

Cell Phones and Driving

The rapid expansion in the use of cell phones and other mobile technology has led to concerns that their use in motor vehicles constitutes a growing highway safety threat. This information brief looks at issues surrounding this 21st-century controversy and three ways of addressing them—public education, technological improvements, and legislation.

Background

The development of mobile telephone technology goes back at least as far as the 1940s. The basic technology for today's cellular phone systems was developed in the United States in the 1970s, but the first commercial system was inaugurated in Japan in 1979. Full commercial use in the United States began in 1983.

Today an estimated 80 million persons own cellular telephones, and surveys indicate that 85 percent of these owners use them while driving.¹ The National Highway Traffic Safety Administration (NHTSA) estimates that at any given time during daylight hours 500,000 passenger vehicle drivers, or 3 percent of all such drivers, are using a cell phone.² The trucking industry estimates that more than 90 percent of over-the-road truckers use cell phones.³

The cell phone has expanded beyond primarily business uses to become a personal-use appliance.⁴ NHTSA reports:

It was inevitable that the reduced size, reduced cost and increased functionality of the cellular telephone would find its use by drivers in vehicles increasing dramatically. Indeed, time spent commuting, caught up in traffic and just plain traveling, could now be productive. In addition, the cellular telephone brought

with it a sense of security for those concerned about traveling alone in unfamiliar areas or concerned about vehicle breakdown.⁵

New automotive technology, such as onboard computers and direction finders that use the global positioning system, offer other new ways in which alternative information sources will compete with the driving environment for the driver’s attention. Clearly “driver distraction,” long a threat to safe driving, is entering a new stage. One of the results has been debate about whether the most ubiquitous and visible signs of this phenomenon, cell phone use while driving, represents a highway safety hazard.

How Serious Is the Problem?

Driver inattention has been recognized as a major contributor to highway crashes. In Minnesota the Department of Public Safety’s accident records database shows that in 2000 “driver inattention/distraction” was a contributing factor in 24 percent of injury crashes and 23 percent of damage crashes, making it by far the most frequently cited factor.⁶

“Driver talking on cell phone/CB” in the department’s annual compilation of crash statistics was cited in 2000 as a contributing factor in 110 damage-only crashes, 68 personal injury crashes, and two fatal crashes. These crashes represent only a tiny fraction of all such crashes in Minnesota that year—less than 0.4 percent of all crashes in each category. These percentages, while still quite low, have been slowly rising since the department began reporting this category of crash factors.



Year	Total fatal crashes	Pct. with cell phone/CB use as contributing factor	Total injury crashes	Pct. with cell phone/CB use as contributing factor	Total damage crashes	Pct. with cell phone/CB use as contributing factor
2000	557	0.35%	30,830	0.220%	72,204	0.150%
1999	567	0.18%	30,279	0.170%	65,967	0.130%
1998	575	0.000%	30,571	0.170%	61,780	0.120%
1997	528	0.000%	31,290	0.140%	66,808	0.100%
1996	503	0.6%	33,283	0.120%	71,546	0.070%
1995	515	0.000%	31,611	0.100%	63,896	0.100%

The damage-crash column is probably the most significant because it includes the largest number of crashes. The trend clearly shows a slight but steady increase in the number of crashes where cell phone use is a factor.

Most states are behind Minnesota in reporting cell phone involvement in crashes, so national figures are difficult to come by. The NHTSA report on wireless communications noted that data on the relationship between cell phone use and crashes was still limited because only Minnesota

and Oklahoma have been gathering this information for a significant length of time. Nonetheless, it came to a tentative conclusion on the question of whether cell phone use while driving increases the risk of a crash:

The available evidence is adequate to support the conclusion that the answer to this question is “Yes,” at least in isolated cases. The conclusion appears reasonably plausible, particularly in light of the trends in the data, the growing complexity of the technology, and the inherent distraction potential of using such devices from a moving vehicle. What remains unknown is the relative contribution of cellular phone use, per se, and characteristics of the involved drivers (e.g., less capacity to time-share attention between cellular telephone use and driving tasks, greater propensity for risk taking, fatigue).⁷

One study, by University of South Florida’s Center for Urban Transportation Research, summarized research on the issue as finding that people who used a mobile phone while driving “were anywhere from 34 percent to 300 percent more likely to have an accident.”⁸ The single most widely cited scientific research on this subject is a 1997 article by Donald A. Redelmeier and Robert J. Tibshirani in the *New England Journal of Medicine*, based on a research study conducted in Toronto in 1994-95. This study found that

... using a cellular telephone was associated with a risk of having a motor vehicle collision that was about four times as high as that among the same drivers when they were not using their cellular telephones. This relative risk is similar to the hazard associated with driving with a blood-alcohol level at the legal limit. We also found that cellular telephones have benefits, such as allowing drivers to make emergency calls quickly.⁹

While the “similar to DWI risk” aspect of this article is important and has been quoted frequently, it should be noted that the crashes studied did not all take place while the cellular phone user was actually on the phone. In the study any collision that took place within ten minutes after a cellular call was considered to be “cell phone related.” Thus the researchers were careful to state that cell phone use is “associated with” a relatively high crash risk. They didn’t claim that cell phone use caused all the “cell phone related” crashes.

