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Characteristics of Commuters

Census Information Scheme

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Key Findings

Analysis of commuter flow and characteristic data for workers in London shows:

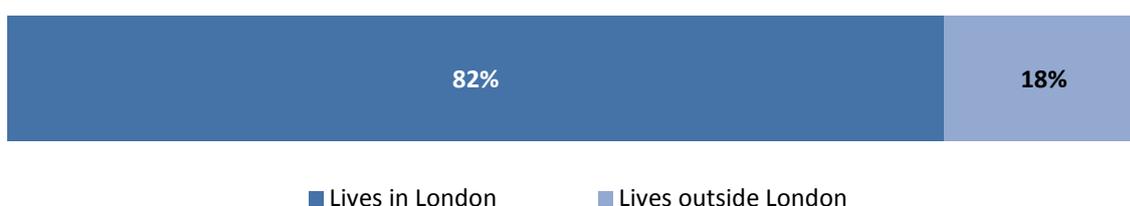
- 18 per cent of people who worked in London commute from outside the capital.
- Those who commuted-in were more likely to be male and were, on average, older than those who lived and worked in London.
- Commuters were more likely to be in managerial and professional occupations and were more likely to work in Finance & Insurance and Public Administration than their London-resident counterparts.
- Individuals living outside London were more likely to commute to the capital for work if they reported non-White British ethnicity. Those with Black ethnicity were five times more likely than their White British counterparts to commute to London.
- In the week before census those working in London travelled a total of 39.7 million miles from their residences to their work. Assuming that this distance was travelled twice a day, in a five day week London workers commuted the equivalent of travelling from Earth to the Sun and back.
- The average commute of those working in London was 9.1 miles – if home workers and those with no fixed place of work are removed from the equation (i.e. those for whom the commute is zero miles), the average distance travelled was 11.2 miles.

Introduction

This report uses 2011 Census safeguarded¹ Special Workplace Statistics data, also known as travel to work data, to provide an overview of the characteristics of people who work in London. The analysis distinguishes between those who commute from outside London to a job in the capital ('commuters') and those who live and work within London ('Londoners'). This second group includes those who work from home and those who live in London and have no fixed place of work. All data refer to UK² residents aged 16 and over who were employed in the week before census (21st-27th March, 2001).

The census reported a working population in London of 4.53 million people. This total included 3.73 million people who lived and worked in London and 793,400 people who commuted from outside the GLA boundary to a job in the capital. Homeworkers and those with no fixed place made up 18 per cent of the total workforce (808,700 people).

Figure 1: Place of usual residence of London workers



2011 Census

There were some significant differences between these two populations. In some cases the differences were driven by the demography of the place of residence (age, ethnicity), in others (such as occupation, industry sector or socio-economic classification) the characteristic itself influences the propensity for commuting. This report provides an overview of some of the more relevant personal characteristics.

¹ These tables are not publically available. Users must register with ONS to gain access to the data. All data published in this report have been aggregated up to at least regional level and therefore can be released publically.

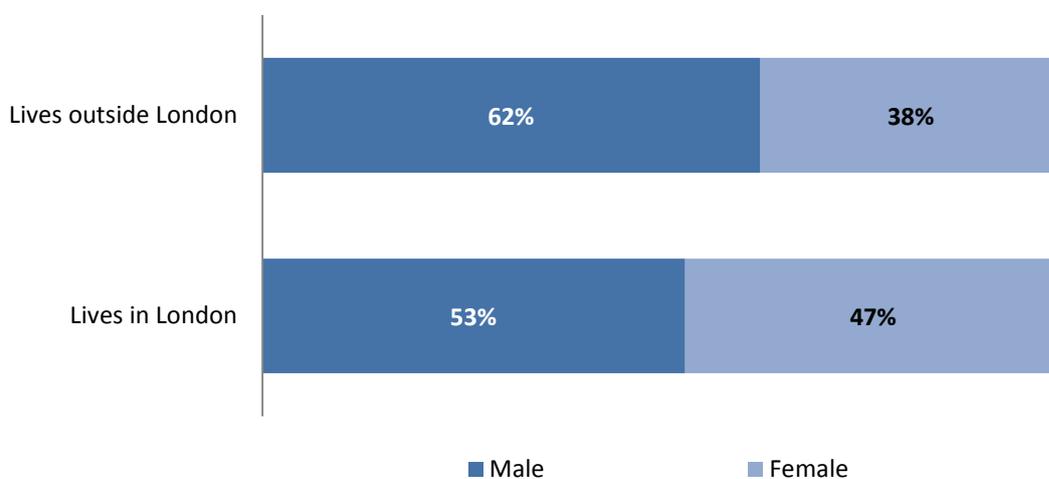
² The exception is the ethnicity data which are limited to residents of England & Wales only.

Demography

Sex

In 2011, 53 per cent of those living and working London were male and 47 per cent were female. Among commuters into London the population was less balanced; 62 per cent were male, 38 per cent female. This was in part due to lower numbers of females in the types of industries and occupations which have the highest propensities for commuting. In addition, women were more likely to be employed in part-time occupations than men and, as is shown below, people with part-time jobs were less likely to commute than those in full-time employment.

Figure 2: Sex of workers by place of residence



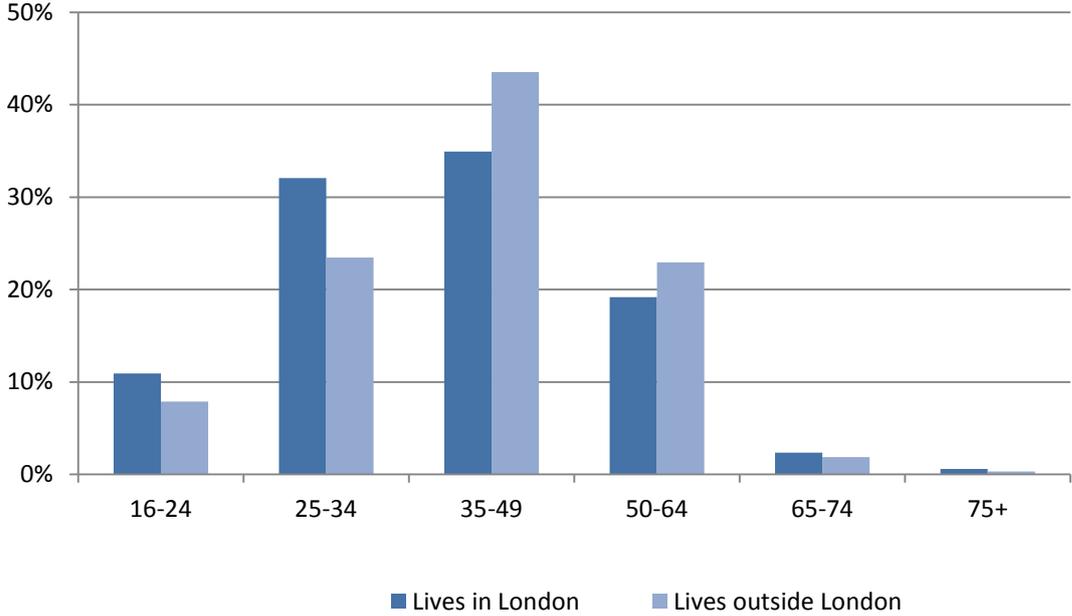
2011 Census

Age

The working population of London was younger than that seen elsewhere in the UK. In London 32 per cent of workers were aged 16 to 34 while in the rest of England & Wales the proportion was 24 per cent. Within the London workforce those who also lived in London tended to be younger than those who commuted from outside the capital – 43 per cent of Londoners were age 16 to 34 while 31 per cent of commuters were in this age bracket.

