

# Technical Compendium

*On the Move – Supporting Paper 1*

Updated January 2013

Scott Le Vine, Peter Jones & John Polak  
December 2012



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## This Study

The main findings of the study are reported in *On the Move: Making sense of car and train travel trends in Britain*. A series of technical reports describe aspects of the work in more detail, and are available on the sponsors' websites:

- A supporting technical compendium containing figures and tables that were prepared but have not been included in this summary report
- 'Rail Demand Forecasting Using the Passenger Demand Forecasting Handbook'
- 'National Rail Passenger Survey Data Analysis'
- A report on trends in Scotland, using both NTS data and data from the Scottish Household Travel Survey

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## 1. Introduction

This document is a Technical Compendium of analyses of Britain's National Travel Survey (NTS) that complements and extends the material covered in the study *On the Move: Making sense of car and train travel trends in Britain*. It documents and puts into the public domain research that was performed on the study but not covered in the report.

It is published as a Web-only version, and is made freely available on the four sponsors' websites (RAC Foundation, Office of Rail Regulation, Independent Transport Commission and Transport Scotland).

Details on the use of the NTS data are available in *On the Move*. It is noted that many of the results in this Technical Compendium are presented in analyses at an annual timescale, rather than in three three-year groupings (1995/7, 2000/2, 2005/7) as in *On the Move*.

It should be noted that these analyses are exploratory, and many will require further research with more sophisticated techniques or additional data sources to better understand what is causing the observed trends.

This document is organised into sections, each of which covers a particular topic area.

A selection of the key points follows:

**Section 2:** At the regional level, car driving travel correlates closely with car passenger travel. There has also been a sharper fall in car driving amongst men living with a woman having a driving licence than amongst men living without a woman having a driving licence in their household. This appears to be largely due to changes in company car use rather than a shift from car driving to car passenger travel.

**Section 3:** There are established reasons that driving mileage per capita estimates vary between the NTS and road traffic counts – but this difference has been growing over time, particularly amongst light vans. It is unclear what is causing this.

**Section 4:** Workers have been making fewer commuting journeys. The evidence suggests a modest but statistically significant link between a crude indicator of telecommunications usage and working at home.

**Section 5:** Car driving mileage increases during the working week from Monday to Friday. The percentage of rail travel that takes place at weekends seems to have increased over time.

**Section 6:** Young people who do not drive cite a variety of reasons for this; of those saying that costs deter them they are more likely to say the costs of learning rather than the cost of purchasing a car, insurance, or general motoring costs. After accounting for age, income and other demographics, there is a strong link between being born outside of the UK and not having a driving licence.

**Section 7:** Young men's car use has fallen essentially across the board. While it has fallen more sharply for some groups of young men, we did not identify any major demographically or economically defined group of young men whose car travel trended upwards over time.

**Section 8:** There is some evidence of 'yield management' practices in the rail industry leading to more low-cost rail tickets being sold, but this is not the case for commuting and business rail travel markets.

**Section 9:** Despite suggestions that travel may be getting more complex over time (in the form of more trips per tour), the evidence is that in general this has not been the case.

**Section 10:** Over time there has been growing prevalence of two-car households, and in railcard-ownership. Ownership of rail season tickets has been stable, however.

**Section 11:** The proportion of workers that do manual work has been falling. The theory that growing income inequality could be contributing to changing car and rail usage does not seem to be supported, as the Gini coefficient of income inequality has been broadly flat throughout the 1990s and 2000s.

**Section 12:** Travel to visit friends and relatives at private homes has fallen over time. This is most pronounced amongst young people, and in the case of men the fall has taken place disproportionately at weekends.

## 2. Car Passenger Travel

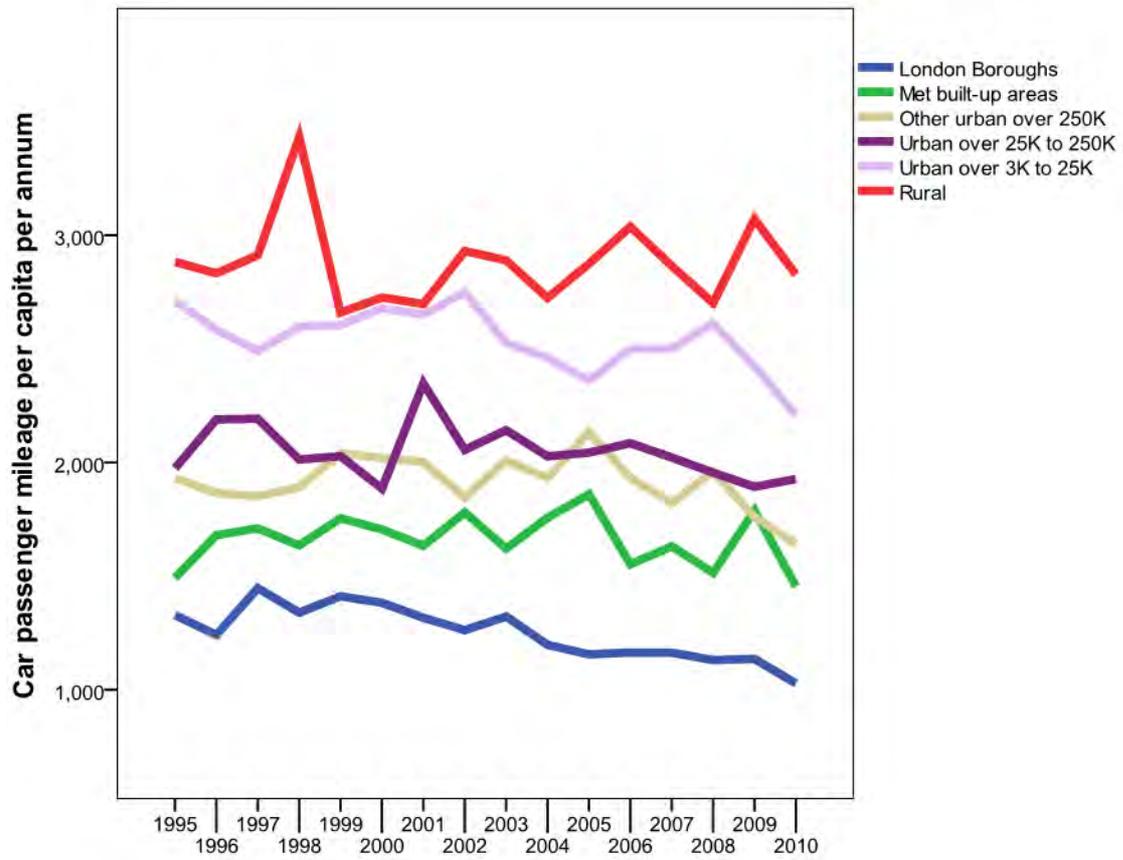
The car occupancy rate (the number of people per car, including the driver) has remained in a narrow band between 1.5 and 1.6 throughout the period from 1995 to 2010.

It can be seen in Figure 1 that, as with car driving mileage, there is a clear relationship between car passenger mileage and settlement size – the average rural resident travels for a much greater distance as a car passenger than does the average Londoner, which is at the opposite end of the settlement size spectrum.

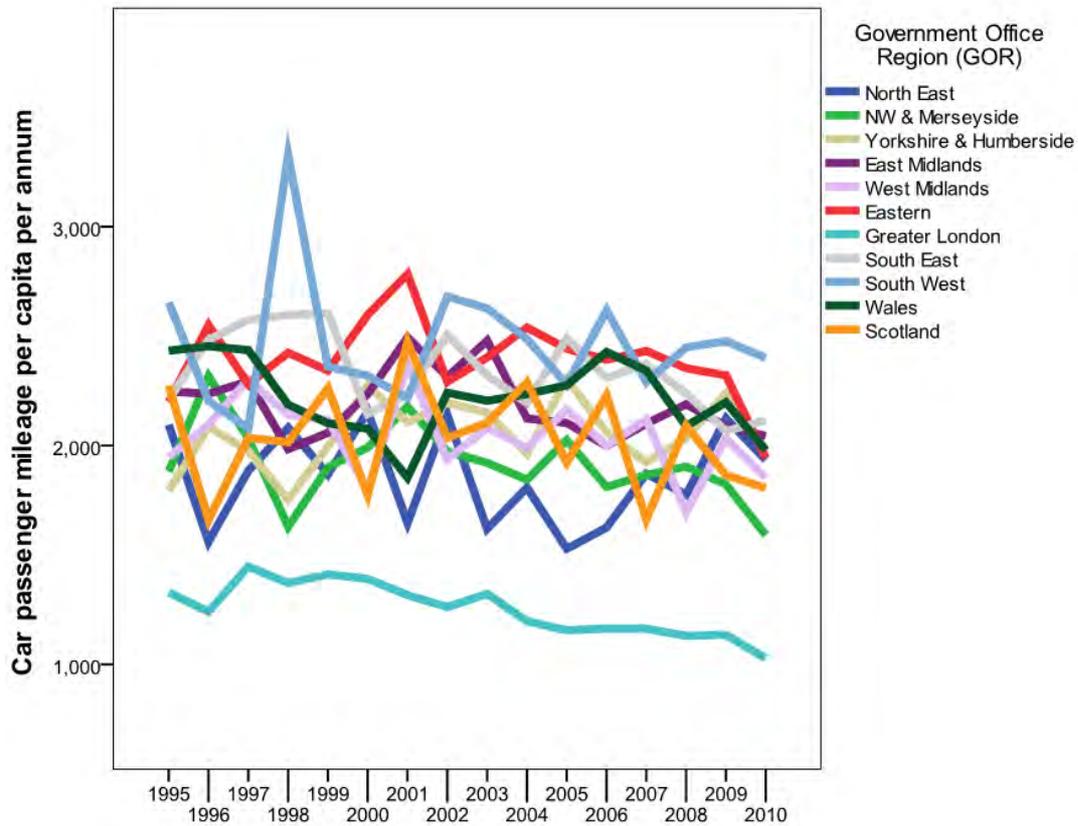
Figure 2 also shows that London has been somewhat unique amongst the regions of Great Britain, in that car passenger travel by Londoners has consistently trended downwards, a trend which is not found for other regions of Great Britain.

In Figure 3 it can be seen that at the regional level there is a quite close link between average car driving and car passenger mileage, with average driving mileage being between 60% and 98% greater in all regions of Great Britain. (A regression line drawn through this plot would have an  $r^2$  value of 0.95.)

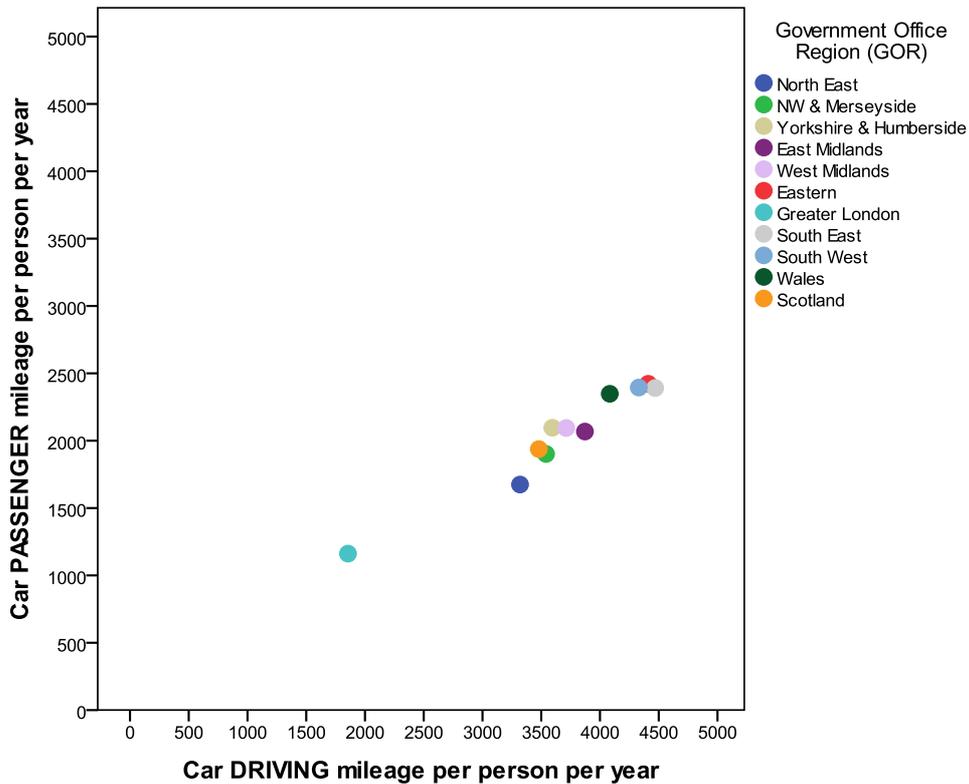
Figure 1: Car passenger mileage per person per year, by settlement size



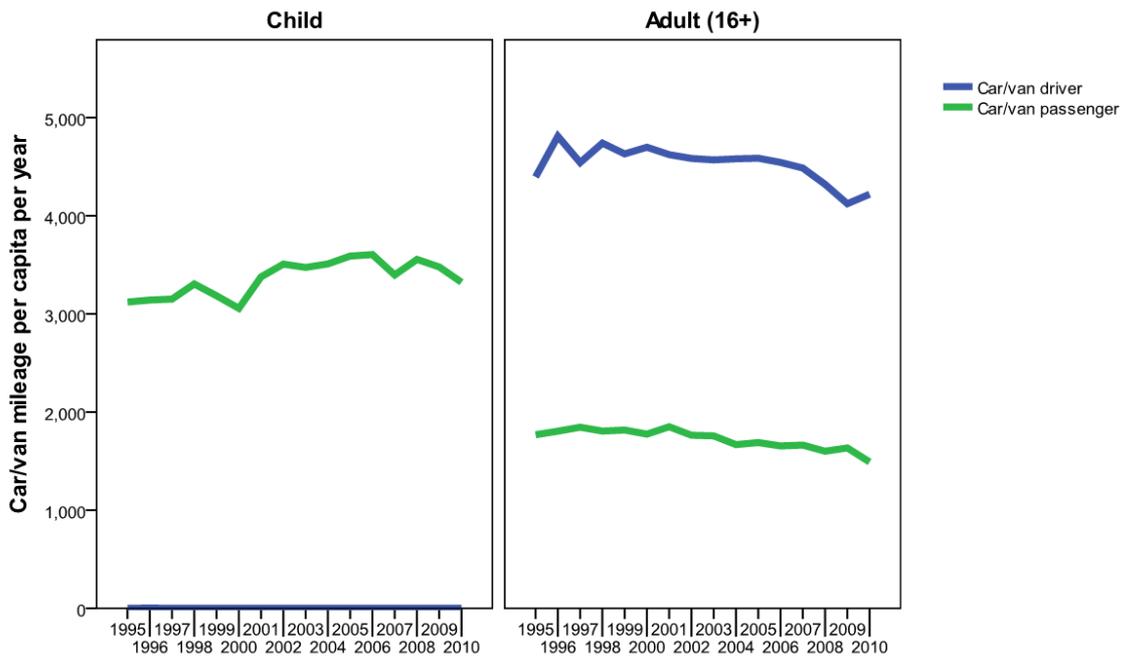
**Figure 2: Car passenger mileage per person per year, by region of GB**



**Figure 3: Car driving and car passenger mileage per person per year by region of GB, 2005/7**



**Figure 4: Trends in car passenger mileage, for children and adults**



Figures 4 and 5 show how trends in car mileage and trips trends break down when disaggregated for children and adults. Here we see an upward trend in car passenger travel for children and a downward trend for adults, both in terms of mileage and journeys.

**Figure 5: Trends in car passenger mileage, for children and adults**

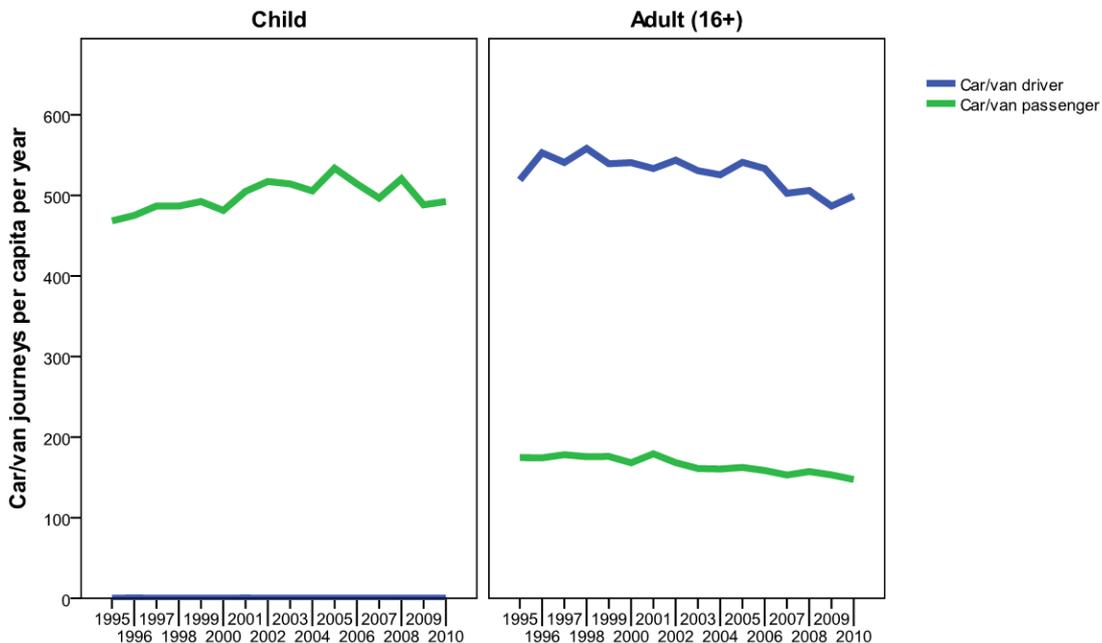
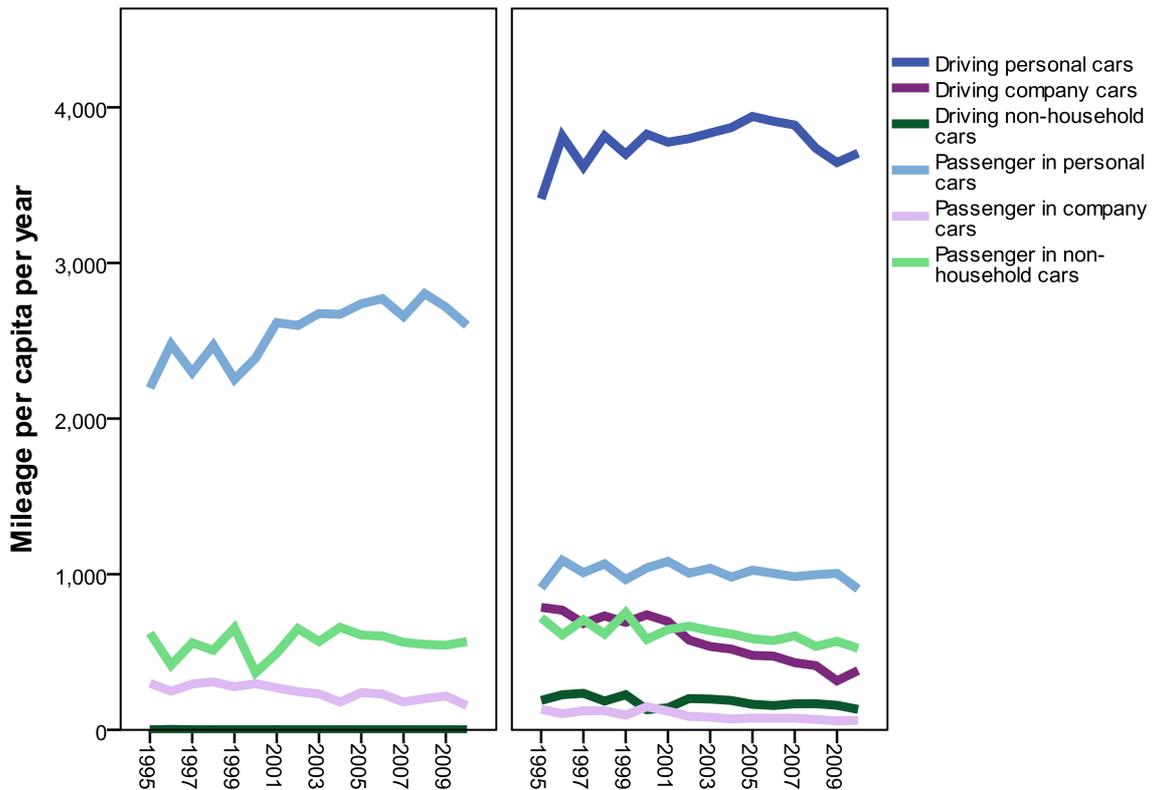


Figure 6 provides a breakdown of car use, by car driver and car passenger, and ownership of the car (i.e. household, company car, and non-household private car), for children (left panel) and adults 16 plus (right panel) separately.

**Figure 6: Car driver and car passenger annual mileage per capita, by car ownership type. Children in left panel, adults in right**



For children, all mileage is as a passenger. About one sixth of annual mileage is in a non-household car; but there has only been an increase over time in car passenger mileage per year in a household car; travel in company cars has declined. For adults, mileage as a driver in a household car has shown a slight increase, while mileage driving a company car has declined by more than a half; driving a non-household car is less than 200 miles year and has remained broadly similar over time. Mileage as a passenger in a household owned car has also remained level at around 1,000 miles per annum; in 1995 the average adult also travelled over 700 miles per year as a passenger in a non-household car, but this has declined steadily over time, to around 500 miles in 2010.

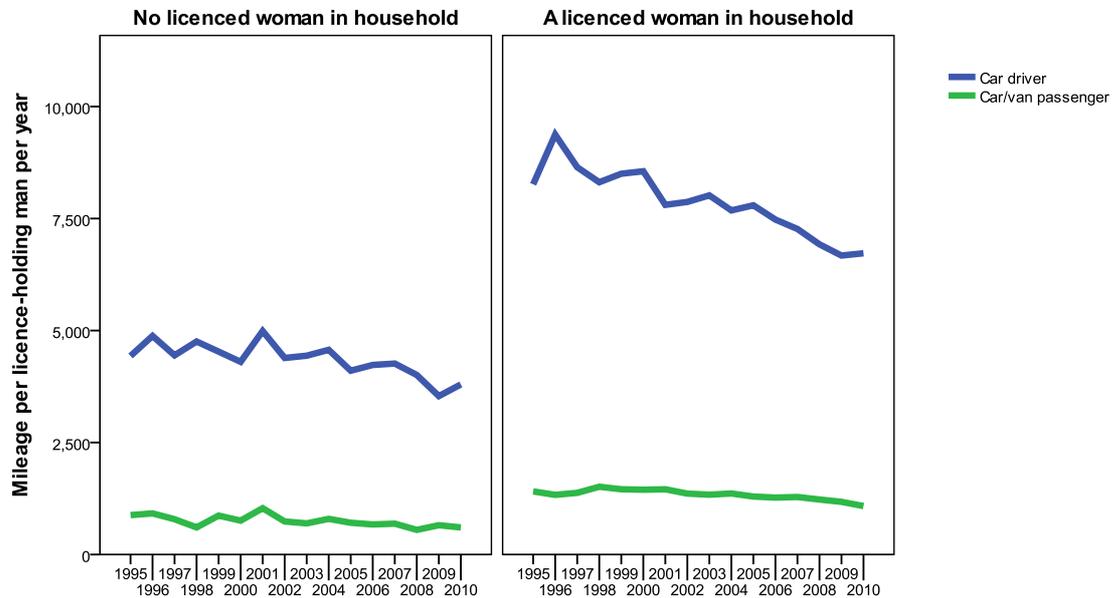
An intriguing result was turned up early in this study: when men are broken into two groups – those living with at least one driving-licence-holding woman in their household and those not – both of these two groups saw their driving mileage fall over time. But the group living with licence-holding women saw their driving mileage fall at a much faster rate. This result was found to be robust when investigated for all men as well as for only licence-holding men, as shown in Figure 7.

This raised the question: could car driving travel by these men simply be transferring to car passenger travel where they are being driven by the licence-holding women they live with?

Figure 8 shows, however, that this differential decrease of car driving mileage is not attributable to growing car passenger travel: apparently men living with licence-

holding women have seen their car driving fall at a fast rate and from a high level, but this is not showing up in the form of them travelling more as car passengers.

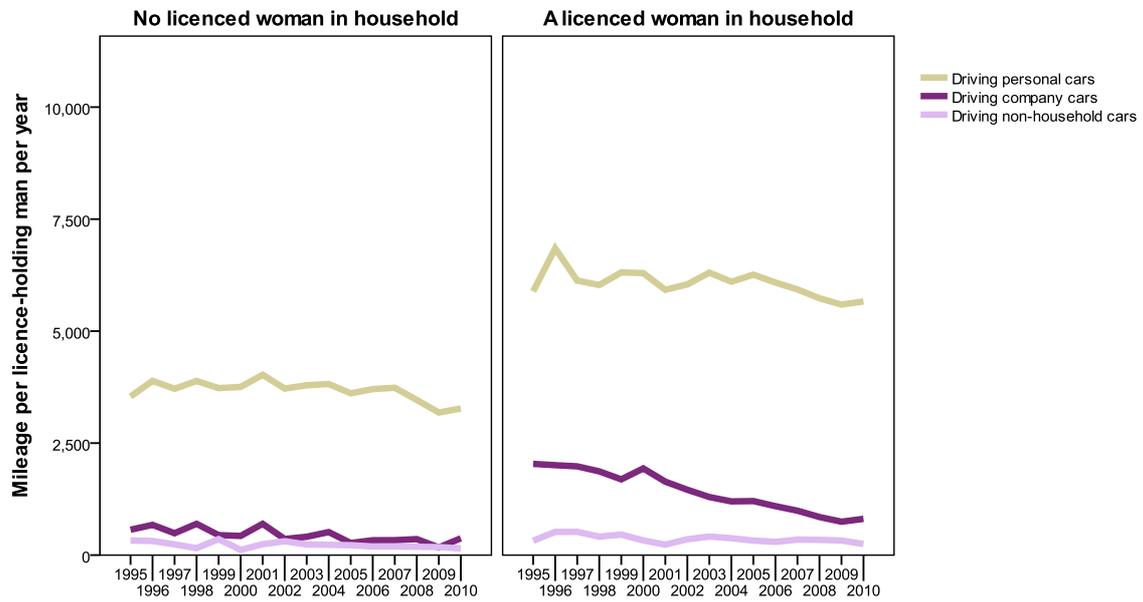
**Figure 7: Car mileage per year by licence-holding men, by car driver/passenger and presence/absence of at least one licence-holding woman in household**



On further study, the effect seems to be due primarily to a fall in company car use. In the mid-1990s company car driving was much higher amongst (licence-holding) men living with licence-holding women, and it has fallen sharply since then.

Interestingly, **personal** car travel has been much more stable for both men living with and without licence-holding women; nearly all the fall in their driving mileage (and the changing differences between the groups) is linked with company car use.

**Figure 8: Car driving mileage per year by licence-holding men, by ownership type of car driven and presence/absence of at least one licence-holding woman in household**



### 3. Traffic and Rail Usage Data

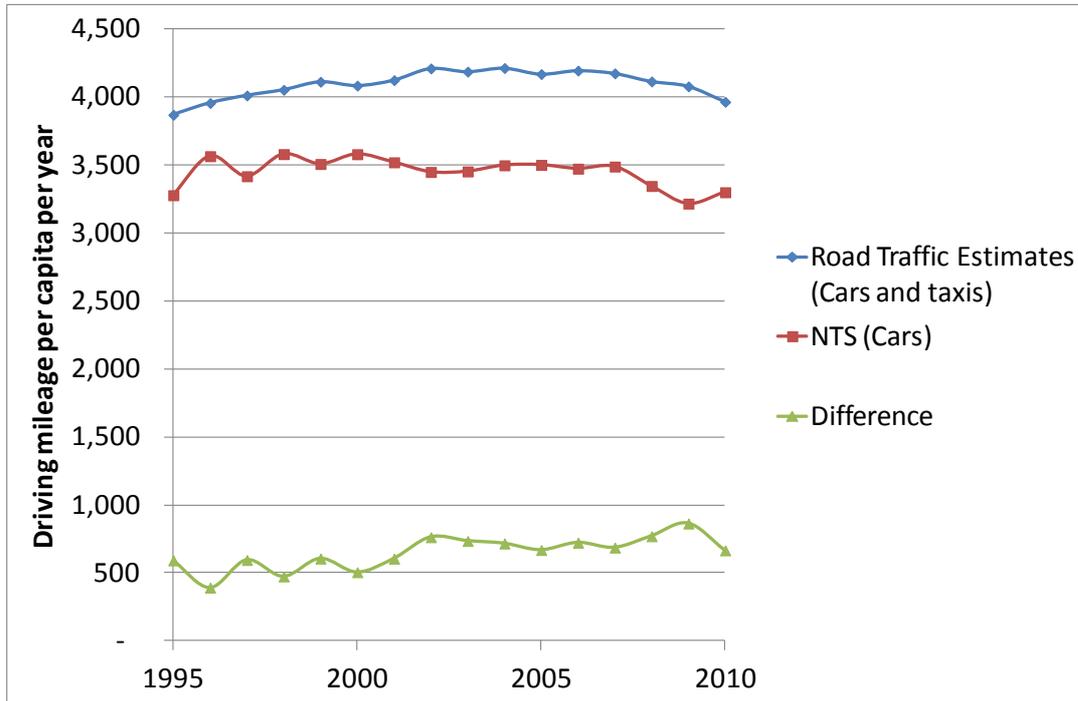
It is well established that there are differences between estimates of per-capita car driving when measured by the NTS and the Road Traffic Estimates (RTEs), which are based on a continuous programme of automatic and manual traffic counts undertaken by the Department for Transport.

The RTEs yield higher estimates of per-capita driving, which are generally attributed to methodological differences. The NTS, for instance, explicitly excludes some travel, notably certain types of travel as part of one's job. A courier delivering a parcel would not report in their NTS diary their driving for work, but this mileage would in principle be eligible to be counted in the RTEs. There are a number of other notable differences: the NTS covers only British residents, so excludes all travel by visitors from abroad. The NTS and RTEs are also both based on sampling procedures, and in the case of the NTS it is known that response rates have drifted downwards over time.

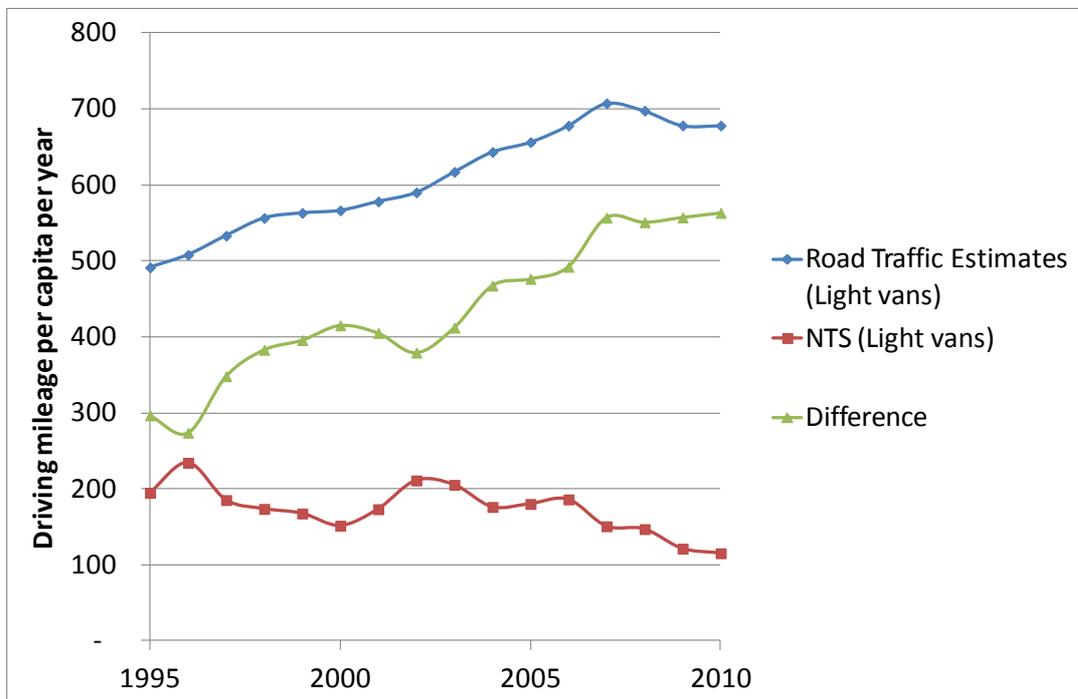
While it is to be expected that the two data sources will yield different estimates, it is interesting that the differences seem to be growing over time. Figure 9 shows that for car driving mileage there has been an apparently growing gap between the NTS estimates and the RTEs. It is worth noting that in addition to the methodological differences noted above, there was a change of NTS contractor in 2002, and Figure 10 seems to show a step change in the 'gap' centred on 2002.

Figure 10 shows the same data as Figure 9, but for light vans instead of cars. Here the differences are striking: the RTEs show light van travel to have grown robustly right up to the 2007+ financial crisis, whilst the NTS shows falling levels of per-capita light van driving. In addition to the methodological differences noted previously, the definitions of 'light vans' are not identical in the NTS and RTEs. Nevertheless it is unexpected that they would yield such divergent trends, and further research will be needed to understand these results.

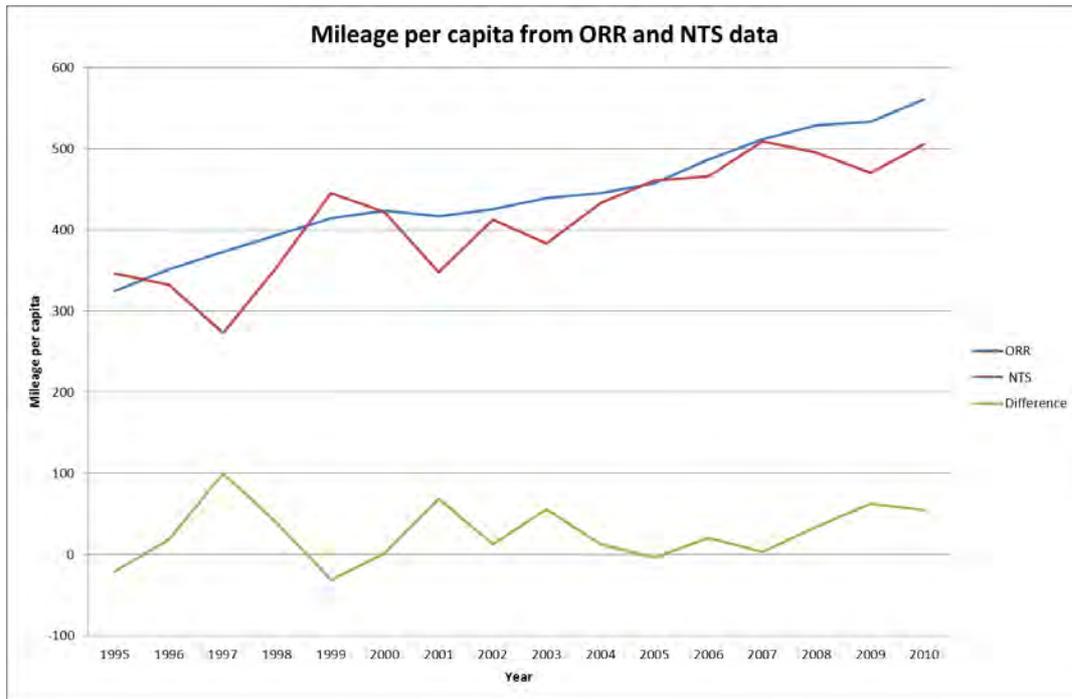
**Figure 9: Car driving mileage per capita, National Travel Survey and Road Traffic Estimates, and the difference**



**Figure 10: Car driving mileage per capita, National travel Survey and Road Traffic Estimates, and the difference**



**Figure 11: Comparison of NTS and ORR estimates of total rail passenger km per year**



Differences are greater on a per journey basis (Figure 12), but this to be expected because the NTS analysis is based on the main mode used for the entire journey, whereas ORR data is per ticket – and people can buy multiple tickets for one trip (e.g. local London ticket plus long distance rail ticket).

**Figure 12: Comparison of NTS and ORR estimates of total rail journeys per year**

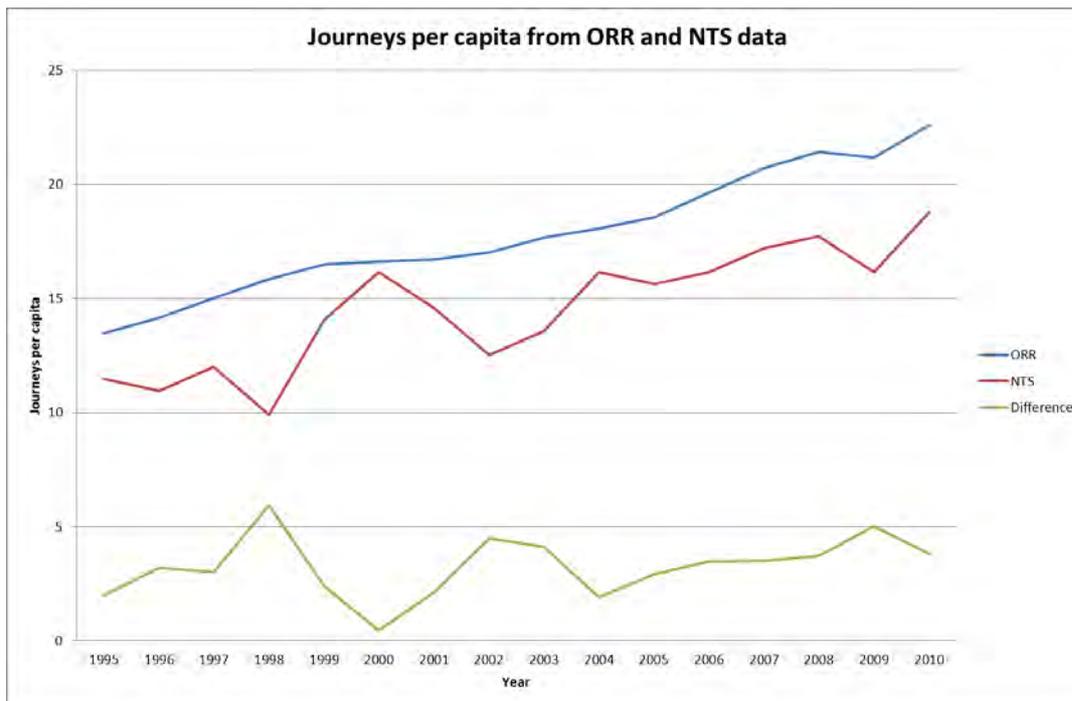


Figure 13 shows the seven-fold growth in road traffic in Great Britain between 1949 and 2011, the vast majority of which has been due to the very large (19 times) rise in car mileage; other motorised traffic only grew four-fold. We can observe a major inflection point around 1989, preceding which there was a five-year surge in growth and at which point car traffic almost levelled off for several years, and then resumed at a rate of growth more in line with historical trends. Car traffic almost levelled off again around 2000 and has declined in absolute terms since the start of the recession in 2007. Historically, cars have accounted for a higher proportion of road traffic, year on year, from a base of 29% in 1949 up to 81.2% in 1993; but since then the share of the total traffic contributed by cars has fallen slightly, to 78.4% in 2011. Over this 52 year period, cycle use declined from 14.7 billion vkm to 3.1 billion vkm; while bus and coach traffic levels have fluctuated but remain broadly the same.

**Figure 13: Growth in road traffic in Great Britain, 1949 to 2011**

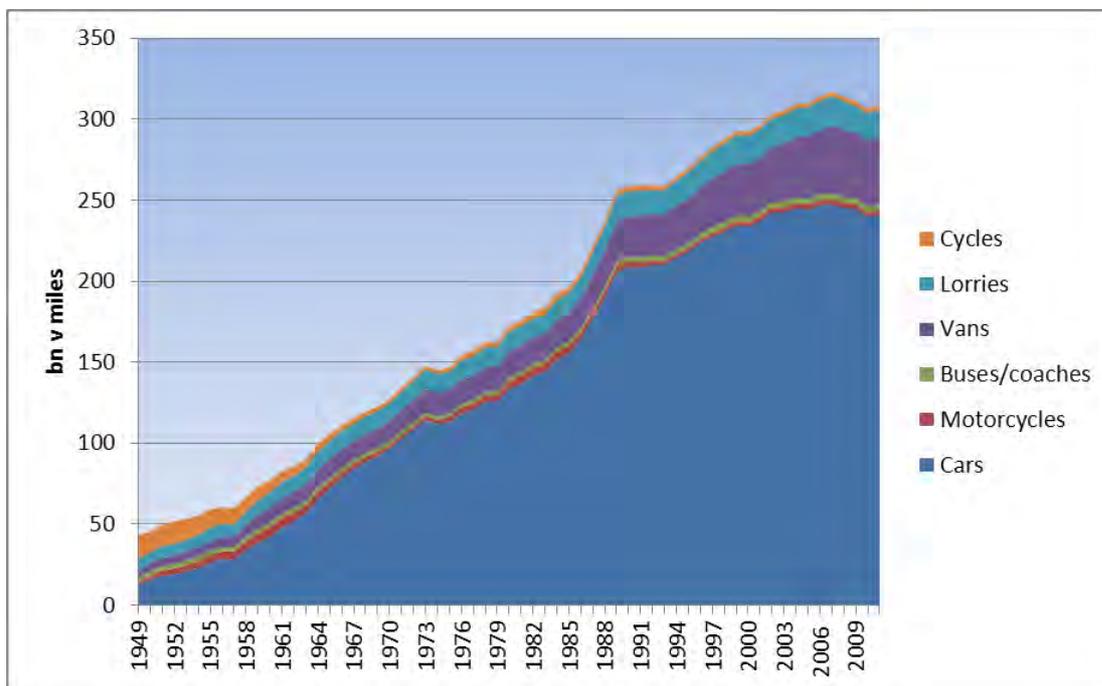
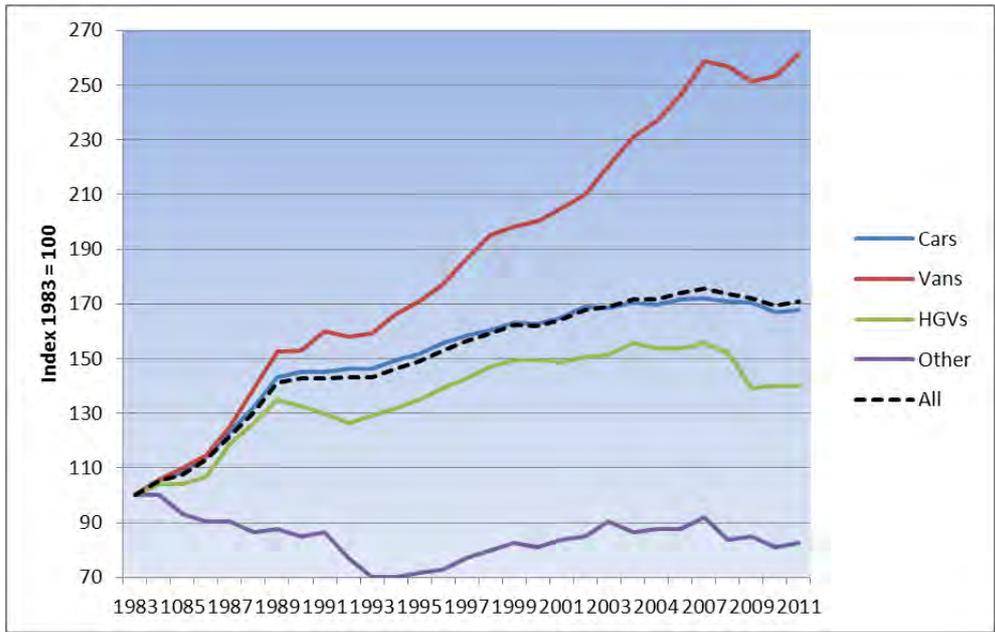


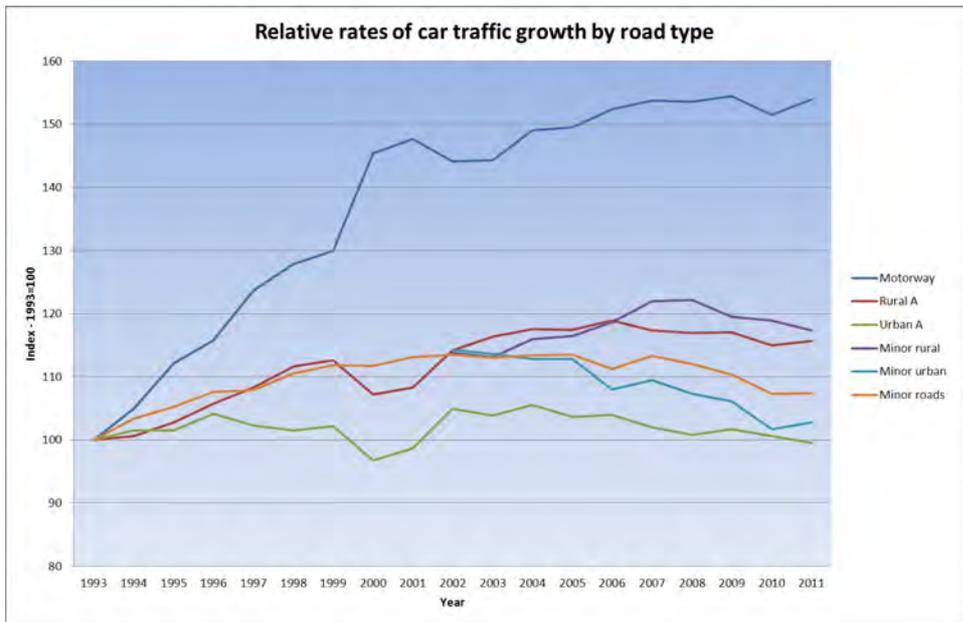
Figure 14 looks in more detail at the rates of relative traffic growth of different vehicle types since 1983. This emphasises the different trajectories of cars and goods traffic since around 1988: HGVs have grown very little, cars only moderate growth (until around 2001), while van traffics has grown very strongly, right up to the start of the recession in 2007. Note that the 'car' figures include taxis, as these cannot be readily distinguished on the street.

**Figure 14: Relative rates of traffic growth, by vehicle type, since 1983**



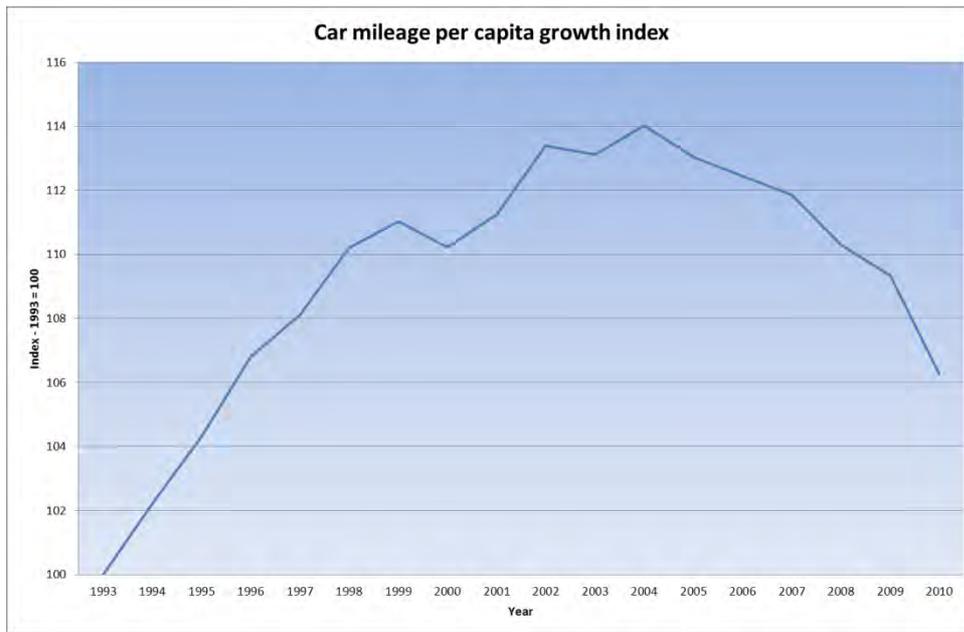
We now focus more specifically on the growth in car traffic nationally. Figure 15 shows that growth rates by road type have varied considerably since 1993. The highest growth rates (around 55%) have been observed on motorways; car traffic on Rural A and Rural minor roads has grown by around 15%-20%, while urban growth rates over this period have been between 0% (Urban A) and 5% (Urban minor); note that it is only possible to separate minor roads into Urban and Rural since 2002.

**Figure 15: Relative rates of car traffic growth, by road type, since 1993**



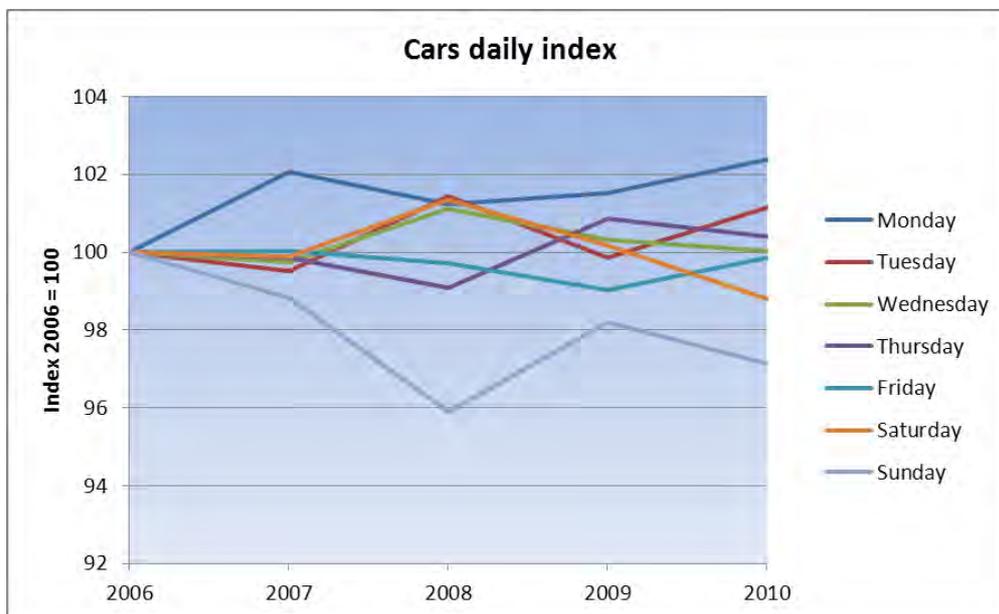
Finally, we look at the growth in annual car traffic on a per person basis (Figure 16), indexed to 1993. Here we see a peak in mileage in 2004, with a sharp inflection and downward trend since then. The rate of decline increases after the start of the recession, in 2007.

