The Car in British Society

Karen Lucas and Peter Jones

RAC Foundation

The Royal Automobile Club Foundation for Motoring Limited is a charity established to promote the environment, economic, mobility and safety issues relating to the use of motor vehicles.

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Royal Automobile Club Foundation Steering Group

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Foreword

Royal Automobile Club Foundation

Cars are an integral part of the way we live. Most of our journeys are by car. Over three-quarters of households have at least one car. Seventy per cent of adults have driving licences.

The present level of car ownership has developed over the last fifty years. Cars have brought enormous advantages to people and the economy. They have increased the choices that people have about where they live, work, are educated and spend their leisure time. In particular, the growth in car ownership has gone hand in hand with the widening of opportunities for women. The highest growth in ownership has been seen in households in the lowest income group. And cars are an important form of transport even for families who do not own one.

The expansion of car numbers has been accompanied by changes in land use – increasingly dispersed patterns of settlement and employment, the spread of out-of-town shopping centres, and the concentration of public services such as hospitals. These changes have made owning a car a necessity for many because such scattered development is hard for public transport to serve.

The growth in car ownership has had no encouragement from government – central or local. Quite the reverse: road building has been cut well below the level of demand; parking has become more difficult and costly in most places; and the cost of running a car (as opposed to buying one) has risen not least because of the price of fuel and the tax levied on it. The attitudes of the authorities in part reflects their appreciation that the unrestrained use of motor vehicles, especially in urban areas, produces real public disadvantages in terms of congestion and pollution.

Particularly over the last ten years, Government has supported measures discouraging car use in favour of walking, cycling and public transport. [It has legislated for traffic reduction targets in local areas]. Such measures have had some success in eradicating marginal car journeys. But more radical measures to reduce congestion and change driver behaviour through pricing schemes have found no popular support and have in effect been abandoned, the exception being the small area in central London that is uniquely well served by public transport.

It is surprising that such radical policies to fundamentally change the way people live their lives should have been embarked on with so little research into the factors that lead people to own and use cars: what might persuade them to change their behaviour; and what the costs of transition might be.

To stimulate thinking on these complex and critical issues the Royal Automobile Club Foundation published in 1995 a report on ‘Car Dependence’. Since then, despite Government policies to switch investment into public transport and to encourage its

use, the growth in car numbers has continued unchecked: there are seven million more cars now than there were then, and the Government's forecasts predict future increases.

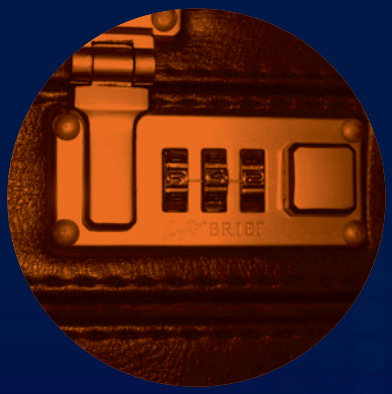
The present report by an independent research team from University College London, Imperial College London and the University of Oxford investigates the changes that have occurred since the 1995 report. It studies attitudes towards cars, and the place of the car in today's society. It looks too at the social and economic consequences of using more coercive methods to change behaviour.

Neither the authors nor the Foundation would claim this report is the last word on the subject of cars and society. But we hope it will stimulate further work and serious discussion on a subject seriously neglected, but central to future transport policy.

David Holmes CB
Chairman
Royal Automobile Club Foundation

April 2009

Executive Summary



This report describes a scoping study into the changing nature of car ownership and use within British society since the previous *Car Dependence* study, published by the Royal Automobile Club Foundation in 1995. It draws on a reanalysis of the National Travel Survey, a review of international literature and British attitude surveys, and findings from a small number of exploratory focus groups and professional interviews commissioned as part of this study.

The study finds that the car is now the dominant mode of travel in most people's daily lives, and is seen as a major asset by most households. Whilst car use per person has grown for nearly half a century, this trend now seems to have come to a halt, although the reasons for this are not clear. Our analysis identifies that since the early 2000s, annual car mileage has grown only in line with increases in the adult population. However, levels of car use are now well above those considered to be sustainable nationally, as outlined in the latest Department for Transport's *Delivering a Sustainable Transport Strategy* document (2008). Our report raises important issues concerning the potential economic and social consequences of substantial 'non voluntary' reductions in car use in the move towards a low carbon economy.

