

11 March 2018

Auckland Transport General
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Submission on Speed Limits Bylaw 2019

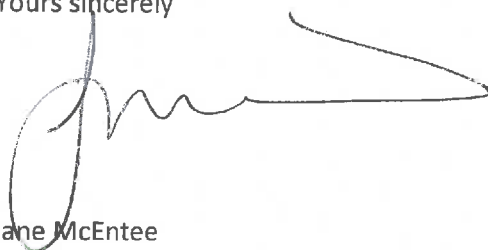
Thank you for the opportunity for Auckland Regional Public Health Service (ARPHS) to provide a submission on Auckland Transport's speed limits bylaw review.

The following submission represents the views of ARPHS and does not necessarily reflect the views of the three District Health Boards it serves. Please refer to Appendix 1 for more information on ARPHS.

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Yours sincerely



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Overview and Recommendations

1. Thank you for the opportunity for Auckland Regional Public Health Service (ARPHS) to provide a submission on Auckland Transport's Speed Limits Bylaw 2019.
2. ARPHS fully supports Auckland Transport in moving towards a Vision Zero approach to improving road safety; and reducing traffic speed limits to reduce deaths and serious injury.¹ Road safety is recognised as both a transport and public health issue. Traffic speed impacts on road traffic accidents, air and noise pollution, and the level of physical activity. Auckland has high rates of pedestrian and cyclist injury compared with many other developed countries.² These deaths and serious injuries are largely preventable.
3. Auckland streets need to be safe for everyone, whether a person is driving, walking, cycling or on public transport. Traffic speeds and a safe system for roads should be considered within a broader framework that makes streets safe for everyone. Road related deaths and injuries are largely preventable and impact disproportionately on children and young people, older people and people living in economically poorer areas.
4. Reducing traffic speeds has proven to be a highly effective way of reducing traffic related deaths and injuries. The data on speed is unequivocal. There is a strong and exponential relationship between increasing speeds and crash risk, and between increasing speeds and serious injuries or death. The faster vehicles travel, the more frequent and severe road crashes become, and the greater the level of injury and death that ensues.³
5. Our main recommendations are as follows:
 - Reduce speed limits in the city centre as proposed under the draft Speed Limits Bylaw 2019;
 - Reduce speed limits in town centres as proposed under the draft Speed Limits Bylaw 2019 and further extend this to include all town centres with a road thoroughfare;
 - Reduce speed limits on rural roads outside of urban traffic areas as proposed under the draft Speed Limits Bylaw 2019;
 - Provide greater protection for children around schools by reducing the variable speed around all schools to 30km/hour. This could be further extended to Early Childhood Education (ECE) services;
 - Prioritise safety on active transport routes through the implementation of the safe speeds recommended in the Roads and Streets Framework for all arterial, collector and local streets across Auckland;⁴
 - Ensure the design speed of roads is consistent with the reduced speed limits.

¹ Auckland Transport. Vision zero. Available from: <https://at.govt.nz/projects-roadworks/safe-speeds-programme/vision-zero/> Accessed 9 November 2018.

² International Transport Forum. "Safer City Streets, A Global road safety benchmark, Working Document prepared to support 2nd meeting of the Safer City Streets network". ITF, 2017.

³ International Traffic Safety Data and Analysis Group. "Speed and Crash Risk: Research report". Paris: International Transport Forum, 2018.

⁴ Auckland Transport (2017). Roads & Streets Framework. Available from: <https://at.govt.nz/media/1976084/roads-and-streets-framework-webcompressed.pdf> Accessed 9 November 2018.

6. To support this submission, ARPHS has developed an evidence brief entitled “Evidence Summary: Traffic speed limit reductions”. The evidence brief summarises the health related evidence for reducing speed limits. It is provided in a separate document in addition to this submission.

Reduce speed limits in the city centre

7. In the morning two-hour peak period, there are 84,000 people commuting into Auckland’s city centre. The mode share for transport into the city is 48% private motor vehicle, with the remainder through public and active transport. The capacity for people movement into the city through private vehicles is near maximum at 22,000 people per hour. Increased capacity for people movement into the city must be through public transport and active transport.⁵ Creating a safe road environment for active and sustainable transport is therefore imperative to support this mode shift. As well as the actual impact on safety, higher traffic speeds impact on people’s perceptions of cycling and walking safety and can be a barrier to their uptake.
8. Auckland’s city centre should now be considered a residential as well as a business area. It was estimated the population of the city centre at the end of 2018 was up to 57,000, with more than 1,500 families with children living there.⁶ The number of people living in the city centre is greater than the number of people driving in during the morning peak,⁷ and residents and their children are entitled to a safe road environment as they move around their neighbourhood.
9. The roads in the central city have a high volume of pedestrian traffic,⁸ with an estimated half a million walking trips daily.⁹ AT’s analysis of high risk intersections shows there is a high crash risk for pedestrians and cyclists on many of the routes and intersections in the city centre. Safety for road users not in vehicles must be a priority.
10. In New Zealand, traffic speed reductions to 30km/h have been effective at reducing injuries from crashes. In Christchurch, the introduction of 30km/h zones in parts of the CBD reduced injury-causing crashes by 25%, compared to a 13.5% increase in the rest of the CBD.¹⁰

Recommendation: ARPHS fully supports 10km/hour and 30km/hour speed limits in the city centre for the safety of all road users, in accordance with International Transport Forum guidelines and Auckland Transport’s Roads and Streets Framework.^{11,12}

⁵ MR Cagney (2018). Auckland City Centre: Transport Capacity and Access Trends. Auckland: Auckland Council.

