

Barriers to Active Travel Among Primary School-Aged Children in Wellington

Abstract

Active school travel (walking, biking, scootering or skating to and from school) is declining in Wellington. This is concerning because active forms of transport benefit children's mental and physical health, as well as producing wider societal benefits such as less noise, reduced air pollution, lower congestion and fewer greenhouse gas emissions. This article explores the barriers to active school travel among primary school-aged children in Wellington, based on an anonymous online survey of parents. The results indicate that the main barriers to active school travel are related to safety concerns, family schedule complexities, and the efficiency of other modes of transport. Possible solutions include a walking school bus programme and more flexible working hours for parents, specifically during school drop-off and pick-up times.

Keywords primary school children, active travel, Wellington, barriers, parental considerations

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Active forms of transport such as walking, biking, scootering and skating are shown to benefit children's mental and physical health (Collins and Kearns, 2010). Moreover, systematic analyses reveal that children who engage in active school travel are more likely to attain the recommended levels of physical activity compared to their passive travel counterparts (Ikeda et al., 2018). In addition to individual benefits, active travel produces wider societal benefits, such as reduced air pollution, reduced traffic congestion, climate change mitigation and urban noise reduction (Collins and Kearns, 2010; Environmental Health Indicators New Zealand, 2019).

Despite its positive impact, the active school travel rates of New Zealand children have decreased over the past 30 years (ibid.). Instead, New Zealand children are commonly getting to and from school in private motor vehicles. These nationwide trends are similar to the active school travel trends being observed in the Wellington city area, and, as a result, traffic congestion is an increasingly prevalent issue for the Wellington City Council (Wellington City Council, 2019; Let's Get Wellington

Figure 1. Respondents' distance from focal child's school

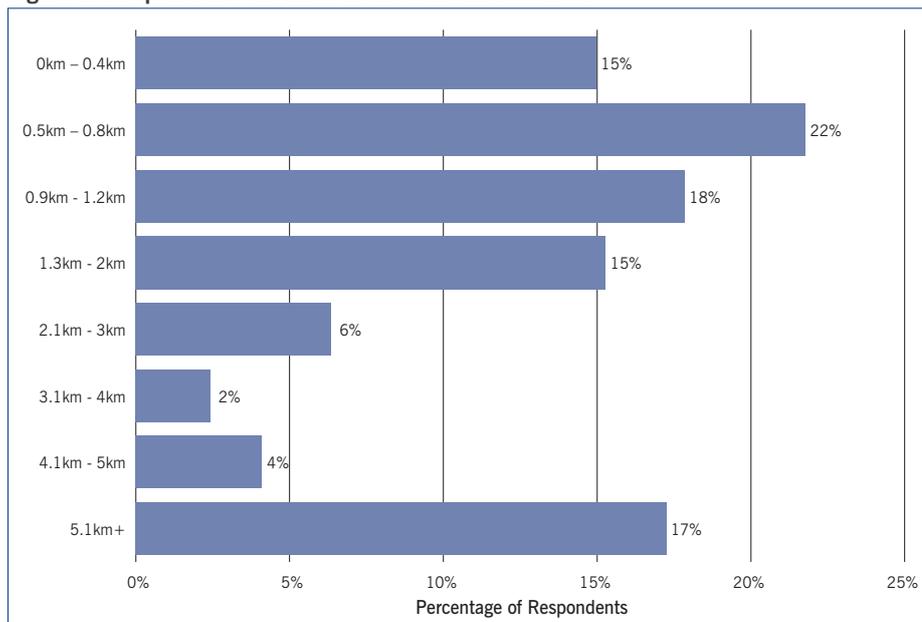
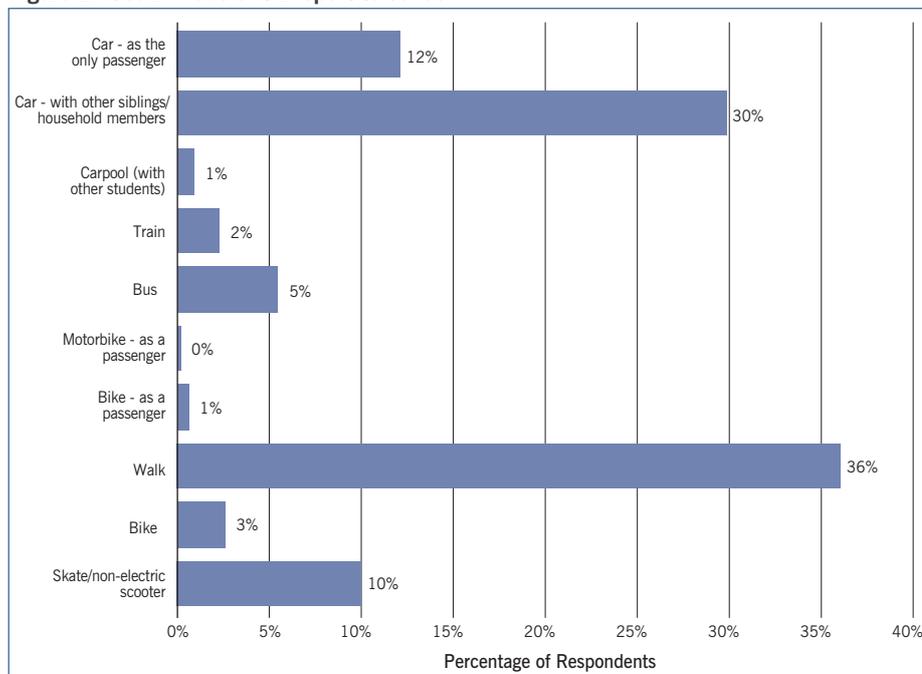