Among those aged 16 to 34 working in London 83 per cent lived in capital while 17 per cent commuted in. In the next age bracket, 35 to 49, more workers commuted from outside London – 21 per cent.

Figure 3: Age of workers in London by place of residence



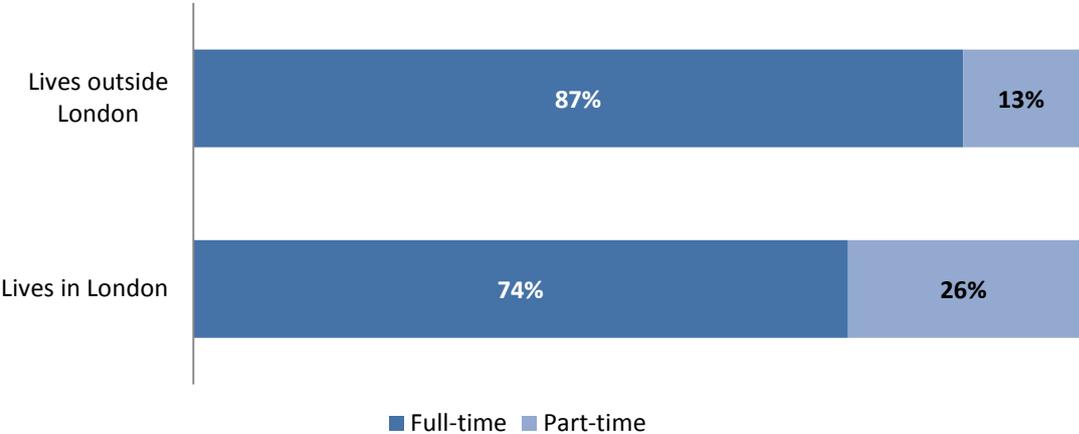
2011 Census

Full-time/Part-time Work

A full-time job is defined as one in which a person works 31 or more hours per week. The census records an individual’s main job. Therefore, people with multiple part-time jobs who in total work more than 30 hours per week will still only be recorded as a part-time worker.

Around three quarters of workers in London had full-time jobs in 2011. Those who lived and worked in London were similarly split with 74 per cent employed in full-time occupations. Commuters into London were much more likely to have full-time jobs with 87 per cent working more than 30 hours in 2011. This is as one might expect; workers were less likely to commute for part-time work.

Figure 4: Hours worked by place of residence

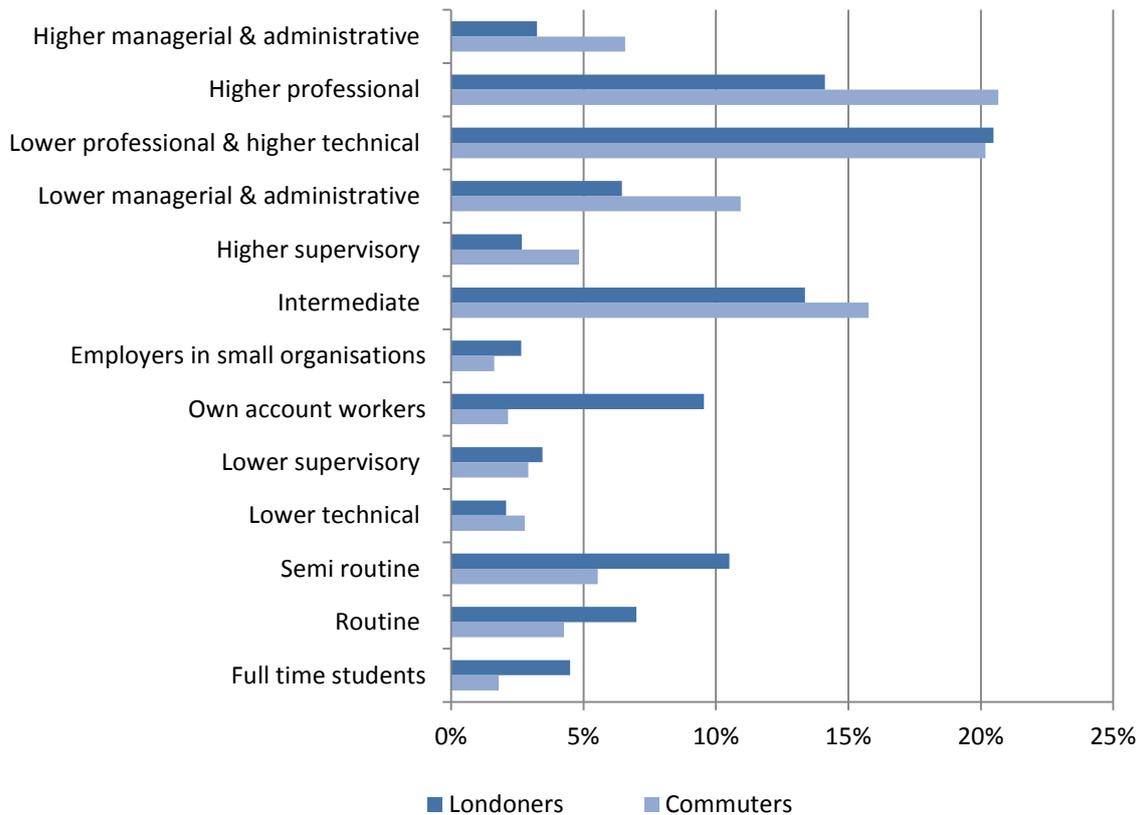


2011 Census

NS-SeC

Those who live and work in London are more evenly distributed among the various NS-SeC groups than those who commute in. This is measured using a diversity index score which identifies the extent to which a population is clustered into certain groups. There are 13 NS-SeC groups, as outlined in Figure 5, and so a perfectly evenly distributed population would have a diversity index score of 13. Londoners have an index score of 8.7 while commuters score 7.4. This means there is less diversity in the socio-economic grouping of commuters than Londoners.