Key findings

1. Car ownership and use have continued to grow and extend across the population since the late eighties and are now embedded into most aspects of daily life in Britain. However, whilst car mode share (driver and passenger), as a percentage of all person trips, rose from 46% in 1975 to 63% in 2002, it has not increased between then and 2006.
2. Low-income households have experienced most growth in car ownership and use over the last ten years. There has been some convergence in car use between low-income households and the average population, but the difference is still large. Those without regular access to a car have lower overall trip rates and are travel disadvantaged in a number of respects.
3. Whilst overall road traffic has continued to grow (mainly due to the increased number of vans in the fleet), the car and taxi component has grown at a slower rate in recent years, and since 2002 has stabilised on a per adult basis. This may be due to a number of factors, such as the completion of the major new road capacity programme and the associated dispersion of land uses, the changing socio-demographic profile of the car driving population or the growth in traffic congestion; other transport policies may have had some influence, but the evidence is unclear.
4. In national attitude surveys and our focus groups, people regularly referred to their work or home location being the main reason for needing a car and said that grocery shopping was the main trip they couldn't manage without a car. After-school child escort trips were also given as an important reason for many parents needing a car.

5. Many people from non-car owning households rely heavily on their friends and families to drive them around in the absence of alternative travel choices. People who do not own cars or cannot not drive often said they felt isolated and a burden on their friends and families.
6. Whilst the car is seen to have a wide range of benefits, most people also recognise the disbenefits of car ownership and use. The most significant are the costs of ownership and use and although some people said they would prefer not to drive, they felt they had no choice.
7. Local transport authority car reduction policies primarily focus on car use management and voluntary behaviour change programmes. Many local authorities are taking a more segmented social marketing approach although there appears to be little certainty amongst their officers about how the Government's new 80% reductions in CO_2 emissions can be met nationally. This study aims to inform that debate.

Current patterns of car ownership and use

Over three quarters of households now own at least one car, and 70% of adults have a driving licence. As a consequence, the car dominates most people's daily travel patterns. The average citizen makes two-thirds of trips by car and three-quarters of their weekly mileage the same way. Even amongst the lowest household income quintile where car ownership levels are much lower than for the average population, cars are used for 45% of daily trips and 65% of travel mileage. Forty percent of household members in this quintile report travelling by car at least once a week; however, they account for only around one-tenth the car trips made by members of one car households, and they make far fewer trips in a week overall, using any mode of transport.

Trends in car ownership and use since 1989

Car ownership grew throughout the period from 1989 to 2006, both on a per household and a per capita basis, as did driving licence holding. Reflecting these trends, car use has extended to all sectors of the population. However, amongst the population as a whole, the growth in per capita car use has stabilised in recent years. The percentage of weekly mileage by car peaked in 1995 since when it has dropped back slightly; the modal share of trips by car has stabilised more recently, since 2002.

Continuing growth in car ownership combined with a stabilisation in car use implies that the intensity of use of the average car must have declined over time. In fact, the number of car trips has dropped from 30 trips per week per car in 1989 to 24 trips per

week per car in 2006 – a 20% drop in all. The pattern for distance is more complex, with a gradual increase from 1989 up to 1996 (up from 142 to 152 miles), followed by a gradual decline, down to 132 miles per car per week in 2006.

One possible explanation for this apparent stabilisation may be the result of constraining socio-demographic factors, such as the increase in lower income and older drivers who tend to travel less, bringing the overall averages down. There has been convergence in total car modal shares between men and women. Men make more trips as drivers whilst women make more as passengers. Amongst drivers aged between 16 – 29 years, a reduction in the number of miles travelled by car has been recorded. However, the 70+ age group has been responsible for offsetting these figures by travelling further and more often in recent years. There has been relatively little increase in the proportions of trips and distances travelled by car by the top two income groups since 1989. However the proportions have increased considerably in the lower income quintiles over the last ten years, which has led to some convergence in car use between income groups, but the differences are still large.

Other possible explanations for the levelling off in overall car use might include an increase in the number of people living in larger settlements, with better local access to goods and services by non-motorised modes, and in areas with good public transport accessibility. However, evidence from the National Travel Survey (NTS) does not show any consistent trends of this type. It might also be associated to some extent with increasing levels of international travel thereby reducing annual travel rates in the UK, or with an increase in traffic congestion on Britain's roads; the NTS does suggest a drop in average speeds by car in recent years.

