

## **A LOOK IN THE (DRIVER'S) MIRROR: USE OF PORTABLE ELECTRONIC DEVICES WHILE DRIVING BY THE DRIVER SAFETY RESEARCH COMMUNITY**

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**Summary:** As the frequency and diversity of use of portable electronic devices by drivers has increased, so have the roadway safety concerns associated with such multitasking. It has been argued that the driving public needs to be better informed about the risks of multitasking, and if they were so informed, people would restrict such practices. Yet various surveys show that in general the public seems to recognize that the use of portable electronic devices while driving does impose significant risk. This study reports the results of a survey of highway and vehicle safety professionals, a group highly informed about the problem and often engaged in efforts on this very issue. It would be instructive to see how this group behaves in terms of its own portable electronic device use while driving. An internet survey was distributed to members of two prominent professional society technical groups in driver safety. The survey revealed substantial cell phone use while driving, moderate text messaging, and little engagement in such activities as social networking, internet browsing, or e-book reading. Members of this expert community actively provided guidance about portable electronic device use while driving to others, including children and teens, family, and friends.

### **OBJECTIVE**

There is a great deal of concern within the transportation safety community regarding the effects of driver distraction due to the use of portable electronic devices. By “portable electronic devices” we mean electronic consumer products that a driver may carry into the vehicle and potentially use while driving. Examples include cellular phones, personal digital assistants (PDAs), smartphones, mobile internet devices, and eBook readers. As the use of such devices becomes ever more widespread, and their various applications expand, there is concern that there will be ever greater consequences from their use while driving. Evidence of the widespread use of some technologies while driving, and associated safety consequences, come from recent surveys, observational studies, research experiments, and crash analyses (e.g., AAA Foundation for Traffic Safety., 2008; Ascone, Lindsey, and Varghese, 2009; Braitman and McCartt, 2010; Hosking, Young, and Regan, 2006; Madden and Lehnart, 2009; Pickrell, and Ye, 2009).

Within the safety community, there have been many calls for “getting the message out,” that is, better public education regarding the risks of multitasking while driving (for example, see <http://distraction.gov/2010summit/index.html>). While there doubtless would be some benefit to this, there is a question of just how effective a better appreciation of risks would be as a means of modifying driver behavior. There is already some indication in recent surveys that the general public sees this as a major risk (e.g., AAA Foundation for Traffic Safety, 2008; National Safety Council, 2010). Yet despite this perception, many people continue to engage in the behavior.

An interesting question, therefore, is whether being extremely well-informed about the distracted driving issue will in itself have a substantial effect on someone's use of communications technologies while driving. One means of approaching this issue is to consider the behavior of a group that is exceptionally well-informed about the risks of multitasking while driving with portable electronic devices. It would be instructive not only to see how such experts behave, but also how they may explain or rationalize what they do. To accomplish this, a survey was distributed to members of two well-established groups of technical experts on driver behavior issues. One group was the Transportation Research Board (TRB) Committee on Vehicle User Characteristics (AND10) and the other was the Surface Transportation Technical Group (STTG) of the Human Factors and Ergonomics Society (HFES). Both groups are comprised of experts in human factors and driver behavior. Many engage in research on driver distraction issues and put forth recommendations for safety countermeasures. As a group, these people are extremely informed about distraction-related crash risks, research efforts, and programs.

The objective of the work reported here is to examine how these well-informed experts behave with respect to the use of portable electronic devices while driving. This may provide insights on how the issue may be addressed with the broader public.

## METHOD

A web-accessible (Zoomerang) survey of portable electronic device use while driving was developed. This was distributed as a membership survey of the AND10 and the STTG (<http://sites.google.com/site/trbcommitteeand10/>; <http://www.hfes.org/sttg/index.htm>). The chair of each committee sent a request by email to committee members and committee friends, along with the link to the survey. The survey was open from October 18 through November 2, 2010. The survey content was constrained by the requirements that it be brief and anonymous. Given the relatively small membership of the surveyed groups, questions that might in combination allow identification of individuals (e.g., age, gender, geographic area, details of occupation) were excluded. Participation was entirely voluntary. The survey introduction indicated that the responses would be anonymous. The data from the two groups were combined for analysis.