Figure 5: NS-SeC group of London workers by place of residence



Insert Source text here

The data show that commuters are more likely to be in higher NS-SEC groups than their London-resident counterparts and that workers are less likely to commute if they are in lower NS-SEC groups. Figure 5 clearly show this imbalance. The proportion of commuters is higher than the proportion of those who lived in London in the higher NS-SEC groups (the top six groups in the graph) while in the lower groups (the bottom seven groups in the graph) the reverse is true.

Those who work in London were more likely to be in a one of the managerial or professional NS-SeC groups than workers elsewhere in England & Wales³. This trend was even more pronounced among in-commuters; 58 per cent of commuters into London were in one of the top four NS-SEC groups while among those who lived and worked in the capital the proportion was 44 per cent.

Own account workers comprised ten per cent of those who lived and worked in London while among commuters just two per cent fell into this category. Similarly, 11 per cent of Londoners had semi-routine occupations and just six per cent of commuters.

³ See CIS report 2013-05: NS-SEC in London (<https://londondatastore-upload.s3.amazonaws.com/RKA%3D2011-census-ns-sec-in-london.pdf>)

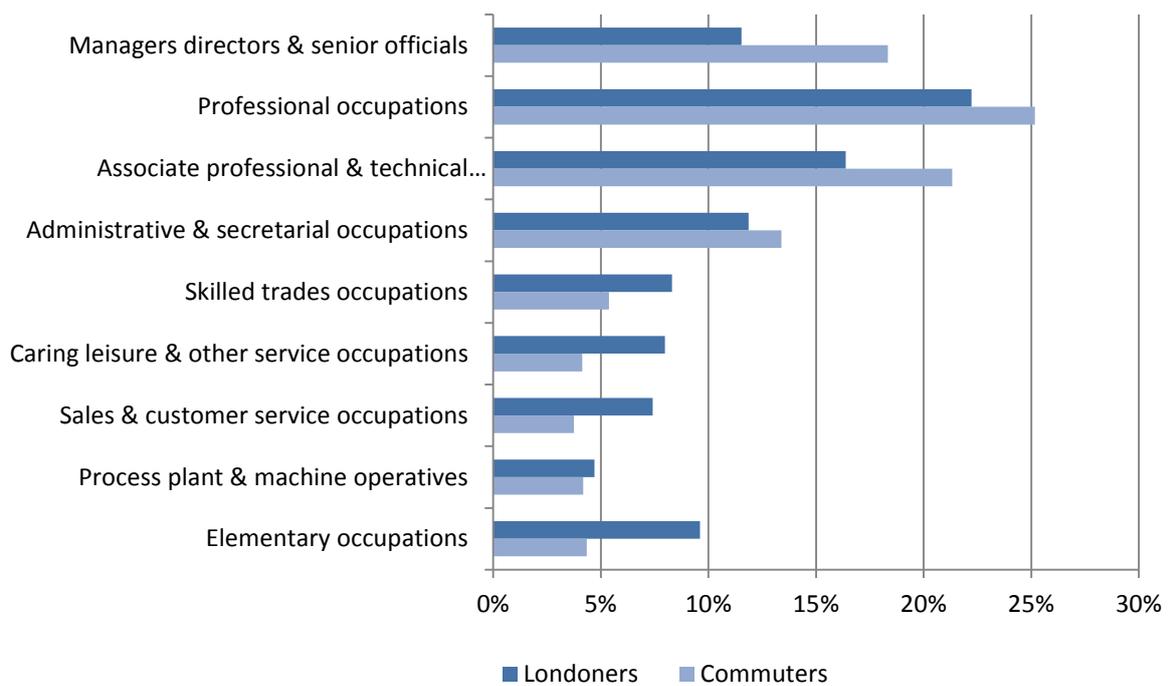
Occupation

The census reports nine occupation groups. Diversity of occupation among in-commuters was much lower than among those who lived and worked in the capital; commuters had a diversity index score of 5.9 while Londoners had a score of 7.5. As with NS-SEC this is largely due to clustering in the higher groups among commuters.

A disproportion number of people were employed in the managerial, professional and associate professional occupation groups in London when compared to the rest of the UK. Among all of those working in London over half were to be found in one of the top three occupation groups. However, this concentration was more pronounced among commuters than London residents. A significant 65 per cent of in-commuters had a top three occupation while amongst Londoners the proportion was 50 per cent.

Commuters are much less likely than Londoners to be in skilled trades, service occupations or manual occupations (Figure 6).

Figure 6: Occupation of London workers by place of residence



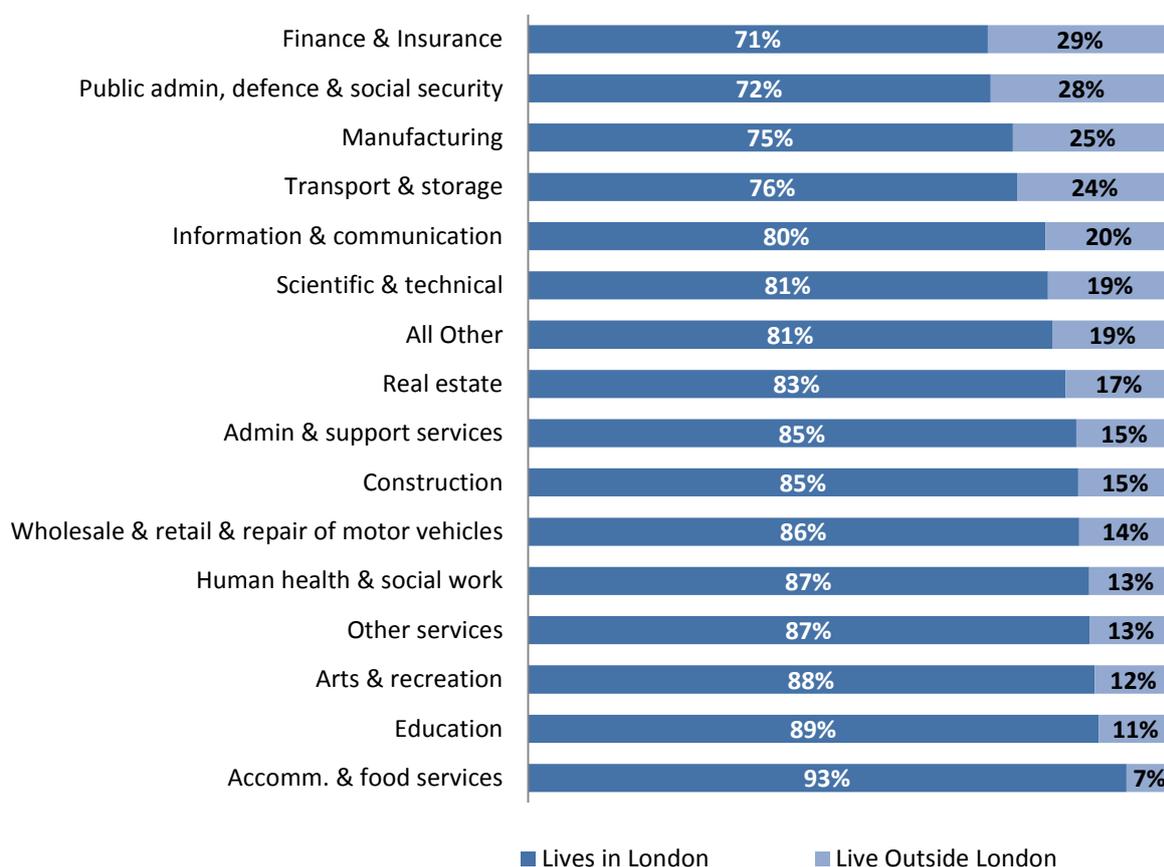
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Industry

