Compliance and Acceptance of Safer Speeds
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Overview

• Why Safer Speeds is important
• Study Objectives
• Literature Findings
• Speed Compliance with Reduced Speed limits
  – Hamilton Suburban 40km/h areas
  – SH2 90km/h Safer Speed zone
  – Hastings 80m/h speed zones
• Acceptance Survey – web survey
• Summary
A key element of the NZ Safer Journeys national road safety strategy is safer speeds (lower speeds) – one of the four elements

- Safer roads and roadsides
- Safer vehicles
- Safer road users
- Safer speeds

We want five star drivers, driving five star vehicles on five star roads at a safe speed – the speeds at which for a particular road design the probability of a serious crash and particularly a fatal crash is extremely low.

We know that drivers are at least for part of any trip, if not all, are not operating at five stars – we know humans make mistakes and some are risk takers. On top of that we have pedestrians, cyclists, animals and weather factors (e.g. heavy rain and snow and ice) that impact on crashes.
Safe System Speeds

- **85th percentile speed ≤30km/h safe system for pedestrians regardless of facilities present**

- **85th percentile speed ≤50km/h is safe system compliant for run-off road crashes (unless a cliff / embankments)**

- **85th percentile speed ≤50km/h at intersections is safe system compliant**

- **85th percentile speed ≤70km/h on an undivided road is safe system compliant for head-on crashes**

*Assuming cars of equal mass*
Safe Speed – Head-on (LOC & overtaking)

- For cars of same mass, undivided roads \( \leq 70\text{km/h}^* \)
- Where operating speeds above 70 (80) need a median barrier – or reduce operating speeds
- Physical separation between oncoming traffic lanes. 2+2 and 2+1 for passing
85\textsuperscript{th} percentile speed $\leq 50\text{km/h}$ is safe system compliant for run-off crashes (unless a cliff / embankments)

Either need a barrier or clear-zone if operating speeds are above 50 kph

Clear zone $>10$ m where 85\textsuperscript{th} percentile speed $\leq 80\text{km/h}$
Safe Speeds – Intersection

- 85th percentile speed ≤50km/h at intersections is safe system compliant

- If operating speeds are above 50kph then avoid designs that result in right angle collisions (priority and signalised intersections)

- Instead consider intersection that avoid right angle collisions
  - Grade separated interchanges (merge lanes)
  - Well designed roundabout
Safe Speeds – Urban areas

- 85th percentile speed ≤30km/h safe system for pedestrians and cyclists regardless of facilities present
- Survival - 90% at 30 - 70% at 40 – under 20% at 50
The initial purpose of the study was to assess the effectiveness of education, enforcement and perceptual changes to the road and road environment in achieving compliance with, and acceptance of, lowered speed limits in both rural and urban environments across New Zealand.

However the study mainly focused on the effectiveness of speed limit signage and engineering measures on speed limit compliance.

Drivers were also asked about there acceptance of lower speeds in an on-line survey.

Four stages of research starting with Literature Review
There is minimal research internationally on the compliance and acceptance of lowering speed limits. Most research is on the default urban and rural speed limits.

European (Sweden and Netherlands) research indicates greater acceptance of lower speed limits in urban residential streets, rather than on higher speed roads.

Australian research indicates that there is some acceptance of lower speed limits on some rural roads - gravel roads and some sealed 2-lane rural roads.
• **Self Explaining Roads** - A study of 80km/h rural roads in the Netherlands demonstrated the importance of ensuring road characteristics are a better match for driver’s perception of appropriate speed limits.

• Road curvature and forward sight distance are strongly correlated with speed perception (and perceived safety risk!) – confirmed in an NZ AA study.

• **Acceptance of Speed limits** - The researchers concluded that although there would never be a speed limit on a particular road section that would be credible for all drivers, there would be a speed limit that would be more credible for everyone…. 
Studies by the Swedish Road Administration showed that, while people often disagreed with lower speed limits, a significant proportion of respondents did travel more slowly subsequent to the changes.

Experience in Wellington indicates that acceptance of reduced speed limits can also increase once it is put in place (Lampton Quay 30 kph limit).

Experience in other places however is that acceptance can also decrease – Hamilton (40kph) and Hastings (80kph).
• 30% classed themselves as speeders, 40% as sometimes speeders and 30% as non-speeders. Males were more inclined to state they were speeders than female respondents.
• 27% of drivers agreed that “I enjoy the feeling of driving fast”
• 27% of drivers agreed that “Speeding is something I do without thinking”.

• 91% agreed that “Everyone should obey the speed limits, because it is the law”. Females were more inclined to agree with this statement.
• 48% agreed that it was very important that something was done to reduce speeding. Percentage of females who agreed it was very important was 56% and males were 40%.

• Close to half of all respondents (48%) said that the speed limit should be enforced all of the time. Percentage of females who agreed strongly was 53% and males were 42%. Two-thirds thought that more frequent ticketing for speeding was a good idea.
82% agreed that vehicles should keep up with the traffic flow.
A majority said they do not want to hold others up – that would be impolite.
A significant number want lower operating speeds.
Hence most support speed enforcement so they can drive at lower and safer speed without holding others up.

