



'Race' or place? Explaining ethnic variations in childhood pedestrian injury rates in London

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ABSTRACT

There is a substantial literature on socio-economic inequalities in injury rates, but less on ethnic differences. Using police records of road injuries to examine the relationships between pedestrian injury, area deprivation and ethnicity we found that, in London, children categorised as 'Black' had higher injury rates than those categorised as 'White' or 'Asian', and that living in less deprived areas did not protect 'Black' children from higher risk. Ethnic differences in injury rates cannot be explained by minority ethnic status or area deprivation, but are likely to result from the complex ways in which ethnicity shapes local experiences of exposure to injury risk.

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1. Introduction

Despite declines in rates of injury over the last twenty years, road traffic injuries remain a major contributor to childhood mortality and morbidity in high income countries (WHO, 2004). This burden is not distributed equally, with studies in a number of countries documenting persisting inequalities in the risk of injury and death (Laflamme and Diderichsen, 2000; Reimers and Laflamme, 2005; Rivera and Barber, 1985; Edwards et al., 2008). In the United Kingdom (UK), local and national studies have identified higher pedestrian injury rates in areas characterised by high levels of deprivation (Grayling et al., 2002; Lyons et al., 2003; Edwards et al., 2008). Analysis of injury mortality data (Edwards et al., 2006) suggests that there are particularly steep socio-economic gradients for child pedestrians.

To date, there has been far less epidemiological research on ethnicity and road injury risk, and the findings are less clear cut than those on deprivation. Although many international studies suggest that minority ethnic groups are at higher risk than the majority population (Schiff and Becker, 1996; Campos-Outcalt et al., 2002; Stevens and Dellinger, 2002; Cercarelli and Knuiman, 2002; Braver, 2003; Stirbu et al., 2006; Savitsky et al., 2007), others have identified some minority groups at lower risk

(Campos-Outcalt et al., 2003). Within the UK, one case-control study found 'non-White' children at higher risk (Christie, 1995), and one local study found 'Asian', but not other ethnic minority, children at higher risk of road traffic injury (Lawson and Edwards, 1991). There are a number of national and regional policy incentives for examining whether there is evidence for ethnic inequalities in injury in the UK, with statutory agencies charged with reducing inequality in health outcomes by targeting those at highest risk and working with communities to develop appropriate services (Department of Health, 2003; Mayor of London, 2008). Nearly half of all non-White ethnic minorities in the UK live in London, and more than one in three London residents belong to a minority ethnic group (Bains and Klodawski, 2007). Transport for London, the body responsible for delivering the Mayor of London's transport strategy (Mayor of London, 2001), commissioned this study in response to concerns about whether road safety gains were being shared equally across London's diverse population.

Research on the relationships between ethnicity and health outcomes presents conceptual, methodological and practical challenges. There is now a growing body of evidence documenting ethnic differences in health outcomes in the UK (Marmot et al., 1984; Davey Smith et al., 2000; Nazroo, 2001; Erens and Primatesta, 2001) but, as Bhopal (1997) has cautioned, there is a real risk of 'black box epidemiology' if we merely document 'differences' between poorly defined and conceptualised groupings. To be useful for policy and practice in addressing inequalities

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in health, research needs to be directed at not only documenting inequalities, but unpacking the mechanisms which potentially link components of ethnicity with particular health outcomes. This is a challenge on a number of levels. First, a priori assumptions of ethnic differences may bias research efforts towards looking at how minority ethnic groups compare (poorly) to majority populations and, as Bradby (2003) notes, acknowledging discrimination whilst not perpetuating it is difficult. Second, as an epidemiological variable, ethnicity is inherently problematic. Ethnicity, referring to ‘the identification with a social group ... on the basis of shared values, beliefs, customs, language and lifestyle’ (Nazroo, 2004, p. 13), includes components related to nationality, skin colour, country of origin of self and ancestors, and religion. As a multidimensional and fluid concept, with meanings influenced by both historical value systems and the current social and political context (Bradby, 2003), ethnic identities are of course time and place specific. The ways in which ethnicity potentially influences health outcomes theoretically relate to these aspects of identity, but also (more plausibly, for many health outcomes) to ethnicity as ‘structure’ (Karlsen and Nazroo, 2002), including components such as associations with socio-economic factors and experiences of racism.