Figure 7 shows the place of residence of London workers broken down by industry⁴. Overall, 82 per cent of workers in London lived in the capital, so all things being equal each industry would have the same split of Londoners and commuters. Industries where more than an average proportion of workers lived outside London are towards the top of the graph, while those where a greater than average proportion live within London are towards the bottom.

Finance & Insurance is the industry where workers are most likely to commute – 29 per cent of all those working in this area in London lived outside the capital. That is 11 percentage points above the average for all industries. In fact, 15 per cent of all of those who commute into London worked in Finance & Insurance. Other industries where a large proportion of workers commuted were public administration (28 per cent), manufacturing (25 per cent) and transport and storage (24 per cent).

Figure 7: Place of residence of London workers by Industry



Insert Source text here

⁴ The analysis in this section excludes those industries where less than one per cent of workers in London were employed. These are: agriculture & forestry; mining & quarrying; electric, gas, steam & air cond. supply; activities of household; activities of extraterritorial organisations; water supply, sewerage & waste.

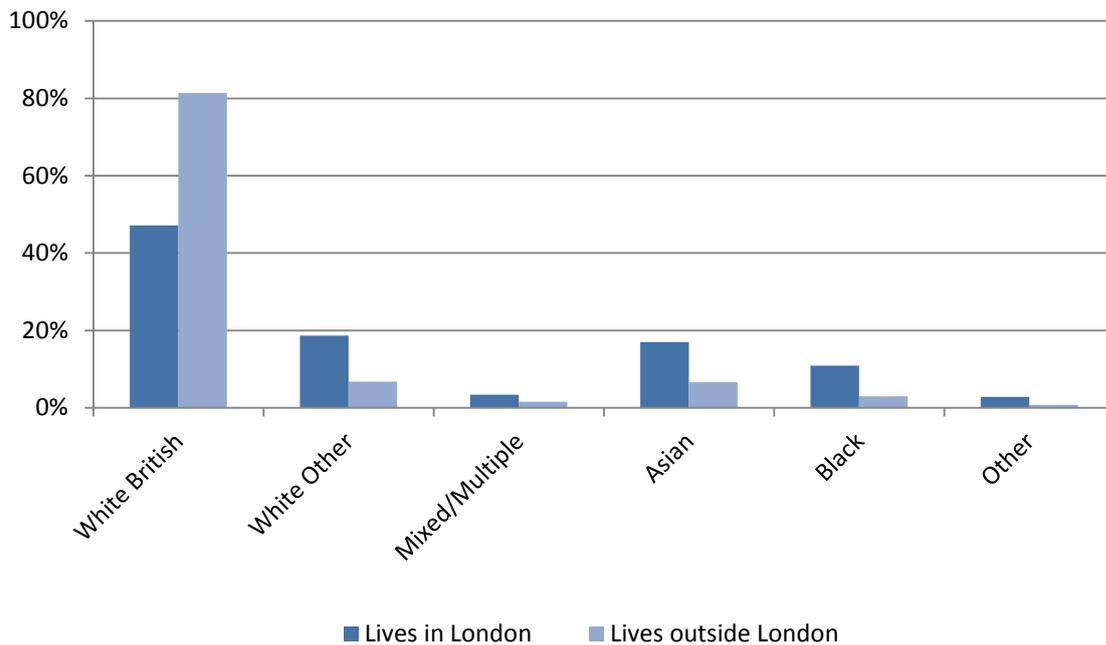
At the other end of the spectrum those working in accommodation and food services were much more likely to live in London than to in-commute (93 per cent) while those working in education (89 per cent), arts and recreation (88 per cent) also showed percentages well above the average.

Ethnicity

Data on ethnicity are limited to commuters from England & Wales due to the lack of comparability between the ethnic groups reported in the Scottish and Northern Irish censuses. Due to the small number of commuters to London from outside England & Wales (around four per cent of the total) this is unlikely to have a significant impact on this analysis.

Commuters were significantly more likely to be of White British ethnicity than those who both lived and worked in the capital. Four in every five in-commuters were White British while among Londoners the proportion was less than half (47 per cent).

Figure 8: Ethnicity of London workers by place of residence



Insert Source text here

The high proportion of White British commuters meant that the proportions in other ethnic groups were depressed; just seven per cent of commuters were of White Other ethnicity compared with 19 per cent of Londoners, while seven per cent reported Asian ethnicity compared with 17 per cent of Londoners.

Table 1 shows the same commuting flows as Figure 8 but with the size of the resident ethnic group populations taken into consideration. What the data show when viewed in this way is that the reason for the small flows from ethnic minority groups into London is due to the size of the resident populations rather than any ethnic bias among commuters.