⁶ City Centre Residents Group (2019). City Centre Facts. Available from: <https://www.ccr.org.nz/city-centre-facts/> Accessed 13 November 2018.

⁷ MR Cagney (2018). Auckland City Centre: Transport Capacity and Access Trends. Auckland: Auckland Council.

⁸ Heart of the City (2018). Pedestrians in the City. Available from: www.hotcity.co.nz. Accessed 13 November 2018.

⁹ City Centre Residents Group (2019). City Centre Facts. Available from: <https://www.ccr.org.nz/city-centre-facts/> Accessed 13 November 2018.

¹⁰ Koorey, G. (November 2018). “Has the Christchurch Central City 30km/h zone worked?” *Transport Knowledge Conference*. Available from: <https://viastrada.nz/sites/default/files/2018-11/GKoorey-TKC18-Chch30kmhCBD.pdf>. Accessed 9 November 2018.

¹¹ International Traffic Safety Data and Analysis Group. (2018). “Speed and Crash Risk: Research report”. Paris: International Transport Forum.

Reduce speed limits in town centres

11. Speed limits need to take into account the type and mix of road users.¹³ In urban areas where there is a greater mix of road users, reducing traffic speeds will give greater protection to road users such as children and people walking or cycling. Walking is the basic unit of movement in neighbourhoods.¹⁴ As town centres typically have a high volume of people walking (and cycling), traffic speeds should be set at a level that is survivable in the case of collision.
12. Slower speed limits in town centres also contribute to social connectedness and place making. Roads and streets make up around half of Auckland's public open space.¹⁵ Auckland Transport has noted that "how we use and design our roads and streets directly influences place identity, accessibility, public health, social equity, inclusivity and local and regional economies..."¹⁶ and slower traffic speeds contribute to these.
13. Some of Auckland's communities are disproportionately impacted by road crashes. There is a relationship between socioeconomic status and traffic injuries and death that is seen globally.¹⁷ People living in lower-income neighbourhoods experience greater levels of traffic-related injury and deaths. This is also the case in Auckland, with Māori and Pacific children, people living in South Auckland and in rural areas over-represented in road deaths and serious injury. Children living in the most socio-economically deprived areas have a three times higher injury rate than children living in the least deprived areas.¹⁸ Auckland should be a place where everyone can feel safe using our streets. Communities who have worse road safety outcomes should be prioritised for road safety interventions.

Recommendation: ARPHS supports 30km/hour speed limits in town centres. We recommend this is extended to all town centres with a road thoroughfare, for example, Hunters Corner, Old Papatoetoe, Manurewa, Papakura and Panmure. This will improve consistency across the region, so drivers can expect town centre speed limits to be 30km/hour. Reduced speeds in town centres should also be prioritised in areas that experience proportionally higher rates of road traffic accidents.

¹² Auckland Transport (2017). Roads & Streets Framework. Available from: <https://at.govt.nz/media/1976084/roads-and-streets-framework-webcompressed.pdf> Accessed 9 November 2018.

¹³ World Health Organization (2017). Save lives: a road safety technical package. World Health Organization.

¹⁴ Auckland Transport. (2017). Roads & Streets Framework. Available from: <https://at.govt.nz/media/1976084/roads-and-streets-framework-webcompressed.pdf> Accessed 9 November 2018

¹⁵ Auckland Transport (2017). Roads & Streets Framework. Available from: <https://at.govt.nz/media/1976084/roads-and-streets-framework-webcompressed.pdf> Accessed 9 November 2018.

¹⁶ Auckland Transport (2017). Roads & Streets Framework. Available from: <https://at.govt.nz/media/1976084/roads-and-streets-framework-webcompressed.pdf> Accessed 9 November 2018.

¹⁷ Christie, N. (2018). "Why we need to view road safety through a public health lens". Transport Reviews, 38:2, 139-141, DOI: 10.1080/01441647.2018.1411226

¹⁸ Hosking, J, S Ameratunga, D Exeter, J Stewart, and A Bell. "Ethnic, socioeconomic and geographical inequalities in road traffic injury rates in the Auckland region." *Australian and New Zealand Journal of Public Health* 37, no. 2 (2013): 162-7

Reduce speed limits on rural roads outside of urban traffic areas

14. New Zealand has already seen the impact of speed limit changes. In 1973, the speed limit on the open road was reduced to 80km/hour to conserve fuel, and in 1985 it was increased to 100km/hour. When speed limits were reduced, traffic deaths and injuries fell relative to urban roads. Conversely, when speed limits increased traffic deaths and injuries increased.¹⁹ The effect of changes in open road speeds has been estimated based on crash data from 1996 to 2002. There was a 12% reduction in fatal and injury crashes for every 1 km/hour reduction in mean open road speed in New Zealand.²⁰
15. Reducing traffic speeds has co-benefits for the environment. Higher speeds on the open road use more fuel and produce more greenhouse gas emissions.²¹ Reducing speeds can therefore help mitigate the significant contribution of transport to Auckland's greenhouse gas emissions.
Recommendation: ARPHS supports reducing speed limits to no more than 80km/hour on rural roads outside of urban traffic areas (this does not include motorways), and lower where identified in the speed bylaw.