The most popular speeding countermeasures were electronic roadside speed warning signs (passive speed enforcement) and increasing public awareness (media campaigns).
61% of drivers would like an in-car device that warned you when you were speeding, with female drivers having a higher agreement to this idea. – leading towards driverless cars!!
Hamilton City Area Wide Treatments
Hamilton City Results - Demonstration

Safer Speed Areas make me safer on my street. (stronger support if asked if good for community)

A Safer Speed Area should be installed in all local streets in Hamilton.
Before surveys were completed in February, April & December 2011. After surveys were completed in April 2012. The survey data relates to those vehicles with a headway greater than four seconds.
SH2 Crash Trends – 90kph areas

- Crashes on 3 sections along corridor

## Annual crash data for 3 sections combined

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<tr>
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</thead>
<tbody>
<tr>
<td>Fsi (Casualties)</td>
<td>12</td>
<td>4</td>
<td>12</td>
<td>3</td>
<td>11</td>
<td>7</td>
<td>17</td>
<td>8</td>
<td>3</td>
<td>1</td>
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<tr>
<td>All Injury (Casualties)</td>
<td>35</td>
<td>16</td>
<td>28</td>
<td>27</td>
<td>36</td>
<td>20</td>
<td>30</td>
<td>14</td>
<td>6</td>
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## Average Crash in Before and Periods

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<tr>
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<th>2005 to 2011</th>
<th>2012 to 2014</th>
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<tr>
<td>FSi</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>All injury</td>
<td>27</td>
<td>8</td>
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</table>
## Hastings Rural Roads – 100 to 80

<table>
<thead>
<tr>
<th>Pakowhai Road Site 1, 2 &amp; 3</th>
<th>Mean Speed</th>
<th>85th %ile Speed</th>
<th>Std. Deviation</th>
<th>Compliance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 km/h zone</td>
<td>70 km/h</td>
<td>80 km/h</td>
<td>12 km/h</td>
<td>–</td>
</tr>
<tr>
<td>80 km/h zone</td>
<td>74 km/h</td>
<td>81 km/h</td>
<td>9 km/h</td>
<td>98%</td>
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<tr>
<td>Change Site 1</td>
<td>+4 km/h</td>
<td>+1 km/h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 km/h zone</td>
<td>87 km/h</td>
<td>96 km/h</td>
<td>10 km/h</td>
<td>–</td>
</tr>
<tr>
<td>80 km/h zone</td>
<td>78 km/h</td>
<td>85 km/h</td>
<td>8 km/h</td>
<td>97%</td>
</tr>
<tr>
<td>Change Site 2</td>
<td>–9 km/h</td>
<td>–9 km/h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 km/h zone</td>
<td>90 km/h</td>
<td>98 km/h</td>
<td>10 km/h</td>
<td>–</td>
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<tr>
<td>80 km/h zone</td>
<td>80 km/h</td>
<td>87 km/h</td>
<td>9 km/h</td>
<td>94%</td>
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<tr>
<td>Change Site 3</td>
<td>–10 km/h</td>
<td>–11 km/h</td>
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</table>
Acceptance of Safer Speeds

If everyone drove a little slower then the roads would be?

When you drive does safety influence your choice of speed?

- Always: 66%
- Sometimes: 32%
- Rarely: 1%
- Never: 1%
Acceptance of Safer Speeds

Less Serious Injury Crashes if we Drive Slower

- 84% Strongly disagree
- 12% Somewhat disagree
- 10% Neither agree or disagree
- 4% Somewhat agree
- 26% Strongly agree

Lowering speed limits would result in people being less seriously injured if a crash does occur:
- 48% Strongly agree
- 26% Somewhat agree
- 12% Neither agree or disagree
- 10% Somewhat disagree
- 4% Strongly disagree
What speed do you travel on a 100km/h road with no congestion?

Typical Travel Speed on Rural Roads

Over 50% travel at 105 or 110 km/h
What do you think if the speed limit on a 100km/h road was lowered to 90km/h or 80km/h?

**Some support for 90 kph**

**Little support for 80 kph**
What speed do you travel on a 50km/h street in a busy shopping area?

Travel Speeds in Urban Shopping Streets

- Less than a quarter travel above 50kph in shopping streets
- ~ 50 km/h
- ~ 55 km/h
- ~ 45 km/h
- ~ 40 km/h
- ~ 35 km/h
What do you think if the speed limit on this street was lowered to 40km/h or 30km/h?

A lot of support for 40 kph

Little support for 30 kph
What speed do you travel on a residential street with a speed limit of 50km/h?

Travel speeds on Suburban Streets

- Around 1/3 travel above 50kph in suburban streets
- Another half travel at 50
What do you think if the speed limit on this street was lowered to 40km/h?

Limited support for 40 kph

- Female
- Male

Far too high | A bit too high | About right | A bit too low | Far too low
Do you think if speed signs had extra wording it would help you slow down more than normal?

- High Crash Zone
- Children Crossing
- Busy Shopping Street
Summary

• In the absence of improved infrastructure on rural (high speed) roads then lower operating speeds (by lowering speed limits) is necessary to move towards reduced fatalities and serious injuries.

• **Good News** High level of understanding that lower speeds results in a lower risk of serious injuries and fatalities.

• **However…** While there is some support for 90kph speed limits, there is little support for 80kph. If we want to lower speed limits we need to get more public support. The NZ Transport Agency is looking at how we do this in there sped management strategy – it’s about ‘changing the conversation around speed’.

• Important that we have self explaining roads for whatever speed limit is selected. How do we do this on rural roads – South Auckland study

• Good support for reducing speed limits in urban shopping streets to at least 40km/h, but little support doing this on most suburban streets.
A note to the audience

This presentation is based on research report RR 563 – *Safer speeds: public acceptance and compliance*.

While the NZ Transport Agency provided investment, the research was undertaken independently, and the resulting findings should not be regarded as being the opinion, responsibility or policy of the Transport Agency or indeed of any NZ Government agency.

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