Figure 2. Usual mode of transport to school³



Moving, n.d). Consequently, the council is working alongside organisations, schools and parents to deliver seven programmes, ranging from initiatives which promote regular active school travel, to skill-based programmes in schools that build children’s confidence to cycle and scooter (Wellington City Council, 2019). These initiatives include: Pedal Ready, Bikes in Schools, walking school buses, Moving March, the Active Travel Action programme, Park and Stride and the micro scooter safety programme. In order for these initiatives to be successful, it is important to first understand the barriers that are inhibiting uptake.

Currently, to gain knowledge about active school travel trends in the Wellington city area, the city council administers a residents monitoring survey (Wellington City Council, 2017, 2019). Unfortunately, this survey only seeks to monitor current active school travel trends and does not seek to identify the underlying reasons behind these trends. As a result, there is a gap in the knowledge base, and more specific, comprehensive engagement is needed. Thus, the primary aim of this study was to identify barriers to active travel for primary school-aged children in the Wellington city area.

This was addressed by conducting an anonymous online survey open to all parents and caregivers of primary school-aged children in Wellington city. The survey focused on primary school-aged children because younger children typically cannot travel independently and may be more susceptible to built-environment challenges such as navigating busy roads.

Methodology

Survey approval and distribution

The survey conducted for the research received ethics approval from the Human Ethics Committee at Victoria University of Wellington (application ID number 0000029252). To reach the parents and caregivers of primary school-aged children in the Wellington city area, all 68 eligible schools were emailed and asked if they could distribute the survey to the families on their mailing list who had students in years 0–8. Schools with low parent engagement in the survey were followed up with a cold call to ask if they required any extra information to move forward with the processing and distribution of the survey.

Target population and survey sample

The target population was calculated by considering three main points: first, the survey asked for only one response per household; second, there are 18,796 primary school-aged children in the Wellington city area (Education Counts, 2020); and third, according to GBD 2017 Population and Fertility Collaborators (2018), on average New Zealand mothers are having 2.1 children.¹ In turn, it was calculated that the target population for the survey was approximately 8,950 people.

Of the 736 survey responses that were collected, only 664 responses could be used, due to 69 responses being less than 60% complete and three respondents having only answered the initial screening question.² As a result, the survey sample was 7.4% of the assumed target population.

Survey sample description

Overall, respondents identified as 79% female, 20% male and 1% gender diverse; the average age of respondents was 43 years old. Respondents reported that focal children (youngest primary school-aged child in the respondent’s care) identified

as 52% female, 47% male and 1% gender diverse. The mean age of focal children was 7.9 years old, with the most common age range being 5–6. At 85%, the most common ethnicity of focal children was European/Pākehā.

