled and a voice-activated mobile phone while driving. Using both the manual and the voice-activated phones was found to cause larger deviations in lane position than not using one. However, the effect was larger when the drivers had to manually dial the numbers than when using the voice activated phone.

Seventeen drivers drove a simple route on a driving simulator,²¹ while holding a phone conversation. Two of the seventeen subjects were able to use the phone and maintain a constant speed. A further nine had problems doing the two things simultaneously, but coped by reducing their speed to give themselves more time. The remaining drivers faced 'mental overload' and failed to maintain a constant speed. They seemed unable to do the two tasks (driving and using the phone) simultaneously and so tended to switch between them, sometimes giving greater importance to the phone conversation and sometimes to driving. In some cases this resulted in a speed decrease, in others a speed increase.

In a pursuit-tracking task that simulated driving²² twenty subjects (10 male and 10 female) in two age groups, 19-26 years and 40-51 years, drove while (i) holding a simple telephone conversation, (ii) holding a difficult conversation, and (iii) tuning and listening to a car radio. Half of the driving was done on a simulated firm road surface and half on a slippery road surface. When driving on the firm road surface and not having to do a secondary task, the drivers were

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generally able to maintain a correct road position. Neither using a hands-free mobile phone nor tuning the radio caused any significant difference. However, when driving on a slippery road, manipulating the radio and using the phone led to greater deviations from the correct road position, and, in this study, tuning the radio caused more problems than using the phone. As one would expect, holding a simple phone conversation caused less trouble for the drivers than holding a difficult conversation. The study concluded that a simple conversation on a hands-free telephone while driving does not in itself impair performance. However a difficult conversation may affect driving adversely, and any prolonged manipulation of the telephone impairs performance, particularly in more difficult driving conditions.

Another simulator study²³ investigated the effects of a mobile phone on following distances. Forty drivers (30 male, 10 female) drove a long, fairly straight route on the simulator, which also showed a continuous stream of on-coming traffic and traffic in front of the driver several times during the drive. The drivers received a call on a hands-free mobile phone during some, but not all, of the car-following situations. During some calls the vehicle in front braked. Using the mobile phone slowed the drivers' reaction time, especially older drivers. The drivers did not compensate for their slower reaction times by increasing their following distances, perhaps because they were unaware that using the phone was slowing their reactions. The authors calculated that the drivers in the study would not have been able to avoid a collision if the vehicle in front had braked sharply.

A study investigating the effects of concurrent use of a mobile telephone and an adaptive cruise control (ACC) was undertaken in an advanced driving simulator.²⁴ The cruise control could be set to operate automatically or be driver-operated, and a control condition without cruise control was included. A visual secondary task was used to study the driver's attention distribution. The presentation of a visual stimulus, (a red square on the screen) resulted in a tendency towards shorter reaction times when using the ACC compared with not using the ACC but only when the telephone was used. When the telephone was not used, a tendency in the opposite direction was found (i.e. longer reaction times when using ACC).

Twenty-five college students aged 18-25 years participated in a simulated driving task (not a driving simulator) which measured visual tracking and hand-eye co-ordination while talking on a hand-held mobile phone.²⁵ When using the

mobile phones the students' reaction times were significantly slower.

An on-road study²⁶ analysed the duration and number of glances made by 23 experienced and 24 inexperienced drivers as they changed a radio cassette, dialled a mobile phone number, or tuned a car radio while driving on a highway or motorway. Glances away from the road were longest when the drivers were tuning the radio and shortest when changing the cassette tape. Experienced drivers were better at allocating their visual attention between driving and the secondary task, probably due to their greater driving experience. Whereas novice drivers made more short, ineffective glances and more long, risky glances. Almost half (46%) of the inexperienced drivers took their eyes off the road for more than 2.5 seconds, compared with only 13% of experienced drivers. The long glances away from the road made by the novices resulted in large deviations in lane position.

Thirty people received and conversed with an incoming call on hand-held and hands-free mobile phones while driving either a manual or automatic car on a driving simulator.²⁷ The drivers' performance was assessed before, during and after the call, and their heart rate was monitored throughout the exercise. Drivers' maintenance of speed was significantly impaired when using either a hand-held or hands-free mobile phone when driving both manual and automatic cars. This reduced responsiveness continued for at least 2.5 minutes after the call. Drivers' also significantly reduced their following distance from the vehicle in front when using either hand-held or hands-free phones and they continued to 'tailgate' after the call. Participants' heart rates rose significantly during the calls, indicating increased stress.

An on-road study²⁸ investigated drivers' ability to detect and respond to a car ahead decelerating, while using a mobile phone. Nineteen participants aged between 20 and 29 years, drove at 80km/h, 50m behind another car on a 30km section of motorway in normal traffic. During each trial, the lead car started to decelerate while the test driver either looked at the car in front (control), dialled numbers on the phone (divided visual attention) or performed a cognitive task (non-visual attention). When drivers were dialling or doing the cognitive task, they were slower (by about 0.5 second) to detect the fact that the car ahead had begun to decelerate and their time to collision was impaired by about one second. The report concluded that using even hands-free or voice-activated mobile phones while driving still impairs drivers' ability to drive safely.

Does Using a Mobile Phone while Driving Impair Driver Performance?

A comparison of the effects of using a mobile phone while driving on real roads and on a driving simulator was conducted to assess whether the results found on driving simulators were indicative of the results that could be expected on actual roads.²⁹ Six male and six female drivers drove on a freeway route while periodically making calls on a hand-held mobile phone, and then drove a similar route on a driving simulator while also periodically making calls. Using the mobile phone reduced the driving precision (lane position and speed control) of all the subjects, both on the road and on the simulator. Although the variations in maintaining lane position were more exaggerated in the simulator than on the road, results still showed that the simulator provided a valid indication of the effects that would occur on the road. It was also notable that drivers aged 60 years and over faced greater problems than younger ones.

Another study³⁰ involved 27 drivers who drove on a combination of city, urban and rural roads while talking with a passenger, and separately holding a conversation on a hands-free mobile phone. Unlike most other studies, this one did not find that using a mobile phone affected driving performance, with the exception that more navigation errors were made by drivers when they were using the telephone. Drivers experienced greater mental workload when using a mobile phone and when talking to a passenger than when driving alone, but appeared to adapt to the increased cognitive demands of the conversations.

Another driving simulator study³¹ involved 20 drivers who were asked to judge whether simple sentences were meaningful, and recall the first words of each sentence on a hands-free mobile phone when (a) not driving, (b) driving an easy route, and (c) driving a difficult route. Using the mobile phone while driving on both the easy and difficult routes resulted in a significant deterioration of both recall and judgement. The study was repeated with a further 24 drivers and similar results were found.

Canadian research³² on an off-road test track assessed drivers who listened and responded to taped messages while driving. They periodically encountered traffic lights, pop-up targets around which they had to swerve and had to turn left into a traffic stream. When responding to the taped messages, the drivers were more likely to stop (rather than 'run' the lights) when the traffic lights changed, possibly to allow themselves to divert their attention to the phone task. When the drivers had to react to the unexpected pop-up targets, their reactions

were slower and they swerved around them at greater speeds, when the message was being played than when not responding to the taped message. When turning left, drivers took significantly riskier decisions when listening and responding to the messages. The study concluded that listening and responding to relatively complex messages (such as when using a hands-free mobile phone) were found to 'significantly degrade driving performance'. The impairment was related to the complexity of the driving task, such that using the phone would cause more problems in more complex driving situations.

