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# TECHNICAL REPORT

## The impact of migration on transport and congestion

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Prepared for the Migration Advisory Committee

The research described in this report was prepared for the Migration Advisory Committee.

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# Summary

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The objective of this study was to understand the likely impact of economic migrants from outside the EEA on transport networks and congestion. We addressed this question through two phases of research: a literature review followed by an empirical analysis.

‘Economic’ migrants are defined as those who have come to the UK with the primary purpose of working. Those from outside the EEA typically hold Tier 1 or 2 work permits. However, since there is a dearth of literature that focuses specifically on these groups and their transport needs, we looked at literature on migrants more generally.

Through our targeted literature review, we identified and reviewed 22 key studies on this topic. We found a dearth of literature on migrants’ travel in the UK, with most articles written on the subject originating from the United States. Some relevant papers concerning research in Canada, Australia, Norway and Sweden were also identified. While we were careful not to directly transfer any quantitative findings from studies conducted abroad, many of the key concepts and phenomena observed provided useful insights and informed the direction of our research. The paucity of literature on migrants’ travel in the UK also highlighted the need for an empirical study addressing this question for the UK specifically.

In the second phase of this study, we undertook empirical analyses of UK data. The main data source was the Annual Population Survey, complemented by other sources, including the National Travel Survey and the Certificate of Sponsorship data. We cannot observe from these data whether the individual migrated to the UK for the purpose of working, so we had to use the broader category ‘non-EEA nationality’ as a proxy in the analysis. Our analysis addressed key travel behaviour issues including the geographical distribution of migrants, frequency of travel and characteristics of their journey-to-work (e.g. mode choice, car sharing, and journey time). Findings from this analysis, combined with information from the Department for Transport (DfT), Office of Rail Regulation (ORR) and Transport for London (TfL), were then fed into the analysis of impacts.

## **Migrants’ travel behaviour**

The empirical findings using UK data corroborated the findings from literature about migrants’ travel behaviour in the US and other countries:

- **Migrants are concentrated in metropolitan areas where public transport provision is high.** Using data from the Annual Population Survey, we found that 40 percent of the non-EEA migrant population live in London, compared with 11 percent of UK nationals.

- **Migrants’ travel is strongly associated with the use of non-car-driving modes of travel (including public transport, walking, cycling and car sharing).** Many researchers in the US attributed this finding to migrants’ choice of residential locations that are well served by public transport.<sup>1</sup> We found this to be true for the UK as well. However, we also found that non-EEA migrants have a higher propensity to use buses even after taking into account their year of arrival, their socio-demographic characteristics, and their place of residence and work.
- **Migrants tend to ‘transport assimilate’.** Previous research found that migrants’ travel patterns become increasingly similar to those of the native-born with increasing length of stay. We saw evidence of this reflected in the UK data. We defined ‘recent arrivals’ as those who had lived in the UK for less than six years,<sup>2</sup> and found that recent arrivals (regardless of nationality) use cars less and tend to use buses, underground/light rail, and walk/cycle more. With the resources available for this study, we were only able to explore one cut-off point. We recommend future research to build on these findings and examine the trajectory of assimilation.

Additionally, our analysis using UK data showed that non-UK-born migrants travel less and mainly for work.

## **Migrants’ travel impacts**

### *Background*

Following the analysis of travel behaviour, the impacts of migrants’ travel on car, bus, national rail and underground were examined. In this report, we quantify these impacts as far as possible. However, we stress that a number of assumptions are used in these calculation; therefore, the values reported are only approximations indicative of the order of magnitude and should be treated as such.

The impact analysis of car use draws on the Department for Transport’s (DfT’s) guidelines on the marginal external costs of car traffic, i.e. the costs imposed on society resulting from an additional car kilometre (DfT, 2007b). A wide range of externalities was considered: congestion, infrastructure damage, accidents, local air quality, noise and greenhouse gases. Indirect taxation, such as fuel duty and VAT on fuel, were also taken into account.

The impact analysis of public transport (bus, national rail and underground) looks at the balance between migrants’ positive contribution through fare payment and negative contribution through consumption of subsidies. Because of lack of data, the quantitative analysis of impact does not incorporate the negative impact of crowding – although this issue is discussed qualitatively.

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<sup>1</sup> Many researchers also attribute their lower level of car access to be the primary explanations for the lower propensity to use cars. Unfortunately, the primary dataset we used, the Annual Population Survey, does not collect data on car ownership. Although it is possible to examine other datasets (the General Household Survey), the constraints of this study do not permit us to include that analysis.

<sup>2</sup> We chose six years on the basis that defining recent arrivals this way gives the best model fit in the final specification of the multinomial logit model developed. However, we note that this value may be sensitive to the model specification and therefore more testing is needed.

**Quantitative Findings**

The quantified impacts of transport use, expressed in £ per person per year, are shown in Table 1-1. We emphasise that these are estimates. The impacts of car use are highly negative, in the order of thousands of pounds per migrant per year, indicating an overall cost to society whereas the impacts of public transport were always positive, in the order of tens of pounds per migrant per year (see the first column of Table 1-1). This is not a migrant- specific issue – as we can see from the first two columns Table 1-1- the respective impacts of migrants and UK nationals always have the same sign and similar order of magnitude. In fact, the impact of the average migrants’ car travel is 4 percent lower than that of the average national, reflecting the behavioural findings that migrants have a lower propensity to use car. This 4 percent is only indicative. Many assumptions were used in this calculation so we should not treat these as precise values.

**Table 1-1: Migrants’ travel impacts, in £ per person per year, 2009/2010 prices**

	Tier 1 and Tier2 migrants	UK nationals	Absolute difference	% difference
Car	-2368	-2459	91	-4%
Bus	76	68	8	12%
Rail	109	74	35	47%
Underground	40	10	29	284%

Note: The values reported are only approximations indicative of the order of magnitude. Negative means values indicate an overall cost to society; positive values indicate an overall benefit to society.

In interpreting these results, we distinguished between ‘population-based’ and ‘migrant-specific’ impacts:

- **The population-based impacts are negative.** Migrants impose a cost on society when they use the transport network, despite the fact that their impact per head is lower than that of a national. The positive impacts associated with their use of public transport cannot offset the negative impacts associated with their car use (as the negative impact is higher by two orders of magnitudes). These results on population-based impacts are shown in the first column of the table.
- **The migrant-specific impacts are positive.** When comparing the impacts by the average migrant and the average national, we can see that the migrant-specific impacts are positive (see the third column in table). The migrant-specific impacts associated with their car use are biggest in absolute terms, while the impacts associated with their use of the underground are biggest in percentage terms.

**Qualitative findings**

Increased patronage on public transport adds to public transport revenues, and this is incorporated in the calculations made in the quantitative analysis. However, such increases in patronage may also increase crowding, which is seen as a negative externality or cost to other travellers. The additional costs of migrants’ impact on crowding on public transport

have not been taken into account in the analysis, because of limitations in the information we have on migrants' travel. Therefore this issue is dealt with qualitatively.

Crowding issues are specific to the mode of public transport. Notably, it is more difficult for rail and underground to address crowding issues by expanding capacity, because additional infrastructure is costly and takes a long time to build. For buses, crowding may be less of an issue as bus operators can respond by providing more buses relatively easily and quickly – in fact, the increased patronage on buses is generally seen as a positive outcome.

This report is prepared for the Migration Advisory Committee (MAC) to inform their thinking on the social impacts of migration. It provides one of the first studies using UK data to offer an empirical evidence base about migrants' travel behaviour and impact.