**Figure 16: Growth index of car mileage per capita, GB**



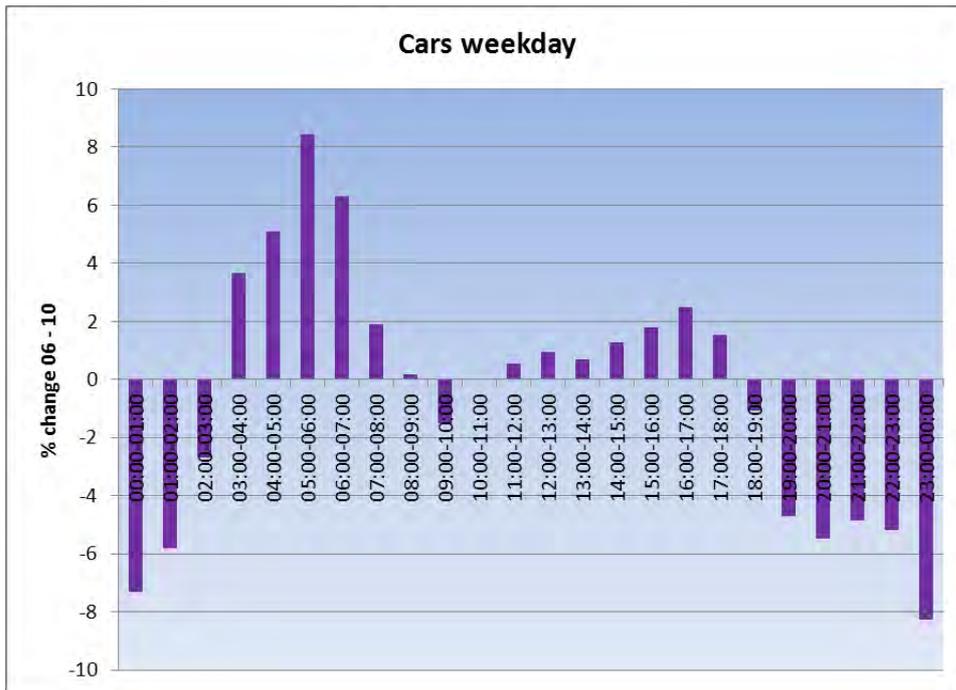
The next three figures look at the effects of the recession on the timing of car travel. Looking at day-of-week changes in car mileage since 2006 (Figure 17) we can see that the greatest drop has been on Sundays, followed by Fridays and Saturdays, while there has been a small continual growth on Mondays.

**Figure 17: Changes in daily car mileage, between 2006 and 2010**

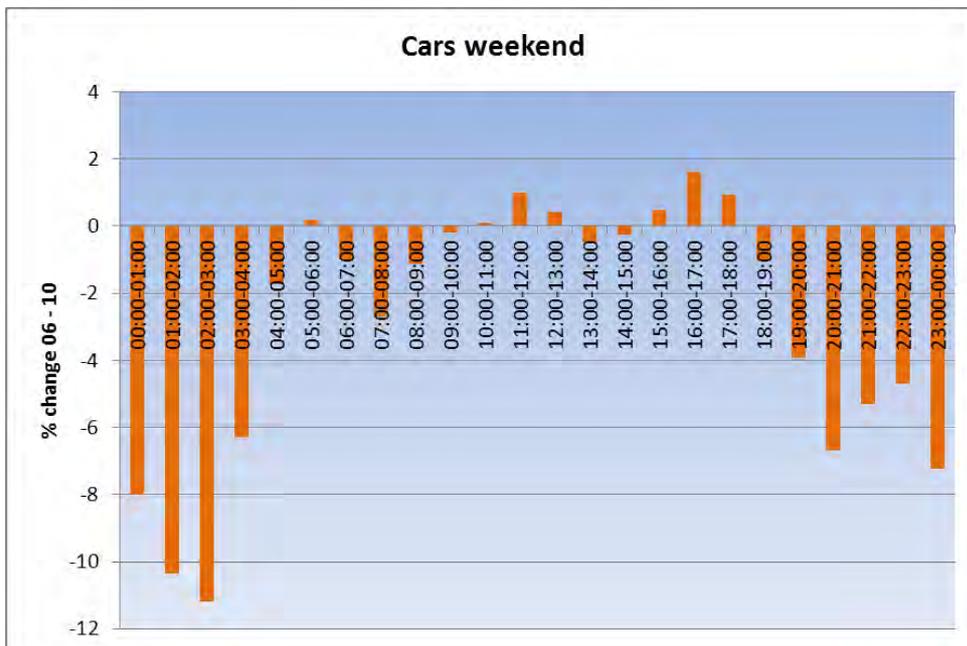


Figures 18 and **Error! Reference source not found.** look at hour-by-hour changes in car traffic volumes between 2006 and 2010, on weekdays and weekends, respectively. Overall, on weekdays car traffic shows substantial increases between 03:00 and 08:00, and smaller ones in the afternoon, offset by reductions between 18:00 and 03:00. On weekends (Figure 19), car traffic is generally down throughout the day, with very small increases around midday and late afternoon.

**Figure 18: Changes in car mileage, hour by hour on weekdays, comparing 2006 and 2010**

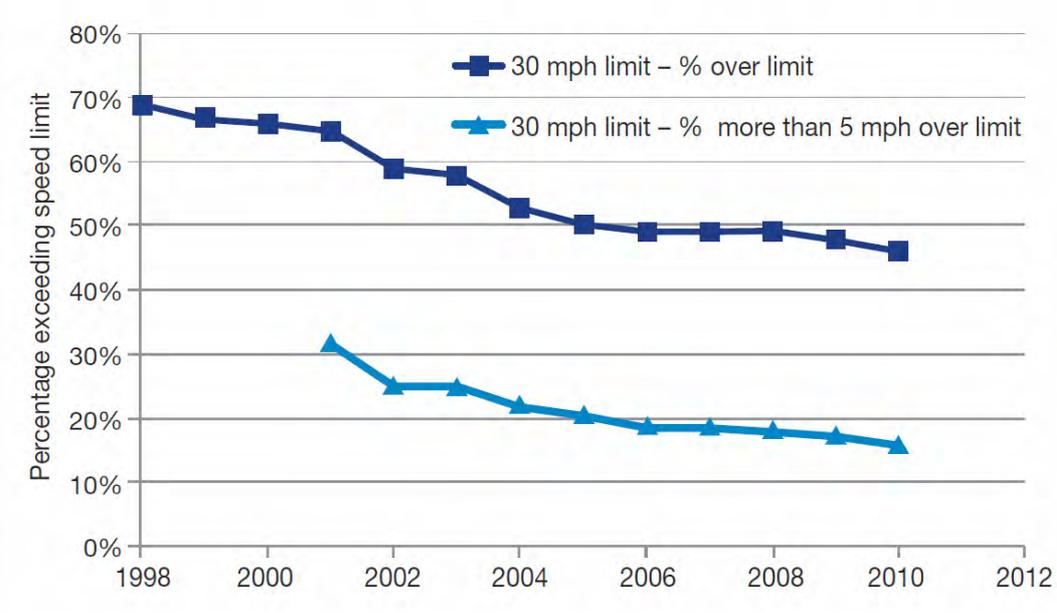


**Figure 19: Changes in car mileage, hour by hour on weekends, comparing 2006 and 2010**

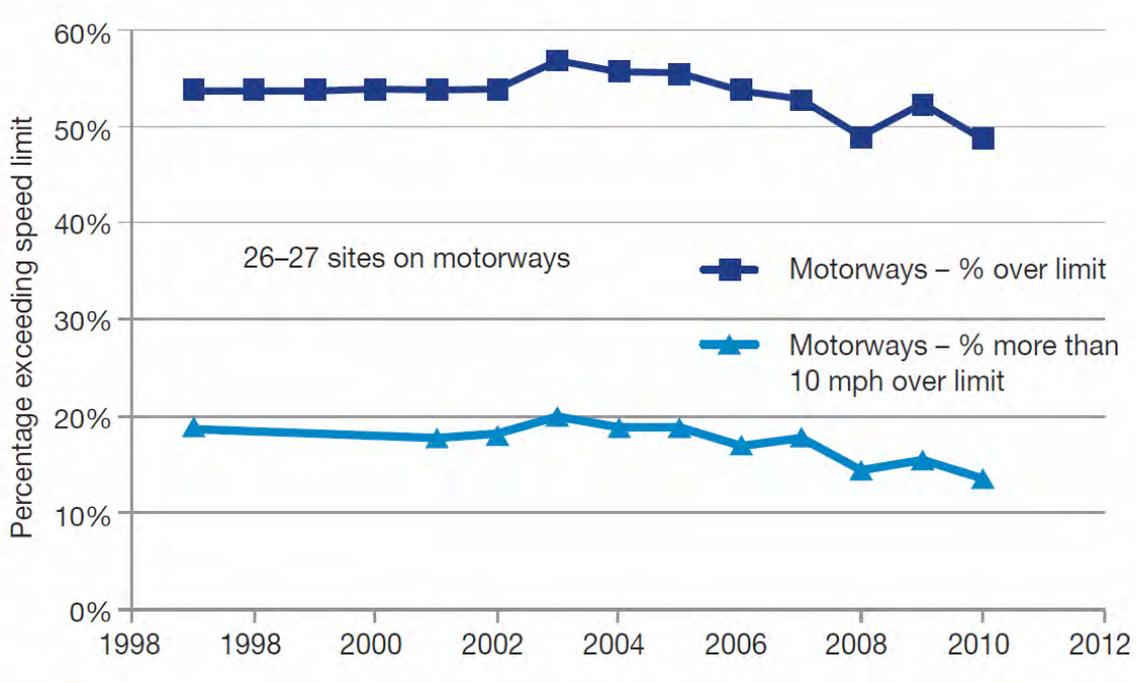


Figures 20 and 21 show evidence of falling rates of non-compliance with speed limits, which could be related to falling car travel speeds noted in the Main Report (Chapter 5).

**Figure 20: Percentage of cars exceeding the 30 mph speed limit and the limit plus 5 mph on built-up roads<sup>1</sup>**



**Figure 21: Percentage of cars exceeding the 70 mph speed limit and the limit plus 10 mph on motorways**



<sup>1</sup> Figure 20 and 21 are reproduced from: Mitchell, K. (2012). *Speed and Safety: Evidence from published data*. RAC Foundation and PACTS. Underlying data source: Free-flow vehicle speeds in Great Britain 2010. Vehicle speed statistics, statistical release June 2011

**Figure 22: Rates of growth in aggregate rail distance in selected OECD countries<sup>2</sup>**

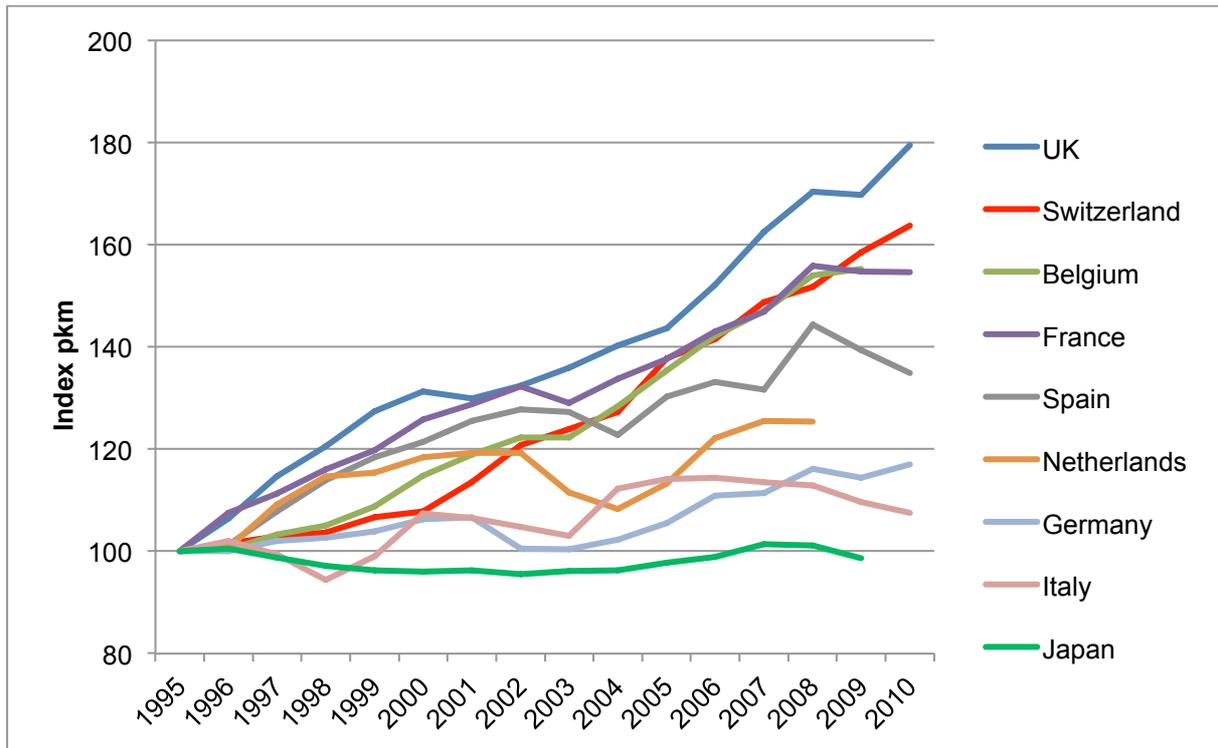


Figure 22 compares trends in rail usage in the UK against a set of OECD countries. What it shows is that rail travel has grown most rapidly in the UK and Switzerland – and in both cases has continued during the current recession. In other countries growth has stopped (e.g. France and Germany), or has gone into decline (e.g. Spain).

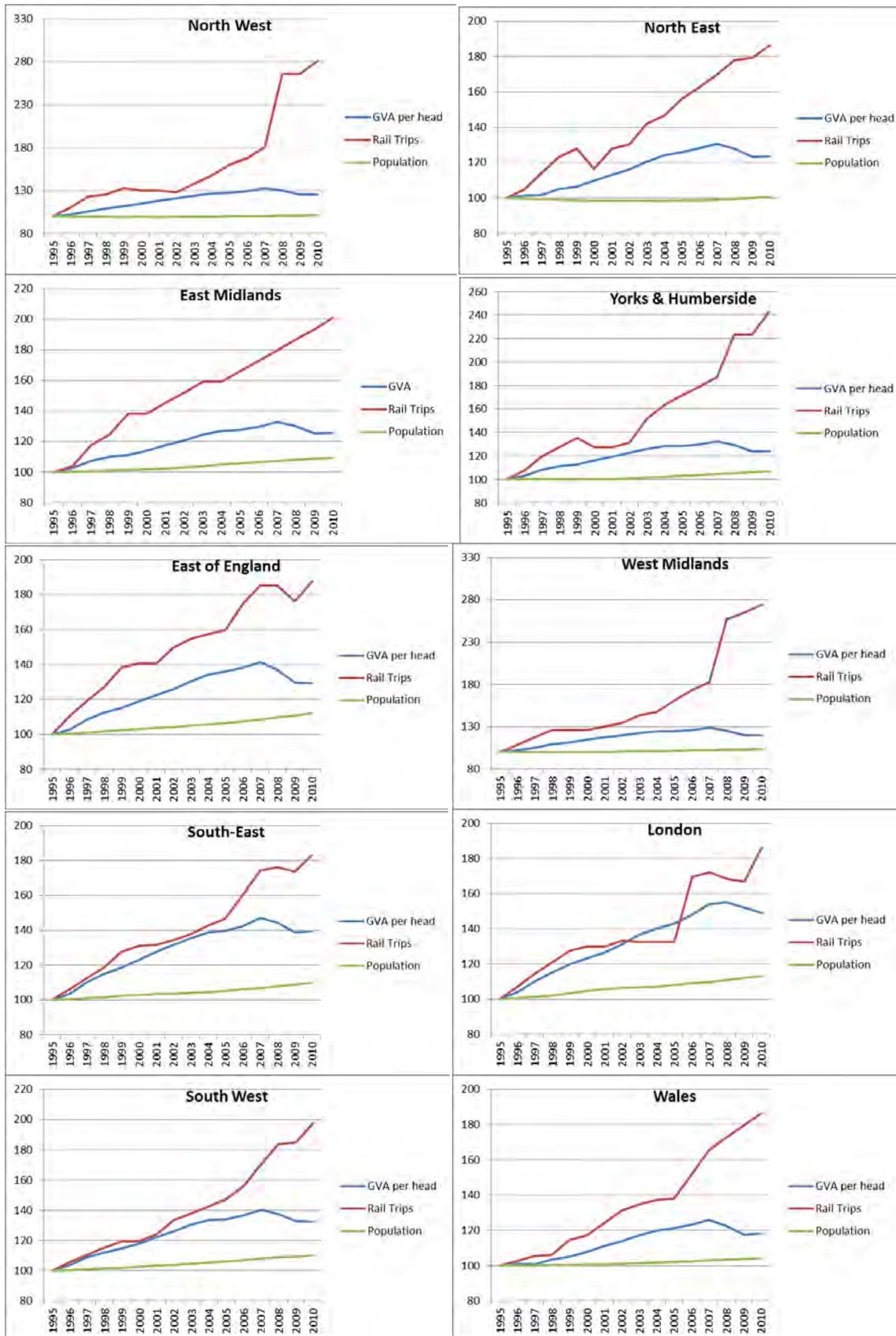
The remaining eleven sub-figures<sup>3</sup> of Figure 23 in this section are not individually numbered; they show trends in gross value added, population, and rail journeys for each of the eleven government office regions of GB. What they show is that rapid growth in across the country, generally at a much faster rate than growth in population or economic activity.

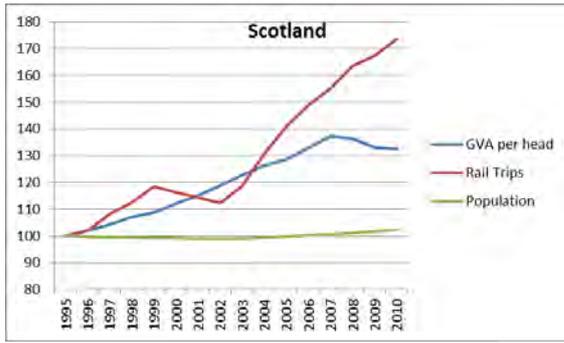
<sup>2</sup> Source:

[http://stats.oecd.org/ViewHTML.aspx?Theme=INLAND\\_PASSENGER\\_TRANSPORT&DatasetCode=INLAND\\_PASSENGER\\_TRANSPORT](http://stats.oecd.org/ViewHTML.aspx?Theme=INLAND_PASSENGER_TRANSPORT&DatasetCode=INLAND_PASSENGER_TRANSPORT)

<sup>3</sup> Figures 22 and 23 were prepared by Tom Worsley.

**Figure 23: Trends in Gross Value Added, Population, and Rail Trips by government office regions of GB**





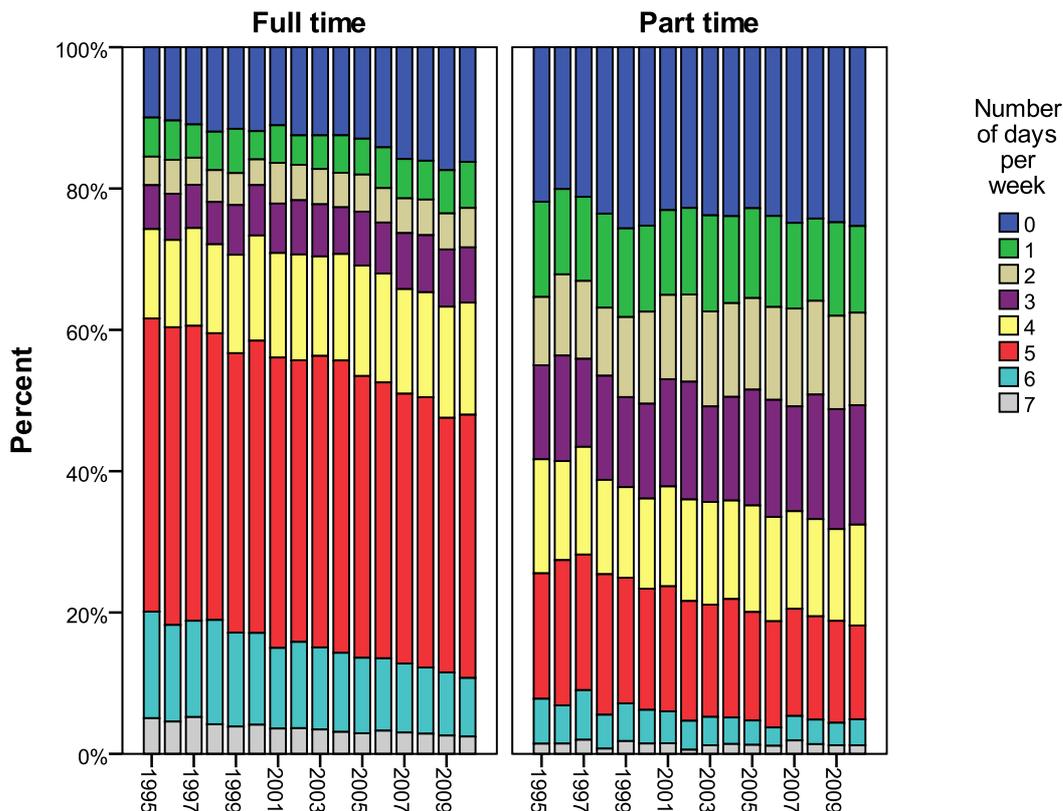
## 4. Working Practices

It has been observed that the number of commuting journeys and commuting mileage per capita have been trending downwards in recent years, whilst average commute lengths have not fallen. This section describes a set of analyses designed to yield insights into these changes in patterns of work travel.

As the NTS data contains a fairly complete record of journeys undertaken for work purposes by each NTS respondent during their diary week, it was processed to yield for each respondent the number of days on which they reported making at least one work-related journey.<sup>4</sup> This was assessed together with the NTS respondents' self-reports of whether they work full time, part time, or not at all.

When this was analysed, it was found that – mainly for full-time workers – the number of working days per week seems to have fallen over time, as can be seen in Figure 24. Somewhat surprisingly, it was found that the largest decreases were in the categories of full-time workers working six or seven days a week. For full-time workers, the prevalence of five-day working weeks fell as well, but to a much smaller degree, and only in the period from 2004 onwards.

**Figure 24: Percentage of full-time and part-time workers, by number of working days per week**

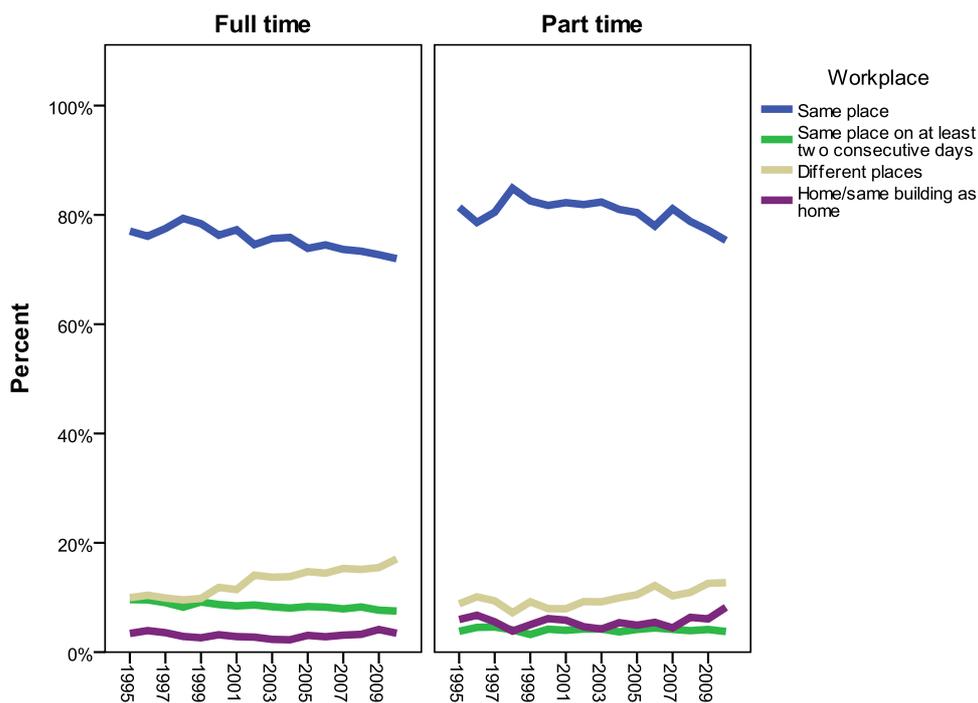


<sup>4</sup> Any work-related journeys made on foot for less than ¼ mile are not recorded on days one to six of the NTS diary week. Certain types of work-related travel are also excluded from the NTS, as are all journeys partly or entirely outside of GB. For this analysis, work-related journeys include both commuting journeys (journeys made to/from a worker's usual place of work) and business journeys (made in the course of work).

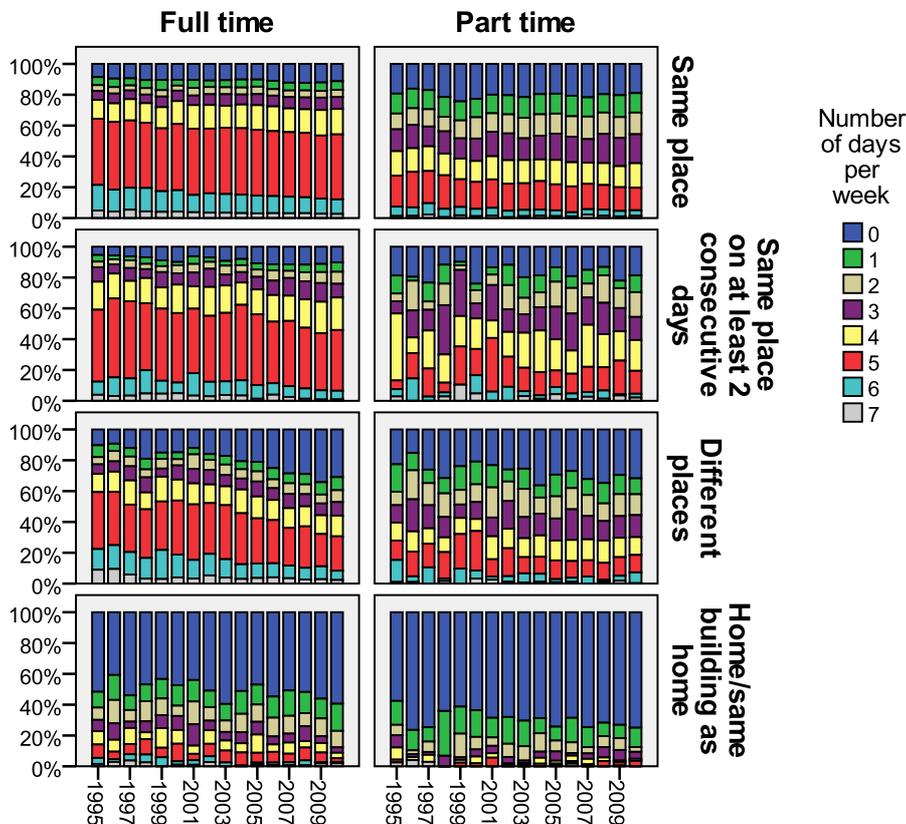
One plausible explanation for this result is the growing prevalence of working at home: in 2002 8% of workers reported working at home either exclusively or more than once per week; this had risen to 11% by 2010 (see Figure 25).

Figure 26 shows that when this analysis was rerun to account separately for people who work at home, however, the time trend towards fewer days working out-of-home per week remained amongst people who do not work at home, and was strongest amongst people who report that they work at different places on different days.

**Figure 25: Type of work location, for full-time and part-time workers**



**Figure 26: Percentage of full-time and part-time workers by place of work, by number of working days per week**



Note: All workers who do not go to the same workplace on at least 'two days running each week' are classified as working at 'different places'

Table 1 contains the results of two multivariate regression analyses: one where the number of days that each worker was seen to perform a work-related journey is the dependent variable, and a second where the dependent variable is the number of days per week that NTS respondents estimate that they typically work at home. The analysis includes only workers; non-workers are excluded. Only respondents to the NTS in years 2002, 2003, 2004 and 2008 are included. These are the only years that questions were asked in the NTS about the type of items that NTS respondents purchase online, via telephone or by post. What was collected are yes/no indicators of whether anyone in the responding household purchases each of the following items:

- Food and drink
- Clothes
- Books
- Furniture
- Travel
- Tickets (non-travel)

The regression made use of this variable as well as the others shown in Table 1.

**Table 1: Results from linear regression analyses of number of days per week working out-of-home (centre column) and number of days working at home (right column), p-values in brackets**

|   | n=39,555<br>r <sup>2</sup> =0.08  | n=39,555<br>r <sup>2</sup> =0.04  |
|---|---|---|
|   | Dependent variable  |   |
|   | # of days observed to undertake at least one work-related journey during NTS diary week | # of days in a typical week that respondent reports working at home, during NTS interview |
| Constant  | 2.94 (<0.01)  | -0.193 (<0.01)  |
| Year 2002   | --  | --  |
| Year 2003   | -0.0326 (0.28)  | -0.0121 (0.41)  |
| Year 2004   | -0.0362 (0.23)  | -0.0123 (0.40)  |
| Year 2008   | -0.217 (<0.01)  | 0.0300 (0.04)   |
| Female  | -0.217 (<0.01)  | -0.00572 (0.61)   |
| Age in years  | -0.00296 (<0.01)  | 0.00952 (<0.01)   |
| Personal income (£/year, 2010 prices)   | 2.46E-7 (0.71)  | 3.42E-6 (<0.01)   |
| FT worker   | 1.21 (<0.01)  | -0.145 (<0.01)  |
| Socioeconomic group: Employer/manager   | -0.236 (0.42)   | 0.591 (<0.01)   |
| SEG: Professional   | 0.228 (<0.01)   | -0.086 (<0.01)  |
| SEG: Non-manual   | -0.0444 (0.59)  | 0.491 (<0.01)   |
| SEG: Personal service   | 0.266 (<0.01)   | 0.120 (<0.01)   |
| SEG: Non-professional self-employed   | 0.035 (0.49)  | 0.0140 (0.57)   |
| SEG: Manual   | --  | --  |
| # of distinct items ordered for delivery by phone, internet or post by members of household | -0.0110 (0.11)  | 0.0280 (<0.01)  |
| Frequency of deliveries per week for items ordered for delivery (all items combined)        | -0.00202 (<0.01)  | 0.00274 (<0.01)   |

A number of the results from these regressions are of note, the first being that the goodness-of-fit for both models are small, which indicates that most of the variation in the number of working days is not being captured by these models. Also, as the dependent variables are in count form (0, 1, 2...7), the distributional assumptions for linear regression are not met and the results should be treated with some caution; an analysis using different distributional assumptions that are suitable for count data is needed in future.

In the 'NTS diary' analysis (of out-of-home working days) there is a *ceteris paribus* gender gap which implies that a woman is likely to travel to work roughly one fifth of a day per week less than an otherwise identical man. In the 'NTS interview' analysis (of days working at home) no statistically significant effect due solely to gender is found.

In both analyses being an older worker is associated with a lower tendency to travel to work.

Higher personal income is positively associated with working at home in the 'NTS interview' analysis, but no significant effect due to income is found in the 'NTS diary'

analysis. We may speculate that this is associated with greater flexibility as people advance in their career, though we can only suggest such a mechanism for this observed statistical association on the basis of this analysis, and in any case the effect suggesting this relationship is only significant in one of the two models.

Self-reporting as a full-time worker (as opposed to a part-time worker) is, not surprisingly, associated with travelling to out-of-home work-related activities for about 1.2 additional days per week in the 'NTS diary' analysis. It is also associated with working at home fewer days per week in the 'NTS interview' analysis.

An interesting result amongst the effects due to the type of work that one does is the effect due to being a professional worker (as opposed to the baseline of being a manual worker). The finding is that after accounting for income and the other effects in the analysis, the *ceteris paribus* effect of being a professional worker is that one is likely to travel to out-of-home work-related activities on more days per week (and likely to work at home on fewer days per week).

The final two results are particularly interesting – both of the indices for home delivery of goods (the breadth of items ordered as well as the frequency in which they are delivered) are negatively linked with the number of days working out-of-home (the 'breadth' variable at a  $p=0.11$  significance level, however) and both at positively linked with the number of days that NTS respondents self-report that they work at home. (The effect of the 'breadth' variable is only significant at the  $p=0.11$  level; all three other effects are highly significant.) These variables are two of very few indicators of the use of remote communications technologies that the NTS gathers, and the effects suggest that for otherwise identical workers, the one living in a household that orders all six types of enquired-about goods remotely and received deliveries at least three times per week (i.e. the highest possible score on this rough index of telecommunications usage) would work approximately 0.07 fewer days per week – which works out to a modest 1.5% drop in work-related journeys for a typical five-days-per-week worker. The analysis of number of days working at home implies an increase of 3.6% in the number of days working at home due to the highest possible score on the telecommunications usage index.

It should be noted that, though these findings of apparent linkages between telecommunications usage and work-related travel are robust after accounting for other effects, they should be viewed as suggestive-only pending more in-depth research. This would include both the use of more sophisticated statistical methods and drawing in additional types of data into the analysis.

## 5. Day-of-Week

Figures 27 and 28 show the percentage of car driving journeys and mileage, respectively that is performed on each day of the week.

It can be seen that the number of car driving journeys made on Saturdays has trended down modestly over time, but that this is not the case for car driving mileage – meaning that average car driving journey length on Saturdays has been growing.

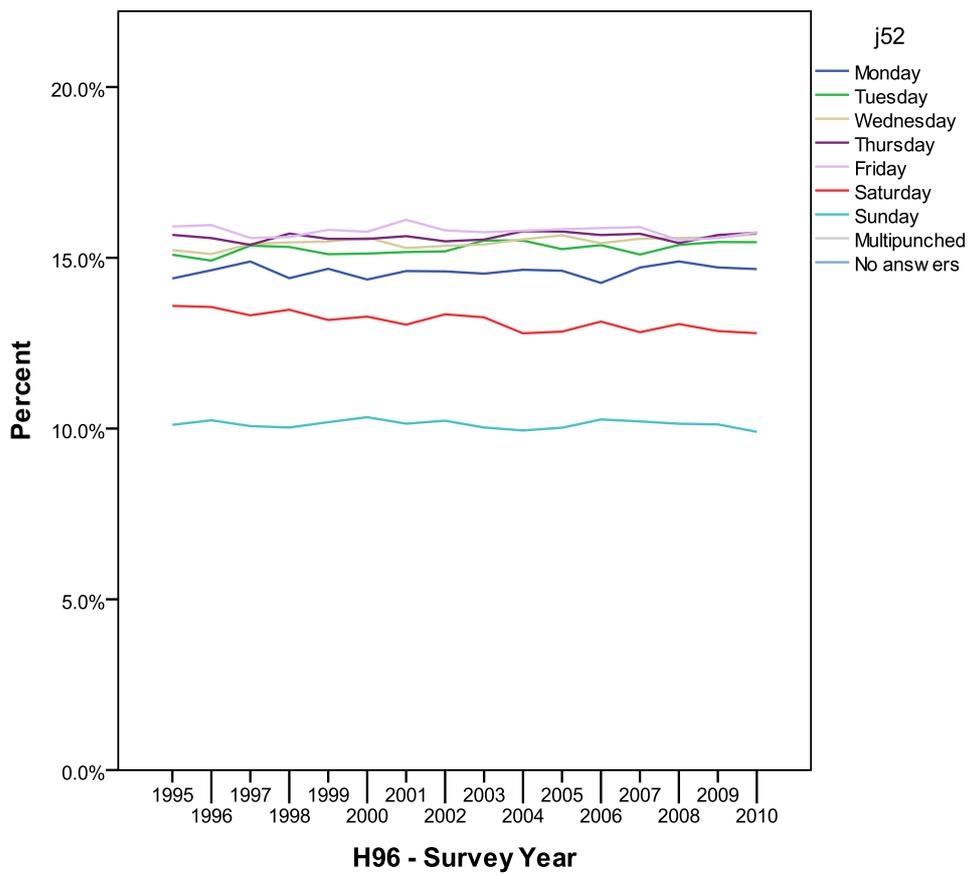
There is also a tendency for more car driving journeys and mileage to be made as the working week progresses from Monday to Friday, an effect which is more pronounced when the metric is mileage than when it is number of journeys.

Figures 29 and 30 show the same information (number of journeys and mileage, respectively, by day of the week) for National Rail. As is the case generally with the rail usage observed in the NTS, the data is noisier than it is for car use.

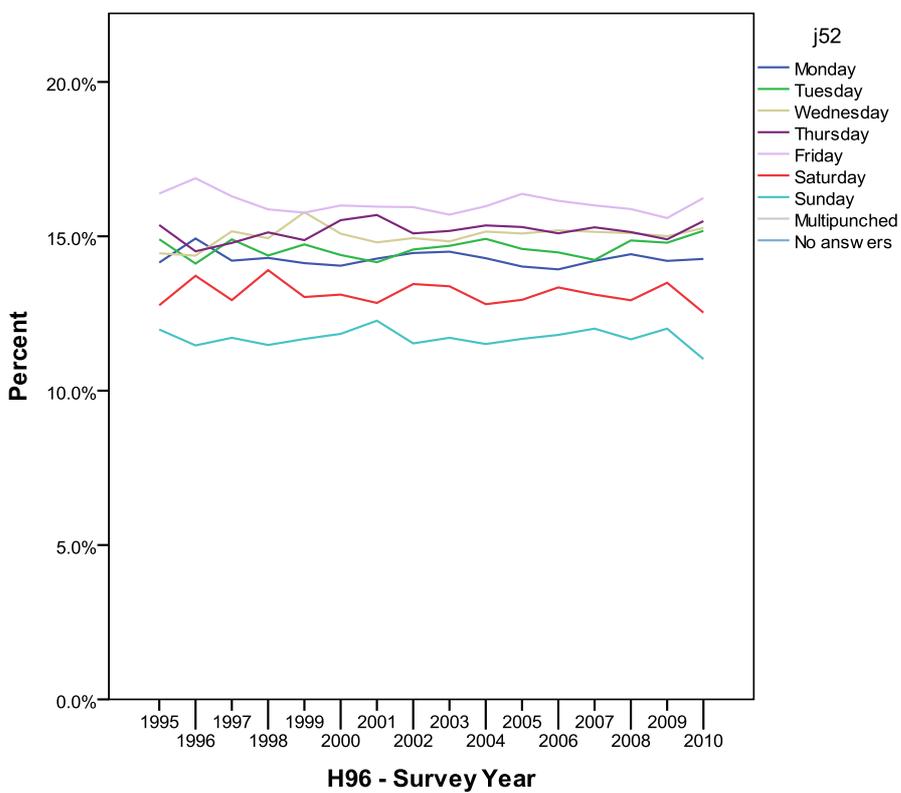
Here we see much greater differentiation between weekday and weekend day than for car driving. Friday is not the weekday that sees the highest use as with car driving; rather it appears that Thursday is, with Monday being the lowest, both in terms of number of journeys and mileage.

There appears to have been an increase in the percentage of rail use that takes place on weekend days; this seems to be the case for journeys on Sundays, and for mileage (and less so, if at all, for journeys) on Saturdays.

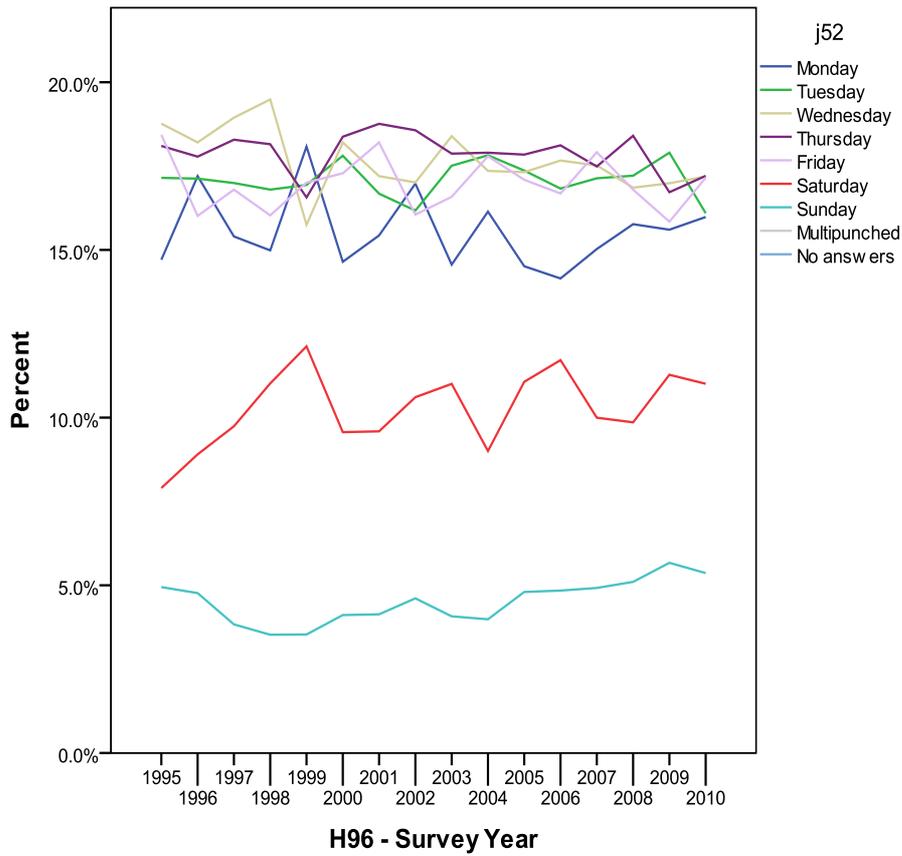
**Figure 27: Percentage of car driving journeys by day-of-week**



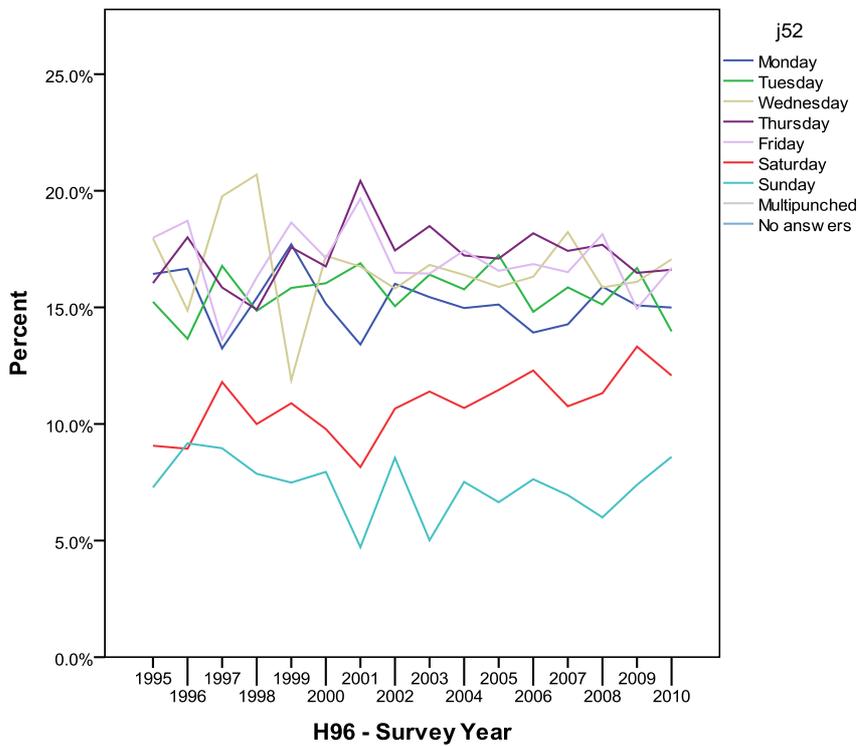
**Figure 28: Percentage of car driving mileage by day-of-week**



**Figure 29: Percentage of National Rail journeys by day-of-week**



**Figure 30: Percentage of National Rail mileage by day-of-week**



## 6. Young People and Licences

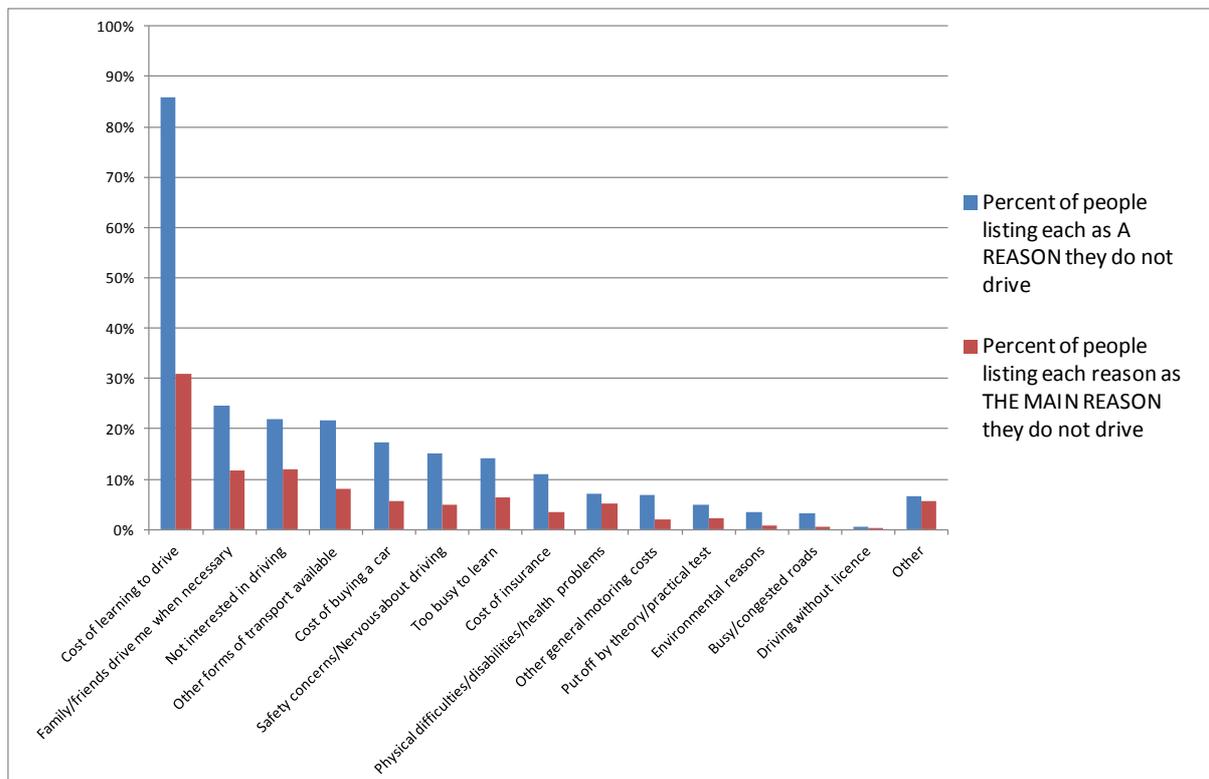
This section looks at the falling level of driving-licence-holding by young people aged 17–29.

In recent years the NTS has been asking adults that do not have a full or provisional driving licence or are not learning to drive the reason(s) why they do not drive.

Figure 31 shows the different classes of reasons. The most frequently cited reason is the cost of learning to drive, which is cited by over 80%. The next three reasons, all of which were cited by over 20% of people, relate to not needing to drive, a lack of interest in driving, and the availability of other forms of transport. All other reasons were cited by less than 20% of people, with the smallest proportions saying that environmental reasons or congested roads kept them from having a driving licence, or admitting that they drive without a licence.

Figure 32 shows the percentage of the time that each reason is cited, as a proportion of the times it is cited as either the main or a secondary reason. The two reasons cited as the main reason more than half of the time that they were cited were: 'Physical/health difficulties' (89%) and any reason other than the classes in the listing (85%). At the other end of the scale, interestingly, were three of the reasons relating to the costs of driving: the cost of buying a car (cited as the main reason 17% of the time it was listed), unspecified 'other' motoring costs (14%), and the cost of insurance (11%). This is in sharp contrast to the costs of learning to drive: 62% of those people listing it cited it as the main reason they do not drive.

