Road user behaviour

Reference group background pack
Key contributors

This pack was put together by the Ministry of Transport and the NZ Police.

It was reviewed by Professor Samuel Charlton, University of Waikato.
This group will examine the role that road user behaviour can play in improving safety outcomes.

The Safe System approach is human centered

1. People make mistakes
2. People are vulnerable
We need to share responsibility

We need to understand road users, their characteristics, requirements and limitations and design a safe system around them.

We need to strengthen all parts of the system
What does the road user behaviour pillar include?

Road users are responsible for:

- When and where they travel
- How they interact with other road users
- Guiding and controlling their vehicles and movements
- Personal factors including alcohol, drugs, & fatigue
- Use of in-vehicle devices

- Infrastructure design
- Environmental complexity
- Experience & skill
- Road rules & enforcement
- Traffic demands & mental workload
- Transport mode options
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Who are the road users?

Most of our thinking and planning has been focussed on cars and their drivers.

Not all road users have the same needs.

The interaction between different road users creates additional risks.
Vulnerable users

- Vulnerable users have far less protection than is provided by light and heavy motor vehicles.
- Cyclists, motorcyclists, wheeled pedestrians, and some pedestrians have less stability than a car and are usually less visible.
- Motorcycling, cycling, and walking are the three riskiest modes of transport in New Zealand per kilometre travelled. However, walking is comparatively safe on a per hour travelled basis.

**Deaths/serious injuries per 100 million km travelled (July 2010 - June 2014)**

- Motorcyclists: 157.9
- Cyclists: 58.1
- Pedestrians: 33.0
- Car/SUV/Van/Ute drivers: 3.2
- Car/SUV/Van/Ute passengers: 2.6
- Bus passengers: 0.5
Cyclists

- Overall, motorists perceive cycling as positive and beneficial.
- However, some motorists display negative attitudes to cyclists that affect their behaviour toward them.
- Cyclists had primary responsibility for only 19 percent of collisions with vehicles from 2012-2016.

Percentage of cyclist-vehicle collisions by fault (2012–2016)

- 24% of motorists feel negative towards cyclists in general.
- 71% of motorists are not at all familiar with the cycling road code.
- 64% of motorists feel they are a lot less considerate on the road when they are stressed and under pressure (whether cyclists are there or not).
- 27% of motorists are ‘not confident’ on our roads. Motorists can’t help but feel fear & anxiety when sharing the road with cyclists.
Motorcyclists

- Nearly two-thirds (63 percent) of all motorcycle injury crashes occur on urban (speed limit of 70km/h or less) roads, but three quarters (75 percent) of fatal crashes are on the open road.
- 82 percent of all injured motorcyclists, and 91 percent of motorcyclist deaths, are males.
- The motorcycle rider has the primary responsibility for 70 percent of fatal motorcycle crashes.
Pedestrians and mobility impaired

- Walking is the second safest mode after buses per hour spent travelling – but relatively unsafe on a per kilometre basis.
- Pedestrians, mobility impaired, and wheeled pedestrians are still highly vulnerable.

Pedestrian deaths and injuries in motor vehicle crashes – annual average 2012-2016 by age group

- Pedestrians under 25 are over-represented in death and injury crashes.
- Pedestrian fatalities have been trending down since 1996.
Young and novice drivers

- Drivers aged 15-24 are over-represented in fatal and injury crashes.
- Between 2014 and 2016, 15-19 year-old drivers accounted for 10 percent of serious injury crashes and 7 percent of fatal crashes, but made up only 4.6 percent of all licensed drivers.
- Young drivers are less familiar with the driving task and more likely to take risks.
Visiting drivers

- Visiting drivers are typically less familiar with our road rules and driving conditions.
- In 2016 overseas license holders were at fault in approximately 4.3 percent of DSI crashes.
- Despite increasing visitor numbers, the number of crashes involving overseas drivers has remained relatively steady over the last 10 years.
Risk factors

