



Safer speeds and network efficiency in relation to NZTA's Speed Management Guide

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New Zealand's road toll is too high. On a per capita basis it is double that of the UK, and among the highest in the world - alongside Cambodia, Malaysia, Lithuania and Slovenia. When surveyed, New Zealanders rate our roads as too dangerous and unsafe for cycling.

It is well known that the higher speeds result in greater frequency and severity of crashes. In contrast, safer speeds support safer roads, improved traffic flows, more liveable communities and reduced transport emissions (noise, CO2 and air pollution). The countries with the world's safest roads have successfully reduced their speed limits over the last 40 years compared to New Zealand:

Default speed limits	Northern Europe	New Zealand
Urban access streets	30 – 40 km/h	50 km/h
Rural roads (one lane each way, no separation, minimal shoulder)	60 – 80 km/h	100 km/h

By way of example, speed reduction measures within the urban area of Gothenburg during 1990 – 2003 have delivered significant safety benefits¹:

Tabell 1b Killed and seriously injured road users in Gothenburg 1985-1989 and 1990-2003 (Source: Adolfsson, 2004).

	1985-1989	1990-2003		Difference	
	Observed result per annum	Total constant * traffic safety	Total, observed result	Total	Percentage
Motorists	229	3 206	2 023	-1 183	-37%
Pedestrians	139	1 946	1 151	-795	-41%
Cyclists	178	2 492	2 054	-438	-18%
Others	78	1 092	1 045	-47	-4%
Total	624	8 736	6 273	-2 463	-28%

**) Assuming the same average result per annum as the 1985-1989 period.*

Furthermore, safer speeds have enabled many people to choose active transport and the Northern European countries have the highest rates of cycling in the world. Enable a walking and cycling culture results in significant environment, social and health benefits². Significantly, there appears to be **no evidence of reduced network efficiency due to safer speeds**, in fact the evidence points to reduced congestion during peak travel times as safer speeds optimise flow, as explained below.

¹ "Evaluation of speed reducing measures in Gothenburg", Swedish National Road & Transport Research Institute

² "Sedentary lifestyles: the hidden factor in the social care crisis" The Guardian, Dec 15 2016

Unfortunately NZTA's new Speed Management Guide appears to miss the opportunity to gain from the many benefits offered by safer speeds due to the assumption throughout the Guide that higher traffic speeds equates to greater efficiency, hence the Guide's advice that safer speeds are a "balancing act" with network efficiency.

This is not so, in fact **safer traffic speeds typically deliver greater network efficiency** due to:

- a. Safer speeds have minimal effect on overall travel times³ yet improve trip time reliability (a transport consideration greatly valued by users)
- b. Safer speeds reduce vehicle operating costs by facilitating steady traffic speeds which are much more fuel efficient (than continual speeding up and slowing down), thus reducing fuel consumption
- c. During peak travel times, safer speeds enhance traffic flow by reducing the tendency for bottlenecks to occur⁴. In congested urban motorway conditions, the speed that optimises throughput (and results in the lowest collective travel time) is around 80km/h⁵. Internationally, cities are implementing 'smart motorways' which use variable (reduced) speed limits to improve traffic flows⁶. In New Zealand the use of ramp metering to slow the flow of vehicles at motorway on-ramps has increased the efficiency of the overall road network
- d. Safer speeds on urban streets enable greater walking and cycling which in turn supports greater use of public transport. Thus there are less vehicles creating congestion (due to both the reduced number of vehicles at intersections and the reduced potential for vehicle breakdowns blocking traffic lanes)
- e. Safer speeds result in less crashes which are a significant cause of congestion.

In the UK and Europe, safer speed limits of 30 to 40 km/h in urban neighbourhoods and 60 to 80km/h rural roads have been implemented without detrimental effect on network efficiency. In New Zealand, the safer speed limit of 80 km/h through the Dome Valley has produced immense safety benefits (a significant reduction in annual deaths) yet there has been no noticeable detrimental effect on network efficiency or economic productivity.

NZTA's business case approach is too narrow as it fails to adequately incorporate the many social and environmental aspects of transport decisions such as the setting of speed limits. Furthermore, whilst complex, the business case approach fails to recognise that it is not possible to build our way out of congestion (because it ignores global traffic effects, local induced traffic and detrimental modal shift generated by new roading projects), hence it is fiscally inefficient⁷.

We encourage NZTA to consider replacing the business case approach with a methodology more appropriate for transport investment decision making, such as the OECD's "Avoid-Shift-Improve" approach⁸.

3 "The impact of lowered speed limits in urban and metropolitan areas" Monash University 2008

4 "Slowing Down Will Get You Through a Traffic Jam Faster" WSJ: <http://www.wsj.com/articles/traffic-engineers-say-slowing-down-will-get-you-through-a-jam-faster-1415386073>

5 NZTA Speed Management Guide discussion guide / OECD, 2006, Speed management

6 The VSL strategy controls the upstream traffic of a bottleneck by reducing the speed limit to reduce the potential for accidents and to improve the efficiency of network operations,

7 Sustainable Transport Investment Could Save \$300 Billion a Year. World Resources Institute: <http://www.wri.org/blog/2016/04/sustainable-transport-investment-could-save-300-billion-year-within-existing-financial>

8 Mobilising private investment in sustainable transport infrastructure, OECD <https://www.oecd.org/env/cc/financing-transport-brochure.pdf>

In conclusion, we encourage NZTA to reframe its approach to speed management to encapsulate the following principles:

- i. Safer speeds contribute to improved traffic flow (particularly during peak travel times), lower vehicle operating costs, and improved travel time reliability – that is, **improved network efficiency**
- ii. Every street should be safe and pleasant for walking and cycling by people of all ages; from school children to the elderly⁹ - safer traffic speeds are a key enabler of this
- iii. Safer speeds reduce transport emissions (eg: noise, contaminant pollution and greenhouse gases) and enhance our streets as significant public spaces to be enjoyed by all through good urban design.
- iv. Safer speeds provide a wide range of benefits and **excellent value for money**.

NZTA has successfully introduced ramp metering to slow the flow of vehicles at on-ramps in order to improve overall network efficiency. This required an extensive communications campaign and engagement with the public to educate users of the benefits provided by ramp metering.

NZTA must now take a similar lead role to facilitate the introduction of safer speeds limits in New Zealand that are credible and appropriate. We encourage NZTA to take a leadership role in changing the conversation around Safer Speeds.

The benefits are too great to ignore, we must actively pursue the opportunity to implement safer speeds.

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Our aging population requires “Reduced speed limits and area wide traffic calming“
http://www.victoriawalks.org.au/Safer_Road_Design/