Table 1: Proportion of EU workers who worked in London, by ethnicity

	White British	White Other	Mixed/Multiple Ethnicity	Asian	Black	Other
Londoners	92%	95%	94%	92%	94%	94%
Commuters	3%	5%	5%	5%	7%	5%

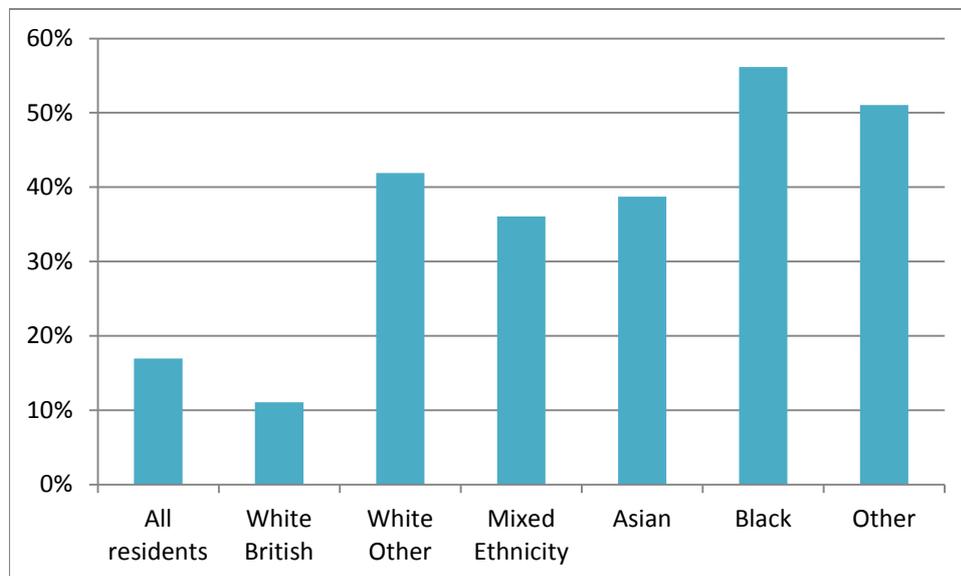
2011 Census

In fact, among the working population outside London residents with minority ethnicity were more likely to commute to the capital for work than those with White British ethnicity. Most strikingly Black residents (seven per cent) were twice as likely to commute as their White British counterparts (3 per cent).

Among residents in London those with White British or Asian ethnicity were the most likely to leave the capital for work but the differences between the groups are not large enough to be significant.

Figure 9 shows the proportion of each ethnicity that worked in London, irrespective of where they lived. A total of 17 per cent of the population of England & Wales worked in London (12 per cent lived in the capital). Over half of Black residents worked in London while just 11 per cent of White British residents had a job in the capital. All ethnic minority groups were significantly more likely to work in London than their White British counterparts.

Figure 9: Ethnicity of London workers by place of residence

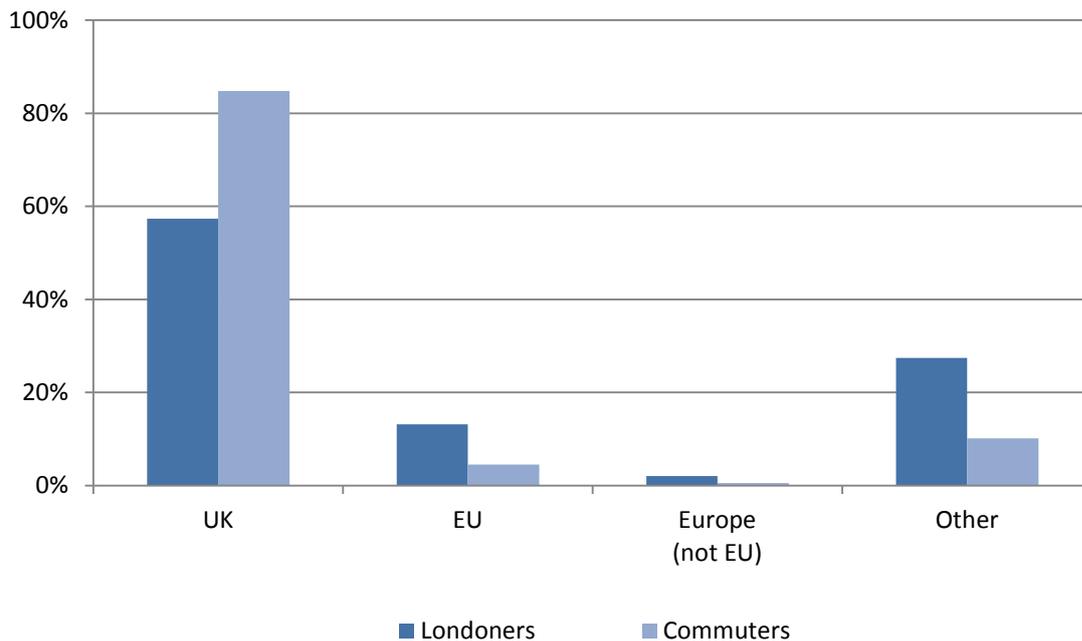


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Country of Birth

Commuters into London were more likely to be born in the UK than those who lived and worked in the capital. In fact 85 per cent of all commuters listed the UK as their country of birth while among people who lived and worked in London the proportion was 57 per cent. As was the case with the ethnicity of workers, a significant driver here was the demography of the resident population. Overall, 13 per cent of non-UK born residents of the UK lived in London in 2011. As a result one would expect the in-commuting population to be less diverse than the London-resident population.

Figure 10: Region of birth of London workers by place of residence

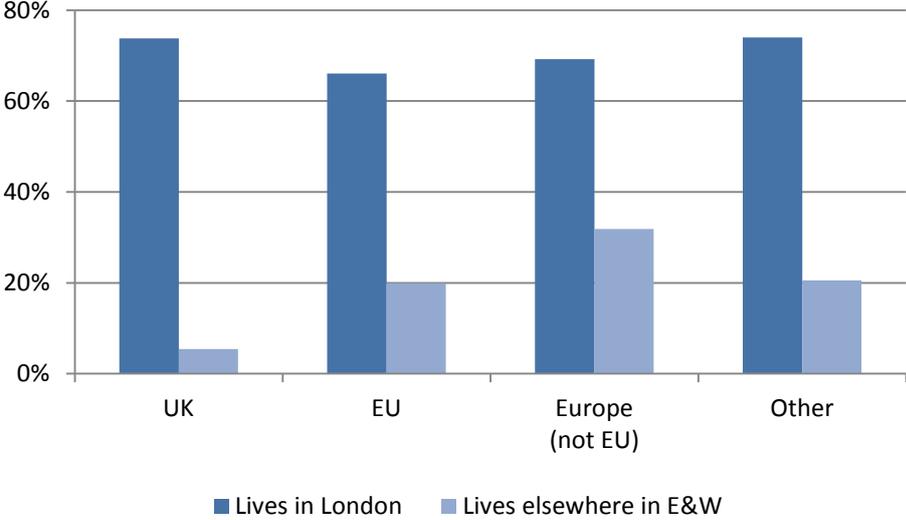


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When the data are weighted to mitigate this difference in the population base they show a strikingly different picture. Among residents outside London, those who were born in the UK were the least likely to commute to the capital – just five per cent of UK-born residents commuted (Figure 11). The proportions among other areas of birth were much higher. Twenty per cent of EU-born residents commuted in to London, 32 per cent of people born elsewhere in Europe commuted and 21 per cent of people born outside Europe commuted to London.