**Figure 31: Reasons given by people aged 17–29 for not having a driving licence, 2009/10**



**Figure 32: Of reasons given by people aged 17–29 for not having a driving licence, percentage saying that each reason is the main reason, 2009/10**

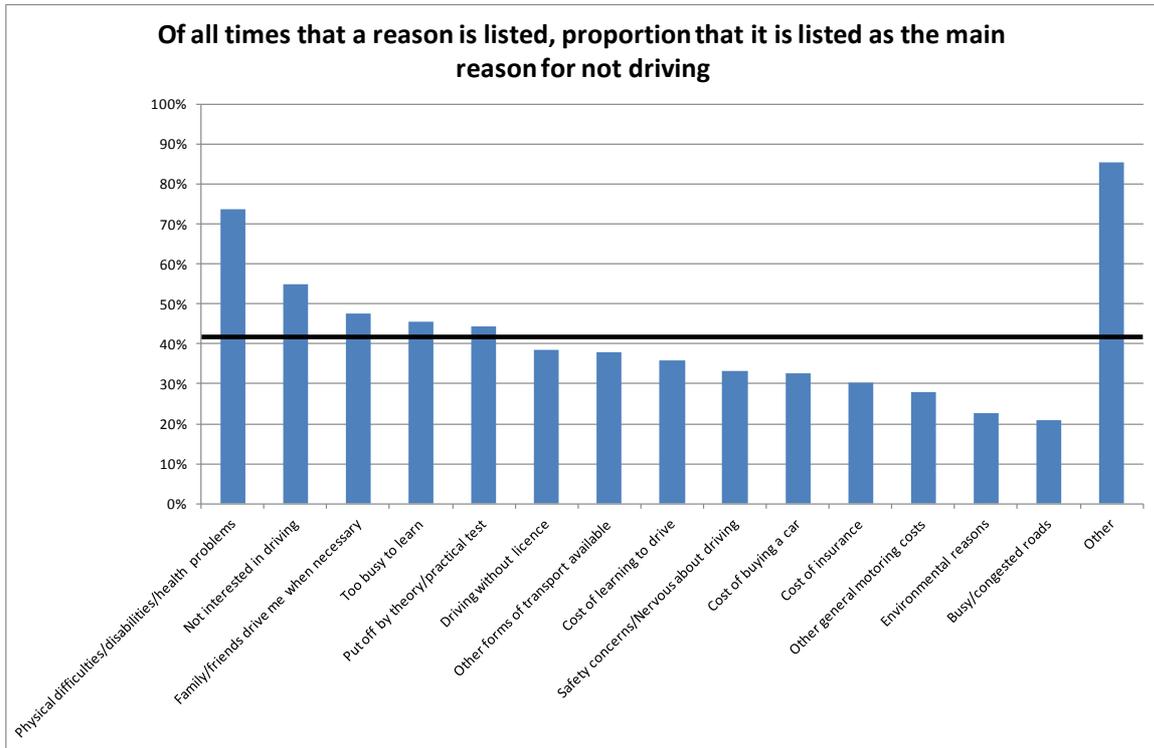


Figure 33 shows that nearly 50% (48%) of people listed only a single reason for not driving, and roughly three quarters (74%) cited three or fewer reasons.

**Figure 33: Frequency plot of number of reasons listed for not driving, people aged 17–29, 2009/10**

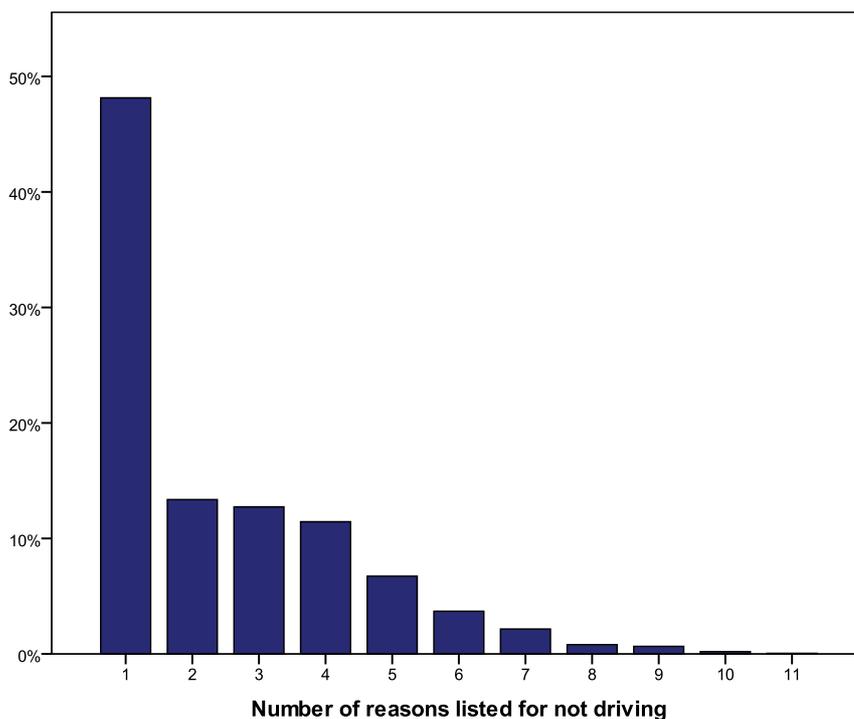


Table 2 compares the relative priority people placed on the various classes of reasons for not driving. The value in each cell is the proportion of time that the reason on the row is cited as the 'main reason', out of the total number of times that the reasons on both the row and column of the cell are cited *and* one of them is cited as the main reason. For example, when 'family/friends drive me' and 'other forms of transport are available' are both cited as reasons and one of them is cited as the main reason, 'family/friends drive me' is prioritised – cited as the main reason – 58% of the time and 'other forms of transport are available' is prioritised the other 42% of the time.

Amongst people citing 'safety concerns/nervousness about driving', this tended to be cited as the main reason (rather than merely a contributory reason) more than half of the time when compared against all other reasons with a sample of more than 25 people. This was also the case for people saying they were 'not interested in driving': this reason tended to be prioritised as the main reason listed.

When 'cost of learning to drive' was cited as a reason, it tended to be prioritised ahead of 9 of 11 other reasons. But interestingly, when the 'cost of insurance' was cited it tended to be listed as a contributory reason; this was the case when compared against all other reasons with a sample of more than 25 people.

**Table 2: Matrix of prioritisation of reasons for not driving cited by people aged 17–29, 2009/10**

| When row & column reasons are both listed by a respondent, proportion where reason on row is prioritized over reason on column |  |                                    |                                    |                           |                   |                      |                              |                       |                                       |  |                   |                                  |                           |                      |                         |       |
|--|--|------------------------------------|------------------------------------|---------------------------|-------------------|----------------------|------------------------------|-----------------------|---------------------------------------|--|-------------------|----------------------------------|---------------------------|----------------------|-------------------------|-------|
|  | Family/friends drive me when necessary | Other forms of transport available | Other forms of transport available | Cost of learning to drive | Cost of insurance | Cost of buying a car | Other general motoring costs | Environmental reasons | Safety concerns/Nervous about driving | Physical difficulties/disabilities/health problems | Too busy to learn | Put off by theory/practical test | Not interested in driving | Busy/congested roads | Driving without licence | Other |
| Family/friends drive me when necessary   | 58%                                    | 36%                                | 74%                                | 61%                       | 66%               | 21%                  | 31%                          | 39%                   | 28%                                   | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Other forms of transport available   | 42%                                    | 36%                                | 78%                                | 68%                       | 77%               | 26%                  | 56%                          | 36%                   | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Cost of learning to drive  | 64%                                    | 64%                                | 86%                                | 83%                       | 84%               | 41%                  | 61%                          | 75%                   | 44%                                   | 70%  | 61%               | 75%                              | 44%                       | 70%                  | 70%                     | 70%   |
| Cost of insurance  | 26%                                    | 14%                                | 59%                                | 41%                       | 36%               | 13%                  | 24%                          | *                     | 14%                                   | *  | 24%               | *                                | 14%                       | *                    | *                       | *     |
| Cost of buying a car   | 39%                                    | 17%                                | 64%                                | 45%                       | 55%               | 24%                  | 31%                          | *                     | 13%                                   | *  | *                 | *                                | 13%                       | *                    | *                       | *     |
| Other general motoring costs   | 34%                                    | 16%                                | 64%                                | 45%                       | 55%               | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Environmental reasons  | *                                      | 30%                                | *                                  | *                         | *                 | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Safety concerns/Nervous about driving  | 79%                                    | 59%                                | 88%                                | 76%                       | *                 | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Physical difficulties/disabilities/health problem  | *                                      | 74%                                | 88%                                | 76%                       | *                 | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Too busy to learn  | 69%                                    | 39%                                | 76%                                | 69%                       | *                 | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Put off by theory/practical test   | 61%                                    | 25%                                | *                                  | *                         | *                 | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Not interested in driving  | 72%                                    | 56%                                | 86%                                | 87%                       | *                 | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Busy/congested roads   | *                                      | 30%                                | *                                  | *                         | *                 | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Driving without licence  | *                                      | *                                  | *                                  | *                         | *                 | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |
| Other  | *                                      | *                                  | *                                  | *                         | *                 | *                    | *                            | *                     | *                                     | *  | *                 | *                                | *                         | *                    | *                       | *     |

\* = fewer than 25 responses

Table 3 contains the correlation matrix of the reasons cited for not driving. The matrix is colour-coded to highlight patterns: the colour ramp runs from green through yellow to red for large positive correlations through to large negative correlations.

It can be seen that people citing any one of the costs of driving also tended to cite the other three classes of driving costs. By contrast, people citing health problems, being disinterested in driving, or 'other' tended to choose almost all other reasons relatively infrequently, particularly the cost of learning to drive. Interestingly, there were small positive correlations between citing environmental reasons and the costs of driving as the reasons that one is put off driving.

**Table 3: Correlation matrix of reasons cited by people aged 17–29, 2009/10**

|  | Correlations |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|--|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|  | A            | B     | C     | D     | E     | F     | G     | H     | I     | J     | K     | L     | M     | N     | O     |       |
| Family/friends drive me when necessary             | A            | 0.28  | -0.03 | 0.06  | 0.05  | 0.08  | 0.09  | 0.05  | -0.08 | 0.08  | 0.07  | -0.01 | 0.09  | 0.01  | -0.11 |       |
| Other forms of transport available                 | B            | 0.28  |       | 0.03  | 0.14  | 0.14  | 0.09  | 0.24  | 0.07  | -0.08 | 0.14  | 0.09  | 0.06  | 0.16  | 0.00  | -0.10 |
| Cost of learning to drive                          | C            | -0.03 | 0.03  |       | 0.55  | 0.52  | 0.32  | 0.08  | 0.04  | -0.20 | 0.03  | 0.04  | -0.23 | 0.08  | -0.02 | -0.21 |
| Cost of insurance                                  | D            | 0.06  | 0.14  | 0.55  |       | 0.76  | 0.49  | 0.16  | 0.07  | -0.13 | 0.03  | 0.09  | -0.09 | 0.14  | -0.01 | -0.13 |
| Cost of buying a car                               | E            | 0.05  | 0.14  | 0.52  | 0.76  |       | 0.45  | 0.17  | 0.08  | -0.14 | 0.03  | 0.06  | -0.10 | 0.12  | -0.02 | -0.15 |
| Other general motoring costs                       | F            | 0.08  | 0.09  | 0.32  | 0.49  | 0.45  |       | 0.12  | 0.03  | -0.08 | -0.01 | 0.07  | -0.06 | 0.04  | -0.02 | -0.09 |
| Environmental reasons                              | G            | 0.09  | 0.24  | 0.08  | 0.16  | 0.17  | 0.12  |       | 0.08  | -0.03 | 0.12  | 0.03  | 0.10  | 0.22  | -0.01 | -0.02 |
| Safety concerns/Nervous about driving              | H            | 0.05  | 0.07  | 0.04  | 0.07  | 0.08  | 0.03  | 0.08  |       | -0.01 | 0.00  | 0.09  | 0.01  | 0.26  | -0.02 | -0.07 |
| Physical difficulties/disabilities/health problems | I            | -0.08 | -0.08 | -0.20 | -0.13 | -0.14 | -0.08 | -0.03 | -0.01 |       | -0.09 | 0.00  | -0.07 | -0.03 | -0.01 | -0.07 |
| Too busy to learn                                  | J            | 0.08  | 0.14  | 0.03  | 0.03  | 0.03  | -0.01 | 0.12  | 0.00  | -0.09 |       | 0.03  | -0.01 | 0.11  | -0.02 | -0.08 |
| Put off by theory/practical test                   | K            | 0.07  | 0.09  | 0.04  | 0.09  | 0.06  | 0.07  | 0.03  | 0.09  | 0.00  | 0.03  |       | -0.03 | 0.11  | -0.01 | -0.04 |
| Not interested in driving                          | L            | -0.01 | 0.06  | -0.23 | -0.09 | -0.10 | -0.06 | 0.10  | 0.01  | -0.07 | -0.01 | -0.03 |       | 0.05  | -0.03 | -0.10 |
| Busy/congested roads                               | M            | 0.09  | 0.16  | 0.08  | 0.14  | 0.12  | 0.04  | 0.22  | 0.26  | -0.03 | 0.11  | 0.11  | 0.05  |       | -0.01 | -0.04 |
| Driving without licence                            | N            | 0.01  | 0.00  | -0.02 | -0.01 | -0.02 | -0.02 | -0.01 | -0.02 | -0.01 | -0.02 | -0.01 | -0.03 | -0.01 |       | -0.01 |
| Other  | O            | -0.11 | -0.10 | -0.21 | -0.13 | -0.15 | -0.09 | -0.02 | -0.07 | -0.07 | -0.08 | -0.04 | -0.10 | -0.04 | -0.01 |       |

A 'k-means' cluster analysis was then undertaken to extend the bivariate correlation analysis in Table 3 to simultaneously assess patterns amongst all reasons cited.

A four-cluster solution with intuitive properties was found, as shown in Table 4. The values in each cell are the proportion of people in a given cluster citing each reason as either the main or a contributory reason for why they do not drive. The colour scheme is green to yellow to red corresponding to a large proportion of 'yes's through to a large proportion of 'no's.

A brief qualitative description of the clusters is:

- Cluster 1: '**Convenience**' – predominantly said that driving is unnecessary for them.
- Cluster 2: '**Cost alone**' – predominantly said cost alone is the barrier to licence-holding.
- Cluster 3: '**Cost plus**' – cost frequently cited, as well as driving being unnecessary. A number of other non-cost reasons also cited more frequently than average.
- Cluster 4: '**None of the above**' – no set of reasons is predominant. Cost of learning to drive (without any other costs) chosen most frequently of any reason.

**Table 4: Proportion of cluster members citing each reason (clusters defined by reasons cited for not driving, people aged 20–29, 2009/10)**

|  | Cluster |      |      |      |
|--|---------|------|------|------|
|  | 1       | 2    | 3    | 4    |
| Family/friends drive me when necessary             | 0.76    | 0.00 | 0.82 | 0.00 |
| Other forms of transport available                 | 0.47    | 0.09 | 0.62 | 0.02 |
| Cost of learning to drive                          | 0.14    | 0.95 | 0.92 | 0.34 |
| Cost of insurance                                  | 0.01    | 0.86 | 0.93 | 0.01 |
| Cost of buying a car                               | 0.06    | 0.93 | 0.90 | 0.04 |
| Other general motoring costs                       | 0.02    | 0.33 | 0.45 | 0.02 |
| Environmental reasons                              | 0.03    | 0.02 | 0.18 | 0.01 |
| Safety concerns/Nervous about driving              | 0.06    | 0.10 | 0.19 | 0.08 |
| Physical difficulties/disabilities/health problems | 0.03    | 0.01 | 0.02 | 0.11 |
| Too busy to learn                                  | 0.12    | 0.09 | 0.27 | 0.12 |
| Put off by theory/practical test                   | 0.06    | 0.06 | 0.12 | 0.04 |
| Not interested in driving                          | 0.13    | 0.04 | 0.24 | 0.23 |
| Busy/congested roads                               | 0.02    | 0.03 | 0.13 | 0.02 |
| Driving without licence                            | 0.01    | 0.00 | 0.01 | 0.00 |
| Other  | 0.02    | 0.01 | 0.02 | 0.13 |

Table 5 shows profiles of the four clusters in terms of some basic demographics – it was found, for example, that members of the ‘cost-alone’ cluster has the lowest level of average income, both at the personal and household level. The ‘Convenience’ cluster had the highest proportion of its members living in Greater London, as well as the oldest average age. People in the ‘Cost plus’ cluster had the highest average incomes.

**Table 5: Profile of clusters defined by reasons cited for not driving, people aged 20–29, 2009/10**

|  | Cluster #1: ‘Convenience’ | Cluster #2: ‘Cost alone’ | Cluster #3: ‘Cost plus’ | Cluster #4: ‘None of the above’ | All people in sample |
|--|---------------------------|--------------------------|-------------------------|---------------------------------|----------------------|
| Percentage of sample (sample size in brackets) | 22% (440)                 | 21% (444)                | 13% (260)               | 44% (889)                       | 100% (2,297)         |
| Proportion female                              | 55%                       | 57%                      | 58%                     | 49%                             | 52%                  |
| Average age                                    | 22.8                      | 22.0                     | 22.2                    | 22.1                            | 21.9                 |
| Average personal income (£/year)               | £7,909                    | £5,960                   | £8,046                  | £7,060                          | £7,191               |
| Average household income (£/year)              | £37,567                   | £25,430                  | £38,625                 | £32,863                         | £35,556              |
| Percentage living in London                    | 29%                       | 12%                      | 15%                     | 23%                             | 21%                  |
| Percentage working full-time                   | 32%                       | 51%                      | 67%                     | 26%                             | 29%                  |

Respondents to the NTS are asked if they plan to learn to drive within the next year, the next year, the next five years, and so on. Using the responses of people saying that they expect to have a licence within the next year, a simple cohort analysis was performed to investigate whether there is a relationship between age and the actual rate at which people expecting to acquire a driving licence actually do so.

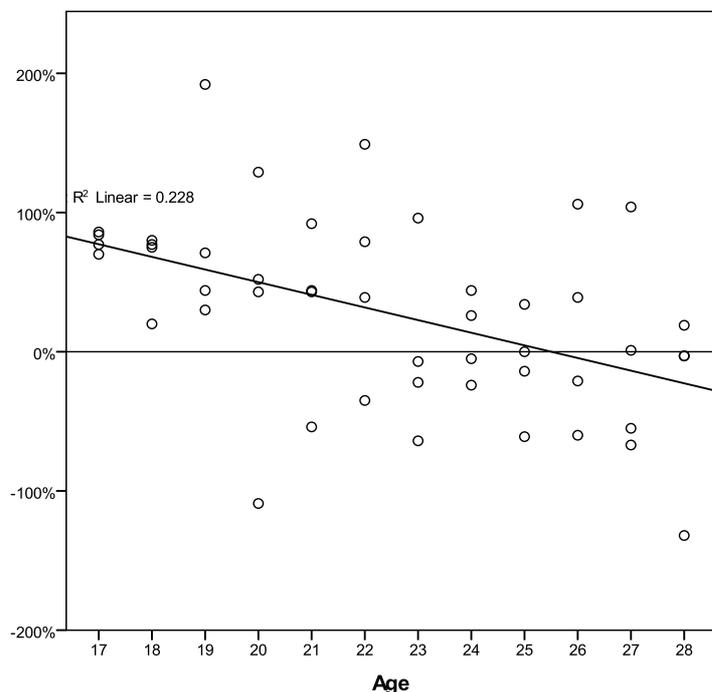
This analysis used data from 2006 to 2010. We observed, for example, the proportion of 17-year-olds in 2006 who do not have a licence but said they planned to acquire one in the next year. The actual percentage of 17-year-olds with a licence in 2006 was subtracted from the actual percentage of 18-year-olds in 2007, and this was then compared with the proportion of 17-year-olds in 2006 saying they planned to acquire a licence over the next year. This was done for ages 17 to 28 separately for each of the years 2006 to 2010.

Figure 34 shows the results of this analysis; each point in this plot represents the group of people of a single year of age over a single calendar year. For each year of age there are four points: one for the year of age in 2006 and a year older in 2007, one for that year of age in 2007 and a year older in 2008, and so on.

The main result from this analysis is that there seems to be a negative relationship between age and the actual rate of licence acquisition of people who had expected to have a licence within a year's time. This implies that older people in this sample who said they expected to have a licence within a year seemed to be somewhat less likely to actually do so.

This analysis is based on a very simple specification – the application of more advanced time-series econometric techniques would be expected to (in all likelihood) confirm this finding and to yield additional insights into the dynamics of licence acquisition as young people age from their teens towards middle age.

**Figure 34: Estimated actual licence acquisition rate of people aged 17 to 29 expecting to have a licence within the coming year, 2006 through 2010**



The next analysis was a binary logistic regression of whether young people had a licence or not; results are shown in Table 6.

**Table 6: Results from binary logistic regression of whether a person aged**

|   | n=2,972<br>Null log-likelihood: -2,459.84<br>Final log-likelihood: -1958.37<br>Rho-squared: 0.20 |
|---|--|
| Constant  | -3.03 (<0.01)  |
| Female  | -0.141 (0.07)  |
| Age   | 0.120 (<0.01)  |
| Non-white ethnicity   | -0.264 (0.03)  |
| Born outside of UK  | -0.623 (<0.01)   |
| Personal income (£/year)  | 3.61E-5 (<0.01)  |
| Residual household income (after subtracting personal income, £/year) | 5.36E-6 (<0.01)  |
| In employment   | 0.814 (<0.01)  |
| Highest qualification is degree-level or higher                       | 0.960 (<0.01)  |
| Population density of postcode sector                                 | -0.0105 (<0.01)  |
| Lives in Inner London   | -0.355 (0.11)  |
| Lives in Outer London   | -0.683 (<0.01)   |
| Lives in a metropolitan area other than London                        | -0.175 (0.23)  |
| Lives in a non-metropolitan area larger than 250K population          | -0.0627 (0.66)   |
| Lives in a settlement between 25K and 250K in population              | -0.392 (<0.01)   |
| Lives in a settlement between 3K and 25K in population                | -0.266 (0.11)  |
| Lives in a rural area   | -  |

The *ceteris paribus* gender gap (the higher propensity for women to not have licences) is significant at the 0.07 level, just less significant than the standard 0.05 threshold.

The marginal effect of age is an increased tendency to hold a licence.

Being non-white is associated with a lower rate of licence-holding, all else being equal. The same goes for being born outside the UK. The effect of being born abroad is more than twice as large as the effect of being non-white.

Higher income is associated with holding a licence, more so at the personal level than for income earned by other members of one's household, though both effects are highly significant.

Being employed and having a highest qualification that is at least at degree-level are both strongly associated with having a licence.

Higher-density neighbourhoods (as defined by the postcode sector of one's residence) are associated with lower rates of licence-holding, all else being equal.

The final variables included relate to the settlement size of the area where one lives. What is interesting is that there is not a fully monotonic relationship between settlement size and propensity to have a driving licence, once the other effects in this model are taken into account. Of all the settlement size categories (ranging from rural through to, separately, Inner and Outer London), we find that the lowest propensity to have a driving licence is linked with living in *Outer* London, whereas the highest propensity to have a licence is associated with residing in a rural area. The last of the analyses of young people's licence-holding was a second binary logistic regression, where the dependent variable was defined to be one if a non-licence-holding person cited one of the costs of motoring as the main reason they do not drive and zero otherwise. Thus the sample for this analysis only includes people who do not have a full or provisional driving licence or are not learning to drive.

**Table 7: Results from binary logistic regression of whether a person aged**

|   | n= 974<br>Null log-likelihood: -785.65<br>Final log-likelihood: -722.03<br>Rho-squared: 0.08 |
|---|--|
| Constant  | 1.316 (<0.01)  |
| Female  | 0.227 (0.07)   |
| Age   | -0.0516 (<0.01)  |
| Non-white ethnicity   | -0.0312 (0.88)   |
| Born outside of UK  | -0.814 (<0.01)   |
| Personal income (£/year)  | -2.78E-5 (0.01)  |
| Residual household income (after subtracting personal income, £/year) | -1.02E-5 (<0.01)   |
| In employment   | -0.00436 (0.98)  |
| Highest qualification is degree-level or higher                       | -0.00899 (0.71)  |
| Population density of postcode sector                                 | -0.00150 (0.56)  |
| Lives in Inner London   | -0.358 (0.31)  |
| Lives in Outer London   | -0.298 (0.27)  |
| Lives in a metropolitan area other than London                        | 0.0859 (0.74)  |
| Lives in a non-metropolitan area larger than 250K population          | 0.0853 (0.73)  |
| Lives in a settlement between 25K and 250K in population              | 0.0871 (0.72)  |
| Lives in a settlement between 3K and 25K in population                | 0.190 (0.53)   |
| Lives in a rural area   | -  |

We see that the goodness-of-fit for this model is much lower (0.08) than for the previous model of whether a person has a licence or not (0.20) – thus this simple specification proves less able to explain patterns of whether young people consider the costs of motoring to be deterring them from driving.

Once again we happen to find an all-else-equal gender gap (in this case implying that a woman is less likely to cite cost as the main reason than an otherwise identical man), but significant at the  $p=0.07$  level.

Being older is associated with being less likely to cite cost as the main reason for not driving.

No significant or close-to-significant effect due to ethnicity was found (the variable we tested is binary for white/non-white). Being born outside the UK was, however, found to be strongly associated with *not* citing cost as the main reason for being put off driving.

Income both at the personal and earned-by-others-in-household levels was found to be associated with a lower propensity to cite cost as a deterrent, a rather intuitive finding.

The remaining variables (whether one is employed, population density of one's neighbourhood, and settlement size) were all found not to have statistically significant effects.

## 7. Young Men's Car Use

Some of the sharpest changes in mobility patterns have taken place amongst young men – particularly their falling levels of car driving. This section examines the personal mobility trends of men in their 20s in some detail – particularly their annual driving mileage -- and how they relate to wider social and economic changes that have occurred.

In this section the term 'young men' is used interchangeably with 'men in their 20s'.

Figure 35 shows trends in average mileage for young men by various methods of travel. Even leaving aside the post-2007 years affected by the recession, their driving mileage fell roughly 30% from 1995/7 to 2005/7. As driving represented the majority of their total travel, their overall mileage (aggregated across all forms of travel) declined by 18%. Much of the fall in their driving took place between 2000 and 2002, with no strong trends in either the years prior to this or after (until the current recession).

Though in the popular press references to their decreased car driving are occasionally assert that young men are being 'chauffeured around' by parents, the evidence does not support this: their car passenger travel fell as well.

Rail and bus use both trended up for young men, but not nearly enough to account for their decreased driving, whilst they used all other modes lightly and this continued through the 2000s. Their rail use for instance increased from an average of just under 500 miles per annum in 1995/7 to roughly 750 in 2005/7 – but this 250 mile per year increase in rail use was dwarfed by the fall in driving mileage of more than 1,900. Interestingly, neither the trend of increased bus use nor the growth in rail use seem to have occurred in the few years around the turn of the millennium when their driving was decreasing so strongly.

**Figure 35: Average mileage by men in their 20s, by various modes of transport**

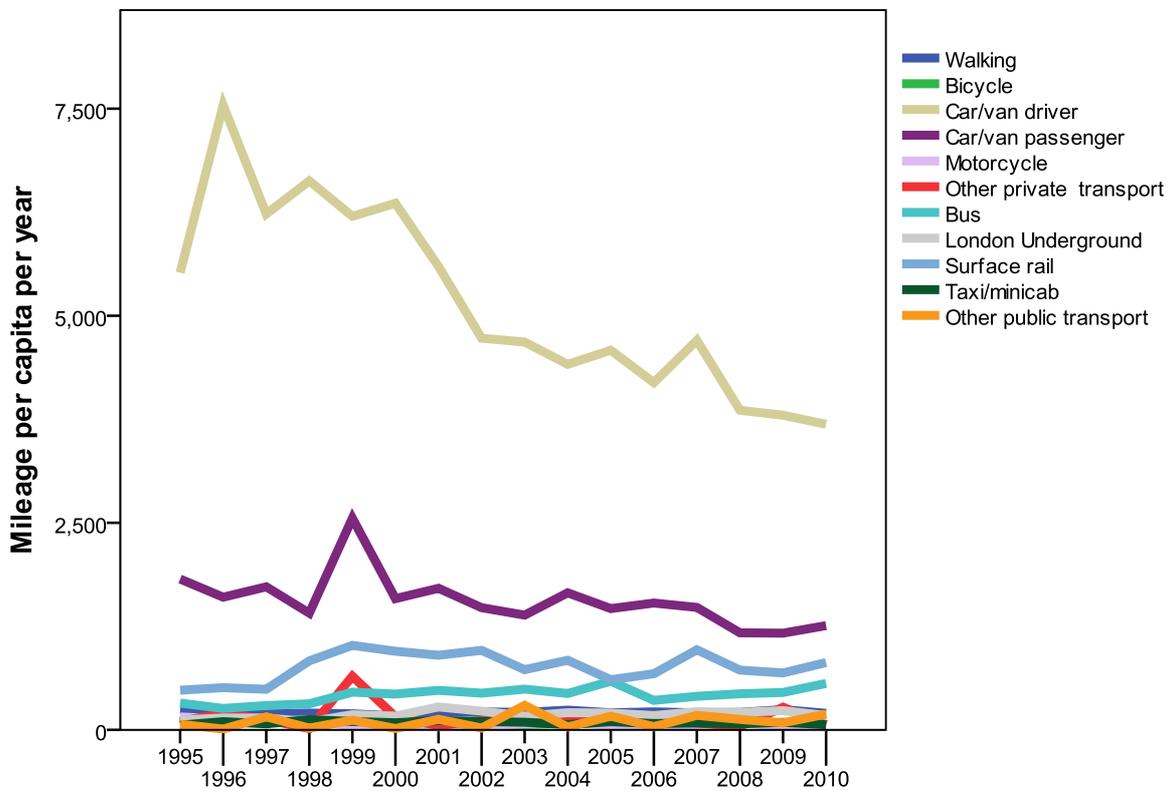
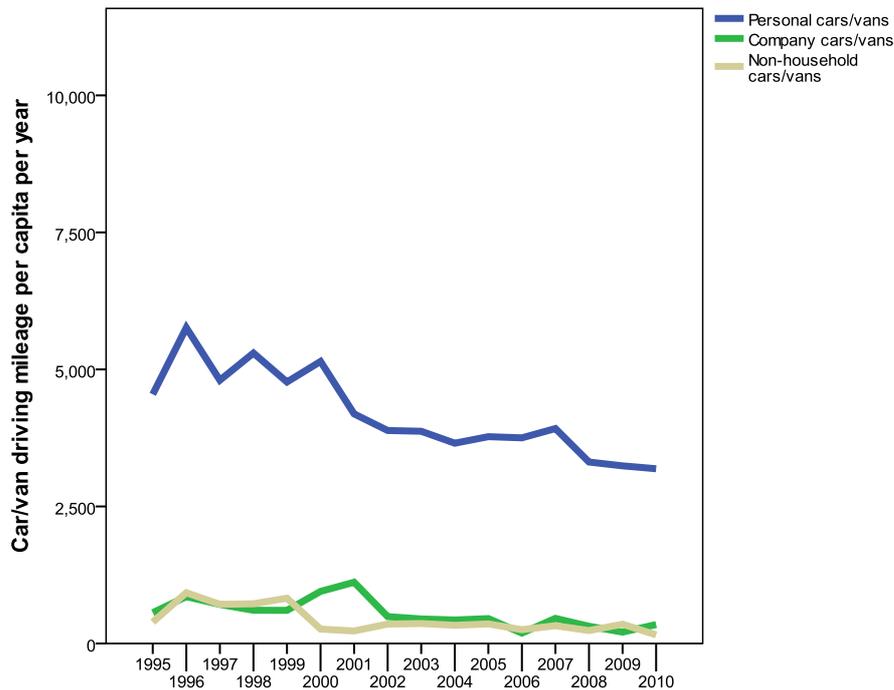


Figure 36 breaks down young men’s driving mileage by type of car: personal cars, company cars, and non-household cars. Driving mileage by all three have trended downwards. Whilst for older men the fall in driving is primarily concentrated amongst company cars, this is not the case for young men: their driving of personal cars has fallen quite substantially.

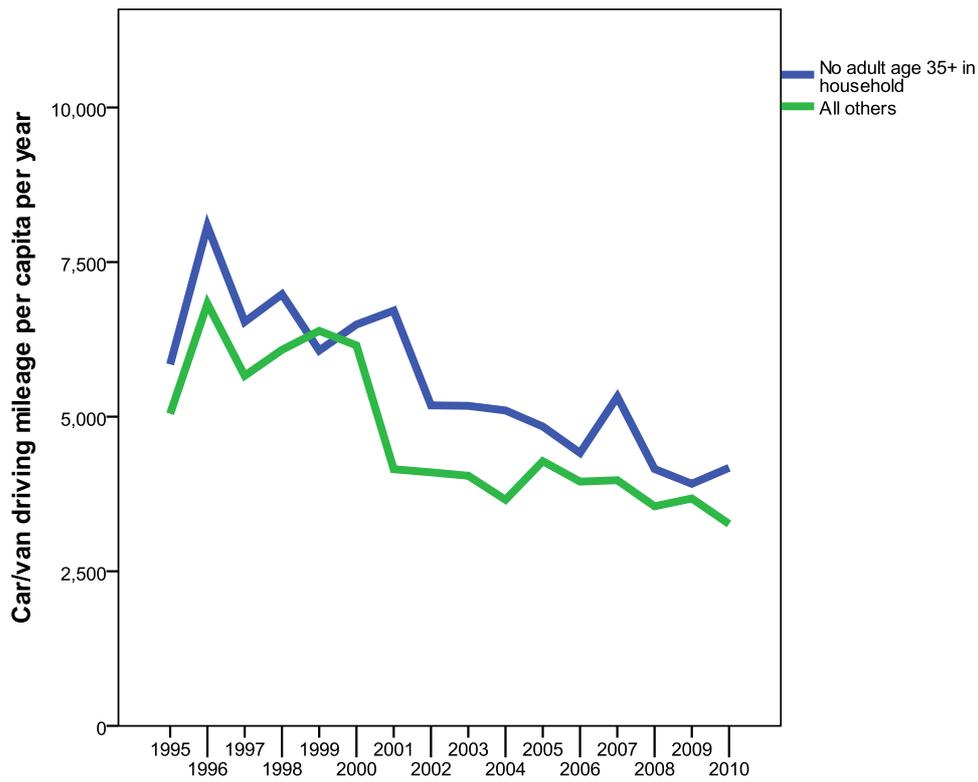
**Figure 36: Average driving mileage by men in their 20s, by type of car driven (personal, company, or non-household)**



One significant social change in recent years has been the increase in the proportion of young people living with their parents. ONS figures from the Labour Force Survey confirm this; whilst family relationships within households are not directly tracked in the NTS, the presence of at least one adult age 35+ was used as a proxy for young people living with their parents. 40% of men in their 20s were living with an adult over age 35 in 1995/7, which had risen to 47% by 2005/7 (and grew further to 53% in 2010).

Figure 37 shows that young men living with their parents or older adults in the household tend to drive somewhat less than their peers living without an older adult. But both of these groups of young men saw their driving mileage fall by roughly the same amount – so whilst this shift in living arrangements can explain some of the fall in driving mileage, it is only a part explanation, and a small one at that.

**Figure 37: Average driving mileage by men in their 20s, by presence of adult age 35+ in household**



**Figure 38: Average driving mileage by men in their 20s, by driver status (main or not main)**

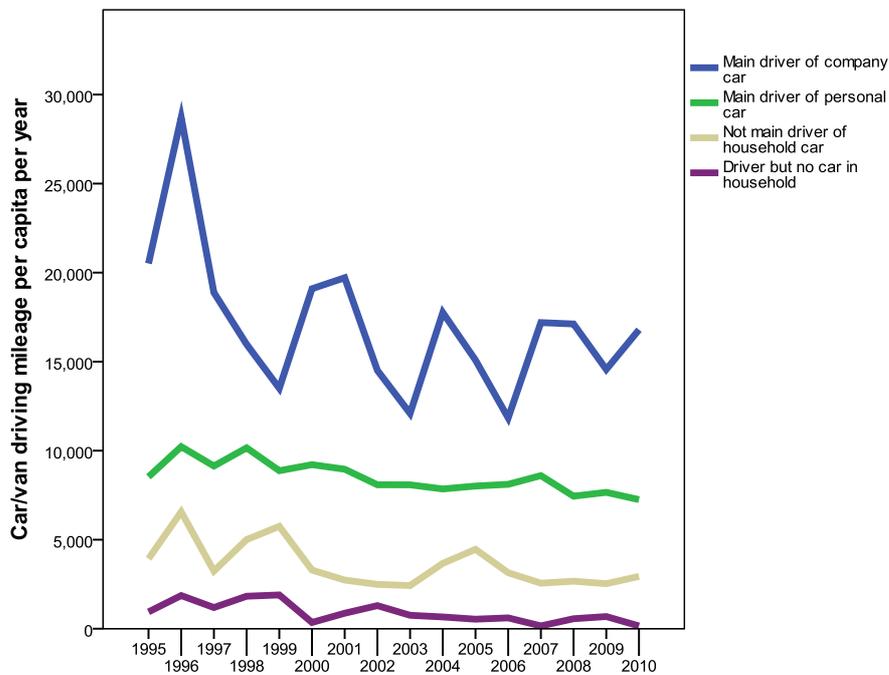


Figure 38 looks at driving mileage by driver status: a main driver is someone who drives a car more than anyone else. Young men who have a company car are the highest-mileage of the groups shown, while those who are licensed drivers but live in a household without a car are the lowest-mileage group. There is a general time trend: all of the four classes shown have seen their mileage trend down over time.

In addition to a growing tendency to live with their parents, young men are also increasingly unlikely to be married. 22% were married in 1995/7, which fell to 12% by 2005/7. Figure 39 shows that young men who are married have always (since the mid-90s) tended to drive more than their single counterparts, but the gap in mileage that relates to marriage status has grown over time as single young men have seen their mileage decrease more rapidly.

**Figure 39: Average driving mileage by men in their 20s, by marital status**

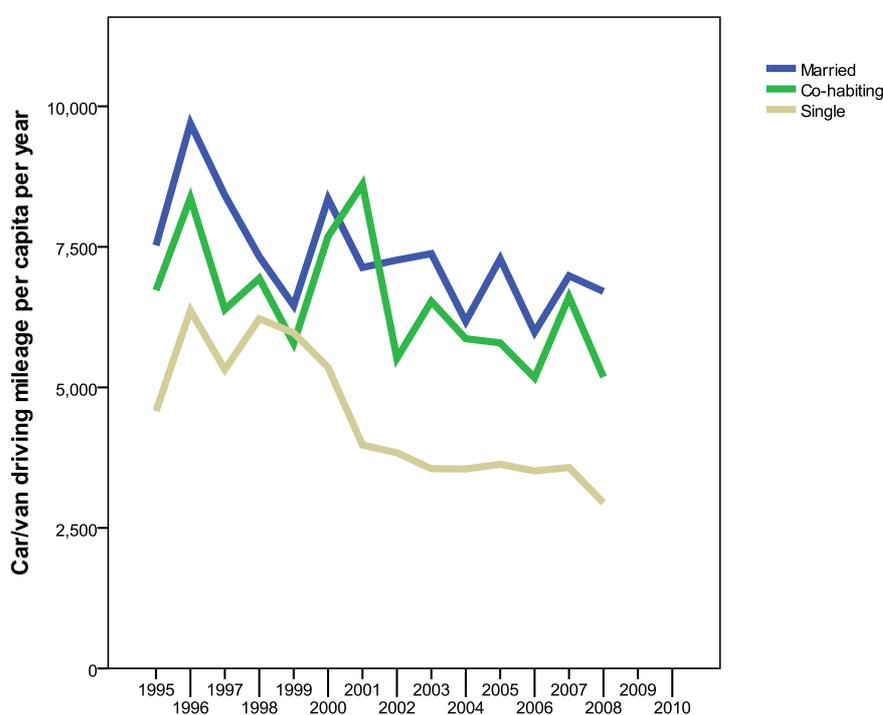


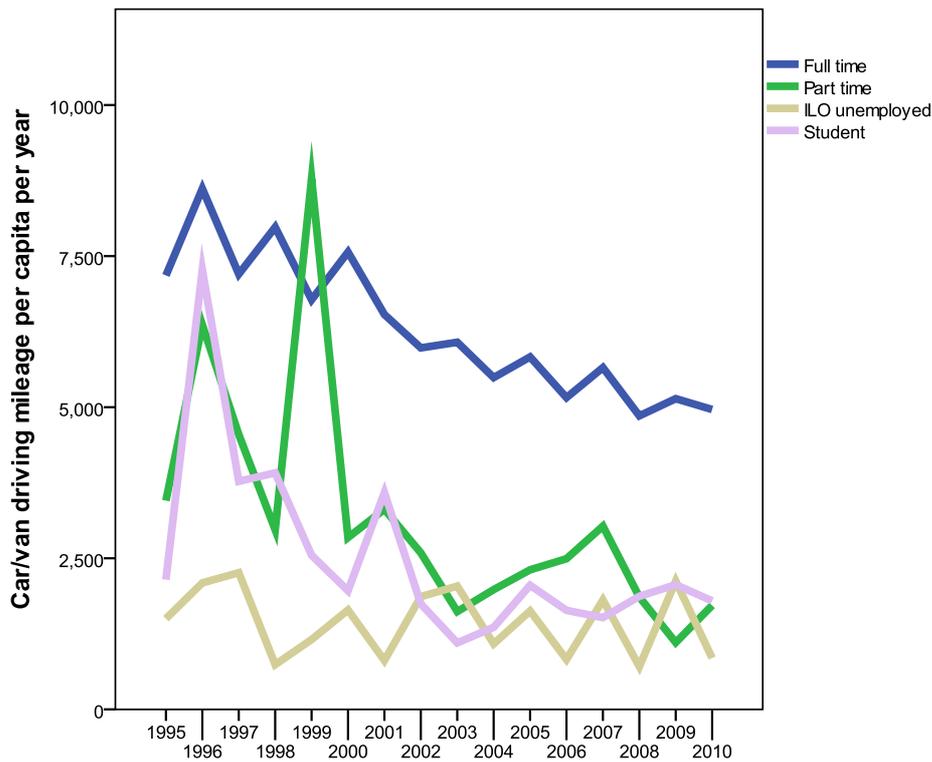
Figure 40 looks at driving mileage by economic status. Young men who are employed full-time tend to drive more than part-time workers, students, or those who are unemployed but in the labour force. Their mileage has fallen over time – but also over this time period there has been a small shift away from full-time work. In 1995/7 74% of men in their 20s were employed full-time, and this declined slightly to 72% by 2005/7.

What is noteworthy is that the NTS provides little evidence of a large-scale shift to student status: the proportion of men in their 20s that were counted as students increased by only a single percentage point: from 9% to 10% (1995/7 to 2005/7). This in part may be due to the NTS' sampling protocol: students living in halls-of-residence (but not private off-campus housing) are amongst the groups that are not included in the sample frame. The drop in driving mileage for young men is, however, observed *within* the NTS sample frame, so any increased likelihood of

young men to be in the out-of-sample group of students cannot explain the drop in driving that has been seen.

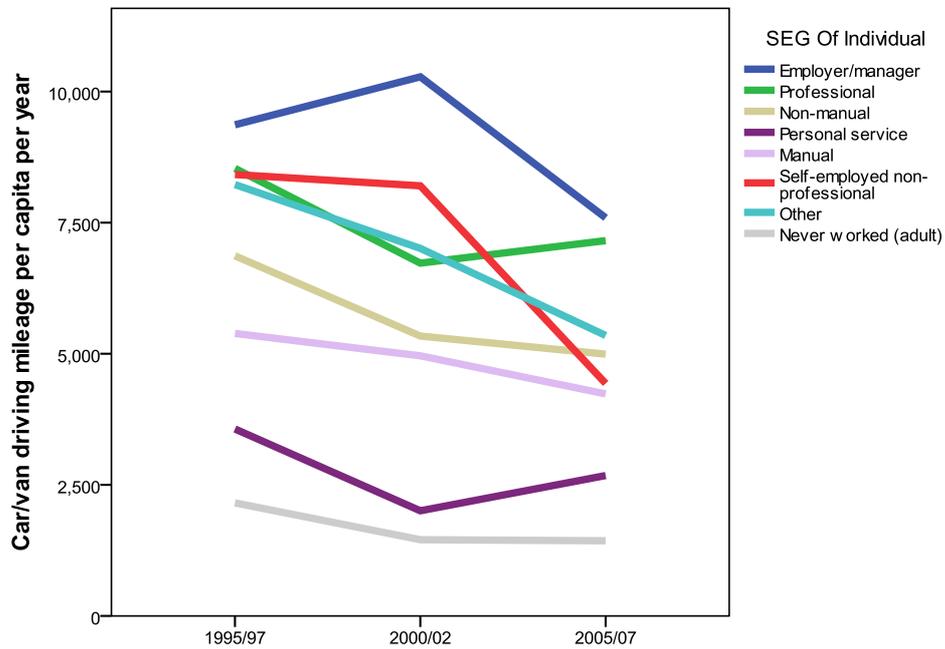
By contrast, the economic status that has grown rapidly has been part-time workers: as a proportion of young men this group more than doubled, from 3% to 8% -- and on average their mileage is less than half that of young men who are in full-time work.

**Figure 40: Average driving mileage by men in their 20s, by economic status**

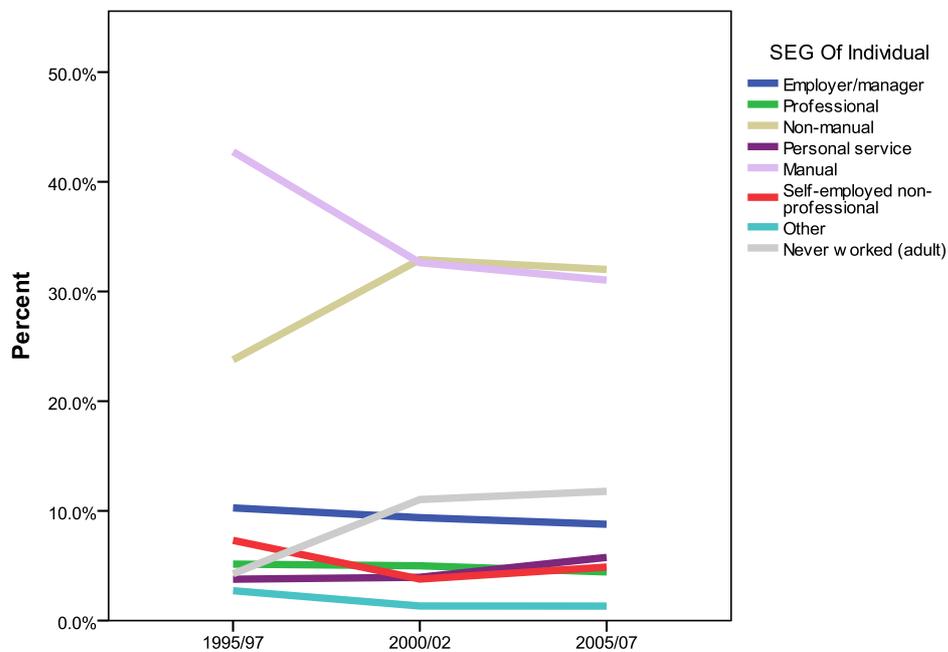


Looking at Figure 41 (where data is grouped in three-year groupings for clarity) we can see large differences in driving mileage for young men in different socio-economic groupings (i.e. the type of work they do). In addition, driving mileage has trended downwards for most of the SEG categories, though at varying rates. At the same time, as seen in Figure 42, there has been a shift amongst young men away from the 'manual' SEG, with the largest growth in the 'non-manual' and 'never worked' categories. Of these, a shift towards 'never worked' status would seem to imply a reduction in driving mileage – they drive less on average than any other SEG grouping – but as 'non-manual-SEG' young men drive more than 'manual-SEG' young men the effect of a shift away from manual working would be expected to lead to an uplift in average driving mileage.

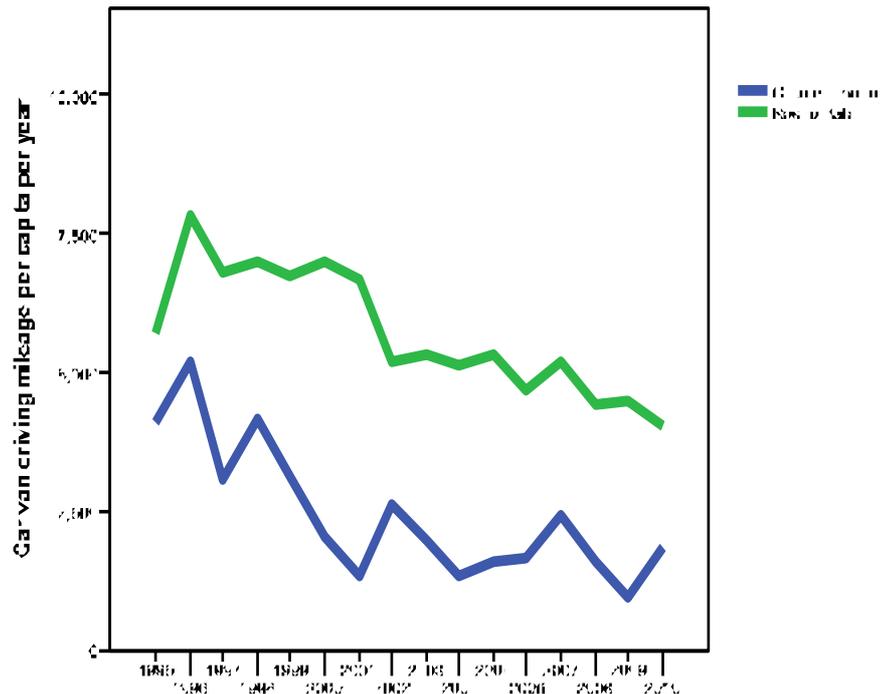
**Figure 41: Average driving mileage by men in their 20s, by socio-economic grouping**



**Figure 42: Percentage of men in their 20s, by socio-economic grouping**



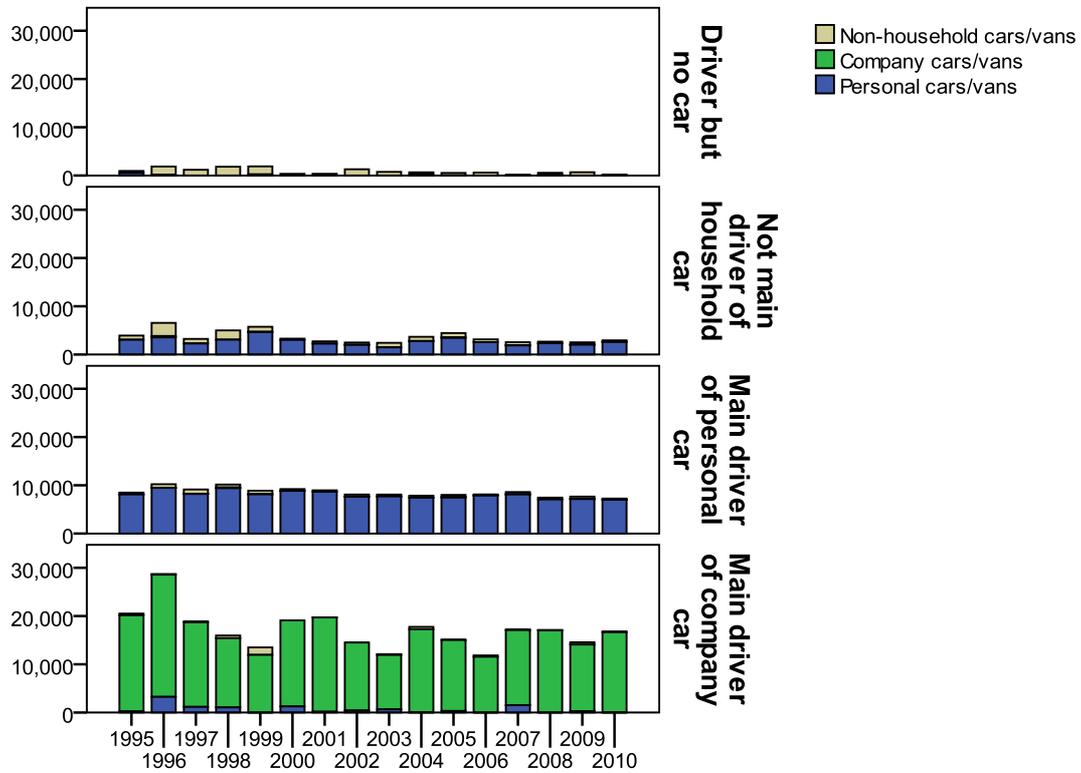
**Figure 43: Average driving mileage by men in their 20s, by place of residence**



As we would expect, young men living in London drive less than their counterparts living elsewhere in Great Britain. Interestingly, Figure 43 also shows that driving mileage has trended downwards for both Londoners and young men living in the rest of the country. The NTS also shows an increase in the proportion of men in their 20s living in London – from under 13% in 1995/7 to nearly 18% in 2005/7: this – which would need confirmation from secondary sources – would be a growth of nearly 40% in the proportion living in London.

