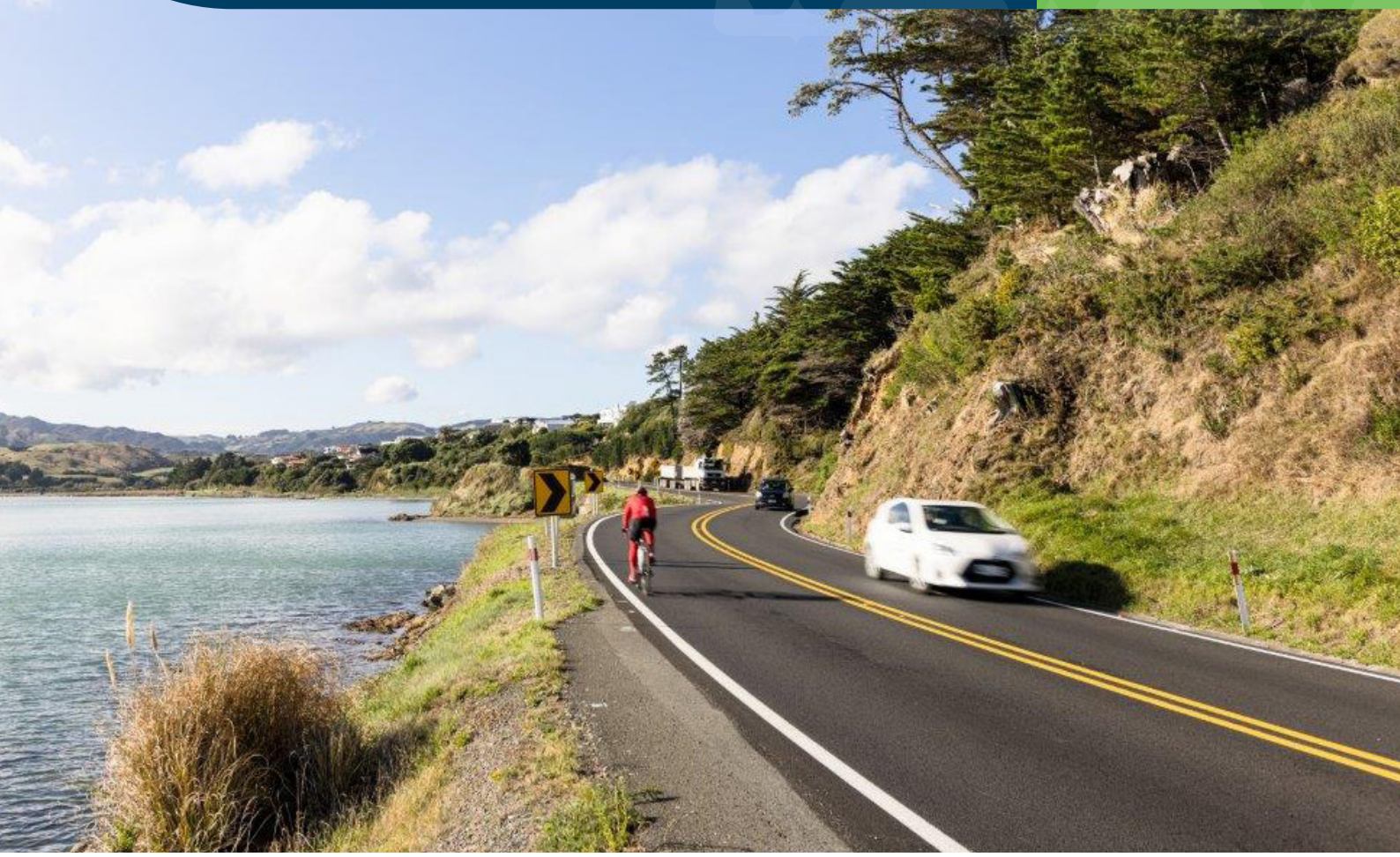
The effectiveness of safe and appropriate speed limits on rural roads

Safe System
case study



Safe speeds are a key part of the Safe System approach to road safety. Even when speed doesn't cause the crash, it's what will most likely to determine whether anyone is killed, injured, or unharmed in that crash.

Reducing the speeds people travel on our roads and streets means that crashes are less likely to happen because people have more time to react to mistakes and avoid collisions.

If a crash does occur, it is less likely to result in harm because slower speeds mean the crash forces are lower and should be more survivable[1].

The results of speed limits changes at three sites show how effective safe and appropriate speed limit are in reducing the level of trauma experienced on our roads.

