



Active School Travel

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Executive Summary

Active school travel benefits children and teens by providing an opportunity to engage in physical activity through walking, wheeling or bike riding on the school commute.

Research shows active school travel helps students meet national physical activity guidelines, develop healthier body compositions and greater fitness levels, and reduce cardiovascular disease to improve heart health. Despite these benefits, only one-third of children in Australia use active travel for at least part of their school journey.

Beyond physical health, active school travel contributes to mental well-being, social interaction, and academic performance. Additionally, active school travel can reduce road congestion, traffic emissions, and air pollution, making it a crucial climate change mitigation strategy and improving heart health across the community.

Built environment barriers to active school travel include lengthy travel times, road safety concerns, inadequate infrastructure, and parental perceptions about personal safety. Urban planning solutions, such as walkable environments and low speed limits, and dedicated cycling infrastructure, can facilitate active school travel. Community support for these improvements is strong, highlighting the need for integrated policies at the local level. Tailored strategies are essential for regional and remote communities, where challenges differ from urban settings.

Active school travel initiatives are needed to enhance urban liveability, environmental sustainability and, most importantly, the health of children.

Keywords: active school travel, walking, bike riding, physical activity, children, adolescents

Definitions/glossary:

Active travel: 'Travel in which the sustained physical exertion of the traveller directly contributes to their motion'.¹ This includes walking, wheeling, bike riding, skateboarding and scootering. Active travel also includes the use of e-mobility devices such as e-bikes even though their use typically requires less physical effort.

Active school travel: Active school travel refers to the use of active travel specifically to travel to or from school. It is often referred to as 'walking to school', 'active commuting to school' or 'active travel to school'.

Microscale pedestrian streetscapes: The fine-grained, street-level features of urban design and pedestrian infrastructures that influence pedestrian experience. These include footpath quality, steepness, type of surface used, presence of physical disorder (e.g., graffiti) and availability of lighting, benches or shades along the streets.^{3,4}

Mixed-use development: The integration of multiple land uses including for example residential, commercial, retail and recreational spaces within a single area.

Physical activity: 'Any bodily movement produced by skeletal muscles that require energy expenditure'² including activities such as walking, wheeling, bike riding and recreational exercise. Physical activity can be categorised into different domains: transport, leisure, occupational and household.

Public transport: Shared transport services for the general public including buses, trains, trams and ferries.

Values-based messaging: A communication strategy that focuses on appealing to an audience's core values.⁵

Walkability: Concept that refers to how well an area supports and encourages walking (as well as wheeling and bike riding). It typically consists of three urban design factors: residential density, street connectivity, and land use mix which combine to create an environment that makes walking (as well as wheeling and bike riding) between destinations easier and more convenient.

Walking school bus: A walking school bus is a group of children walking to school with one or more adults. It can be as informal as two families taking turns walking their children to school to as structured as a route with meeting points, a timetable and a regularly rotated schedule of trained volunteers.⁶

Wheeling: the action of moving as a pedestrian, using manual or self-assisted modes of transport including the use of wheelchairs, mobility aids, scooters and others.

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Introduction

Active school travel and heart health

The benefits of active school travel for child and adolescent health are broad. These health benefits are largely facilitated through the physical activity that is accumulated from either walking, wheeling, bike riding or scooting for all, or part, of the journey. Research demonstrates that children and adolescents who engage in active school travel participate in more physical activity, and are more likely to meet physical activity guidelines, than their peers who travel in a car⁷⁻¹⁰. The uptake of active school travel has also been linked to an increase in physical activity.^{11,12} As most children and adolescents in Australia do not meet national physical activity guidelines,¹³ active school travel represents a critical daily opportunity to increase overall physical activity levels.