1.1. A model of potential links between ethnicity and child pedestrian injury risk

In terms of conceptualising how ethnicity might relate to pedestrian injury as an outcome, there are a number of potential causal pathways relating to ethnicity as both ‘structure’ and ‘identity’. The determinants of the relative risk of being injured as a pedestrian include three factors: the road environment (how many roads and junctions, the volume and speed of traffic); an individual’s exposure to that environment (how often they are on or near the road as a pedestrian); and their behaviour on or near roads. These three factors are inter-related, in that behaviour and levels of exposure are to some extent determined by the perceived dangerousness of the road environment. Fig. 1 summarises some of pathways by which ethnicity might influence these variables.

First, ethnicity is often associated with deprivation, both at area level and individually, at household level. A long standing debate in research on ethnicity and health has been the extent to which observed differences reflect socio-economic inequalities (Nazroo, 1998, 2001; Davey Smith, 2000; Ahmad and Bradby, 2007). At an area level, given the known associations between

injury and area deprivation (Edwards et al., 2008), and the fact that ethnic minorities tend to live in more deprived areas in the UK (Prime Ministers Strategy Unit, 2005), with particularly steep gradients in London (Table 1), any differences found in pedestrian injury by ethnicity might simply be a reflection of area effects relating to local road environments. Evidence suggests that a higher density of major roads, high vehicle speeds, high junction density, the presence of parked cars, the presence of bus stops, low minor road density, high employment density, and low residential population density are associated with increased pedestrian injury risk (Noland and Quddus, 2005; Grayling et al., 2002; Agran et al., 1996; Roberts et al., 1995). Thus ethnicity may be merely a proxy for the area effects of ‘place’, if minority ethnic communities live in areas more likely to have these road environments.

However, it is also known that injury risk is associated independently with individual, or household, socio-economic deprivation as well as area effects (Reading et al., 1999; Haynes et al., 2003). At the household level, associations with injury risk have been found for both number of parents in the household (Haynes et al., 2003) and employment status (Edwards et al., 2006). These variables are also likely to vary across ethnic groups. Pedestrian exposure is likely to be an important mediator of relationships between deprivation and risk, with Sonkin et al. (2006) finding, for instance, higher levels of walking in households with unemployed adults, in rented rather than owner-occupied accommodation and in households with no access to a car. Within the UK, there are large ethnic differences in household car availability, with the National Travel Survey (Department for

Table 1
Average percentages of Lower Super Output Area populations that are ‘Black’ and ‘Asian’ by deciles of deprivation (Edwards et al., 2007).

Deprivation deciles	Percentage ‘Black’(SD)	Percentage ‘Asian’ (SD)
1	1.5 (1)	6.6 (7)
2	2.7 (2)	7.8 (9)
3	4.8 (5)	11.7 (13)
4	6.8 (6)	12.8 (13)
5	9.2 (7)	14.5 (15)
6	11.1 (7)	12.5 (15)
7	13.2 (8)	12.7 (14)
8	16.0 (10)	13.0 (17)
9	20.8 (12)	12.2 (14)
10	23.2 (12)	15.6 (17)

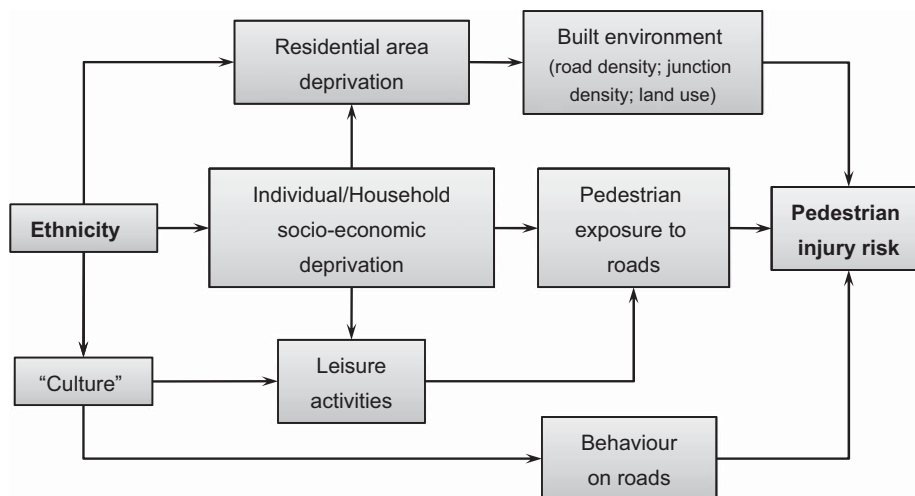


Fig. 1. A model of causal pathways linking ethnicity to pedestrian injury risk

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