Responses covered approximately two-thirds (45 schools) of the schools in the Wellington city area. The mean decile rating for identified schools was 8.8 and the median decile rating was 10. The mean decile rating of the 68 eligible schools was 8.6 and the median decile rating was 9. Thus, in terms of decile rating the sample was mostly representative of the population.

Findings

Respondents' distance from focal child's school

Figure 1 shows that 55% of respondents live a 15-minute walk or less (0–1.2km) from their child's school, with the average distance being 2km. Additionally, 17% of respondents live more than 5.1km from their focal child's school.

Focal child's usual mode of transport to and from school

Figure 2 reveals that 50% of focal children travelled to school using an active mode of transport (walking, biking, scootering or skating), 43% travelled to school in a car and 7% travelled to school using public transport.

The after-school mode choice findings were fairly similar; however, it was found that children were 5% less likely to use an active mode of transport when travelling home after school. Further, children were 5% more likely to travel from school to home in a car.

Frequency of active school travel⁴

Tables 1 and 2 display the frequency at which active travel modes were used to travel to and from school. It was found 73% of children travelled to school actively at least once a week. The most common mode of active transport was walking, with 27% of children walking to school every day of the week. Interestingly, this was 4.3% higher than for those who walked home. In comparison to walking, biking and scootering/skating were used much less frequently.

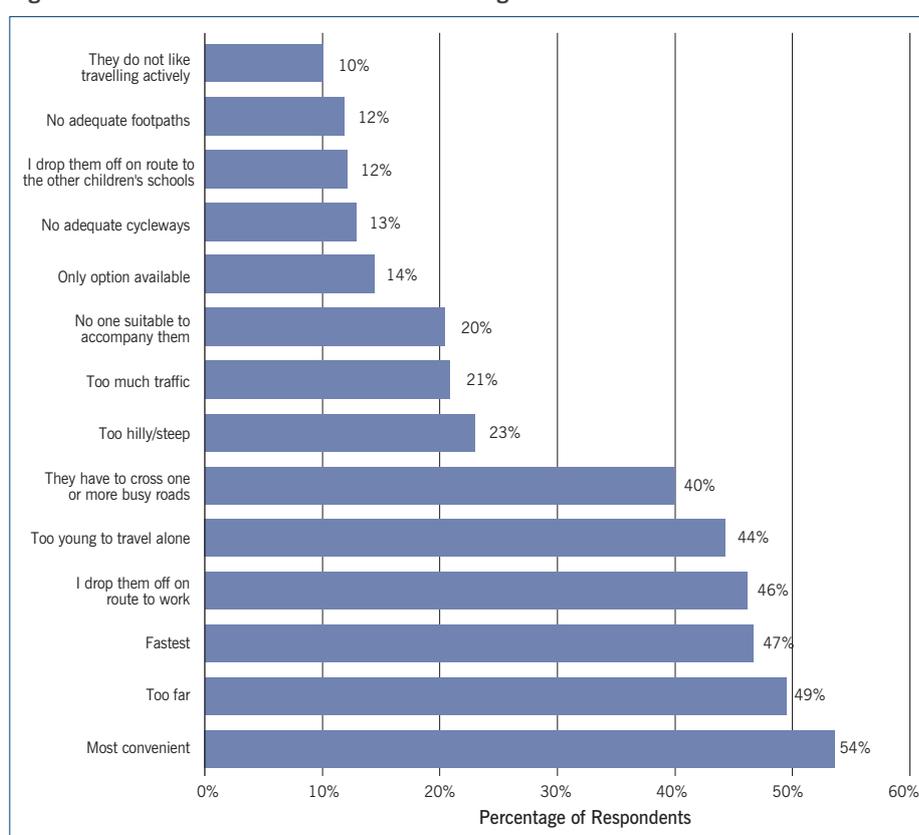
Table 1. Frequency of child's active travel to school by active mode of transport

Active Mode of Transport	Never	Less Often	1-2 Times a Week	3-4 Times a Week	5 Times a Week
Walking	39.8%	11.8%	10.9%	10.1%	27.3%
Biking	85.4%	7.6%	3.9%	2.0%	1.1%
Scootering/Skating	68.8%	13.5%	7.8%	6.8%	3.1%