Figure 11 also shows how EU-born residents living in London are the least likely of the four groups to work in London (66 per cent), meaning therefore that they are most likely to out-commute.

Figure 11: Proportion of residents working in London, by place of residence



2011 Census

Distance Travelled

The following section uses MSOA to MSOA flows to calculate the average distance travelled by workers with various characteristics. The distances were calculated using MSOA-level centroids rather than postcode-level information as the latter is not publically available and therefore the data reported here are an approximation. These distances may therefore differ from ONS-reported distances available elsewhere in the census.

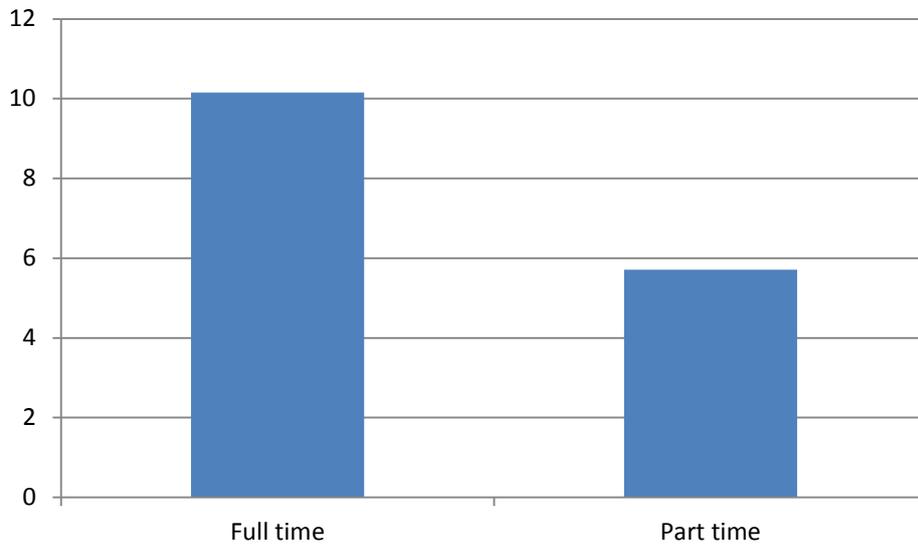
- Residents who live and work within the same MSOA will have a commuting distance of 0km
- Distances are calculated as the crow flies and make no attempt to account method of travel or routing
- All workers are assumed to travel to their place of work from their usual residence rather than a second address
- Data are for residents of England and Wales only. Centroids for Intermediate Zones in Scotland are not available meaning distances cannot be calculated. This affects four per cent of the working population of London.
- Details of the process used to calculate average distances can found in Appendix B

In the week before census those working in London travelled a total of 39.7 million miles from their residences to their work. Assuming that this distance is travelled twice a day, in a five day week London workers commuted the equivalent of travelling from Earth to the Sun and back.

The average commute of those working in London was 9.1 miles – if home workers and those with no fixed place of work are removed from the equation (i.e. those for whom the commute is zero miles), the average distance travelled was 11.2 miles.

Full-time/Part-time work

Figure 12: Average distance travelled by hours worked (miles)

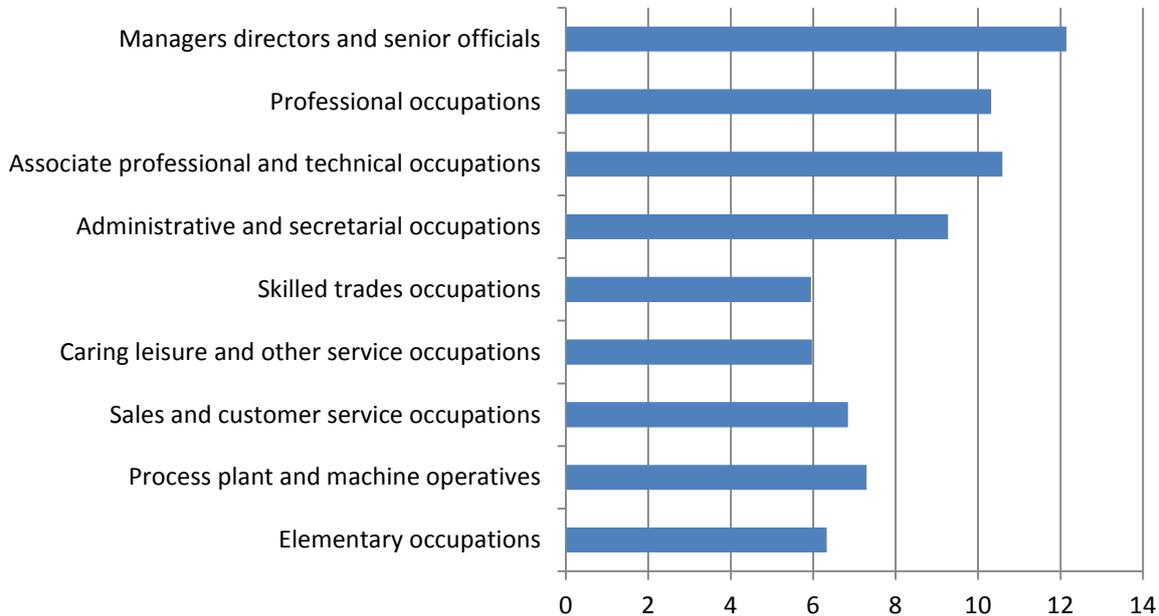


2011 Census

Those working in full-time occupations (31 hours or more per week) travelled, on average, 10.2 miles to work while those who worked part-time travelled 5.7 miles. This was primarily because part-time workers were more likely to live in London than full-time workers meaning their commutes to jobs within the capital were shorter. In fact 90 per cent of all part-time workers in London lived in the capital while among full-time workers the proportion was 80 per cent.