Figure 44 shows how driving mileage has trended for young men, broken down by their access to cars within their household. It builds on Figure 38, adding in the dimension of what types of cars are driven and for how much mileage. The top panel covers men with driving licences who live in households that do not own cars: their mileage is by definition in non-household cars. There are two important points to note from this figure: there are large differences *between* groups, but the time trends *within* each of the groups are relatively weak. For men who are ‘main drivers’ of personal cars – meaning they drive a personal car more than anyone else drives it – their mileage fell by only 11%. Meanwhile, the proportion of men in their 20s who are ‘main drivers’ of personal cars fell from 52% to 44% – which is itself comprised of a large fall in licence-holding (79% to 68%) but stability (at 65%) in the proportion of licence-holding young men who are main drivers of a personal car.

**Figure 44: Average driving mileage by access to cars within the household**



From 2002 the NTS has occasionally (in 2004 and 2008) asked whether respondent households had ordered home delivery of several types of products by post, telephone, or the internet within the past year. With the aim to better understand the fall in shopping travel by young men, correlations were prepared (for year 2008 only) between whether a household received delivery(ies) of food or other products, and the distance travelled for food and other shopping by young men.

**Table 8: Correlations between mobility and home delivery usage, by men in their 20s, year 2008 only. Significance levels are in parentheses**

|  | # of food shopping journeys | # of non-food shopping journeys | Mileage (all modes) for food shopping purposes | Mileage (all modes) for non-food shopping purposes | Lives with adult age 35+ in household |
|--|-----------------------------|---------------------------------|--|--|---------------------------------------|
| <b>Household had food delivered at least once in past year</b>                     | -0.06 (0.84)                | 0.024 (0.39)                    | -0.013 (0.64)                                  | 0.066 (0.02)                                       | -0.04 (0.14)                          |
| <b>Household had products other than food delivered at least once in past year</b> | -0.029 (0.31)               | 0.017 (0.54)                    | 0.011 (0.70)                                   | 0.025 (0.37)                                       | 0.069 (0.01)                          |
| <b>Lives with adult age 35+ in household</b>                                       | -0.161 (<0.01)              | -0.072 (0.01)                   | -0.085 (<0.01)                                 | 0.017 (0.55)                                       | 1.0                                   |

As can be seen in Table 8, the correlations between food shopping journeys [mileage] and home delivery of food were not close to significant, and the same was true for non-food shopping. Interestingly, a positive correlation was found between having food delivered at home and mileage travelled for non-food shopping purposes, which may or may not be spurious.

Table 8 also shows how physical mobility and home delivery usage correlate with living with older adult(s) in the household. Young men who live with older adults (typically their parents) were more likely than otherwise to have non-food products delivered in the past year.

But the largest correlations were found between living with older adults and personal mobility: young men living with their parents or other older adults travelled significantly less for food shopping. The effect of living with older adults was less clear-cut for non-food shopping travel: it was negatively associated with the number of non-food-shopping journeys, but not with mileage travelled for the same purposes.

To summarise, this limited analysis of the relationships between personal mobility and home delivery for young men was inconclusive in explaining young men's falling shopping travel, but the growing prevalence of living with older adults (parents) seems to explain some of their drop in shopping travel. Further research with datasets that contain richer observations of behaviour in the virtual realm will be needed to more fully establish its relationship with physical mobility.

**Figure 45: Average driving mileage by men in their 20s, by type of car ownership and selected journey purposes. From left panel to right panel: Main drivers of company cars, Main drivers of personal cars, Non-main drivers but car owned by household, Drivers living**

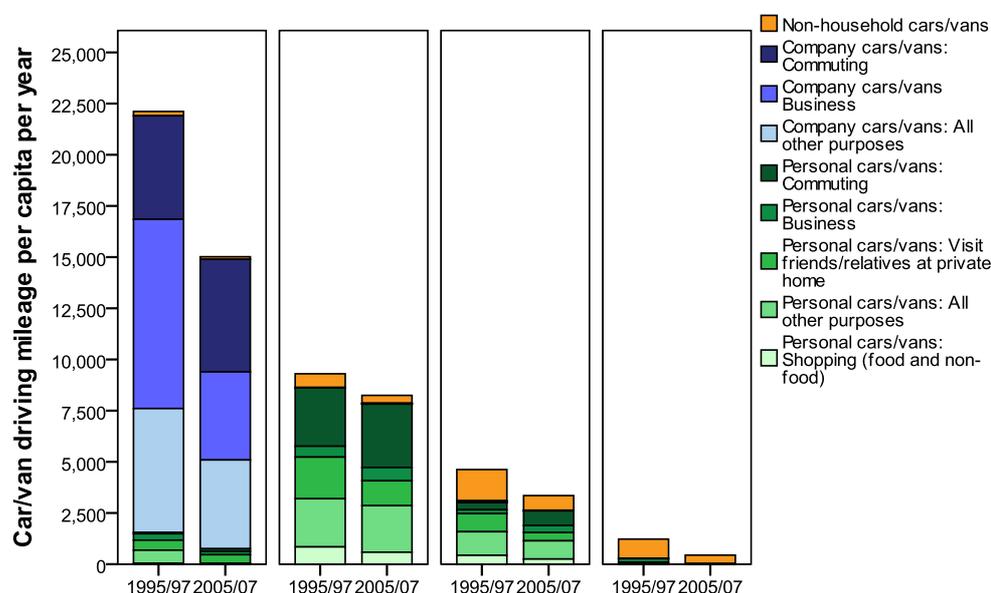


Figure 45 combines the analyses of access to cars within the household and journey purpose.

For all of these groups of young men, use of non-household cars fell by more than 40%. (Non-household cars are hire cars, an employer’s pool cars, cars borrowed from friends/relatives outside the household, etc.) It can also be seen that the use of ‘non-household cars’ is higher for drivers who do not ‘own’ (i.e. drive more than anyone else) a personal car or company car. What this seems to imply is a sort of weak substitution effect between cars over which young men have primary control and those that they do not: non-household cars.

Not surprisingly, young men who are the main driver of a company car tend to drive very high mileage in company cars, and very little in other cars. Their driving mileage fell, however, by about 32% from 1995/7 to 2005/7. In percentage terms, the largest fall in their driving was for [non-commuting] business purposes; their use for commuting in fact grew slightly.

Young men who are ‘main drivers’ of personal cars drive substantially less than company-car owners, and as mentioned before their mileage fell only marginally. Their travel for ‘visiting friends/relatives at private homes’ [VFRPH] fell most, by about 40%. Their commuting and [non-commuting] business driving mileage actually increased, by 9% and 22% respectively. Though it cannot be known on the basis of this analysis, it suggests that there may be some shift in work-related mileage from

company cars to personal cars. (Confirming that this would require more detailed econometrics.)

For young men who have driving licences but are not main drivers (the two rightmost panels of Figure 45, the biggest fall in mileage amongst the purpose/ownership-type categories shown is for use of non-household cars. As with main drivers of personal cars, there was a strong decrease (55%) in VFRPH driving mileage by young men who are drivers in a household with car(s) that they are not the main driver of.

One theory to explain this drop in driving for VFRPH purposes is that young men are simply tending to live with parents for longer. To investigate this theory, the correlation between living with older adult(s) – aged 35+ – in the household and VFRPH travel was calculated. Table 3.9 shows these results, along with several other correlations for comparison.

The results were mixed: The correlation between living with older adult(s) and VFRPH driving mileage is significant and negative – as one would suppose if it is imagined that living with one’s parents means less travel to visit them. But the same relationship with driving journeys was not significant.

Several of the other results in Table 9 are also of note. Being born in the UK was associated with more driving for VFRPH purposes, which makes sense if it is theorised that migrants have less-well-developed family networks within the UK, as much of the family may remain abroad. Living in London (as opposed to elsewhere in GB) was associated with less VFRPH driving, though this would finding would need to be compared against the generally lower driving levels of Londoners to determine if it is specific to VFRPH. Finally, being a student was found to be associated with higher VFRPH driving mileage (at the  $p=0.11$  level) but not VFRPH driving journeys. This may be related with a relatively small number of long-distance VFRPH journeys of students that have family and other social networks living in other parts of the country.

**Table 9: Correlations between various socio-demographic attributes and driving mileage/journeys to visit friends/relatives at private homes**

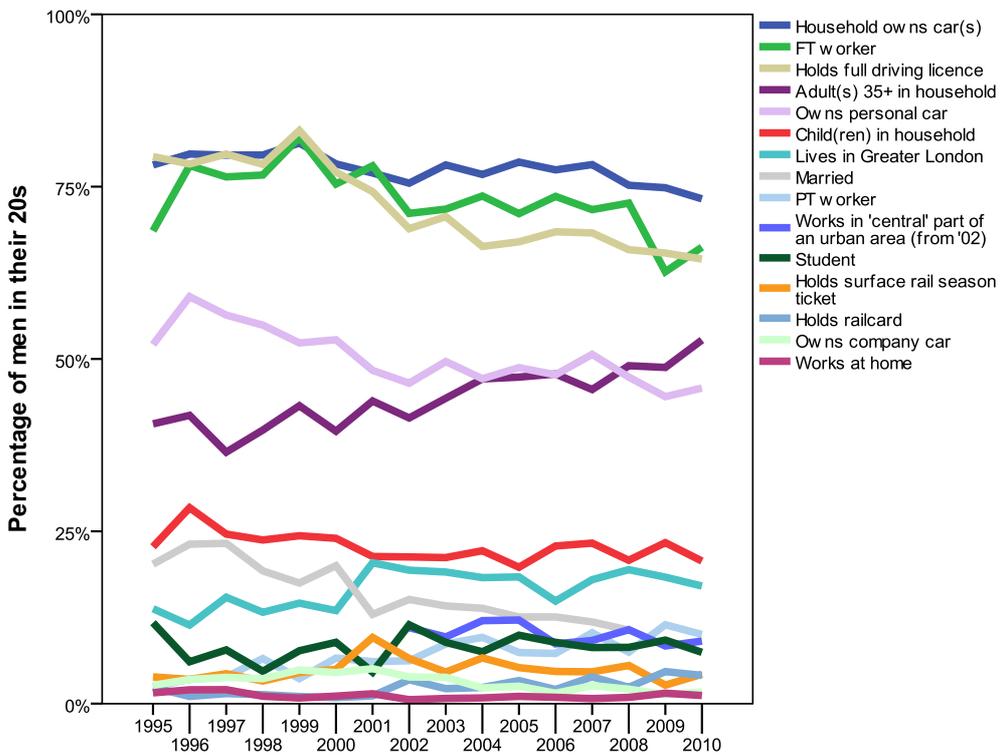
|                                       | Driving JOURNEYS for visiting friends/relatives at private homes | Driving MILEAGE for visiting friends/relatives at private homes |
|---------------------------------------|--|---|
| Lives with adult age 35+ in household | -0.029 (0.30)  | -0.06 (0.03)  |
| Born in the UK                        | 0.089 (<0.01)  | 0.051 (0.07)  |
| Presence of children in household     | 0.058 (0.04)   | -0.020 (0.48)   |
| Lives in London                       | -0.055 (0.05)  | -0.046 (0.10)   |
| Student status                        | 0.015 (0.60)   | 0.045 (0.11)  |

Figures 46 and 47 sum up a number of analyses that investigated demographic shifts and behaviour changes amongst men in their 20s. Figure 46 shows ‘profile shifts’, including both demographic and other characteristics. For instance, the uppermost line (dark blue) shows the proportion of young men who live in a household that owns a car(s).

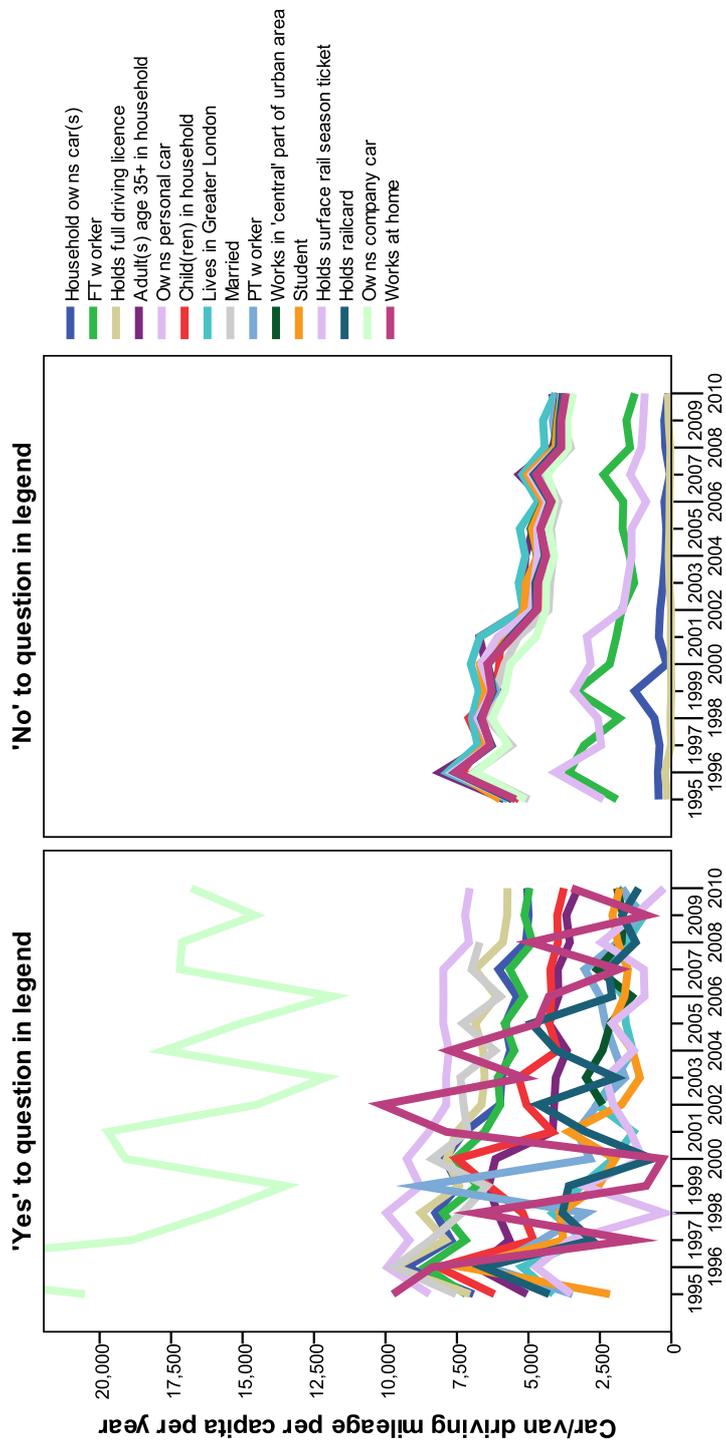
Figure 46 shows the change in average driving mileage for groups of young men defined by the 'profile characteristics'. The left panel shows average driving mileage for groups that are defined by each legend item; the right panel shows all other people. For instance the uppermost (light blue) line in the left panel shows driving mileage by young men who are main drivers of company cars, whilst the same colour line in the right panel shows driving mileage for all young men who are not main drivers of company cars.

The headline from **Error! Reference source not found.**Figure 47 is that average driving mileage by all groups shown seems to have trended downwards over time. There are two plausible explanations for this result: (1) there could be an overriding downward trend in driving for young men, and thus the disaggregation by the profile characteristics does not show different trends for different groups, or (2) the dominant effect could be due to shifts in 'profile' characteristics, which are seen in Figure 46 but not Figure 47.

**Figure 46: Percentage of men in their 20s having various socio-demographic attributes**



**Figure 47: Annual driving mileage by men in 20s, by various socio-demographic attributes**



## 8. Rail Fares

This section investigates whether there is evidence of ‘yield management’ – the notion of selling a larger number of cheap rail tickets in order to fill seats that would otherwise go empty.

The analysis looks at the distribution of rail tickets on the basis of their price, which is in 2010 price levels normalised by journey distance. The unit of analysis is the ‘journey stage’, which basically means that any journey which involves transferring between trains is counted in the data as separate journey stages for each train that was boarded.

First, Figure 48 shows the percentage of rail journey stages made with no out-of-pocket cost. Commuting journeys in London and the greater South East tend to be the most likely journeys paid by season tickets, though the rate has fallen somewhat since the 1990s. The rate for business journeys and not-commuting-and-not-business journeys are lower than for commuting, and interestingly they are lower outside of the Greater South East.

**Figure 48: Percentage of rail journey stages where no fare is paid, by journey purpose**

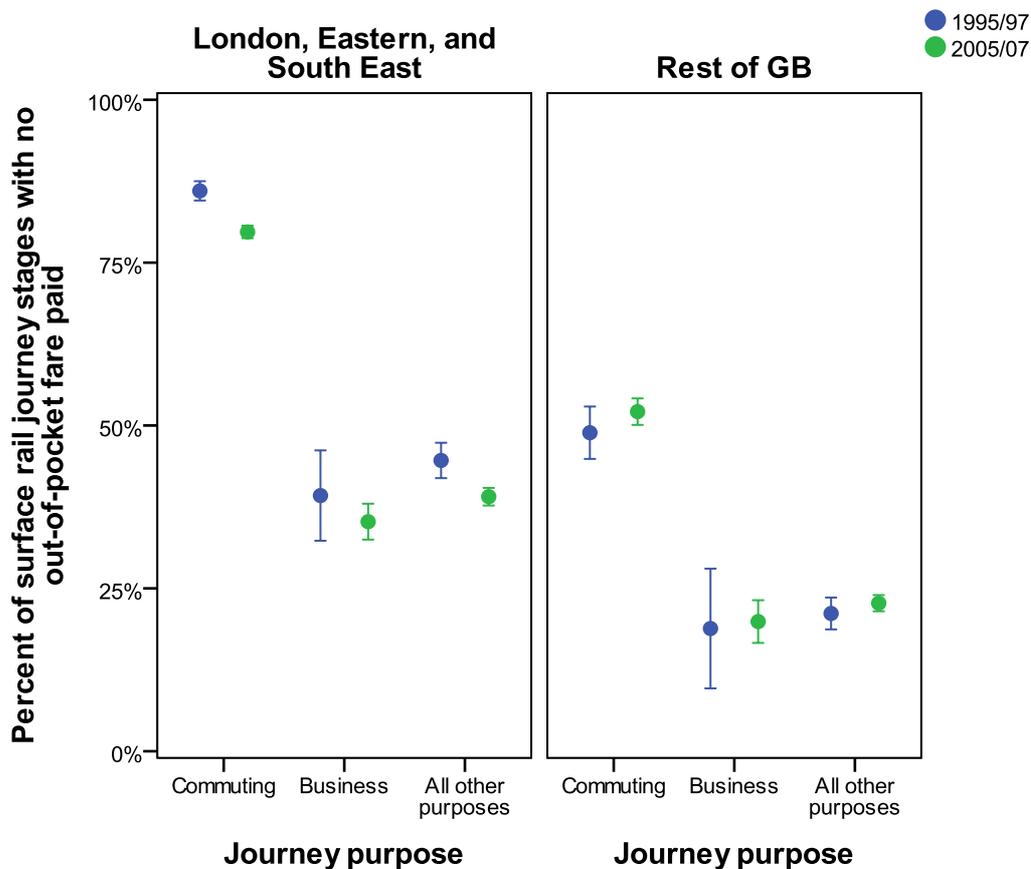
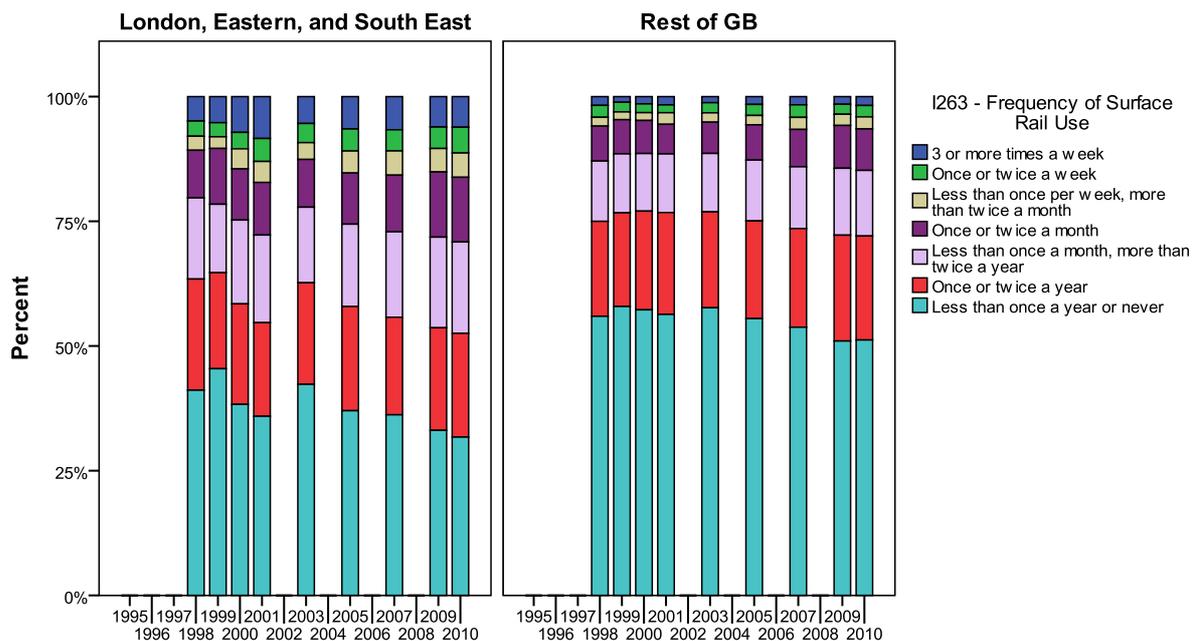


Figure 49 shows a linked finding. It is noted in the Main Report of this study that the growth in rail use in recent years has come from a broadening of the rail market to include more people, rather than existing rail users travelling more. Figure 48 showed that the percentage of commuting journeys in the Greater South East that are made on season tickets has fallen. Figure 49 corroborates this by showing that the proportion of people who say they use rail three or more times per week (i.e. mainly daily commuters) has not increased, whereas the proportion of people who are occasional rail users has.

**Figure 49: Reported frequency of rail use**



We now turn to the distribution of fares paid for rail journeys. Due to the small sample sizes for rail in the NTS, this analysis is based on two year groups: 1995 to 1999, and 2006 to 2010. Journey purposes are combined into three categories: commuting, business, and all travel for any other purposes.

The six figures that follow (Figures 50 to 55) show cumulative distribution plots for the three classes of journey purposes, first the full distributions (with the exception of truncated upper tails) and then with the bottom of the distribution magnified.

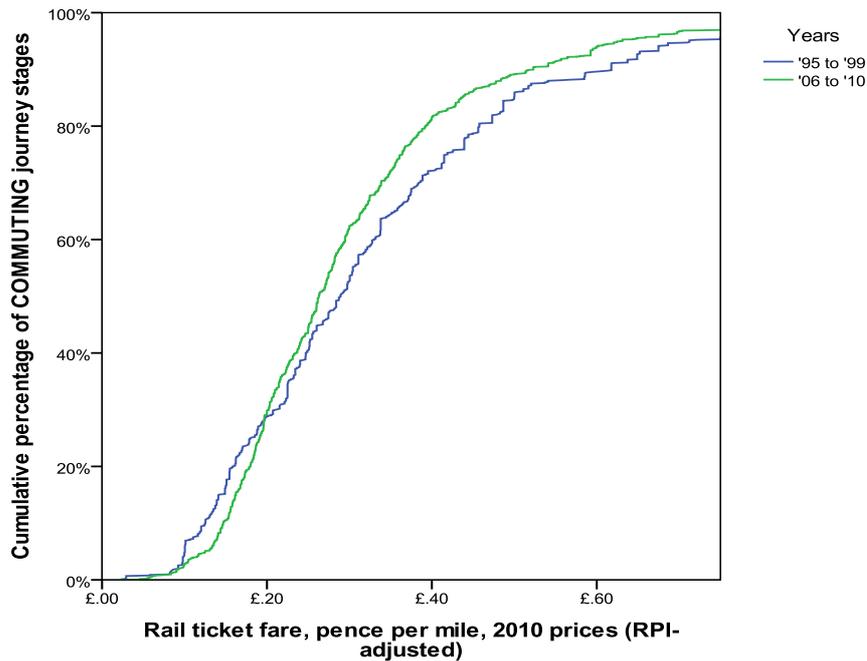
The distributions only include journeys where some fare was paid – they exclude journeys made on season tickets, but do include pay-per-journey means of payment such as pre-purchased carnets.

It can be seen that for commuting and business journey purposes the proportion of tickets sold at low cost-per-mile actually decreased – thus we do not find evidence for ‘yield management’ pricing have affected these rail markets.

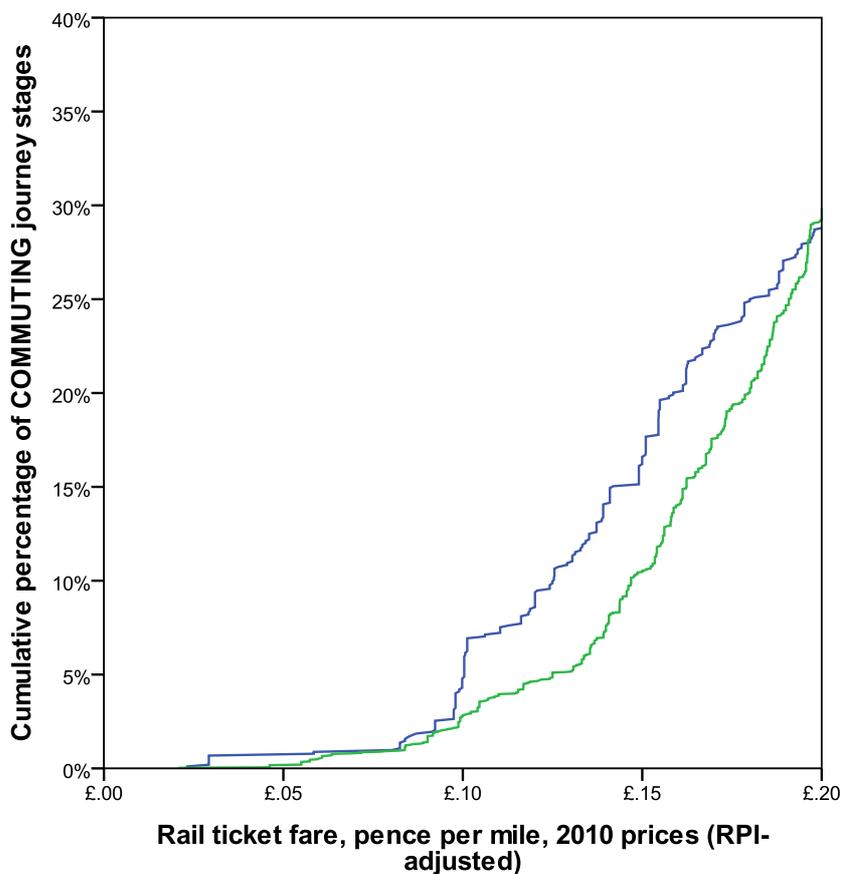
We do find evidence of yield management in the all-but-commuting-and-business market, however – here the data shows an increased proportion of rail tickets sold at low-cost-per-mile. 10% of rail tickets were sold for less than nine pence-per-mile in 1995/9; this rose to 14% of tickets being sold for less than nine pence-per-mile by 2006/10.

These results are broadly reasonable – one would expect the largest amount of available seating (i.e. conducive to yield management) on trains operating outside of the peak hours, which is precisely when non-commuting/business journeys tend to be made. They should be viewed in light of the distinction between those rail fares that are regulated and those where the operator has greater discretion in setting price levels.

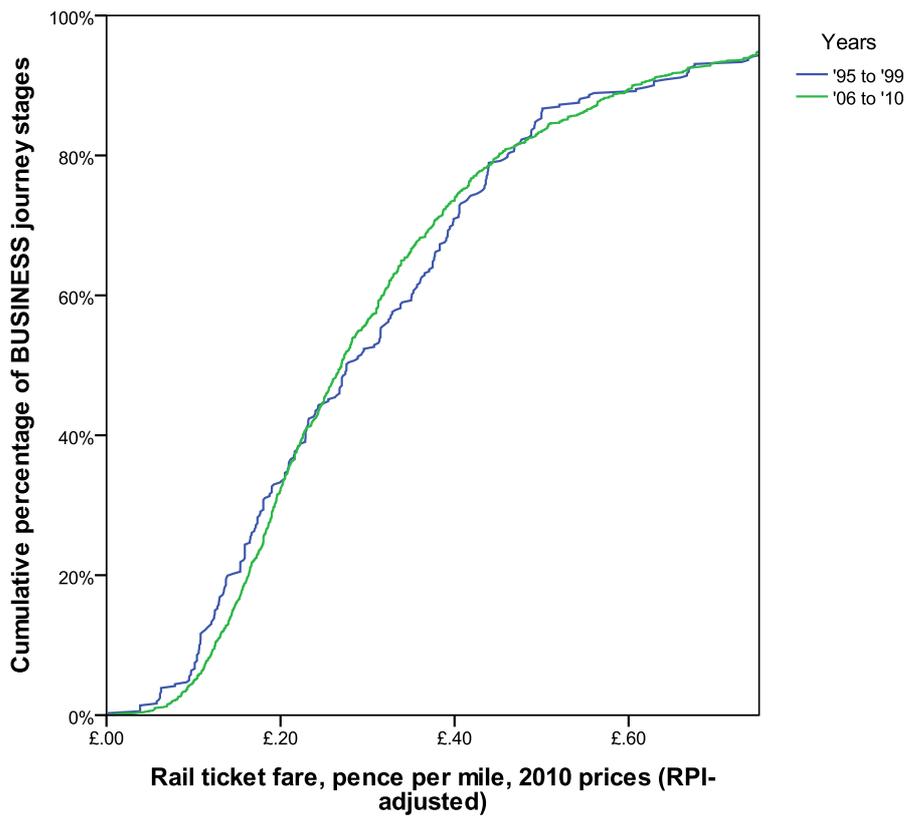
**Figure 50: Cumulative distribution of National Rail fares for commuting purposes**



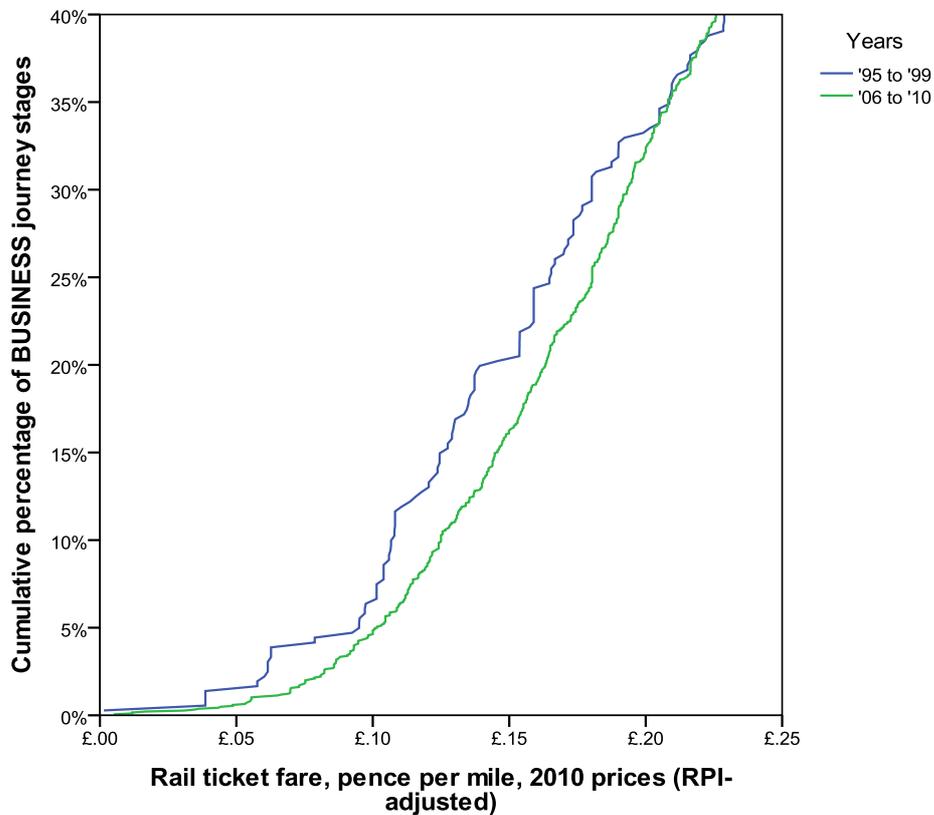
**Figure 51: Cumulative distribution of National Rail fares for commuting purposes, bottom of distribution magnified**



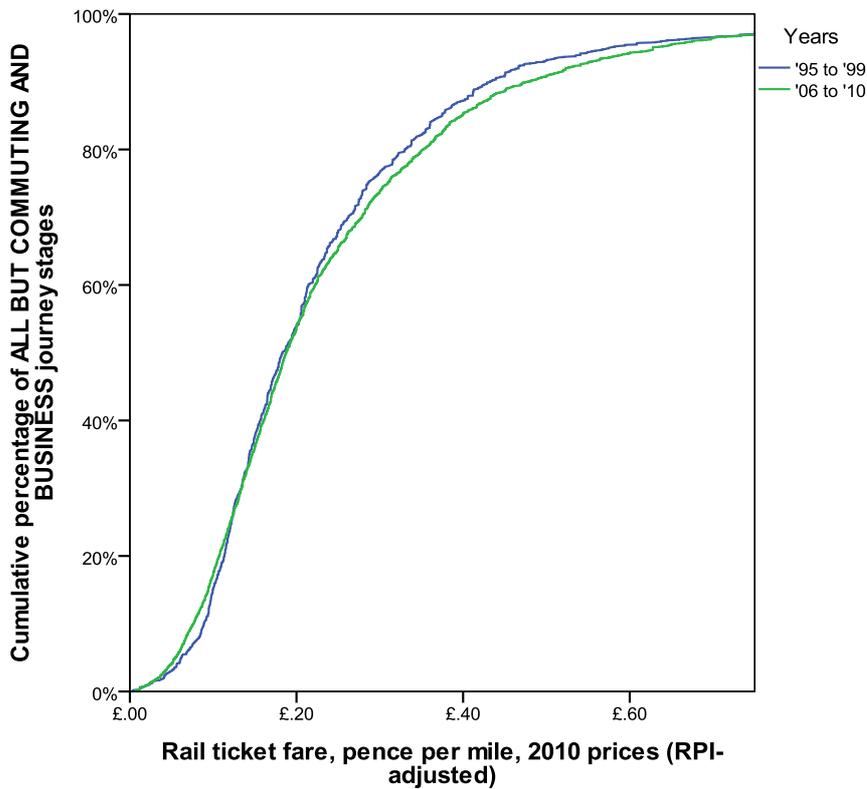
**Figure 52: Cumulative distribution of National Rail fares for business purposes**



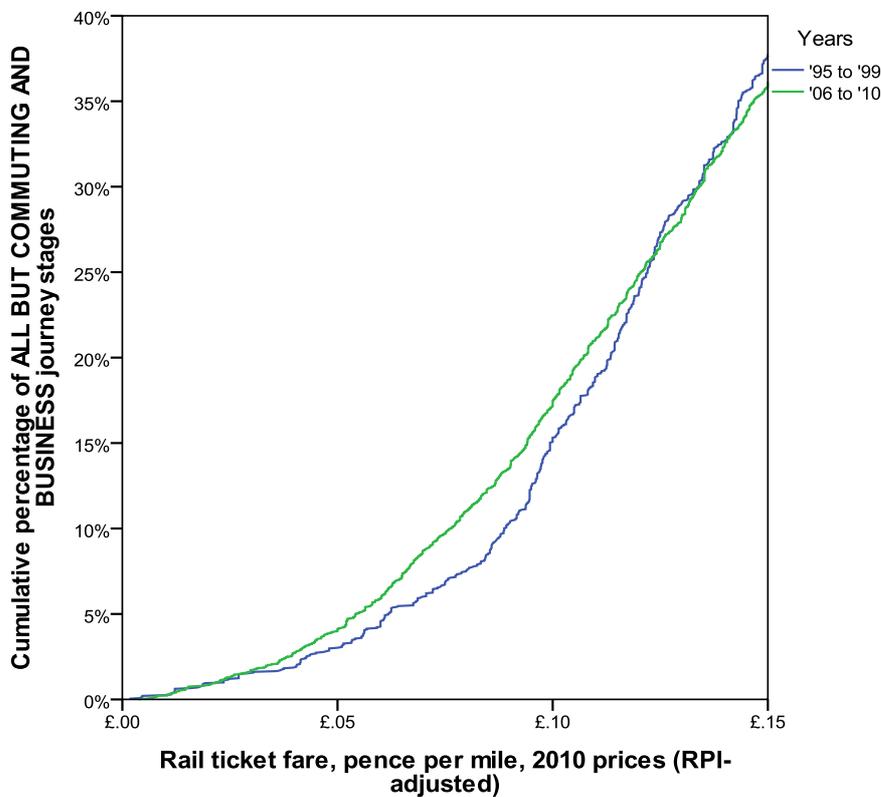
**Figure 53: Cumulative distribution of National Rail fares for business purposes, bottom of distribution magnified**



**Figure 54: Cumulative distribution of National Rail fares for all but commuting and business purposes**



**Figure 55: Cumulative distribution of National Rail fares for all but commuting and business purposes, bottom of distribution magnified**



## 9. Travel Complexity

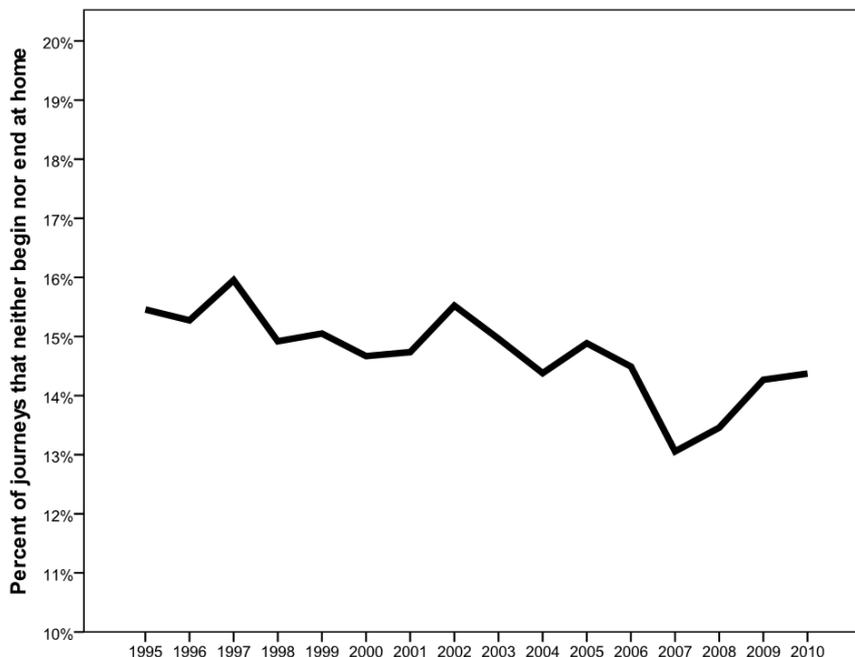
It is often suggested that people's lives are becoming busier, resulting in travel patterns that are becoming more complex – and so more difficult to make by public transport. One way of measuring travel pattern complexity is to look at the percentage of trips that do not either begin or end at home, things like stopping at the shops on the way home from work. Simpler travel patterns would involve making separate trips for each activity from home, so there would be very few 'non-home based trips'.

Changes in travel complexity are illustrated in Figures 56 and 57. Contrary to expectations, travel patterns have shown a trend towards simplification between 1995 and 2010 – the number of trips not starting or ending at home has gone down, not increased.

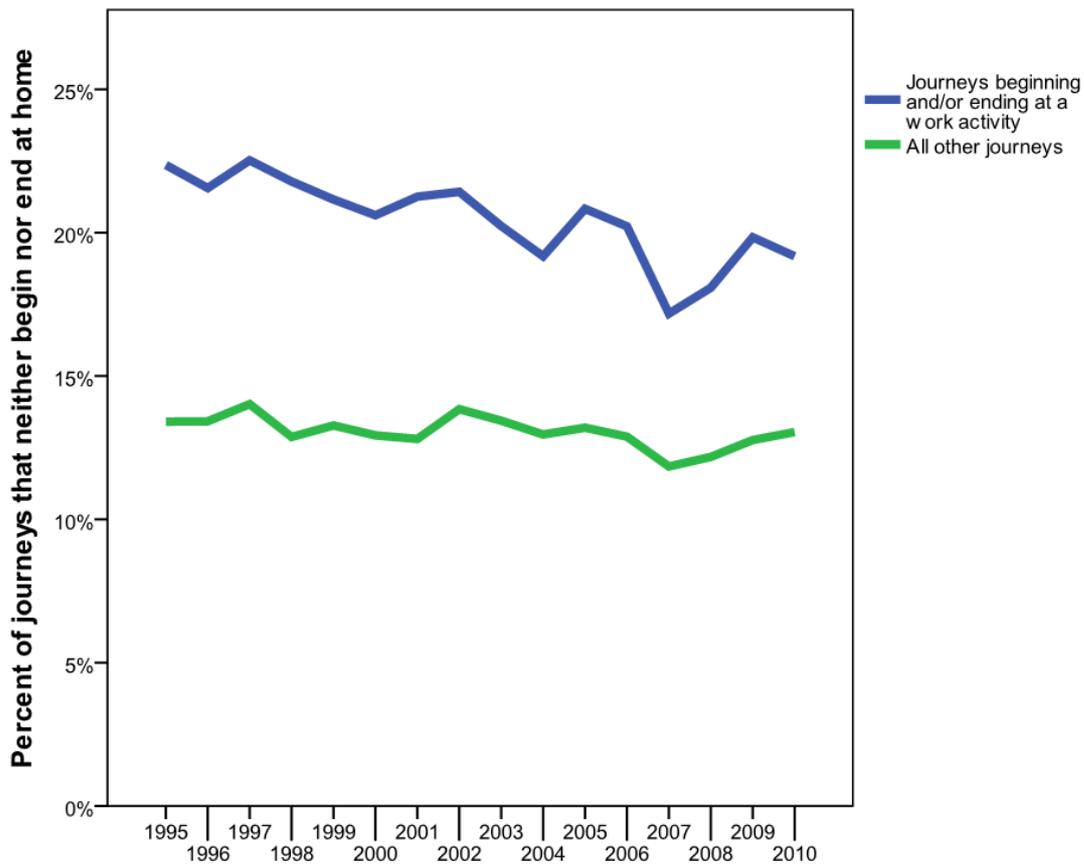
When we look more closely at how this trend differs according to whether the non-home based trip begins or ends at work, or elsewhere, we see a marked difference (Figure 57). It is mainly the trips that begin or end at work that have become less complex over time – more of them involve trips straight to or from home than in the past. Non work-related trips are less likely to be complex in nature, but this pattern has not changed much over the past fifteen years.

Car trips are particularly suited to forming complex travel patterns, as they are not limited by stops or stations as are buses and trains, so simpler trips make it more feasible to use public transport – but it might also be that less use of cars is 'forcing' people to adopt simpler travel patterns. We cannot say which is cause or effect.

**Figure 56: Proportion of trips that neither begin nor end at home**

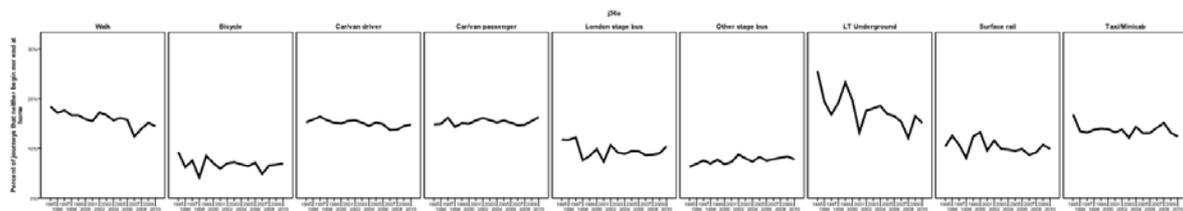


**Figure 57: Proportion of non-home trips that are linked to work and to non-work activities**



Finally, Figure 58 shows how trip complexity varies by mode of transport. Only in the case of Walk and London Underground have journeys become less complex over time, most have remained stable. But the percentages of non-home based trips vary by mode, being lowest for Cycling and highest for Walk, Car Driver and Car Passenger, London Underground and Taxi – suggesting that at least part of the observed simplification might be due to a shift from one travel mode to another.

**Figure 58: Proportion of trips that neither begin nor end at home, by mode of travel**



## 10. Ownership: Cars, Season Tickets, and Railcards

This section looks at trends in ownership of cars, season tickets, and railcards.

Figure 59 shows changes in the pattern of household car ownership, between 1995 and 2010. Up to 2005 there was a steady drop in the proportion of no car owning households and a growth in two car owning households, but since then both trends have stopped. There has, however, been an increase in the (small) proportions of three and four car owning households.

**Figure 59: Changes in household car ownership, 1995–2010**

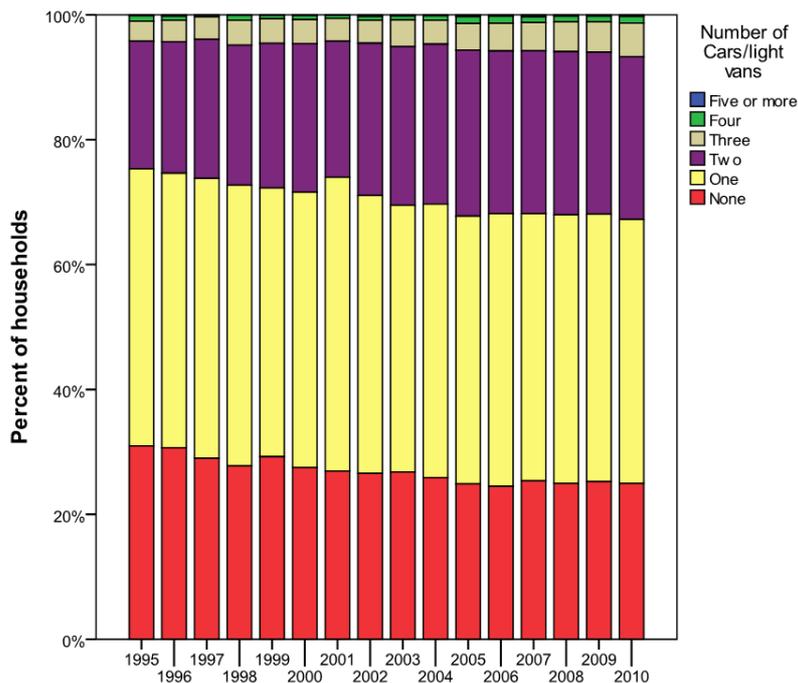


Figure 60 looks at the relationship between car ownership rates and economic status, over time, for men and women. Rates are highest for full-time workers and lowest for students. Among men, rates have remained broadly stable since around 2000 for most groups, with a slight decline among students and a slight rate increase among those retired or permanently sick. Some high rates of change are apparent in the late 1990s for part-time workers and students (sharp drops) and for Home/other (sharp increase). Patterns are clearer and more consistent among the female groups: most have risen steadily throughout the period, except for students which has shown a slight decline, and for part-time workers which did not exhibit any growth until around 2002.