Public attitudes towards the car

Our analysis of the published survey data suggests that people's attitudes to driving have remained fairly consistent over the last twenty years, with between 80 to 90 percent of people still saying that they would find it difficult to adjust their lifestyles to living without a car. During the last three to four years there appears to be a slight increase in the numbers of drivers who say they would be prepared to use their cars less if public transport were better. It is unclear whether this is because people think public transport is getting worse over time or whether their attitudes towards public transport have become more positive.

Various surveys have found that the majority of the population (even those who do not themselves own cars) tends to favour car travel over any other mode for day-to-day travel. The wide-ranging benefits of car-based travel are discussed in some academic literature in terms of convenience, coverage, flexibility, security and status. However, there is also a considerable and growing body of literature referring to the disbenefits of

mass car ownership. These include traffic congestion, traffic accidents, the effects of vehicle emissions on climate change and air quality, and poor public health resulting from the car replacing walking as a means of travel.

Focus groups which included members of the public broadly supported the findings of our literature review. It was confirmed that car owners value highly the freedom and independence having a car offers, as well as wider access to goods and services. Conversely, public transport is seen as being outside personal control and many people without cars to whom we spoke were still largely reliant on their car owning friends and families to get them to the places they needed to go. This sometimes made them feel a *burden* and *isolated* and was a particular problem for the older people, single parents and rural dwellers in the groups.

Many people in the groups acknowledged that there were also disbenefits to car ownership and use, both for themselves and their families and wider society. Many people noted the considerable expense of maintaining and running a car and there were at least one or two 'reluctant drivers' in each of the five groups. Some said the car made them lazy and expressed the desire to walk or use public transport more. They felt this was often impossible because these alternatives were not available or their lives were too busy to allow for such a switch. However, it should be noted that in almost all cases participants felt the benefits of a car far outweighed its disbenefits either to themselves or to wider society.

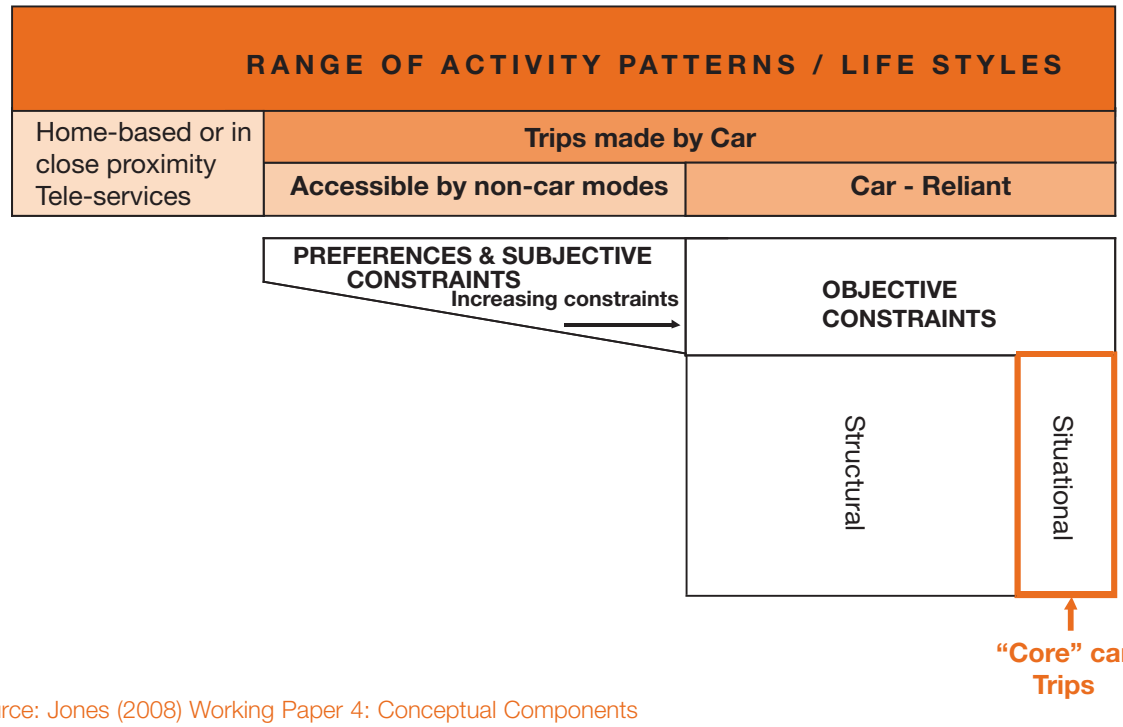
Car use: choice or necessity?