Occupation

Figure 13: Average distance travelled by occupation (miles)



2011 Census

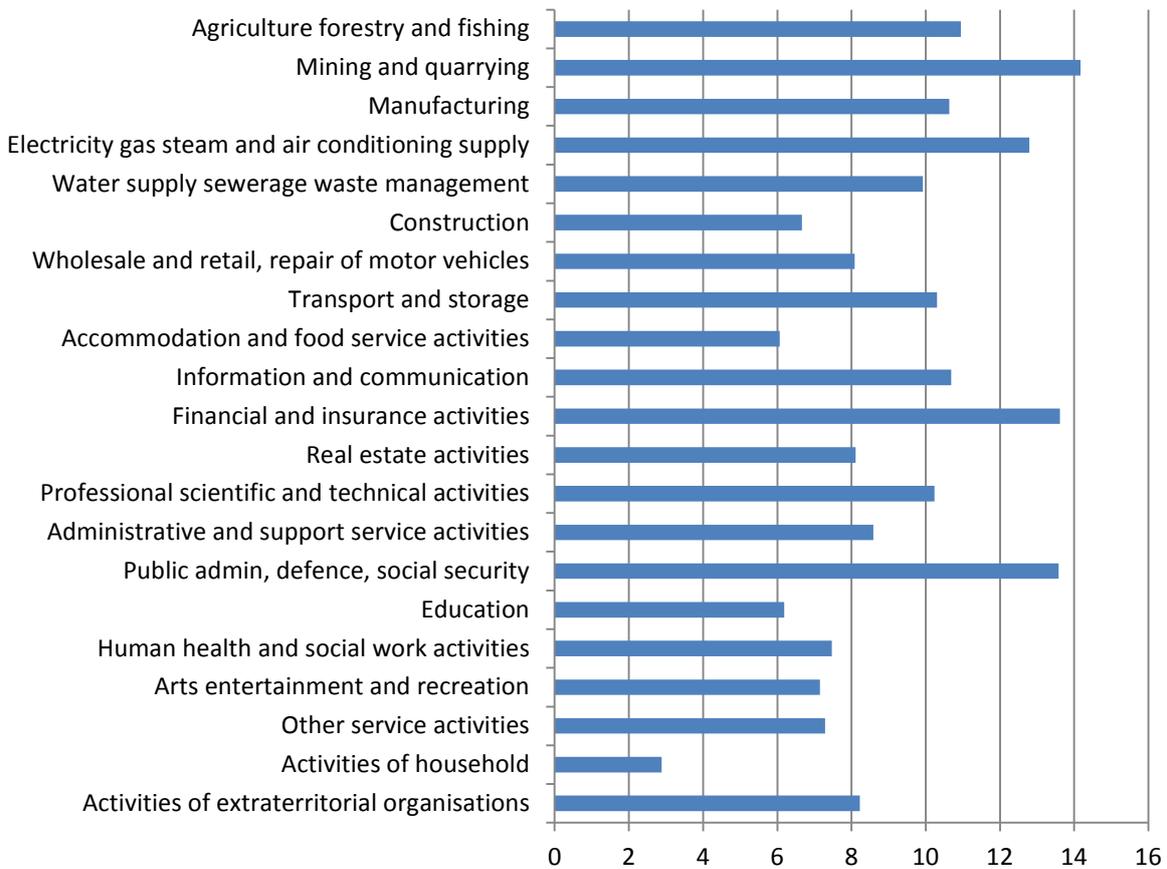
There is some pattern in the average distance travelled by workers in particular occupation groups. Specifically those employed in the higher occupation groups on average travelled longer distances than those in lower groups.

Managers directors and senior officials travelled 12.1 miles, which is 3.0 miles above the London average. Professionals and Associate Professionals also had commutes above the London average (10.3 and 10.6 miles respectively).

Those with Skilled trades occupations had the shortest commute at 5.9 miles, 3.2 miles below the London average. Skilled trades were not the most likely occupation group to live in London but a high proportion did – 88 per cent – and over half of those who lived and worked in London with a skilled trade occupation worked either from home or with no fixed place. These individuals therefore have a travel to work distance of zero miles and have a significant diminishing impact on the average distance. If these people are removed from the calculation so that we just include those who make a journey to a specific place of work, the average for the skilled trades is much higher – 11.0 miles.

Industry

Figure 14: Average distance travelled by industry (miles)



2011 Census

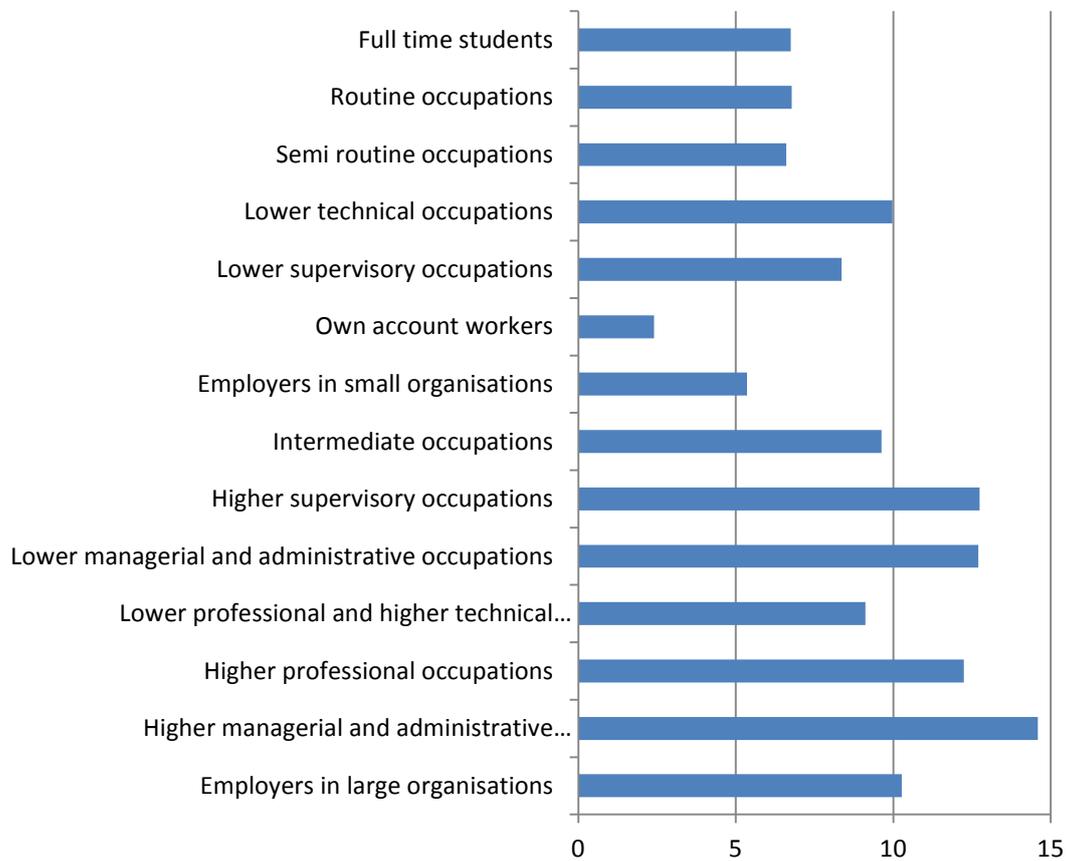
The highest average distance travelled was by those in the Mining and Quarrying industry. This is not a large industry in London – it employed just 4,300 people or 0.1 per cent of the working population – and it is likely that those working in this industry are engaged in the administrative elements of their businesses. As already noted administrative and managerial occupations tend to have longer travel to work distances than other occupation types.