Children who engage in active school travel have a healthier body composition (are less likely to be overweight or obese)¹⁴ and better cardiorespiratory fitness compared to those who travel by car.^{7,15,16} The health benefits appear to be even greater for students who primarily ride a bike on the school journey.^{7,15} Active travel in childhood has the potential to reduce cardiovascular disease risk later in life¹⁷⁻²⁰ and supports the development of life-long healthy physical activity behaviours.²¹

Active school travel supporting child development and mental health

There is some evidence that active school travel is associated with developmental benefits for children such as academic achievement,²² and, in particular, mathematics scores.²³ It may also contribute to the development of children's spatial awareness through interactions with the environment.^{24,25}

Active school travel can foster positive social interactions with peers, family and the community, thereby improving social connections and overall well-being.²⁶ Some research suggests that children and parents who engage in active school travel feel happier and have more positive emotions compared to those who travel in a car.²⁷

Children and adolescents who usually engage in active school travel report better mental health outcomes, fewer depressive symptoms²⁸ and higher levels of happiness.²⁹ Data from nine countries shows that bike riding on the school journey may be linked to fewer psychological problems, as well as better mental health.³⁰

Co-benefits of active school travel

The benefits of active school travel extend beyond the individual. Reducing car travel is considered an important climate change mitigation strategy. Regular walking, wheeling and bike riding on the school journey may mean fewer cars on the road and less congestion, noise, greenhouse gas emissions and traffic-related air pollution.^{31,32} Traffic-related air pollution is associated with a range of health conditions, including cardiovascular disease,^{33,34} and exposure to air pollution at school has been linked to poorer cognition among students.^{35,36} Importantly, research in adults suggests that exposure-related harms of active travel do not outweigh the benefits obtained by being active.³⁷



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Participation in active school travel in Australia

In Australia, participation in active school travel is low. The 2022 Australian Report Card on Physical Activity for Children and Young People rated national active school travel levels a D+. ³⁸ This rating has been maintained since the first Report Card was published in 2014. ³⁹ It indicates that only one-third of children and young people usually use an active mode of travel on the school journey for at least part of the way.

Participation in active school travel has declined substantially since the 1970s. For example, in New South Wales, between 1971 and 2013, the proportion of 5–9-year-old children walking to school declined from 58% to 26% and the proportion of 10–14-year-old children walking to school declined from 44% to 21%. ⁴⁰

While many high-income countries also report low rates of active school travel, comparably higher rates are consistently reported in Japan, South Korea, Denmark and Finland where up to 80% of children usually engage in active school travel. ⁴¹

Built environment barriers and enablers to active school travel

Active school travel is influenced by a variety of factors including individual, familial, societal, environmental and policy factors (see Box 1). For example, boys are more likely than girls to engage in active school travel.⁴² There is also some evidence indicating that a child's travel mode preference and skill level (particularly for bike riding), as well as the level of support they receive from friends, family and school, influence whether they will walk or ride on the school journey.⁴³ That being said, decisions to engage in active school travel are largely shaped by parental perceptions of the *convenience* of walking and bike riding for parents and their children, relative to driving and of *child safety* (both personal and traffic-related) on the journey, the latter being particularly true for bike riding.⁴⁴ In this regard, the **built environment**, including the way neighbourhoods are designed, and the characteristics of streets and roads can either create obstacles or present opportunities for active school travel.

Travel distance

Distance to school is the most consistent and strongest predictor of whether a child walks or bike rides on the school journey.⁴⁵ In Western Australia, children who live closer to school have much higher odds of walking, wheeling or bike riding to and from school.^{46,47} Among children in Victoria, a clear link between distance and active school travel has been observed: those who live closer to school (within 0.75 km) were nearly three times as likely to walk or bike ride on the journey, and those who lived between 0.75–1.24 km were almost twice as likely to do so, compared to those living further from school (between 1.25–2 km from school).⁴⁸ Similarly, a study among adolescents aged 12–17 years who attended school in Melbourne found that for every additional kilometre an adolescent lived from school, they were half as likely to walk or bike ride on the school journey.⁴⁹

Neighbourhood design

The way neighbourhoods are designed can influence whether an area is orientated to driving or to walking, wheeling or bike riding. It can also shape parental perceptions about the area, including perceptions of safety.

