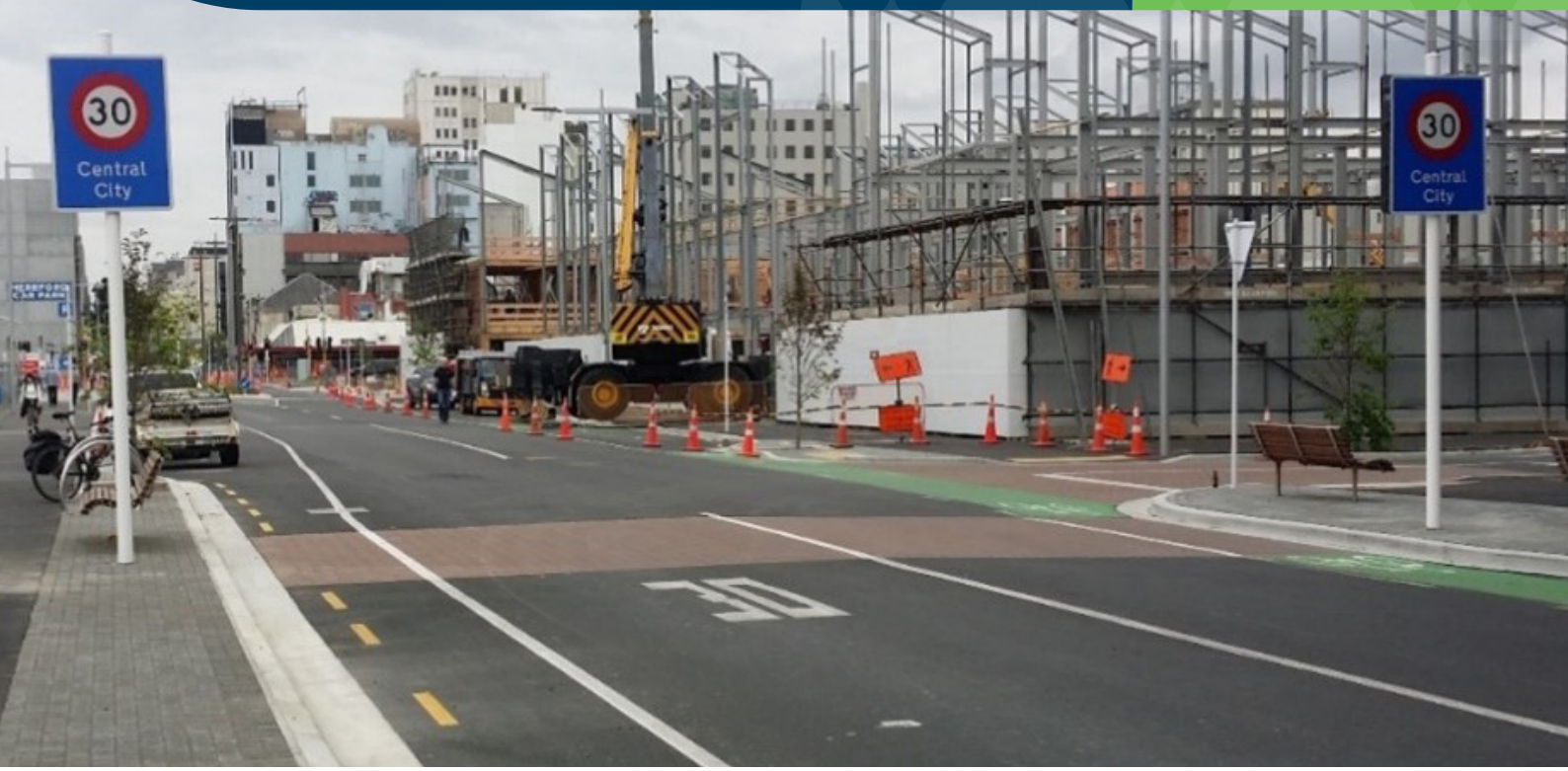
Implementing safe and appropriate speed limits on central city streets

Safe System
case study



Central business district (CBD) speed zones improve safety by reducing the likelihood of crashes occurring, and the severity of any crashes that do occur while enabling the shift toward cleaner, safe and affordable travel modes that incorporate higher levels of physical activity such as walking, cycling and use of public transport.

