



Ethnic group differences in impacts of free bus passes in England: A national study

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ABSTRACT

Background: A pass permitting free bus travel for older people (aged ≥ 60 years) in England was introduced in 2006. There has been no examination of whether this scheme has differential effects across ethnic groups. We examined whether Black and South Asian participants were more likely to hold a bus pass and have higher associated levels of active travel than White participants.

Methods: Data come from the National Travel Survey, a nationally representative sample of the travel patterns of households in England. Using cross-sectional data from 33,344 participants eligible for a bus pass 2006–2014, we investigated ethnic differences in bus pass uptake and associations with bus use, active travel and walking ≥ 3 times per week.

Results: Black participants were more likely to hold a bus pass (84%) than South Asian or White participants (74% and 75% respectively). Black participants accumulated 56% of their active travel as part of bus journeys, compared with 29% in White and 44% in South Asian participants. Bus pass possession was associated with increased odds of bus-related active travel in all ethnic groups.

Conclusions: These findings suggest that the free bus pass scheme in England is associated with higher levels of active travel and that these may be greater among minority ethnic groups. Removing financial barriers to active travel could produce important health benefits particularly among ethnic minority groups, who have low levels of leisure-based physical activity.

1. Background

Minority ethnic groups in England have a higher prevalence of increased adiposity than Whites. For example, persons of Black ethnicity are more likely to be overweight or obese, while South Asians are more likely to have elevated abdominal obesity than Whites (El-Sayed et al., 2011). Diabetes and cardiovascular disease risk is higher among South Asian and Black groups when compared with White groups (Yusuf et al., 2001). These disparities may be partially due to lower levels of physical activity - in England minority ethnic women and men and women of South Asian ethnicity are particularly likely to be physical inactive (Higgins and Dale, 2010; Paterson and Warburton, 2010; Physical Activity Guidelines Advisory Committee, 2008).

The World Health Organization (WHO) and UK national physical activity guidelines for older people recommend 150 minutes per

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week of moderate to vigorous physical activity (Chief Medical Office, 2011; Physical Activity Guidelines Advisory Committee, 2008; World Health Organization, 2010) but older people have lower mean physical activity levels compared with the general adult population (Paterson and Warburton, 2010). Compared with younger adults, older people who are physically inactive face additional risks e.g. loss of independence, functional decline, falls and hip fractures (Gregg et al., 2000; Paterson and Warburton, 2010). Age related declines in physical activity are also concerning as there is evidence that the benefits of physical activity are most evident among older adults (World Health Organization, 2010).

The WHO has promoted active travel as a key intervention to combat non-communicable diseases (World Health Organization, 2002, 2012). Public transportation use has been shown to confer physical health benefits (Flint et al., 2014; Lavery et al., 2013; Liao et al., 2016) by increasing walking or cycling to and from transport hubs (Besser and Dannenberg, 2005; Patterson et al., 2018). These health benefits have been demonstrated among UK commuters, with public transport commuters having lower adiposity than those using private transport (Flint et al., 2014). With car and van use making up 78% of distance travelled in the UK, and more than 90% of non-work trips among those aged 65+ years in the US, modal shift to more active forms of travel offers significant potential public health benefits (Battelle, 2000; Department for Transport, 2016). Transport patterns also differ between ethnic groups: data from 2011/15 show that Black residents of England and Wales report 31% of trips by public transport compared with 16% in Asian and 8% in White residents (Department for Transport, 2017).

In April 2006, free bus travel was introduced for those aged 60 years and over living in England. Among the eligible older population, uptake increased quickly following implementation, from around 60% in 2006 to 75% in 2009; uptake remained at 75% in the most recently available data, collected in 2015 (Department for Transport, 2016). The bus pass was primarily aimed at reducing social exclusion through access to goods and services (Department for Transport, 1998; HM Treasury, 2006), as older people are at risk of social exclusion due to factors including reduced mobility, reduced community involvement and ceasing to drive (Edwards et al., 2009; Ragland et al., 2005; Spinney et al., 2009). There is evidence that the free bus pass scheme has been successful in reducing exclusion (Jones et al., 2012; Reinhard et al., 2018) and that it additionally confers physical health benefits. Previous research has demonstrated that those with a bus pass are more likely to use active forms of travel and that bus pass possession is associated with lower adiposity in women (Coronini-Cronberg et al., 2012; Webb et al., 2016). In England, buses are the most common form of public transport and even residents of rural areas usually have some access to bus services. Buses provide access to local amenities such as shops and health services and they generally cover shorter distances than other forms of public transport. The bus pass application process is straight forward, taking place at local government buildings, and advice about applications is available from older people's charities and local authorities (Age UK, 2016).

Previous research shows that the bus pass was associated with active travel immediately following its implementation (Coronini-Cronberg et al., 2012) but did not examine any potential differences across ethnic groups. The purpose of this study was to evaluate whether Black and South Asian ethnic groups were more likely to hold a free bus pass and have higher associated levels of active travel than people of White ethnicity. We further expand on previous research by using data up to eight years after the introduction of the free bus pass. We hypothesise that the provision of free bus travel in England confers greater physical activity benefits among minority ethnic groups who have lower leisure based physical activity levels and worse cardiovascular disease risks.

2. Methods

Full details of the England National Travel Survey (NTS) are described in detail elsewhere (Morris et al., 2015). In brief, NTS is an annual, cross-sectional survey, comprising a stratified, two-stage, random sample of private households in England. All household members are asked to take part in an interview and complete a one week travel diary. Annual response rates are 59–63%.

We analysed data collected from 2006 to 2014 for participants who were eligible for the bus pass. Of the total sample of 35,843 participants, 7% were excluded: 2447 participants who reported not leaving the house due to walking difficulties, 28 due to reporting an unusually high number of journeys in the study week (> 75) and 24 due to missing ethnicity data, leaving 33,344 participants in the analysis, of whom 25,152 (75.4%) had an older person's bus pass.

Outcomes of interest were: bus use, active travel (from the NTS travel diary) and walking three or more times per week which was ascertained during the interview. When completing the travel diary, participants recorded the mode of transportation used for each stage of any journey, additionally, the whole journey is assigned a main mode based on the mode with the greatest distance. We categorised the mode of travel for each journey stage into active (walking, cycling and public transportation such as bus or train) or not active (car, motorbike and taxi). Public transport was categorised as active as people tend to under-report short walks, such as those to access public transport (Bassett, 2000; Edwards, 2008; Golob and Meurs, 1986; Kelly et al., 2014). Therefore, this allowed us to capture the activity of all bus users, including those who did not record details of the walk to and from the bus stop. Main mode of travel for each journey was additionally categorised into bus and other, allowing a calculation of the number of active stages which took place as part of a bus journey. During the interview stage of NTS, participants were asked to categorise their walking frequency into one of seven categories ranging from never to three or more times per week; we dichotomised these responses into fewer than three times per week and three or more times per week. This dichotomy was chosen as walking three to five times per week has been shown to confer significant health benefits in an ageing population (Paterson and Warburton, 2010). Our primary exposure variable was having an older person's bus pass. Although initially available for all residents aged 60+, since 2010 the age of eligibility has been gradually increasing, in line with changes to the UK female state pension age and it is set to reach 66 in 2020 (Butcher, 2015). This change is accounted for in the NTS data.

Participants self-defined their ethnic group, and we subsequently categorised these as White (White British & other White), South Asian (Indian, Pakistani and Bangladeshi), Black (Caribbean, mixed White & Black Caribbean, Black African, mixed White & Black

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