Table 2. Frequency of child's active travel to home by active mode of transport

Active Mode of Transport	Never	Less Often	1-2 Times a Week	3-4 Times a Week	5 Times a Week
Walking	42.3%	11.8%	10.4%	12.4%	23.0%
Biking	85.9%	7.4%	4.2%	1.5%	0.9%
Scootering/Skating	71.4%	14.4%	7.2%	5.2%	2.1%

Figure 3. Barriers to active travel when travelling to school⁶



Barriers to active travel when travelling to and from school

Figure 3 displays the top barriers that slow the uptake of active travel among primary school-aged children when travelling from home to school. There were a wide range of responses, so only barriers that are cited by 10% or more of respondents are shown.⁵

Figure 4 reveals the top barriers that slow the uptake of active travel among primary school-aged children when travelling from school to home. Again, there were a wide range of responses, so only barriers that are cited by at least 10% of respondents cited are shown.⁷

When assessing the difference in barriers for school morning travel and after-school travel, dropping children off en route to work received 46% of all responses; in comparison, picking children up en route from work to home received 24% of all responses. The barrier of activities before school received 3% of all responses, while the barrier of activities after school received 35% of all responses. Further, barriers to afternoon active school travel included focal children being too tired, being picked up from school by a nanny or being in after-school care.

Figure 4. Barriers to active school travel when travelling home⁸

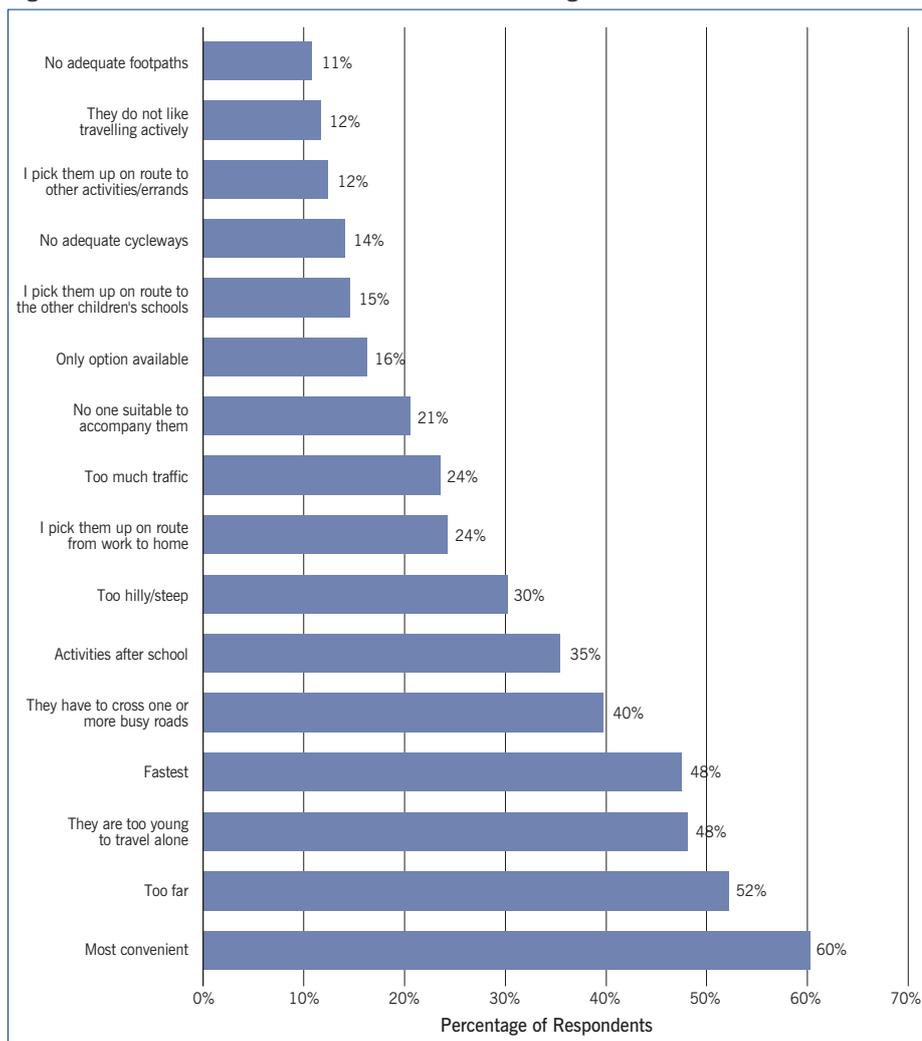


Table 3. Knowledge of child's school participation in active school travel initiatives

