Children’s Independent Mobility in Australia

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Executive summary

This study is among the first to examine levels of independent mobility among schoolchildren in urban and rural areas of Victoria, Australia, as well as their participation in active transport (e.g. walking/cycling) on journeys to school and to other local destinations. Overall, compared with girls, boys were granted greater freedom in terms of mobility licences, as were secondary schoolchildren compared with those attending primary school. While these findings concur with existing international evidence, little was known, until now, about independent mobility among Australian schoolchildren and whether this varied by urban/rural locality.

Our findings demonstrate that urban and rural schoolchildren were granted similar levels of freedom. However their actual levels of independent mobility varied according to urban/rural locality. On weekends, slightly higher proportions of rural schoolchildren engaged in at least one independent activity compared with urban schoolchildren, but these differences were not statistically significant. On the school journey, boys who attended urban primary schools had the highest levels of independent mobility. Because motorised travel requires some level of adult accompaniment, travel mode is closely associated with independent mobility on the journey to school. In our study, rates of active transport to school were highest among urban primary schoolchildren. Future research will examine objectively the distance between home and school travelled by these children, as distance to school is a key barrier to travel by non-motorised transport. We found that school bus was the dominant mode of transport for rural secondary schoolchildren. Among schoolchildren lived in rural farming communities, school buses were the most convenient and cost-effective mode of transport. It is important to consider this when designing programs to promote active transport and independent mobility in rural areas, as there is clearly not a ‘one-size-fits-all’ solution that can be applied to town and country.

In areas where schoolchildren travel long distances (not easily covered by walking or cycling) to school, efforts should concentrate on promoting active transport and independent mobility on trips to other neighbourhood destinations. We found that that many children were taken by car on local trips that were within walking distance of home. The most frequently reported reason for this was parental concern about traffic. Our earlier research has identified the importance of providing traffic calming infrastructure on residential streets to promote active transport and outdoor physical activity among schoolchildren. This may in turn help to address concerns about stranger danger by encouraging greater pedestrian activity, outdoor physical activity and social interaction on and around local streets. Even though almost all schoolchildren considered their neighbourhood to be safe, their most common concern was about harm from strangers.

Further analyses will be conducted to objectively measure the physical environment around the children’s homes and to examine how this is associated with levels of active transport and independent mobility. Findings will help design tailored interventions for those living in urban and rural areas, with different physical infrastructure and varying population density.
Introduction

When an Expression of Interest was circulated by researchers at the Policy Studies Institute (PSI), London, to participate in an international comparison study of children’s independent mobility, I was eager to be involved with the gathering and analysis of Australian data. The report¹, “One False Move... A study of children’s independent mobility”, by PSI researchers Hillman, Adams and Whitelegg (1990) was a key source of inspiration to me during my PhD studies. While I had already decided to examine how the local neighbourhood was associated with children’s physical activity, this seminal study inspired me to investigate how neighbourhood safety, in particular, was associated with overall physical activity and active transport (e.g. walking/cycling for transport) among children and adolescents. My findings demonstrated that aspects of the physical environment, such as traffic calming measures (e.g. speed humps and pedestrian crossings) and walking tracks were more strongly associated with these behaviours among adolescents compared with younger children²,³. This may have been due to adolescents having greater independent mobility than children, but there was a paucity of Australia data on this.

There is evidence that participation in active transport among Australian children has declined over recent decades. For example, an Australian study⁴ found that between 1985 and 2001, the proportion of children aged 9-13 years who walked to/from school six to ten times per week declined by 31%, while the proportion of children who cycled to school at least once per week declined by 58%. Little is known, however, about levels of independent mobility among Australian children. Furthermore, most Australian data²⁶ on children’s active transport was gathered in urban rather than rural areas. The gathering and analyses of data from Australian schoolchildren and their parents in both urban and rural areas will contribute to the evidence base on active transport and independent mobility, and enable comparison of the behaviour and attitudes of children and their parents regarding independent mobility. In particular, associations between mobility licences and children’s actual independent mobility will be examined, making an important contribution to the literature, as the original English study⁷ did not cross-match data from parents and their children.

It is worth noting that in 1991, Tranter & Whitelegg⁷ conducted the surveys of Hillman et al.¹ (1990) in Canberra to compare levels of children’s independent mobility with those in England and Germany. They reported lower levels in Canberra compared with Germany, but more similar levels when compared with England⁷. It is important, however, to study children’s independent mobility in other urban and rural areas of Australia, because unlike other Australian cities, Canberra was a planned city, based on the winning design of an international competition.

Our study in Australia was timely as it aligns with a number of major Government initiatives. For example, the National Urban Policy⁸, released in May 2011 has among its objectives the improvement of public health outcomes:

“A number of preventative and public health objectives can be achieved through better designed built environments and transport networks that encourage active travel, recreational and incidental exercise, social interaction and enjoyment of the natural environment.”

In 2009, in a bid to combat obesity, the Australian Government National Preventative Health Taskforce⁹ identified the requirement for urban planning and building design that promotes physical
activity, as well as the need to “reorient urban obesity-promoting environments through appropriate infrastructure investments”.

In addition, the “Healthy Spaces & Places” guide\(^\text{10}\) was released in 2009 by the Australian Local Government Association, the National Heart Foundation of Australia and the Planning Institute of Australia to guide the development of communities that encourage active living. The key action areas include the encouragement, support and facilitation of more walking and cycling; a comprehensive active children and youth program; and regulation to provide physical infrastructure that supports active lifestyles.