**Figure 60: Car ownership rates, by economic status**

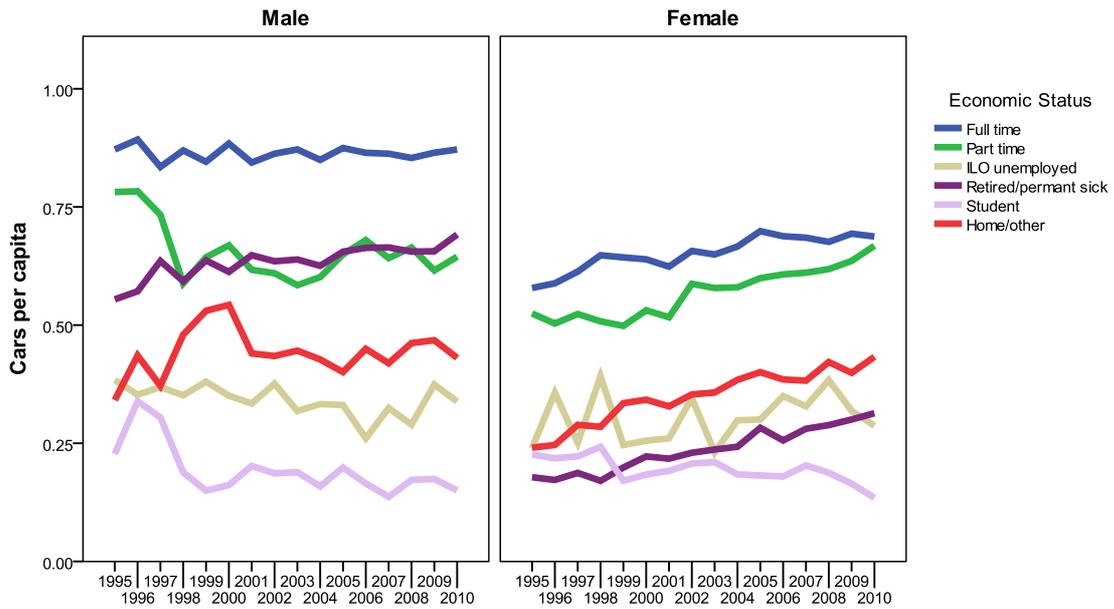


Figure 61 shows how car ownership has trended by people’s individual (not household) income level. (Cars are defined here to be ‘owned’ by the person who drives them the most.) At any given income level, men have a higher rate of car ownership than women on similar incomes. The fastest rates of growth for both men and women have been for those earning less than £10,000 a year.

**Figure 61: Car ownership rates and personal incomes by gender, over time**

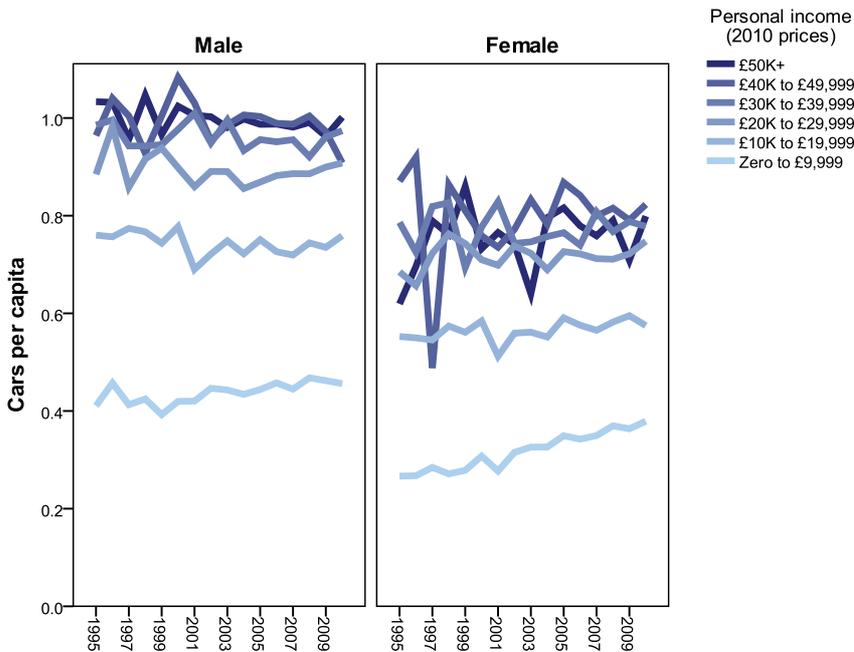


Figure 62 shows that this trend is concentrated mainly outside London, where people earning under £10,000 saw rapid increases in car ownership, whilst their counterparts in London did not increase their rate of car ownership, but rather it held steady rather than falling as for other income classes in London. Outside of London car ownership was basically steady for income groups above £10,000.

**Figure 62: Car ownership rates and personal incomes by London and rest of GB, over time**

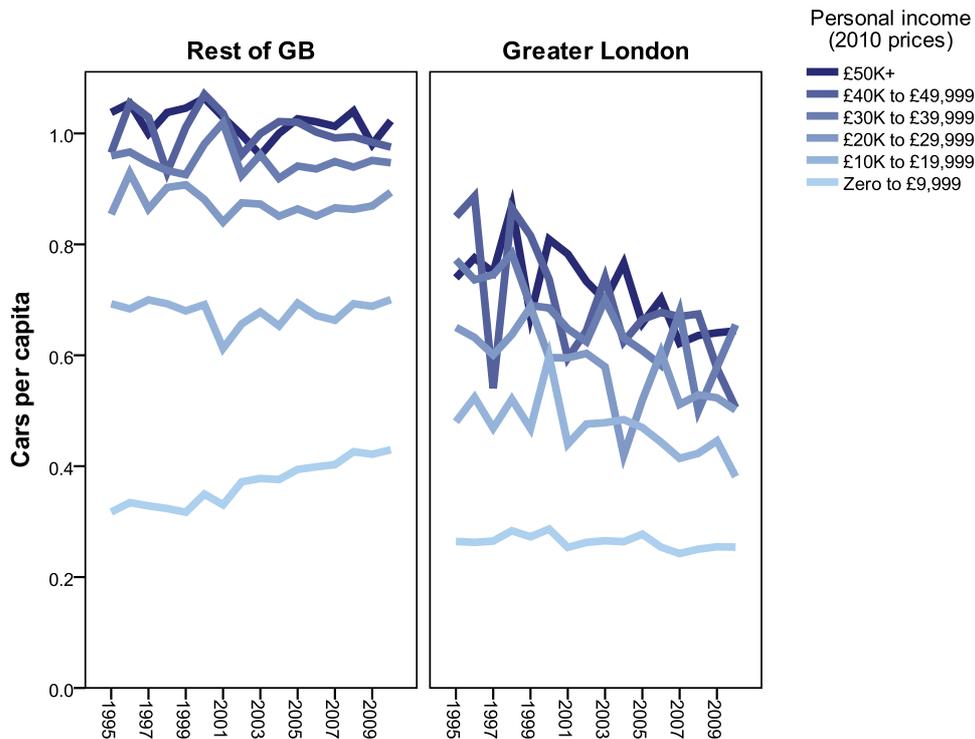


Figure 63 looks at company car ownership by age and gender. Here we can observe several trends. First, car ownership rates among women are much lower than among men, and confined to a narrower age range (20–59), but women’s rates have not shown signs of falling over time – indeed, among 50–59 year olds, they rose during the first half of the 2000s. So, all the observed reduction in company car ownership has been among men. Second, among men, peak company car ownership rates are to be found in the 30–59 age ranges, where they are broadly similar. The (lower) 20–29 age group grew in the late 1990s, but has since declined. The main ownership groups (30–59) have all declined, but with some differences in profile; the exception is the 60–69 age group, which has low but steady or rising rates of company car ownership.

**Figure 63: Trends in ownership of company cars, by age and gender**

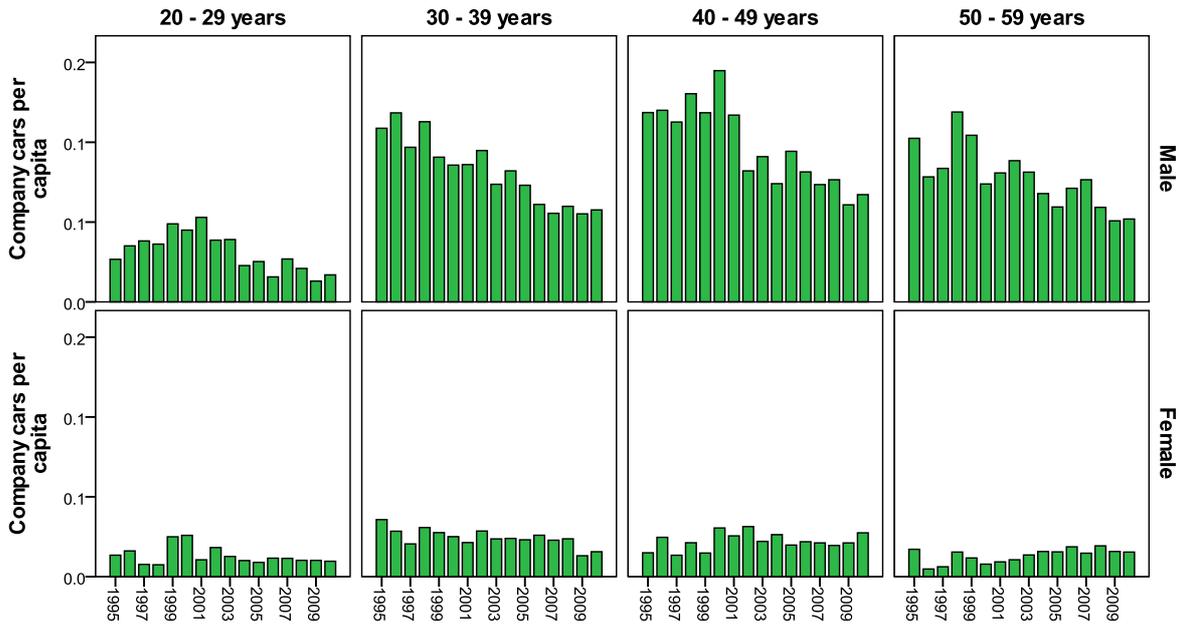


Figure 64 shows the breakdown of company car ownership by settlement size. All areas show a downward time trend, with the highest rates of ownership for those living in rural areas. Interestingly, the data seem to show a large drop in company car ownership in London several years before the same occurred in the GB's other metropolitan areas.

**Figure 64: Trends in ownership of company cars by settlement size**

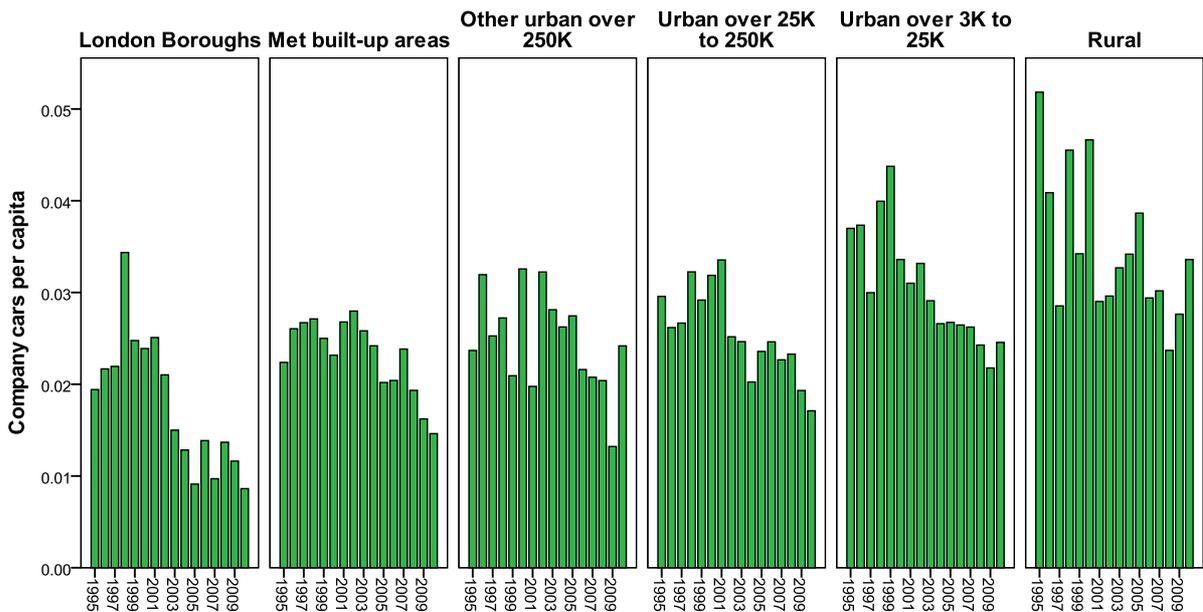
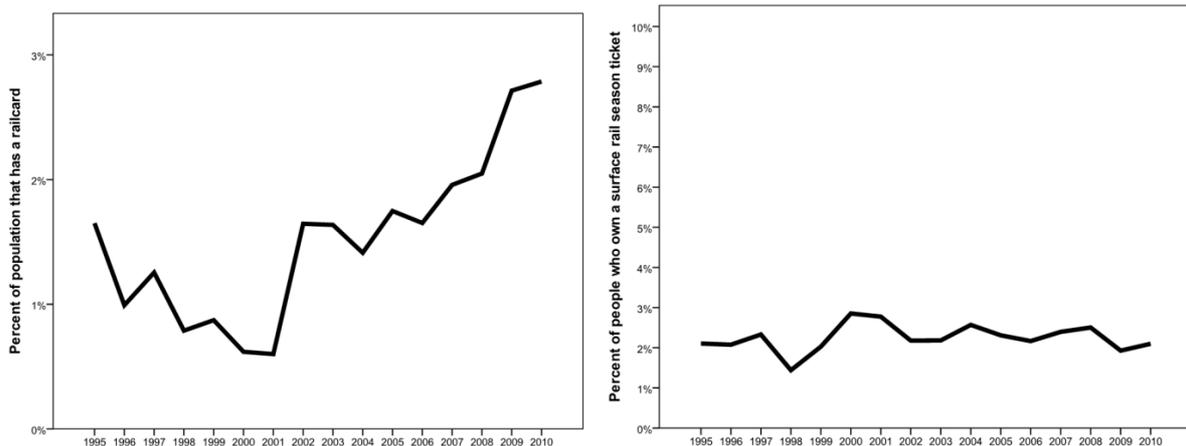


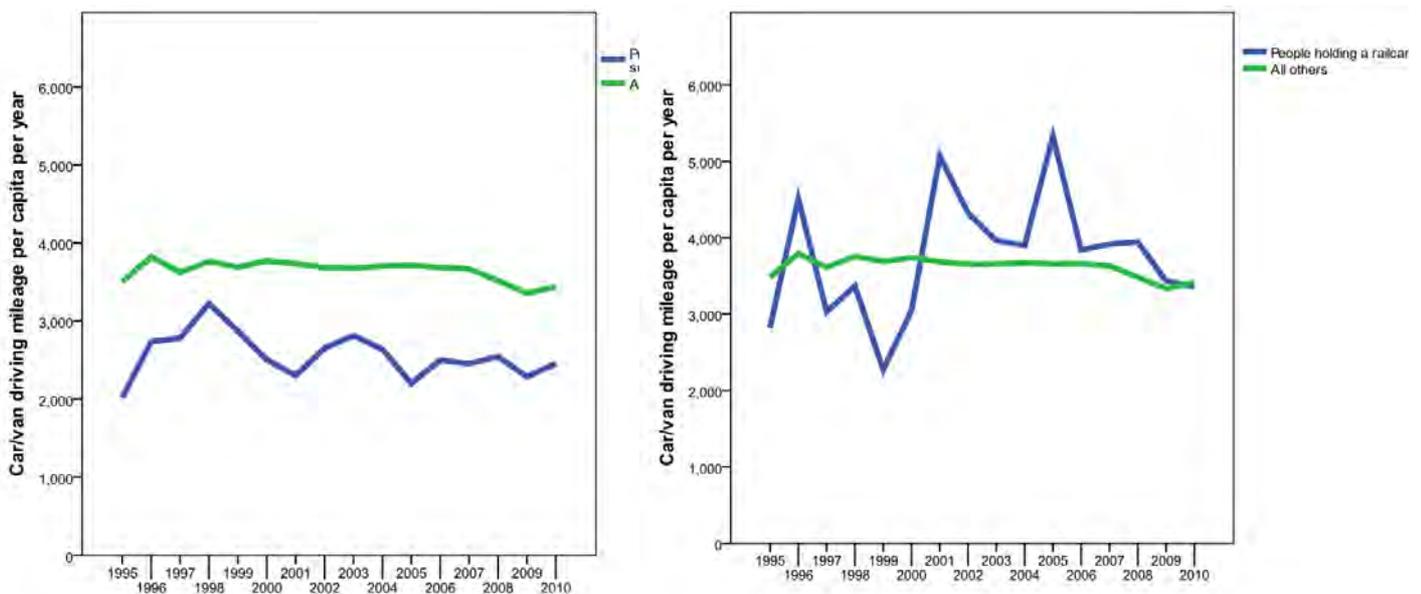
Figure 65 shows the proportion of the population who report owning a rail season ticket and a railcard. Across the population as a whole, the proportion of season ticket holders has hardly changed, at around 2%, but since 2001 railcard ownership has shown a steady growth – from just over 0.5% to just under 3%. (There is a possible data discontinuity here between 2001 and 2002 when the NTS contractor changed, but even if this is the case it does not explain the increasing trend from 2004 onwards.)

**Figure 65: Public transport ticket ownership: season tickets and railcards**



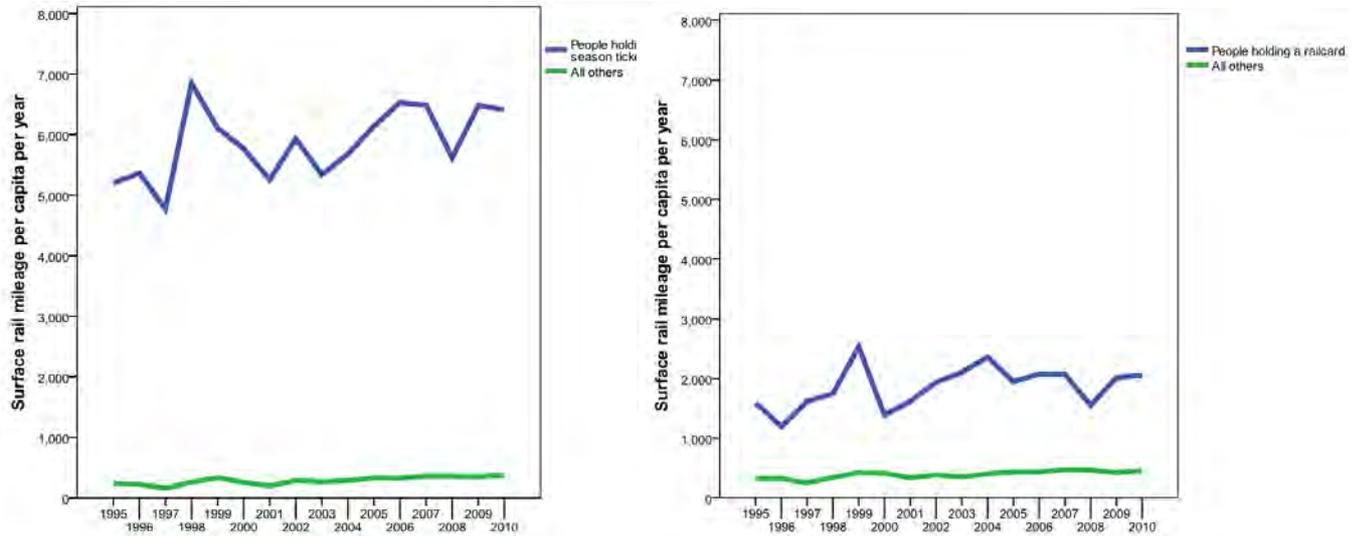
The next two figures look at the effect of ticket ownership on car and rail travel. For car travel (Figure 66), ownership of a season ticket leads on average to lower car mileage – or around 1,000 miles per year. But holding a railcard seems to have no major effect.

**Figure 66: Car driver mileage by public transport ticket ownership**



As would be expected, the effects are much larger for rail (Figure 67). Having a season ticket results in an annual average rail mileage of 5,000 to 6,000 miles per year, compare to 200 to 30 miles for non-owners – both rising over time. The effect of having a railcard is significant, but much less: around 2,000 miles vs 200–300 miles.

**Figure 67: Rail passenger mileage by public transport ticket ownership**



## 11. Societal Trends

This section reports on social and economic trends which have been observed.

Using NTS respondent data and looking at different settlement sizes, we can see a growth in income per capita at 2010 prices in each of the areas in the second half of the 1990s (Figure 68) but there have been some marked variations since then. Around 2000 per capita incomes reached a plateau and then fell in the London Boroughs, and has declined slightly since then. Income stabilised in rural areas around 2000, and had peaked in all other areas by around 2005. It is noteworthy that income per capita is highest in London and then rural areas, whereas the lowest per capita incomes are found in GB's metropolitan areas (aside from London).

**Figure 68: Changes in real income per capita by region**

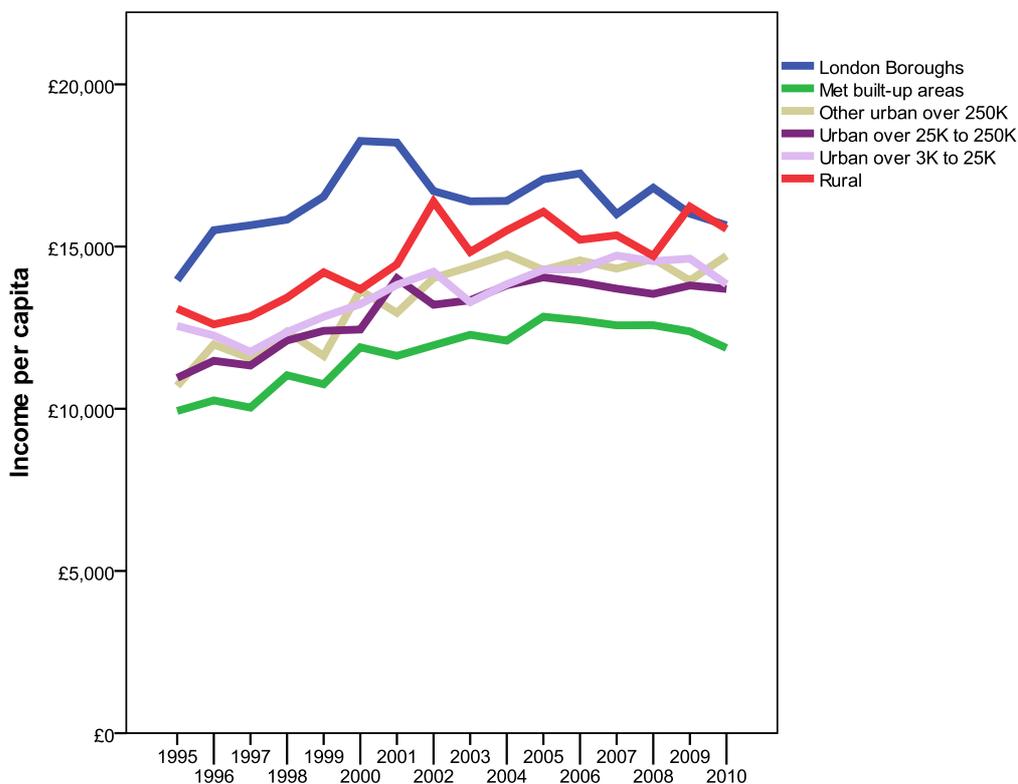
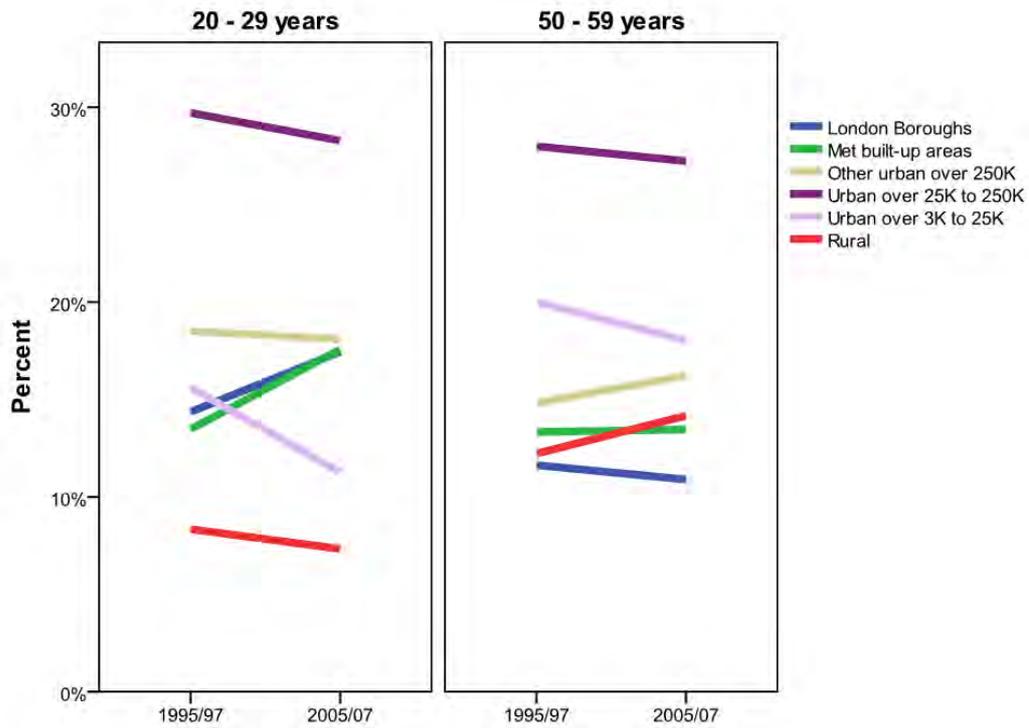
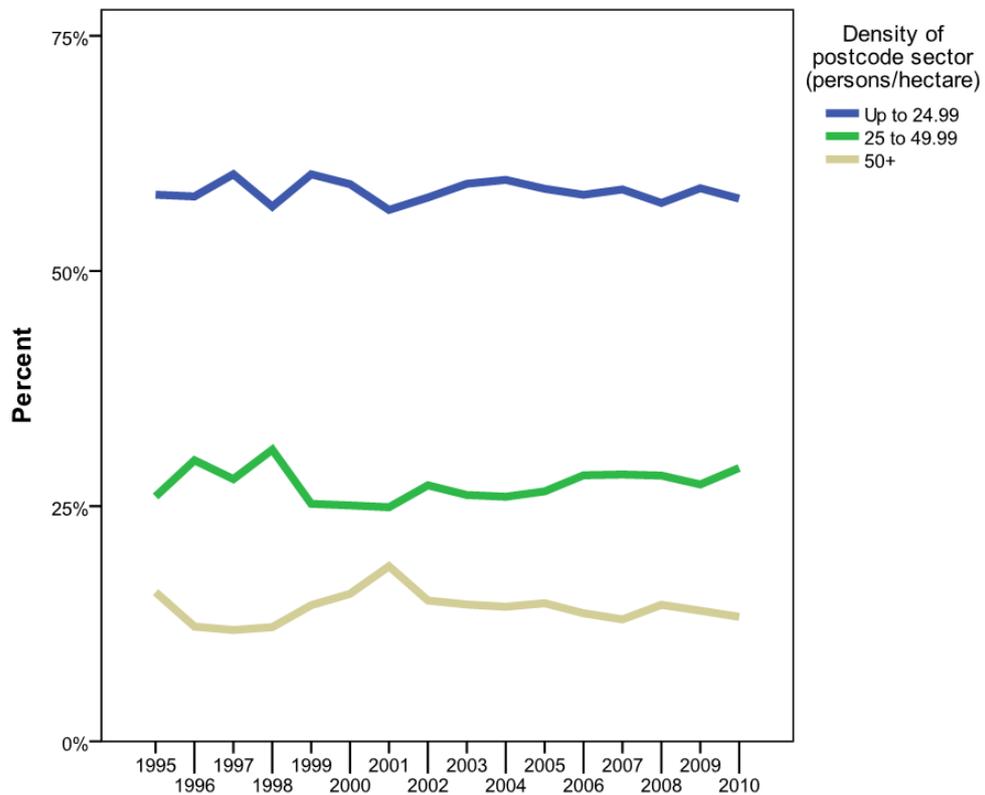


Figure 69 shows that young adults (people in their 20s) seem to have tended to concentrate in London and other metropolitan areas during the period from 1995/7 to 2005/7, whereas this is not found amongst people in their 50s.

**Figure 69: Proportion of people aged in 20s and 50s by settlement size**



**Figure 70: Proportion of people by residential density of postcode sector**



From Figure 70, it can be seen that there has been no substantial shift in residential densities, which reflects that some aspects of the built environment tend to change only very slowly over time in a mature society like Britain.

**Figure 71: Proportion of people by government office region (GOR)**

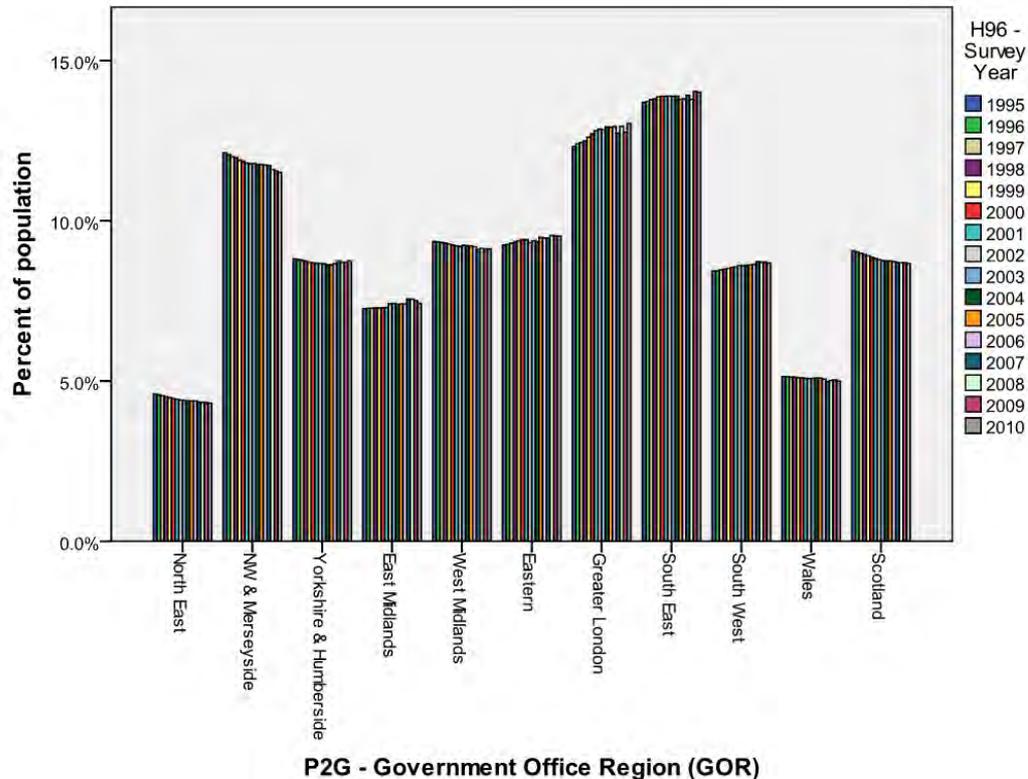
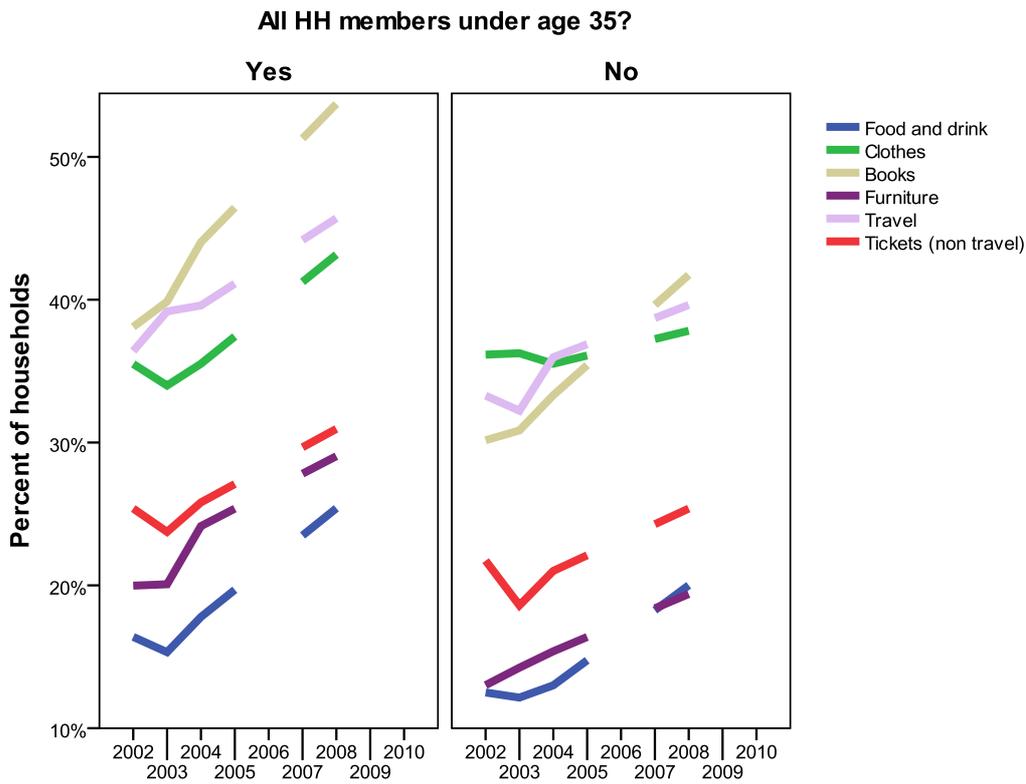


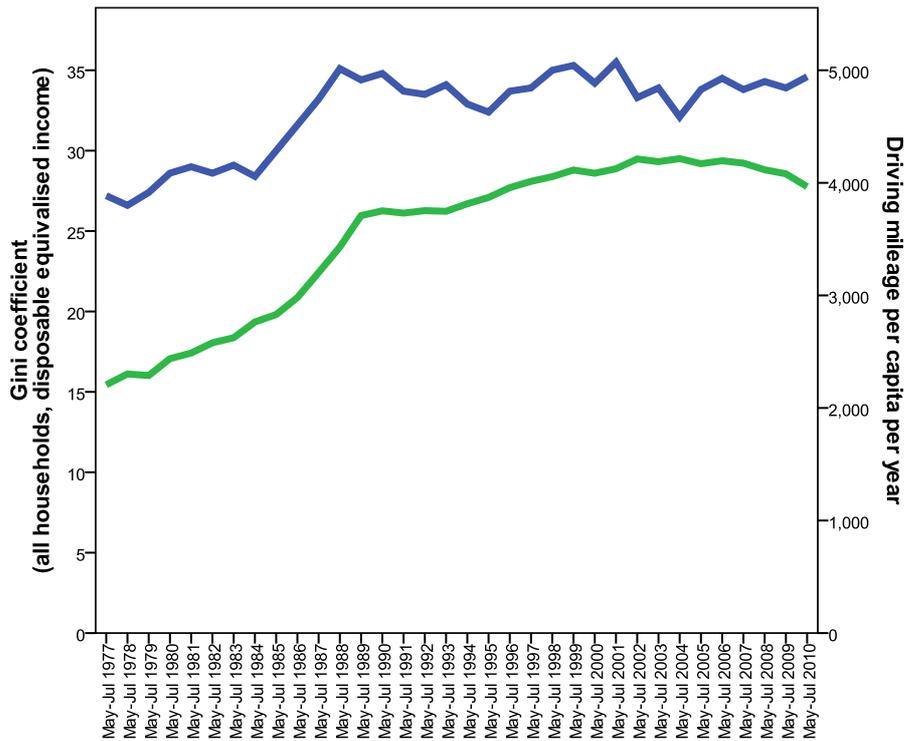
Figure 71 shows that the regions of GB that have increased their share of population since the 1990s have been London, the South East and South West, the East of England, and the East Midlands, with Yorkshire & Humberside having switched from shrinking (in relative terms) to growing in the mid-2000s.

The Main Report notes that whilst the prevalence of home delivery usage has increased, it was especially concentrated amongst young people: this is shown in Figure 72.

**Figure 72: Usage of home delivery services by age of household members**



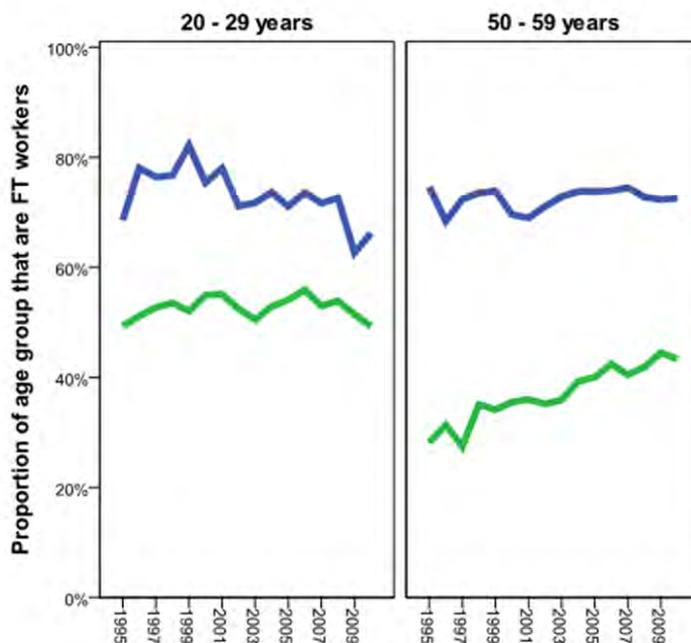
**Figure 73: Comparison between car driving mileage per capita and the Gini coefficient**



There has been considerable discussion in the press about changes in the patterns of income distribution over time. Figure 73 looks at the relationship between this – using the Gini coefficient – and the average car driving mileage per capita, over time. Interestingly, the Gini coefficient rose quite sharply between 1977 and 1988 (indicating a more even distribution of income across the population) – especially between 1984 and 1988 – since when it has fluctuated but not shown any consistent trend.

This period of rapid growth in the Gini coefficient seems to be associated with a historically rapid growth in car mileage per capita, and the inflection point does seem to occur at around the same time as a sharp change in the rate of increase of car mileage.

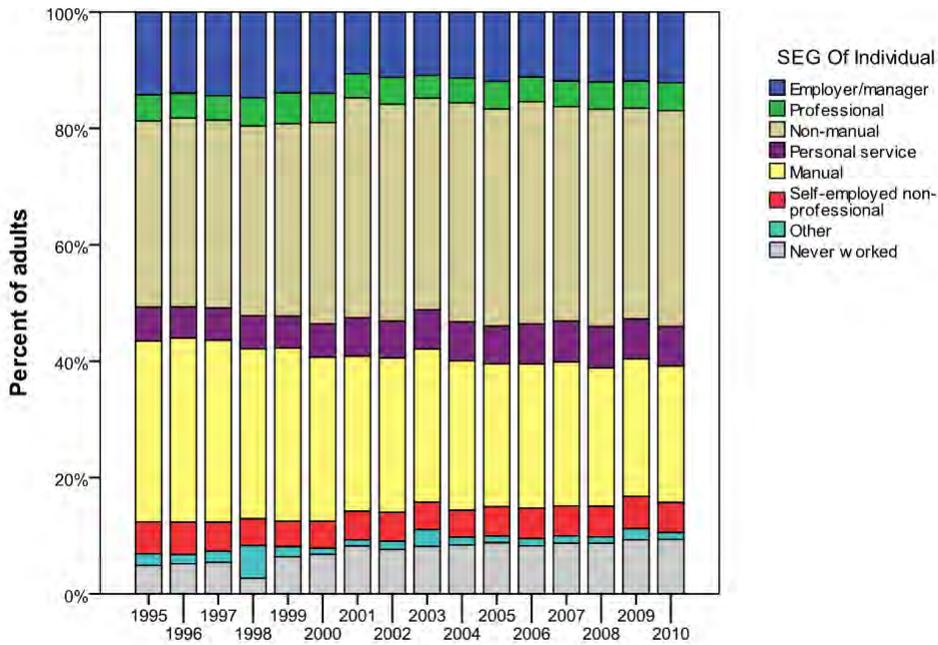
**Figure 74: Of people aged in 20s and 50s, percent of men (blue) and women (green) who are in full-time work**



The Main Report noted stark differences in trends of both economic activity and mobility for young people, particularly men, and older people, particularly women. This can be seen in Figure 74, which shows a falling rate of FT employment for young men, in sharp contrast to the rapidly-rising rate for women in their 50s.

Across the whole population of adults, there has been a distinct shift away from manual work-classification over this time period, as shown in Figure 75. The fastest rates of growth have been in the ‘non-manual’ socio-economic grouping, and the ‘never worked’ category.

**Figure 75: Changing occupation distribution over time**



**Figure 76: Occupational status over time: 20s vs 50s**

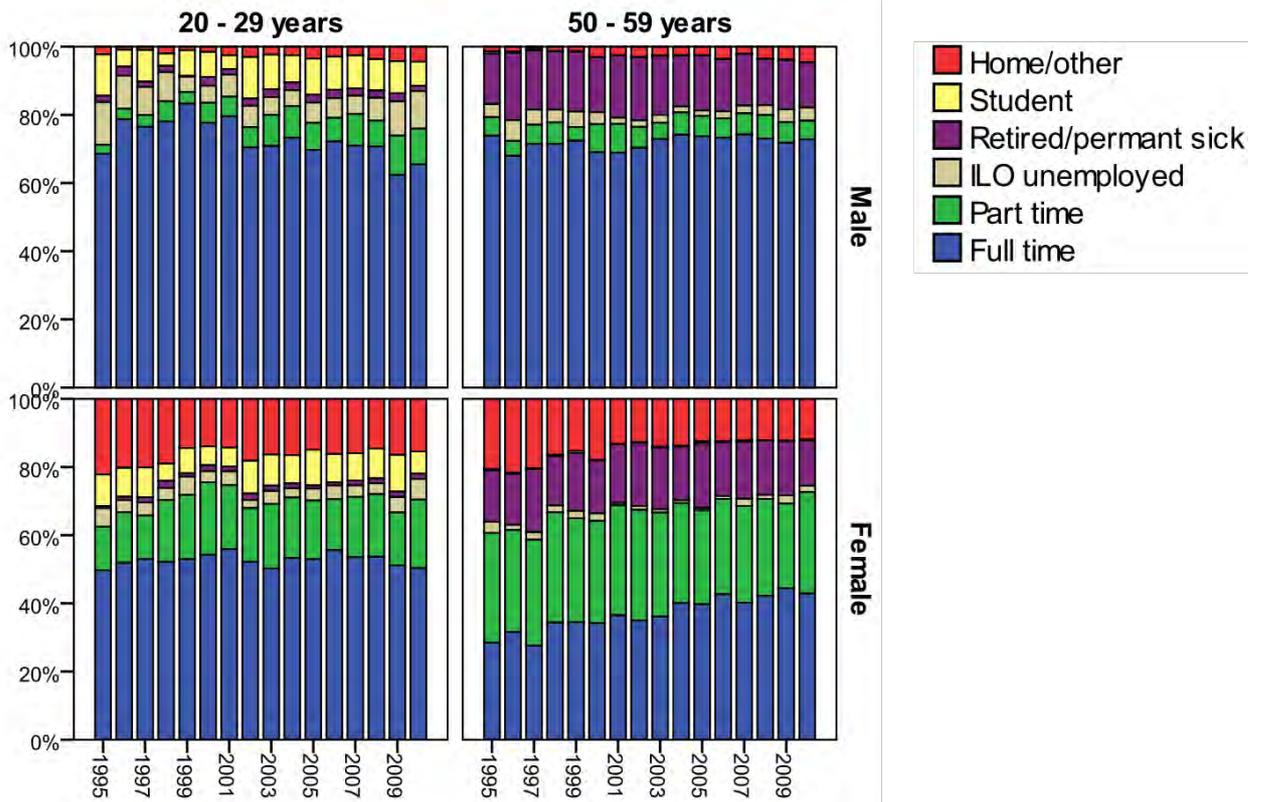


Figure 76 shows in more detail how employment status has changed for these same age groups. It can be seen that part-time working has increased amongst young men, as well as student status and 'home/other category'. For women in their 50s it is this 'home/other' status that is shrinking the status, which is simply highlighting the decreasing tendency for women to be stay-at-home mums.

**Figure 77: Car driving mileage by economic status, for men and women aged in 20s and 50s**

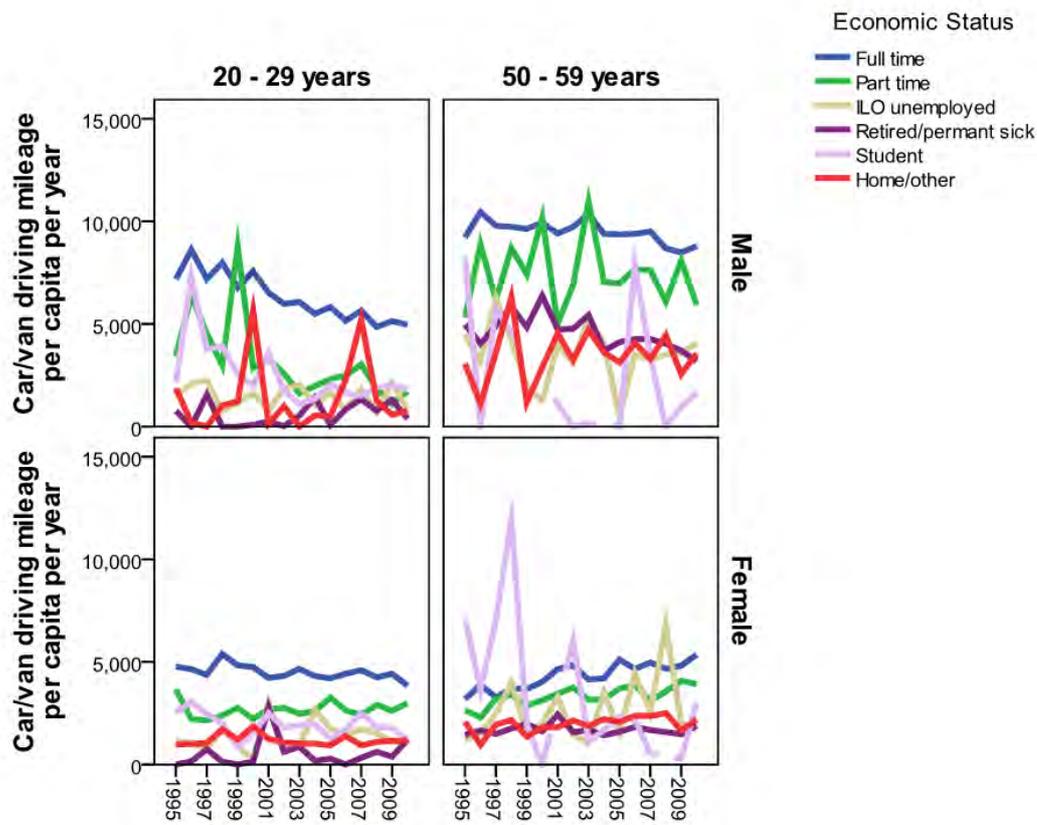


Figure 77 shows car driving mileage for these age and economic status groups. (The lines with wider oscillations represent smaller sample sizes.) It can be seen that being in full-time work is generally the highest-driving-mileage category, but that amongst young men those working full-time have reduced their mileage substantially over time. This is not the case for young women and men in their 50s. For women in their 50s, those in full-time work exhibited increasing driving mileage over time, as did most of the other economic status groupings.

**Figure 78: National Rail mileage over time, by occupational groups, 20s vs 50s**

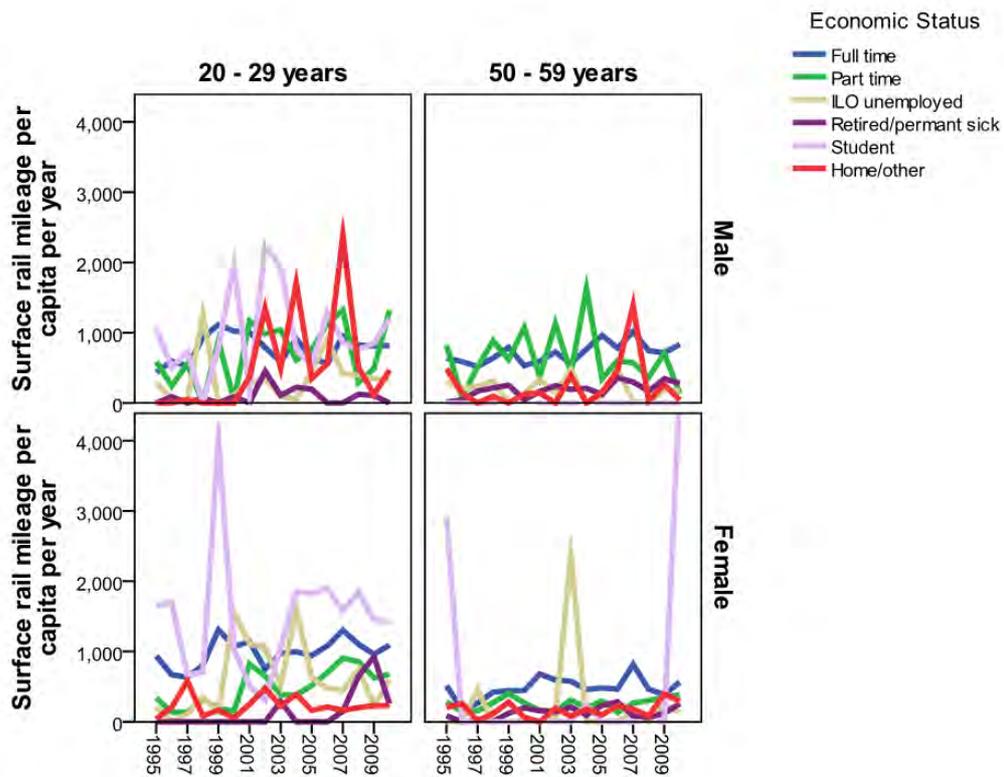


Figure 78 is the same as Figure 77, but showing National Rail mileage instead of driving. Unlike with driving, there is no evidence of a large gap in rail usage between full-time workers and everyone else. The time trends are also less distinct, due to the smaller sample size of rail journeys observed in the NTS.