Provide greater protection for children around schools

16. SafeKids report that 316 children each year die or are hospitalised from crashes involving motor vehicles in New Zealand. For non-fatal crashes, nearly half occur when children are passengers in vehicles and more than one-quarter occur when they are pedestrians.²²
17. Differences in the road environment in areas of Auckland may be contributing to the risk of child pedestrian injury. Research has found fewer road traffic-calming features within a 1km radius of schools in Manukau City, compared to a 1km radius of schools in Auckland City. There were 25 traffic-calming features around the least deprived schools versus 18 around the most deprived schools.²³
18. Studies that have assessed the impact of 30km/hour zones have found they reduce injuries and deaths in children by 50-70%.^{24,25} As 30km/hour is generally considered the survivable speed in collisions with vulnerable road users, it is the appropriate variable speed limit to be in place

¹⁹ Koorey, G. F. (2017). "Changing rural speed limits - learning from the past". *IPENZ Transportation Group Conference*. Hamilton

²⁰ Povey, L. F. (2003). "An investigation of the relationship between speed enforcement, vehicle speeds and injury crashes in New Zealand". *IPENZ Transportation Group Technical Conference*. Christchurch.

²¹ NZTA. (2016). Speed Management Toolbox. Available from: <https://www.nzta.govt.nz/assets/Safety/docs/speed-management-resources/speed-management-toolbox-and-appendices-201611.pdf>

²² SafeKids Aotearoa. (2015). "Child Unintentional Deaths and Injuries in New Zealand, and Prevention Strategies". Auckland, NZ: SafeKids Aotearoa.

²³ Hopgood, T., Percival, T., Stewart, J., Ameratunga, S. (2013). "A tale of two cities: paradoxical intensity of traffic calming around Auckland schools". *NZ Med J.* 10;126(1374):22-8.

²⁴ Cairns, J, J Warren, K Garthwaite, and et al. "Go slow: an umbrella review of the effects of 20 mph zones and limits on health and health inequalities." *Journal of Public Health* 37, no. 3 (2014): 515–520

²⁵ Grundy, C., Steinbach, R., Edwards, P., et al. "Effect of 20 mph traffic speed zones on road injuries in London, 1986-2006: controlled interrupted time series analysis." *BMJ*, 2009: 339:b4469

around all schools. This same level of protection should be extended to all rural schools and to ECE services.

Recommendation: ARPHS recommends the variable speed around all schools is reduced to 30km/hour. This could be further extended to include ECE services.

Prioritise safety on active transport routes

19. Conditions for people cycling in Auckland are reported by Auckland Transport as unsafe. As unprotected road users, people cycling in Auckland experience ten times the level of serious injuries from crashes by mode share.²⁶ It is an NZTA strategic priority to make urban cycling a safer and more attractive transport choice. Similarly, it is a focus in the Auckland Plan 2050 to “make walking, cycling and public transport preferred choices for many more Aucklanders”.²⁷
20. Safer Journeys’ vision for walking and cycling is that: "By 2020 we will have a safe road environment that encourages more people to walk and cycle, where vehicles travel at safe speeds and there is a culture of sharing the road. We will aim to achieve a significant reduction in the number of pedestrians and cyclists killed and seriously injured while at the same time encouraging people to use these modes through safer roading infrastructure."²⁸ Auckland Transport’s Roads and Streets Framework clearly outlines how this safer road environment can be achieved including suitable speeds by road type. This Framework should form the basis for setting safe speeds across all roads in Auckland, not solely the roads named under the proposed bylaw.
21. There is evidence of suppressed demand for cycling as a transport mode, with three-quarters of urban New Zealanders saying they would cycle more if there were safer roads.²⁹ Auckland Transport’s most recent cycling survey revealed 52% of respondents felt unsafe cycling because of the way people drive.³⁰ Negative traffic perceptions have been consistently associated with less walking and cycling. Levels of walking and cycling are inversely proportional to traffic speed and volume of vehicle traffic. Where pedestrians and cyclists feel safer, levels of walking and cycling tend to be higher.^{31,32,33}

²⁶ Auckland Transport. Auckland Cycling 10-year Plan. Available from: <https://at.govt.nz/media/1974167/auckland-cycling-10-year-plan-july-2017.pdf>

²⁷ Auckland Council. Auckland Plan 2050. Transport and Access Focus Area 4. Available from: <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/auckland-plan/transport-access/Pages/focus-area-make-walking-cycling-public-transport-preferred-choices.aspx>

²⁸ Ministry of Transport. “Safer Journeys: New Zealand’s Road Safety Strategy 2010-2020”. Wellington: Ministry of Transport, 2010

²⁹ NZTA. (2016) “Urban New Zealanders Attitudes and Perceptions of Cycling”. Available from: <https://www.nzta.govt.nz/assets/Walking-Cycling-and-Public-Transport/docs/Urban-Cycling-Attitudes-Baseline-2016.pdf>

³⁰ TRA. (2018). “Measuring and growing active modes of transport in Auckland”. Auckland: Auckland Transport.

