In-Vehicle Cell Phones: Smoke, But Where's the Fire?

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The debate now raging around cellular telephone use by drivers is highly emotional, as cities and states consider steps to ban or seriously restrict their use. Articles with titles like "Death by Distraction" or "Death by Cell Phone" abound both in the popular press and on-line.

Our rush to judgment—and legislation—is too hasty. It is not at all clear if using a cell phone in a moving vehicle is significantly more risky than such tasks as adjusting the radio, drinking coffee, or talking with a passenger. The issue is not whether using a cell phone distracts the driver. It does. Rather, the issue is whether its use is markedly more distracting than tasks that the public regards as acceptable behind the wheel.

Most experts in the field of human factors agree that the critical issue is the mental load, or driver distraction, imposed by carrying on even a simple conversation. Engrossed in a phone call, the driver may fail to pay attention to the road and its potential hazards.

A study by M.A. Recarte and L.M. Nunes in the March 2000 Journal of Experimental Psychology: Applied held that a driver engaging simultaneously in driving and a verbal task—for example, repeating the words of the experimenter—would scan a much smaller area outside the vehicle than if concentrating on just driving. Performing simple mental spatial-imagery tasks, say, mentally rotating letters, shrank the monitored area still further.

The U.S. National Highway Traffic Safety Administration (NHTSA), Washington, D.C., estimates that 20 to 30 percent of all fatal auto accidents occur in part because the driver is distracted. Most distractions have little to do with using cell phones.

Ban windshield wipers?

Driver distraction has been debated off and on for almost a century. Around 1905 the focus was on the hypnotic effect of windshield wipers. In the 1930s, the advent of car radios had some experts warning of the carnage to come as people engrossed in a radio program did not pay attention to the road.

Today, the debate is about cell phones, whose users in the United States have grown from a few thousand in 1983 to over 112 million. Estimates are that up to 70 percent of all cellular calls are made from vehicles, that 44 percent of all drivers have cell phones in their vehicles, and that 85 percent use them at least occasionally while driving.

If using cell phones in vehicles is so dangerous, why haven't the number of traffic accidents and fatalities skyrocketed? In fact, the reverse is true. In 1983, the fatality rate per 100 million vehicle miles traveled on U.S. roads was 2.6; in 1990 the number was 1.6, a drop of almost 40 percent, according to NHTSA figures. The rate of injuries has also dropped. In 1988, the figure was 169 per 100 million miles; in 1997, it was 133, a drop of over 20 percent.

Also in 1997, according to NHTSA's Fatality Analysis Reporting System, a total of 57 out of more than 37,000 fatal motor-vehicle accidents nationwide were attributed to cell phone use. For comparison, 67 people were killed by lightning and 350 people drowned in bathtubs in 1966, according to National Safety Council figures.

But driver distraction is a big problem. NHTSA estimates that it contributes to 1.6 million crashes each year—roughly 25 percent of the total. Virtually any extra task for a driver—conversations with passengers, reading street signs and billboards, dealing with children in the back seat, or simply thinking about the day's events—is distracting to some degree.

For example, the NHTSA estimates that over 150,000 crashes each year are related to interaction with a vehicle's entertainment system. The driving public finds these systems reasonably safe and accepts responsibility for interacting with them. This approach should be taken with cell phones.

What's safe and what's not

Not everyone would agree on what is acceptable and what is not. Recent surveys of activities routinely performed by drivers in their vehicles elicited such responses as applying makeup, shaving, reading the paper, and putting in contact lenses. But some reasonable baseline should be identifiable.
A 1993 study by the University of Michigan's Transportation Research Institute ranked the relative distraction of a number of common tasks. Changing tapes in an in-dash unit was found more distracting than talking on a cell phone. Reading a map (the most distracting task) was nearly twice as distracting. In a 1995 survey of Honolulu law enforcement officials, cell phones were seen as less hazardous than noisy children, unrestrained pets, and smoking behind the wheel.

An often-cited study, published in the 13 February 1997 issue of *The New England Journal of Medicine*, examined traffic accidents involving cell phone users in Toronto. It suggested that the risk of having an accident was four times as great for them as for non-cell phone users, equivalent to roughly the same level of impairment as driving with a blood alcohol level high enough to be arrested for drunk driving in most states.