Fifteen subjects were asked to drive on a driving simulator for 15.5 miles on a single carriageway rural road with traffic in front of and behind them and on-coming vehicles.³³ They were told to observe the speed limits and expect some severe weather conditions. They were asked a series of questions on a hands-free phone during the drive, and their reaction times, braking profiles, lateral position, speed, and situational awareness were measured. Reaction times were significantly slower during the early part of the phone conversations, but improved as the phone call proceeded. However, when using a mobile phone the drivers took an average of 200 metres longer to respond to a change in the speed limit. The simulation was stopped at various points and the drivers were asked questions about the traffic conditions. Using the mobile phone resulted in a significant deterioration of the drivers' awareness, to such an extent that they had very little awareness of what was happening on the road around them.

A recent USA report³⁴ contrasted the effects of using a hand-held and hands-free mobile phone on responses to traffic signals on a simulated driving task. Sixty-four students performed a pursuit tracking test on a computer (to simulate driving) while either listening to a radio, listening to an audio tape, using a hand-held or a hands-free phone. When using either a hand-held or hands-free phone, the students' responses to the traffic signals were significantly slower, and they were significantly more likely to miss the signals altogether. Listening to the radio or tape did not have any significant effects. The study concluded that using a mobile phone while driving creates a serious distraction which is caused by the driver's active engagement in the conversation rather than the physical interference of holding the phone.

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Fifty drivers, included ten driving instructors, drove around an off road test track at 40-50 km/h with a vehicle in front of them and another behind.³⁵ The test subject drove while listening to a cassette tape, while using a hand-held phone and while using a hands-free phone. Using a mobile phone, especially a hand-held one, increased the drivers' braking reaction times, although they increased the distance from the car in front, and slowed their speed, to compensate for this. When using a mobile phone, especially a hand-held one, the drivers were more likely to deviate from their lane position. Those drivers who had to pick up the phone from the passenger seat to answer it took their eyes off the road for almost 2 seconds. There was also a tendency for the driver to stare straight ahead while using the phone and to look around less.

Research in Taiwan included a driving simulator study, interviews with members of the public and an analysis of accident records.³⁶ 390 drivers drove on a driving simulator while sometimes using a hand-held mobile phone and sometimes talking to a passenger. Five different traffic situations occurred randomly during the drive: traffic signal change, obstacle falling in front of the driver, pedestrian stepping into the road, a vehicle emerging in front and a vehicle in front braking abruptly. The results showed that using a mobile phone while driving significantly increased the time it took drivers to respond to the various traffic situations. The response times of older drivers were affected to a greater extent than those of younger drivers.

As part of this study, 500 members of the public were interviewed about their views on drivers using mobile phones. Over three-quarters (77%) thought it was unsafe to use a mobile phone while driving, but less than half (44%) thought a law should be introduced to prohibit it.

In a recent UK study,³⁷ twenty drivers drove on a driving simulator in four road conditions:

- on a motorway with moderate traffic
- maintaining a safe distance when following another vehicle
- attempting to negotiate a bend
- on a dual carriageway with traffic lights.

Before the drives, the subjects consumed either an alcoholic drink to take them up to the UK legal drink drive limit of 80 mg/100 ml or a similar looking and tasting placebo drink. During each drive the drivers answered a standard set of questions and conversed over a mobile phone.

On average, drivers' reaction times were 50% slower when using a hand-held mobile phone than under normal driving conditions, and 30% slower than when under the influence of alcohol. It took hand-held mobile phone users half a second longer, on average, to react than normal, and a third of a second longer to react compared to when they had drunk alcohol. At 70 mph, this is equivalent to travelling an additional 46 feet (14m) before reacting to a hazard on the road.

When using a hands-free phone drivers took an extra 26 feet to stop at 70 mph than when not using a phone.

Drivers were also less able to maintain a constant speed and found it more difficult to keep a safe distance from the car in front when using a mobile phone in comparison to the other conditions. In addition, drivers using either a hands-free or hand-held mobile phone, missed significantly more road warning signs than those who were not.

Conclusion: Does Using A Mobile Phone While Driving Impair Driving Performance?

The simple answer is 'yes'.

Many studies, using a variety of different research techniques, have reached the same conclusions. Using a mobile phone while driving adversely affects driver performance in a number of different ways. It impairs:

- Maintenance of lane position
- Maintenance of appropriate and predictable speed
- Maintenance of appropriate following distances from vehicles in front
- Reaction times
- Judgement and acceptance of safe gaps in traffic
- General awareness of other traffic.

Much of the research has assessed using hands-free phones and demonstrates that these still distract drivers and impair safe driving ability, even when driving automatic cars, which are arguably easier to drive than the manual transmission cars predominantly used in the UK.

There is also evidence that using a mobile phone while driving causes greater problems for those drivers who already have a higher accident risk, namely young, novice drivers and elderly drivers.

Does Using a Mobile Phone while Driving Increase Accident Risk?

Experimental evidence shows that using a mobile phone while driving impairs driving performance in a number of safety critical ways. The next question is does using a mobile phone while driving actually increase accident risk in real-life driving, and if so to what extent? There is much less data and research to answer this question, largely because it is rarely recorded whether or not drivers were using a mobile phone at the time of an accident. However, some studies have been conducted.

A USA study³⁸ of 699 drivers who had a mobile phone and who had been involved in a damage-only road accident examined their mobile phone records on the day of the accident and during the preceding week. Statistical analysis indicated that the risk of being involved in a collision was four times higher when using a hand-held or a hands-free phone than when not using one. This finding has been criticised, but in a recent review³⁹ of their study, the authors have concluded that their findings were robust, and if anything under-estimated the risk.

An analysis of accident data from the USA's Fatal Analysis Reporting System (FARS), National Automotive Sampling System (NASS) and police crash reports from individual States⁴⁰ identified that the use of mobile phones by drivers appeared to be a growing factor in crashes (although little data was available). Accident investigations found that the majority of these drivers were talking on their phones, rather than dialling, at the time of the crash. The 'overwhelming majority' of drivers who had a crash while using a mobile phone ran into another vehicle or object that was clearly visible. The report also suggested that accidents caused or contributed to by in-car distraction are likely to increase as more in-car technology is introduced.

The same report analysed crash data in Oklahoma (one of only two states that records the presence or use of mobile phones after crashes) and found that about 10% of the mobile phones present in vehicles were being used at the time of the crash. This study also reports on crash data from Japan that indicates mobile phone usage was involved in less than 1% of crashes.

An analysis⁴¹ of police reports of 5,740 fatal road accidents in Great Britain between 1985-1995 found that in-vehicle distraction was reported as a contributory factor in about 2% of the fatal accidents (although this figure may be a conservative estimate). The analysis identified the various causes of distraction as interacting with passengers, operating in-car entertainment systems, eating and drinking, smoking and using a mobile phone.

A case-control study⁴² of data from 223,137 traffic accidents (1,548 of which were fatal) between 1992 and 1995 in the USA, compared the accident characteristics and use of mobile phones in fatal crashes with non-fatal ones. There was a mobile phone in 4% of the vehicles involved in a fatal accident, and in these crashes, almost 8% of the drivers were using the phone at the time of the crash. Drivers who were using a mobile phone were nine times more likely to be involved in a fatal accident than drivers who were not. (Just the presence of a mobile phone in the vehicle resulted in the accident risk being doubled).

Drivers who used a mobile phone while driving were more likely to cause an accident by wandering out of their lane, more likely to hit a pedestrian and more likely to overturn their vehicle. This report also stated that using a mobile phone while driving increases the risk of a fatal accident three times more than being drunk. However, concerns about the reliability and findings, of this study have been raised⁴³.

An analysis of a sample of police-reported crashes between 1995-1999 in the USA⁴⁴ sought to identify the major sources of driver distraction and their relative importance as a crash cause. 8% of the drivers were identified as distracted at the time of their crash, and the specific sources of distraction were:

Outside person, object, or event	29.4%
Adjusting radio/cassette/CD	11.4%
Other occupant	10.9%
Moving object in vehicle	4.3%
Other device/object	2.9%
Adjusting vehicle/climate controls	2.8%
Eating and/or drinking	1.7%
Using/dialling mobile phone	1.5%
Smoking related	0.9%
Other	25.6%
Unknown	8.6%

Does Using a Mobile Phone while Driving Increase Accident Risk?