³¹ Jacobsen, P. L., Racioppi, F., & Rutter, H. (2009). “Who owns the roads? How motorised traffic discourages walking and bicycling.” *Injury Prevention*. 15(6): 369

³² Fraser, DS., Lock, K. (2010). “Cycling for transport and public health: a systematic review of the effect of the environment on cycling.” *European Journal of Public Health* 21, no. 6: 738-743

³³ Garrard, J. (2008). “Safe speed: promoting safe walking and cycling by reducing traffic speed”. Melbourne, Australia: Safe Speed Interest Group - Heart Foundation, City of Port Phillip and City of Yarra

22. New Zealand is a member country of The International Transport Forum, which makes the point that “where streets are seen as dangerous, efforts to promote walking and cycling are undermined. Reducing the risks of urban traffic thus not only saves lives: it unlocks sustainable forms of transport which reduce pollution, cut emissions, fight congestion and improve the physical and mental health of citizens – in short, safer streets are a key to make a city more liveable.”³⁴
23. Most cycling crashes and deaths happen in urban areas. Vehicle drivers are at fault in 87% of collisions and near misses, with a common feature being failing to look properly.³⁵ Traffic speed reduction is a straightforward and important mechanism for improving cycle safety. It can reduce the number of collisions by reducing stopping distances, and reduce the impact forces to a survivable level if a collision does occur.
24. Under a safe system paradigm for road safety it is recognised that exposure, or the amount that vehicles travel, is a risk factor for crashes. Reducing vehicle travel becomes important not only to manage demand but to improve the safety of the transport system overall and reduce serious injuries and deaths. This is especially important with the projected population growth for Auckland and limited capacity for more vehicle travel. Creating a shift to make active and public transport safer and easier can help achieve a shift in transport mode choice.³⁶

Recommendation: To create transformational change in Auckland’s road safety statistics, and improve road safety for sustainable transport modes, ARPHS recommends implementation of the safe speeds recommended in the Roads and Streets Framework, including all arterial, collector and local roads and streets across Auckland.

Ensure the design speed of roads is consistent with the reduced speed limits

25. Estimates of impacts on travel time from speed limit changes suggest impacts will be small. On urban roads, capacity is determined more by traffic flow through intersections and congestion rather than speed limits. Dropping the maximum speed limit has a small effect on the average speed for a trip.³⁷ Regardless, we contend that safety must be the priority and that any disadvantages for travel time cannot outweigh improvements in safety.
26. Road safety will not solely be improved by reducing speed limits on some roads. A Safer Journeys approach lowers the design speed of a road to encourage reduced speeds and self-enforce the speed limit. This requires greater consistency in applying design speed principles throughout all road design, maintenance, and re-development in Auckland. Design and infrastructure changes made to improve road safety must consider all modes of road user. Safety for one travel mode should not be traded off against safety for another. An example is

³⁴ International Transport Forum. Safer City Streets. Available from: <https://www.itf-oecd.org/safer-city-streets>

³⁵ Mackie, H. H. (2017). “Towards a safe system for cycling. Research report 606”. Wellington: NZ Transport Agency

³⁶ Litman, T. (2018). “A new traffic safety paradigm”. Melbourne: Victoria Transport Policy Institute.

³⁷ NZTA. (2016). Speed Management Toolbox. Available from: <https://www.nzta.govt.nz/assets/Safety/docs/speed-management-resources/speed-management-toolbox-and-appendices-201611.pdf>

kerb build-outs, which are a good design solution for people on foot, but are a hazard for people on bikes.

27. The design speed of roads should be considered within a framework such as Healthy Streets or Complete Streets that moves beyond traffic speeds to creating streets that support social, environmental, economic and physical health and wellbeing.^{38,39}
28. It has been contended by some that the solution to improving road safety is driver education. Training and driver education have a role, but cannot be relied on to significantly improve road safety. The Safe System approach arose in the 1980s and 1990s because of the ineffectiveness of the prevailing view that road user safety was a person's own responsibility and could be changed by influencing road users' to act safely at all times. There was a shift to viewing road safety as a whole system, taking into account that human beings make errors of judgment.⁴⁰ Traffic psychology tells us that human behaviour is the most difficult part of the transport system to change.⁴¹ Experimental studies on driver training have not demonstrated beneficial effects on accident rates (positive effects have only been seen in non-experimental studies). It is thought this could be because people who have received training think they are better drivers so give themselves smaller safety margins than less-confident drivers.⁴²

Recommendation: Ensure the design speed of roads is consistent with the reduced speed limits; and prioritise the safety of all road users above speed.

Conclusion

29. Too many people are being injured or dying on Auckland's roads. In contrast to many other cities around the world, the number of people dying on Auckland's roads is increasing. Safe and survivable speed limits will reduce these preventable road injuries and deaths.
30. Most Aucklanders use a mix of transport to get to their destination, whether it is walking from a car park or cycling to a train station. Reducing traffic speed limits makes our roads safer and more forgiving for everyone regardless of the stage of their journey.
31. ARPHS encourages AT to formally adopt a Safe System/Vision Zero approach to road safety to ensure a comprehensive approach to preventing road injuries and deaths.
32. ARPHS fully supports Auckland Transport in reducing traffic speed limits in the Speed Limits Bylaw 2019; and further recommends implementation of safe speeds as set out in the Roads & Streets Framework to all roads in Auckland.

³⁸ Mayor of London & Transport for London. "Guide to the Healthy Streets Indicators." London, n.d.

³⁹ Smart Growth America. Complete Streets. Available from: <https://smartgrowthamerica.org/program/national-complete-streets-coalition/publications/what-are-complete-streets/>

⁴⁰ ITF (2016), Zero Road Deaths and Serious Injuries: Leading a Paradigm Shift to a Safe System, OECD Publishing, Paris.