**Methodology**

Government secondary schools in Victoria, Australia were randomly sampled and assigned to the following settlement types: Inner City, Urban, Suburban, Small Town, Rural. While the characteristics of the settlement types in Victoria could not exactly mirror those in England due to Australia’s lower population density, the following criteria were applied to ensure diversity in settlement types:

- **Inner City** – within 5km of Melbourne’s Central Business District;
- **Urban** – non-inner-city area of Metropolitan Melbourne, population density > 2000 people/km\(^2\);
- **Suburban** – outer area of Metropolitan Melbourne, population density < 2000 people/km\(^2\);
- **Small Town** – non-Metropolitan Melbourne, rural, population of town > 6000 people;
- **Rural** – rural\(^1\), population of town < 6000 people.

When a randomly selected secondary school was identified for a particular settlement type, the Principal was provided with details of the study and an invitation for the school to participate. If this invitation was declined, then the Principal of the next randomly selected secondary school that met the selection criteria for that settlement type was contacted. If the invitation was accepted the Principal of the primary school located the closest distance to the secondary school was asked to participate. In areas where school enrolments were low, several primary schools were approached to boost potential participation rates. Secondary schools in two separate rural areas were recruited as teachers at the first school recruited anticipated low participation rates.

Once the Principal has agreed for their school to participate, a notice was sent home to parents/guardians of all students who were in Years 3-6 or in Years 7-10 in 2010. The

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parents/guardians and children were provided with appropriate information in a plain language statement and two consent forms. One form was for parents to provide consent for their own participation, and the other form was for parental consent for their child's participation in the survey (in Australia, active informed consent is required for children’s participation). Completed parent surveys and consent forms were returned to Deakin University by mail (using a pre-paid envelope). Participating parents were invited to enter a prize draw for four $100 vouchers for a major department store.

Each parent-child pair was assigned a unique identifier code (ID). Three weeks after parent surveys were distributed, each school was contacted to arrange a time to conduct the student surveys in the classroom. Each school was provided with a list of students for whom parental consent had been obtained. Since only the Project Manager was available to conduct the school visits the surveys were conducted over several weeks in October and November (Spring-time). One secondary school (urban) requested that the student surveys be mailed to school so that teachers would conduct the surveys when convenient. An instruction sheet was provided to guide participating teachers. On completion of their survey, children were given a small sports ball, as compensation for their time. Each participating school received a $100 book voucher for the school library.

Number of schools

The numbers and types of schools recruited for this study were:

9 Primary schools (2 Inner City; 2 Urban; 1 Suburban; 1 Small Town; 3 Rural); 6 Secondary schools (1 Inner City; 1 Urban; 1 Suburban, 1 Small Town; 2 Rural); 1 Prep-Year 12 school (1 Inner City).

Participants

Overall 4810 parents surveys were distributed and 891 of these were completed (i.e. the response rate was 18.5%). A total of 688 children participated in the study. The numbers of primary and secondary school children who participated in each settlement type are reported in Table 1.
Table 1: Participating primary/secondary schoolchildren (n=688) by settlement type

<table>
<thead>
<tr>
<th>Settlement Type</th>
<th>Primary</th>
<th>Secondary</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner City</td>
<td>150</td>
<td>28</td>
<td>178</td>
</tr>
<tr>
<td>Urban</td>
<td>128</td>
<td>89</td>
<td>217</td>
</tr>
<tr>
<td>Suburban</td>
<td>30</td>
<td>16</td>
<td>46</td>
</tr>
<tr>
<td>Small Town</td>
<td>51</td>
<td>64</td>
<td>115</td>
</tr>
<tr>
<td>Rural</td>
<td>71</td>
<td>61</td>
<td>132</td>
</tr>
</tbody>
</table>

The areas surveyed

The survey areas are described in detail in Appendix 1. Considering the random sampling used to select the survey areas, they are likely to be broadly representative of urban and rural areas in Australia.

Demographic and socio-economic data for each of the study areas in comparison with data for Australia and the State of Victoria are reported in Table 2 below.
<table>
<thead>
<tr>
<th></th>
<th>Australia</th>
<th>Victoria</th>
<th>Inner City (Fitzroy, Clifton Hill, Collingwood)</th>
<th>Urban (Mont Albert, Surrey Hills)</th>
<th>Suburban (Knoxfield, Ferntree Gully)</th>
<th>Small Town (Gisborne)</th>
<th>Rural 1 (Korumburra, Poowong)</th>
<th>Rural 2 (Kyneton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment rate (2009)</td>
<td>5.0</td>
<td>5.1</td>
<td>6.1</td>
<td>5.5</td>
<td>5.0</td>
<td>2.0</td>
<td>2.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Wage &amp; salary earners ‐ managers (proportion) (2008)</td>
<td>8.9</td>
<td>10.0</td>
<td>11.8</td>
<td>11.8</td>
<td>9.3</td>
<td>12.1</td>
<td>7.6</td>
<td>8.0</td>
</tr>
<tr>
<td>Wage &amp; salary earners ‐ professionals &amp; associate professionals (proportion) (2008)</td>
<td>26.1</td>
<td>27.0</td>
<td>44.7</td>
<td>37.6</td>
<td>22.2</td>
<td>30.3</td>
<td>23.1</td>
<td>25.8</td>
</tr>
<tr>
<td>% of population aged 0‐14 years (2009)</td>
<td>19.1</td>
<td>18.5</td>
<td>11.8</td>
<td>15.9</td>
<td>17.6</td>
<td>22.1</td>
<td>17.4</td>
<td>19.9</td>
</tr>
<tr>
<td>Population density (persons/km²) (2009)</td>
<td>2.9</td>
<td>23.9</td>
<td>3785.9</td>
<td>2560.8</td>
<td>1632.3</td>
<td>38.2</td>
<td>13.3</td>
<td>15.8</td>
</tr>
<tr>
<td>% born overseas (2006)</td>
<td>23.8</td>
<td>25.4</td>
<td>29.6</td>
<td>32.9</td>
<td>21.6</td>
<td>15.0</td>
<td>13.6</td>
<td>11.9</td>
</tr>
<tr>
<td>% estimated indigenous</td>
<td>2.5</td>
<td>0.7</td>
<td>0.5</td>
<td>0.2</td>
<td>0.5</td>
<td>0.4</td>
<td>0.6</td>
<td>0.5</td>
</tr>
<tr>
<td>% speak language other than English at home</td>
<td>16.8</td>
<td>21.5</td>
<td>23.8</td>
<td>28.5</td>
<td>10.5</td>
<td>4.6</td>
<td>3.9</td>
<td>3.3</td>
</tr>
<tr>
<td>% (aged 15+ years) with post‐school qualifications</td>
<td>52.5</td>
<td>52.5</td>
<td>69.3</td>
<td>61.1</td>
<td>50.2</td>
<td>57.1</td>
<td>49.4</td>
<td>49.6</td>
</tr>
</tbody>
</table>
Additional questions in the Parent Questionnaire

