Neighbourhood environments and children's active travel – findings from participatory GIS in the Neighbourhoods for Active Kids study

Melody Smith
on behalf of the Neighbourhoods for Active Kids Study team
Associations between the neighbourhood built environment and out of school physical activity and active travel: An examination from the Kids in the City study

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Kids in the City: Children’s Use and Experiences of Urban Neighbourhoods in Auckland, New Zealand

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Abstract

Environmental and socio-demographic associates of children’s active transport to school: a cross-sectional investigation from the URBAN Study

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RESEARCH

Environmental and socio-demographic associates of children’s active transport to school: a cross-sectional investigation from the URBAN Study

Melody Oliver, Hannah Badland, Suzanne Mavoa, Karen Witten, Robin Kearns, Anne Ellaway, Erica Hinckson, Lisa Mackay and Phillip J Schluter

Abstract

Background: Active transport (e.g., walking, cycling) to school (ATS) can contribute to children’s physical activity and health. The built environment is acknowledged as an important factor in understanding children’s ATS, alongside parental factors and seasonality. Inconsistencies in methodological approaches exist, and a clear understanding of factors related to ATS remains elusive. The purpose of this study was to gain a better...
Fulfils children’s rights

Access to services
Equality
Be safe

Influence decision making
Active agents in planning

Being heard and respected

Live in an unpolluted environment

Express opinions

Participate in community life

Reflected in policies, laws, programmes, budgets

Being heard and respected

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Participants & Data

19 Schools, diverse in geography and area-level deprivation

1102 Children aged 8-13 years, 51% female

13% Māori, 15% Pacific, 13% Asian, 40% European

4676 Neighbourhood comments included in content analysis

727 Outdoor advertisements around schools classified by content and audience

3492 School route comments included in content analysis from 974 children
Meaningful differences found between child-mapped and estimated (using Geographic Information Systems) routes to school in terms of spatial overlap, distance to school, traffic exposure (using road hierarchy), and route directness.

Children most frequently noted distance to school. Comments were both positive and negative:

“its fast and it’s the closest way to get to school”

“its far so it gives me time to talk to my friends”

They enjoyed the opportunity the school trip provides to spend time with friends and family:

“i like that we get to pick up up my friend so we can walk together”

“I like to sit down and talk to my mum in the car”

Children noted concerns about air pollution and a desire for safe streets/safety from traffic and regular and uncrowded public transport.
My places

Please click here to mark on the map the places you go in and around your neighbourhood.
Challenge 2: Complexity

- Don’t know where anything is
- Can’t remember
- Which home do I choose?
- I’m “lost”
- What does this mean?
### Challenge 3: Multiple homes

Below is a statistical analysis of distance data related to the presence of multiple homes. The data is categorized into different distance metrics: Mean, Median, Minimum, and Maximum. The analysis is presented for three different scenarios:

1. 1 home (n = 903)
2. >1 home (n = 122)
3. All (n = 1025)

<table>
<thead>
<tr>
<th>Distance (m)</th>
<th>1 home (n = 903)</th>
<th>&gt;1 home (n = 122)</th>
<th>All (n = 1025)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>32.7</td>
<td>71.2</td>
<td>37.2</td>
</tr>
<tr>
<td>Median</td>
<td>9.6</td>
<td>10.8</td>
<td>9.6</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.2</td>
<td>0.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Maximum</td>
<td>1428.8</td>
<td>2553.5</td>
<td>2553.5</td>
</tr>
</tbody>
</table>

Additionally, it is noted that 12% of the addresses have >1 address.
Challenge 4: Cleaned datasets
How do you usually get here?

How do you usually get here? — If another way, how?

Who do you usually come here with?

How much do you like it here?

Please tell us anything you like or dislike about this place.

Walk

With other children (no adults)

I like that there is heaps of room to play I don't like that there is sometimes rubbish everywhere.

How do you usually get here?

How do you usually get here? — If another way, how?

Who do you usually come here with?

How much do you like it here?

Please tell us anything you like or dislike about this place.

Walk

With other children (no adults)

I like that it's a good place for running (on the field and concrete area), it's fun because I can play in the park I don't like that there's no shelter at the park which means I hate it when it rains because we then run home and once we get home we are drenched and our clothes are soaking wet.

Question

Answer

How do you usually get here?

How do you usually get here? — If another way, how?

Who do you usually come here with?

How much do you like it here?

Please tell us anything you like or dislike about this place.

Walk

With other children (no adults)

I like that there is a big place to play in I don't like that sometimes the rubbish that is left behind and the taggings on the walls make the place look untidy (because if it's untidy I then don't feel like playing there).
Neighbourhood-level geospatial profiles indicated:

Clustering of child-marked (softGIS) points around parks and shops (consistent with open ended items)

Outdoor advertising of unhealthy food and beverages is geographically widespread, but also clustered around shops and locations where children spend time

Child-marked points are frequently near unhealthy food and beverage outlets

Children frequently marked parks close to schools as key destinations

Approximately 2/3 of schools had clustering of unhealthy advertising/outlets nearby

Higher proportion of unhealthy advertising around schools with higher area-level deprivation
Kids – Perceptions of Neighbourhood Destinations (PoND)

Large, multi-use parks/outdoor settings with a variety of options and facilities for active play and socialization were important:

“...its fun there’s so much to do there. There’s a beach if you want to swim a park if you want to play and it’s a nice place to hang out with friends”

“I like the different games that you and play there and the trees, so you can play hide and seek. I also like that there are toilets and drinking fountains near by.”

Shops (especially food shops) were frequently mentioned and often contextualized with purchasing/consuming unhealthy food and drink:

“it’s a dairy and they have good lollies”


Take home messages (for now!)

• Capturing spatial patterning of children’s perceptions has provided a fine-grained understanding of specific neighbourhood features of importance from the child’s perspective.

• Geospatial data and content analysis of children’s reported neighbourhood destination use demonstrate the important role of public outdoor spaces and shops in children’s lives.

• Evidence for unhealthy food environments around schools, and children’s use of these is presented.

• Child-reported routes to school do not align with researcher-estimated routes.

• Differences in environment characteristics were observed between child-mapped and researcher-estimated routes to school.

• Taking a child-centred approach to measuring neighbourhood use and experiences can yield sensitive and in-depth understanding of contextual factors important for promoting child health behaviours and outcomes.