To: City Development
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Subject: Essential Evidence on a page 57: Community severance

Certain population groups are especially adversely affected by motor traffic acting as a barrier to them accessing local facilities on foot. Understanding the barrier effect is an important consideration for transport planning, not least when promoting walking as transport.

Community severance or the traffic barrier effect is a potentially common obstacle to accessibility, especially among non-motorised road users. The traffic barrier is:

“…the sum of inhibiting effects upon pedestrian behaviour resulting from the impact of traffic conditions within a specific environment/street context. These effects can be either physical (observable) and psychological (unobservable) impediments to pedestrian movement.”

A study of the barrier effect was undertaken in Edinburgh. The study included findings from research into relationships between pedestrian behaviour, perceptions and changing traffic conditions, and the measurement of the extent of the traffic barrier experienced by pedestrians. These relationships have important implications for the design and implementation of traffic calming, bus priority and other types of traffic management schemes. The relationships were examined at selected sites in Edinburgh that have a residential/retail mix. The focus was therefore on streets in which major pedestrian/vehicular conflicts arise.

Pedestrian crossing behaviour was studied through a video analysis of behavioural responses to variations in traffic conditions, over time through the day. Video tape also provided data on traffic flow and speed and pedestrian flow. Pedestrians were categorised into three age groups: (a) child under 18, (b) 18-64; and (c) those 65+. Pedestrian movement and crossing flow counts were used to derive crossing ratio measures. For each pedestrian observed crossing the road the following measures were recorded: age, sex, walking situation, delay in crossing the road, mode of crossing angle, whether or not crossing from behind parked vehicles and acceptance gaps. Micro-level measures of traffic conditions at the time of a pedestrian crossing were also recorded: traffic speed of the oncoming vehicle and the traffic flow at the time of the crossing. Information on perceptions was obtained through questionnaire surveys of local residents and pedestrians on-street.

The findings illustrated the potential use of crossing ratios as indicators of traffic barrier effects on pedestrians. They demonstrated the scale of the differences of impact of the barrier on different age groups. The elderly are many times more disadvantaged than other adults – more than 10 fold on the basis of the crossing ratio indicator, and this on a street where shopping is the dominant trip purpose for both age groups and where crossing activity is closely linked to shopping as evidenced by variations in the ratios by time of day.