**Figure 79: Car driving mileage by occupational type, over time**

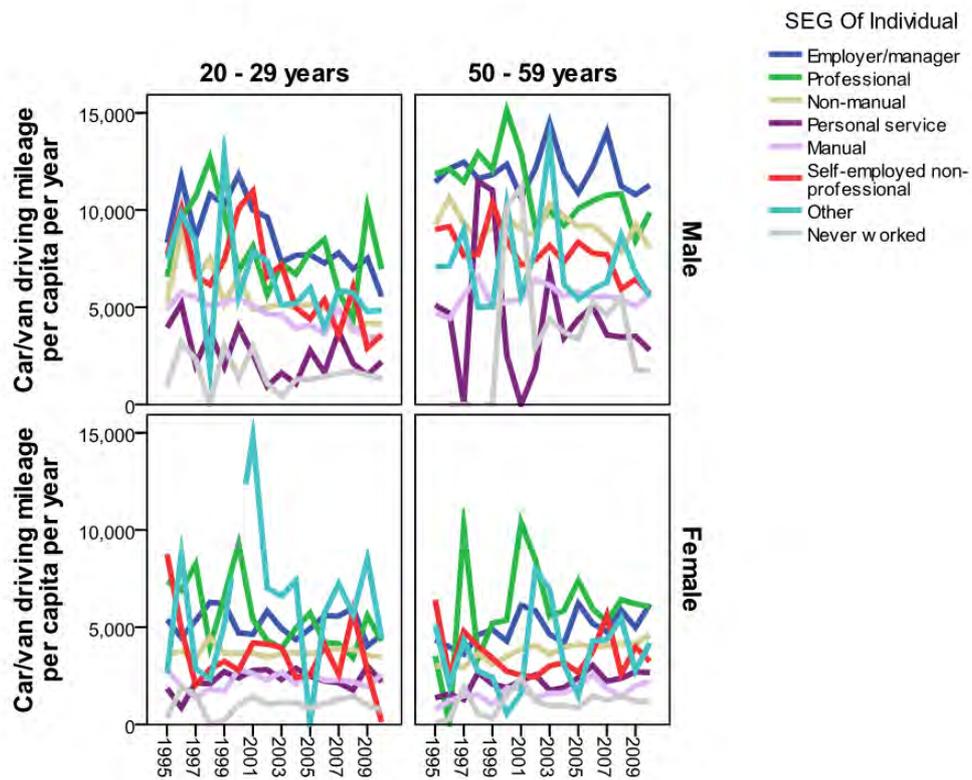


Figure 79 shows how driving mileage has trended when disaggregated by the type of work one does (or did, in the case of non-workers), rather than by economic status, for the 20s and 50s age groups. In general, the professional and employer/manager groups are high driving mileage.

**Figure 80: Trends in car driver mileage, by occupational type and gender**

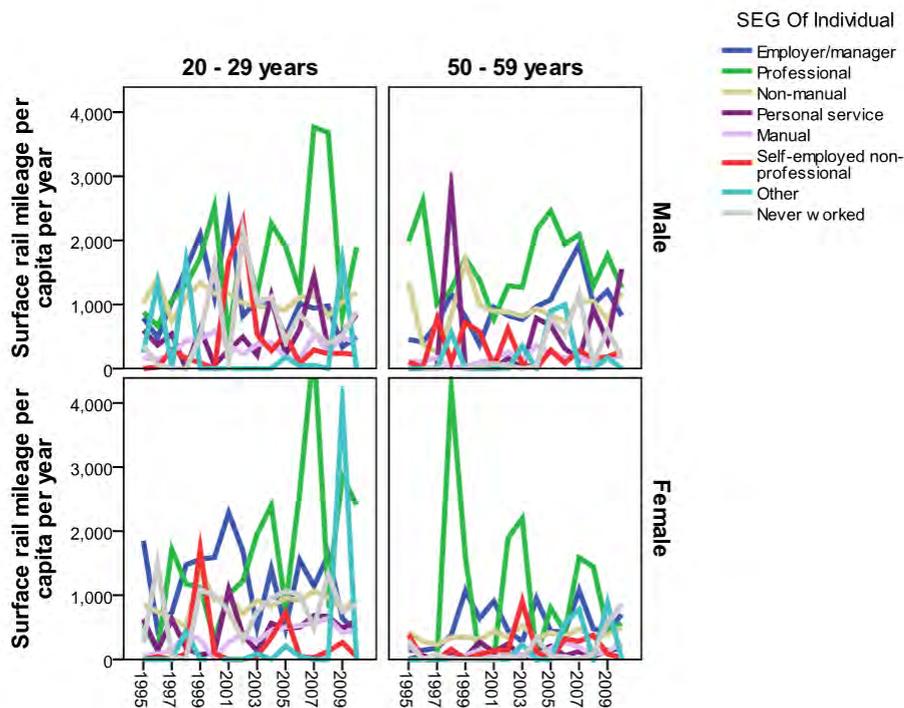
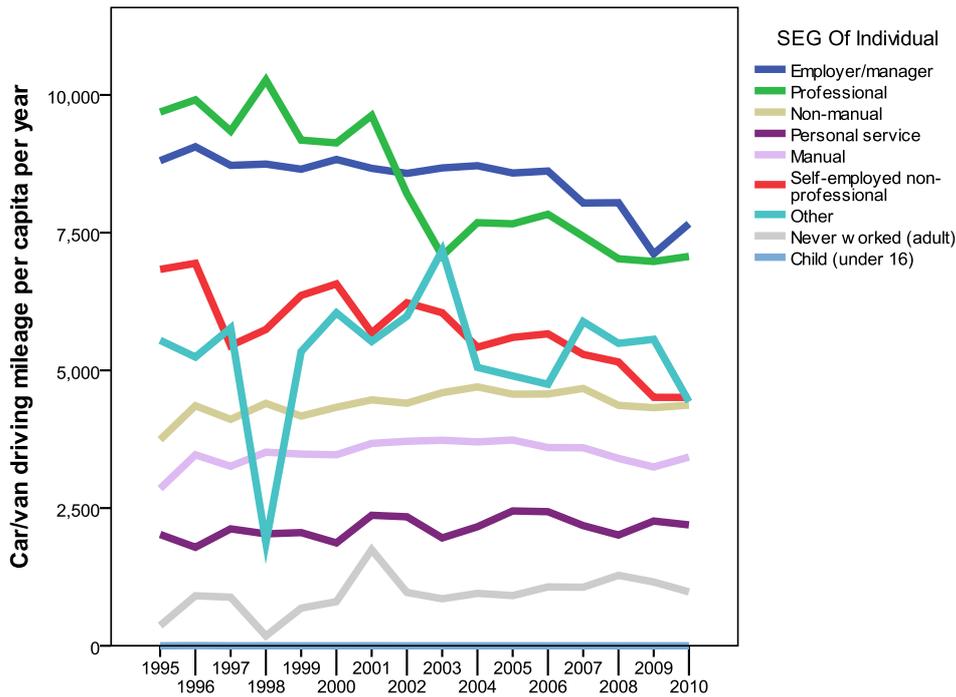


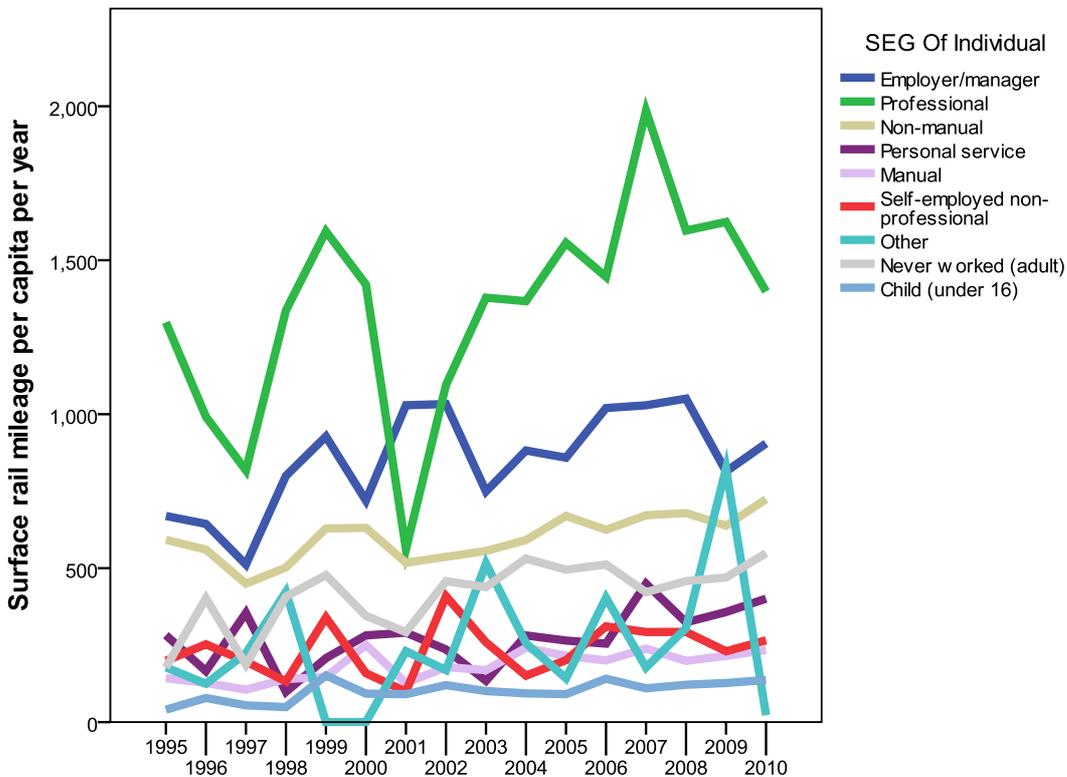
Figure 80 shows the same as Figure 79 but for rail mileage. Some similarities are evident: again, the professional and employer/manager groupings exhibit relatively high mobility levels.

The next two charts – Figures 81 and 82 – show the trends in Figures 79 and 80 for the whole population of adults (not disaggregated by age and gender).

**Figure 81: Car driver mileage by occupational type, over time**



**Figure 82: Trends in rail passenger mileage, by occupational type and gender**



**Figure 83: Driving trends by age/gender and presence of children in the household**

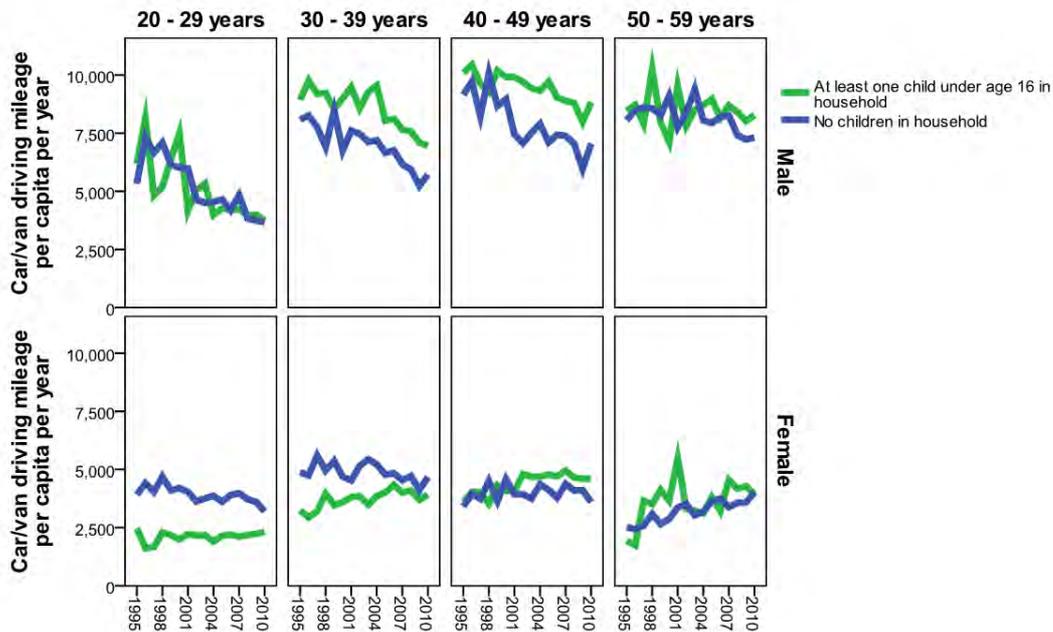


Figure 83 looks at whether average car driving mileages for particular age/gender groups vary according to the presence of children in the household.

For men in their 20s and 50s this has no effect, but it does for the 30 and 40 year age groups, where mileage is higher for men in households with children. This is opposite to the pattern for women in their 20s and 30s, where the presence of children is associated with lower annual car driver mileages.

Figure 84 looks at the effect of household income on licence-holding rates, for men and women, at two points in time. As expected, the percentages of men and women with a full car driving licence increases with income. For men, there has been a slight drop for all income groups except the lowest one, where it has risen. Conversely, for women there has been an increase in all income groups, except the highest one which has fallen.

**Figure 84: Driving licence ownership by household income, 1995/7 vs 2005/7**

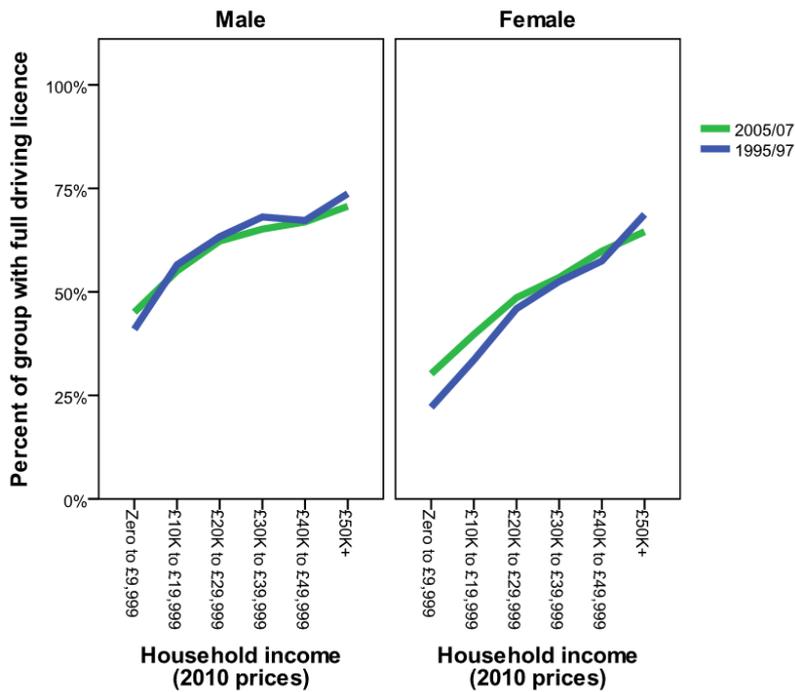
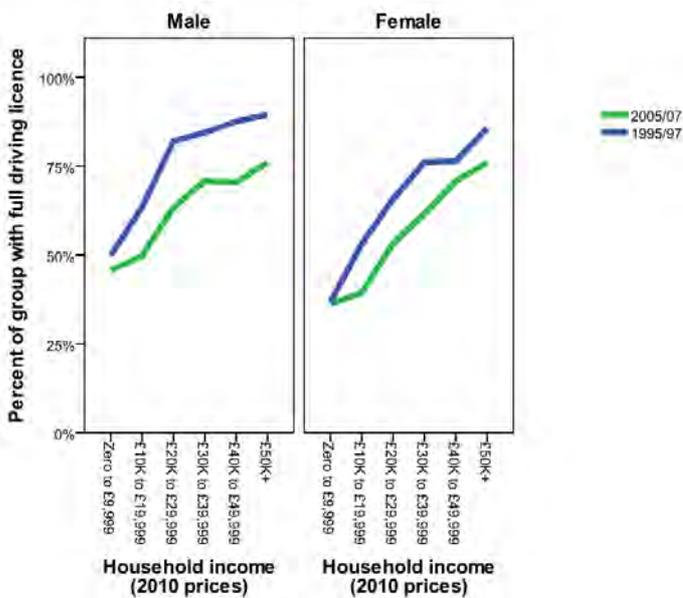
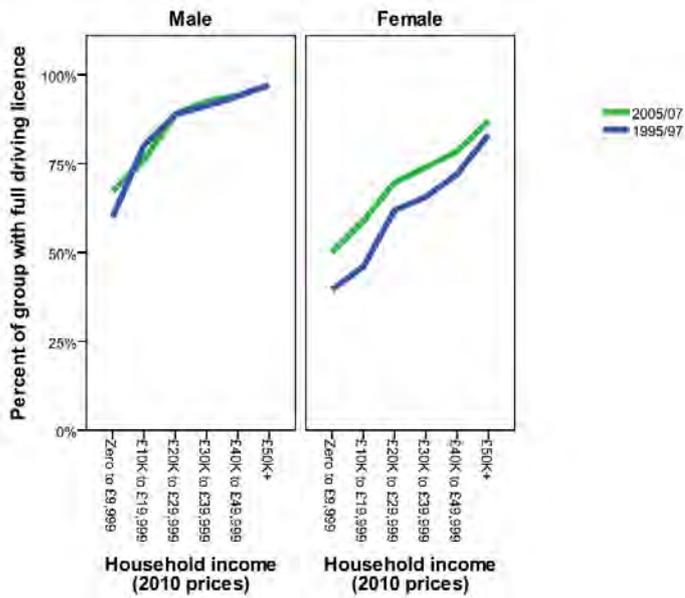


Figure 85 and 86 show the same information, but focus on the 20s and 50s age groups. Now we see sharp drops in licence-holding among the 20s age group except in the lowest income group, particularly among men, and an increase among women in their 50s.

**Figure 85: Driving licence ownership by household income and age group 20–29, comparing 1995/7 vs 2005/7**



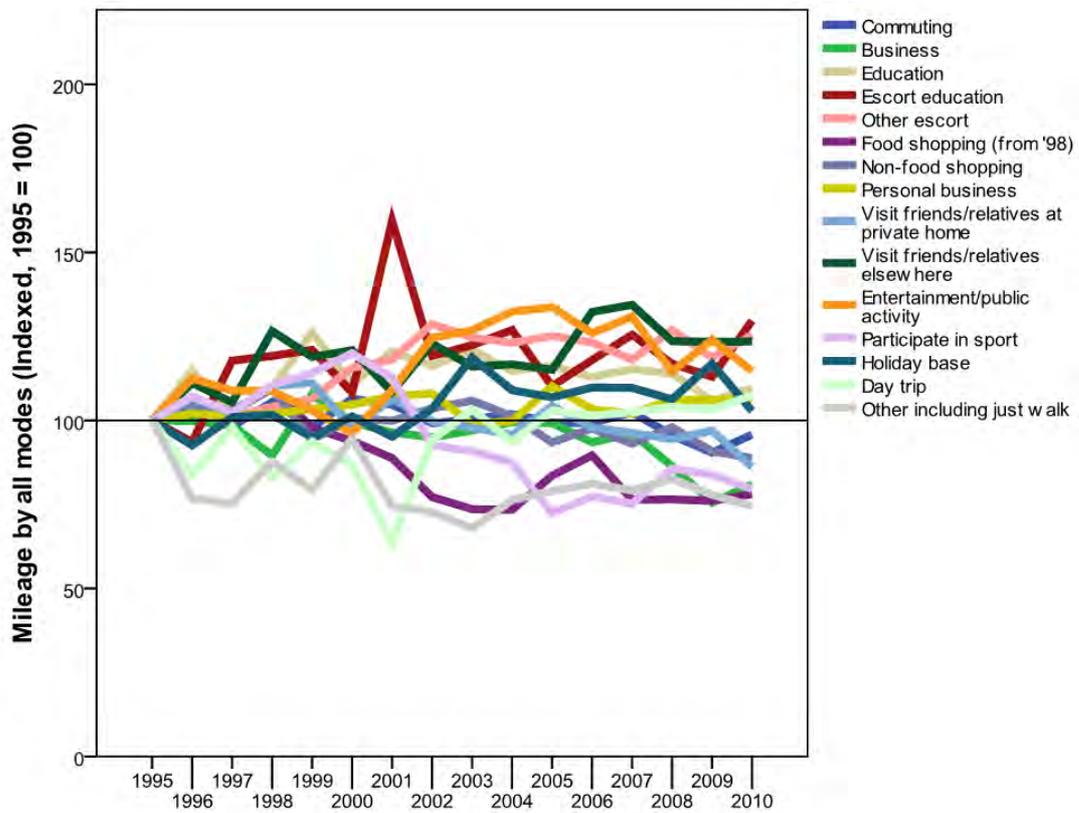
**Figure 86: Driving licence ownership by household income and age group 50–59, comparing 1995/7 vs 2005/7**



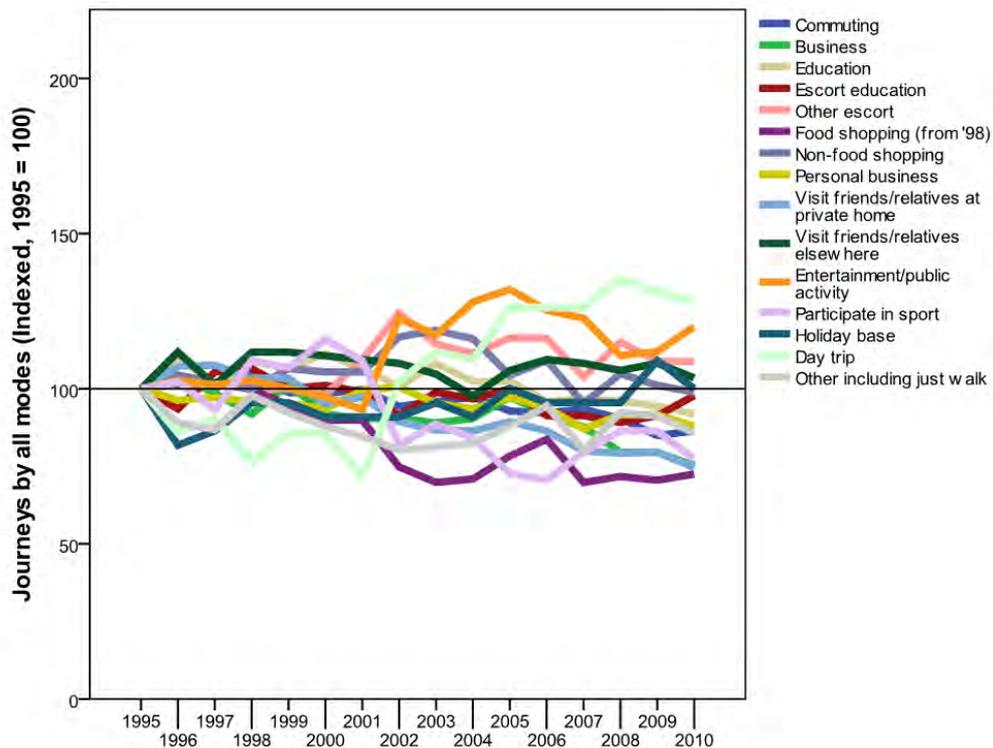
## 12. Journey Purposes

We begin this section by looking at trends in mileage and journeys by all modes – shown in Figures 87 and 88, respectively.

**Figure 87: Average annual mileage by journey purpose, indexed to 1995**



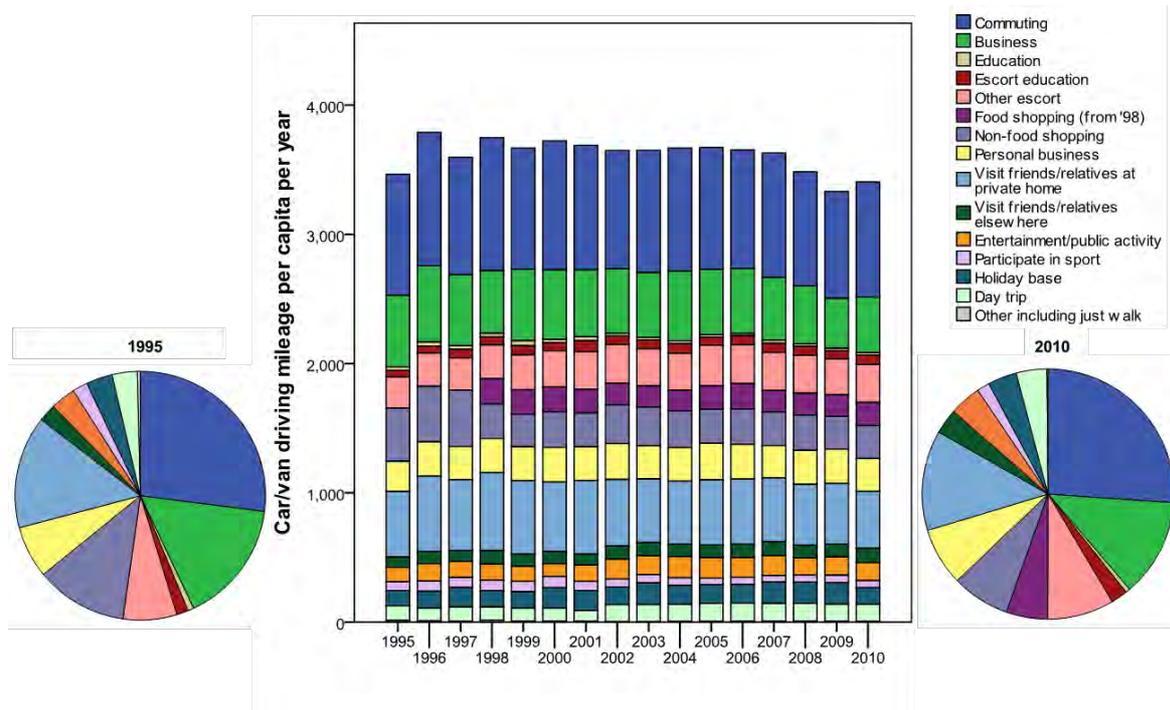
**Figure 88: Average annual journeys by journey purpose, indexed to 1995**



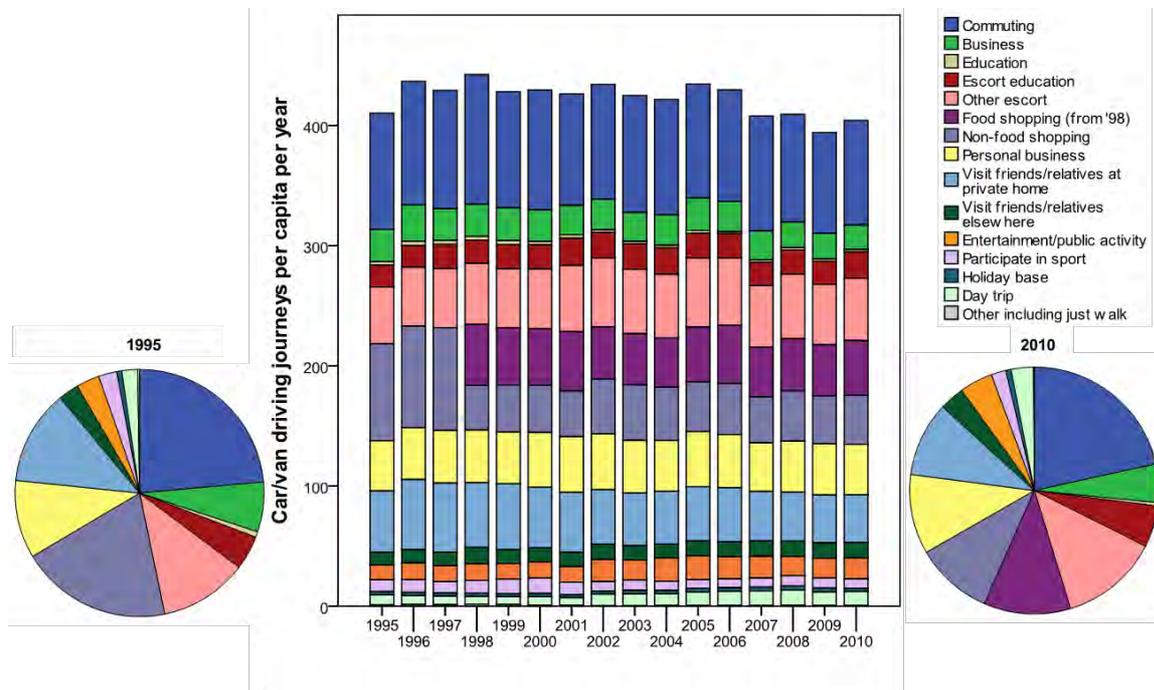
Figures 89 and 90 show the trend in average annual car/van driving mileage and number of journeys disaggregated by journey purpose. In addition to the time trend, at either side of the chart are pie charts showing the share in 1995 (at left) and 2010 (at right). Thus the Figures show both the absolute and relative changes during this time period.

Figures 91 and 92 show the same information, but for National Rail rather than car driving travel.

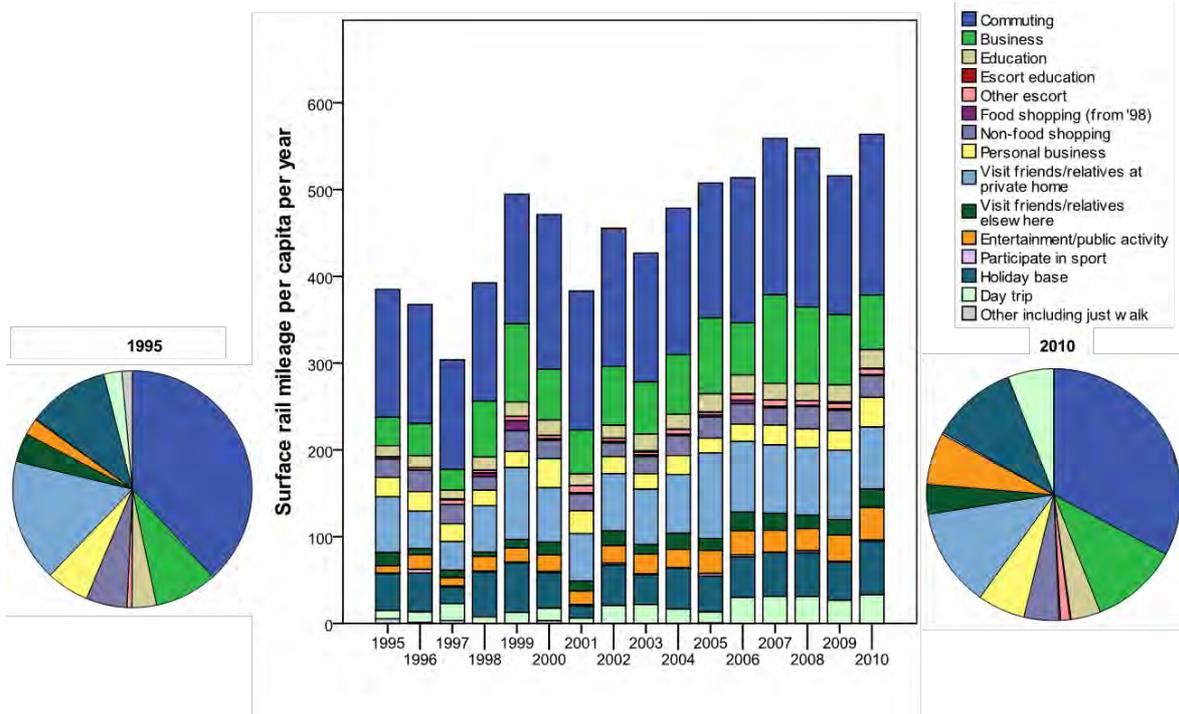
**Figure 89: Cumulative average annual car/van driving distance by journey purpose**



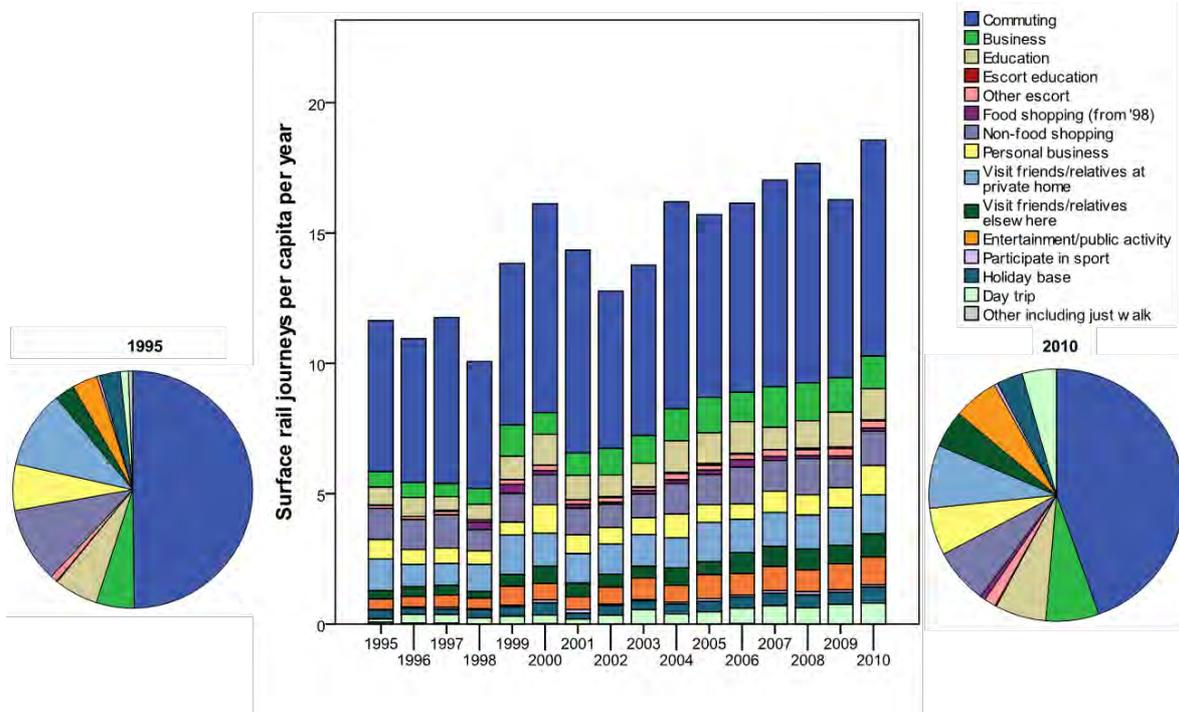
**Figure 90: Cumulative average annual number of car/van driving journeys by journey purpose**



**Figure 91: Cumulative average annual National Rail distance by journey purpose**



**Figure 92: Cumulative average annual number of National Rail journeys by journey purpose**



The rest of this section looks at changes in the number of journeys made during NTS respondents' diary weeks for various purposes.

The data is weighted at the NTS respondent level, but not with the NTS's journey-level weights; this is so that the number of journeys per week is an integer for each person, thus allowing the visual presentation of results shown here.

Results are shown for adults and children separately in Figures 93 to 116 inclusive; further detailed breakdowns by age and gender are shown in Figures 117 to 137 inclusive. We comment primarily on the adult vs children breakdown in the text of this section.

Detailed definitions of journey purposes can be found in the NTS documentation. The rest of this section briefly describes what the results show – it should be stressed that this is an exploratory analysis; the findings require more in-depth research to properly understand the changing trends and what may be causing them.

As discussed in Section 4, there has been a falling level of commuting activity per person over time, which is also evident from Figure 93. The biggest drop seems to be in the proportion of people making six or more journeys to work activities. Figure 94 shows that the proportion of people performing out-of-home, in-the-course-of-work activities is much smaller than the proportion performing out-of-home work activities at one's main place of work, and that of those performing in-the-course-of-work activities the most common number during the diary week is one.

Figure 95 shows that rail travel has seen growth in commuting and other business purposes, but that much of the growth in rail travel has in fact been for all other (non-business) purposes.

Figure 96 shows number of journeys to education activities, which has trended slowly upwards over time.

The NTS did not distinguish between food shopping and non-food shopping before 1998, which can be seen in both Figures 97 and 98. Figure 97 shows an especially marked fall over time in the proportion of people making six or more trips to food stores. There is a step change in the number of food shopping trips per child; this appears to be due to simply recharacterising some trips to food stores by children after the change of NTS contractor in 2002 from trips for 'food shopping' purposes to trips for 'escort to shopping/personal business' purposes (Figure 115). By contrast, the fall in non-food-shopping trips by children appears to be genuine as it is essentially a year-on-year fall from 2000 onwards (Figure 99). This last result is certainly ripe for further enquiry to better understand why this has happened and whether it is likely to continue.

In Figure 98 it can be seen that the NTS is showing a downward trend in travel for both food and non-food shopping since 1998. It is not known whether the temporary uplift in 2004, 2005, and 2006 is a data artefact or represents an actual change in shopping behaviour. It is also noteworthy that in 2007 there were minor changes to the NTS diary instrument which seems to have primarily affected the reporting of short journeys. In any case, since 2007 despite the recession there seems to have been a small upward trend in food shopping travel, which is not seen for non-food-shopping: it has been basically flat.

Figure 99 shows that amongst children there has been a strong downward trend over time in the number of non-food shopping activities.

Figure 100 shows an increasing number of trips to medical-related activities over time, which further analysis showed to be especially concentrated amongst people aged 70+.

Figure 101 shows that the number of people who record making trips to eat/drink alone is very small, and much smaller than the number who record journeys to eat/drink together with friends/relatives (Figure 103). Figure 103 also shows that journeys to eat/drink with friends/relatives increased in the mid- to late-1990s, and has since been more stable.

Figure 102 shows that trips to unspecified 'personal business' activities have been generally stable over time.

In Figure 104 it can be seen that the number of trips by adults to visit friends/relatives at private homes has been trending downwards over time, an effect which seems predominantly due to a falling number of people who make many trips (four or more per week) to visit friends/relatives at home. This trend has also been concentrated amongst younger adults (as shown in Figure 105), and particularly for younger men the fall has been disproportionately at weekends (also shown in Figure 105).

Figure 106 shows that there has been a countervailing increase (at least until the 2007+ recession) in the number of trips made for other social purposes, but that this increase is a much smaller magnitude than the fall in visiting friends/relatives at homes. Figure 107 shows a similar result for entertainment/public activities, which is clearer for children than adults, but again not very large. Thus there does not seem to be one-for-one substitution of increasing not-in-homes socialising to compensate for the fall in in-homes socialising.

Figure 108 it can be seen that, unsurprisingly, children generally make more trips to participate in sport than adults do.

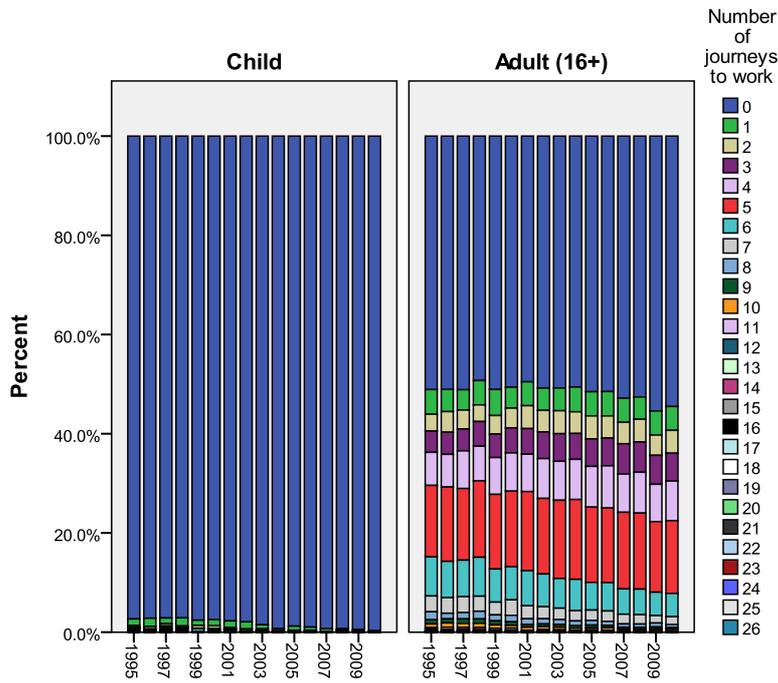
Figure 109 shows an upward trend in the number of trips to holiday-destination-bases (i.e. residences such as hotel rooms or cottages where one stays whilst on holiday).

Figure 110 shows that in recent years NTS respondents are reporting more journeys in the 'day trip/just walk' category, particularly children.

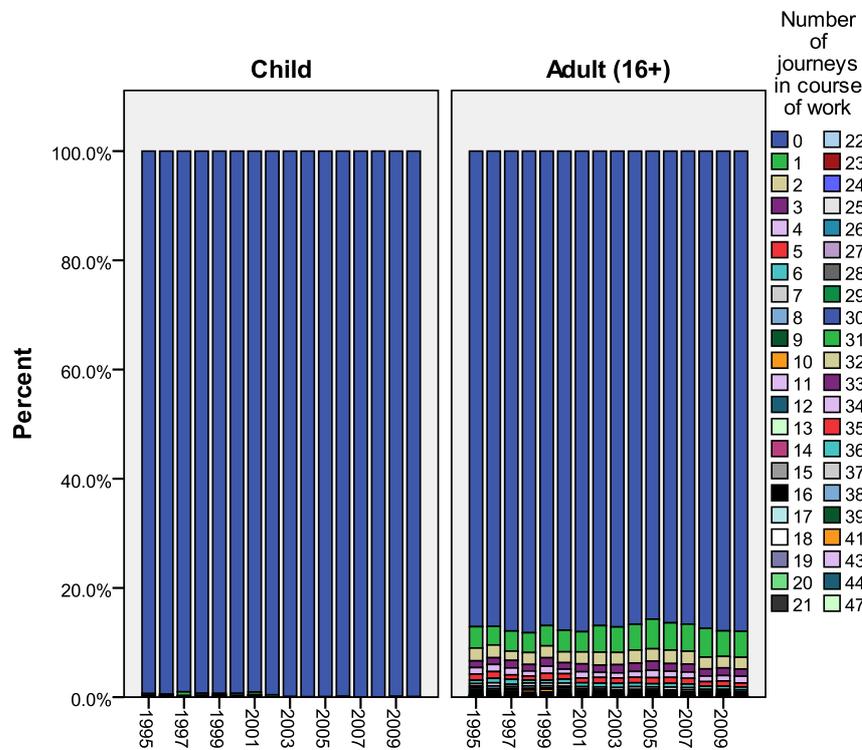
Figure 111 shows that NTS respondents report very few journeys for non-escort purposes that are classified as 'other' than the previously listed purposes.

The remaining figures (Figures 112 to 116) relate to escort travel – in all cases these are minority activities, with well fewer than 50% of people (either children or adults) performing any one of these classes of escorting journeys during their diary week. Several apparent artefacts due to the change of NTS contractor in 2002 can be seen – e.g. the jump in 'escort other' travel from 2002 onwards.

