Assessment of solutions to reduce the impact of traffic barriers on pedestrian accessibility

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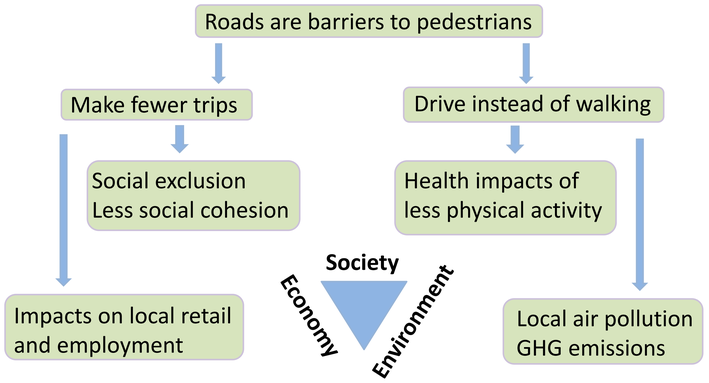
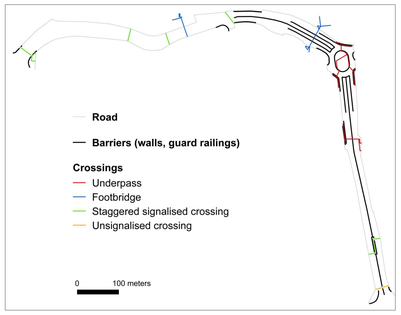
1 THE BARRIER EFFECT OF ROADS



2 CASE STUDY

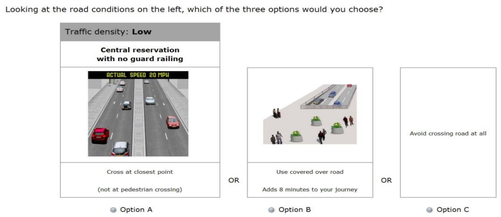


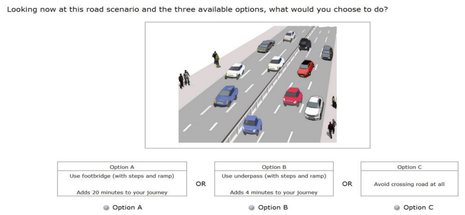
Location: Southend-on-Sea, a medium-sized town in England

Road: Queensway, a 4-lane busy arterial separating the town centre from residential areas

3 METHOD

Step 1
Stated preference survey





Crossing a road with no crossing facilities and..	Equivalent walking time (minutes)
4 lanes	4.0
No median strip	4.1
Medium traffic density	1.0
High traffic density	7.1
Speed>20mph	1.4

Crossing a road using…	Equivalent walking time (minutes)
Straight signalised crossing	0 (hypothesis)
Staggered signalised crossing	1.0
Footbridge	2.7
Underpass	4.7

Step 2
Network analysis

Different road scenarios (pre- and post-policy)

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In each scenario, assign the relevant equivalent times to the road crossings in a pedestrian network model

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Calculate optimal routes from every building to town centre

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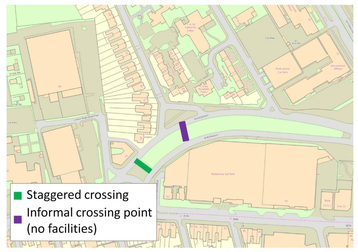
Number of risky crossings (away from crossing facilities) and walking times

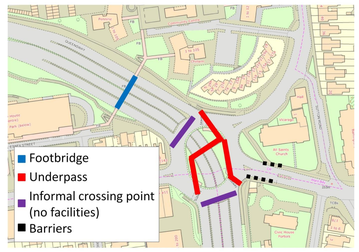
4 RESULTS

Section 1 (West)



Possible interventions	% risky crossings (change)	Time (change, mins/person)
Staggered → straight crossing	-5%	-0.60
Reduce delay in staggered crossing	-1%	-0.33
Informal crossing → staggered crossing	-38%	0.19
Reduce traffic speed	0%	0.00
Remove one traffic lane	+2%	-0.01

Section 2 (Centre)



Possible interventions	% risky crossings (change)	Time (change, mins/person)
Footbridge → staggered crossing	-1%	0.00
Underpass → staggered crossing	-14%	+0.07
Remove barriers	+7%	-0.03
Remove barriers & new straight crossing	-22%	+0.06

Section 3 (South)

Possible interventions	% risky crossings (change)	Time (change, mins/person)
Underpass → staggered crossing	0%	-0.53
Remove barriers	+20%	-0.12
Remove barriers & new staggered crossing	0%	-0.38
Staggered → straight crossing	0%	-0.47
Reduce delay in staggered crossing	0%	-0.21
Unsignalised crossing → staggered crossing	0%	-0.37

% of 'risky crossings: % of pedestrians crossing the road not using designated crossing facilities (trips to city centre)
time: walking time to city centre

5 CONCLUSIONS

- Only a few type of interventions decrease the proportion of risky crossings and average walking time simultaneously
- The construction of new crossing facilities and the change in the type of facilities decrease risk but can lead to time losses
- Some interventions increase the proportion of risky crossings with only small gains in average walking travel times

Street Mobility and Network Accessibility

Developing tools to identify and overcome barriers to walking

Current project members:

Jennifer Mindell, Nora Groce, Muki Haklay, Peter Jones, Shaun Scholes, Laura Vaughan, Paulo Anciaes, Ashley Dhanani, Jemima Stockton, Lusine Tarkhanyan, Louise Francis

http://www.ucl.ac.uk/street-mobility

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