The survey was comprised of eleven questions, addressing the following:

1. Professional membership (AND10 and/or STTG committees)
2. Relevant work areas (e.g., driver behavior, interface design, driver education)
3. Type of work (e.g., research/consulting, policy/regulation, student/graduate student)
4. The frequency with which the respondent engaged in various activities (e.g., place cell phone call, send text message) on a portable electronic device while not driving a vehicle
5. The frequency with which the respondent engaged in various activities (e.g., place cell phone call, send text message) on a portable electronic device while driving a vehicle
6. Discouraging children or inexperienced drivers from electronic device use while driving
7. Discouraging adult drivers (family, friends) from electronic device use while driving
8. Teaching others how to more safely engage in electronic device use while driving
9. Thoughts on why you (respondent) engage in portable electronic device use while driving
10. Thoughts about what would be effective in getting you (respondent) to refrain from multitasking that you now do
11. Any additional comments

For items 4 and 5 (which ask about the frequency of various device use activities), respondents indicated the frequency of 15 different activities. The 15 activities may be seen in the abscissa of Figures 1, 2, and 3. Frequency ratings were made using five alternative categories: (1) multiple times a day; (2) daily; (3) weekly; (4) less than once a week; and (5) never.

## RESULTS

A total of 118 valid surveys were completed. Of these, 45 respondents indicated they were members or friends of the AND10 committee. There were 67 individuals on the AND10 mailing list, so this indicates a completion rate of 67%. 101 respondents indicated they were members of the STTG, which is about 25% of those on the group's listserv. Twenty-eight respondents indicated that they were members of both groups. About three-quarters of the respondents described themselves as being involved in work on driver behavior and driver distraction/attention, about half as being involved in interface design, and about a third were in product design. Slightly over half were involved in highway safety and about a fourth in transportation policy. About one-fifth of the respondents were involved in driver education. Thus overall this group appears highly knowledgeable about issues related to safe driver behavior, vehicle and product interfaces, and distraction. When asked for the best description of the type of work they do, a majority (69%) indicated research/consulting, with others representing students/graduate students/post docs (13%) and design/engineering (12%). Other categories (safety advocacy, policy/regulation, other) all had less than 5% representation.

Figure 1 illustrates the findings about portable electronic device use while not driving. This indicates to what extent the respondents were users of these technologies in general. Low occurrences of device use while driving only indicate *refraining* from use if the driver engages in that activity at other times. The figure indicates that outside of the driving context, this group actively engaged in cell phone conversation. Over 90% of respondents placed and answered cell phone calls at least weekly and engaged in personal conversations. Two-thirds engaged in work-related cell phone calls at least weekly. Text messaging was common. Over 60% of respondents sent and received text messages at least weekly and about half engaged in extended exchanges of messages. However, meaningful minorities (13%-31%) of respondents *never* engaged in these texting activities. A majority (62%) of participants used cell phone tools or applications at least weekly, but again a sizable minority (25%) never did this. Social networking on personal portable devices was not that common, with only one-third of respondents doing so at least weekly and 56% reporting they never did this. Sizable majorities reported at least weekly engagement in reading extended text (54%), browsing the internet (67%), and reading email (74%); however, it is not certain that all respondents recognized their answers were meant to be limited to engaging in these acts with portable electronic devices.