This distinction highlights the gap in knowledge about the relationship between cell phone use and crashes. Cell phone use has been found to be “associated” with crashes, but a cause and effect relationship has been harder to establish. The risk appears to exist, but the nature and extent of the risk are still under study. As the NHTSA report points out, “the data reviewed here are inconclusive as to the magnitude of the problem,” but it goes on to say, “the lack of data cannot be interpreted to mean that there is no problem of sufficient magnitude to warrant action.”¹⁰

Some research has concentrated on cell phone use within the overall context of distracted driving. A 2001 study by the University of North Carolina Highway Safety Research Center that looked at five years of data on crashes where driver distraction was a contributing factor found that by far the largest distraction was an “outside person, object, or event,” followed by radio or sound system tuning and another occupant in the vehicle. Cell phone use was identified as the

distraction in only 1.5 percent of these crashes.¹¹ On the other hand, some research suggests that cell phone use poses greater dangers than some other types of distractions. A study at the University of Utah has found that “subjects involved in phone conversations showed significantly slower responses to traffic signals and missed signals entirely much more often than subjects who were listening to the radio or a book on tape.”¹²

There appears to be a general consensus that cell phone use while driving is a cause for concern, but no one can say with certainty how serious it is. The concern seems to arise more from the explosive growth in mobile telephone use and the dangers inherent in any distraction while driving than from any firm statistics to document the extent of the problem.

There is agreement that cell phone involvement in traffic crashes is likely to grow with the increasing level of cell phone use in society generally and in vehicles in particular. A number of countermeasures have been proposed, including increased public education on safe use of cell phones while driving, advances in cell phone technology, and legislation to address the problem.

Public Education

NHTSA has already taken the first major step in attempting to influence public opinion and behavior on cell phone use while driving. In July 2000, it issued an advisory to motorists against using cell phones in vehicles. An NHTSA spokesperson said, “NHTSA’s consumer information will now include advice that growing evidence suggests using a wireless phone or other electronic device while driving can be distracting, and drivers should not talk on the phone or use other devices while their vehicles are in motion.”¹³

NHTSA’s widely cited report on the safety implications of wireless devices in vehicles recommends developing and distributing education materials on the hazards of driving while distracted by cell phones, and the teaching of “cellular telephone etiquette” to encourage drivers to refuse or stop a conversation when conditions demand it. It also recommends teaching drivers to recognize signs of “attentional impairment” in other drivers as an element of defensive driving.¹⁴ The National Safety Council has joined in this effort, with a recommendation that “When on the road, drivers [should] concentrate on safe and defensive driving and not on making or receiving phone calls, delivery of faxes, using computers, navigation systems, or other distracting influences.”¹⁵

The cell phone industry is also becoming involved in public education, possibly seeing it as one alternative to restrictive legislation. The message, however, is not always consistent. In its owner’s manuals, the cell phone maker Nokia advises owners never to talk on their cell phones while driving, while an AT&T spokesperson says, “We’re not suggesting people never make phone calls [in their cars], but they need to use common sense when they’re in a car.”¹⁶

The history of public education on highway safety issues contains both successes, such as long-term campaigns to combat drunk driving and promote seat belt use, and less effective efforts such as that on behalf of the 55 m.p.h. speed limit. The most effective campaigns have had simple and consistent messages that make reasonable requests of motorists. Messages to the public on cell phone use have wavered on whether nonemergency phone use is ever safe, and on

whether hands-free models are inherently safer than hand-held units. As long as these issues and other issues remain unresolved, public education on cell phone use is likely to be of limited effectiveness.

Technological Improvements

A variety of hands-free options are now widely available to cell phone users:

All but two of the 40-some phones offered by AT&T Wireless now come with free headsets. VoiceStream issues headsets with every phone it sells to customers. By 2002, Verizon will require all its phone suppliers to provide it with phones that include voice-activated dialing and headset jacks. All new Sprint phones include headset jacks and an increasing number have built-in speakerphones.¹⁷

Of the available options, headsets tend to be more popular than speakerphones built into a car, mainly because of lower cost and portability. Some headsets hook over the ear, while others slip over the head. One version combines telephone and headset into a single unit. The speed dialing feature reduces one distraction of cell phone use, that of dialing the number.

All these features reduce one potential drawback of cell phones in vehicles by freeing both hands for driving instead of using one for driving and the other for holding the phone. There is growing evidence, however, that this represents at best only a minor improvement with respect to highway safety.