'Walkability' is a concept that refers to how well an area supports and encourages walking (as well as wheeling and bike riding). It typically consists of three urban design factors: residential density, street connectivity, and land use mix which combine to create an environment that makes walking (as well as wheeling and bike riding) between destinations easier and more convenient.⁵⁰ Conceptually, areas with a variety of land uses – such as residential, office, retail and public spaces – are more walkable as they allow destinations typically visited in daily life (e.g. homes, schools, workplaces, shops, and services) to be located closer together.⁵⁰ Areas with well-connected streets provide shorter and more direct active travel routes and in residentially-dense areas, these destinations are more likely to be close to people's homes.⁵⁰

Cross-sectional evidence suggests that walkability is important to facilitate active school travel.⁵¹ A Melbourne study of children aged 5–12 years found that higher walkability around the home and school was associated with more active school travel.⁴⁸ A similar finding was reported in Scotland among children aged 10–11 years.⁵² A Canadian study among 10–13 year-olds found that those living in the most walkable neighbourhoods accumulated more than twice as much active travel than those living in the least walkable neighbourhoods (16 mins/day vs 6 mins/day, respectively).⁵³

Studies have also explored the individual components of walkability in relation to active school travel. Higher residential density around the home and school, and greater diversity of land use are consistently associated with more active school travel among children and adolescents.^{45,51,54,55}

Studies on street connectivity have found both positive^{53,55-57} and no⁵⁸ associations with active school travel. One plausible explanation for the mixed findings may be that more connected street networks carry more vehicular traffic, potentially heightening traffic-related safety concerns. For example, a study in Australia found that the association between street connectivity and active school travel was influenced by the speed of traffic on the route.⁵⁹ Relatedly, a US study examined parental safety concerns for their child's active school travel, and found that higher street intersection density (representing better connectivity) was associated with increased safety concerns.⁶⁰



image credit: National Heart Foundation of Australia, Cameron Murray Photography

Road safety and road safety infrastructure

Traffic conditions, such as speed, traffic volume and the availability of safe road crossings, can affect how safe parents feel and influence their decision to let their child walk, wheel or bike ride on the school commute. Systematic reviews have found that both parent and child perceptions of safety about traffic are associated with participation in active school travel.^{61,62} In Western Australia, boys were more likely to walk on the school journey if they lived in areas with low traffic and less likely to do so if they reported having to cross busy roads.^{46,47} A study in Denmark found that active school travel was much lower when children reported that cars drove fast in their neighbourhood.⁶³ More recently, concerns about safety from traffic (particularly speeding cars, high traffic volumes and lack of safe places to cross roads) have been reported as a key barrier to parents enabling active school travel in children residing in Auckland⁶⁴ and internationally.^{45,65} In another study conducted in Austin, Texas, the presence of highways along the home-to-school route was associated with increased parental safety concerns.⁶⁶ A study in Toronto, Canada, found that as average vehicle speed increased by just 1km/h, the likelihood of children walking or biking on the school journey dropped by 3%.⁶⁷

Box 1: Interactions between the built environment, individual factors and active travel

The relationship between the built environment, individual factors and active school travel is complex as it involves interacting elements that influence travel choices. For example, distance to school is a key influence on school active travel, yet the influence of distance is often moderated by factors like the supportiveness of the built environment, psychosocial factors, peer support and gender. For example, studies in adolescents have shown:

- A diverse mix of land use around home facilitated active travel among those who lived closer to school, but this positive effect was not seen for those who lived further from school.⁴⁹
- Those who attended a school located in an area with higher residential density were more likely to engage in active school travel if they perceived their traffic environment as safe, but the effect was reversed for those who perceived their traffic environment as less safe.⁴⁹
- Those living in walkable neighbourhoods with a high number of parks and recreational facilities were more likely to engage in active travel on school and non-school journeys if they also had high physical activity self-efficacy.⁶⁸
- Those with better quality of microscale pedestrian streetscapes were more likely to engage in active travel on school and non-school journeys if they also reported low barriers to physical activity in their neighbourhoods.⁶⁸

Traffic speed plays a key role in the incidence of accidents and severity of injuries for vulnerable road users, including children and adolescents.^{60,69} As indicated in the Figure 1 below, modelling data indicates that the probability of a fatality to a person walking, wheeling or bike riding following a collision increases substantially when speed limits exceed 30km/hr. An accident that occurs with a car travelling at 30km/h has a 10% chance of death, but this jumps to above 80% at 50km/hr.⁷⁰

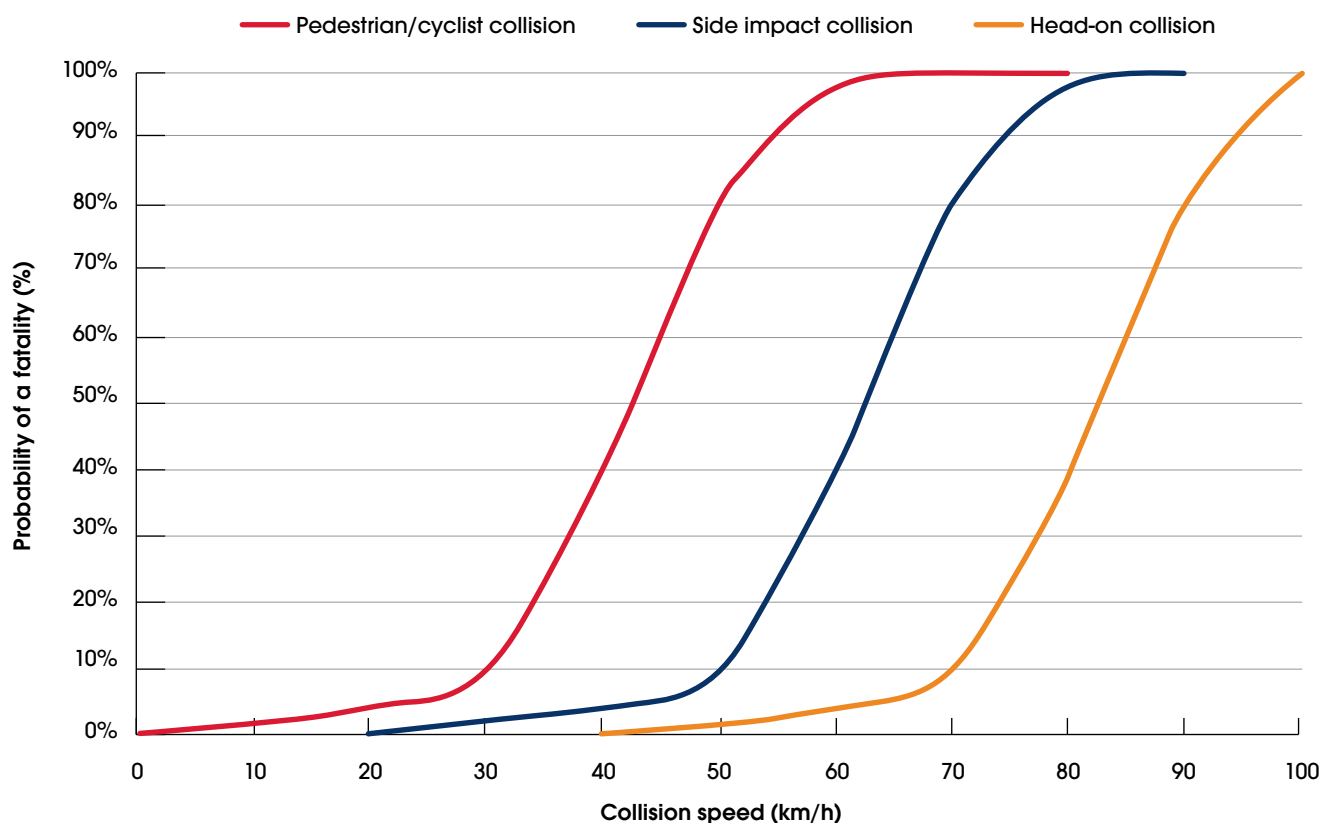


Figure 1. Wramborg's model for fatality probability vs. vehicle collision speeds. Source: based on Wramborg (2005).

Walking, wheeling and cycling infrastructure

The provision of a dedicated, connected and system-wide network of walking, wheeling and cycling infrastructure that separates users from traffic is important to support the uptake of active school travel. Systematic reviews have indicated that access to this type of infrastructure is associated with more walking and bike riding by children.^{71,72} Investing in supportive active travel infrastructure can potentially lead to long-term improvements in the uptake of active travel at the population level.⁷³ In the US, walking and biking journeys increased following installation, or widening, of bike lanes or upgrading footpaths along school routes (as part of wider school travel planning).⁷⁴

Personal safety

Parental concern over their child's personal safety, which includes harm or abduction by a stranger, is a deterrent to active school travel. A recent review indicated that children were more likely to engage in active school travel if their parent had a more positive view of neighbourhood safety.⁷⁵ A study in New Zealand revealed that parents expressed more concern for 'stranger danger' than any other danger.⁶⁴