Active school travel initiative	Have not participated	Unsure	Have participated
Pedal Ready	42.6%	39.8%	17.6%
Bikes in Schools	44.6%	39.4%	16%
Walking School Buses	51.9%	28.0%	20.1%
Moving March	20.1%	19%	60.9%
Active Travel Action Plans	44.4%	48.3%	7.3%
Park and Stride	48.8%	44.5%	6.7%

Parental circumstances

Parental and family circumstances are strongly related to a number of the barriers that slow the uptake of active travel for primary school-aged children.

The survey revealed that 56% of respondents were in full-time work and 24% were in part-time work. Sixteen per cent of respondents stated that they did not have flexible working hours, 48% of respondents stated that they had somewhat flexible working hours and 35% of respondents stated that they had very flexible working hours. Sixty per cent of

respondents said that the flexible working hours allowed them to travel more actively with their children.

Regarding mode of transport to work or study, 60% of respondents travelled in a car as the driver, 20% of respondents travelled in a bus, 12% walked, 10% biked and 10% worked or studied from home. With respect to commute time, 59% of respondents took 11–30 minutes to travel to work and 28% of respondents took more than 30 minutes. The mean commute time was 23 minutes and the median commute time was 25.5 minutes. These findings are

significant because focal children's active school travel is likely affected by these commute trends (Conlon, 2013).

Eighty-six per cent of respondents stated that they lived with a partner, and of these 83% stated that their partner was in full-time work. Of respondents' partners, 35% did not have flexible working hours, 48% had somewhat flexible working hours and 17% had very flexible working hours. Fifty-one per cent of respondents stated that these flexible working hours did not allow their partners to travel more actively with their children.

Regarding mode of transport, 41% of respondents' partners travelled to work or study in a car as the driver, 17% took the bus, 12% walked and 14% biked. With respect to commute time, 67% of respondents' partners took 11–30 minutes to travel to work and 21% took more than 30 minutes to travel to work. The mean commute time was 22.2 minutes and the median commute time was 25.5 minutes.

Knowledge of focal child's school

participation in active school travel initiatives

As previously stated, there are several initiatives in Wellington primary schools aimed at increasing children's participation in active travel. In addition to asking parents and caregivers about barriers to active travel, the survey also asked about their knowledge of their child's school's participation in these different initiatives (Table 3). Walking school buses were participated in the least out of the initiatives, at 51.9%. Respondents were most unsure about whether their child had participated in the Active Travel Action programme, at 48.3%. The survey identified Moving March as having the highest participation rate at 60.9%.

Discussion

Barriers to active school travel

The survey found that the most common barriers to active school travel when travelling to and from school were: the preferred mode of transport being the fastest or the most convenient; respondents' children being too young to travel alone; respondents' homes being too far away from school; and respondents needing to drop their children off en route to work. Other notable barriers included children having to cross busy roads, and

active school travel routes having too much traffic or being too hilly or steep.

For the 55% of respondents who live within 1.2km of their child's school, the active school travel barriers would likely relate to the safety of the built environment, the availability of a suitable person (if needed) to accompany a child on their active school travel journey, and having someone suitable at home after school (if needed) to look after the child. For parents who live beyond an actively travelable distance, the focus turned to the barriers surrounding the usability, convenience and cost of public transport. Thus, people in these two key groups face different barriers and should be surveyed with different questions if we are to better understand the barriers to active school travel.

Distance considerations

When assessing how far children travel from their home to their school, the survey found that the mean distance was 2km (around a 25-minute walk) and the median distance was 1.05km (around a 10–15-minute walk), with 55% of respondents living a 15-minute walk or less from their child's school. This is important because previous studies have found that a major predictor of active school travel engagement is the distance children live from their school (Mandic et al., 2020; Oliver et al., 2014; Smith et al., 2020). Moreover, Tang states that if active school travel is to be optimised, a child should live a five-minute walk from their school or closer (Tang, 2021). Thus, a potential group of people who could be nudged by thoughtful policy are the 55% of respondents who live within a 15-minute walk of their child's school. Given that 49% of focal children are using active modes of transport to travel to and from school, evidence-based policy would see this number rise to 55% of children as a minimum target.

