

Digital Billboards - Dynamic illuminated distracting advertisements

“Crystal clear and eye-catching advertisements day or night, our digital billboards command attention“

“Digital billboards make a statement in high-traffic areas“ WHERE ELSE ?

“Excessive brightness of digital billboards.. - a digital billboard at night can be a killer - quite literally. In fact, people have found that the brightness from digital billboards can distract or even briefly blind the driver and cause an accident. This is the reason why some cities ban digital billboards“

“Driver distraction is now accepted as an important contributor to road crashes“ (Road Safety Commission, 2019).

“Science Applications Inc. hired a man by the name of Jerome Watchel, a Berkeley traffic safety expert, to review the study conducted by the FHWA. It was revealed that Watchel reviewed two studies in the past that were in fact sponsored by billboard companies, and the results were obviously pointing in favour of digital billboards being safe outdoor displays. What came out after was surprising. The billboard industry groups that were studied, along with five congressmen, signed a letter to the Secretary of Transportation outlining that Watchel’s hiring could affect the legitimacy of the FHWA study. Afterwards, it was exposed that those congressmen had received campaign contributions from billboard industry execs that rose to the amount of \$26,484 since 2006. This limited any valuable information revealed from the study, and only served to steer information related to driver safety and digital billboards towards mistrusting influential figures.“

Any stimulus above the threshold, regardless of its intensity, causes 'distraction' - worst case: 'distraction blindness' with possible fatal consequences, QED.

Moving stimuli have a particularly disturbing effect in the peripheral visual field, flickering light no less: overflow/overload of visual short-term memory and working memories.

Potential for distraction:

A 3D digital billboard is a type of billboard that uses advanced technology to create three-dimensional visuals that appear to extend beyond the confines of the screen, creating an illusion of depth and movement 1. Unlike traditional billboards, which are static or even standard digital displays, 3D digital billboards generate lifelike visuals that captivate the viewer’s attention by making it seem as though objects or characters are interacting with the real world, **floating in mid-air, or even coming toward the viewer.** These innovative

billboards offer unprecedented viewer engagement, making them a potent tool for modern advertising strategies 1.

“persuasive evidence that billboards – particularly digital billboards — take drivers’ eyes off the road for dangerously long gazes. That’s a problem especially when the bright electronic displays change messages, which typically happens every six to eight seconds“ . www.floridabulldog.org/2016/04/1

Meuleners L, Roberts P, Fraser M. Identifying the distracting aspects of electronic advertising billboards: A driving simulation study. *Accid Anal Prev.* 2020 Sep;145:105710. “..digital billboards negatively affected driving performance..“

Sheykhfard A, Haghghi F. Driver distraction by digital billboards? Structural equation modeling based on naturalistic driving study data: A case study of Iran. *J Safety Res.* 2020 Feb;72:1-8.

“main factors that increase the possibility of drivers' distraction. „

Wang Y, Clifford W, Markham C, Deegan C. Examination of Driver Visual and Cognitive Responses to Billboard Elicited Passive Distraction Using Eye-Fixation Related Potential Sensors (Basel). 2021 Feb 20;21(4):1471.

“the cognitive level of engagement to the billboard is likely to be a precursor to driver distraction.“

file:///C:/Users/User1/Downloads/adverts-d1.1b-current-practices-and-future-trends.pdf

“ motion in the advertisement, as well as exposure time and the use of flashing lights. Restrictions on the use of a sequence of displays/ message“

Gitelman V, Doveh E, Zaidel D. An examination of billboard impacts on crashes on a suburban highway: Comparing three periods-Billboards present, removed, and restored. *Traffic Inj Prev.* 2019;20(sup2):S69-S74.

“empirical evidence on the positive safety impact of removing billboard advertising from the roadsides of a suburban highway and of the negative safety impact of billboard restoration.“

Marciano H. The effect of billboard design specifications on driving: A driving simulator study. *Accid Anal Prev.* 2020 Apr;138:105479

“the presence of billboards from the Loaded and Minimal clusters significantly compromised road safety in various experimental conditions.“

Edquist J, Horberry T, Hosking S, Johnston I. Effects of advertising billboards during simulated driving. *Appl Ergon.* 2011 May;42(4):619-26. There is currently a great deal of interest in the problem of driver distraction. Most research focuses on distractions from inside the vehicle, but drivers can also be distracted by objects outside the vehicle. Major roads are increasingly becoming sites for advertising billboards, and there is little research on the potential effects of this advertising on driving performance. The driving simulator

experiment presented here examines the effects of billboards on drivers, including older and inexperienced drivers who may be more vulnerable to distractions. The presence of billboards changed drivers' patterns of visual attention, increased the amount of time needed for drivers to respond to road signs, and increased the number of errors in this driving task. “

García-Herrero S, Febres JD, Boulagouas W, Gutiérrez JM, Mariscal Saldaña MÁ. Assessment of the Influence of Technology-Based Distracted Driving on Drivers' Infractions and Their Subsequent Impact on Traffic Accidents Severity. *Int J Environ Res Public Health*. 2021 Jul 4;18(13):7155. “technology-based distractions are likely to increase the probability of committing aberrant infractions and speed infractions; (ii) technology-based distracted young drivers are more likely to speed and commit aberrant infractions; (iii) distracted motorcycles and squad riders are found more likely to speed; (iv) the probability of committing infractions by distracted drivers increases on streets and highways; and, finally, (v) drivers' infractions lead to serious injuries. „

Qin L, Li ZR, Chen Z, Andi Bill MS, Noyce DA. Understanding driver distractions in fatal crashes: An exploratory empirical analysis. *J Safety Res*. 2019 Jun;69:23-31. “inner cognitive inferences accounted for the greatest proportion of driver engagement in distractions. Young drivers show a larger probability of being distracted by in-vehicle technology-related devices/objects ..“

According to Scenic America, hundreds of cities have banned the construction of new billboards to prevent the billboard problem from getting worse, protect new roads from becoming blighted, and help billboard-free communities stay that way. In April 2022, the U.S. Supreme Court affirmed a community's right to ban digital billboards in a landmark case, *Austin v. Reagan*. The ruling was upheld in 2023 in a similar case in Madison, WI. Scenic America recommends communities explore bans on digital billboards instead of allowing digital billboard conversions.

<https://t3n.de/bildergalerie/darth-vader-baby-katzen-3d-billboards?news=1479224>
<https://www.baltimoresun.com/2021/10/18/digital-billboards-downtown-a-bad-idea-for-baltimore-guest-commentary/>

<https://billboardinsider.com/what-do-the-feds-say-when-asked-about-the-governments-research-on-digital-billboards/>

What The Feds Say About Digital Sign Safety NOT MUCH.