Young drivers (under 20 years old) were the most likely to be involved in distraction-related crashes as a whole. Certain types of distraction were more prominent in certain age groups, for example, adjusting the radio, cassette or CD was a more common crash cause among the under 20-year-olds. Distraction caused by other occupants (e.g., young children) was more common among 20-29 year-olds; distraction caused by outside objects and events was more common among those aged 65 and older.

The amount of time spent talking on a cellular telephone per month by 100 randomly selected drivers who had been involved in an accident was compared with a control group of 100 randomly selected drivers who had not been in an accident.⁴⁵ Approximately, 13% of the accident-involved drivers and 9% of the non-accident involved drivers, used a mobile phone when driving. Those who talked on a cellular phone in their vehicle for more than 50 minutes per month were over five times more likely to have a traffic accident.

The mobile phone users who had been involved in an accident were younger and less experienced than those who had not been involved in an accident, and spent twice as long talking on their phones per month (not necessarily when driving) and their conversations seemed to be more intense.

Over a four-month period, in three cities in Taiwan,³⁶ the accident report forms recorded whether the involved drivers had a mobile phone in their vehicle at the time of the accident, and whether it was being used. Over 3,000 road accidents occurred during this period, of which 676 (22%) involved drivers who had a mobile phone in the car and 133

(4%) involved drivers who were using a mobile phone at the time of the accident. Nearly 20% of drivers who had a mobile phone and been involved in an accident, had been using their phone when the accident occurred.

The same study showed that in Taiwan between August 2000 and March 2001, 2,407 traffic accidents were caused by drivers using mobile phones and these resulted in 14 people being killed and 443 being injured. Nine deaths and 354 injuries occurred in accidents where the driver was using a hand-held phone, and four deaths and 89 injuries occurred in accidents where the driver was using a hands-free phone.

A search of the North Carolina Accident database records for 1989 and the first four months of 1992 was performed to assess 'the effects of driver visual allocation into the vehicle on accident rates'.⁴⁶ The results showed that drivers' visual allocation within their vehicle is a significant contributory factor in accidents. Radio usage was often associated with accidents. The search also indicated that between 1989 and 1992 the use of cellular phones became an increasing contribution to accidents. In 1989, cellular phones were mentioned just 11 times in the accident database, but, by 1992, they were mentioned 27 times.

RoSPA has collected reports of 20 fatal road accidents where the use of a mobile phone by a driver (and in one case a pedestrian) was reported to have been a factor.

The information below is taken from press reports of police investigations and coroner's inquests.

Does Using a Mobile Phone while Driving Increase Accident Risk?

Mobile Phone Related Deaths

Date	Circumstances	Sentence
1988 (actual date unconfirmed) Reported: Oct 20, 1988 – Birmingham Evening Mail	Driver leaned across to answer his mobile phone and swerved into the path of another car, whose driver died instantly.	Fined £100 after admitting driving without due care and attention.
September 1994 Reported: May 24, 1997 – Times; Scotsman; May 26, 1997 – Express	Driver listening to messaging system on phone, crossed to the wrong side of the road and collided head-on with a van on a bend, killing the driver.	Jailed for six months for causing death by dangerous driving.
September 1996 Reported: April 28, 1999 – Daily Mail; May 1, 1997 – Western Daily Press	Driver using his mobile when he collided with and killed a child pedestrian.	Fined £250 and ordered to pay £35 costs after admitting careless driving.
September 1996 Reported: July 28, 1997 – Evening Mail	Lorry driver was trying to hang up his mobile phone when he hit a car, killing the driver.	Fined £250 and given six penalty points after admitted careless driving.
October 1996 Reported: May 21, 1997 – Telegraph; Liverpool Daily Post	Driver was killed when he turned right while using a mobile phone, and was hit by another car. Believed to be using the phone for work purposes.	Verdict = accidental death.
1997 (actual date unknown) Reported: December 1, 1997 – Daily Mail	Pedestrian crossing a dual carriageway was hit and killed by a driver using a hands-free mobile-phone.	Fined £540 and given nine penalty points.
February 1998 Reported: May 18, 1999 – Eastern Daily Press	Head-on collision involving two cars, one of which was travelling on the wrong side of the road. The driver who was killed may have been speaking on a mobile at the time and had been tailgating another motorist moments before the collision.	Jailed for two-and-a-half-years and banned for five years.
March 1998 Reported: February 4, 1999 – Daily Mail; Daily Express; Times	Driver pulled out to overtake, travelling at 70 mph while using a mobile phone. Collided with an on-coming vehicle, killing its driver.	Jailed for 12 months and banned from driving for a year.
November 1998 Reported: Jan 17, 2000 – Daily Mail	Articulated lorry hit two cars waiting at traffic lights. One of the car drivers was killed.	Admitted causing death by dangerous driving and sentenced to 240 hours community service. Banned from driving for two years and ordered to pay costs of £1200.
March 1999 Reported: Sep 1, 1999 – Western Daily Press/Daily Star	Driver died when his car veered off the road and into a tree while talking on a mobile.	
March 1999 Reported: Jan 20, 2000 – Daily Record, Jan 21, 2000 – BBC News online – UK Scotland	Truck driver was speeding while using a hands-free mobile phone. He hit a stationary van which was shunted into another car, killing the occupant,	Jailed for 18 months and banned from driving for four years.

Does Using a Mobile Phone while Driving Increase Accident Risk?

Date	Circumstances	Sentence
April 1998 Reported: April 8, 1998 – Daily Mail; August 26, 1998 – Daily Mail	Driver killed while talking on a mobile. He was travelling at 104mph on a motorway when a rear tyre punctured and he lost control.	
February 9, 2000 Reported: May 5, 2000 – Daily Mail; Telegraph;	Truck driver distracted when his mobile phone rang. He took his eyes off the road but didn't answer phone. Hit a cyclist who was killed instantly.	Charged with driving without due care and attention. Fined £500 for lack of attention.
March 2000 Reported: June 5, 2000 – Times	Driver reading his map while talking to his boss on a mobile phone. Hit back of parked lorry carrying gas cylinders. He died in the fire.	Verdict of accidental death recorded.
March 2000 Reported: September 1, 2000 – Times website	Driver said (by witnesses) to be driving at 70mph in 30mph zone, talking on mobile phone and overtaking. Hit and killed a pedestrian. Driver had only recently completed ban for driving without due care and attention. Driver pleaded guilty to causing death by dangerous driving.	Jailed for three years. Banned from driving for three years from the time of his release.
April 18 2000 Reported: July 13, 2000 – Times	Pedestrian talking on a mobile phone stepped into the road without looking and was hit and killed by a car. Friend shouted warning but pedestrian did not hear.	Verdict = Accidental death. Coroner said that the mobile phone was a factor in distracting her from noticing the car.
May 2000 Reported: August 25, 2000 – The Sun	Driver overtaking another vehicle at up to 90mph in heavy rain. Lost control and hit tree. When Police officers checked the phone they found a message that was three pages long and had been received two minutes before the crash.	Recording a verdict of accidental death, coroner said: "A message had been accessed. It may have diverted his attention".
June 2000 Reported Feb 2001: Independent, Telegraph, Mail, Express	Truck driver composing a text message veered into a lay-by, and hit a man standing by his parked car.	Jailed for five years for causing death by dangerous driving. Denied composing a text message, but admitted he may have glanced at phone to see if he had a message. Judge said "In many ways it is difficult to imagine a more blatant act of such cold blooded disregard for safety on the roads.
November 2000 Reported: BBC News Online October 2001	A driver was killed when he pulled out in front of a police car that was travelling at 80mph with its lights and sirens on. The driver had received and sent two text messages minutes before the crash.	
August 2001 The Sun	A driver was killed when she drove head-on into a truck as she used her mobile phone. She had just sent a text message when she lost control of her car.	Verdict of accidental death. The coroner said it was 'probable' that she was distracted by her phone.