Notably, of respondents who reported that they had more than one primary school-aged child, 83% stated that their primary school-aged children travelled to and from school in the same way. Thus, active school travel initiatives in the Wellington city area should target households as opposed to individual children.

Safety-related barriers

When asked to think about the statement 'cycling in the city is safe', 46% of participants in the Wellington City Council residents monitoring survey in 2019 reported they were dissatisfied or very dissatisfied with this statement. When asked to think about this same statement for their children, 76% of respondents were dissatisfied. Additionally, when asked about walking in Wellington central, respondents noted concerns about sharing footpaths with scooters and cyclists (Wellington

Family circumstances and efficiency-related barriers

The survey showed that a main factor in respondents' travel habits was that the travel was fast and convenient. In the 2019 residents monitoring survey, 39.2% of Wellington city respondents reported that driving around the city was quite easy or very easy. When thinking about cycling around the city, only 28.9% of respondents reported that it was quite easy or very easy. When thinking about walking around the city, 92.5% of respondents

Prior literature has shown how parents' attitudes and commute patterns are intertwined with their children's opportunities for active travel ...

City Council, 2019). Thus, to incentivise active travel for children and adults who are within a walkable or rideable distance of their destination, adults and children need to feel safe and be safe.

The active school travel survey conducted for this research included an open text question on why it would be unsafe for their child to actively travel a short distance to school unaccompanied, to which there were multiple responses. In particular, one respondent stated:

We would let our youngest walk or ride everyday if we didn't have to accompany them. They are good at making judgement decisions as to when it is safe to cross, however there are two streets which are 50km/h zones with significant blind spots which are a very real concern.⁹

Comments such as this highlight the real barriers for children engaging in active school travel, and why children may not be travelling actively even when living within a short distance of their school.

reported that walking was quite easy or very easy (ibid.). These statistics are reflective of the thoughts of adults in the Wellington city area and would likely be different when thinking of children navigating the transport networks. Thus, if active school travel is to become more accessible in Wellington city, it needs to be comparatively easier than using private or public transport and should be developed with children in mind.

Prior literature has shown how parents' attitudes and commute patterns are intertwined with their children's opportunities for active travel (Activity Nutrition Aotearoa, 2018; Smith et al., 2019; Susilo and Liu, 2016). Due to the majority of the survey sample consisting of women aged 35–44 and full-time workers commuting to work or study in a car, with this commute time most commonly taking around 25 minutes, active school travel initiatives aiming to engage with parents/guardians in Wellington city need to have this demographic and their key barriers in mind.

When asked about flexible working hours, 48% of respondents and 48% of respondents' partners reported that they had somewhat flexible working hours, while 35%

of respondents and just 17% of respondents' partners had very flexible working hours. Moreover, 40% of respondents stated that the flexible working hours provided by their work did not help them to facilitate active school travel; similarly, 51% of respondents stated that their partners' flexible working hours did not help them to facilitate active school travel. Thus, it is likely that if more workplaces offered 'very flexible' working hours, respondents and their partners would be better positioned to facilitate active school travel.

In the closing open text section of the survey, a number of respondents highlighted the impact that parental working arrangements had on active school travel. One commented:

school start time. For any parents that work, a normal day begins at 9am. Most schools only open at 8.30. Half an hour is not a lot of time to get from school to work, so often, parents will choose to drive rather than take a bus/train or use active transport. If the parent is driving to work, they will drive the kids to school first. Also, consideration of sibling's transport requirements. Easy to factor in active modes of transport if you are all doing the same thing, but if everyone needs to be in different places, it's more convenient and time efficient to drive.

This comment supports the findings of the survey and underlines how intertwined children's active school travel habits are with the travel habits of those in their household.

Notably, a focus on parental work schedules is somewhat lacking in active school travel literature. One respondent echoed this when stating:

I am impressed this survey is delving into home circumstances and family work commitments. These overwhelmingly dictate mode choice. Many families would love to use active modes, but it can be difficult to fit in to family routines.