The widely cited *New England Journal of Medicine* study by Redelmeier and Tibshirani reported:

We observed no safety advantage to hands-free as compared to hand-held telephones. This finding was not explained by imbalances in the subjects' age, education, socioeconomic status, or other demographic characteristics. Nor can it be explained by suggesting that those with units that leave the hands free do more driving. One possibility is that motor vehicle collisions result from a driver's limitations with regard to attention rather than dexterity.

This finding was supported by a recent study by researchers at the University of Utah:

The phone conversation itself resulted in significant slowing of the response to simulated traffic signals as well as an increase in the likelihood of missing these signals. Moreover, the fact that hand-held and hands-free cell phones resulted in equivalent dual-task deficits indicates that the interference was not due to peripheral factors such as holding the phone while conversing.¹⁸

Researchers at the University of South Florida reported in 1999 that "research comparisons of hand-held and hands-free phones show that there is little difference in risk during the act of conversation due to the continued presence of a mental distraction."¹⁹

The thrust of this research is that the greatest highway safety threat from cell phones is the way that they distract the driver's attention away from the driving task. This threat remains largely the same whether the phone being used is hand-held or hands-free.

Hands-free models can serve some useful safety purpose by freeing both hands for driving, and models that make dialing easier can reduce the safety hazard still further. However, these advantages do not really address the real safety problem inherent in using cell phones while driving, which is the conversation itself.

Legislation

All states, including Minnesota, have long had laws on their books prohibiting careless, inattentive, or distracted driving, but few of these laws have been revised to reflect the growing use of in-vehicle technology. Minnesota's law reads:

Any person who operates or halts any vehicle upon any street or highway carelessly or heedlessly in disregard of the rights of others, or in a manner that endangers or is likely to endanger any property or any person, including the driver or passengers of the vehicle, is guilty of a misdemeanor.²⁰

This careless-driving language can cover a variety of extraneous tasks that distract from concentration on driving, from cell phone use to reading a newspaper to tuning a car radio. But none of those actions is illegal *per se* while driving. A person can be cited for performing them only after their dangerous character has been established, such as by a crash or by obviously erratic driving patterns.

Most states follow this pattern, and up until recently there were only a few minor examples of states addressing the cell phone issue in legislation. That did not mean, however, that the issue was being ignored in legislatures. As early as 1999 bills were introduced in at least 15 states to prohibit or restrict cell phone use while driving. Some were quite narrow, such as a Virginia proposal aimed only at school buses, but some would have banned all cell phone use by drivers.

In the 1990s a few small localities banned all cellular calls while driving, and in 2000 Suffolk County in suburban New York became the largest locality to regulate cell phone use when it banned use of hand-held phones by drivers.

By 2001, legislation to restrict cell phone use had been introduced in 40 states, and a bill in Congress would have required all states to prohibit calls by drivers on hand-held models. Various states have passed laws to study and gather information on cell phone use while driving, and others passed restrictions on cell phones in school buses (Massachusetts) and by persons with learner's permits (New Jersey). Taking a different tack, Oklahoma and Oregon prohibited local jurisdictions from passing cell phone restrictions.²¹

In June 2001, the New York Legislature became the first to impose a statewide prohibition against using hand-held phones while driving, while granting exemptions not only for hands-free phones but also for emergency uses of hand-held models. The law took effect on November 1,

2001, but for the first month violators received only a warning. On December 1 violators became subject to a fine of up to \$100. A recent article in the *New York Times* described the New York law as being “widely ignored.”²² A comparable bill passed both houses of the Rhode Island Legislature but was vetoed by the governor.

The legislation that has been enacted so far to deal with the problem probably does not address it directly because it distinguishes between conversations on hand-held and hands-free phones, while research indicates that in terms of driver distraction there is little difference between the two. For this reason laws of this type are likely to be of only limited effect. In fact, if such legislation has the effect of sending motorists a message that the only danger posed by cell phones comes from hand-held models, it may end up endangering highway safety more than it enhances it.

Conclusion

Cell phones would not have soared in popularity if they did not offer significant benefits to consumers in the form of mobility and convenience. Researchers and highway safety professionals alike recognize that cell phones offer safety benefits as well as drawbacks. Cell phones make it possible for drivers immediately to report emergencies to public safety authorities and to report congestion hotspots to traffic managers. For persons driving alone, at night, in bad weather, or on little-used highways cell phones provide added security and a greater margin for error. Nonetheless, the evidence appears to be growing that talking on a telephone while driving provides a new and especially dangerous form of driver distraction.

The increased attention given to the safety effects of cell phone use while driving has created a new impetus to gather more data on cell phone use in particular and driver distractions in general. It is likely that this process will have to be much further along before there is extensive new legislation regulating cell phone use by motorists. In the meantime, public education will continue, although not always with the same message. Technological improvements are also likely to continue their rapid pace, but their ability to resolve all issues surrounding cell phones and driving is likely to be limited.

For more information about highway safety, visit the transportation area of our web site, www.house.leg.state.mn.us/hrd/issinfo/trans.htm.

ENDNOTES

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