Two additional questions were included in the Parent Questionnaire to gather more information about reasons for parental accompaniment:

2d) If your child is usually taken to other places (that are within walking distance) by an adult, what is the main reason for not allowing them to travel alone or with other children? (Please tick only one box)

- □ Concern about traffic danger
- □ Child is unreliable or too young
- □ Concern about danger from adults
- □ Fear of bullying by other children
- □ Other parents would disapprove of this
- □ Concern that there is no one to support your child should they need help
- □ Other reason, please write in: .................................................................
- □ Not applicable

9d) If you were allowed to get about alone at a younger age than you would allow your child to do so, what are the main reasons for this? (Please tick no more than three boxes)

- □ Nowadays, there is greater traffic danger
- □ Nowadays, there is greater risk of harm from strangers
- □ Nowadays, there is greater risk of bullying by other children
- □ Our family has greater access to a car(s) than my family did when I was a child
- □ My child’s leisure time is more structured (with sports & activity classes) than mine was (i.e. I had more ‘free’ time)
- □ Other reason, please write in: .................................................................
- □ Not applicable
All data were entered in SPSS version 17, and descriptive analyses were performed. Where appropriate, data were stratified by primary/secondary school, by sex and by urban/rural setting. Linear and logistic regression analyses were performed in Stata version 10 to examine associations between particular variables (e.g. between mobility licences and actual independent mobility on the journey to school and on weekends.) These analyses which controlled for clustering by school will be described later in this report.

**Findings**

Results are presented for 688 parent-child pairs.

1. **Findings grouped by primary and secondary school children**

   i. **The six licences of independent mobility**

   The proportions of primary and secondary schoolchildren who were granted each of the ‘mobility licences’ are shown in Table 3.

   **Table 3. Mobility licences granted by parents to primary and secondary schoolchildren**

<table>
<thead>
<tr>
<th>Licence</th>
<th>Primary (%)</th>
<th>Secondary (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross main roads alone</td>
<td>55</td>
<td>97</td>
</tr>
<tr>
<td>Go on their own to places other than school</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td>Come home from school alone</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Go out alone after dark</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Travel on local buses alone</td>
<td>11</td>
<td>62</td>
</tr>
<tr>
<td>Cycle on main roads alone†</td>
<td>18</td>
<td>65</td>
</tr>
</tbody>
</table>

† For this item only those who owned a bicycle were included (primary, 97%; secondary, 88%)

(note: the figures in the table for those allowed to go on their own to places other than school were for the response ‘usually goes alone’. If those who answered ‘varies’ were included, then the proportions would be: primary, 45%; secondary, 79%.)

Overall, secondary schoolchildren were granted more mobility licences than were primary schoolchildren. While almost all secondary schoolchildren were allowed to cross main roads alone, just over half of all primary schoolchildren were allowed to do so. However, very few schoolchildren
in either age-group were allowed to go out alone after dark. Even though almost all (97%) primary schoolchildren owned a bike, less than a fifth were allowed to cycle on main roads alone. Among secondary schoolchildren, 88% owned a bicycle, but only 65% were allowed to ride alone on main roads.

**Differences/agreement between parental and children’s responses to questions on licences**

Because the children’s survey questions were phrased differently from those on the parents’ survey, direct comparison of reported mobility licences could be made only for the three licences shown in Table 4 below.

**Table 4. Children’s report of mobility licences granted by their parents**

<table>
<thead>
<tr>
<th>Licence</th>
<th>Primary (%)</th>
<th>Secondary (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross main roads alone</td>
<td>60</td>
<td>97</td>
</tr>
<tr>
<td>Travel on local buses alone</td>
<td>15</td>
<td>80</td>
</tr>
<tr>
<td>Cycle on main roads†</td>
<td>71</td>
<td>80</td>
</tr>
</tbody>
</table>

† For this item only those who owned a bicycle were included (primary, 97%; secondary, 88%)

There was close agreement between parents and children’s reports of being able to cross main roads alone. The slight difference between responses from primary schoolchildren and their parents may have been due to some children being unclear about the definition of a ‘main’ road. Similarly with regard to travelling alone on buses, some study areas did not have regular bus services, so the children were unclear about whether they were allowed to travel alone on buses.