There have been numerous attempts in the literature to understand the theories underlying people's car use behaviours. It is clear that the influence of the car works at many levels, both physical and psychological. But in many situations it is not the actual car that people are dependent on, rather what it delivers for them in the context of time constrained, dispersed and highly security conscious lifestyles. Often there are alternative forms of transport available but they are generally perceived by the public as less convenient and reliable and sometimes more expensive.

In the focus groups, people were able to identify when and where they were using their cars out of choice or convenience and when out of necessity for their own or their family's well-being. Children's escort trips were seen as a significant factor in people being car reliant amongst parents in all the groups (but most of the people we spoke to were dependent on their cars, to varying degrees, for the majority of their trips). A number of people said that travelling to work and servicing family needs such as shopping were the prime motivations for using their cars and for which they felt they could least do without a car.

The population collectively engages in a very wide range of activities that support many different lifestyles. Some of these activities are carried out at home but most require travel and tend to be accessed by car. In several instances these trips could be made by non-car modes although with varying degrees of difficulty. In many cases, however, there are currently no reasonable or practicable transport alternatives to car use that can sustain the kinds of activity patterns and lifestyles that people have built around their daily use of the car. These different degrees of car dependence are represented in Figure 1, with the size of each area roughly corresponding to the relative importance of that form of car use. The 'core' car trips are those where the situation requires a car, due to personal mobility restrictions, or the need to carry heavy loads.

Figure 1: Different degrees of car dependence, across a range of activity patterns and lifestyles



Source: Jones (2008) Working Paper 4: Conceptual Components

Car reliance and dependence tend to grow over time. There is a 'ratchet effect', in which people start substituting cars for trips where there are modal alternatives, but they become locked into car use as these transport alternatives are cut back due to reduced levels of use, and people become attracted to other, car-based, destinations. It becomes increasingly difficult for them to return to their pre-car travel patterns, and so they are less responsive to increases in fuel prices or to policies to encourage reductions in car use.

The cost of adjustment to a low carbon future

Currently, national and local policy measures to reduce car use do not fully consider the impacts they might have on people's lifestyles and livelihoods, especially for those with limited travel alternatives. The empirical evidence relating to the economic and social consequences of significantly reducing people's car use and the wider costs of such an adjustment is limited. There are a few experimental studies suggesting that in the short term people absorb such costs, but in the medium term some groups may experience economic and social hardships. We do not know what the knock-on effects of reduced ability to travel might have on the wider economy and society as a whole, as this is largely not considered by the literature.

Some useful research has been undertaken in other disciplines about the wider costs of adjustment to economic shocks, which may have lessons that could usefully be applied to the transport field. Our focus groups demonstrated that many people have already adjusted their car use and the way they drive in response to recent economic pressures and environmental concerns. However, most people cannot envisage a future without their cars and most would go to considerable lengths to maintain their ownership and use, although many said they would make more use of public transport.

Recommendations for further research

Whilst there will be scope to explore some of these issues through the re-use of existing data sets, detailed empirical research is needed in order to examine fully the kinds of constraints that prevent voluntary reductions in car use, and the nature and extent of the 'costs of adjustment' that result from 'forced' behavioural change, where economic and political pressures result in households cutting back substantially in car use, beyond that which they would do voluntarily. Further research should seek to identify the kinds of measures that could be taken, by both the public and private sectors, to reduce any undue burden and/or social exclusion arising from pressures to reduce car use.

1 Introduction

1.1 Background to the study

In 1995, the RAC Foundation published its influential Car Dependence report, based on work led by the ESRC Transport Studies Unit at Oxford University. The study examined the travel behaviour and decision making of individuals and households up to the end of the 1980s, following a period of rapid growth in car travel and in the context of an emerging policy debate on the need to restrict car traffic in certain places. It found that:

- Car ownership had been growing rapidly in previous decades, spreading more widely across the population and leading to major increases in car trips and in travel distances by car;
- Among current car trips, there was a spectrum of dependence on the car, from trips that could readily be transferred to other modes, to those which would be totally impractical by any other means;
- Attitudes to the car also varied, from a grudging use of the car by some to a strong affection and association with the car by others and from cars as a source of dependence to the car providing independence;
- The study identified a group of users and trip purposes ('the low hanging fruit') that could relatively easily be encouraged to reduce their car use (mainly through transfer to other modes), and this subsequently helped inform the development of the Government's Smarter Choices initiative based around voluntary behaviour change.