- Impairment
  - Alcohol
  - Drugs
  - Fatigue
- Distraction and inattention
- Aggressive driving and risk taking, including red light running, sensation seeking
  - Link to Speed group
- Insufficient skills and knowledge
- Unrestrained occupants
<table>
<thead>
<tr>
<th>Slips</th>
<th>Actions not carried out as intended</th>
<th>Turning on the wipers instead of indicators</th>
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<tbody>
<tr>
<td>Lapses</td>
<td>Missed actions or omissions (e.g. forgetting to do something)</td>
<td>Forgetting to check mirrors before changing lanes</td>
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<tr>
<td>Mistakes</td>
<td>Incorrect action taken in the belief that it is correct</td>
<td>Failing to understand a give way rule</td>
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<tr>
<td>Violations</td>
<td>Deliberate violation of a rule, procedure or accepted practice</td>
<td>Running a red light</td>
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</table>
Almost all DSI crashes involve user factors, however most crashes have multiple causes.

Attitudes to compliance

- **Generally compliant**
  - Try to comply

- **Habitual offenders and risk takers**
  - Don’t want to comply

- **High risk drivers**
  - Will not comply

**Behaviours**

- Slips, lapses and mistakes
- Risk taking, speeding, aggressive driving, impairment
- Extreme risk and recidivist driving behaviour
All drivers make mistakes

Compliant drivers make slips, lapses and mistakes
  • Try to be compliant but sometimes fail
  • Understand risky driving but may not fully appreciate risk, even when trying to be compliant
  • While not overrepresented, make up a large proportion of DSIs.

General deterrence; mostly self-regulated. Enable through information and education.
Habitual risk takers

Lack of understanding of what risk is and what risks their own driving carries
Overrepresented in DSI crashes, moderate size of driving population
- Speed to be covered in separate reference group, but significant overlap.
- Intersection offences
- Mobile phone use/distraction
- Manner of driving
- Failing to wear a seatbelt
- Unsafe overtaking
- Lane violations
- Driving under the influence

General and specific deterrence; need motivation to change
High-risk drivers

Deliberate, high-end and repeat offending and risk taking. Small part of population but highly overrepresented in DSI crashes.

High risk drivers include:
- unlicensed and disqualified drivers
- high-end alcohol offenders
- high end speeding offenders
- repeat offenders
- drug impaired drivers
- fleeing drivers
- drivers involved in illegal street racing.

May not respond as well to deterrence-based initiatives. Specific deterrence and rehabilitation is required.
The risk of being involved in a crash increases as a driver’s blood alcohol concentration (BAC) increases. At high blood alcohol levels the risk rapidly increases.

Relative risk of fatal crash by blood alcohol level

Blood alcohol levels of alcohol-affected drivers who died in crashes (2014-2016)
Some areas are more at risk from Alcohol factors on the roads than others.

Collective risk measures the total number of DSI crashes in an area.

Personal risk measures the number of DSI crashes in an area but also takes into account the traffic volumes.
In 2017 drugs (and not alcohol) were a factor in 13 percent of fatal crashes, which was higher than alcohol alone at 12 percent.

Note: Alcohol: From 2016 onward, alcohol information from crash reports is not comparable with earlier years, officer suspicion of alcohol/drugs no longer included.

Drugs: From mid-2015 Police started testing all samples from drivers in fatal crashes for drugs. Prior to mid-2015, a much smaller number of driver samples were sent for drug tests.
Fatigue

- Can be caused by lack of sleep, circadian rhythms, time spent driving/working
- Working component included in *Vehicles as Workplaces Reference Group*

Percentage of crashes with fatigue as a contributing factor (2014–2016)

Drivers involved in fatal crashes by vehicle type (annual average 2014–2016)
Distraction

Deaths and serious injuries in crashes with driver attention diverted between 2008 and 2017

Research suggests that the contribution of diverted attention in crashes may be underrepresented in police-reported crash systems.