Location	Speed limit reduction	Date
SH2 Maramarua	100km/h to 90 km/h	December 2011
SH2 Karangahake Gorge	100km/h to 80 km/h	November 2005
SH58 around Pāuatahanui Harbour	100km/h to 80 km/h	April 2006

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

This case study shows

the impact of the change in speed limit on mean operating speeds (SH2 Maramarua only)*

the impact of the change in speed limit on crash numbers

the crash rates before and after the speed limit change

For the three sites, a comparison site was also analysed to better understand the overall effectiveness of the speed limit change. It has been attempted to replicate similar corridor attributes to the three sites without the speed limit change.

* While data on the impact that the change in speed limit has had on operating speeds is limited, comparison analysis has found crash reductions that are generally in keeping with or in excess of those documented in international literature.

The impact on road safety outcomes at these three sites has been significant and confirms that posted speed limit reductions were successful in improving the safety performance of our roads.

Location	Reported Injury crash reduction	Reported DSI reduction	Crash rate (per 100 million VKT) reduction
SH2 Maramarua	45%	47%	50%
SH2 Karangahake Gorge	18%	48%	23%
SH58 around Pāuatahanui Harbour	4%	71%	35%

The net reductions in injury crash and death and serious injury numbers are generally around or in excess of 30% which is aligned to what international literature would expect.

Location	Net reduction injury crashes	Net reduction DSI	Net reduction crash rate (per 100 million VKT)	Net reduction DSI rate (per 100 million VKT)
SH2 Maramarua	32%	28%	39%	42%
SH2 Karangahake Gorge	41%	74%	20%	35%
SH58 around Pāuatahanui Harbour	29%	18%	57%	25%

SH2 Maramarua

46% reduction

17 lives saved

31 serious injuries saved

On 15 December 2011, the speed limit on most of the corridor on State Highway 2 between the SH1 Interchange and the SH25 roundabout was lowered from 100km/h to 90km/h. The township of Maramarua remained at 70km/h and the recently completed deviation, remained at 100km/h.

There was a total of 70 reported injury crashes in the five years before the speed limit reduction, giving a five-year average of 14 per year. In the five years following the speed reduction, there were 39 reported injury crashes, a yearly average of 7.8. This is a 45% reduction. The number of reported death and serious injuries dropped from 36 in the five years before to 19 in the five years after resulting in a 47% reduction.

The injury crash rate for this corridor reduced by 50% from a rate of 12.02 injury crashes per 100 million Vehicle kilometres travelled (VKT) before the speed limit reduction to 6.01 injury crashes per 100 million VKT after the speed limit reduction.

SH2 Karangahake Gorge

33% reduction

11 lives saved

6 serious injuries saved

On 30 November 2005, the speed limit in the winding Karangahake Gorge reduced from 100km/h to 80km/h between RS 073/5.264 and 73/13.860; a length of 8.461km.

There was a total of 33 reported injury crashes in the five years before the speed limit reduction, giving an average of 6.6 reported injury crashes per year. This reduced to 5.4 reported injury crashes per year or 27 reported injury crashes in the 5 years after; a reduction of 18%. The reported deaths and serious injuries dropped by 48%, from 23 in the five years before to 12 in the five years after.

There has also been a substantial reduction in the injury crash rate, the crash rate has dropped from 30.2 injury crashes per 100 million VKT to 23.2 per 100 million VKT in the five years after; a reduction of 23%.

SH 58 Paremata to Pāutahanui

38% reduction

5 lives saved

1 serious injuries saved

In April 2006, the speed limit around the Pāutahanui Harbour reduced from 100 km/h to 80 km/h from 100m east of Paekākāriki Hill Road to 140m east of Postgate Drive.

Comparing the total number of reported injury crashes the five years before and after the speed limit change only reduced by 4% from 24 to 23 reported injury crashes. However, the number of reported death and serious injuries dropped from 7 in the five years before with an average 1.4 death and serious injuries per year to 2 in the five years after with an average 0.5 death and serious injuries per year.

This 71% reduction suggests that while injury crashes remained essentially the same, injury severity reduced dramatically.

The injury crash rate also dropped significantly by 35% from 61.4 injury crashes per 100 million VKT in the five years before to 39.6 injury crashes per 100 million VKT in the five years after.

1. International Transport Forum (2016). Zero Road Deaths and Serious Injuries: Leading a paradigm shift to a safe system. Paris, France: OECD Publishing. **dx.doi.org/10.1787/9789282108055-en**

For more information:

- Waka Kotahi Speed Management Guide: Road to Zero edition

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