The concept of '*eyes on the street*' or passive surveillance likely plays a key role in increasing parental perceptions of safety. For example, in an Australian study of 10-12-year-old children, a more inviting pedestrian environment, perceived as having a higher number of people walking in a pleasant and friendly setting, was associated with less parental fear of strangers.⁷⁶ Passive surveillance can be created with active frontage (e.g. houses with windows facing the street), street lighting, clear sightlines and mixed-use development.

Box 2: Trip chaining and the school journey

The school journey is rarely an isolated trip. Owing primarily to parental fear, children are often accompanied by adults on the school journey. For example, in Melbourne most children (80%) have adult accompaniment to school.⁴⁸ In addition, parents may be juggling the drop-off / pick-up of multiple children to various destinations (i.e. daycare and school) and for parents working outside the home, an onward journey to their place of work. A child's before and after school commitments may also add to this complexity, as travel is not always between home and school. It is therefore critical that the school journey is not considered in isolation and that the built environment supports the complex nature of school travel (including trip chaining).

Supporting elements to underpin active school travel

Community support for active school travel

There is strong community support for neighbourhood improvements to encourage active school travel.⁷⁷ In a study of parents of primary school-aged children in Victoria, there was strong support for neighbourhood improvements to infrastructure that prioritises walking and bike riding. Over 80% of parents surveyed supported widening footpaths to accommodate a range of users, establishing designated drop-and-walk zones within walking distance of schools, increasing the number of pedestrian crossings, and creating bike paths that are physically separated from traffic. Additionally, nearly 70% supported lowering speed limits to 30 km/h around schools, while around half endorsed closing roads to cars during peak times and implementing shared streets near schools.⁷⁷

This strong support for investing in neighbourhood improvements that encourage walking and bike riding also extends to the wider public. Two national surveys in Australia found that two-thirds of adults supported increased government funding for walking and bike riding infrastructure, including reallocating road funding.^{78,79} Just over 83% of people surveyed in Australia felt that having facilities accessible by walking and bike riding was important, nearly three-quarters viewed traffic calming measures as important, while 61% wanted children to be able to walk or bike ride to school safely.⁷⁹

