

## **Digital Billboards and Road Safety: How can we best assess the risk?**

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### **Abstract**

There has been a long standing concern about the distracting effect of roadside advertising and its potential negative effect on road safety. In recent years this concern has been further amplified by the introduction of digital technology for billboard displays. This paper outlines a practical and defensible approach to assessing the safety risk associated with digital billboards based on the approach outlined in AP-R420-13 (Austroads, 2013). The assessment process will be illustrated by reference to examples and case studies.

### **Background**

Most jurisdictions in Australia are currently experiencing an influx of applications for approval of digital billboard installations. This includes new sites and also the digitization of existing static sites (see e.g. *The Australian*, February 22<sup>nd</sup>, 2016).

There has been a long standing concern about the distracting effect of roadside advertising and its potential negative effect on road safety. Fundamental human factors considerations raise concerns that the unique characteristics of digital billboards increase distraction and with it an increase in crash risk, beyond that which holds for traditional billboards. In particular, in some driving situations it is likely that image and luminance changes will involuntarily capture attention and that particularly salient emotional and engaging material will recruit attention to the detriment of driving performance, particularly in inexperienced drivers. Where this happens in a driving situation that is also cognitively demanding, the consequences for driving performance are likely to be significant. Furthermore, if this attentional capture also results in a situation where a driver's eyes are off the forward roadway for a significant amount of time this will further reduce safety. Additionally, road environments cluttered with driving-irrelevant material may make it difficult to extract the information that is necessary for safe driving, particularly for older drivers (Austroads 2013).

### **Digital billboard safety assessment**

It is clear that not all locations and billboard designs are likely to be equally risky and indeed some are likely to be acceptable from a safety perspective. For this reason it is important to have a process for assessing the road safety risk associated with digital billboard installations and proposals. AP-R420-13 (Austroads, 2013) sets out the key principles that must be considered in assessing risk but does not provide details of how to apply these principles in practice. This paper outlines a practical and defensible approach to assessing the safety risk associated with digital billboards, based on the approach outlined in AP-R420-13.

Information about the key variables identified in AP-R420-13 generally can be obtained relatively easily from application proposals, site visits and road agency databases. That information must then be interpreted and combined in a way that allows a decision to be made about the risk associated with an installation. Since much of the risk associated with digital billboards is associated with the changing of the display, attention must be focused on the relationship between dwell time, visibility distance, travel speed and exposure of the traffic stream to image changes. In general, dwell time durations that would result in a large proportion of the traffic stream being exposed to one or more display changes, in road environments that are cognitively demanding, would generally be seen as unacceptably risky. The details of this and other aspects of the assessment process will be illustrated by reference to examples and case studies.

## References

Austrroads (2013) *Impact of Roadside Advertising on Road Safety*, AP-R420-13, Sydney, NSW, Australia.

The Australian Newspaper, February 22nd, 2016, online edition accessed 24<sup>th</sup> February 2016 (<http://www.theaustralian.com.au/news/latest-news/digital-billboards-key-to-ooimedia-profit/news-story/afd458e6de81dac269ff577f39ef3696>)