The discrepancies between responses from parents and children regarding cycling on main roads, may have been due to children being unclear about the definition of a ‘main’ road, but also due to the omission of the word ‘alone’ on the children’s survey which asked ‘are you allowed to cycle on main roads by your parents?’ In addition, some children were confused by the wording and asked if ‘by your parents’ meant ‘with your parents’.

Direct comparison of the remaining licences was not possible for the following reasons:

1. Children were not asked if they were allowed to go to places other than school alone. Instead they were asked whether they had done particular activities (including going to a friend’s home or to a playground) on their own or with another young person on the previous weekend. Around half (49%) of primary schoolchildren had done at least one independent activity on the weekend, while 93% of secondary schoolchildren had done so.
2. Children were not asked if they were allowed to travel home from school alone. They were asked about their mode of travel and about their level of accompaniment.

3. Although not asked if they were allowed to go out alone after dark, 11% of primary schoolchildren reported that they had spent time outside after dark alone or with friends on the previous weekend, and 29% of secondary schoolchildren reported that they had done so.

ii. The journey to and from school

Participation rates by primary/secondary schoolchildren in each travel mode on the journey to school are shown in Figure 1. Overall most schoolchildren (43%) travelled to school by car, but the school bus was the most popular method of travel to school among secondary schoolchildren (predominantly those living in rural areas).

![Figure 1: Participation rates in transport modes on journey to school](image-url)
Further analyses were conducted after dichotomising the types of survey areas as urban (i.e. inner city, urban, suburban) and rural (small town and rural as defined in the Methodology section). Urban and rural schoolchildren tended to use different modes of travel to school (Figure 2 below). Most urban and rural primary schoolchildren travelled to school by car. Amongst urban secondary schoolchildren, equal proportions travelled by car or public transport, while among rural secondary schoolchildren travel by school bus was most prevalent.

Figure 2: Participation rates in transport modes on journey to school
Household access to cars

Household access to cars among primary and secondary schoolchildren is shown in Figure 3.

![Bar chart showing household access to cars]

Figure 3: Regular access to a car(s)

Car access among households was almost universal. Only 1% of households of primary and secondary schoolchildren did not have regular access to a car, while over 70% of households had access to two or more cars.

Children's preferred mode of travel to school

The preferred mode of travel to school among primary and secondary schoolchildren is shown below in Figure 4.
When asked how they would like to travel to and from school, 30% of primary schoolchildren reported they would like to walk to school (this aligned with the actual proportion doing so), while 36% reported they would like to cycle there. Among secondary schoolchildren 21% reported they would like to walk to school, while 12% reported they would like to cycle there. Therefore, far more schoolchildren would like to engage in active transport to school than do currently. The proportions of schoolchildren who were not travelling to and from school by their preferred mode are show in Figure 5. Around 40% of primary schoolchildren and around 60% of secondary schoolchildren were not travelling by their preferred mode on the school journey.
Figure 5: Proportion of children who did not travel by preferred mode

Accompaniment on the school journey

Schoolchildren were asked with whom they had travelled to school on the morning of the survey. They could choose from the following response options and could choose more than one option: ‘Travelled on my own’; ‘Parent’; ‘Another child’, ‘Older child/teenager’, ‘Child of same age or younger’. Levels of accompaniment of primary and secondary schoolchildren on the journey to school are shown in Figure 6. Only 14% of primary schoolchildren and 27% of secondary schoolchildren made this journey alone, while 69% of primary schoolchildren and 38% of secondary schoolchildren were accompanied by an adult (usually their parent).
Because the previous question had allowed children to choose more than one response (e.g. they could report that they had travelled with a parent and with a younger child), we analysed the data further to examine how many children were travelling to school by active transport, without adult accompaniment. The proportion of schoolchildren who travelled actively to school without adult accompaniment is shown in Figure 7.
The above results contradict the usual pattern where independent mobility increases with age\(^1\). For all groupings except urban girls, lower proportions of secondary schoolchildren compared with primary schoolchildren were travelling to school without adult accompaniment. This is related to the lower participations rates in active transport among secondary schoolchildren as depicted in Figure 2. An important barrier to engaging in active transport is distance to school\(^2\) and we shall demonstrate later that overall, secondary schoolchildren, compared with those attending primary school, were travelling greater distances to school.

**Travel time to school**

Children were asked to report how long it had taken them to travel to school on the morning of the survey. The results are presented in Figure 8 below. Almost a third (32%) of primary schoolchildren and 12% of secondary schoolchildren reported travelling for less than 5 minutes to school. Most (81%) primary schoolchildren and almost half (49%) of secondary schoolchildren reported journey times to school of fifteen minutes or less.
Distance to school

We also gathered objective data regarding distance from home to school. The children’s homes and their schools were mapped using a Geographical Information System (GIS). We then computed the shortest distance between home and school using the pedestrian network (which includes walking tracks and bike paths as well as roads). Objectively measured distances to school are presented in Figure 9. Few schoolchildren (primary, 8%; secondary, 2%) lived within 500m of their school. Among those attending primary school, almost a third (32%) lived within 1km of their school, while almost two thirds (63%) lived within 2km of their school. In comparison, secondary schoolchildren were travelling further to school: only 7% lived with 1km of their school, less than a quarter (23%) lived within 2km of their school; and almost a third (29%) lived more than 10km from their school.