Research has also found that people talking on a cellphone while driving have significantly more crashes than those talking to a passenger. Passengers adjust their conversations to reflect road risks and alert drivers to hazards. Talking on a hands-free cellphone was found to be just as dangerous as talking on a handheld phone.

(Charlton 2009; Wilson, Thomson, Tarkey & Charlton, 2013).
Restraints

- While 97% of vehicle occupants wear safety belts, the remaining 3% are disproportionately represented in fatal crashes. In 2016 29% of vehicle occupants killed were not wearing safety belts.
- Males were the most common offenders (74.5%) and 58% of offenders were repeat offenders.
- 14% of restraint offences are for the incorrect restraint or seatbelt use of children.

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-seat belt fatalities as a proportion of motor vehicle occupant deaths</th>
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<tbody>
<tr>
<td>2006</td>
<td>25%</td>
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How can we influence driver behaviour?

- **Generally compliant**
  - Try to comply
  - Information
    - Rules
    - Education and training

- **Habitual offenders and risk takers**
  - Don’t want to comply
  - Deterrence
    - Change attitudes

- **High risk drivers**
  - Will not comply
  - Targeted interventions
    - Removing from the system
Rules

Safer Journeys Actions to date include:

- Competency based motorcycle licence testing
- Raised minimum driving age to 16 years
- Implemented zero BAC for drivers under 20 years old
- Lowered BAC for drivers over 20 years to 0.05
- Implemented the alcohol interlock programme
- Investigating changes to road rules to increase cycling safety.
**Awareness**

- NZTA advertising campaigns focused on driver behaviour – e.g. drink driving, drug affected driving, young driver, driver distraction, seatbelts, cycling (share the road).
  - NZTA advertising guidelines (2012) provide information on effective road safety advertising campaigns.
- **Visiting Drivers project**
  - Steering wheel tags reminding drivers about New Zealand road rules on rental vehicles.
  - Rental vehicle operator information sharing network – rental vehicle operators share information about drivers that have previously had their rentals cancelled – allows operators to avoid renting out vehicles to these drivers.

Education and training

• Share the Road campaign seeks to encourage positive behaviour change in drivers of heavy vehicles and people on bicycles. Campaign includes driver and cyclist workshops aimed at increasing mutual understanding.

• Ride Forever - ACC subsidised training for riders of mopeds, motorcycles, and scooters to improve skills and confidence.

• Behind the Wheel Signature Project – supports young people who face multiple barriers to becoming safe, fully-licensed drivers.

The current driver licensing system is out of scope for this reference group because a separate review is underway.
What might change from 2020-2030

- Technology – increasing levels of automation in new vehicles may change the importance of road user behaviour over time. Impact likely to be limited in the next decade because of the age of our fleet.
- Vehicle kilometres travelled (VKT) – increases or decreases in VKT can influence the number of DSIs from crashes.
- Modes – new modes of transport can pose new behavioural challenges for the system. E.g. electric powered skateboards, segways, and scooters.
- Social norms – changes to social norms could impact road user behaviour. E.g. reduced vehicle ownership, reduced driver licensing or people getting their licences later, and increased use of active modes.
- Tourism growth – continued increases in the number of visiting road users.
Links to other outcomes and groups

Strong overlap between this reference group and other reference groups:

• Speed – behavioural aspects and risks are often linked.
• Vehicles as a Workplace – covers fatigue management and drug and alcohol policies.

Child Wellbeing Strategy (under development)

• Safety is likely to be one of the wellbeing domains, identifying children’s physical safety as a potential focus area, including reducing DSI on roads.

Safe and Effective Justice (Criminal Justice System reform)

• Reducing offending, reducing re-offending, and having fewer victims of crime.
• Early data shows that for 40% of first time offenders, the reason they are before the court is that they have been charged for a traffic offence.