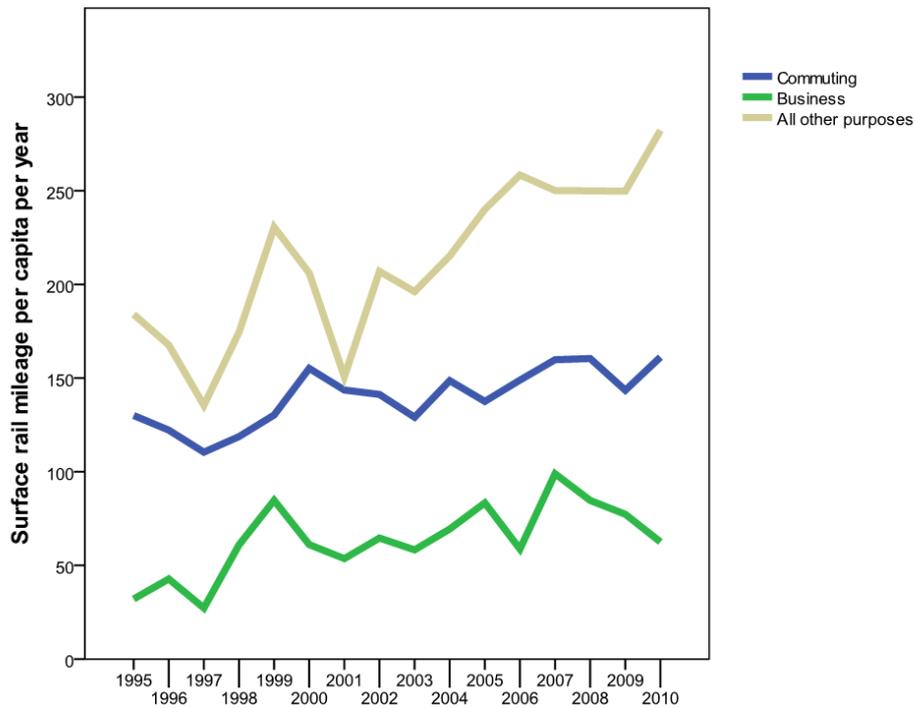
**Figure 93: Percentage of children and adults by number of journeys to work activities during NTS diary week**



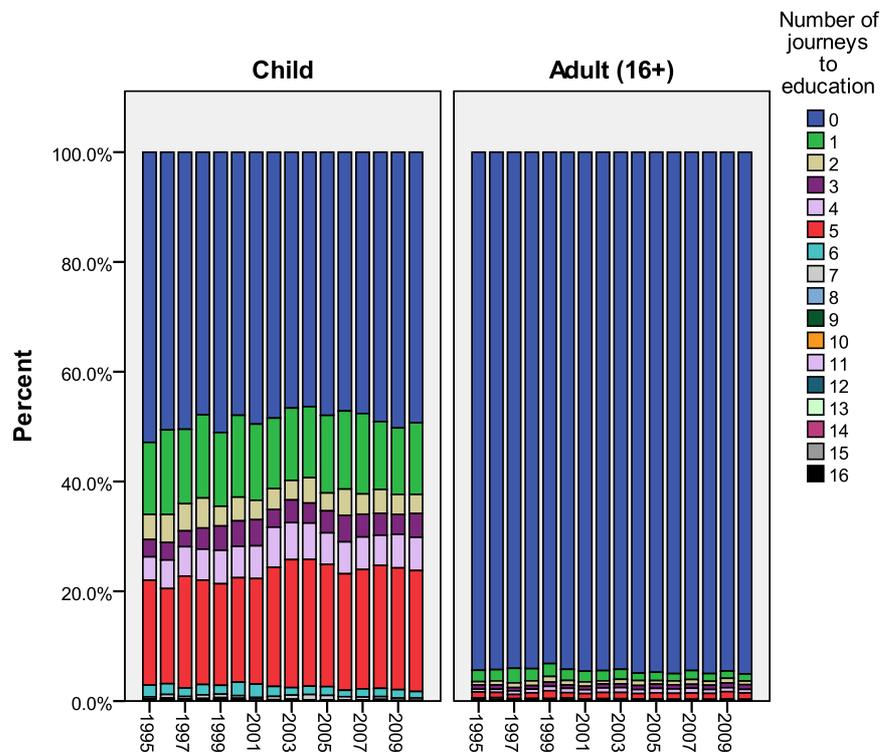
**Figure 94: Percentage of children and adults by number of journeys in the course of work activities during NTS diary week**



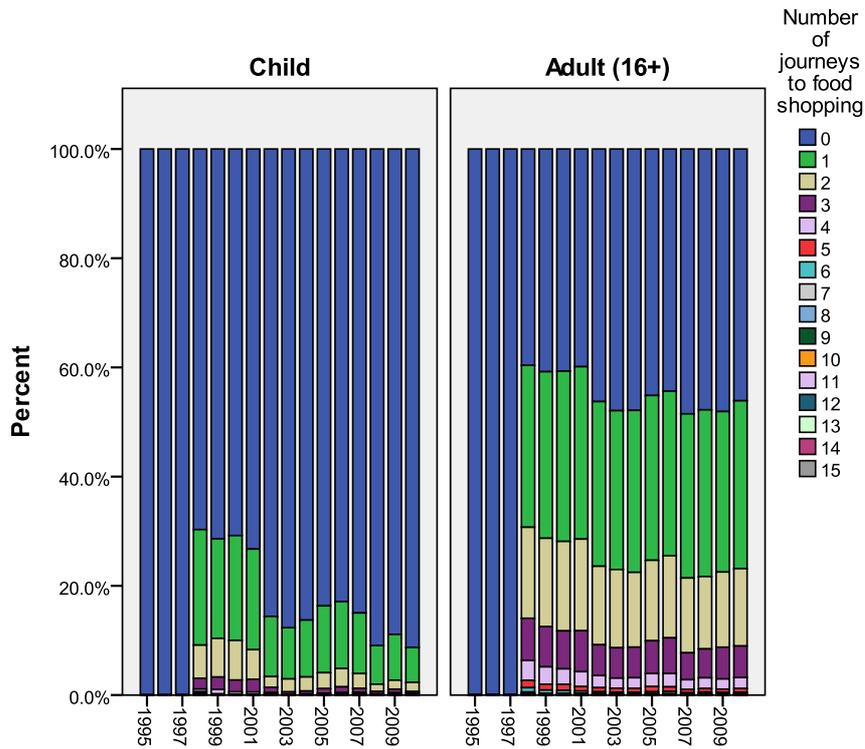
**Figure 95: Trends in rail mileage for commuting, other business purposes, and all other purposes**



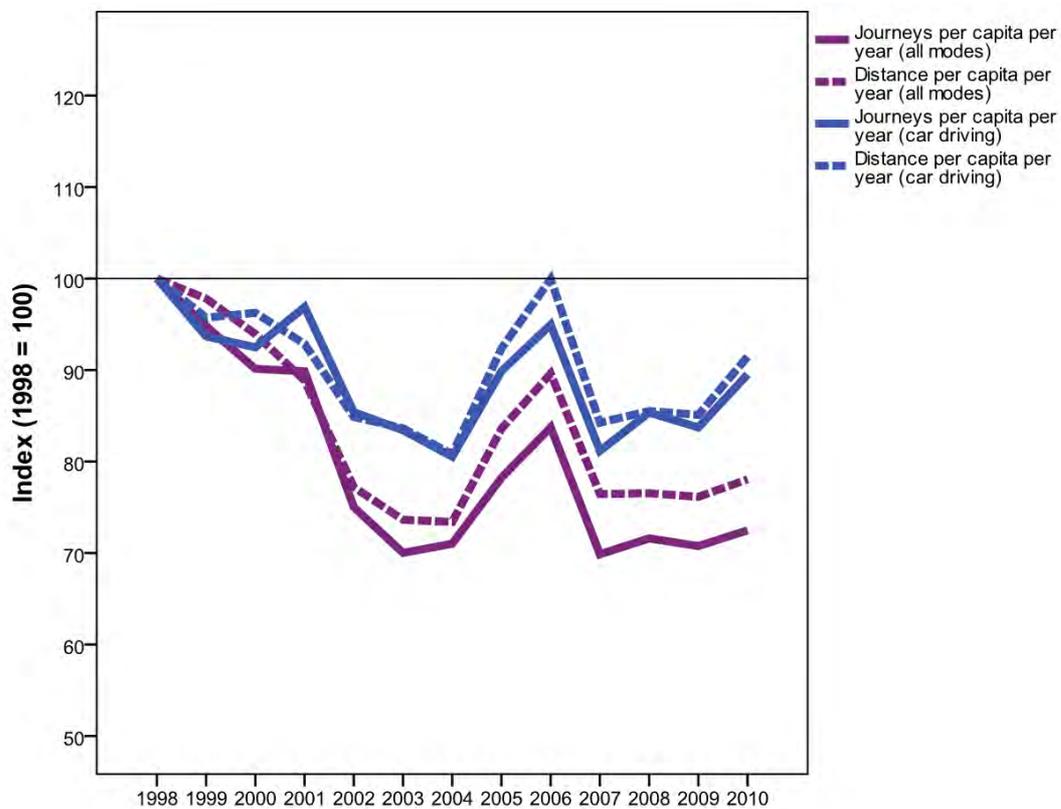
**Figure 96: Percentage of children and adults by number of journeys to education activities during NTS diary week**



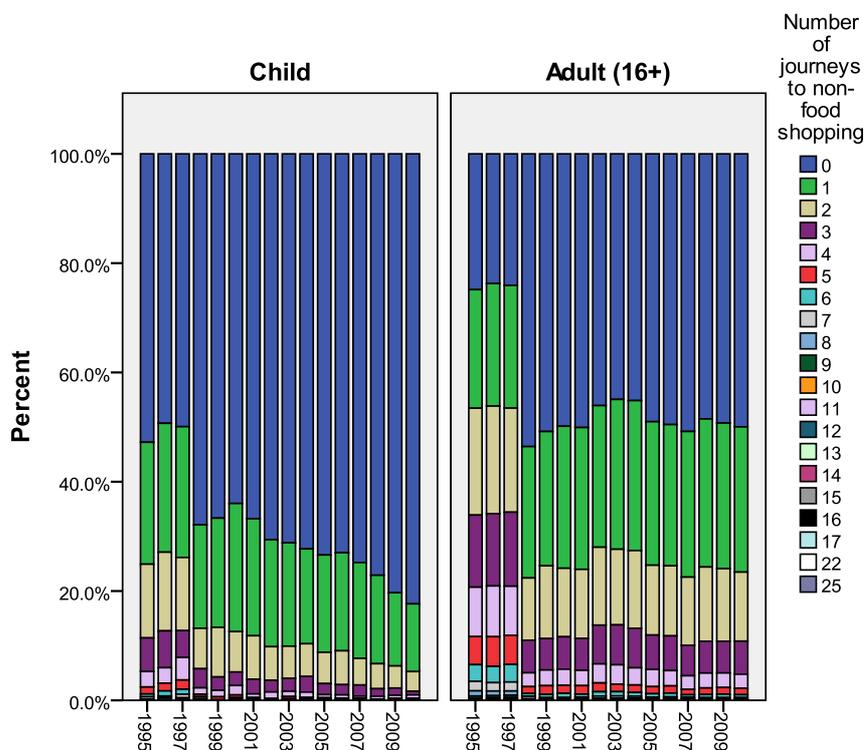
**Figure 97: Percentage of children and adults by number of journeys to food shopping activities during NTS diary week**



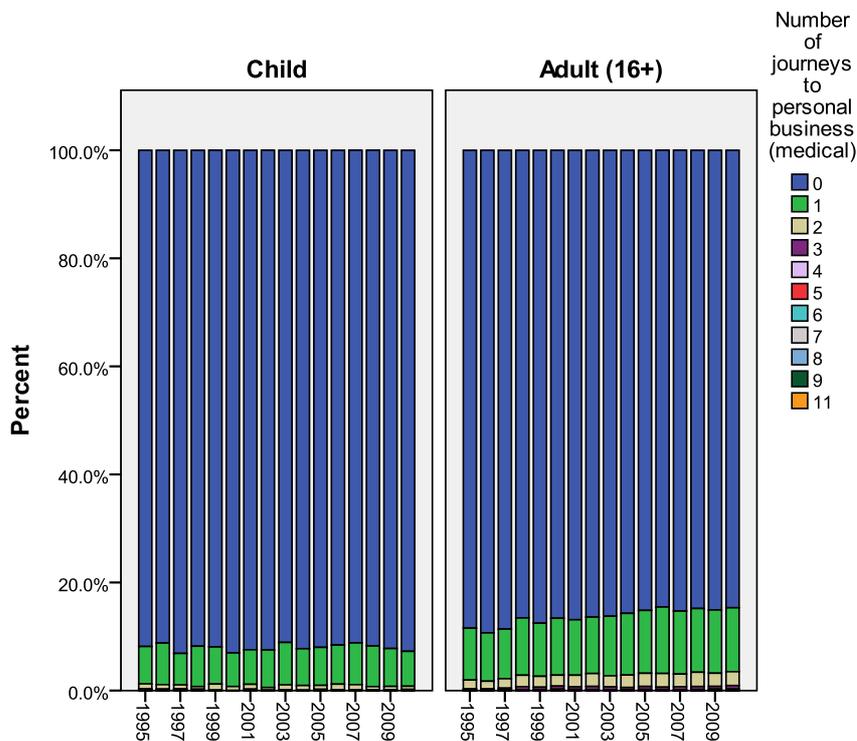
**Figure 98: Trends in food shopping (blue) and non-food shopping (purple)**



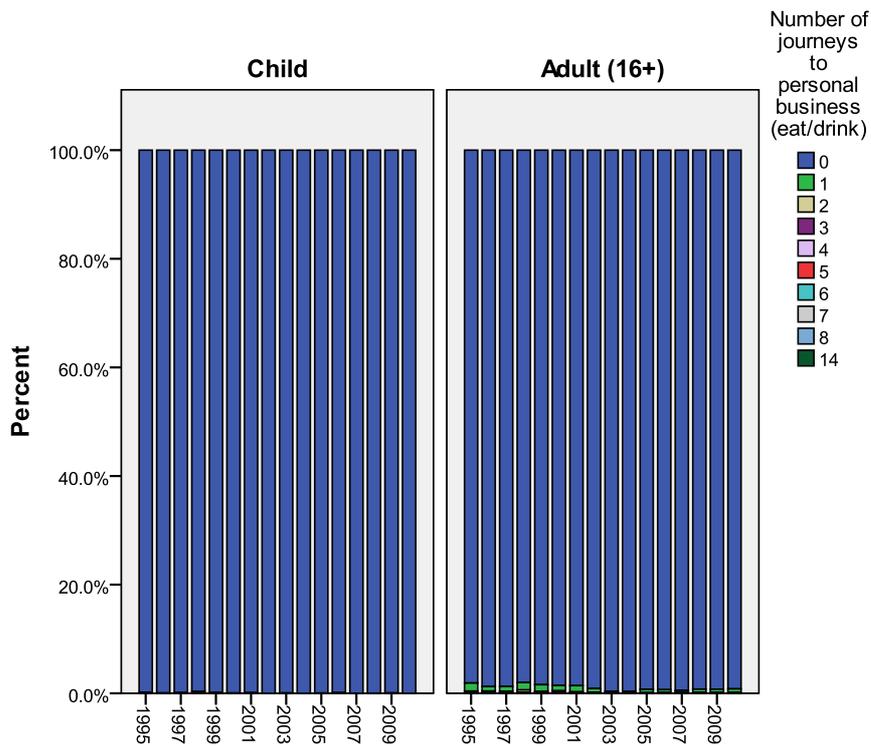
**Figure 99: Percentage of children and adults by number of journeys to non-food shopping activities during NTS diary week**



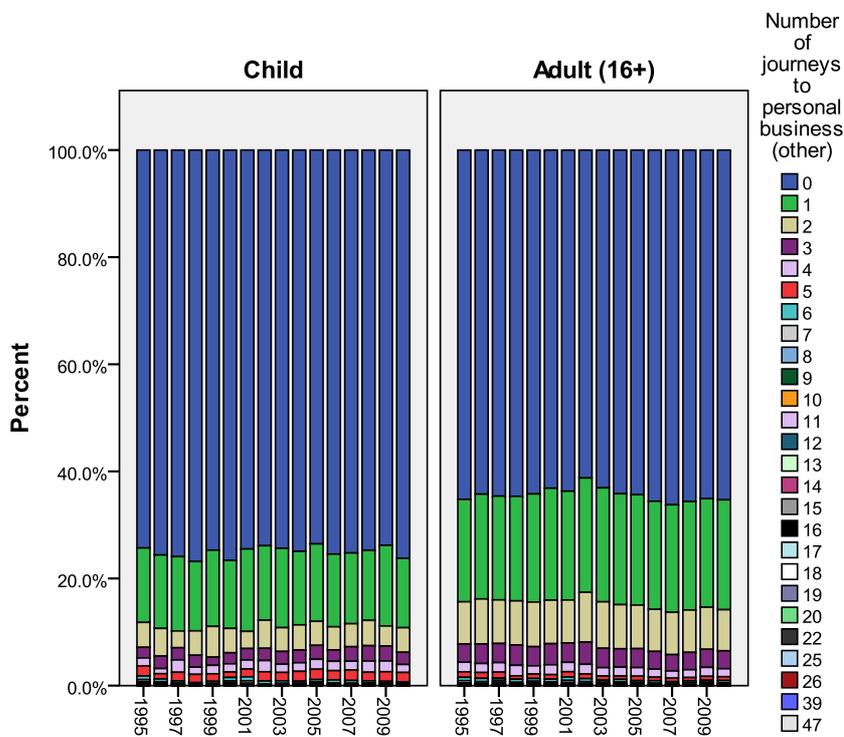
**Figure 100: Percentage of children and adults by number of journeys to medical activities during NTS diary week**



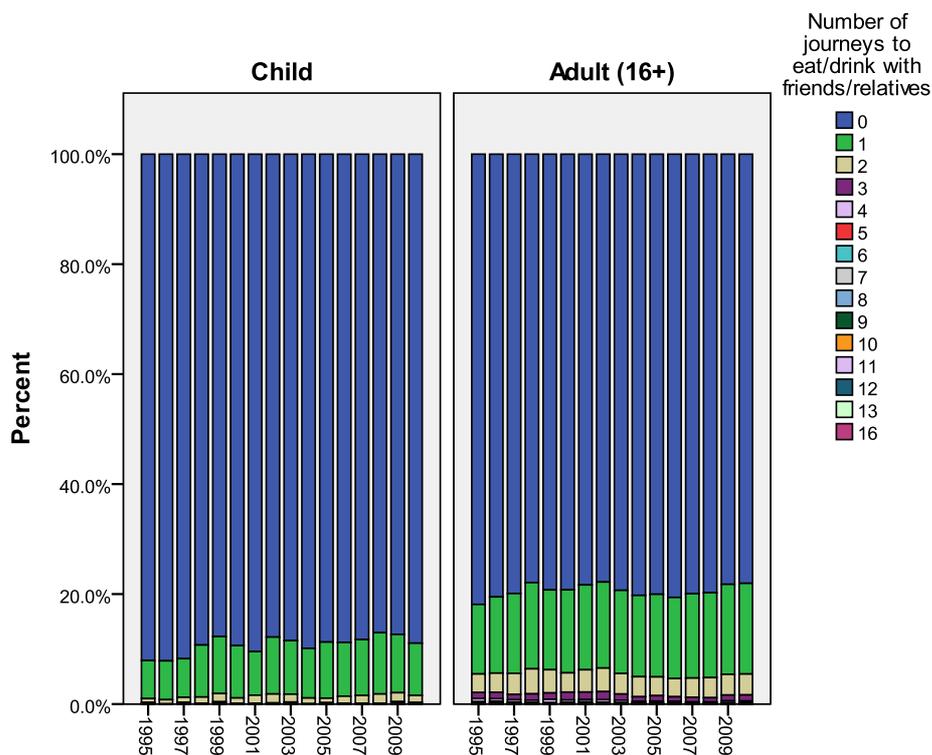
**Figure 101: Percentage of children and adults by number of journeys to eat/drink alone activities during NTS diary week**



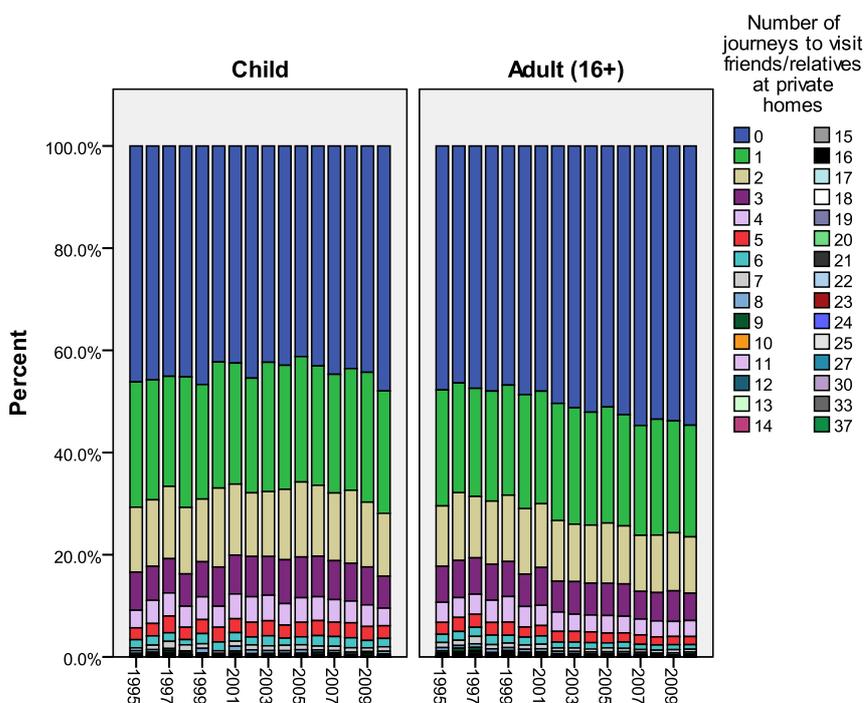
**Figure 102: Percentage of children and adults by number of journeys to other personal business activities during NTS diary week**



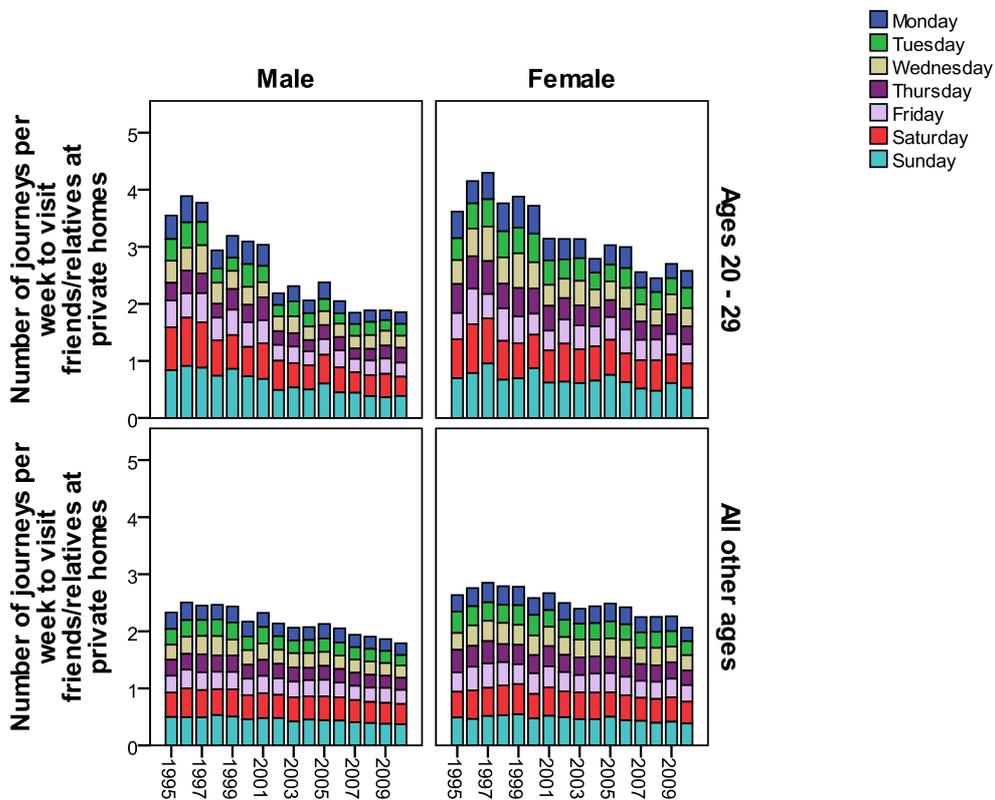
**Figure 103: Percentage of children and adults by number of journeys to eat/drink with friends/relatives activities during NTS diary week**



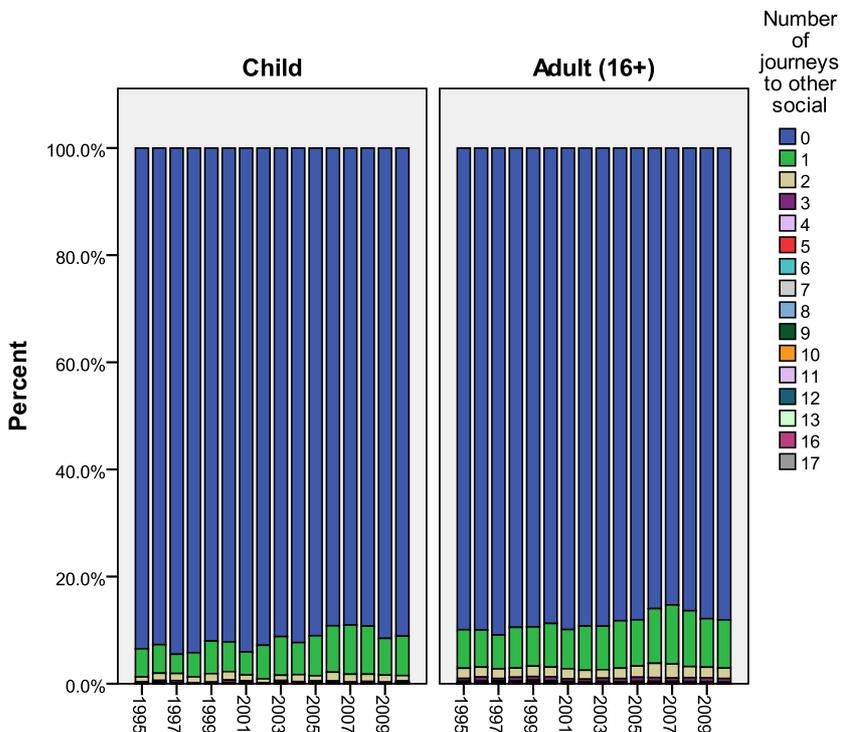
**Figure 104: Percentage of children and adults by number of journeys to visit friends/relatives at private home activities during NTS diary week**



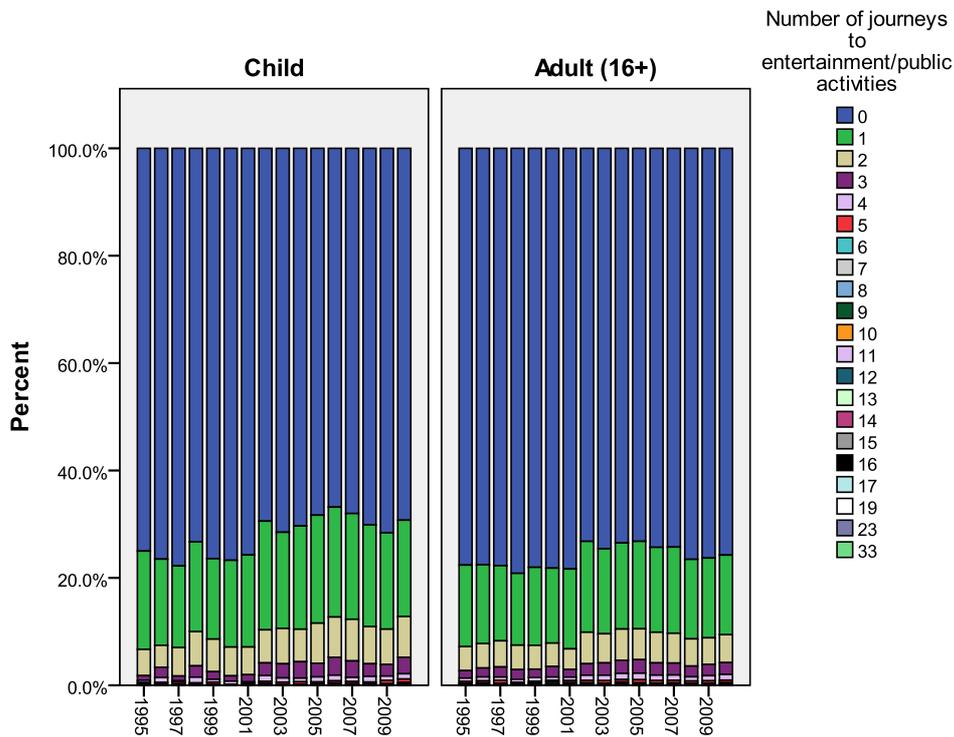
**Figure 105: Number of journeys to visit friends/relatives at private homes, by day-of-week, gender and age**



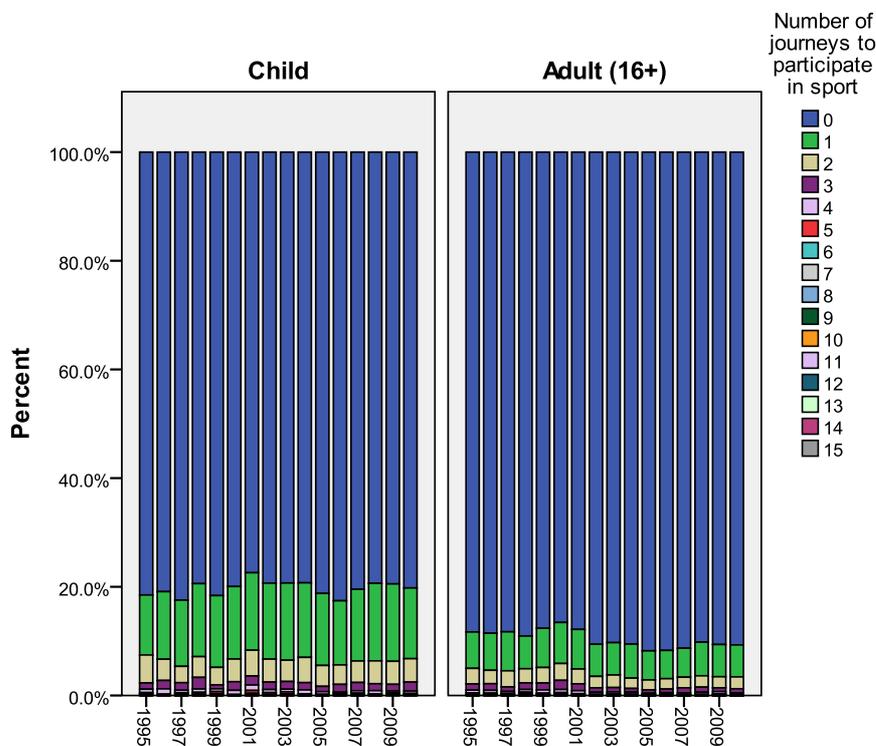
**Figure 106: Percentage of children and adults by number of journeys to other social activities during NTS diary week**



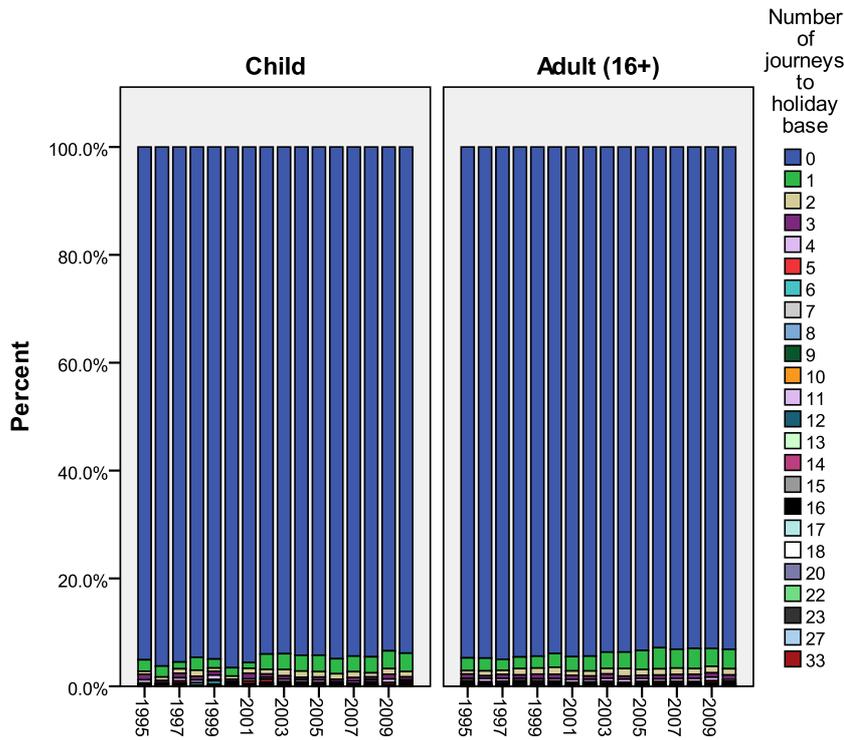
**Figure 107: Percentage of children and adults by number of journeys to entertainment/public activities during NTS diary week**



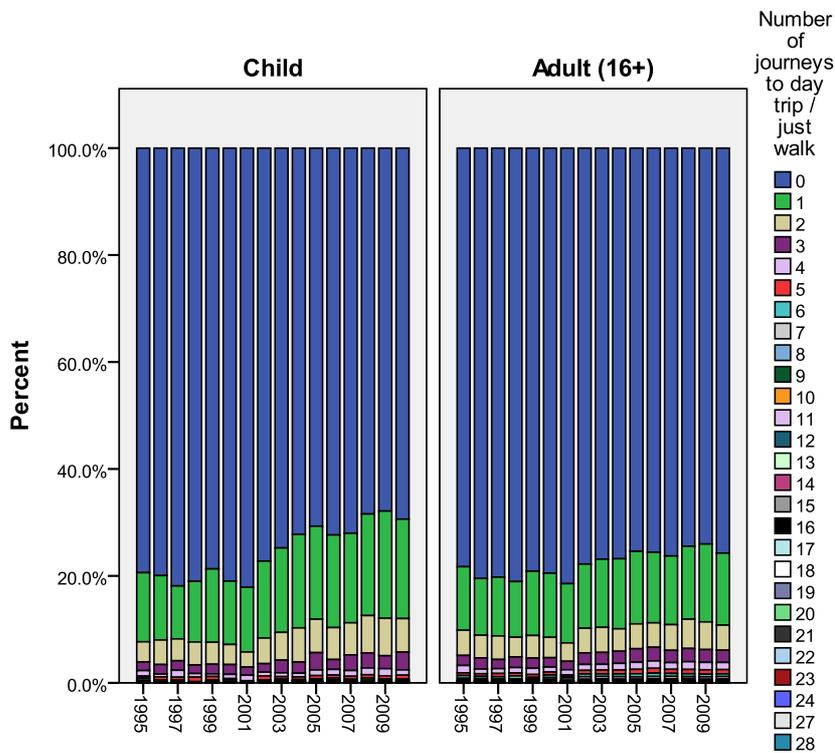
**Figure 108: Percentage of children and adults by number of journeys to participate-in-sport activities during NTS diary week**



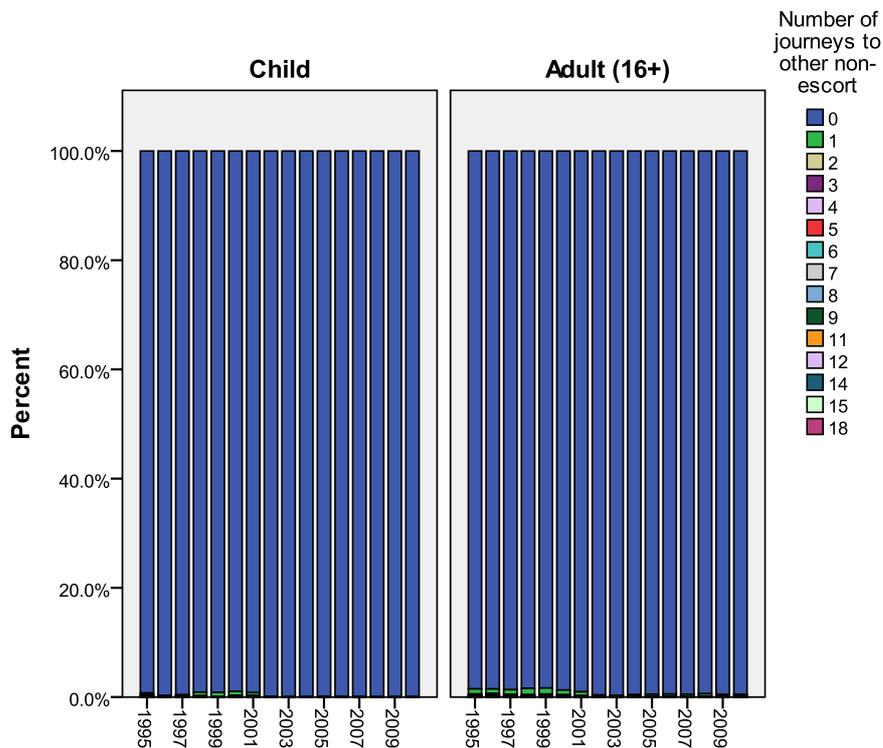
**Figure 109: Percentage of children and adults by number of journeys to holiday-destination-base activities during NTS diary week**



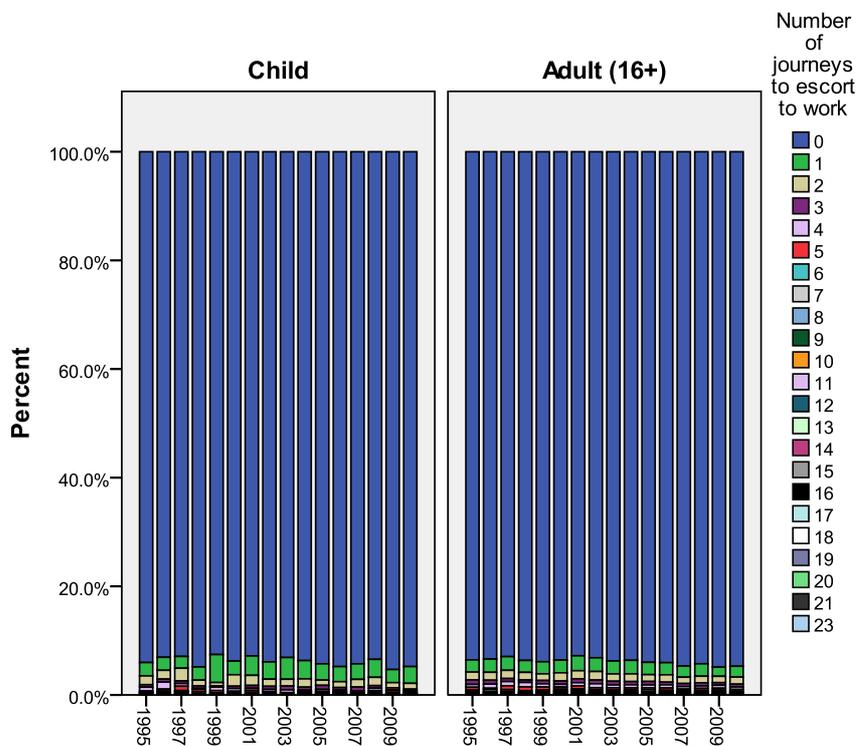
**Figure 110: Percentage of children and adults by number of journeys to day trip/just walk activities during NTS diary week**



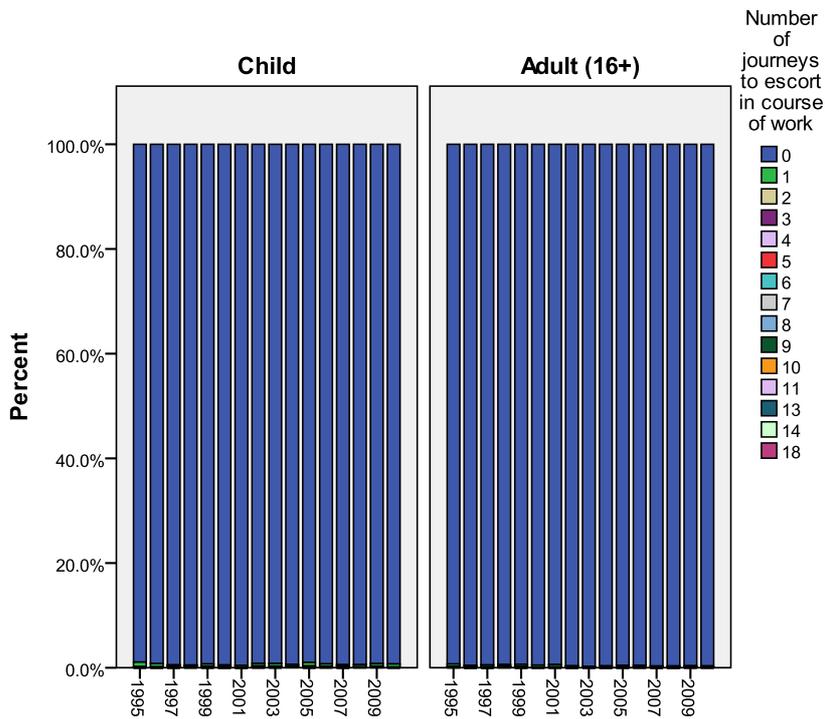
**Figure 111: Percentage of children and adults by number of journeys to other non-escort activities during NTS diary week**



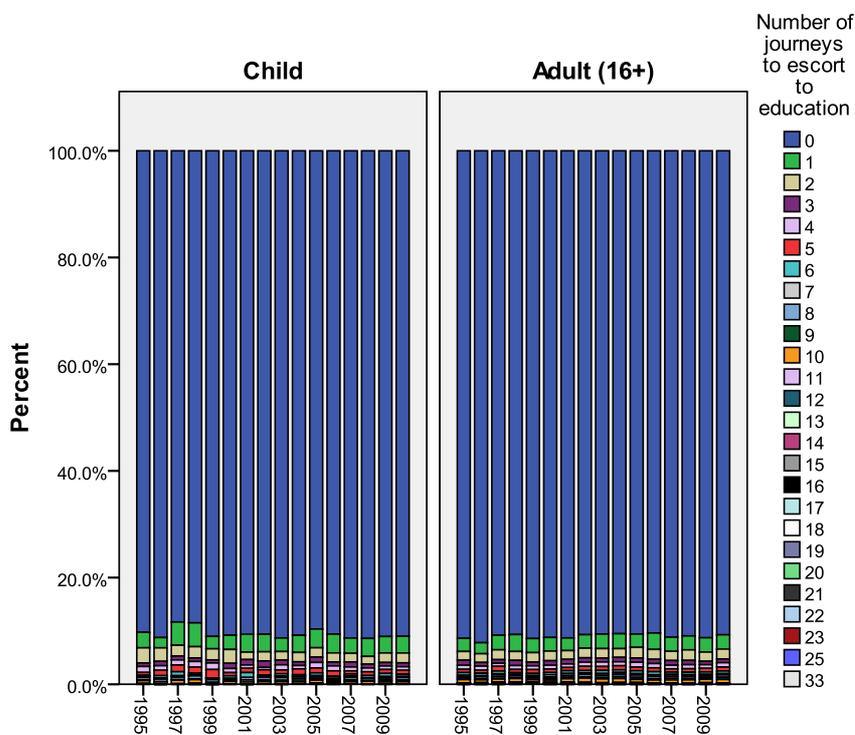
**Figure 112: Percentage of children and adults by number of journeys to escort-to-work activities during NTS diary week**



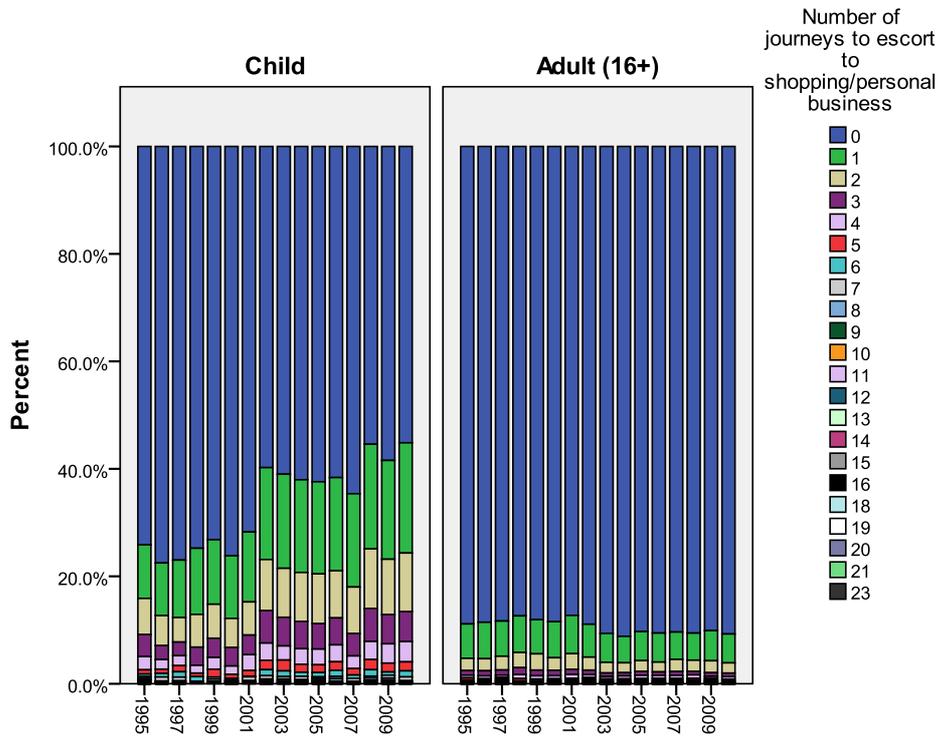
**Figure 113: Percentage of children and adults by number of journeys to escort in course of work activities during NTS diary week**



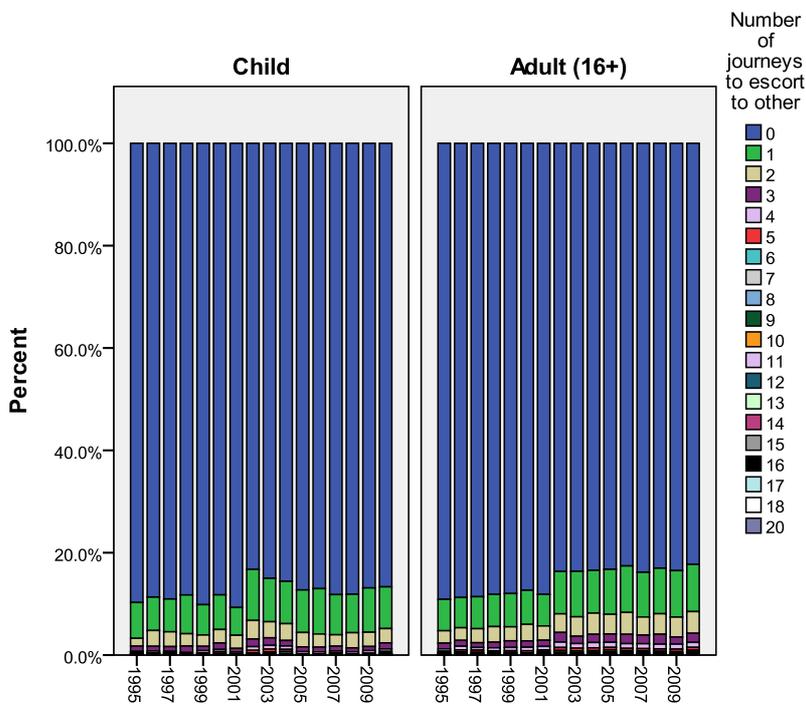
**Figure 114: Percentage of children and adults by number of journeys to escort-to-education activities during NTS diary week**



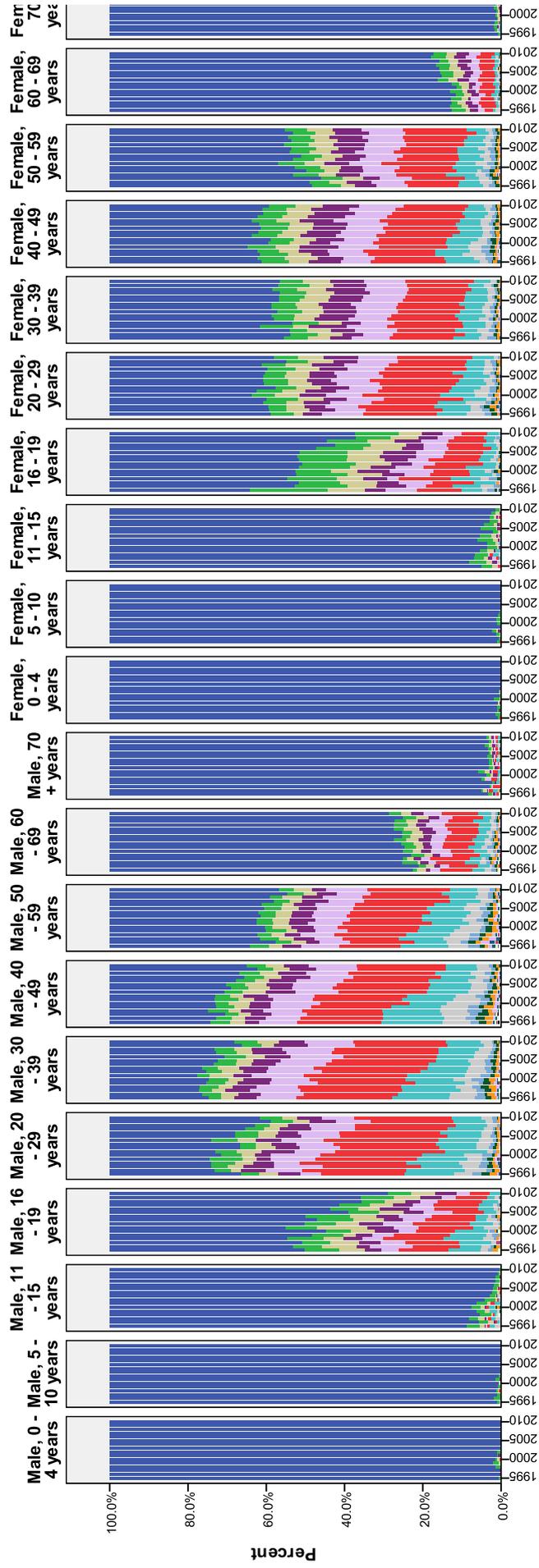
**Figure 115: Percentage of children and adults by number of journeys to escort to shopping/personal business activities during NTS diary week**



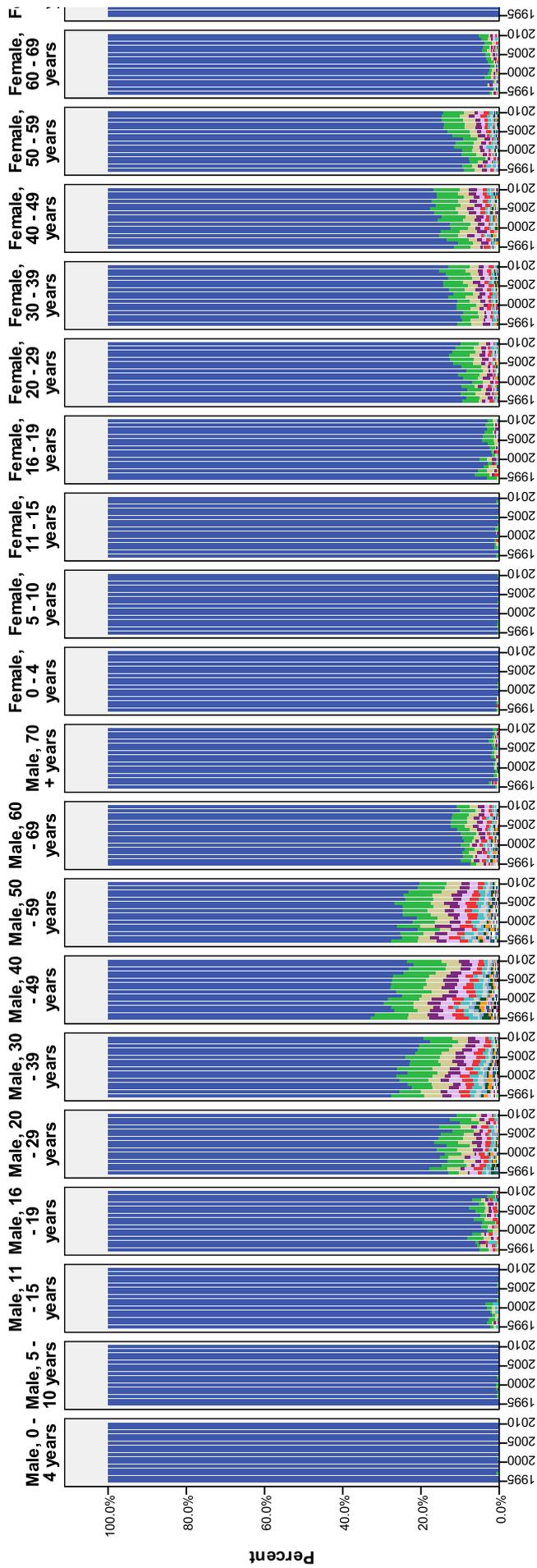
**Figure 116: Percentage of children and adults by number of journeys to escort-to-other activities during NTS diary week**



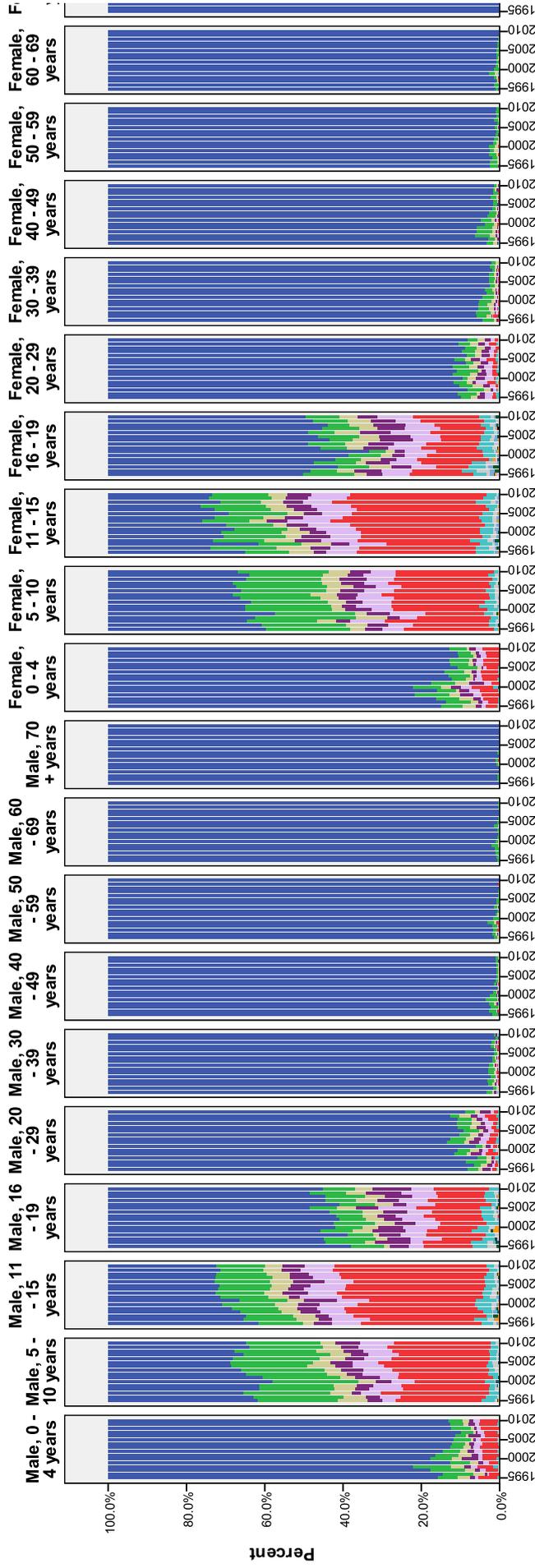
**Figure 117: Percentage of age/sex groups by number of journeys to work activities during NTS diary week**



