Community severance: do busier roads lead to lower mental wellbeing?

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Aim
We are investigating associations between objective and self-reported measures of traffic conditions in neighbourhoods bisected by busy roads and their respective associations with the self-reported mental wellbeing of local residents.

Introduction
Community severance is the “barrier effect” of traffic and transport infrastructure on access to goods, services and people (1). There is evidence that busy roads discourage walking (2). Perceptions of the physical environment in terms of walkability show moderate correlation with objective indicators (3). A recent natural experiment showed that living near a motorway reduced mental wellbeing (4). The causal pathways of community severance have yet to be determined (5).

Methods
Drawing on the multi-disciplinary expertise of our team, we developed tools to measure community severance and examine its associations with health and wellbeing. We selected three neighbourhood case studies, each bisected by a busy road, as likely exemplars of areas of community severance: Seven Sisters Road, Haringey (A); Finchley Road, Camden (B); Queensway, Southend-on-Sea (C).

We used our Health and Neighbourhood Mobility Questionnaire to survey a random selection of residents (N=518) on their perceptions of local traffic, walking, and wellbeing, as indicated by SWEMWBS score (6).

We conducted video surveys to measure traffic speed and volume and pedestrian crossing times. We used actual traffic conditions at the nearest crossing point on the busiest road as objective indicators of people’s exposure to local traffic.

We mapped survey participants’ homes in relation to their nearest crossing on the busiest road in order to link objective traffic measures and their perceptions of traffic and wellbeing.

Results
Overall, 54% of survey participants were female and 21% were aged ≥65yrs. 73% perceived traffic as heavy or fast on their busiest road whilst 65% perceived traffic volume or speed as a barrier to walking locally. 15% had low wellbeing. This was a higher proportion than the national average, possibly reflecting at least in part the location of survey participants in areas of community severance. After adjusting for age, sex and case study area, our preliminary regression results show that:

- Participants who perceived traffic on their busiest road as heavy or fast were more likely to report traffic volume or speed as a barrier to walking locally
  (OR:2.3;95%CI:1.4-3.5;p<0.001)

- Participants who reported traffic volume or speed as a barrier to walking locally were more likely to report

  (i) avoiding crossing the busy road
  (OR:2.5;95%CI:1.5-4.1;p<0.001)

  (ii) low mental wellbeing
  (OR:2.5;95%CI:1.3-4.9;p<0.01)

Conclusion
Perceptions of traffic volume/speed are related to perceptions of barriers to walking locally, and perceptions of barriers to walking locally are related to reported walking behaviour and to mental wellbeing. The strength of associations vary by demographics and case study location. Analyses of the dataset to further characterize the pathways of community severance are ongoing.

References