⁴¹ Porter, BE (2011). Handbook of Traffic Psychology. Academic Press: London.

⁴² Porter, BE (2011). Handbook of Traffic Psychology. Academic Press: London.

Appendix 1: Auckland Regional Public Health Service

Auckland Regional Public Health Service (ARPHS) provides public health services for the three district health boards (DHBs) in the Auckland region (Counties Manukau Health, Auckland and Waitemata District Health Boards).

ARPHS has a statutory obligation under the New Zealand Public Health and Disability Act 2000 to improve, promote and protect the health of people and communities in the Auckland region. The Medical Officer of Health has an enforcement and regulatory role under the Health Act 1956 and other legislative designations to protect the health of the community.

ARPHS' primary role is to improve population health. It actively seeks to influence any initiatives or proposals that may affect population health in the Auckland region to maximise their positive impact and minimise possible negative effects.

The Auckland region faces a number of public health challenges through changing demographics, increasingly diverse communities, increasing incidence of lifestyle-related health conditions such as obesity and type 2 diabetes, infrastructure requirements, the balancing of transport needs, and the reconciliation of urban design and urban intensification issues.

Evidence Summary: Traffic speed limit reductions

February 2019

This summary provides an overview of research evidence on the impacts of reductions in traffic speed limits on road crashes, injuries and deaths; road safety risk in Auckland; the impact on sustainable transport modes; and other public health co-benefits.

Impact of vehicle speed on road crashes, injuries and deaths

Streets are shared public spaces that allow Aucklanders to go about their daily lives, whether by driving, walking, or cycling. In 2017, 64 people lost their lives on Auckland’s streets, and 771 more were seriously injured. These deaths and injuries are largely preventable. Reducing traffic speeds is a highly effective way of making our streets safe for everyone by reducing collisions, serious injuries (such as brain and spinal injuries) and deaths.

Reducing speed limits reduces crashes, serious injuries, and deaths

Evidence

Motor vehicle crashes are a leading cause of injury and death

In 2017, road injuries were the ninth leading cause of premature death in New Zealand. (Institute for Health Metrics and Evaluation (IHME) n.d.)

Increasing numbers of Aucklanders are being killed and maimed on our roads

In 2017, 64 people were killed and 771 seriously injured on Auckland’s roads. Numbers of serious injury and deaths have increased by more than 70% between 2014 and 2017, much faster than the rest of the country, which has experienced a 23% increase. (Howard 2018)

Auckland Transport has a dashboard that shows numbers of [road injury and death by local board area](#).

The social cost of crashes in Auckland has been estimated as \$4,516,000 for each fatal crash and \$855,000 for each serious crash. Over 90% of the social cost of crashes comes from loss of life or loss of quality of life. Other factors include reduced productivity and medical or other resource costs. (Ministry of Transport 2017)

Because they are unprotected, people who are walking or cycling have a greatly increased risk of serious injury or death compared to someone travelling in a car. For example, people walking have a 29 percentage point increase in serious injury risk compared to a person in a car. (Deloitte 2017, Infometrics 2017)

Estimates from the International Transport Forum show that out of 26 international cities, Auckland has the second highest pedestrian fatality rate, the sixth highest cyclist fatality rate, and the highest motorcyclist fatality rate per distance travelled. (International Transport Forum 2017) Nearly all serious cycling injuries in New Zealand involve a vehicle. (Turner 2009)

SafeKids report that each year 316 Kiwi children die or are hospitalised from crashes involving motor vehicles. For non-fatal crashes, nearly half occur when children are passengers in vehicles and more than one-quarter occur when they are pedestrians.