A safe road system not only prevents people being killed and serious injuries but helps improve lives and lifestyles too. Improving road safety in our towns and cities makes them more accessible, connected and liveable.

Safe roads and streets encourage walking and cycling which promotes independence and improves accessibility for people. Walking and cycling trips can support healthier lifestyles, improve mental health, and reduce pressure on our health system.

Safe speeds are key to the Safe System approach to road safety

The Safe System approach recognises as humans we all make mistakes, but these mistakes do not need to cost us our lives. We must strengthen every part of the transport system, adopting a mix of solutions that all combine to keep people safe.

Speed is the biggest determining factor to how much harm is caused in a crash. As speed increases, the risk of death or serious injury increases.

Setting safe speed limits of 30km/h on our city streets and urban areas where high numbers of active road users, especially children, are present or desired is a key component of a safe road system.

A pedestrian struck by a motor vehicle at this speed has a strong chance of surviving and avoiding a serious injury. The probability of a pedestrian being killed rises as impact speed increases.

The probability approximately doubles between 30km/h and 40km/h and doubles again from 40km/h to 50km/h.

WAKA KOTAHI NZ TRANSPORT AGENCY
ROAD TO ZERO
Te Kāwanatanga o Aotearoa New Zealand Government

30km/h central city speed zone

In March 2016, Christchurch City introduced a 30km/h zone within the central city. The 30km/h zone is bordered by Kilmore Street in the north, Madras Street in the east, St Asaph Street in the south and Hagley Park in the west, with specific extensions north along Victoria Street and south along Colombo Street; an area of approximately 1.5km^2.

Speed limit signs were installed at the extents of the zone, with repeater signs inside the zone and changes to pavement markings. Some physical speed calming measures were used to enhance zone thresholds and assist in maintaining lower speeds within the zone.

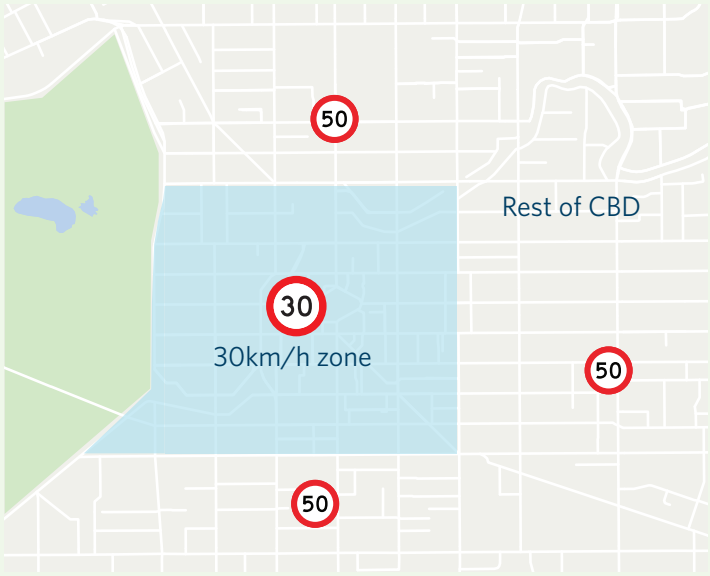


Figure 1: Christchurch 30km/h zone

Traffic speeds

Traffic volumes increased in the 30km zone by 4% (3 years before vs. after), compared with a higher increase in the adjacent control zone (+13%). Note that Christchurch was experiencing significant disruption to normal traffic patterns due to the post-earthquake rebuild, which may have affected these volumes.

Safety performance

Crashes were analysed in 2.5-year periods before and after the treatment (March 2014 to February 2016 and April 2016 to March 2018).

Within the 30km zone there have been no reported fatal crashes within the crash analysis period before or after the speed change. The number of people who were either seriously or minor injured due to crashes reduced from 52 prior to the speed change, to 33 since the speed limit change. A reduction of 37%. Reported injury crashes also reduced by 25% from 36 serious and minor injury crashes to 27.

In the 30km zone, the observed number of crashes after implementation was 18% lower than the expected number of crashes (derived from the number of crashes before and relative volumes before/after). In the control zone, the observed number of crashes was 7% greater than expected. The finding is statistically significant at the 90% confidence level (see Figure 3).