Differences between before-school and after-school active travel

Interestingly, the survey found that

children engaged in active modes of transport slightly more when travelling to school (50%) than when travelling from school (45%). Moreover, it was more likely for children who travelled in private vehicles or used public transport to use the same mode of transport when travelling to and from school than for those who travelled actively. This finding was also reflected in answers to the questions about the frequency of active school travel. When assessing the before- and after-school barriers to active travel, additional barriers such as focal children being too tired, being picked up from school by a nanny or being in after-school care featured as barriers to afternoon active travel.

Conclusion

Currently, the initiatives undertaken by Wellington City Council are insufficient to address the declining rate of active school travel. Further, programmes must be considered in tandem with those already in action to achieve the goal of at least 55% of children (those living within a 15-minute walk of their school) travelling actively.

Given the strong indication that safety, convenience and efficiency are key barriers to active school travel, it is recommended that a city-wide walking school bus programme be established, addressing parents' safety concerns and not requiring all parents to attend every morning. Additionally, to mitigate safety concerns regarding younger children it is recommended that the current micro scooter safety programme be offered to children in years 0–3, as they are ineligible for the Pedal Ready courses. This research also found that wider-reaching access to the Active Travel Action programme, including for children in years 5–8, may assist with addressing the barriers to travel.

Further, the study suggests the need for infrastructural changes: safe crossing options within a 20-minute walking radius of primary schools, adequate footpaths and cycleways within a 20-minute walking radius of primary schools, speed reduction around schools at drop-off and pick-up times, and traffic reduction around schools at drop-off and pick-up times.

Other key barriers could also be managed by encouraging workplaces to

offer parents/guardians more flexible working hours, especially during school drop-off and pick-up times, and incentivising households with primary school-aged children to travel actively.

When assessing the implementation of new active school travel initiatives, the overarching goals should be to ensure that the initiative: is convenient; aligns with the family schedule; safe (objectively and subjectively); is equitable; fosters active school travel skills and knowledge; and fosters awareness and in turn an understanding of the importance of active school travel. Further, for the organisation implementing such initiatives, affordability and political feasibility are obviously vital considerations.

- 1 Although the survey found that the mean number of primary school-aged children a parent/guardian had was 1.5, the target population was calculated using the 2.1 average due to the survey sample size being significantly lower than the assumed population.
- 2 Of the analysed responses, 649 of them were 100% complete.
- 3 After analysing the open text answers, bike – as a passenger and motorbike – as a passenger were added to the travel modes.
- 4 The active school travel frequency statistics are in line with Wellington City Council's active school travel findings stated in its 2018/19 annual report (Wellington City Council, 2019).
- 5 After analysing the text answers, the following options were included: cheapest; I am not physically able ...; not enough time to travel actively; there is no space to store the necessary active travel equipment in our home. Answers that received less than 10% of responses were: there is no space to store the necessary active travel equipment in our home (0%); not enough time to travel actively (0%); I feel pressured by other people/parents to take them to school in this way (0%); I drop them off en route to other activities/errands (0%); they travel in this way because they don't want to get bullied (1%); cheapest (1%); too much crime (2%); do not have the necessary active school travel equipment (2%); I'm not physically able to facilitate active school travel and/or the child in my care is not physically and/or mentally able to travel actively (2%); their peers travel to school in this way so they want to as well (3%); activities before school (3%); not enough time to travel actively (4%); I drop them off en route to other activities (7%); bad weather (7%); they have a lot to carry (9%).
- 6 Responses total more than 100% due to the question being multiple choice. Number of respondents = 320; number of responses = 820.
- 7 After analysing the text answers, the following options were included: cheapest; I am not physically able ...; not enough time to travel actively; there is no space to store the necessary active travel equipment in our home; after school-care/nanny picks them up from school; too tired after school. Answers that received less than 10% of responses were: There is no space to store the necessary active travel equipment in our home (0%); I feel pressured by other people/parents (1%); cheapest (1%); they travel in this way because they don't want to get bullied (1%); too much crime (2%); not enough time to travel actively (2%); I am not physically able to facilitate active school travel and/or the child in my care is not physically and/or mentally able to travel actively (2%); do not have the necessary active school travel equipment (2%); after-school care/nanny picks them up from school (3%); too tired after school (3%); their peers travel in this way so they want to as well (4%); bad weather (9%); they have a lot to carry (9%).
- 8 Responses total more than 100% due to the question being multiple choice. Number of respondents = 370; number of responses = 1846.
- 9 The author can provide a summary of comments upon request.

