A stated preference model to value reductions in community severance

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What is community severance?
Prague, Czech Republic
Açores, Portugal
How to monetize severance?

Sweden, Denmark (old documents for transport appraisal):
formulas combining traffic variables (density, composition, speed),
crossing need, and unit monetary values per age group

Pedestrian delay * value of walking time

Stated preference:
estimate willingness to contribute to projects that reduce severance
Stated preference survey

**SP1**

willingness to walk
to avoid crossing a road in a place without crossing facilities

**SP2**

willingness to pay

200 respondents, 100 in London, 100 in Southend (a smaller city)
Looking at the road conditions on the left, which of the three options would you choose?

Traffic density: **Low**

**Central reservation with no guard railing**

Cross at closest point  
*(not at pedestrian crossing)*  

**Option A**

Use covered over road  
*Adds 8 minutes to your journey*

**Option B**

Avoid crossing road at all

**Option C**

**Attributes**
### SP1: model results

<table>
<thead>
<tr>
<th>Variables</th>
<th>MIXED LOGIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>coeff.</td>
</tr>
<tr>
<td>time</td>
<td>-0.31***</td>
</tr>
<tr>
<td>Option A (cross)</td>
<td>-2.45***</td>
</tr>
<tr>
<td>lanes=as now</td>
<td>-1.86***</td>
</tr>
<tr>
<td>no central reservation</td>
<td>-2.67***</td>
</tr>
<tr>
<td>density=medium</td>
<td>-</td>
</tr>
<tr>
<td>density=high</td>
<td>-1.63***</td>
</tr>
<tr>
<td>speed=30</td>
<td>-</td>
</tr>
<tr>
<td>Option C (don't cross)</td>
<td>-7.95***</td>
</tr>
</tbody>
</table>

*Higher for females and people who don't cross every day (vs. males and people who cross every day)*

*Higher for people aged>50 (vs. age<50)*
SP2: design

Traffic density: Low

Central reservation with no guard railing

In this scenario, which of the two options would you choose?

<table>
<thead>
<tr>
<th>Option A</th>
<th>Option B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross at this point</td>
<td>Do not cross the road and pay the higher ticket cost</td>
</tr>
<tr>
<td>Saving 80p off your one-way ticket cost</td>
<td></td>
</tr>
</tbody>
</table>

- Option A
- Option B

or shopping bill

Attributes
### SP2: model results

<table>
<thead>
<tr>
<th></th>
<th>Random-effects logit (coeff.)</th>
<th>Willingness to pay (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.24***</td>
<td></td>
</tr>
<tr>
<td>Saving</td>
<td>0.92***</td>
<td></td>
</tr>
<tr>
<td>Lanes=as now</td>
<td>-1.40***</td>
<td>1.5</td>
</tr>
<tr>
<td>No central reservation</td>
<td>-1.24***</td>
<td>1.4</td>
</tr>
<tr>
<td>Density=medium</td>
<td>-1.15***</td>
<td>1.3</td>
</tr>
<tr>
<td>Density=high</td>
<td>-2.56***</td>
<td>2.8</td>
</tr>
<tr>
<td>Speed&gt;=30</td>
<td>-0.72***</td>
<td>0.8</td>
</tr>
</tbody>
</table>

- Higher for people aged > 50 (vs. age < 50)
- Higher for people with mobility restrictions (vs. full mobility)
Application: Tool for local authorities/general public

User inputs

Road conditions
(# lanes, central reservation, traffic levels and speeds)

Population

Major destinations
(stations, supermarkets, schools..)

Outputs

Severance index
‘Disutility’ of the road for pedestrians

Impact on behaviour
Probability that someone will not cross the road (by age group)

Monetary value of the impact
Thank you for your attention!

UCL
Street Mobility project

www.ucl.ac.uk/street-mobility
streetmobility.wordpress.com
@streetmobility