	<p>(Safekids Aotearoa 2015) Transport injuries were among the top ten causes of health loss in children under 14 years of age in 2013. (Environmental Health Indicators New Zealand 2018)</p>
<p>Speed limits are currently at a level that is known to be unsafe</p>	<p>Auckland Transport is required under the 'Land Transport Rule: Setting of Speed Limits 2017' to set speed limits that are safe. The International Transport Forum is an intergovernmental organisation with 59 member countries, including New Zealand. Their latest report on speed and road traffic safety compiled data from 10 countries to determine what a safe traffic speed limit is. Safe and reasonable speed limits were determined as:</p> <ul style="list-style-type: none"> • 30 km/h maximum in built up and residential areas where there is a mix of vulnerable road users and motor vehicle traffic • 50km/h in other areas with intersections and a high risk of side collisions • 70km/h on rural roads without a median barrier to reduce risk of head-on collisions. (International Traffic Safety Data and Analysis Group 2018)
<p>Reducing speed limits makes our roads safer for all road users – fewer collisions, fewer injuries, fewer deaths. It reduces the likelihood of a collision occurring and the consequences if it does</p>	<p>It is a universal finding that reducing traffic speeds reduces the number of crashes and the level of injury from those crashes. (Cairns, et al. 2014) 30km/h speed limits in urban areas have been widely used around the world to improve road safety and are an effective way to reduce accidents and injuries, traffic speed, and improve perceptions of safety. (Cairns, et al. 2014, International Traffic Safety Data and Analysis Group 2018)</p> <p>There is a direct correlation between speed and road safety. Nilsson's Power Model gives a general rule for this relationship. It estimates that a 1% increase in average speed results in a 2% increase in injury crash rates, a 3% increase in severe crash rates, and a 4% increase in fatal crash rates. (Nilsson 2004) The magnitude of the change in risk will differ based on initial speed and the road environment, but the direction of the relationship stays the same. (International Traffic Safety Data and Analysis Group 2018, Elvik 2009, Cameron 2010)</p> <p>In Christchurch, the introduction of 30km/h zones in parts of the CBD reduced injury-causing crashes by 25%, compared to a 13.5% increase in the rest of the CBD. (Koorey 2018)</p>
<p>A collision at 30km/h is a survivable impact for most unprotected road users</p>	<p>In a collision, the severity of injury is directly related to vehicle speed. As speed increases, so does the level of injury. At 30km/h, most (90%) unprotected road users will survive if hit by a vehicle. This is the collision speed that is considered survivable for the human body. (International Traffic Safety Data and Analysis Group 2018)</p> <p>If a person is hit by a car at 50km/h they are five times as likely to be killed compared to being hit at 30 km/h. (Kröyer. H. R. G. 2014, Rosen 2009)</p> <p>NZTA reports collision impacts at 50km/h are equivalent to falling from the third floor of a building. (New Zealand Transport Agency n.d.)</p>
<p>Real world data shows the impact of reducing speed limits on travel time are minimal. Regardless, the enormous societal good of lives saved outweighs any individual concerns about marginal travel time differences</p>	<p>Changes in speed limits tend to have more effect on travel times for roads that are not congested and rural roads. In urban environments, travel time is effected more by traffic flow through intersections rather than speed limits. (Accident Compensation Corporation 2000) NZTA has determined travel times on an urban Auckland route using different speed limits. A 10km/h speed reduction in a peak hour trip of 12km from Lynfield to Mt Wellington increased trip time by 3:13</p>

minutes. (Rowland 2017)

Evaluation shows that residents favour reduced speed limits once they are in place, even if there was initial opposition. (van den Dool 2017, Cairns, et al. 2014)

Recommendations to improve acceptance of 30km/h speed limits include:

- Implementing slow zone neighbourhoods around schools and busy residential areas that allow residents to experience the benefits of slower speeds prior to wider implementation
- Creating a culture of safer streets through physical traffic calming and enforcement
- Developing an attitude of zero tolerance to unnecessary road deaths
- Working together with all stakeholders to create a strong collective voice for change and a broad base of support, whilst also working with residents around any concerns. (VanderBerg 2015)

Road safety risk in Auckland impacts more on some groups than others

Our streets are public spaces that all people should be able to use without fear of being killed or maimed. However, road safety risk is not spread equally. Serious injuries and deaths from traffic crashes impact disproportionately on children and young people, older people, people living in economically poorer areas, and people walking and cycling. One of the strongest features of reducing traffic speed limits is that it makes our streets safer for everyone regardless of age, mode of travel, or socio-economic group.

Explicit use of risk prediction when developing road safety strategies will enable area-wide traffic calming zones to be implemented where the greatest need is.

Traffic injuries and deaths are unevenly distributed in Auckland ¹	Evidence
There are social and geographical differences in road traffic injury in Tāmaki Makaurau	Research from the University of Auckland, commissioned by Auckland Transport, found traffic-related deaths and hospitalisations were more common for Māori, Pacific children, people in South Auckland and in rural areas. Road crash injury rates increased with level of socio-economic deprivation across all age groups. Children living in the most socio-economically deprived areas had a three times higher injury rate than children living in the least deprived areas. (J. A. Hosking 2013)
Structural differences in the road environment can shape inequities in road safety	The road environment for children attending higher-decile schools in Auckland City was compared to that for children attending lower-decile schools in Manukau City. There were fewer road traffic-calming features within a 1km radius of schools in Manukau City, where children are known to be at increased risk of child pedestrian injury. By level of socio-economic deprivation, there were 25 traffic-calming features around the least deprived schools versus 18 in the most deprived schools. Auckland City schools had 27 traffic calming interventions, compared to 16 around schools in Manukau City. (T

¹ Acknowledgments to SafeKids for sharing information related to this section

	<p>Hopgood 2013)</p> <p>The World Health Organization report on Child Injury Prevention discusses a range of interventions to protect children when using roads. A safe environment for children requires:</p> <ul style="list-style-type: none"> • prioritising space for walking and cycling • integrating routes to school, playgrounds and shops into a logical, coherent and safe cycling and walking network, and • the use of traffic calming and speed limits to reduce vehicle speeds. (World Health Organization 2008) <p>They recommend 30km/h speeds should be the norm in residential areas and around schools. (World Health Organization 2008)</p>
<p>Children are particularly vulnerable on our roads</p>	<p>In Auckland from the beginning of 2014 and the end of 2015, 110 children aged under 10 were killed or required hospitalisation due to a motor vehicle collision. This was over a third of the total child injuries and deaths from motor vehicle collisions in the whole country. (Injury Prevention Research Unit, Department of Preventive and Social Medicine, University of Otago n.d.)</p> <p>Appendix 1 shows the number of children requiring either a hospital stay of more than a day or killed due to road injuries, by Auckland local board area.</p>
<p>Children are especially affected by reducing the speed limit to 30km/h. Studies have found a greater reduction in injuries and deaths for children with reductions in speed limits</p>	<p>A before-and-after study of 32km/h (20mph) zones found a 61% reduction in total injuries, but a 70% reduction in child pedestrian injuries, and a 48% reduction in child cyclist injuries. (Cairns, et al. 2014)</p> <p>A controlled time series analysis of 20 years of data on the impact of 20 mph zones in London found they were associated with a 40% reduction in casualties and collisions. Serious injuries and deaths in children were halved. (Grundy 2009)</p>