Figure 8: Travel time to school (reported by child)
Among primary schoolchildren, 52% attended the school closest to home, while 64% of secondary schoolchildren did so. In cases where the child did not attend the nearest school, parents were asked to select possible reasons why. Response rates are reported below in Table 5. In most cases (primary, 53%; secondary, 64%) parents reported that they did not wish to send their child to the local school or preferred a specific school elsewhere. The most pervasive ‘other’ reason for not attending the closest school was that siblings and/or friends were attending the chosen school.
Table 5. Reasons for not choosing the school closest to home

<table>
<thead>
<tr>
<th>Reason for not choosing school closest to home</th>
<th>Primary (%)</th>
<th>Secondary (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No places available at local school</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Did not want to send child to local school or preferred a specific school elsewhere</td>
<td>53</td>
<td>64</td>
</tr>
<tr>
<td>Wanted a specific type of school (e.g. performing arts etc.)</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Moved home after child started school</td>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>Travel easier</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>20</td>
<td>19</td>
</tr>
</tbody>
</table>

N.B. Multiple reasons could be selected, hence total proportions for each age-group exceeded 100%

iii. Non school travel and activities

Independent mobility on weekends

The total numbers of independent activities (i.e. without adult accompaniment) in which primary/secondary schoolchildren engaged on weekends had skewed distributions. The median number of independent activities for primary schoolchildren was 0 (range 0-8), while the median value for secondary schoolchildren was 2 (range 0-12). The median (and range of) values according to urban/rural location (as described in Findings 1.ii), as well as the proportions of children who engaged in some independent activities are reported in Table 6.
Table 6. Independent activities on weekends: median (range) values

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median (range)</td>
<td>Some independent activities (%)</td>
</tr>
<tr>
<td>Urban primary</td>
<td>1 (0 to 8)</td>
<td>53.4%</td>
</tr>
<tr>
<td>Rural primary</td>
<td>0 (0 to 6)</td>
<td>47.5%</td>
</tr>
<tr>
<td>Urban secondary</td>
<td>3 (0 to 12)</td>
<td>84.6%</td>
</tr>
<tr>
<td>Rural secondary</td>
<td>2 (0 to 9)</td>
<td>87.3%</td>
</tr>
</tbody>
</table>

Among primary schoolchildren the most popular activities they did without adult accompaniment were: playing sport or going swimming (32%); visiting a friend’s home (30%); going for a walk or cycling around (25%) and going to the playground, park or playing fields (21%). Among secondary schoolchildren, the most popular activities they did without adult accompaniment were: visiting a friend’s home (52%); going for a walk or cycling around (50%); going to the shops (38%) and going to the playground, park or playing fields (34%).

Around half of all primary schoolchildren engaged in at least one independent activity on weekends. In urban areas, slightly higher proportions of boys compared with girls did so, while in rural areas slightly higher proportions of girls did so. Most (83%) secondary schoolchildren engaged in at least one independent activity on weekends. The median number of independent activities was highest (and the range of values was broadest) among urban secondary boys. For each age-group, Chi-square tests of significance were performed to determine if there were statistically significant differences in engagement in at least one independent activity on weekends according to urban/rural location. No significant associations were found. Similarly, there were no significant differences in engagement in more than the median number of independent activities on weekends, according to urban/rural locality.

iv. Perception of safety and local area

Parents were asked about journeys that their child made to destinations other than school that were within walking distance. Less than a quarter (23%) of schoolchildren made these journeys without adult accompaniment, while 42.4% of schoolchildren were usually taken by parents to these destinations (the remainder were taken by parents on some but not all of the journeys). Of those children (n=292) who were usually taken by parents from home to places within walking distance, 81.5% were attending primary school, and 80.5% of children did not walk or cycle on these journeys;
instead travel by car was the usual mode. On average, parents who accompanied their children made 3.6 (SD 2.4) such non-school journeys per week. In the Australian survey, these parents were asked to state the main reason for accompanying their child on these trips. Response options were: ‘concern about traffic danger’, (2) ‘child is unreliable or too young’, (3) ‘concern about danger from adults’, (4) ‘fear of bullying by other children’, (5) ‘other parents would disapprove of this’, (6) ‘concern that there is no one to support your child should they need help’, (7) ‘other’, (8) ‘not applicable’. Response rates are presented in Figure 10 below.
Figure 10: Main reasons for parental accompaniment on local trips within walking distance
Concern about traffic was the most commonly cited reason for parents accompanying their child on trips that were within walking distance. The next most prevalent concerns were in relation to their child being considered too unreliable or too young, and in relation to danger from adults or ‘stranger danger’, which is pervasive in the literature on neighbourhood safety\textsuperscript{13}.

Over a half of parents (primary, 56%; secondary, 53%) either agreed or strongly agreed that most adults who live in their neighbourhood look out for other people’s children in the area. Less than a fifth of parents (primary, 21%; secondary, 16%) either agreed or strongly agreed that some young people and adults in their area made them afraid to allow their children play outdoors.

**Children’s perceptions of neighbourhood safety**

Levels of perceived safety were high: almost all schoolchildren considered their neighbourhood to be either ‘very safe’ (51%) or ‘fairly safe’ (45%). However, when asked about particular aspects of safety when outside on their own or with friends, concern about strangers was most prevalent (primary schoolchildren, 54%; secondary, 40%). Other causes for concerns were: traffic (primary, 26%; secondary, 16%), getting lost (primary, 28%; secondary, 14%), bullying (primary, 22%; secondary, 8%) and not knowing what to do if spoken to by someone (primary, 29%; secondary, 15%). Despite these concerns most schoolchildren considered themselves old enough to get about on their own (primary, 87%; secondary, 95%).