Does Using a Mobile Phone while Driving Increase Accident Risk?

Conclusion: Does Using A Mobile Phone While Driving Increase Accident Risk?

Again, the answer is 'yes'.

One study suggests that the risk of being involved in a collision is four times higher when using a mobile phone than when not using one. However, it is difficult to quantify the increased risk because of the lack of accident data concerning the use of mobile phones. This is due to the fact that in the UK, and most other countries, the presence or use of a mobile phone in a vehicle is not recorded, except sometimes in very serious accidents. The number of States in the USA that are beginning to record mobile phone use in their accident data systems is increasing, and, consequently, it seems likely that better data will become available.

Despite the lack of data, there is nevertheless evidence from epidemiological studies and from accident reports that drivers who use mobile phones while driving have higher accidents rates than those who do not.

As the use of mobile phones is growing so rapidly, it is very likely that they will become an increasingly common cause of road crashes.

A number of reviews of the available research into the effects of using a mobile phone while driving have been conducted, and have generally reached similar findings as this review.

A 1993 review⁴⁷ concluded that holding car-phone conversations while driving increases drivers' mental workload and stress levels and impairs their driving performance, particularly by slowing their response times. However, this review suggested that mobile phones may develop to such an extent that integrated in-car systems would monitor driver behaviour and the traffic situation and when necessary, alert the driver and the person to whom she or he is speaking, and even terminate the call if necessary.

Another review⁴⁸ published in 1995 claimed that the risks associated with mobile phone use when driving are not simply limited to physical and mental distraction. They also involve more aggressive driving, manifesting itself in tailgating other drivers to intimidate them to move over, dangerous overtaking and lane changing.

A 1997 USA⁴⁰ review found consistent evidence that manual dialling (i.e. using a hand-held mobile phone) impairs drivers' vehicle control (especially lane position and maintenance of appropriate speed) and reduces drivers' traffic awareness, resulting in slower reaction times and less use of mirrors. This review concluded that using hands-free mobile phones has less effect on drivers' vehicle control, but does decrease their situational awareness and increase their braking reaction times.

In 1997, TRL⁴⁹ concluded that there is evidence that using a mobile phone while driving impairs driving performance and "evidence of an association between mobile phone use (even of the hands-free type) while driving and higher accident occurrence." This review suggested that hand-held mobile phones cause considerable distraction, but this effect may be reduced with hands-free phones, although there is still some cognitive distraction caused by the mental effort of telephone conversation with advanced aids. The authors concluded that brief casual conversations under light traffic conditions have a small impact on a driver's mental workload and so are unlikely to have a discernible safety effect. However, manual dialling and intense telephone conversations cause considerable distraction and this could impact on safety.

More recently, the Independent Expert Group on Mobile Phones, formed by the British Government to review "concerns about the possible health effects of mobile phones"¹ concluded that "there is one substantial established risk to health from mobile phone technology, namely through the increased incidence of motor vehicle accidents when drivers use mobile phones. Since the chance of an accident appears to be equally elevated for hands-free and hands-held use, this effect is almost certainly due to the distracting effect of the conversation".

Given the lack of data about the involvement of mobile phones in road accidents, a questionnaire (Appendix 1) was devised to seek details from Police Forces and Local Authorities about road accidents where a driver or other road user was using a mobile phone, and about education and enforcement campaigns that have been conducted.

Sixty questionnaires were sent to the Senior Crash Investigators' Conference held in October 2001 where they were distributed to all the Police Collision Investigation Units in Britain. A further 219 questionnaires were posted to Road Safety Officers based in police and local authorities in England, Scotland, Wales and Northern Ireland. Only 38 questionnaires were returned, which represents a low return rate of 13%. The results are presented below.

Accident and Injury Information

Most of the respondents noted that they were unable to supply any accident or injury information because it was not collected on the STATS19 form. (This may be a reason for the low response rate).

Only four were able to supply any accident and injury data relating to mobile phone use. Between them, these respondents had records of one serious accident and 17 slight accidents involving the use of a mobile phone by a driver, plus one slight accident involving a pedestrian who stepped into the path of a reversing vehicle while talking on a mobile phone.

Education Campaigns

Twenty-eight (74%) of the respondents had conducted education and publicity initiatives to discourage mobile phone use while driving. In 18 cases, this involved regular, on-going distribution of publicity materials, sometimes in co-ordination with national campaigns, and sometimes as part of general mail out activities to libraries, health centres and other distribution points. Seven of the respondents reported that they had conducted specific 'mobile phone' educational campaigns.

In most cases, the initiatives were conducted by partnerships involving the Local Authority Road Safety Department, local Police, DTLR, a local health board and hospital and (in one case) with major mobile phone retail outlets. In three cases, the campaigns were conducted solely by Local Authority Road Safety Departments.

The campaigns consisted mainly of distributing publicity resources (usually the leaflet 'Mobile Phones and Driving' which the DTLR supplies free of charge), issuing press releases and giving media interviews. In one case, advice about mobile phones and driving was emailed to all Council employees.

Target groups varied from all mobile phone users to specific groups such as local businesses, council employees, people taking part in driver improvement courses or participants in internal training courses such as minibus training.

Publicity materials were distributed to a wide range of outlets, including petrol stations, Police stations, local businesses, mobile phone retailers, taxi and car hire companies, driving schools and test centres, doctors' surgeries, leisure centres and libraries. Some Road Safety Departments also included mobile phone leaflets in education packs prepared for use in joint road safety officer/police officer roadside checks on other issues, such as drink drive, speed and seat belt wearing.

Enforcement Campaigns

Three respondents had also conducted enforcement activities targeted at drivers using mobile phones.

In one 30-day campaign in January 2001 in Gwent (Operation Ringtone), 65 drivers were stopped for using a mobile phone while driving, 22 were cautioned and 43 were issued with a fixed penalty notice.

In another campaign conducted periodically over an eight month period in Bedfordshire, 91 drivers were issued with a fixed penalty notice.

The third campaign was conducted over a two-month period in Norfolk in 2001, during which 132 drivers were issued with a fixed penalty notice.

Another respondent reported that in four London Boroughs over a four-month period, 287 verbal warnings and 45 fixed penalty notices were issued to drivers for being 'not in a position to have proper control'. This respondent noted that "these are most usually related to mobile phone use".

No Campaigns

Ten of the respondents reported that they had not conducted any education or enforcement campaigns targeted at discouraging drivers from using a mobile phone while driving. One gave the reason that their road safety activities were data led (i.e. based on STATS19 data) and since this does not record mobile phone use in driving casualties, they could not justify devoting resources to education or publicity initiatives on this issue.

Conclusion: Local Authority and Police Survey

There was a low response to this questionnaire survey.

The results show that there is very little hard data on the number of accidents or injuries involving someone using a mobile phone while driving, riding or walking on the road. The lack of data is largely due to the fact that the STATS19 form does not include a box to record the presence or use of a mobile phone. The lack of this data may be one reason for the low response to the questionnaire survey.

The questionnaire responses received indicate that some local education and publicity initiatives are being conducted, usually by Local Authorities and Police working together, and sometimes in co-operation with other groups.

Those respondents who were not conducting education initiatives are deterred from doing so by the lack of accident data.

Legislative Approaches to Preventing Drivers Using Mobile Phones

UK Legislation

In the UK, there is no specific offence of using a mobile phone while driving. However, drivers doing so may face a number of careless or dangerous driving charges.

Section 2 of the Road Traffic Act 1988 states:

“A person who drives a mechanically propelled vehicle dangerously on a road or other public place is guilty of an offence”.