The impact of traffic speed on sustainable transport modes

Transportation impacts on health and wellbeing not only through traffic crashes, but through reduced opportunities for physical activity. Being physically inactive increases risk of diseases such as obesity, heart disease, diabetes, and cancer. Communities in which it is safe and easy to walk, cycle or take public transport are associated with healthier populations. Roads are not simply vehicle corridors. Local streets are public spaces that play an important role in place-making and should allow for walking, cycling, playing, and social interaction.

Increasing the proportion of people using sustainable transport modes such as cycling and walking is a priority in the Auckland Plan 2050. The government has also explicitly targeted improvements in road safety, transport choice and the impact of transport on the environment and public health in its Government Policy Statement on Land Transport. (Ministry of Transport 2018) Traffic speed is one of the factors that people perceive as making roads unsafe. The perception of unsafe roads is a barrier to walking and cycling for transport, children’s play, and social interaction. With slower traffic speeds, roads are perceived to be safer by people walking and cycling.

While reductions in speed limits are an important component of a Safe System approach, changing perceptions on road safety for cycling and walking will require more than reducing speed limits. It is likely to require improvements in the whole road environment. The few studies that have solely assessed the impact of traffic speed limit changes on active transport have found mixed results. Conversely, studies that have assessed the

impact of comprehensive traffic calming approaches suggest positive impacts on walking and cycling, although more and better quality research is needed to say this with certainty.

Co-benefits of speed reductions for sustainable transport modes	Evidence
The road environment and perceived road safety can impact on levels of cycling and walking	<p>Auckland Transport’s most recent cycling survey reported 52% of respondents not feeling safe cycling because of the way people drive. (TRA 2018)</p> <p>Negative traffic perceptions have been consistently associated with less walking and cycling. Levels of walking and cycling are inversely proportional to traffic speed and volume of vehicle traffic. Where pedestrians and bicyclists feel safer, levels of walking and cycling tend to be higher. (Jacobsen 2009, Fraser 2010, J. Garrard 2008) Places that have high rates of active transport use traffic speed reduction to create an environment that is conducive to walking and cycling. (J. Garrard 2008)</p>
Parents frequently cite a lack of road safety as a barrier to allowing their children to use walking school buses, or walk or cycle to school (D’Haese 2015)	<p>Studies of walking school buses frequently identify parental concerns about road safety as a barrier to their use. Walking school bus coordinators reported the dominance of cars, cars not stopping, and busy roads being of concern. (Smith 2015)</p> <p>Simulated bicycle route choices show parents and children favour routes with 30km/hour traffic speed limits. (Ghekiere 2015)</p> <p>A research project with three intermediate schools in Auckland and three outside Auckland found that low traffic speed zones were one of the top-three rated interventions to overcome barriers to children cycling to school. A school cycle network and cycle skills training were the other top rated interventions. (H. Mackie n.d.)</p> <p>While there is good data on the <i>perceived</i> impact of traffic speeds and road safety on cycling, walking and children’s play, there is only limited data on the <i>actual</i> impact of reducing traffic speeds. Both are likely to influence the relationship between traffic speed and active transport. Results from the few studies on actual impact are mixed and suggest a comprehensive approach to traffic calming is important to change perceptions sufficiently to impact on travel behaviour. This includes features such as road layout and design features alongside speed reductions. (Cairns, et al. 2014, J. Garrard 2008)</p>
People report that they would use sustainable transport modes more if they felt the roads were safer	<p>An NZTA survey of adult New Zealanders living in urban centres found three-quarters reported they would cycle if the roads were safer. (NZTA 2016)</p>
Local trials of self-explaining roads and healthy streets have been successful at reducing speeds and creating a more people-friendly environment	<p>Self-explaining roads use the design characteristics of a road to influence driver behaviour. A demonstration project in Pt England/Glen Innes was successful at significantly reducing mean vehicle speeds to 30km/h with less speed variance. (Charlton 2010) The intervention resulted in a 44% reduction in traffic compared to control areas. (H. C. Mackie 2013, H. M. Mackie In press)</p> <p>Te Ara Mua-Future Streets was a multi-agency healthy streets demonstration project in Māngere. The design principles were:</p> <ol style="list-style-type: none"> 1. A street hierarchy giving greater priority to people walking and cycling 2. Making people feel safe on their travel routes 3. Reducing traffic speed and speed variability