Interestingly, there was little difference in the accident rate when calls were ongoing and when calls were probably completed two or three minutes before the accident. This strongly suggests that the drivers were not affected by the act of using the cell phone, but by simply having their minds on something other than driving. As a colleague of mine put it, "Society has long been prepared to say, 'Don't drink and drive.' I do not believe we are ready to say, 'Don't think and drive.'"

A study released last year by the Harvard School of Public Health suggested that the levels of risk reported in the *New England Journal of Medicine* study, were drastically overstated. To interpret the Harvard conclusions, the risk of being struck and killed in one's own car by a driver using a cell phone is 1.5 in a million per year. There is a much greater risk than this associated with either being killed by a driver with a blood alcohol content higher than 0.10 percent, the usual legal limit, or being killed in a crash with a large truck. Motorists are exposed daily to both these risks, yet few advocate either a return to Prohibition or a ban on semi-trailer trucks.

Considerable credence is lent to the Harvard data by a study sponsored by the American Automobile Association at the University of North Carolina completed in June. More than 25,000 accidents were analyzed for the effects of driver distractions. Most drivers were distracted by something outside the car (25.4 percent). Next came such distractions as adjusting a radio or cassette or CD player (11.4 percent); paying attention to another occupant (10.9 percent); reacting to a moving object within the vehicle (4.3 percent); adjusting climate controls (2.8 percent); eating or drinking (1.7 percent); and, way down near the bottom, using or dialing a cell phone (1.5 percent). Smoking-related distractions came to 0.9 percent, while distractions labeled "other" or "unknown" totaled 34.2 percent.

These results reinforce the conclusion that cell phone usage is far less "dangerous" than other tasks routinely performed behind the wheel. If cell phones are inordinately dangerous and should be banned, then, logically, any task with greater impact must be more dangerous and should also be banned.

**To dial or not to dial**

Discussions of cell phones also revolve around the impact of holding or dialing the phone while driving. Several U.S. cities and states (and a number of countries) have either passed, or are considering, legislation banning the use of handheld units in vehicles, while still permitting hands-free operation. New York State, for example, passed such legislation on 25 June. The rationale for this is hard to fathom, since the National Highway Traffic Safety Administration's stance (and that of most researchers) is that the driver's mental distraction is far more important than what the driver's hands are doing.

According to the safety administration, only 8-15 percent of cell phone-related crashes occur while dialing, answering, or ending a call, a finding that makes the utility of banning handheld phones questionable at best. Indeed, why don't other manually intensive tasks such as eating, drinking, lighting cigarettes, or tuning radios provoke similar scrutiny by lawmakers? Further, the 1997 *New England Journal of Medicine* study observed no great difference in the accident rates with hands-free versus handheld phones; in fact, hands-free units were associated with slightly more accidents.

Also largely ignored are the possible negative effects that hands-free kits might have on drivers. Most may erroneously believe that the kits eliminate any problems. Such a view might lead them either to make more calls than otherwise or talk longer during each call they make.

My observations also suggest that the kits foster even more "eyes-off-road" time than do handheld units. The kits place the phone and its internal speaker in a rest next to the center console and usually conceal a remote microphone in the headliner. Using such kits, drivers seem to talk in a mostly "head down" mode because of the natural tendency during a conversation to speak and look toward the source of the sound. Much more research assessing the benefits of such hands-free systems in the real world is needed before mandating their use.

**Help for drivers**

Lawmakers contemplating cell phone legislation should consider several developments under way at the top automakers. Within the next few years, many will offer revolutionary products. These include adaptive cruise control, which by braking or increasing speed automatically keep a vehicle at a preset safe distance behind a car moving ahead of it in the same lane; lane warnings to alert drivers if they approach or cross the boundaries of their own lane; and warnings to alert drivers to obstacles in the roadway ahead. If vehicles have such features to compensate for driver distractions, is it reasonable to forbid drivers to operate cell phones?

Perhaps the best way to deal with driver distraction regardless of cause is by a program of educating the public and vigorously enforcing existing laws. Cell phone users should be urged to maintain safe distances behind vehicles in their lane, limit the duration and nature of calls, and make calls only when road and traffic conditions do not demand their full attention.

Most, if not all, cities and states have laws already on the books mandating that drivers maintain full control of their vehicles at all times. Violations of such laws should be prosecuted expeditiously. Ideally, the end-result of all these efforts will be a net increase in driver situation awareness and overall roadway safety, an unlikely result of legislation targeted solely at cell phone use.