

Recent Billboard Safety Research – Summaries by Jerry Wachtel Spring 2013ⁱ

1. The Swedish government recently supported the erection of a series of digital billboards on a main road near Stockholm for a trial period, and asked the Swedish Road Safety Institute to conduct a study of, among other things, driver response to these roadside advertising signs. The authors of the study (Ahlstrom, et al , 2012) reported that significantly more drivers looked at the billboards than at other signs, and that the dwell times (the length of time that a driver fixated on the sign) were significantly longer for the billboards than for other signs, as were the number of fixations made to the billboards, and the maximum cumulative glance durations to those billboards. As a result of this and a related study on driver attitudes toward the billboards by the same authors (not yet published in English), the Government removed the billboards at the end of the trial period. <http://bit.ly/YfdMA6>

2. Researchers at two different research laboratories in Israel recently completed a series of studies about the impact of billboards on driver behavior (Shinar, 2012). In one study, the researchers interviewed drivers after they had passed a billboard. They found that nearly half (47%) felt that the billboard enhanced the pleasure of their drive, but most (87%) felt that the sign was a safety hazard. In a second study, a hidden observer watched the behavior of drivers at signalized intersections with a nearby billboard when the traffic signal turned green for them. They found that, when drivers looked at the billboard, they were delayed in starting to move after the light turned green, and received a significant number (20%) of horn honks from annoyed drivers behind them. Although not necessarily a safety concern, this behavior demonstrated to the researchers the extent of distraction from the driving task caused by the billboard. In the third study, the researchers, responding to a request from the Government, studied crash rates on a major roadway near Tel Aviv while a group of billboards was present, and again while the billboards were covered as part of a State-mandated trial period. They also studied “control” sections of the same roadway during the same two time periods – in the control sections there were no billboards present during either time period. The results were dramatic. In the control sections of highway (those without billboards) both the total number of crashes and the number of crashes with serious injuries and/or property damage remained stable from year to year; whereas the crash rates for the treatment sites (those where pre-existing billboards were covered) declined significantly from the “before” to the “after” period. <http://bit.ly/11uhTlh>

3. The most recent report about the impact of billboards has just been published by AUSTROADS (Roberts, et. al, 2013). The summary report states: “The studies that have been conducted show convincingly that roadside advertising is distracting and that it may lead to poorer vehicle control. However, the evidence is presently only suggestive of, although clearly consistent with, the notion that this in turn results in crashes.” The report goes on to describe the Government’s commitment to a “Safe Systems” approach to road safety, based on work done previously in Sweden and The Netherlands. It then provides an excellent summary of the human factors principles that serve at the heart of this approach (including a discussion of mental workload, gaze direction, and the potential for a driver’s attention to be captured involuntarily), and concludes by stating: “... it is difficult to see how adding roadside infrastructure (billboards) that has the potential, however minor, to encourage driver error (through distraction) could be justified” (p. 17). <http://bit.ly/11ui5r4>

4. At the University of Massachusetts, Amherst, students and faculty in the Human Performance Laboratory of the Department of Industrial Engineering have been using a state-of-the-art driving simulator to evaluate driver visual distraction caused by tasks inside-the-vehicle (e.g. navigation, entertainment, climate control adjustments) vs. tasks outside-the-vehicle (e.g. reading road signs and billboards). The researchers compared young, novice drivers to older, more experienced drivers. They hypothesized that, since it is known that more experienced drivers are safer drivers, such drivers would take fewer long glances away from the roadway when performing both in-vehicle and out-of-vehicle tasks. Indeed, their hypothesis was confirmed for the in-vehicle tasks, but not for the outside tasks. In this case they found that both novice and experienced drivers took their eyes off the road for similar, extended lengths of time. The next question they asked was: Is this eyes off the road time for external tasks safe or unsafe? After performing additional experiments, the authors concluded: “The results of the current study show a clear negative effect of external to vehicle distraction on glance distribution and hazard anticipation skills of both age groups. The vehicle control measures show that the lane maintenance performance for younger novice drivers impaired significantly in the presence of external distractions. But no matter what the vehicle control measures indicate it is clear that both experienced and younger drivers are at elevated risks of getting in a crash when they are looking away from the forward roadway at external distractions” (Divekar, et al, 2012). <http://bit.ly/XgOa40>

5. A recent study in Norway (Backer-Grøndahl and Sagberg, 2009) surveyed more than 4000 drivers who had been involved in a recent collision – 1785 found to be at fault by police, and 2522 found to be not at fault. The authors asked the participants to identify (from a list developed in earlier distraction research) the cause or causes of their crashes. The authors used sophisticated statistical techniques (quasi-induced exposure) to look at the relative risk of the various identified factors, and compared at-fault to not-at-fault drivers. The highest risk factor (out of 12) was from looking at billboards; the second highest was searching for address or street names. Both of these actions involve what human factors experts call visual attention (as distinguished from physical or cognitive attention), and both of them are for distracters outside the vehicle on the side of the road. After this initial analysis, to eliminate potentially confounding variables, the authors performed a multiple logistic regression. As a result, several previously identified crash causation factors dropped out, but both billboards and searching for addresses remained a statistically significant factor in crashes at the 0.1 level of confidence. <http://bit.ly/YWoCdb>

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