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Appendices

Summary statistics of socio-demographic information and household circumstances (questions B1-G1)

Variable	n	Mean	Median	Mode	Min	Max
B1. # of Primary school-aged children (PSAC)	664	1.5	1	1	1	5
B2. PSAC get to and from school in the same way	314	0.83	1	1	0	1
C1. Respondents' gender	651	0.80	1	1	0	1
C2. Respondents' age	659	42.7	39.5	39.5	29.5	69.5
C3. Respondents' ethnicity	647			European		
D1. Do you have a partner	658	0.86	1	1	0	1
D2. Work status	656			Full-time work		
D3. Flexible working hours	540		Somewhat flexible	Somewhat flexible		
D4. Flexible working hours facilitate active travel	437	0.60	1	1	0	1
D5. Respondents' usual primary mode of transport to work or study	566			Car driver		
D6. Respondents' commute to work or study (minutes)	507	23	25.5	21-30	5.5	35.5
D7. Partner's work status	566			Full-time work		
D8. Partner's flexible working hours	531		Somewhat flexible	Somewhat flexible		
D9. Partner's flexible working hours facilitate active travel	339	0.49	0	0	0	1
D10. Partner's usual primary mode of transport to work or study	532			Car driver		
D11. Partner's commute to work or study (minutes)	494	22.2	25.5	21-30	5.5	35.5
E1. Adults in the house	661	1.9	2	2	1	5
E2. Children in the house under 4 years old	661	0.28	0	0	0	4
E3. Children in the house year 9 and above	661	0.37	0	0	0	1
F1. Focal child's gender	649	0.53	1	1	0	1
F2. Focal child's age	661	7.9	7.5	5-6	5.5	11.5
F3. Focal child's ethnicity	644			European		
Decile of participating schools	45	8.8	10	10	3	10
Decile of all eligible schools	68	8.6	9	10	3	10
G1. Distance from home to school (km)	661	2.0	1.05	0.5 - 0.8	0.2	5.55

Summary statistics of children's usual mode of transport to and from school and barriers to active school travel (questions G2-G5)

Variable	n (Respondents)	n (Responses)	Mode
G2. Focal child's mode of transport to school	660	660	Car
G3. Top safety barrier when travelling actively to school	320	820	Too far for the focal child to travel actively
G3. Top family barrier	257	345	I drop them off on route to work
G3. Top social barrier	51	54	They do not like travelling actively
G3. Top efficiency barrier	256	389	Most convenient
G3. Top other barrier	113	125	Only option available
G3. Top overall barrier when travelling actively to school	338	1733	Most convenient
G4. Focal child's mode of transport from school to home	646	646	Car
G5. Top safety barrier when travelling actively from school to home	331	847	Too far
G5. Top family barrier	283	397	Activities after school
G5. Top social barrier	58	63	They do not like travelling actively
G5. Top efficiency barrier	268	399	Most convenient
G5. Top other barrier	125	140	Only option available
G5. Top overall barrier when travelling actively from school to home	370	1846	Most convenient

Summary statistics of children's frequency of active school travel and respondents' knowledge of initiatives (questions G6-G12)

Variable	n	Median	Mode
G6. Frequency of walking to school	651	Less often	Never
G7. Frequency of walking from school to home	652	Less often	Never
G8. Frequency of biking to school	664	Never	Never
G9. Frequency of biking from school to home	647	Never	Never
G10. Frequency of scootering or skating to school	650	Never	Never
G11. Frequency of scootering or skating from school to home	653	Never	Never
G12. Pedal ready participation	578	Unsure	No
G12. Bikes in schools participation	576	Unsure	No
G12. Walking school bus participation	576	No	No
G12. Moving March participation	637	Yes	Yes
G12. Active travel action plan participation	565	Unsure	Unsure
G12. Park and stride participation	566	Unsure	No
G12. Other active school travel initiative	4		GWRC Walk or Wheel Week

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