The Smarter Choices agenda was based on the implementation of a range of 'soft' transport policy measures such as workplace-based travel plans, personalised travel planning, travel awareness campaigns, teleworking and shopping, and car-club/car sharing schemes, designed to reduce overall levels of car use (Cairns et al, 2004). Based on the evidence of 24 case study initiatives from across the UK and Europe, the study found that, if collectively applied in an intensive fashion, such schemes could potentially lead to an average reduction in traffic nationally of around 11% (2-3% in a low intensity scenario).

Over a decade after the publication of the 1995 RAC Foundation report on car dependence, comprehensive behaviour change programmes are achieving short-term measured reductions in car use within three medium sized English trial urban areas of around 11%-13% (DfT, 2008a). However, overall car ownership and use has continued to grow nationally since the publication of the 1995 report, and has spread to what were traditionally non-driving sectors of the population, including lower income households, women between the ages of 18 and 65, and men of 65 years and over. As a consequence, we have become a more car dominated society since the early 1990s – and probably a more car dependent society too.

In recent years, the modal share of car trips by men and women has equalised,

although men still act as the driver more often than women who are more frequently found in the role of passenger. In the younger age groups (16 to 49), women make more car trips, on average, than men, which is offset by more male car trips among the older age groups. The percentage of household trips by car now exceeds 50% in all but the lowest income quintile, and is significantly higher in rural areas and in areas with low public transport accessibility, even among non-car owning households.

1.2 Current policy context

Against this background of increasing car use, there are growing policy concerns at governmental level about climate change, energy security, social exclusion, and public health and well-being. Together with more localised issues such as traffic congestion and air quality hotspots, these are leading to growing pressures on local and central government to reduce people's car use by much larger amounts than are likely to be achievable through current voluntary measures.

The Climate Change Act 2008 committed government to reducing CO_2 emissions by 80% by 2050 (based on 1990 levels) and domestic transport is an important contributor to this (DfT, 2008). It is anticipated that vehicle emission reduction targets will be met in the long term by improvements in vehicle technology. However, in the short term there is likely to be pressure to reduce car use overall. At the same time, conditions in the global oil markets mean that fuel will probably become substantially more expensive over time. Together, these conditions are likely to lead to significant economic and political pressures for reductions in car use on a scale not seen before.

In this context, stronger political and economic pressures to reduce people's car use and to encourage the use of other modes, including walking and cycling, are likely to have significant impact on people's lifestyles and livelihoods. This updated study of car dependence aims to further understanding of the current role of the car in society and to identify the likely economic and social consequences of moving towards more coercive measures to reduce people's car use over the next decade.

1.3 Study objectives

The study has two primary objectives:

i) To examine recent trends in travel by car, and explore the changing nature, extent and causes of car dependence; and to consider whether this is still a useful way of characterising people's car use behaviours; and
ii) To explore the likely economic and social consequences of moving beyond current voluntary change programmes, towards future policy and economic environments that may pressure people into making more coercive reductions in car use.

The work reported here relies primarily on a literature review and a reanalysis of existing data, complemented by a small programme of qualitative data collection in the form of five focus groups with the general public and a series of in-depth interviews with local policy makers and practitioners.

The aim of the study is to highlight recent trends in car use and identify the extent of car dependence, and to stimulate public debate on the future role of the car in society. It is hoped it will assist policy makers and practitioners to understand more fully the economic and social implications of implementing various policy and market measures that might be employed as part of a transition towards a low carbon economy in the UK.

1.4 Research methods

The main tasks carried out during the study were as follows:

1. A critical review of the literature pertaining to car dependence and the economic and social benefits and disbenefits of car use and car restraint policies, which has been published since the previous RAC Foundation report.
2. A refresh analysis of the National Travel Survey (NTS) data between the late 1980s and 2006, in order to identify:
   - Differences in the amount and characteristics of car use over the past two decades How the nature and extent of car dependence has changed, in the context of wider economic and societal changes;
   - Demographic and geographical factors contributing to differences in car use and car reliance for particular trips.
3. An exploration of the feasibility of re-using the in-depth data from the original RAC Foundation study, and emerging longitudinal data sets (such as those produced as a by-product of behaviour change programmes), to gain deeper insights into car dependence.
4. Exploratory discussions with key professional stakeholders to review their experiences in relation to local car-based travel trends and to glean insights with regards to their anticipated future policy directions in this respect. Interviews were largely conducted face to face and included:
   - Local authority Chief Officers
   - Transport and land use planners
   - Lead transport officers in Government Offices
   - A property developer
   - A bus operator
5. Focus groups with randomly selected members of the public who were recruited according to a pre-determined set of criteria as follows:

- 'Voluntary switchers' – people of a range of ages who had made a voluntary switch from their cars to public transport for some journeys as a result of reduced fares or free bus tickets that were recently introduced by Nottingham City Transport;
- 'Banned drivers' – people of a range of ages that had received an enforced driving ban of over six months in the last year;
- 'Over 75 drivers' – elderly drivers living in and around Banbury who might be considering giving up driving in the near future for reasons of their age;
- 'New drivers' – young people between 18 and 25 years old, living in and around Banbury, who had passed their tests within the last year;
- 'Non-car owners' – people living in and around Banbury in non-car owning households and without regular access to a car.

