

Safety of Digital Billboard Installations

Andy Carr | Director | Carriageway Consulting Limited

What are digital billboards?



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NZ-Based Safety Research into Digital Billboards

No primary research

Advice/guidance based on:

- Overseas research
- 'Commonsense' reasoning
- General road safety principles

Often different views between advertisers and councils

First attempt to try to quantify effects in a NZ environment

Overseas Safety Research

A range of techniques used to study effects:

- Driver eye movements when driving
- Driving simulators
- Proxies for digital billboards
- Upstream and downstream studies of crash rates

Clear conclusion:

- Digital billboards attract driver attention

Not clear:

- Whether driver attention is attracted such that crashes occur
- Whether NZ has the same factors as the overseas studies

Study One: Review of CAS Records

Review of CAS data over the past five years

- Simple check of crashes where advertising was cited as a contributing factor
- Result: No clear evidence of any increase in crash numbers over time

Drawbacks

- Under-reporting by drivers
- Accuracy of records

Study Two: Before and After

Assessment of crash rates before and after digital billboard installation

- 14 sites evaluated in Auckland and Christchurch
- 5 years of 'before' data but only 0.3 to 2.7 years of 'after' data
- Result: No evidence of an increase in crashes

Drawbacks

- Patterns may not show in the 'after' data set (too small)
- No 'control' sites
- Doesn't account for general downward trend in crashes



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Study Three: Improved Before and After

Five clusters of sites (in Auckland)

Each cluster comprised:

- an intersection with a digital billboard, near to
- an intersection with a static billboard, near to
- an intersection with no billboard

‘Complex’ locations chosen (eg traffic signals)

- Locations where any crash patterns would be most evident

Two years of data analysed for every location before and after the date of installation of the digital billboard

Blinding the Study

In published studies researchers knew the purpose but this study was blinded (world first?)

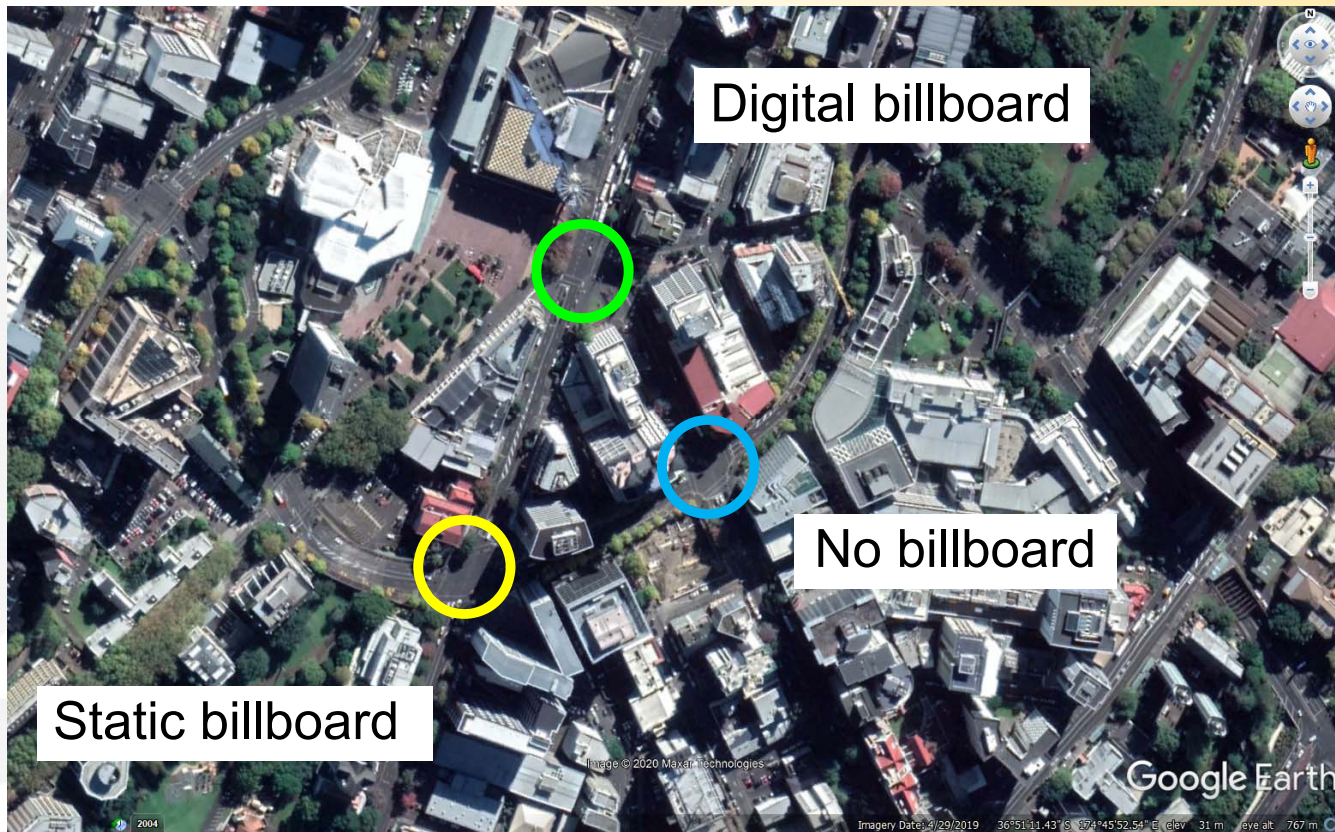
- Locations were randomised
- No instructions given on the study purpose (ie no mention of billboards)