Section 3 states:

“If a person who drives a mechanically propelled vehicle dangerously on a road or other public place without due care and attention, or without reasonable consideration for other persons using the road or place, he is guilty of an offence”.

Section 104 of the Road Vehicles (Construction and Use) Regulations 1986 states:

“No person shall drive or cause or permit any person to drive a motor vehicle on a road if he is in such a position that he cannot have proper control of the vehicle or have full view of the road and traffic ahead.”

The Highway Code (Rule 127) states:

“You MUST exercise proper control of your vehicle at all times. Never use a hand-held mobile phone or microphone when driving. Using hands free equipment is also likely to distract

your attention from the road. It is safer not to use any telephone while you are driving – find a safe place to stop first.”

Several Private Members Bills to prohibit the use of hand-held mobile phones have been introduced in the House of Commons and the House of Lords in recent years. The latest was introduced by Janet Anderson MP in November 2001.

To date, none has been passed into law.

The British Government’s view is that the Police have sufficient powers to deal with drivers using mobile phones, although it is committed to keeping the need for new legislation under review.⁵⁰

International Legislation

An international survey by e-mail and website searches was conducted to identify which countries have introduced, or were considering, legislation to prohibit the use of mobile phones while driving.

Many countries have enacted legislation banning the use of mobile phones by drivers while in control of their vehicle. In most cases, the legislation prohibits the use of hand-held phones, but does not apply to hands-free mobile phones. Two exceptions were identified. New Delhi in India and Portugal have banned the use of both hand-held and hands-free mobile phone by drivers.

Countries that restrict or prohibit the use of mobile phones while driving

Country or State	Legislation	Penalty (Where known)
Australia	<p>The ‘Australian Road Rules’; as approved by the Australian Transport Council includes the following rule on the use of hand-held mobile phones:</p> <p>“Use of hand-held mobile phones</p> <p><i>The driver of a vehicle (except an emergency vehicle or police vehicle) must not use a hand-held mobile phone while the vehicle is moving, or is stationary but not parked, unless the driver is exempt from this rule under another law of this jurisdiction.”</i></p> <p>Every state and territory has enacted this as legislation and so prohibits the use the hand-held mobile phones in a moving vehicle or even when stopped at traffic lights. The vehicle must be properly parked with the engine turned off, before a driver can legally use a hand-held mobile phone.</p> <p>In Victoria in 2000, 18,696 drivers were issued with a fixed penalty notice for using a hand-held mobile phone while driving.</p> <p>Drivers are permitted to use a mobile phone in a motor vehicle if they use a hands-free device.</p>	Varies between States – fines of up to \$200 Australian.

Legislative Approaches to Preventing Drivers Using Mobile Phones

Country or State	Legislation	Penalty (Where known)
Austria	Prohibits the use of hand-held phone while driving.	Fines up to 300 ATS.
Belgium	It is illegal to use a phone while driving, without using a hands free kit. A hand-held phone can be used in a stationary vehicle, but not where the vehicle is stationary at traffic lights or in a traffic jam.	
Brazil	Prohibits use of hand-held phone while driving.	
Czech Republic	Enacted legislation to prohibit the use of hand-held mobile phones while driving on 1st January 2001.	
Chile	Prohibits the use of hand-held mobile phone while driving.	
Denmark	It has been illegal to use a hand-held phone while driving since 1 July 1998. The use of hands-free equipment is allowed.	Fines of up to 300 kroner.
Eire	From March 2002, the use of hand-held phones or similar apparatus such as CB radios while driving is prohibited. Their use is allowed when the vehicle is parked. Hands-free phones are allowed.	Maximum penalties of 435 Euros and/or up to three months imprisonment for third offence.
Germany	From 1st of February 2001 the use of a hand-held phone was prohibited for drivers, motorcyclists and pedal cyclists. The use of hand-held phones is allowed where the vehicle is stationary with the engine switched off. The use of hands-free phones is allowed.	Since April 1st 2001 non compliance is subject to a fine of 60 DM for drivers or motorcyclists and 30 DM for a cyclist.
Greece	Prohibits the use of hand-held mobile phone while driving.	
Hong Kong	Prohibits the use of hand-held mobile phone while driving.	
Hungary	Prohibits the use of hand-held mobile phone while driving. However very little enforcement, so little effect.	Fine up to 10,000ft.
Israel	Prohibits the use of hand-held mobile phone while driving.	
India (New Delhi only)	From 1 July 2001, the use of any mobile phones when driving, whether hand-held or hands-free, has been prohibited.	
Italy	Prohibits the use of hand-held mobile phone while driving.	Fine of 66,600-242,000 Lira.
Isle of Man	Prohibits the use of hand-held mobile phone while driving – since 1 July 2000.	Fine of up to £1,000 + 3 penalty points.
Japan	Since November 1st 1999 the use of a portable hand-held telephone device by a driver is prohibited, unless the vehicle is stationary or it is an emergency.	Penalty of up to 3 months in prison or fines of up to 50,000 yen.
Jersey	Prohibits the use of hand-held mobile phone while driving – from February 1998.	Fine of up to £500.
Jordan	Prohibits the use of hand-held mobile phone while driving – from October 2001 .	
Malaysia	Prohibits the use of hand-held mobile phone while driving – since 1998. Compliance rate is estimated at 85%.	Fines of up to RM300.00 and penalty points.

Legislative Approaches to Preventing Drivers Using Mobile Phones

Country or State	Legislation	Penalty (Where known)
Norway	Prohibits the use of hand-held mobile phone while driving.	Fine of 5000 NOK.
Philippines	Prohibits the use of hand-held mobile phone while driving.	
Poland	Prohibits the use of hand held mobile phone while driving.	Fines of up to 5000 Zloty.
Portugal	Prohibits the use of a hand-held or hands-free mobile phone when driving.	Fines of up to 5000 Esc.
Romania	Prohibits the use of hand-held mobile phone while driving.	
Singapore	Prohibits the use of hand-held mobile phone while driving.	
Slovak Republic	Prohibits the use of hand-held mobile phone while driving.	Fines of 300 SKr.
Slovenia	Prohibits the use of hand-held mobile phone while driving.	Fine of 105 DM.
South Africa	Prohibits the use of hand-held mobile phone while driving.	
South Korea	Prohibits the use of hand-held mobile phone while driving – from July 2001.	Fine of US\$47 + 15 points
Spain	Prohibits the use of hand-held mobile phone while driving.	Fine of up to 100,000 Pts.
Switzerland	Prohibits the use of hand-held mobile phone while driving.	Fine of 100 SF.
Taiwan	Prohibits the use of hand-held mobile phone while driving.	
Thailand	Prohibits the use of hand-held mobile phone while driving.	
Turkey	Prohibits the use of hand-held mobile phone while driving.	
USA		
Arizona	A school bus driver shall not wear an audio headset or earphones or use a cellular telephone whenever the school bus is in motion.	
California	Rental cars with cellular telephone equipment must include written instructions concerning its safe use.	\$100 for first violation rising to \$250 for third and subsequent violations within same year.
Florida	Cellular phone use is permitted as long as it provides sound through one ear and allows surrounding sound to be heard with the other ear.	\$35 for each violation.
Illinois	A single-sided headset or earpiece is permitted with a mobile phone while driving.	No penalty
Massachusetts	No person shall operate a moving school bus while using a mobile telephone. Cellular phone use is permitted as long as it does not interfere with the operation of the vehicle and one hand remains on the steering wheel at all times.	\$35 for first violation rising to \$150 for third and subsequent violations.
New York	Drivers prohibited from talking on hand-held mobile phone while operating a motor vehicle. At least 13 municipalities (e.g. Santa Fe) have used City ordinances to ban the use of mobile phones while driving within their City limits.	Fine of up to \$100.

Legislative Approaches to Preventing Drivers Using Mobile Phones

Effectiveness of Legislation

The only country contacted which was able to provide statistical evidence on the effectiveness of their Mobile Phone Use While Driving Legislation was Japan.