Values-based messaging

While the community generally support changes to the environment that make it easier for children and adolescents to walk, wheel or bike ride to and from school, **values-based messaging**⁸⁰ can help to frame communications about active school travel and changes to the built environment more effectively. Values-based messaging emphasises a focus on providing more people with more choice to travel in ways they want to, positioning walking, wheeling and bike riding as everyday activities that children and young people want to do and appealing to people's values and emotions. Positive framing presents desired solutions that create safe opportunities for people to walk, wheel or bike ride. This is recommended over framing that presents the solution as restricting certain activities or travel modes, or that emphasises what people don't want or highlights danger.⁸⁰ It has been suggested that a narrative structure presenting a vision of what people want, followed by the barrier and then the required action, is most appealing to those who already support measures to increase walking and bike riding, as well as to those who are ambivalent or hold conflicting attitudes.⁷⁶



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Advice for local councils

Including active school travel as a local objective for public health may be a critical means of securing a commitment to create built environments that support more children to use active travel for school journeys. Increasing active school travel is consistent with state-based public health priorities relating to active living, healthy environments and mitigating climate change, while also potentially improving local issues related to traffic management. Active school travel intersects with health and wellbeing, active living, transport, urban design/place and climate change strategies.

Barriers to active school travel may be localised and differ from area to area, therefore it may be necessary to conduct local needs assessments and/or audits of existing infrastructure. Co-designing solutions with schools and local communities offers a powerful means of engaging communities to identify locally responsive actions, increasing the chance of local buy-in and impact. Encouraging community members to act and advocate for changes in their community that support active school travel may be a useful way to create change. This can be done by raising awareness of issues with schools, contacting local media, and writing to elected representatives to highlight opportunities. The Heart Foundation's Community Walkability Checklist and petition are resources that can be used for this purpose.

Additional resources to support local governments to plan programs and actions related to improving active travel for young people are available (see, for example, the VicHealth Local Government Partnership modules which have a section on active school travel⁸¹ and the City of Hobart's School Access Travel Plans⁸²).

Active school travel in regional and remote communities

Nearly a third of people living in Australia live in regional and remote areas.⁸³ Cardiovascular diseases, such as heart, stroke and vascular diseases, are more common in regional and remote areas than in urban areas, and the burden of chronic disease increases with increasing levels of remoteness.⁸³

As noted above, distance between home and school plays a critical role in active school travel and this is likely amplified for children and adolescents living in regional and remote areas of Australia. Yet, the active school travel challenges for students who live in regional and remote areas likely extend beyond distance alone. For example, teens living in regional or remote areas were still 17% less likely to engage in active school travel than teens living in urban areas, even after taking into account perception of distance between home and school.⁸⁴

Studies of adolescents in different Australian states report conflicting findings, with longer distances from home and rural locations related to greater car travel on the school journey in Victoria⁸⁵ but active travel was higher in rural than urban areas of New South Wales.⁸⁶ Similarly, greater active school travel has been seen among adolescents living in rural areas of New Zealand, but more so for those living in closer proximity to school (less than 2.25 km) to school.⁸⁷

Within rural areas of North America, adolescent active school travel varies: lower levels of active travel were reported in winter, while those with a lower household income, living in a single-parent household, attending school in a larger town, or with a shorter distance to school were more likely to engage in active school travel.⁸⁸ Further, active school travel was greater for adolescents living less than 2 miles (3.2 km) from school. Among active travellers, built environment characteristics (higher residential density, footpaths, and building continuity) were associated with active school travel.⁸⁸

For some children and adolescents living in regional and remote areas, active school travel may not be possible due to the large distance required to travel, limited public transport options, family and sociodemographic characteristics, scheduling and logistical issues, or unsupportive built environments. Nonetheless, creative strategies may enable active travel for some - ideas include walking school buses from a central location⁸⁹, remote drop-off zones⁹⁰, and ensuring the provision of supportive bike riding infrastructure. E-bikes may also be an option for adolescents in some states (legal age varies) but requires appropriate bike riding infrastructure.