Only instructions given (to professional traffic engineers) were to:

- Identify crashes within 75m of each intersection where the causes show drivers may have been distracted
- Look for a statistically significant differences in crash rate:
 - on any intersection approach compared to the other approaches
 - between the intersections in the same time period
 - between the intersections over two periods of time ('before / after')



Example: Queen St / Wakefield St Cluster



Example: Queen St / Wakefield St Cluster

Digital billboard installed on 1 August 2014

For crashes recorded between 1 August 2012 to 31 July 2014

- Did any approaches to any intersections have a statistical difference to the others?
- Did any intersections have a statistical difference to the others?

For crashes recorded between 1 August 2014 to 31 July 2016

- Did any approaches to any intersections have a statistical difference to the others?
- Did any intersections have a statistical difference to the others?

Finally, was there any statistical difference (in anything!) when the 2012/14 period was compared to the 2014/16 period?

Results: Differences on Approaches

Type	Type	Before	After
Digital	Stanley Street (SH16) / Alten Road	(no data)	No difference
	Queen Street / Wakefield Street	Wakefield Street	Wakefield Street
	Karangahape Road / Ponsonby Road	No difference	K Road
	Khyber Pass Road / Symonds Street	No difference	No difference
	George Bolt Memorial Drive / Tom Pearce Drive	No difference	No difference
Static	Stanley St (SH16) / Beach Road / Parnell Rise	No difference	No difference
	Mayoral Drive / Queen Street	No difference	Mayoral Drive (east)
	Ponsonby Road / Richmond Road / Picton Street	No difference	No difference
	Symonds Street / Alex Evans Street / Overbridge	No difference	No difference
No billboard	The Strand (SH16) / Tamaki Drive	(no data)	No difference
	Mayoral Drive / Wakefield Street	Mayoral Drive (west)	No difference
	Ponsonby Road / Williamson Ave / Hepburn St	No difference	No difference
	Symonds Street / Mt Eden Road	No difference	No difference
	George Bolt Memorial Drive / Montgomerie Road	No difference	No difference

Results: Differences at Intersections

Type	Type	Before	After
Digital	Stanley Street (SH16) / Alten Road	(no data)	No difference
	Queen Street / Wakefield Street	No difference	No difference
	Karangahape Road / Ponsonby Road	No difference	No difference
	Khyber Pass Road / Symonds Street	No difference	No difference
	George Bolt Memorial Drive / Tom Pearce Drive	No difference	No difference
Static	Stanley St (SH16) / Beach Road / Parnell Rise	No difference	No difference
	Mayoral Drive / Queen Street	No difference	No difference
	Ponsonby Road / Richmond Road / Picton Street	No difference	No difference
	Symonds Street / Alex Evans Street / Overbridge	No difference	No difference
No billboard	The Strand (SH16) / Tamaki Drive	(no data)	No difference
	Mayoral Drive / Wakefield Street	No difference	No difference
	Ponsonby Road / Williamson Ave / Hepburn St	No difference	No difference
	Symonds Street / Mt Eden Road	No difference	No difference
	George Bolt Memorial Drive / Montgomerie Road	No difference	No difference



Results: Differences (Before to After)

Type	Type	Approach	Intersection
Digital	Stanley Street (SH16) / Alten Road	(no data)	(no data)
	Queen Street / Wakefield Street	No difference	No difference
	Karangahape Road / Ponsonby Road	K Road	No difference
	Khyber Pass Road / Symonds Street	No difference	No difference
	George Bolt Memorial Drive / Tom Pearce Drive	No difference	No difference
Static	Stanley St (SH16) / Beach Road / Parnell Rise	No difference	No difference
	Mayoral Drive / Queen Street	Mayoral Drive (east)	No difference
	Ponsonby Road / Richmond Road / Picton Street	No difference	No difference
	Symonds Street / Alex Evans Street / Overbridge	No difference	No difference
No billboard	The Strand (SH16) / Tamaki Drive	(no data)	(no data)
	Mayoral Drive / Wakefield Street	Mayoral Drive (west)	No difference
	Ponsonby Road / Williamson Ave / Hepburn St	No difference	No difference
	Symonds Street / Mt Eden Road	No difference	No difference
	George Bolt Memorial Drive / Montgomerie Road	No difference	No difference



Outcomes and Limitations

Study suggests that digital billboards in these locations did not increase number of crashes

- Controls on digital billboard location and operation may mitigate potential adverse effects?
- Conditions of resource consent

Care needed when looking at overseas research

But this is a small study and more research is needed in New Zealand

Further Work

Possible improved studies

- Simple 'before and after' study but using a wider range of locations (now over 150 installations around the country)
- Increase number of sites used with the methodology of the latter study (but possibly harder to do 'blind')
- Video analysis of conflicts, rather than relying on crashes

National 'best practice' conditions for resource consent?