Effectiveness of Japanese Legislation⁵¹

	12 months before enforcement Nov 1998 to Oct 1999	12 months after enforcement Nov 1999 to Oct 2000	% change
Number of traffic accidents with drivers mobile phone use.	2,830	1,351	-52.3%
Injured persons from traffic accidents with drivers mobile phone use.	4,118	1,925	-53.3%
Fatalities from traffic accidents with drivers mobile phone use.	25	20	-20.0%

These figures show a significant change in the number of accidents and casualties in collisions involving mobile phone use after the introduction of the legislation prohibiting the use of hand-held phones while driving.

Countries Considering Legislative Action

France	<p>The French Highway Code requires that drivers be in control of their vehicle at all times. Prosecution may occur if a driver has an accident while using a mobile phone.</p> <p>The Court of Appeal confirmed in October 2001 that phoning during driving is in contravention of the provisions of article R 412-6 of the French traffic rules which stipulates that "every driver should hold themselves constantly in a state and in a position to execute comfortably and immediately all the operations which fall to them".</p> <p>The driver who uses a mobile phone while driving may be fined 35 Euros; this corresponds to a second class infringement. However, a driver committing this offence can be presented in front of the police court, where the fine may be up to 150-Euro.</p> <p>The public prosecutors of Bobigny and Marseilles asked that offenders are systematically charged and presented in front of the police court.</p> <p>French road safety organisations are campaigning for the introduction of specific legislation on mobile phone use while driving.</p>	
Finland	<p>Finland is debating proposed legislation which if passed could be enacted by the middle of 2002.</p>	

Legislative Approaches to Preventing Drivers Using Mobile Phones

<p>New Zealand</p>	<p>Submissions to a consultation paper on mobile phone use while driving are being analysed at the moment. Current legislation section 7. (Drivers not to be reckless or dangerous) and section 8 (Drivers not to be careless or inconsiderate) of the Land Transport Act 1998, has been used to prosecute drivers.</p> <p>In addition, if a driver on work-related business has a crash because of mobile phone use, both the driver and the employer may be liable for prosecution under the Health and Safety in Employment Act 1992 (sections 15, 16 and 19).</p>	
<p>USA</p>	<p>Since 1995, at least 45 States in the USA have proposed Bills concerning the use of cellular phones in automobiles,⁵² some of which were intended to prohibit the use of all mobile phones while driving, some were restricted to hand-held phones and some were concerned with requiring the use of mobile phones to be recorded on accident report forms or with increasing the penalties imposed on drivers who are involved in crashes when using a mobile phone.</p> <p>In 2001, approximately 140 bills regarding mobile phones and driving were proposed in 43 States, the District of Columbia and Puerto Rico. Many failed to be passed as law and others are still making their way through the legislative process.</p>	

Conclusion: Mobile Phones and Driving Legislation

At least 35 countries, plus many States or Districts within countries, have introduced legislation to prohibit drivers from using mobile phones while driving, and several more countries are considering such legislation. In the vast majority of cases, the legislation applies only to the use of hand-held mobile phones, although in two cases, using hands-free mobile phones while driving is also banned.

Only Japan has published an evaluation of the effect of its legislation on accidents involving drivers using mobile phones. Its results show a substantial reduction in accidents involving mobile phone use (-52%), in the number of people injured in such accidents (-53%) and the number of people killed in mobile phone accidents (-20%).

In the UK, there is no specific offence of using a mobile phone while driving. However, drivers doing so may face a number of careless or dangerous driving charges. The Highway Code states that drivers MUST be in proper control of their vehicle at all times. It advises drivers never to use a hand-held mobile phone when driving, and to avoid using hands-free equipment.

None of the several attempts to introduce legislation to prohibit the use of hand-held mobile phones have been successful. The British Government believes the Police already have sufficient powers to deal with drivers using mobile phones, but are keeping the need for new legislation under review.

Public opinion surveys in Great Britain indicate broad acceptance of the need for legislation. The RAC 2002 Motoring Survey⁵³ found that 42% of drivers felt that the Government's main priority to reduce accidents should be to 'stop the use of mobile phones'. However, only 5% thought they were the main cause of accidents or that they should stop using their own phones while driving.

A survey⁵⁴ of a small sample of police officers of different ranks in Scotland and England, magistrates, CPS prosecutors, Procurators Fiscal and Crown Court judges showed support for making the use of mobile phones whilst driving a potential Fixed Penalty Notice offence, with a suggested fine of up to £1,000.

Employers' Policies on Staff Use of Mobile Phones While Driving

Many drivers who use a mobile phone while driving do so for work purposes. Some employers provide mobile phones for certain staff and others reimburse staff for work related calls made on their private mobile phones.

Health and Safety Legislation in the UK places legal duties on employers to provide their employees with a safe working environment and to take all reasonably practicable measures to ensure the safety of their staff and of others that they come into contact with while working. This applies to employees driving or riding on the road in the course of their employment.⁵⁵

As part of their overall management of work related road safety, employers should, therefore, be providing their employees with clear guidance on the use of mobile phones while driving.

A survey was conducted to assess the policies of a small sample of companies.

Firstly, fifty-four large companies who were thought likely to have mobile phone policies were contacted for copies of their policies. Seventeen companies replied.

Secondly, a random selection of 100 businesses found in Thomson's Directory were contacted by letter and asked if they had a mobile phone policy and if so what it was. This received a tiny response – only two replied.

Large Companies

Fifty-four large companies were contacted and seventeen responded. Fourteen of those who responded had policies on restricting the use of mobile phones while driving, and three did not. Those companies that had policies were aware of the risks of staff being involved in an accident when using a mobile phone while driving and of the legal consequences which could ensue both for the member of staff and the company.

The policies varied in detail but there were strong similarities overall. Nearly all of them prohibited the use of hand-held mobile phones and some required mobile phones to be switched to a message service and for messages to be picked up and responded to only when the vehicle was safely parked. One company's policy prohibited a list of activities that it considered to be distracting when driving.

Company Policy

- | Company | Policy |
|---------|---|
| 1 | No definitive policy statement but staff are issued with mobile phones and have hands-free kits installed in their vehicles as standard. The use of a mobile without hands-free is prohibited. Even with a hands-free kit, use of the phone while travelling should be restricted to the receipt of messages and brief conversations. Company lorry drivers are prohibited from the use of mobile phones; any infringement by them is gross misconduct. |
| 2 | Company car drivers are issued with a pack of information, including the DTLR Leaflet "Mobile Phones and Driving" and a company booklet which states, "Do not use a hand-held telephone or microphone while driving. Stop at a safe place first." |
| 3 | This company prohibits the use of hand-held phones while driving on company business. They can only be used when safely parked. Policy recommendation that Line Managers provide hands-free kits for employees who regularly use a mobile phone at work. However, these should be used with the greatest of care and automated pre-programmed dialling should be used. Mobile phone conversations should only take place when traffic conditions make it safe to do so. If it is not safe, calls should be ignored or terminated. It is preferable for calls to be taken by the answer phone function and replied to when the driver has reached their destination. |
| 4 | This policy covers and prohibits a list of driver distractions including the use of hand-held mobile phones or microphones. Use of hands-free equipment is confined to emergency calls and incoming calls of short duration. Outgoing calls must only be made when the vehicle is parked. |
| 5 | Drivers are asked to use a landline where possible and not to use a hand-held phone while driving. When using a hands-free kit they are asked to avoid long or distracting calls. They should tell any caller that they are driving, keep the call short and if necessary find a safe place to park for the duration of the conversation. |