Recommendations

- Locate schools close to residential areas to reduce travel distance between home and school.
- A walkable environment can support active school travel and should be a priority.
- Implementing and enforcing lower speed limits and providing safe road crossings on streets used for school journeys are critical considerations.
- Invest in dedicated and connected walking and cycling infrastructure. This includes footpaths and wide bike paths separated from traffic.
- Consider ways to increase perceptions of personal safety by including, for example, natural surveillance from 'eyes of the street' and increasing passive surveillance with more street lighting, house windows facing the street, clear sightings from homes and mixed-use developments.
- Ensure access to quality public transport around schools and the provision of walking and cycling infrastructure for onward journeys.
- Harness community support for neighbourhood improvements that support active school travel when advocating for change.
- Conduct local needs assessments, co-design solutions with schools and local communities, and encourage community members to advocate for changes to their neighbourhoods.

Conclusion

Active school travel provides significant benefits for young people. By integrating walking, wheeling, bike riding, or other forms of active travel into the school journey, young people can increase their physical activity levels, support healthy body composition, and reduce their risk of cardiovascular disease later in life. Additionally, active school travel fosters independence, enhances spatial awareness, has been linked to better academic performance and mental health outcomes and is a key climate change mitigation strategy.

Participation in active school travel in Australia is low. Research indicates that decisions to engage in active travel are influenced by travel distance, neighbourhood walkability, traffic volume and speed, the provision of dedicated walking, wheeling and cycling infrastructure and perceptions of personal safety.

To promote active school travel, urban planning and infrastructure improvements—such as traffic calming measures, pedestrian-friendly street designs, and separated cycling paths—are crucial. Community engagement, values-based messaging, and policy integration at local, state and federal levels will support uptake.

Ensuring that all children, including those in regional and remote areas, have safe and feasible opportunities for active school travel requires coordinated efforts across health, education, transport, and urban planning sectors. Prioritising active travel across these areas will foster long-term public health benefits and create healthier, more liveable communities.

A Case Study from Victoria

Transforming School Streets to Encourage Walking and Cycling

Title: Open Streets & Merri-bek Council

Lead Agencies: Bicycle Network / Merri-bek Council

Description: For short periods of time at drop-off and pick-up, the streets surrounding school gates are closed to car traffic, allowing children and parents the space to walk, bike ride and play safely.

Time Period: 2021 – ongoing

Location: Ten primary schools within Merri-Bek City Council

Implementation: Bicycle Network and Merri-Bek Council work with schools to trial the program. As part of the trial, the streets surrounding school gates (entrance points) are closed one day a week for three weeks. In addition to closing the streets to cars, schools help to activate the streets by providing activities that promote social play. Merri-bek Council also runs a parent-led Open Streets program for interested schools after they have completed a trial.

Evaluation: Using Hands Up! count data, approximately 70% of children walked or cycled to school on Open Streets days (average across 10 schools) compared with non-Open Street days, an average increase of 19%. Parents (91%) felt the street was safer on Open Streets days and were satisfied with the street closures (92%). Residents were typically supportive of Open Streets with 63% satisfied with the program.

Key factors contributing to success:

- School buy-in – having an engaged school Principal, teacher or parent champion to promote the program and collaborate with
- Student engagement – students must be front and centre, involving them in activation and planning gives them agency and builds excitement
- Embed monitoring & evaluation – survey parents, residents and students before, during and after the trial
- Tell the story – report outcomes back to the community and share photos and videos of the event.

Challenges:

- Resident engagement – engaging residents on the street can be tricky, so it is important to find ways to include and collaborate with residents
- Encouraging parents who still drive to 'park & walk' – having clear guidance on where to park and walk from will ensure side streets are not filled with diverted parent traffic

Website: <https://bicyclenetwork.com.au/rides-and-events/ride2school/programs/open-streets/>
<https://zerocarbonmerri-bek.org.au/ride-and-stride/>

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