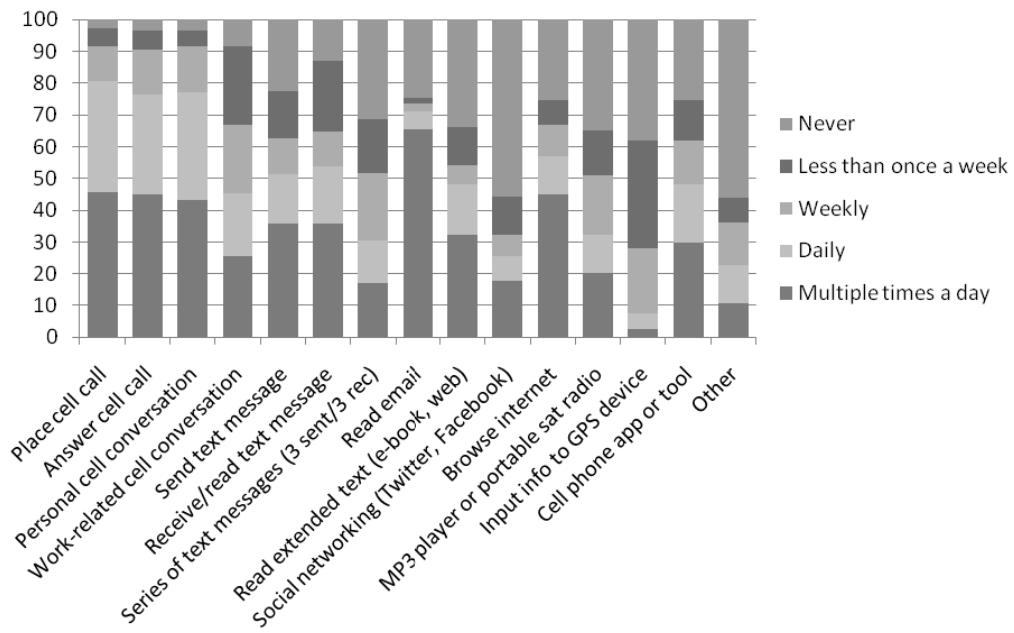
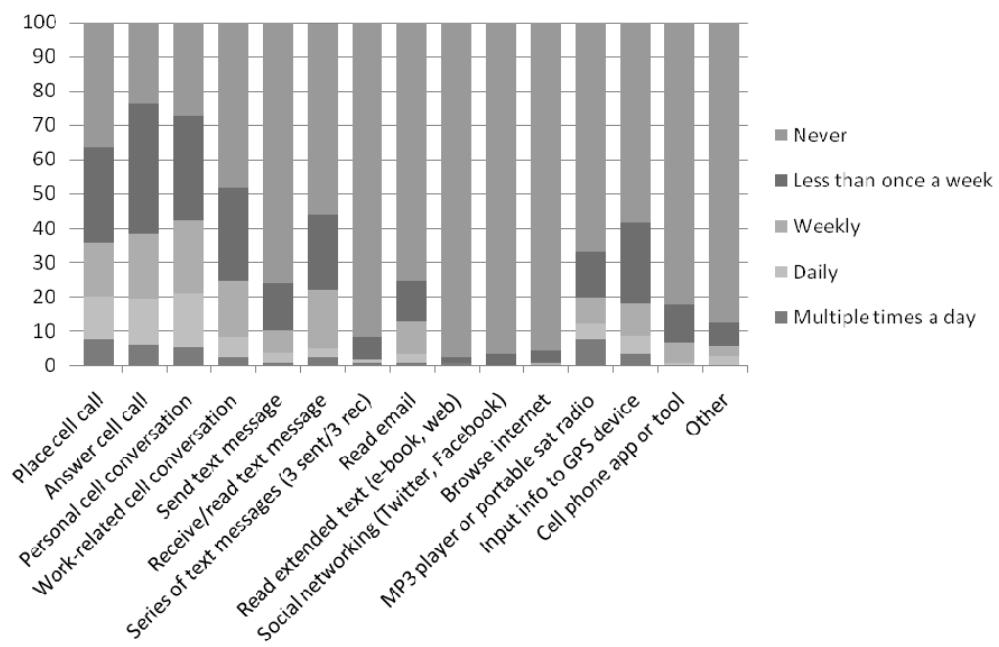
**Figure 1. Portable electronic device use when not driving**

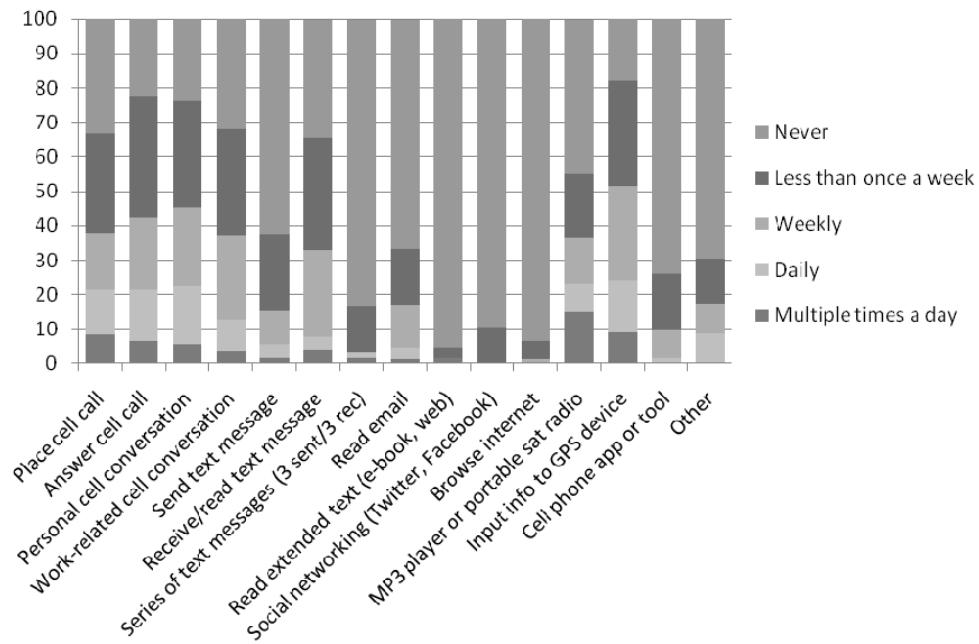
Figure 2 illustrates how frequently respondents reported in engaging in these same activities *while driving*. A substantial minority reported that they place (36%) and answer (38%) cell phone calls at least weekly while driving, and about one in five reported this as daily activity. However, 36% claimed to never place a cell phone call while driving and 24% claimed to never answer a cell phone while driving. Personal calls were much more prevalent than business calls. About half the group indicated that they never engage in business calls while driving. Although a majority of respondents engaged in text messaging outside of the driving, relatively few did this while driving. Receiving a text message at least weekly while driving was about twice as common as sending a text message (24% vs. 10%). Extended text exchanges, social networking and internet browsing almost universally were eschewed while driving, although reading email was somewhat more frequent (13% at least weekly).