Employers' Policies on Staff Use of Mobile Phones While Driving

Company Policy

- 6** Drivers are prohibited from using hand-held mobile phones. The phone should be switched off and the answer facility used. Hands-free kits should be used only for incoming calls and where they will not distract the driver from the driving task. Calls should be kept brief and where necessary the call terminated and only reconnected when the vehicle is safely parked.
- 7** This company's policy states that mobile phones must be switched off while the vehicle is in motion. Breach of this policy attracts disciplinary action.
- 8** Drivers are advised to consider switching off mobile phones while the vehicle is in motion and only make or receive calls when the vehicle is safely parked. Staff are supplied with a correctly fitted hands-free kit and can receive incoming calls. But outgoing calls are prohibited, unless the vehicle is safely parked. Use of a mobile phone in an emergency where the driver's personal safety is compromised is allowed, but only when the driver does not cause risk to themselves or others.
- 9** This policy strongly discourages the use of mobile phones while driving. The use of hand held phones are prohibited while hands free kits should only be used to receive short message calls. Drivers should only make a call or check voice mail when the vehicle is parked.
- 10** Staff are prohibited from making or taking mobile phone calls while driving. Calls should be diverted to the message centre while the vehicle is in motion and the driver should find a safe place to park before making or responding to a call.
- 11** This company prohibits the use of mobile phones while driving. Phones should be switched off and any missed calls responded to when the driver reaches their destination. This applies to both hand-held and hands-free telephones.

- 12** The use of hand-held phones by drivers is prohibited and hands free should only be used to take a message on incoming calls. The vehicle should be safely parked if a discussion is required.
- 13** The policy prohibits the use of mobile phones of all types by drivers who are company employees, or are driving a company vehicle. If there is no one in the car with the driver who can take telephone calls then the phone should be set to message taking or standby and any messages responded to at the next rest break.
- 14** Company mobile phones are provided with a hands-free facility but this must only be used to receive incoming calls. It is prohibited to pick up the handset. Calls should only be taken where traffic conditions are favourable and drivers should not make notes or refer to documents while driving.

Companies with no policy

Of the three companies who responded to say that they did not have a policy on their staff using mobile phones while driving, one gave no reason for this and one said that they did not provide company cars or mobile phones for their staff and so had no need of a policy. The third respondent said that they had a working party examining all work travel issues.

Random Survey

One hundred businesses selected at random from the Thomson Directory were contacted by letter asking if they had a policy on mobile phone use while driving, and if so, what the policy was. Only two responses were received.

One company provided its staff with both vehicles and mobile phones for business use and said its policy was that mobile phones should be used while driving, both hand-held or hands-free were permissible – "whatever was necessary to do the job".

The second company did not provide company vehicles or mobile phones to their staff and so felt no need to have a policy statement on mobile phone use while driving.

Employers' Policies on Staff Use of Mobile Phones While Driving

Conclusion: Company Policies

The large companies who responded had, for the most part, policies to ban or restrict the use of mobile phones when driving for work purposes. They were well aware of their legal responsibilities, and of the risks created by using a mobile phone while driving.

Most of these companies restrict the use of hand-held mobile phones while driving. However, many provide hands-free kits to enable their staff to use phones while driving under limited conditions. This suggests that while employers recognise there is some risk in using a hands-free phone while driving, they believe the risks can be managed in some circumstances. Or they may be balancing the risk against the business needs of the company and concluding that the risk of using hands-free phones is not sufficiently large to completely ban their use when driving.

However, some large companies prohibit the use of any mobile phone while driving for work purposes, and require staff to use their phones only when parked in a safe place.

Although the two small firms who responded to the random survey cannot be regarded as representative, they both had little interest in this matter. One regarded the use of mobile phones while driving as important for business efficiency and was unaware of or chose to ignore, the risks involved.

The growth in the use of mobile phones has been phenomenal, and extremely rapid. Mobile phones provide a wide range of important social and work benefits, and, in some circumstances, are an important safety feature, allowing users to summon help or report accidents.

However, using a mobile phone while driving creates a significant accident risk. Many studies, using a variety of research techniques including simulated driving tasks, advanced driving simulators, real driving on off-road circuits and driving on real roads, provide evidence that using a mobile phone while driving impairs driving performance in many ways.

Lateral Position

The majority of research indicates that drivers' maintenance of a constant appropriate lane position is impaired when using a mobile phone.

Maintenance of Speed

The majority of research indicates that drivers find it more difficult to maintain an appropriate and predictable speed while using a mobile phone which sometimes leads to reducing their speed and sometimes to increasing it.

Reaction Times

The evidence indicates that drivers take longer to detect and respond to changes, such as a vehicle in front decelerating, which leads to slower braking times.

Following Distances

When using a mobile phone, drivers are more likely to reduce their following distance from the vehicle in front. When this effect is coupled with slower reaction times, the risk of a collision is even greater.

Gap Acceptance

Using a mobile phone also impairs drivers' judgement of acceptable gaps in traffic streams, leading to drivers entering or accepting gaps that are not large enough.

Mental Workload

Most of the studies show that using a mobile phone while driving increases drivers' mental workload, often resulting in higher stress and frustration levels. There is evidence that drivers have to switch their attention between driving and using the phone, sometimes giving more attention to the phone call than to the road situation.

Situational Awareness

Using a mobile phone reduces drivers' awareness of what is happening around them on the road. Some evidence indicates that when using a phone drivers have little awareness of whether or not there is other traffic around them and what it is doing.

Age and Driving Experience

There is evidence that undertaking secondary tasks while driving, such as using a mobile phone, causes greater problems for inexperienced drivers (who already have a higher accident risk) than experienced ones. There is also evidence that older drivers find it more difficult to conduct two tasks concurrently, and their response times are particularly impaired.

Accident Risk

Although few studies have been conducted to assess the increase in accident risk caused by using a mobile phone when driving, those that have confirm that the impairment created by using a mobile phone does result in an increased likelihood of being involved in an accident.

However, the lack of a system to record whether or not drivers who are involved in an accident have a mobile phone in the vehicle and if it was being used, means that it is difficult to calculate the increased risk and to estimate the level of accidents caused, or contributed to, by drivers who are using mobile phones.

Conclusion

There is currently no facility in the STATS19 form completed by police officers to record mobile phone use. However, during the quinquennial review of the STATS19 form several organisations, including RoSPA, have recommended that the form be amended to record mobile phone use.

Where crash investigators are involved in reconstructing fatal and sometimes serious accidents they use witness evidence, reconstructive evidence and data from mobile phone bills to check whether a mobile phone was in use during or immediately prior to the accident.

The main USA review of mobile phones and driving has also recommended that data is collected on a national scale, as the first, most important step to accurately evaluating the risk associated with mobile phone use.

Mobile Phones and Driving Legislation

At least 35 countries, plus many States or Districts within countries, have introduced legislation to prohibit drivers from using mobile phones while driving, and several more countries are considering such legislation. In the vast majority of cases, the legislation applies only to the use of hand-held mobile phones, although in two cases, using hands-free mobile phones while driving is also banned.

Only Japan has published an evaluation of the effect of its legislation on accidents involving drivers using mobile phones. Its results show a substantial reduction in accidents involving mobile phone use (-52%), in the number of people injured in such accidents (-53%) and the number of people killed in mobile phone accidents (-20%).

Public opinion surveys in Great Britain indicate broad acceptance of the need for legislation. The RAC 2002 Motoring Survey found that 42% of drivers felt that the Government's main priority to reduce accidents should be to 'stop the use of mobile phones'. However, only 5% felt mobile phones were the main cause of accidents.

In the UK, there is no specific offence of using a mobile phone while driving. However, drivers doing so may face a number of careless or dangerous driving charges. The Highway Code states that drivers MUST be in proper control of their vehicle at all times. It advises drivers never to use a hand-held mobile phone when driving, and to avoid using hands-free equipment. Several attempts have been made to introduce legislation in

the UK to prohibit the use of hand-held mobile phones, but none have been passed as law. The Government's view is that existing legislation is sufficient, although it is keeping the need for new legislation under review.