**2. The influence of different factors on independent mobility**

In this chapter, ‘independent mobility’ refers to the six licenses which were defined in the original *One False Move* study:

- License to cross main roads on your own (reported by both parents and children)
- License to go to places other than school (reported by parents)
- License to travel home from school alone (reported by both parents and children)
- License to go outside after dark (reported by parents)
- License to cycle on main roads alone (reported by both parents and children)
- License to go on buses on their own (reported by both parents and children)

**i. The impact of age**

Earlier results in Table 3, have shown that age is associated with mobility licences, as secondary schoolchildren were granted more mobility licences than were primary schoolchildren. To explore this further, mobility licences granted to 8 year-olds in our study were compared with those granted to 12 year-olds. The results are presented in Table 7.
Table 7. Mobility licences granted by parents to children aged 8 and 12 years

<table>
<thead>
<tr>
<th></th>
<th>8-year-olds (%)</th>
<th>12-year-olds (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross main roads alone</td>
<td>4</td>
<td>88</td>
</tr>
<tr>
<td>Go on their own to places other than school</td>
<td>9</td>
<td>37</td>
</tr>
<tr>
<td>Come home from school alone</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>Go out alone after dark</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Travel on local buses alone</td>
<td>0</td>
<td>38</td>
</tr>
<tr>
<td>Cycle on main roads alone†</td>
<td>15</td>
<td>44</td>
</tr>
</tbody>
</table>

† For this item only those who owned a bicycle were included (primary, 97%; secondary, 88%)

The higher prevalence of these mobility licences at age 12 compared with at age 8 aligns with international evidence that children are granted greater independent mobility beginning with the transition from primary to secondary school14. The 12-year-olds in our study had either recently made or were just about to make that transition.

### ii. The impact of gender

Chi-square tests of significance were performed to examine differences in numbers of mobility licences granted according to gender. Among primary schoolchildren, the number of mobility licences granted did not vary significantly by gender, but on average, boys had more mobility licences (mean 1.6, sd 1.4) than did girls (mean 1.2, sd 1.4). Among secondary schoolchildren the number of mobility licences varied significantly (p<0.002) with gender, and on average boys had more mobility licences (mean 3.8, sd 1.2) than did girls (mean 3.1, sd 1.2).

### iii. The impact of independent mobility

Logistic regression analyses were performed to examine associations between being granted a high number of mobility licences (i.e. above the average number of mobility licences: more than one licence for primary schoolchildren, and more than three licences for secondary schoolchildren) and actual independent mobility on the school journey and on weekends. In these analyses we controlled for clustering by school.

For the school journey, a dichotomous variable was created to show whether the child made at least one active journey to/from school without adult accompaniment on the day of the survey. The
odds of travelling by active transport on the school journey without adult accompaniment when granted a high rather than a low number of mobility licences are presented in Table 8.

Table 8. Odds ratios (OR, and 95%CI) predicting active transport to/from school journey without adult accompaniment

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th></th>
<th>Girls</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds Ratio (95% CI)</td>
<td>p(t)</td>
<td>Odds Ratio (95% CI)</td>
<td>p(t)</td>
</tr>
<tr>
<td><strong>Primary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 licence or less</td>
<td>1.0</td>
<td></td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>2 or more licences</td>
<td><strong>4.28 (2.65, 6.91)</strong></td>
<td><strong>&lt;0.001</strong></td>
<td><strong>7.24 (3.77, 13.91)</strong></td>
<td><strong>&lt;0.001</strong></td>
</tr>
<tr>
<td><strong>Secondary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 licences or less</td>
<td>1.0</td>
<td></td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>3 or more licences</td>
<td>1.42 (0.91, 2.21)</td>
<td>0.141</td>
<td>1.05 (0.60, 1.82)</td>
<td>0.870</td>
</tr>
</tbody>
</table>

Similarly, a dichotomous variable was created to show whether the child had engaged in at least one independent activity on the previous weekend. The odds of engaging at least one independent activity on the weekend when granted a high rather than a low number of mobility licences are presented in Table 9.

Table 9. Odds ratios (OR, and 95%CI) predicting engagement in at least one independent activity on the weekend

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th></th>
<th>Girls</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds Ratio (95% CI)</td>
<td>p(t)</td>
<td>Odds Ratio (95% CI)</td>
<td>p(t)</td>
</tr>
<tr>
<td><strong>Primary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 licence or less</td>
<td>1.0</td>
<td></td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>2 or more licences</td>
<td><strong>3.00 (1.59, 5.66)</strong></td>
<td><strong>0.001</strong></td>
<td><strong>1.88 (1.14, 3.08)</strong></td>
<td><strong>0.013</strong></td>
</tr>
<tr>
<td><strong>Secondary</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 licences or less</td>
<td>1.0</td>
<td></td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>3 or more licences</td>
<td>1.70 (0.77, 3.77)</td>
<td>0.190</td>
<td><strong>2.32 (1.14, 4.74)</strong></td>
<td><strong>0.020</strong></td>
</tr>
</tbody>
</table>
Primary schoolchildren who were granted a high number of mobility licences were more likely to travel by active transport without adult accompaniment on the school journey, but this was no true for secondary schoolchildren (Table 8). Distance travelled to school (which is a key barrier to active transport) by secondary schoolchildren is likely to have contributed to this difference. Among all schoolchildren, except boys attending secondary school, those who were granted a high number of mobility licences was more likely to engage in at least one independent activity on weekends (Table 9).

iv. The impact of car availability

Linear regression analyses were performed to examine whether car availability was associated with mobility licences. There were no significant associations between access to regular use of a car and the number of mobility licences to children. This would have been due to the fact that almost all households had access to at least one car, and most had access to more than one car.

v. The impact of social class

To measure area-level socio-economic status (SES) we used the Index of Relative Socio-economic Advantage and Disadvantage. This index is a continuum of advantage (high values) to disadvantage (low values), and is derived from Australian Census variables related to both advantage and disadvantage. Linear regression analyses were performed to examine associations between SES and mobility licences. No significant associations were found between these variables.

vi. The impact of areal characteristics

In order to examine whether independent mobility varied between the areas studied, Chi-square tests of significance were performed to examine differences in numbers of mobility licences according to the type of survey area (i.e. inner city, urban, suburban, small town, rural). For each age-group, there were no significant differences in mobility licences according to survey area.