Figure 3 confines the analysis only to those respondents who report engaging in a given task with some regularity (at least weekly), outside the context of driving. Thus engagement rates are not lowered to begin with by including non-users of that application. Of regular cell phone users, 38% placed phone calls while driving at least weekly and 42% answered calls. About a third of cell phone users report that they never place a call while driving and just over one-fifth never answer a call while driving. The calls included substantial activity for both work-related and personal calls. Respondents who regularly receive text messages were about equally split among those regularly (at least weekly) did this while driving, rarely did this while driving (less than weekly), and never did this while driving. However, only about 15% regularly sent text messages during driving, while a substantial majority (62%) report they never do this. Extended exchanges were rare, with most (84%) never doing this. Email was read with some regularity while driving by about 17%, with about two-thirds indicating they never did this. Among those who engage in social networking, e-book reading, internet browsing, or various cell phone applications on a regular basis, very few report doing this while driving.

**Figure 2. Portable electronic device use while driving**

Respondents frequently took steps to influence the use of portable electronic devices by others. Of those who responded to the question “Do you/have you taken steps to discourage your children or other young/novice drivers from personal communications device use while driving?,” 68% indicated that they did. Of those who responded to the question “Do you/have you taken steps to discourage adult drivers (family, friends) from personal communications device use while driving?,” 83% indicated that they did. Of those who responded to the question “Do you/have you taught other drivers more effective and safer ways to engage in personal communications device use while driving?” 62% indicated that they did.

The majority of respondents provided some response to the open-ended question on why *they* engaged in activities while driving. The most frequently cited reasons dealt with the importance or urgency of the message and the selectivity of conditions (low workload) under which the person was willing to engage in activities. A number of respondents even pointed to essentially doing a cost/benefit calculation, where the risk they were willing to take was a function of how important or urgent the message might be. Other common explanations concerned boredom, convenience, control of the nature of the communication (brief, non-emotional), the normality of multi-tasking, being connected, and making use of personal time. A number of respondents highlighted their own personal abilities, either as highly capable multi-taskers or as having good judgment about safe times to engage in tasks. A few people (2.5%) explicitly indicated that they were not convinced use of personal communications devices while driving is dangerous.

**Figure 3. Portable electronic device use by frequent users while driving**

## CONCLUSION

This survey provides a description of the types of portable electronic device use driver safety experts themselves engage in while driving. It is not a formal study in the sense that this group can be directly compared to some less expert control group on a comparable set of questions. Also, it is limited in the degree to which these behaviors can be correlated with certain individual characteristics. None the less, it provides a good picture of how these experts behave and how they perceive and explain their behavior. As a group, the driving safety experts in this survey rarely engaged in such tasks as social networking, e-book reading, internet browsing, or various cell phone applications, and while slightly more common, email reading was also fairly rare. However, for behaviors related to cell phone conversation or text messaging, restraint from use while driving was far from universal. When the analysis was confined to those who routinely use cell phones outside of the driving context, only 22% never answer a call while driving and 33% never place a call while driving. Substantial minorities (37-45%) of regular cell phone users place calls, answer calls, engage in personal conversations, and engage in work-related conversations on at least a weekly basis. Although reading text messages while driving was relatively infrequent for this expert group as a whole, it was substantially more prevalent when the analysis was confined to only those who texted regularly.

This descriptive survey does not permit any formal direct comparison with other driver populations. Based on some other published data (e.g., Braitman and McCartt, 2010), this expert group appears somewhat less engaged in various distracting behaviors. However, such comparisons are difficult because of differences in question structure and confounds with other demographic characteristics, such as age (which is strongly related to device use). What can be said, however, is that despite knowledge of the risks associated with portable electronic device use while driving, even these experts engaged in substantial cell phone use and moderate levels of text messaging. Thus it does not appear that being extremely well-informed about the

distracted driving issue will in itself be sufficient to inoculate against the use of portable electronic devices while driving. While perhaps better than the general public in this regard, the expert safety community is not immune to performing these behaviors. The rationales given for one's own behavior appear much like that of the general public. This is not meant to dismiss the importance of informing the public, but rather to indicate that these behaviors appear quite resistant to such knowledge of risks alone.

Although the behavior of this expert group is imperfect, the large majority of respondents have actively engaged in giving advice to others, whether children, young drivers, or friends.

## ACKNOWLEDGMENTS

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