Hand-held and Hands-free Phones

Most of the studies in this review have involved the use of hands-free phones. The evidence clearly shows that manually dialling telephone numbers, especially long numbers, is a significant mental and physical distraction. Hands-free phones reduce the physical distraction, and speed dial facilities or voice-activated systems reduce time required to dial numbers. However, even these systems still cause substantial cognitive distraction, resulting in significant driver impairment.

Other Distractions

The evidence indicates that talking to a passenger does not cause the same level of distraction as using a mobile phone, perhaps because of the visual communication clues that accompany a face-to-face conversation and because a passenger can see the traffic situation and adapt the conversation accordingly. When using a mobile phone has been compared with tuning a radio or changing a tape cassette, the results usually show that the mobile phone causes more problems. However, tuning the radio has also been found to distract drivers and impair their performance.

An area of increasing concern is the growth in the number and complexity of electronic devices being fitted in cars: navigation devices, internet computers, fax machines, even small televisions. While some devices, such as navigation equipment, may aid safe driving, most of these items are unnecessary additions and should not be used while driving. But, just as drivers use mobile phones while driving, many are likely to use other devices as they drive. The distraction and accident risks seem likely to be similar to those created by mobile phones.

Local Authority and Police Surveys

There was a low response to this questionnaire survey. The results show that there is very little hard data on the number of accidents or injuries involving someone using a mobile phone while driving, riding or walking on the road. The lack of data is largely due to the fact that the STATS19 form does not record the presence or use of a mobile phone.

Conclusion

The lack of this data may be one reason for the low response to the questionnaire survey.

The questionnaire responses received indicate that some local education and publicity initiatives are being conducted, usually by Local Authorities and Police working together, and sometimes in co-operation with other groups. Those respondents who were not conducting education initiatives were deterred from doing so by the lack of accident data.

Company Policies on Staff Using Mobile Phones While Driving for Work

A small survey of large companies indicates that many have policies which ban or restrict the use of mobile phones while driving. They are well aware of their legal health and safety responsibilities, and of the risks created by using a mobile phone while driving. Most restrict the use of hand-held mobile phones while driving, but provide hands-free kits to enable their staff to use phones while driving, although only in limited circumstances. This suggests that the risks caused by the cognitive distraction of using a hands-free mobile phone while driving are recognised by employers, but they believe the risks can be safely managed in some driving situations. Smaller firms seem to have less interest in this matter, and may be more concerned with financial pressures and regard the use of mobile phones as purely a business consideration.

Education

Government (both Central and Local), Police and other agencies should continue to conduct education and publicity campaigns to raise awareness of the dangers of using a mobile phone, whether hand-held or hands-free, while driving.

Data

The lack of accident data is preventing an accurate assessment of the number of people killed or injured in accidents involving the use of a mobile phone by a driver. Therefore, methods to record whether drivers involved in accidents had a mobile phone with them, and whether it was being used at the time or shortly preceding the accident, should be developed and implemented.

The STATS19 Form should be amended to record data about mobile phones, although it will often not be easy for the Police to identify whether a driver was using a phone, as any who were doing so are unlikely to readily admit to it.

Specific research studies should be conducted to assess and quantify the involvement of mobile phones in road accidents in the UK.

The surveys to record mobile phone use by drivers recently commissioned by the Government should be continued on a regular basis.

Legislation

The effect of legislation in other countries to prohibit or restrict the use of mobile phones whilst driving should be analysed.

A wide-ranging survey of Police Officers, of all ranks, should be conducted to assess their experience and views about the extent of their existing powers to deal with drivers who use a mobile phone while driving. This should also canvass their views about the need for more specific legislation to prohibit the use of mobile phones by drivers.

Employers

Guidance for employers to raise awareness of the dangers of their staff using a mobile phone, whether hand-held or hands-free, while driving for work should be developed.

This should include an explanation of the employer's legal responsibilities and potential liabilities, and advice on developing and implementing appropriate policies.

As part of their Management of Occupational Road Risk, employers should adopt, implement and monitor clear policies to ensure that their staff do not use mobile phones, hand-held or hands-free, while driving for work purposes. Where employers provide mobile phones, or re-imburse staff for work calls made on private mobile phones, they should ensure the phones are able to record messages, and that employees only use the phone when parked in a safe place.

Where employers provide mobile phones for staff to use for work purposes they should seek to develop ways of checking whether drivers are using mobiles when driving, and awareness of the policy among their staff.

When an employee who has a mobile phone provided by the employer is involved in a road accident while driving for work, the employer should check the phone records to ascertain whether the driver was using the phone at the time.

Other Distractions

A review to quantify and qualify the relative levels of distraction caused by the wide range of activities that drivers do while they are driving, including mundane activities such as eating and drinking as well as using in-vehicle technology for work purposes. This should seek to establish:

- the range of non-driving tasks that drivers undertake while driving
- the reasons for these activities
- the relative levels of distraction caused by different activities
- drivers' perceptions of risk in relation to them
- the actual relationship between the identified activities and accident risk.

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A Appendix A

Mobile Phones and Driving

As part of our DTLR grant funded work programme, RoSPA is conducting research into “The Effects of Using Mobile Phones While Driving”. The aim is to review evidence about the level of distraction caused by using a mobile phone while driving, and the consequent effect this has on accident risk.

As you know, it is not possible to gather information about mobile phone use from normal road accident (STATS19) data. Therefore, we are seeking information from a number of other sources:

- an extensive review of published literature on this topic
- a review of press reports
- a short questionnaire to Local Authority Road Safety Departments, Police Forces and other organisations, seeking details of road accidents where a driver or other road user was using a mobile phone.

We are also interested in education and enforcement campaigns that have been conducted, including data on the number of drivers stopped, cautioned or fined for using a mobile phone.

It would be extremely helpful if you were able to complete as much of this short questionnaire as possible and return it by Friday 28 September 2001 to:

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RoSPA
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353 Bristol Road
Birmingham B5 7ST

Tel: 0121 248 2037
Fax: 0121 248 2001

lmallsopp@rospa.com

Appendix A

Contact Details

Name:

Organisation:

Address:.....

.....

.....

Email: Tel. No:

Accident and Injury Information

	Mobile Phone used by				
	Driver	Motor Cyclist	Pedal Cyclist	Pedestrian	Total
Number of fatal accidents in which mobile phone use has been implicated					
Number of serious accidents in which mobile phone use has been implicated					
Number of slight accidents in which mobile phone use has been implicated					

Number and Type of injuries caused (e.g. 1 fatal, 2 slight)

.....

In what way is the use, or suspected use of a mobile phone recorded? (e.g. witness evidence, result of reconstruction)

.....

.....

How is it investigated?

.....

.....

Appendix A

Education and Enforcement Campaigns

(Please complete a questionnaire for each campaign)

Campaign Name (if any)

When did the campaign take place? From **To**

Please give details of any partners involved in the campaign

.....

Did the campaign target a particular geographical area? YES NO

If YES please give details

.....

Did the campaign target a sector of population? YES NO

If YES please give details

.....

.....

Did the Campaign Include? (please circle correct answer)

Enforcement only **Education only** **Both**

Enforcement

	Mobile Phone used by				
	Driver	Motor Cyclist	Pedal Cyclist	Pedestrian	Total
Number of road users stopped for using a mobile phone					
Number of road users cautioned for using a mobile phone					
Number of road users sent for prosecution for using a mobile phone					
Number of road users given a fixed penalty for using a mobile phone					

Appendix A

Education

Campaign Name (if any)

Campaign Materials

What materials were used? (please include copies of news reports, campaign materials etc. where available)

.....

.....

.....

.....

How were the education materials distributed?

.....

.....

.....

.....

Who were the target groups?

.....

.....

.....

.....

Was the Campaign Evaluated?

YES

NO

If YES please give details of results

.....

.....

.....

.....

Notes





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