3. How parents travelled as children

Most parents reported that they had engaged in active transport on the journey to school, when they were aged 8 to 9 years. Most of these parents (67%) had usually walked to school. However, rates of cycling to school were low (6%) in this earlier generation. Over a third (36%) of parents
reported that their child travelled a greater distance to primary school than they had done as children.

Exactly 60% of parents reported that they were allowed to get about alone by age 10 years, and 81% reported being allowed to do this at younger age when compared with their child. In the Australian survey, parents were asked an additional question:

‘If you were allowed to get about alone at a younger age than you would allow your child to do so, what are the main reasons for this?’

Up to three of the following response options could be selected: (1) ‘Nowadays, there is greater traffic danger’, (2) ‘Nowadays, there is greater risk of harm from strangers’, (3) ‘Nowadays, there is greater risk of bullying by other children’, (4) ‘Our family has greater access to a car(s) than my family did when I was a child’, (5) ‘My child’s leisure time is more structured (with sports & activity classes) than mine was (i.e. I had more ‘free’ time), (6) ‘Other reason’ and (7) ‘Not applicable’.

Almost half the parents reported they had been allowed to get about alone at an earlier age than they would allow their child to because nowadays there is greater traffic danger (45%) and greater risk of harm from strangers (44%). A quarter of parents reported that greater access nowadays to a family car(s) was a contributing factor, while 30% of parents reported that they had more free time than their child who has more structured leisure activities. Few parents (7%) reported that nowadays there is a greater risk of bullying by other children.

Discussion and conclusions

This study is among the first to examine levels of independent mobility among schoolchildren in urban and rural areas of Victoria, Australia, as well as to provide data on their participation in active transport on journeys to school and to other local destinations. On average, compared with girls, boys were granted greater freedom in terms of mobility licences, and secondary schoolchildren were granted more mobility licences than were primary schoolchildren. These Australian findings concur with existing international evidence. While several studies have reported that boys are granted independence at an earlier age than are girls\(^1,11,16\), there is also evidence that from an early age, boys are socialised differently from girls and are encouraged to take greater risk\(^17\). Furthermore, Valentine\(^14\) argues that independent mobility increases during the transition from primary to secondary school, because children may have to travel further than before, possibly by public transport, and may engage in different social activities which encourage increased independence\(^14\).

Our findings demonstrate that there was little difference in the freedom granted to urban or rural schoolchildren. Variations in actual independent mobility were identified according to by urban/rural locality. For example, on weekends, slightly higher proportions of rural schoolchildren engaged in at least one independent activity compared with urban schoolchildren. However, these differences were not statistically significant. On the journey to school, however, boys attending urban primary schools had the highest rates of independent mobility. Because motorised travel
requires some level of adult accompaniment, travel mode is closely associated with independent mobility on the journey to school. In our study, rates of walking and cycling to school were highest among urban primary schoolchildren. Distance to school may have been related to choice of travel modes, because, in general, primary schoolchildren compared with secondary schoolchildren, lived closer to their school. Furthermore, distance to school is widely recognised as a key barrier to travel by non-motorised transport\textsuperscript{12}. Our findings demonstrate that the school bus was the dominant mode of transport for rural secondary schoolchildren. Anecdotally, several Principals and teachers at rural schools reported that many of their schoolchildren lived in farming communities, and that school buses were the most convenient mode of transport for these schoolchildren. This is an important consideration when designing programs to promote active transport and independent mobility in rural areas, as there is clearly not a ‘one-size-fits-all’ solution that can be applied in urban and rural areas.

In areas where schoolchildren travel large distances (not easily covered on foot or by cycling) to school, it may be more important to concentrate efforts to promote active transport and independent mobility on trips to other neighbourhood destinations. Our findings demonstrate high levels of parental accompaniment and mainly travel by car on local trips that were within walking distance. The most commonly cited reason for this was concern about traffic. Our earlier research\textsuperscript{2,3} has identified the importance of providing traffic calming infrastructure on residential streets to promote active transport and outdoor physical activity among schoolchildren. This may in turn help to address concerns about stranger danger by encouraging greater pedestrian activity, outdoor physical activity and social interaction on and around local streets\textsuperscript{18}. Even though almost all schoolchildren considered their neighbourhood to be either ‘very safe’ or ‘fairly safe’, their most prevalent safety concern was about harm from strangers.