	<p>4. Improving people’s ability to safely cross the road 5. Prioritising schools and the mall as destinations in the walking and cycling network 6. Providing an arterial separated bike network 7. Reflecting the identity of Māngere residents. (H. Mackie 2018)</p> <p>Preliminary data analysis suggests Te Ara Mua - Future Streets achieved reductions in traffic speed and volume, safer pedestrian crossing behaviour, a more user-friendly environment for walking and cycling, and improvements for people with impaired mobility. (Hirsch 2018)</p>
<p>Road safety should be embedded within a ‘Healthy Streets’ type approach that recognises the role streets play in creating wellbeing and liveable communities</p>	<p>Healthy Streets is an evidence-based approach to creating urban streets and spaces that are socially and economically vibrant, environmentally sustainable and that improve people’s health. The street environment achieves this if the whole community, including children, older people and disabled people are able to safely enjoy using the space. (Mayor of London & Transport for London n.d.)</p>
<p>Design speed, traffic calming, and enforcement of speed limits help reinforce lower speed limits</p>	<p>ACC, in their report on reducing traffic speeds, states that “<i>To be effective, speed limits should be consistent with the design speed of the road and be backed up by enforcement</i>”. (Accident Compensation Corporation 2000)</p> <p>Traffic calming reduces vehicle speeds by altering the road layout or structural features. Traffic calming has been associated with higher levels of walking and reductions in pedestrian injury. (Cairns, et al. 2014, Rothman 2014)</p>

The co-benefits of traffic speed reduction

Reducing traffic speeds, especially on the open road, can contribute to reductions in air pollution and greenhouse gas emissions (GHG).

Co-benefits of speed reductions on air quality and GHG emissions	Evidence
<p>Reducing speeds on the open road improves air quality and reduces greenhouse gas emissions</p>	<p>Speed reductions on roads with 100km/h speed limits will improve air quality and reduce greenhouse gas emissions, noise and fossil fuel use. (International Traffic Safety Data and Analysis Group 2018)</p> <p>On urban roads with 50km/h speed limits reducing traffic speeds may not improve air quality unless it creates smoother driving patterns and a shift towards public and active transport. (Bellefleur 2012) While vehicle emissions data does not suggest improvements in air pollution at speeds under 50km/h, empirical evidence shows that vehicles travelling at higher speeds in urban areas brake and accelerate more often, increasing air pollution. Slower and calmer styles of driving can reduce gear changing, braking, and fuel use, thereby reducing air pollution. (Replogle 1995)</p> <p>In New Zealand, deaths attributable to the effects of air and noise pollution from road transport have been estimated to be similar to the number of deaths from road collisions. (Briggs 2016)</p> <p>Vehicle emissions are a major contributor to greenhouse gas emissions. Road transport was one of the biggest contributors to the increase in New Zealand’s greenhouse gas emissions between 1990 and 2016, with an 82% increase in emissions. (Ministry for the</p>

Environment 2018) Transportation is the biggest contributor to greenhouse gas emissions in Auckland. (Xie 2017)

Carbon dioxide emissions directly relate to fuel consumption. Reducing speed (no further than 20km/h) reduces fuel consumption. (International Traffic Safety Data and Analysis Group 2018)

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Appendix 1

Child (<10 years) road traffic hospitalisations and deaths by Auckland local board area in the 2014-15 year

Children <10 years in 2014 to 2015 by local board area	Children discharged from hospital (>1 day)	Rate per 100,000 people (not calculated for <5 discharges)	Child deaths	Rates per 100,000 people (not calculated for <5 deaths)
Rodney	5	32.7	1	-
Hibiscus & Bays	7	30.2	1	-
Upper Harbour	1	-	0	-
Kaipatiki	5	20.3	0	-
Devonport-Takapuna	4	-	1	-
Henderson-Massey	10	26.4	1	-
Waitakere Ranges	2	-	1	-
Great Barrier	0	-	0	-
Waiheke	0	-	0	-
Waitemata	2	-	0	-
Whau	6	26.7	0	-
Albert-Eden	4	-	0	-
Puketapapa	4	-	0	-
Orakei	4	-	0	-
Maungakiekie-Tamaki	6	24.9	0	-
Howick	2	-	1	-
Mangere-Otahuhu	12	40.6	1	-
Otara-Papatoetoe	10	34.5	0	-
Manurewa	10	30.0	1	-
Papakura	3	-	0	-
Franklin	5	25.2	0	-

* 2014-15 data was used as both injury and death rates were available for these years in the database (Injury Prevention Research Unit, Department of Preventive and Social Medicine, University of Otago n.d.)

Total road traffic hospitalisations and deaths by Auckland local board area in the 2014-15 year

2014 to 2015 year	Total discharges from hospital (>1 day)	Rate per 100,000 people (not calculated for <5 discharges)	Total deaths	Rates per 100,000 people (not calculated for <5 deaths)
Rodney	142	119.7	8	6.7
Hibiscus & Bays	120	61.7	7	3.6
Upper Harbour	70	58.9	6	5.1
Kaipatiki	136	76.2	6	3.4
Devonport-Takapuna	74	62.1	4	-
Henderson-Massey	184	79.1	11	4.7
Waitakere Ranges	72	69.6	2	-
Great Barrier	1	-	0	-
Waiheke	14	79.4	0	-
Waitemata	137	75.8	7	3.9
Whau	108	67.8	6	3.8
Albert-Eden	140	68.7	4	-

Puketapapa	89	75.1	3	-
Orakei	103	60.4	4	-
Maungakiekie-Tamaki	144	95.1	8	5.3
Howick	153	54.3	7	2.5
Mangere-Otahuhu	167	107.0	6	3.8
Otara-Papatoetoe	157	93.9	7	4.2
Manurewa	173	96.6	8	4.5
Papakura	86	85.3	5	5.0
Franklin	132	93.9	15	10.7

* 2014-15 data was used as both injury and death rates were available for these years in the database (Injury Prevention Research Unit, Department of Preventive and Social Medicine, University of Otago n.d.)