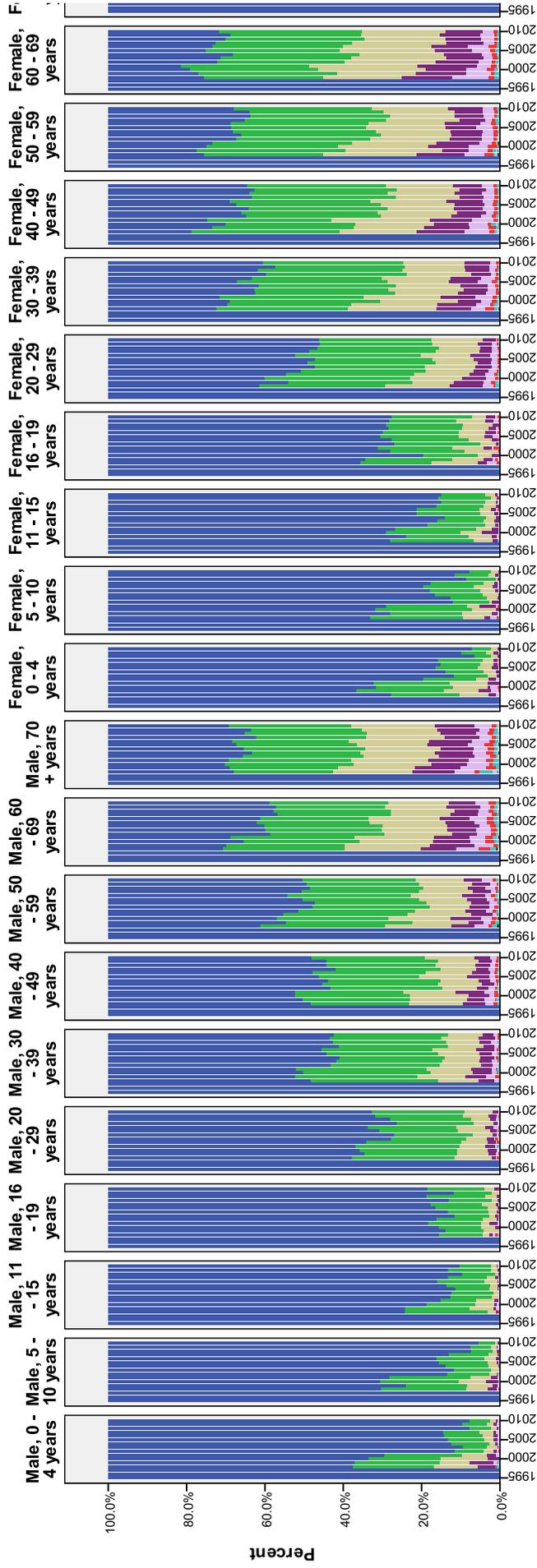
**Figure 118: Percentage of age/sex groups by number of journeys in the course of work activities during NTS diary week**



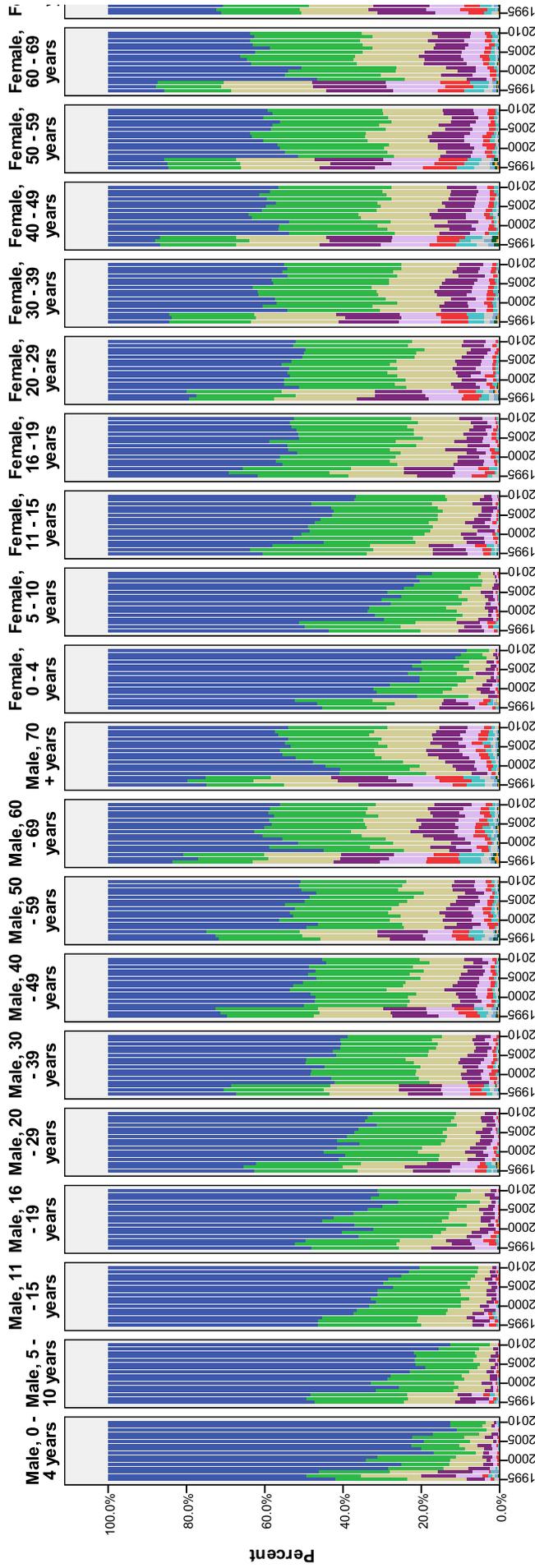
**Figure 119: Percentage of age/sex groups by number of journeys to education activities during NTS diary week**



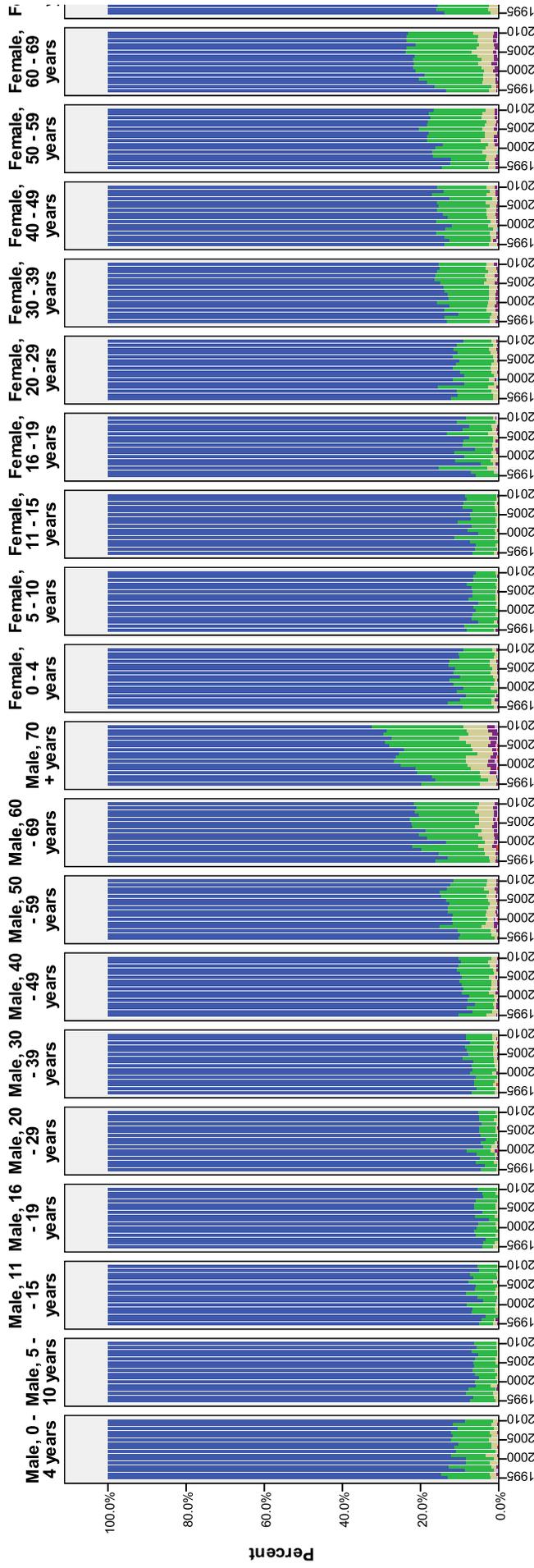
**Figure 120: Percentage of age/sex groups by number of journeys to food shopping activities during NTS diary week**



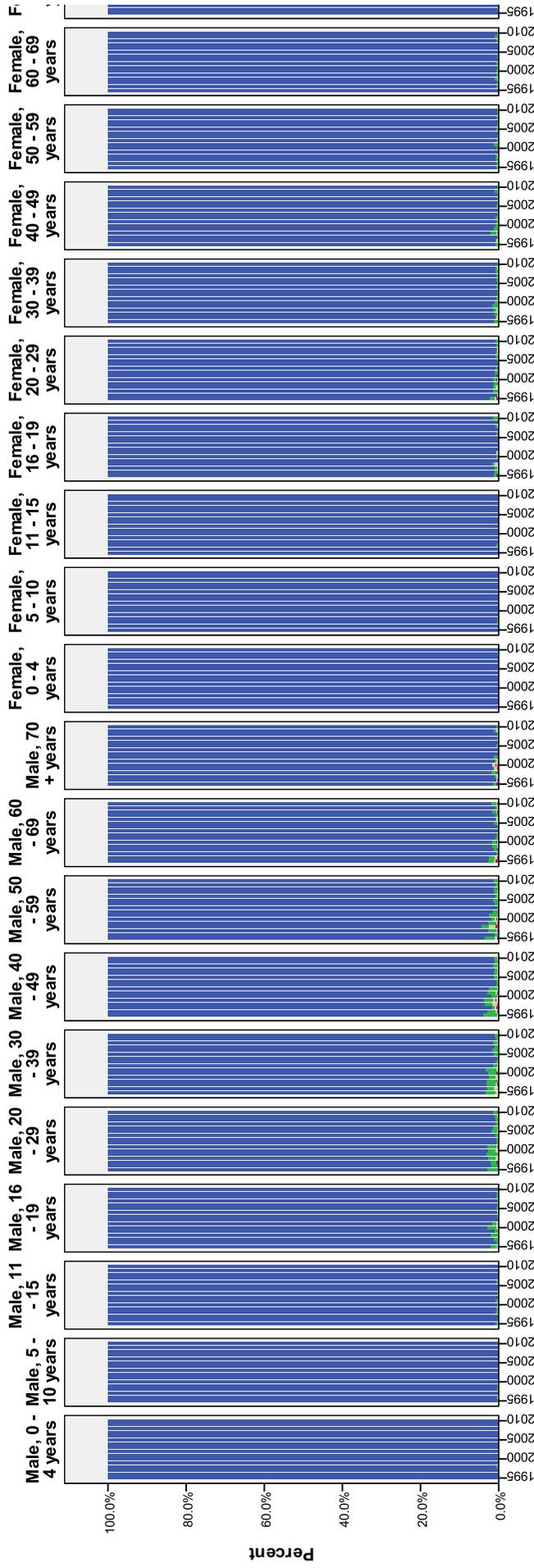
**Figure 121: Percentage of age/sex groups by number of journeys to non-food shopping activities during NTS diary week**



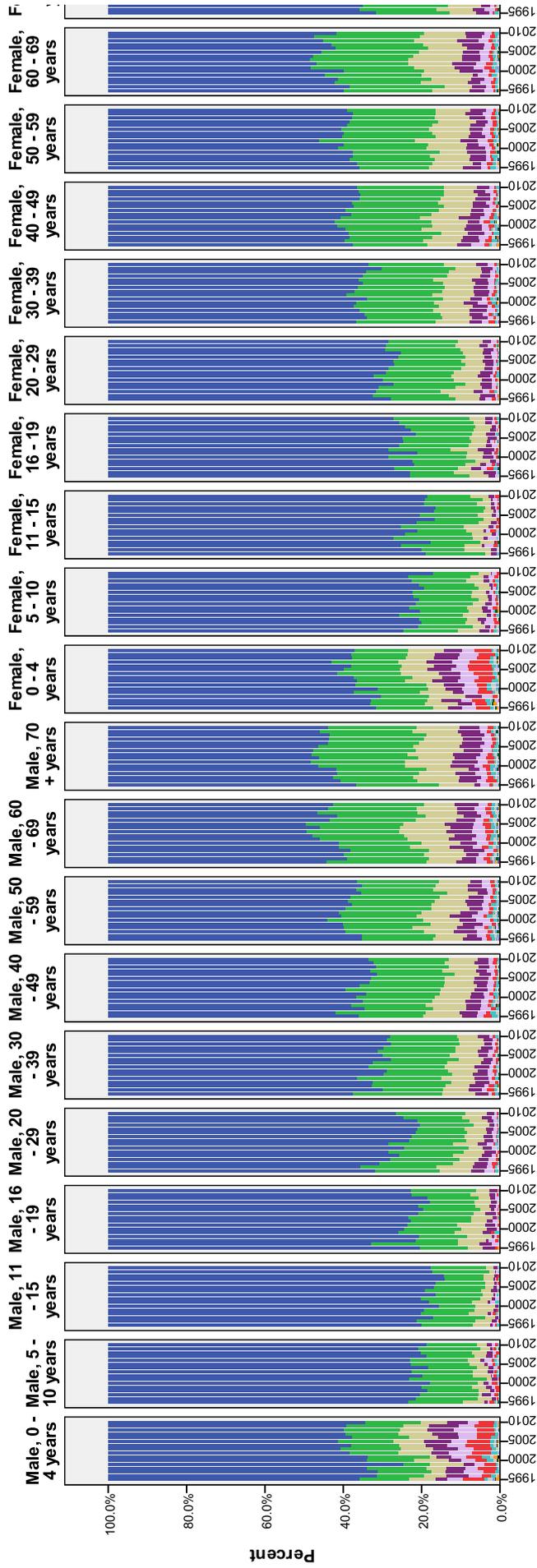
**Figure 122: Percentage of age/sex groups by number of journeys to personal business (medical) activities during NTS diary wee**



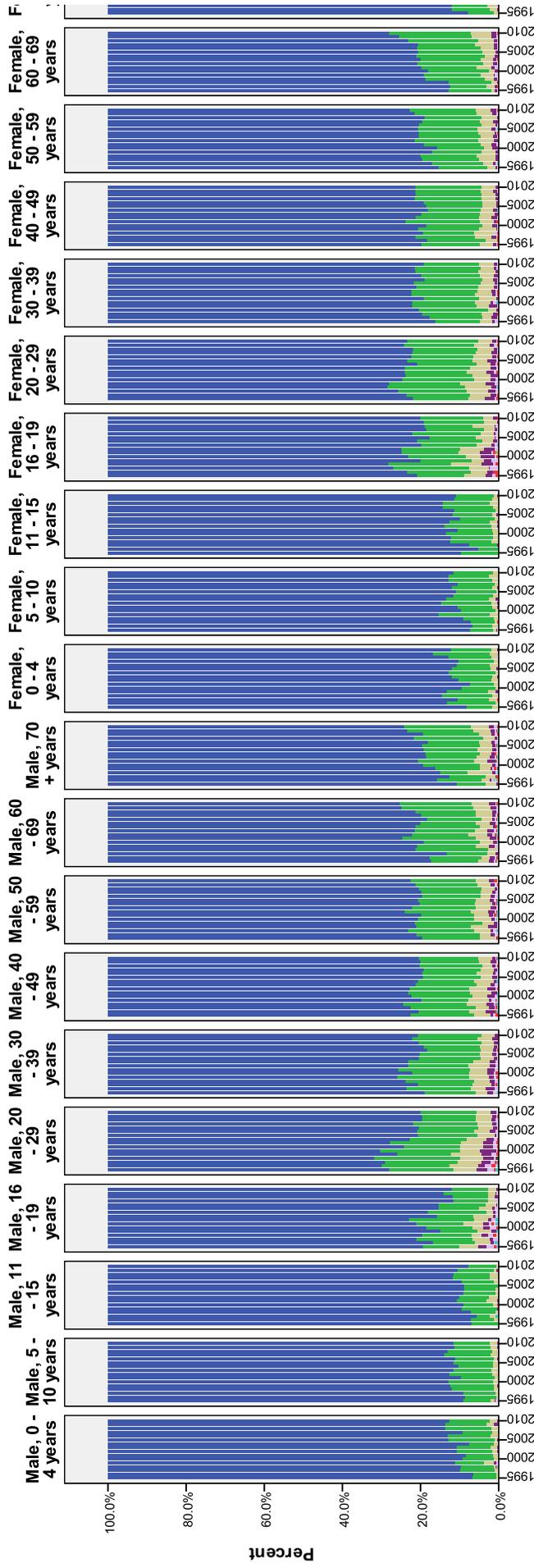
**Figure 123: Percentage of age/sex groups by number of journeys to personal business (eat/drink) activities during NTS diary we**



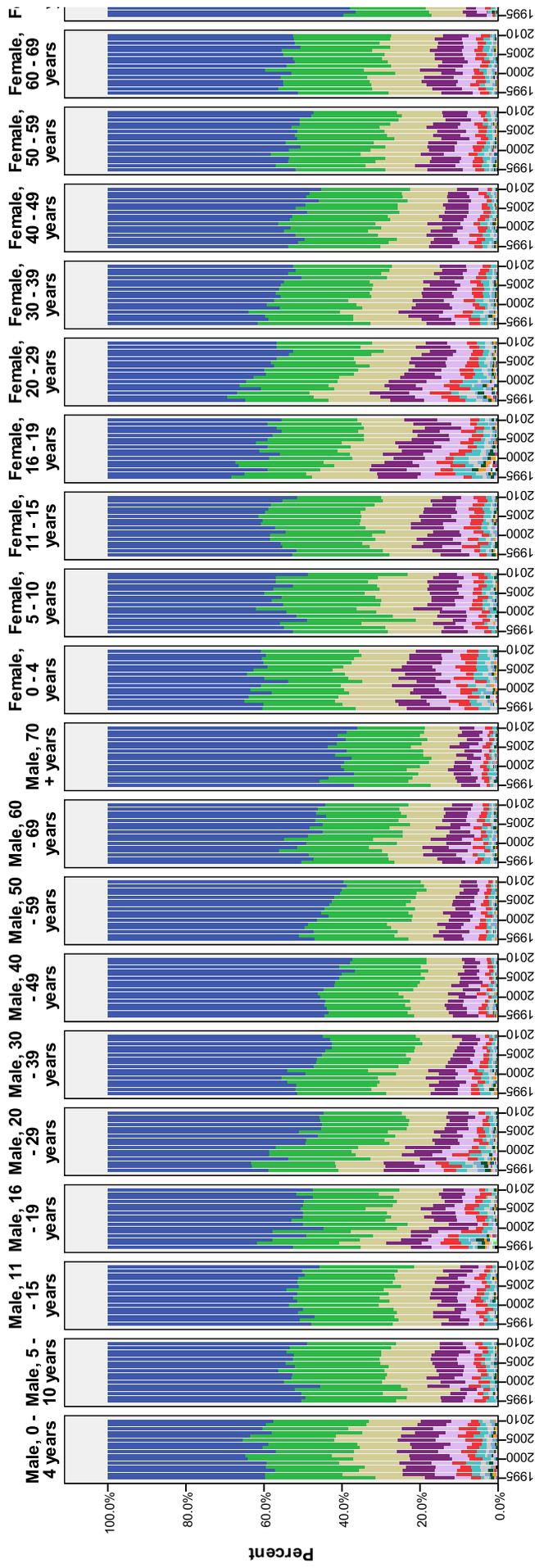
**Figure 124: Percentage of age/sex groups by number of journeys to personal business (other) activities during NTS diary week**



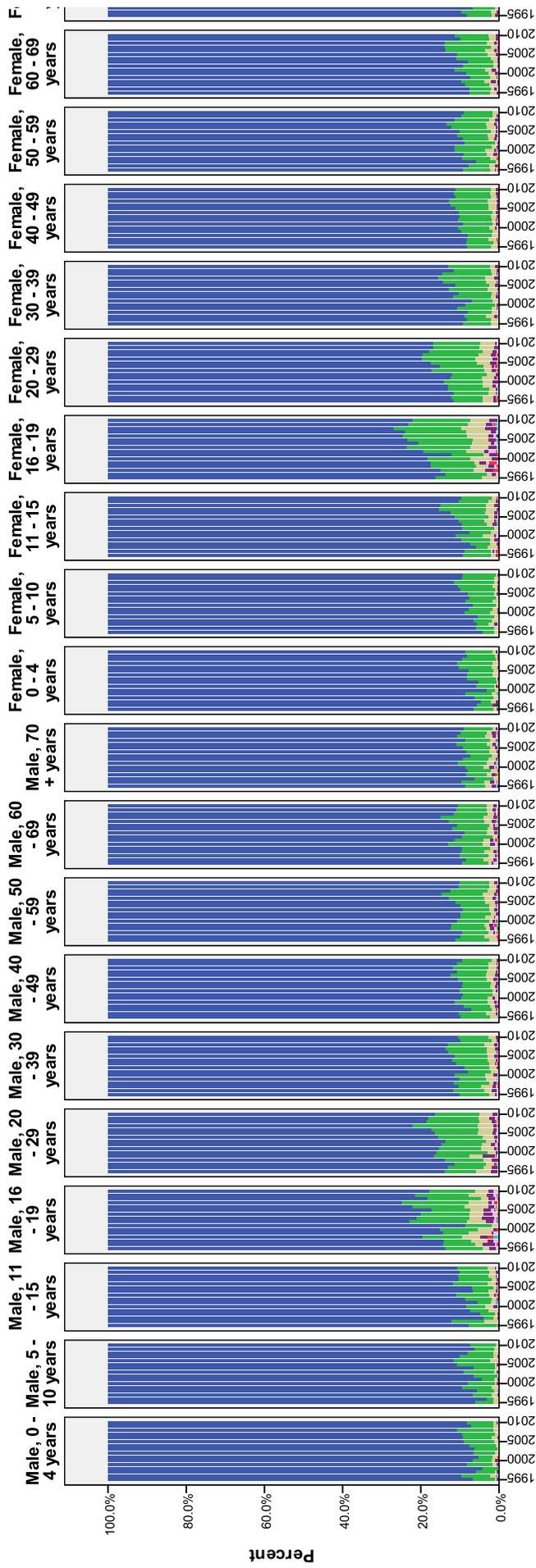
**Figure 125: Percentage of age/sex groups by number of journeys to eat/drink with friends/relatives activities during NTS diary w**



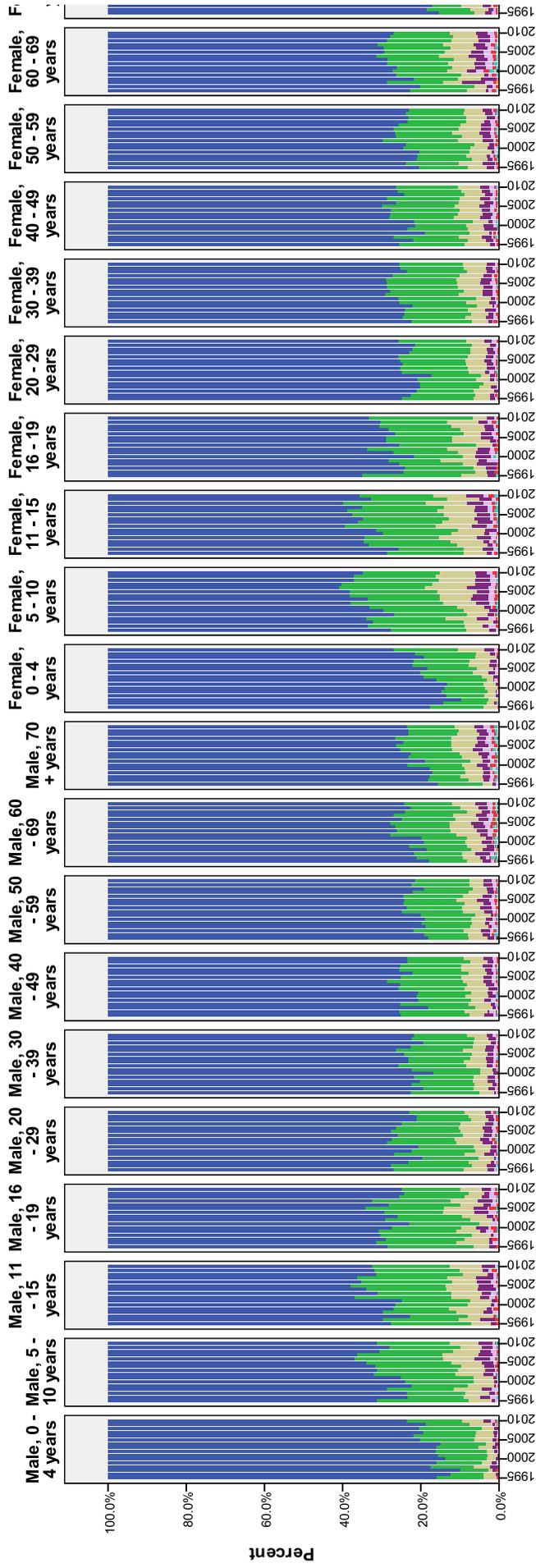
**Figure 126: Percentage of age/sex groups by number of journeys to visit friends/relatives-at-home activities during NTS diary week**



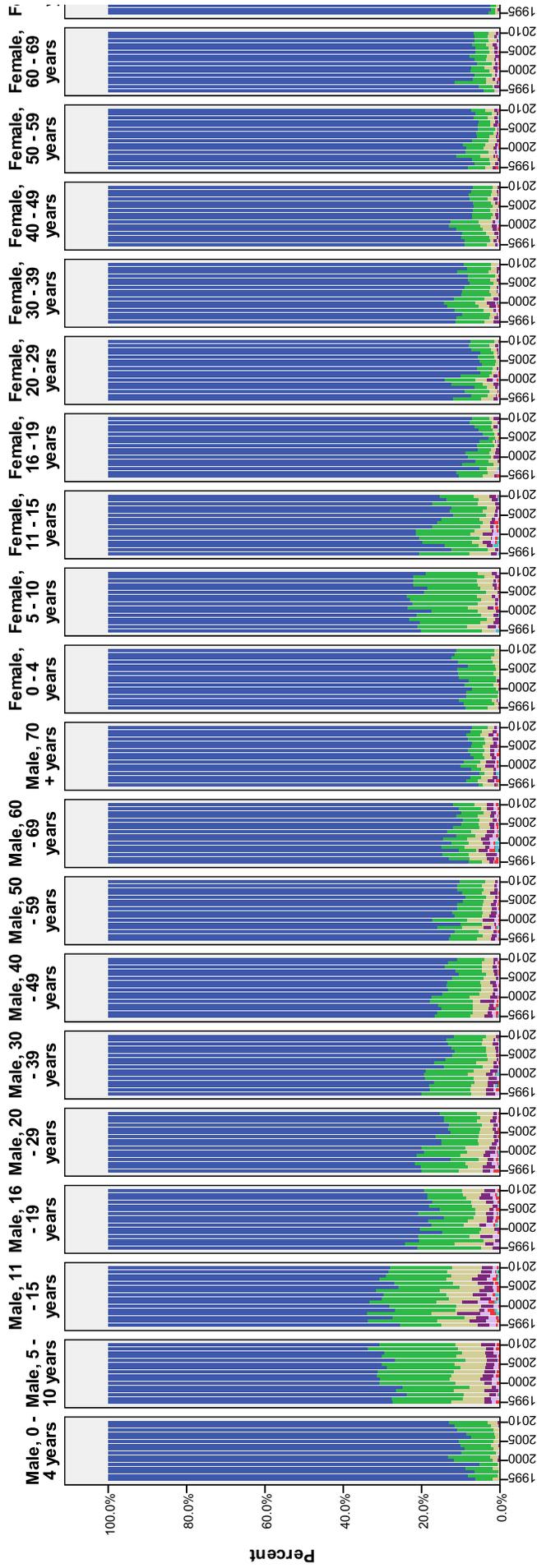
**Figure 127: Percentage of age/sex groups by number of journeys to other social activities during NTS diary week**



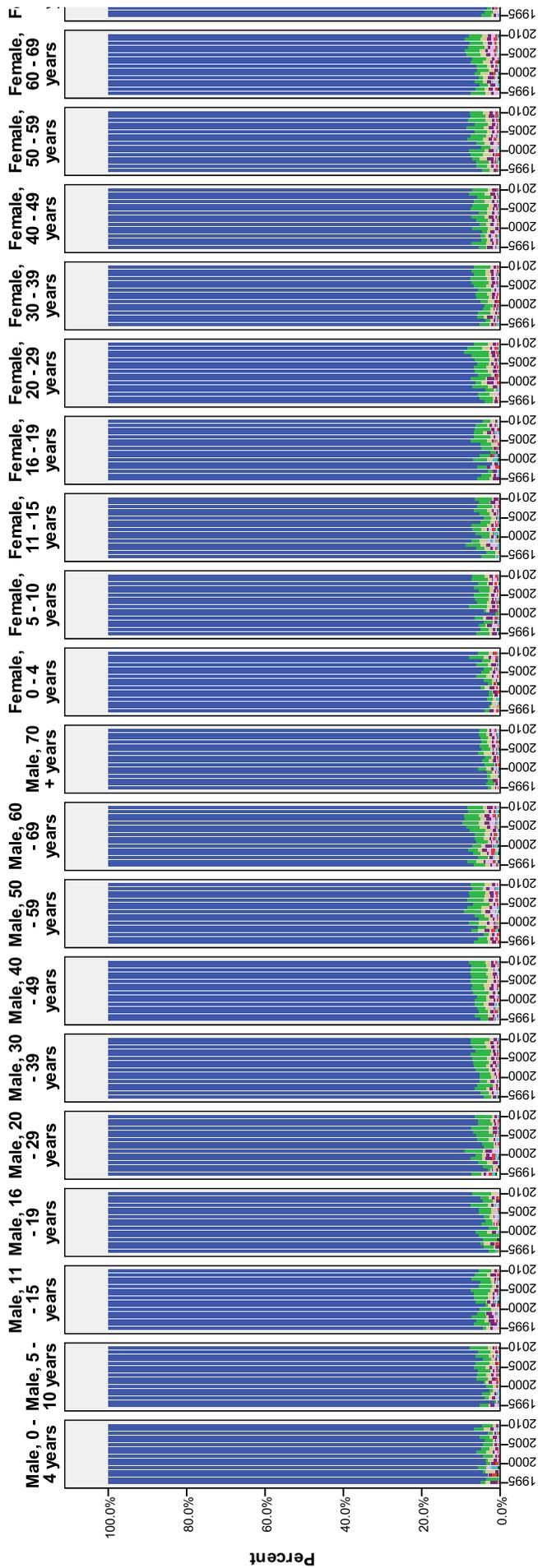
**Figure 128: Percentage of age/sex groups by number of journeys to entertainment/public activities during NTS diary week**



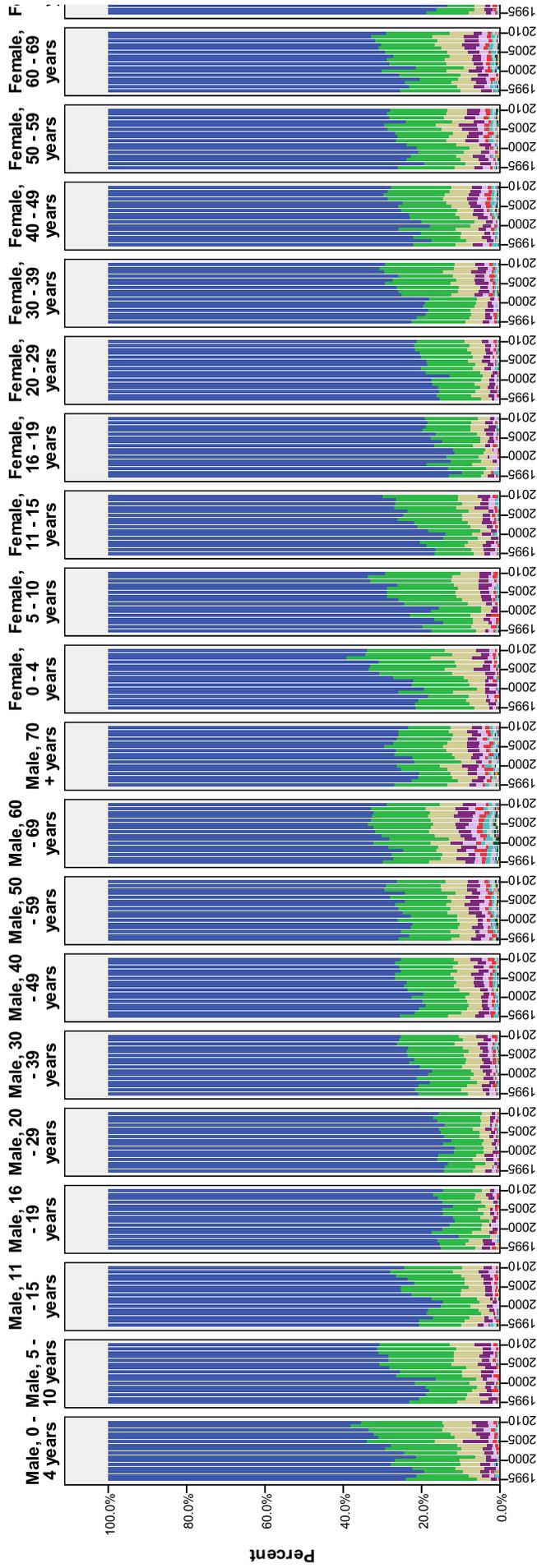
**Figure 129: Percentage of age/sex groups by number of journeys to participate in sport activities during NTS diary week**



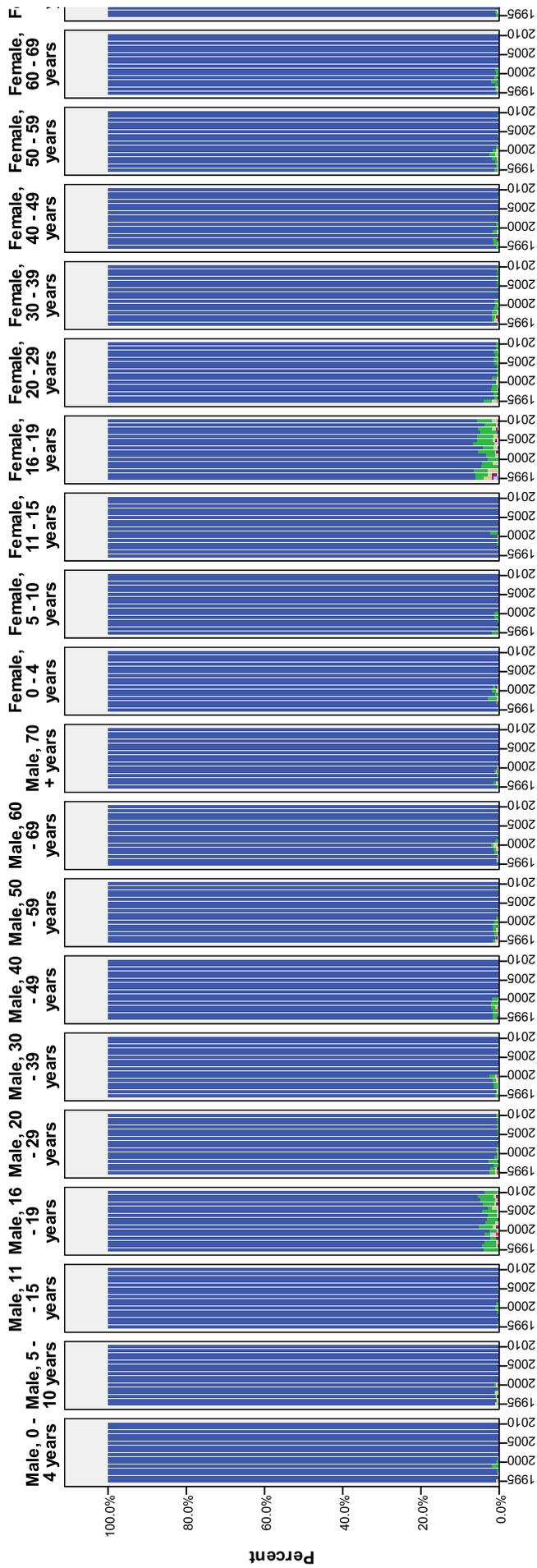
**Figure 130: Percentage of age/sex groups by number of journeys to holiday-destination-base activities during NTS diary week**



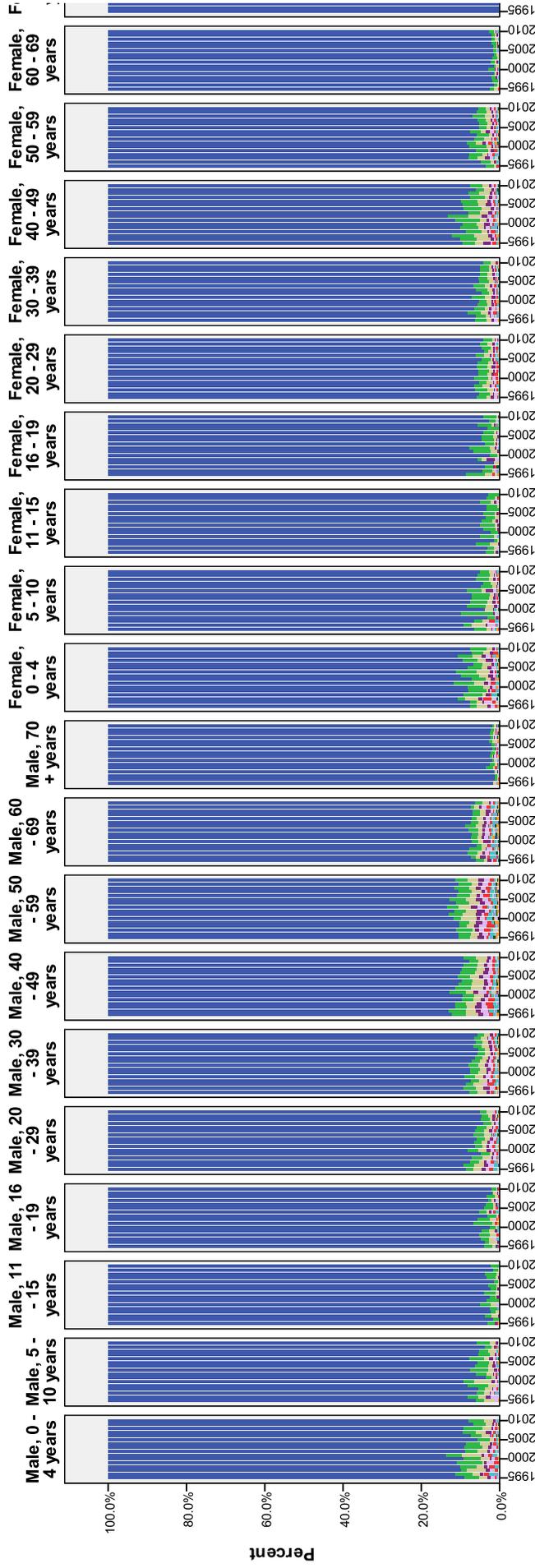
**Figure 131: Percentage of age/sex groups by number of journeys to day trip / just walk activities during NTS diary week**



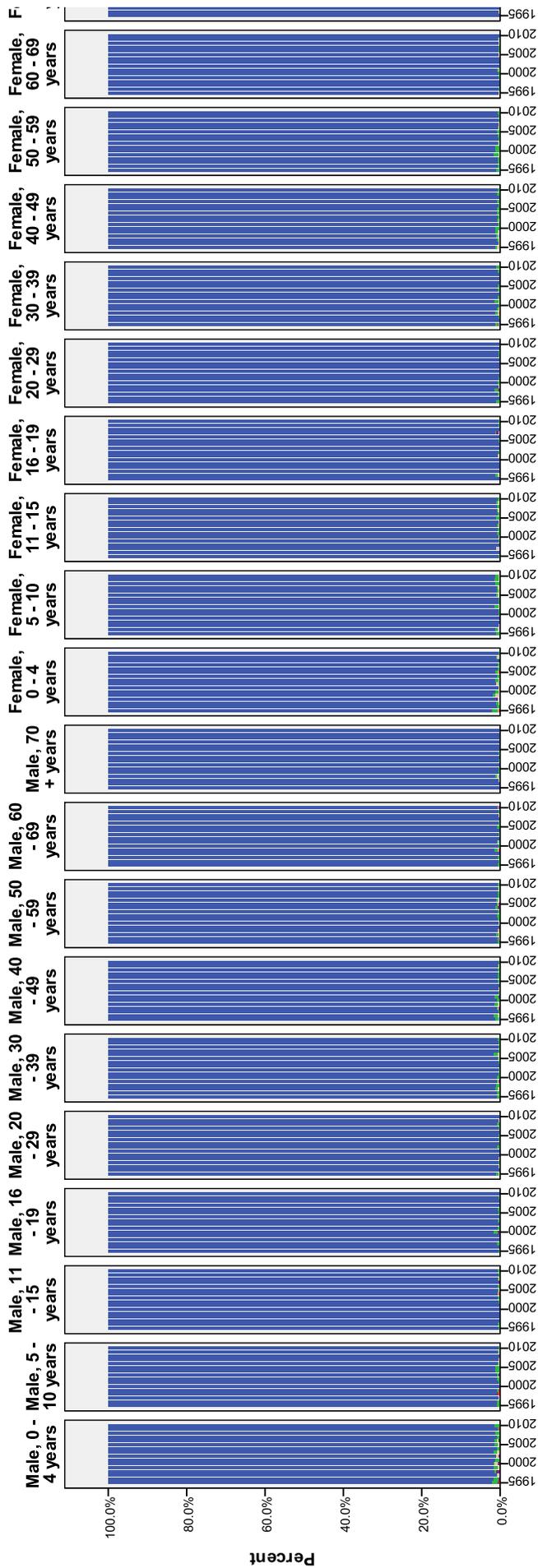
**Figure 132: Percentage of age/sex groups by number of journeys to other non-escort activities during NTS diary week**



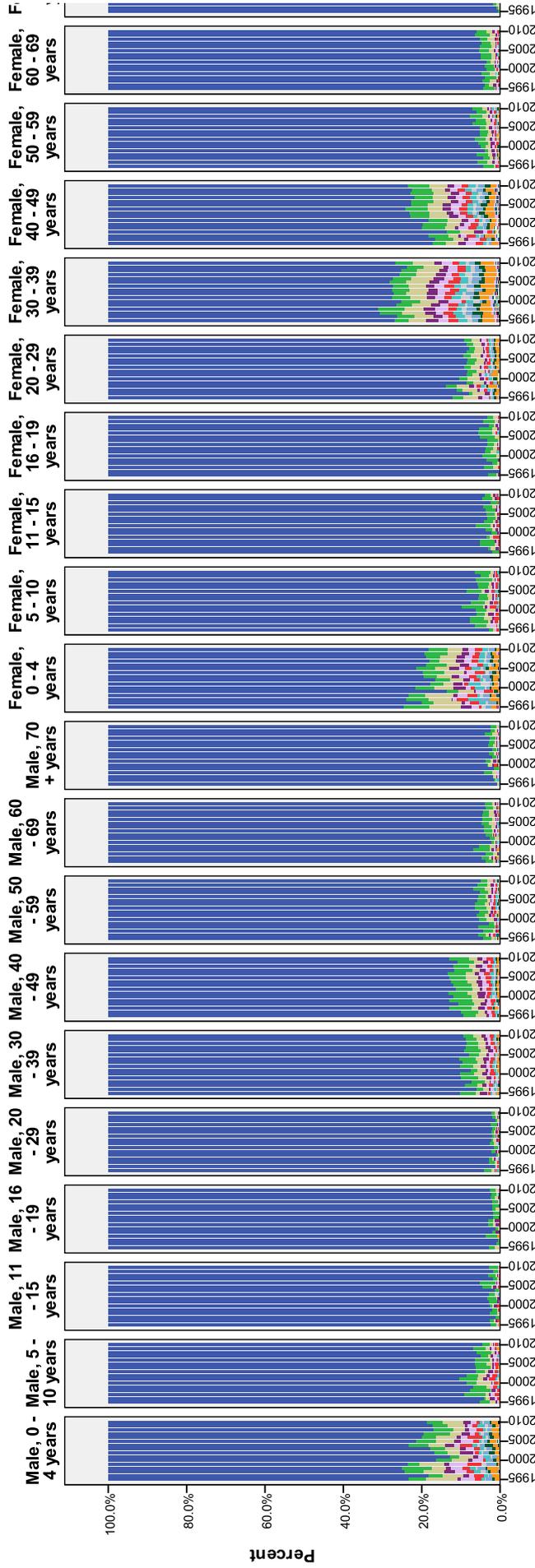
**Figure 133: Percentage of age/sex groups by number of journeys to escort-to-work activities during NTS diary week**



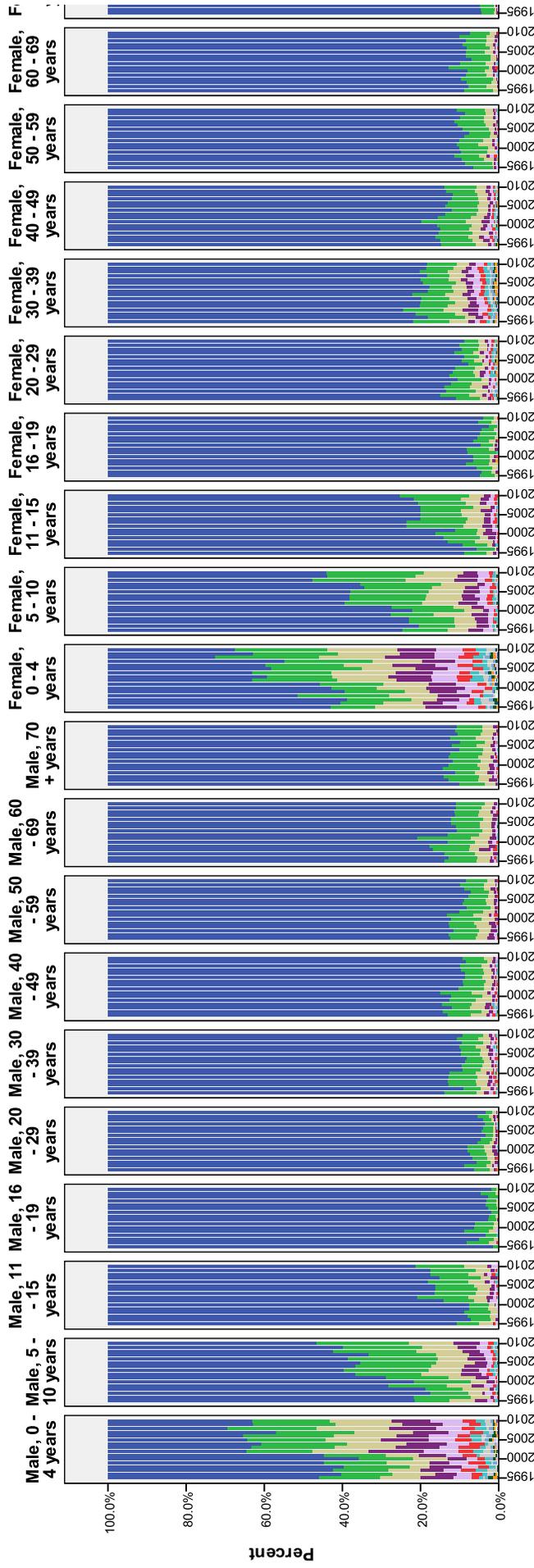
**Figure 134: Percentage of age/sex groups by number of journeys to escort-in-course-of-work activities during NTS diary week**



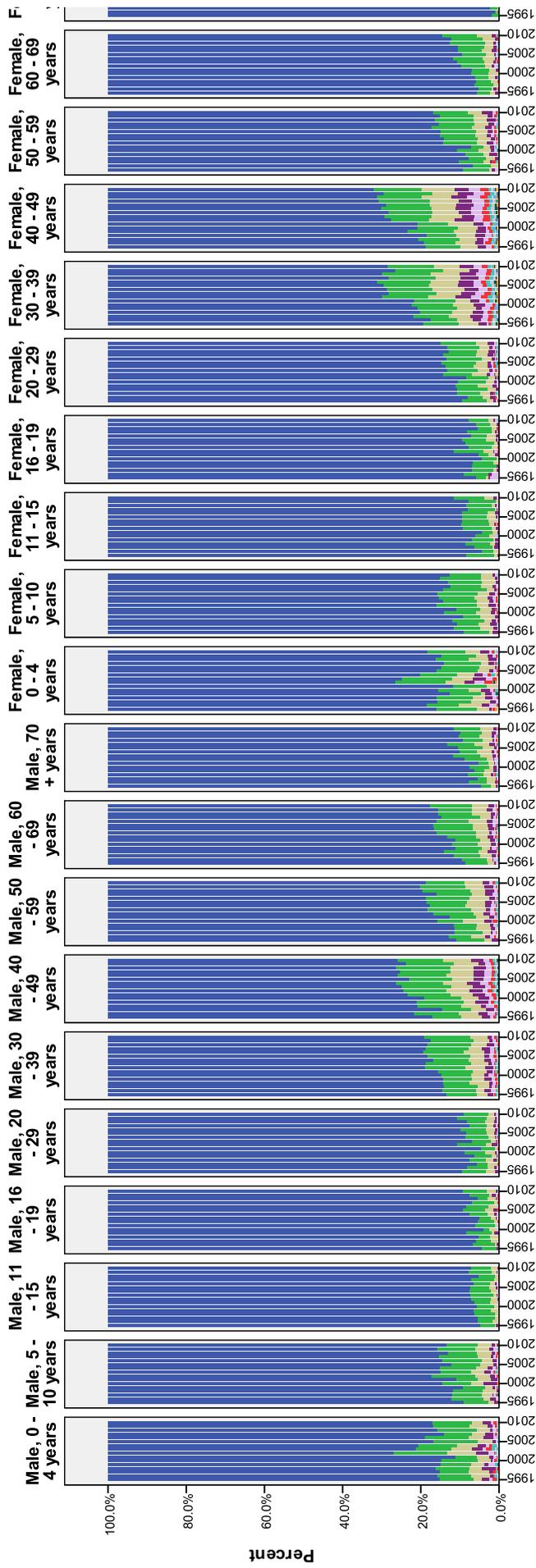
**Figure 135: Percentage of age/sex groups by number of journeys to escort-to-education activities during NTS diary week**



**Figure 136: Percentage of age/sex groups by number of journeys to escort-to-shopping/personal-business activities during NTS**



**Figure 137: Percentage of age/sex groups by number of journeys to escort-to-other activities during NTS diary week**



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