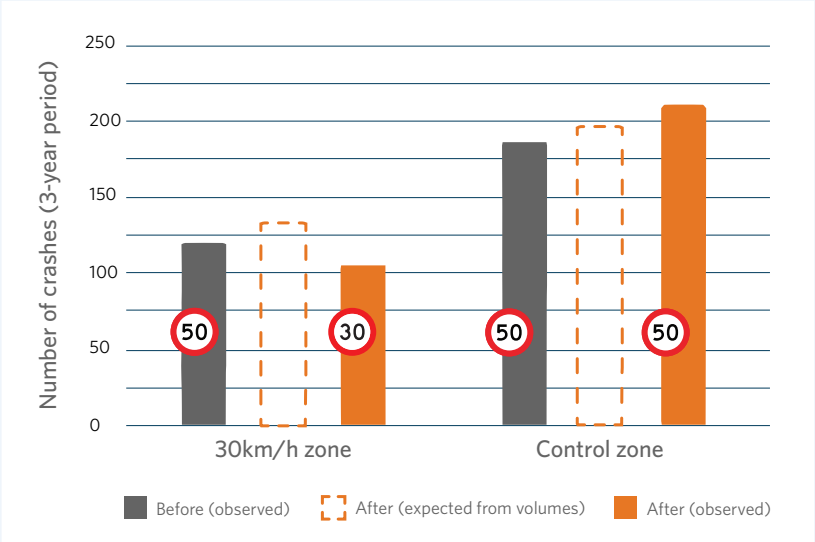


Figure 2: Crashes in Christchurch CBD before and after 30km/h zone introduced, compared with control zone, and expected crashes based on volume changes

Monitoring and evaluation of safe and appropriate speed limits

Regular monitoring, evaluation and reporting are critical for keeping road controlling authorities (RCAs) on track to achieve local, regional and national outcomes.

Monitoring and evaluation are ongoing processes that should be integrated into all stages of development and implementation.

They should occur:

- at the beginning, providing baseline data to inform programming, design and establish targets
- during to monitor effectiveness of interventions
- after implementation of changes to evaluate the effectiveness of interventions

Figure 2: Sign at entry to Christchurch CBD 30km/h zone (Durham Street one-way)

This integration will help RCAs to effective monitor and evaluate speed management interventions by:

- tracking progress towards identified key performance indicators
- testing and measuring the effectiveness of new approaches and sharing results
- communicating progress and effectiveness to political leaders, policy makers, local authorities, communities and other stakeholders
- demonstrating accountability for the investment in the interventions
- identifying outcomes that were not intended (whether positive or negative)
- identifying any need for additional speed management interventions and the most effective places to deploy them across the network

Monitoring of the speed limits changes can be carried out at implementation level but requires good baseline data collected prior to any changes.

The data that should be collected includes, as a minimum:

- before and after data on injuries
- before and after speed data of all vehicles
- before and after speed data of freight vehicles
- before and after traffic volume
- vehicle classification data.

Key tips for practitioners

- Collection of traffic volume and speed data at multiple locations before and after the treatment is implemented assists in conducting meaningful statistical analysis.
- Crash analyses may indicate trends but are unlikely to yield statistically significant results due to relatively low sample sizes and the rare and random nature of crashes; it is therefore important to assess other quantitative measures, such as traffic speeds and volumes.
- Undertaking qualitative public opinion surveys can help understand the community and individuals' perceptions of safety before and after the speed treatments.
- Community engagement is critical – don't underestimate the amount of cost, time and effort required, or the value of undertaking it.
- Aligning safety related gains from speed limit changes to other outcomes can help people understand the wider benefits of lower speeds. Examples of other benefits include improved street amenity, urban regeneration, and improved mode choices.
- Speed treatments can be introduced as part of a wider urban regeneration project, for example the Christchurch CBD 30km/h example was introduced as an integral part of case the earthquake recovery package.

For more information:

- Christchurch City Council speed limits
- Speed limit to be permanently reduced to 30km/h in central Christchurch (The Press, March 2016)
- Waka Kotahi Speed Management Guide: Road to Zero edition