

## About transport and health

### HIGHLIGHTS:

- **Transport can impact on health in a number of ways: road traffic injuries and deaths, air pollution, noise pollution, and physical activity. Transport activities can also contribute to greenhouse gas emissions. A lack of transport can also be an important barrier to social interaction and accessing services.**
- **New Zealanders are heavily reliant on cars as a mode of transport, and have the highest car ownership rate in the OECD.**
- **Road transport was estimated to have caused 650 deaths in New Zealand in 2012 (308 from traffic accidents, 283 from air pollution and 59 from noise pollution).**
- **Active forms of transport (such as walking and cycling) have a range of health benefits.**



This factsheet provides information about how transport impacts on human health in New Zealand. This information complements the new set of environmental health indicators (EHIs) on transport and health released by the EHINZ programme in May 2017.

### Transport plays an important role in our lives

Transport plays an important role in New Zealand society. We rely on transport to get from one point to another, move goods around, get to work, and for everyday life. Transport is also very important for connecting people to healthcare services, education, family, community, shops and recreation (British Medical Association 2012).

Cars are the main form of transport used in New Zealand, and New Zealand has the highest vehicle ownership rate per capita in the OECD (OECD 2013). In 2011–2014, New Zealanders spent the vast majority (79%) of their total travel time in motor vehicles, with much less travel time spent walking (13%), cycling (2%) or on public transport (4%) (Ministry of Transport 2014).

### How transport impacts on health

Transport can impact on our health in a number of ways, including road traffic injuries and deaths, air pollution, and noise pollution, as well as providing health benefits through physical activity. Additionally, motorised transport relies heavily on fossil fuels, which contribute to greenhouse gas emissions when burned. Furthermore, a lack of transport can lead to social isolation and barriers to accessing services, including healthcare.

Active transport (such as walking and cycling) and public transport are sustainable alternatives to motor vehicles, with positive health benefits, including for mental wellbeing, physical activity, and cardiovascular health (British Medical Association 2012).

A recent study estimated that in New Zealand, road transport was responsible for 650 deaths in 2012, of which 308 were from traffic accidents, 283 as a result of air pollution, and 59 deaths from noise pollution (Briggs et al 2016). Additionally, an estimated 40 deaths were avoided through active transport.

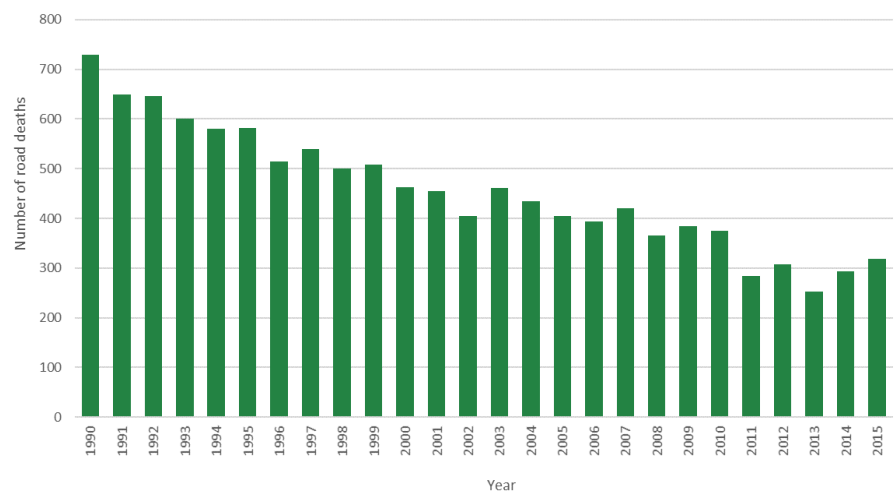
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### Road traffic injuries and deaths

Worldwide, road crashes are estimated to result in 1.3 million deaths annually, and are a large contributor to the global burden of disease (Bhalla et al 2014).

Road traffic crashes cause several hundred deaths in New Zealand each year (Figure 1), and many more injuries. Road crashes do not exclusively affect people travelling in motor vehicles, but also other road users such as pedestrians and cyclists. Younger people tend to have the highest rates of road crashes and deaths (Ministry of Transport 2016).

Figure 1 : Annual road toll in New Zealand, 1990–2015



Source: Ministry of Transport (2017)

### Air pollution from road transport

Motor vehicles contribute to air pollution in New Zealand, particularly in the Auckland region (Kuschel et al 2012). Vehicle emissions (from burning petrol and diesel) include particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), and nitrogen dioxide, carbon monoxide and other gases.

Exposure to particulate matter, particularly the finer PM<sub>2.5</sub>, can lead to chronic respiratory and cardiovascular diseases, as well as some cancers and low birth weight (Beelen et al 2014, Hoek et al 2013, Pedersen et al 2013, Stafoggia et al 2014). Nitrogen dioxide is associated with acute respiratory effects such as asthma symptoms, especially in children (Hoek et al 2013, Jacquemin et al 2009).