Other industries with high average distances are Finance & Insurance and Public administration, both areas with high proportions of administrative, professional and managerial occupations. A quarter of all those working in Finance & Insurance lived outside London and of those who lived inside the GLA boundary just nine per cent worked from home. Similarly, among those working in Public administration just nine per cent said they worked from home. The small proportion of workers in these industries with a zero-mile commute serves to increase the average distance travelled.

As may be expected those engaged in Activities of the household had the shortest commutes with an average distance of just 2.9 miles. A significant 60 per cent of those who lived in London and worked in this industry worked from home or had no fixed place of work.

NS-SeC

Figure 15: Average distance travelled by NS-SeC group (miles)



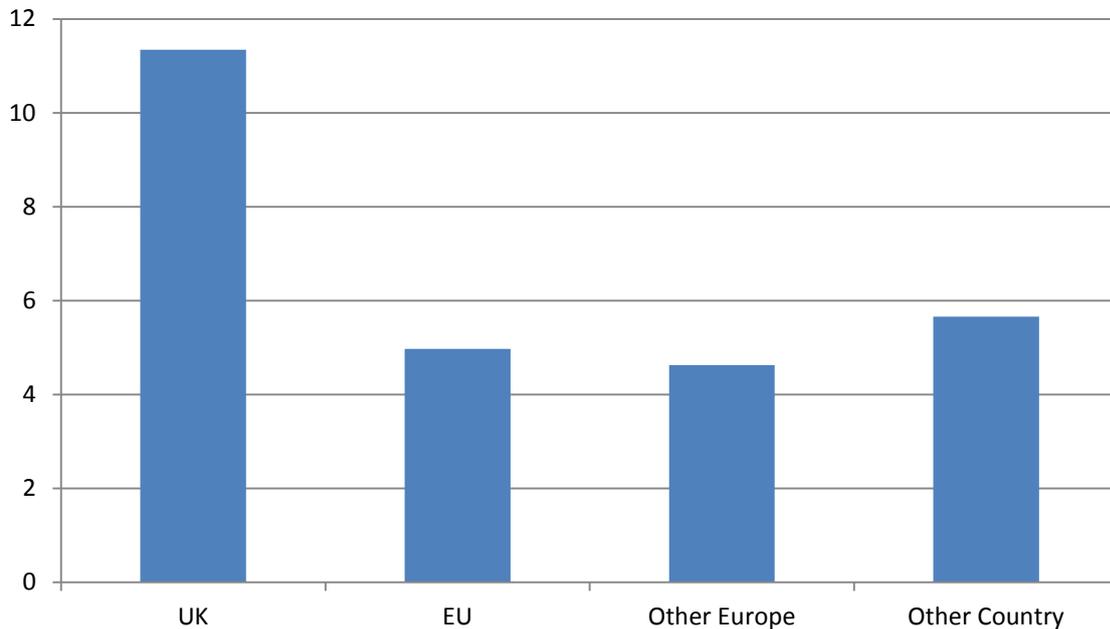
2011 Census

Own account workers had the lowest average distance travelled at just 2.4 miles. This is because a high proportion worked from home or had no fixed place – 73 per cent compared to a London average of 18 per cent. Those own account workers who did report a specific commute (27 per cent of the total) had a more typical average distance (9.4 miles).

This group with the furthest travel to work distance were the Higher managerial and admin occupations where the average journey was 14.6 miles. This reinforces the findings on distance travelled by occupation.

Country of Birth

Figure 16: Average distance travelled by region/country of birth (miles)



2011 Census

Those born in the UK on average travelled twice the distance to work of those born outside the UK (11.3 miles and 5.4 miles respectively). Migrants from non-EU countries had the shortest travel to work distance at 4.6 miles while those from EU countries travelled an average of 5.0 miles and those from elsewhere travelled 5.7 miles.

UK-born workers were more likely to live outside London than those born outside the UK. Almost a quarter of UK-born workers commuted from outside London (24 per cent) while among those born in other areas the proportion was between seven and eight per cent. The distance travelled for EU-born workers was suppressed by a higher than average proportion of workers working from home/having no fixed place of work – 28 per cent of all workers compared with 15-25 per cent in other groups.

Appendix A: Borough Maps

Appendix A of this report comprises four maps for each London borough detailing the following:

- 1) Map1 – Distribution of homeworkers with the borough
- 2) Map2 – Distribution of workers who live the borough but do not work from home (intraflow)
- 3) Map3 – Distribution of workers who commute to the borough from elsewhere in London
- 4) Map4 – Distribution of workers who commute to the borough from outside London

This document is available here:

<http://londondatastore-upload.s3.amazonaws.com/dataset/characteristics-of-commuters/Characteristics%20of%20Commuters%20-%20Appendix%20A.pdf>

Appendix B: Note on data manipulation

Origin-destination tables constitute the largest datasets available from the 2011 Census. At MSOA level there were 6.8 million travel-to-work origin-destination pairs recorded in 2011 in England and Wales. Working with datasets of this size requires the use of specialist software. For this report the data were processed using a combination of the database FME and the R programming language.

Commuter Flows

Using R, the national MSOA to MSOA flows were filtered to include only destinations in London and home workers or no fixed place workers whose residence was London. This constitutes the London workforce.

The totals for those who commuted into London and those who lived and worked in London were then calculated for each variable.

The 132 borough maps were created from this data using R.

Average distance calculation

The first stage of the process was to calculate the distance from every MSOA in England and Wales to each MSOA in London. Longitudes and Latitudes were calculated for each weighted centroid using ArcGIS mapping software. The database FME was then used to apply the Haversine formula⁵ to each pair to determine the 'as the crow flies' distance.

At the time of writing Intermediate Zone centroids have not been published by National Records Scotland and so it is not possible to determine the travel to work distances of those commuters who reside in Scotland. For this reason the decision was taken to limit this analysis to commuters from England and Wales. This affects around 161,000 London workers, or four per cent of those with a London-based job.

The univariate origin-destination tables for MSOAs were joined together into one large dataset in FME. The previously calculated distances were joined to this dataset also.

The remainder of the process was undertaken in R. The total for each column (variable) was calculated – this is the number of people with a particular characteristics who travel to a job in London (named here variable **a**).

Each estimate for each origin-destination pair was then multiplied by the distance between the origin and destination to create a distance-weighted count of workers. The total for each column (variable) was calculated – this is the total distance travelled for each variable (named here variable **b**).

The total number of persons who worked from home or had no fixed place of work was calculated (named here variable **c**).

Average Distance Travelled = (a + c) / b

⁵ <http://www.movable-type.co.uk/scripts/latlong.htm>

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