What is community severance and why is it important?

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On behalf of the Street Mobility and Network Accessibility project team

www.ucl.ac.uk/street-mobility  @StreetMobility

We thank our funders:
WHAT IS COMMUNITY SEVERANCE?
WWF
• According to the WWF, the Giant panda population in China is growing. However, it is divided into 33 groups, many of which are very small: 24 groups are at high risk of becoming extinct. Climate change is likely to reduce the area of suitable bamboo habitat.

• At the same time, new roads and other infrastructure could fragment the bears’ habitat, restricting pandas’ ability to move around to breed and feed.

• National Highway 108 in the Qinling mountains created an impassable boundary between two large populations. In 2007, the road was rerouted through a tunnel and the habitat replanted with bamboo.
Figure 4: Word cloud of definitions of “barrier effect”
Our definition of community severance

Transport-related community severance is the variable and cumulative negative impact of the presence of transport infrastructure or motorised traffic on the perceptions, behaviour, and wellbeing of people who use the surrounding areas or need to make trips along or across that infrastructure or traffic.
WHAT ARE THE POTENTIAL IMPACTS OF BUSY ROADS ON HEALTH & WELLBEING?
Community severance

Light traffic: Where people gather

"I feel it's home. There are warm people on this street. I don't feel alone."

"Everybody knows each other."

"Definitely a friendly street."

"A friendly street. People chatting, washing their cars, people on their way somewhere always drop in."
Moderate traffic: Where people gather

"A friendly street. Some families here a long time, many people related."

"Don't feel there is any community any more, but people say hello."
2000/d
Peak 200/hr

8000/d
Peak 550/hr

16,000/d
Peak 1900/hr

FIGURE 3
Figure 3: Word cloud of definitions of “community severance”
Home territory

"The street life doesn't intrude into the home...only happiness comes in from the street."

"I feel my home extends to the whole block."

"I definitely think of it as my real home."

"I feel a sense of responsibility. I planted trees in front of my house and keep property and sidewalk clean of trash."

"It's a medium place--doesn't require any thought."

"It is impersonal and public."

"Noise from the street intrudes into my home."

"Just this apartment...not even that."
WHAT ARE THE POTENTIAL IMPACTS OF BUSY ROADS ON HEALTH INEQUALITIES?
Health inequalities from busy roads:

Benefits of transport – mobility and access

“A developed country is not where the poor drive cars, it is where the rich use public transportation.”

Enrique Peñalosa, Mayor, Bogotá
Mobility and destinations

% at least occasionally affected by volume of traffic (own road): P=0.002
Health inequalities from busy roads
Air pollution

- Poorer people:
  - More exposed to air pollution from motor traffic
  - More susceptible to health impacts of pollution
Health and wellbeing

Noise / air pollution
(% problem on road): P=0.002

1.
Health inequalities from busy roads
Noise pollution

- Raised blood pressure
- Interference with concentration and with sleep
- Disruption of education
  - which affects adult health
Health inequalities from busy roads
Injuries

Rate of fatality (all modes) per billion km by IMD quintile, persons, England, 2007-12

- Injury rates higher in more deprived areas
- More deprived people more likely to be killed in road traffic crash

Feleke et al, *J Transp Health*. 2018; 8 B: AiP [https://doi.org/10.1016/j.jth.2017.08.007](https://doi.org/10.1016/j.jth.2017.08.007)
Health inequalities from busy roads
Social isolation

- Poor - worse health – less able to walk or cycle
- Frail, elderly, disabled: less able to cross the road (bus stops)
- Fewer other options for safe spaces to meet and socialise (old, young)
Street Mobility project

My neighbourhood, my streets

Please make sure you have read the information sheet before you complete this questionnaire

Instructions

Please answer all the questions you can

You may leave questions blank if you do not wish to answer

In total, this questionnaire should take around 20 minutes to complete

STREET MOBILITY & NETWORK ACCESSIBILITY PROJECT

Survey to quantify the impacts of busy roads on local residents

708 participants in 4 areas: 2 in London, 1 in Birmingham, 1 in Southend
## Wellbeing of residents affected by road vs. others

(Warwick-Edinburgh Mental Well-Being Scale (Stewart-Brown 2009))
Scale from 7 (min) to 35 (max)

<table>
<thead>
<tr>
<th>Average Score</th>
<th>All 708 respondents in the 4 case studies</th>
</tr>
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<tbody>
<tr>
<td>26.2</td>
<td></td>
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<table>
<thead>
<tr>
<th>Average Score</th>
<th>73 respondents in case study areas who:</th>
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<tbody>
<tr>
<td>23.4</td>
<td>Perceive traffic volume on main road as heavy AND Perceive traffic volume on main road as fast AND Perceive traffic as a barrier to walking AND Avoids main road because of traffic AND (significantly lower than sample average, p&lt;0.01)</td>
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<table>
<thead>
<tr>
<th>Average Score</th>
<th>National Average (from other studies)</th>
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<tr>
<td>26.1</td>
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## Explaining wellbeing

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<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Significance</th>
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<tr>
<td>Age: 18-34</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Age: 65-75</td>
<td>+</td>
<td>**</td>
</tr>
<tr>
<td>University degree</td>
<td>+</td>
<td>**</td>
</tr>
<tr>
<td>Employed</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Full time work</td>
<td>+</td>
<td>*</td>
</tr>
<tr>
<td>Neighbourhood social capital</td>
<td>+</td>
<td>**</td>
</tr>
<tr>
<td>Female</td>
<td>-</td>
<td>*</td>
</tr>
<tr>
<td>Lives alone</td>
<td>-</td>
<td>*</td>
</tr>
<tr>
<td>Health: bad</td>
<td>-</td>
<td>**</td>
</tr>
<tr>
<td>Health: very bad</td>
<td>-</td>
<td>**</td>
</tr>
</tbody>
</table>

- Perceive traffic volume on main road as heavy AND
- Perceive traffic volume on main road as fast AND
- Perceive traffic as a barrier to walking AND
- Avoids busy road because of traffic AND

**1%, * 5%**
A vision of the future?

“Old men and women shall again dwell in the streets \ldots; every person with their staff in their hand because of great age. And the streets of the city shall be full of boys and girls playing in its streets.”

Zechariah 8:4-5
What is community severance?
Vos & Chardon, 1998

“For [older people], isolation can be regarded as a combination of distance to other [places] and the resistance of the landscape between [them]. The road network will probably contribute considerably to the resistance between [them] … higher traffic density … increased mortality as well as increasing isolation. The negative effects of roads are often underestimated.”
“For ground dwelling species, isolation can be regarded as a combination of distance to other habitat patches and the resistance of the landscape between patches. The road network will probably contribute considerably to the resistance between habitat patches. …. Mortality on roads can have a considerable impact on amphibian populations and eventually can lead to extinction…. “