The Health and Air Pollution in New Zealand (HAPINZ) study estimated that in 2006, there were 256 deaths in New Zealand due to air pollution (PM<sub>10</sub>) from motor vehicles (Kuschel et al 2012). Briggs et al (2016) estimated that in 2012, air pollution from road transport caused 283 deaths in New Zealand, of which 218 were due to PM<sub>10</sub>, and 65 due to nitrogen dioxide exposure.

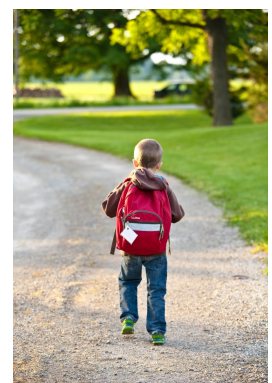
### Active transport brings many benefits for health and the environment

Active forms of transport, such as walking and cycling, have a range of benefits, including producing no air pollution, noise pollution or greenhouse gases. The health benefits of active transport also include improved mental health, and reduced risk of diseases such as cardiovascular diseases and cancer (British Medical Association 2012).

Using walking or cycling as a means of transport integrates physical activity into everyday life, and reduces the time spent being sedentary. A meta-analysis found that active commuting (walking or cycling) led to a 11% decrease in cardiovascular risk (Hamer 2007). Active transport could play a role in helping to reduce the obesity rate (Swinburn et al 2011), which is particularly high in New Zealand (32% of adults and 11% of children in 2015/16) (Ministry of Health 2016).

A New Zealand study found that moving 5% of short urban car trips (of up to 7 kilometres) to cycling would result in: 116 deaths avoided annually in New Zealand through increased physical activity, 5.6 fewer deaths due to local air pollution from vehicles, and an additional 5 cyclist deaths from road crashes (Lindsay et al 2011).

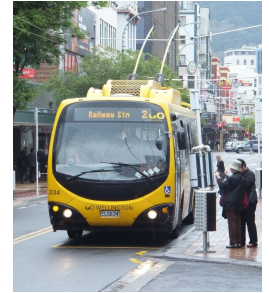
Additionally, a 2008 transport cost-benefit analysis found that active forms of transport had economic benefits in New Zealand, saving \$4.27 per km for each new walker, and \$2.14 per km for each new cyclist (Genter et al 2008).



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### Public transport also has benefits

Using public transport can also bring health benefits. Public transport increases physical activity, as it often incorporates physical activity as part of the journey. Public transport use also reduces air pollution, is safer than travelling by car, and can improve mental health (Litman 2010, Rissel et al 2012). Additionally, at average occupancy, public transport produces fewer harmful emissions than private vehicles (British Medical Association 2012). Given this, public transport is considered the preferred, and most sustainable, form of transport for longer distances (British Medical Association 2012, NZCPHM 2013).



### Noise pollution from road transport

Road traffic noise can also affect health, particularly through annoyance, high blood pressure (van Kampen and Babisch 2012) and cardiovascular disease (Babisch 2008). Noise pollution from traffic can also affect people's sleep patterns and impair cognitive performance, as well as affecting children's learning and increasing their risk of cognitive and behavioural problems (WHO 2011, British Medical Association 2012, Tiesler et al 2013, European Commission 2015).

Most road traffic noise is caused by motorised vehicles, in particular the sound of tyres on the road, as well as engines, brakes and exhaust systems (Mindell, Watkins and Cohen 2011). People most exposed to road-related noise include those living close to busy roads, and low-income groups (WHO 2012).

The World Health Organization (WHO) estimated that 1.0–1.6 million healthy life years are lost every years from traffic-related noise in western European countries (WHO 2011). In New Zealand, road traffic noise was estimated to have caused 59 deaths in 2012 (Briggs et al 2016).

### Towards a more sustainable transport system

Many organisations have called for transport systems to shift away from the heavy reliance on cars and motorised vehicles, towards healthier and more sustainable forms of transport (British Medical Association 2012, Mindell et al 2011, NZCPHM 2013). In particular, the New Zealand College of Public Health Medicine has called for the 'development of a sustainable transport environment where active travel and public transport are prioritised and represent realistic and safe alternatives to travelling by car' (NZCPHM 2013).

Use of active transport and public transport can be limited by a number of barriers, including concerns about road safety, a lack of safe places to travel, and poor urban design. Studies have shown that traffic speeds and volumes can affect how people choose to travel, with higher levels of walking and cycling in areas with lower traffic volumes (British Medical Association 2012). A study in London showed that reducing speed limits to 20 miles per hour (30 km/h) reduced road injuries by 42% (Grundy et al 2009). Additionally, one of the major barriers to cycling remains the real (and perceived) risk of injuries. Public transport also needs to be reliable, affordable, frequent and easy to use, for people to use it. In smaller towns and rural areas, public transport is often not available.

### Environmental Health Indicators for transport

The EHINZ programme at Massey University has recently released a new set of environmental health indicators (EHIs) on transport and health. The following indicators are available on the EHI website ([www.ehinz.ac.nz](http://www.ehinz.ac.nz)):

- Number of motor vehicles
- Active transport to and from school
- Main mode of transport to work on Census day
- Household travel time by mode of transport
- Unmet need for GP services due to a lack of transport
- Transport injury hospitalisations and deaths.

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