While a strength of this study was the gathering of data from children in two distinct age-groups, there were some limitations in the survey methods. By asking children about their travel modes to and from school on the day of the survey, and about their activities on the previous weekend only, rather than about their travel modes and activities in a typical week, data on habitual travel modes and activities may have not been captured accurately. Future research should also include objective measures of children’s neighbourhoods, gathered using GIS, to measure safety-related features of the local road environment, as well as access to and availability of walkable destinations, so that associations between the physical environment and children’s independent mobility may be examined in diverse areas. Findings will help design tailored interventions to promote active transport and independent mobility among children living in urban and rural areas, with different physical infrastructure and varying population density.
References


Annexes
Appendix 1 - Survey Areas in Victoria, Australia

Inner City – Fitzroy North¹, Clifton Hill², Collingwood³

These adjoining suburbs located 3-4km north east of Melbourne’s Central Business District (CBD) are all located in the Local Government Area (LGA) titled ‘City of Yarra’. The traditional land-owners are the Wurundjeri Aboriginal people who inhabited the area prior to white settlement. Overall, there are over 230 hectares of open space within City of Yarra⁴. These include two large historical gardens, Edinburgh Gardens in North Fitzroy and Darling Gardens in Clifton Hill. The earlier industrial nature of these inner city suburbs has been replaced with mixed land-use (primarily residential and retail). Population growth and demand for inner city housing has resulted in factories and warehouses being converted to apartments. Nevertheless, the industrial past is still visible today, with examples such as the Clifton Hill Shot Tower built in 1882 and the former Yorkshire Brewery, Collingwood (1880). Fitzroy North has many one/two storey terraced residences, many of which were built late in Queen Victoria’s reign. Along the northern perimeter of the suburb, on the easement of a disused railway line, runs a linear park with a bike path (a section of the Capital City Trail – a 30km loop sealed bike trail around inner Melbourne). All these inner city suburbs have access to metropolitan tram and rail service. Local sport facilities include Australian Rules football ovals, swimming pools, fitness centres, tennis and basketball courts.

Urban area – Mont Albert North⁵ and Surrey Hills⁶

Mont Albert North and Surrey Hills are located within the ‘City of Whitehorse’ LGA and are located 13km and 11km, respectively east of Melbourne’s CBD. Both suburbs have regular public transport links via train and tram to the CBD. Next to Surrey Hills' railway station is a 300m shopping strip which includes bakeries, food stores, a pharmacy, a florist, clothes shops, a post office and a travel agent. The Eastern Freeway (motorway) runs along the northern perimeter of Month Albert North. This provides local residents with fast travel links to the CBD. In addition, bike trails run alongside the motorway and are separated from traffic by partition walls and fencing. Local sports facilities include an indoor heated swimming pool, Australian Rules football ovals, cricket pitches, basketball and tennis courts

Suburban area – Knoxfield⁷ and Ferntree Gully⁸

The suburban primary and secondary schools that participated in this study are located on either side of a main road, which forms the border between Knoxfield and Ferntree Gully, within the ‘City of Knox’ LGA.
Knoxfield is located 27 km south-east from Melbourne's CBD. Knoxfield is home to several small businesses related to food processing, graphic design and printing as well as a small shopping centre. Recreational facilities include an athletics track with stadium, a reserve for baseball/softball, a BMX track and bike tracks.

Ferntree Gully is located 29 km south-east from Melbourne's CBD. It has a railway station near the shopping area and trains run regularly into Melbourne. Knoxfield and Ferntree Gully also have local bus services. Ferntree Gully overlaps with the Dandenong Ranges National Park which is a popular tourist destination that also provides opportunities for hiking, trail-running and picnics.

Small Town – Gisborne

The town of Gisborne is located 55km north-west of Melbourne’s CBD and is within the ‘Shire of Macedon Ranges’ LGA.

The town centre has a shopping strip with cafes and bakeries, clothing stores and three supermarkets. Outdoor sports and facilities cater for Australian Rules football, soccer, cricket, netball and tennis and there is also an indoor swimming pool. Gisborne has a railway station (in New Gisborne, approx 600m from the local primary school in our study.) Rail links are provided to Melbourne and other regional areas of north-west Victoria.

Rural Area – Kyneton

Kyneton is located 83km north-west of Melbourne, within the ‘Shire of Macedon Ranges’ LGA. Unlike many towns in this part of Victoria, Kyneton was established on the Campaspe River in 1850, a year before gold was discovered in the surrounding area. Kyneton emerged as a major stop for prospectors on their way to the gold rushes at Mount Alexander and Bendigo. Many historic bluestone buildings remain from the mid-late 1800s. Nowadays, tourists and day-trippers visit Kyneton’s mineral springs, botanical gardens and historic houses and gourmet restaurants. Annual events include Kyneton Jazz Festival, Kyneton Daffodil Festival, Kyneton Agricultural show and the Kyneton Cup (horse-racing). Local sporting facilities cater for Australian Rules football, soccer and golf. A sports & aquatic centre opened in September, 2010 and includes heated swimming pools, a fitness centre, squash courts and a sports stadium. Rail links are provided to Melbourne and other regional areas of north-west Victoria.

Rural Area – Korumburra (including Poowong)

Korumburra is a town located 120 km south-east of Melbourne, in the South Gippsland Shire local government area. The name is believed to be derived from the Aboriginal word meaning ‘blow-fly’. Croatian and Italian migrants contributed to the growth of Korumburra in 1890s and 1900s following the discovery of coal there. Village life at that time is depicted in a historical reconstruction at the Coal Creek outdoor museum, a local tourist attraction. Nowadays beef and dairy farming are the
main commercial activities, and a dairy company in also located in the town. Korumburra railway station is Heritage Listed. Passenger trains stopped running in 1993, however, a tourist railway now operates. Sports facilities include an outdoor swimming pool (open from November to March) and a basketball stadium, sports fields for Australian Rules football and soccer, and a golf course.

Poowong is a small dairy-farming town located 8km north-west of Korumburra. Local sports facilities include, tennis courts, netball courts, and indoor basketball stadium, an Australian Rules football oval and an outdoor swimming pool (open December to March).

References for Appendix 1