6. Identify gaps in existing knowledge and areas where there is need for further research and make recommendations for future policy.

1.5 Report outline

The main findings of our research are presented in the next six chapters. Working papers are available relating to specific aspects of the study, namely (i) Literature review; ii) Full National Travel Survey analysis; iii) Policy review; (iv) Conceptual Components; (v) Expert seminar and (vi) Focus group exercises. These are in electronic format and can be downloaded from the Royal Automobile Club Foundation website (www.racfoundation.org).

Chapter 2 looks at the current position of the car in contemporary British society considering such issues as how, where and when it is used and by whom. It also considers the influence of public transport accessibility and settlement sizes.

Chapter 3 then summarises the main trends in car use patterns over the past 20 years, and examines some of the demographic and geographical factors that may account for observed differences over time.

Chapter 4 turns to the question of what drivers and non-drivers think about their car use, and what they see as the main benefits and disbenefits of current levels of car use.

Chapter 5 examines the extent to which current car use patterns reflect personal choice or structural and situational constraints, and seeks to explore more fully the concept of 'car dependence'. It considers why car dependence has grown over time, in response to adjustments in land use patterns and public transport provision.

Chapter 6 reviews the available research evidence on the costs of adjustment in

situations where car use is restrained in some way, as well as some of the wider literature on the economic and social cost of adjustment in other circumstances outside the field of transport. It also presents findings from the focus groups about how people adjusted to the sharp increases in fuel prices during 2007/08 and how they anticipate responding to other potential restrictions on car use in the future.

Finally, some conclusions and recommendations are set out in Chapter 7.

2

The dominance of the car in contemporary British Society

Key messages

- Over three-quarters of households now own at least one car, and 70% of adults have a driving licence.
- The car dominates most people's daily travel. Average citizens make two-thirds of their trips and over three-quarters of their mileage by car; even among the bottom income quintile cars are used for 45% of daily trips and account for 65% of mileage.
- In general, the smaller the settlement size the higher the car ownership rate. Public transport accessibility seems only to be associated with low car ownership rates in areas of high provision.
- While 40% of members of non-car owning households report travelling at least once a week by car, car trip rates are only one-tenth of those of one-car owning households, and they make far fewer trips overall.
- Rather surprisingly, average car trips rates for the under 16 and 16-29 age groups are identical at 510 trips per year, although in the latter case two-thirds of trips are as a car driver.
- In the younger adult age groups, women make more trips by car than men. The converse applies to older age groups where men aged 50-69 make more trips by car per year than do women. The number of trips made by women peaks in the 30-49 age group.

2.1 Introduction

This chapter analyses data from the British National Travel Survey (NTS) to look at contemporary patterns of car ownership and use among the UK population (using the latest available data from the 2006 survey). The NTS is based on an annual random sample of around 8,300 households in Great Britain, with each household member recording their trip making over a consecutive seven day time period[1]. In Chapter 3, we also consider time series data taken from the NTS 1989–2006 and some traffic trends in order to establish how things have changed since the 1995 *Car Dependence* report.

In Section 2.2, we first examine car availability in 2006, in terms of vehicle and licence ownership across Great Britain, and how this varies by population group and type of area. Section 2.3 summarises patterns of car use and differences by socio-demographic and geographical characteristics. Section 2.4 looks more closely at the situation currently faced by non-car owning households.

[1] In recent years the DfT has introduced weighting procedures for NTS, to take into account the drop off in trip response rates over the diary week, and variations in person response rates across the population. Re-weighted data has been released for the period 1995 to 2006 only. These data are used in the 2006 analysis presented in this Chapter, but not in the trend analysis reported in Chapter 3, which goes back to 1989. As a consequence, there are some differences between the weighted 2006 values reported in this chapter and the un-weighted values for 2006 that are part of the trends analysed in the next chapter.

2.2 Car and licence ownership in 2006

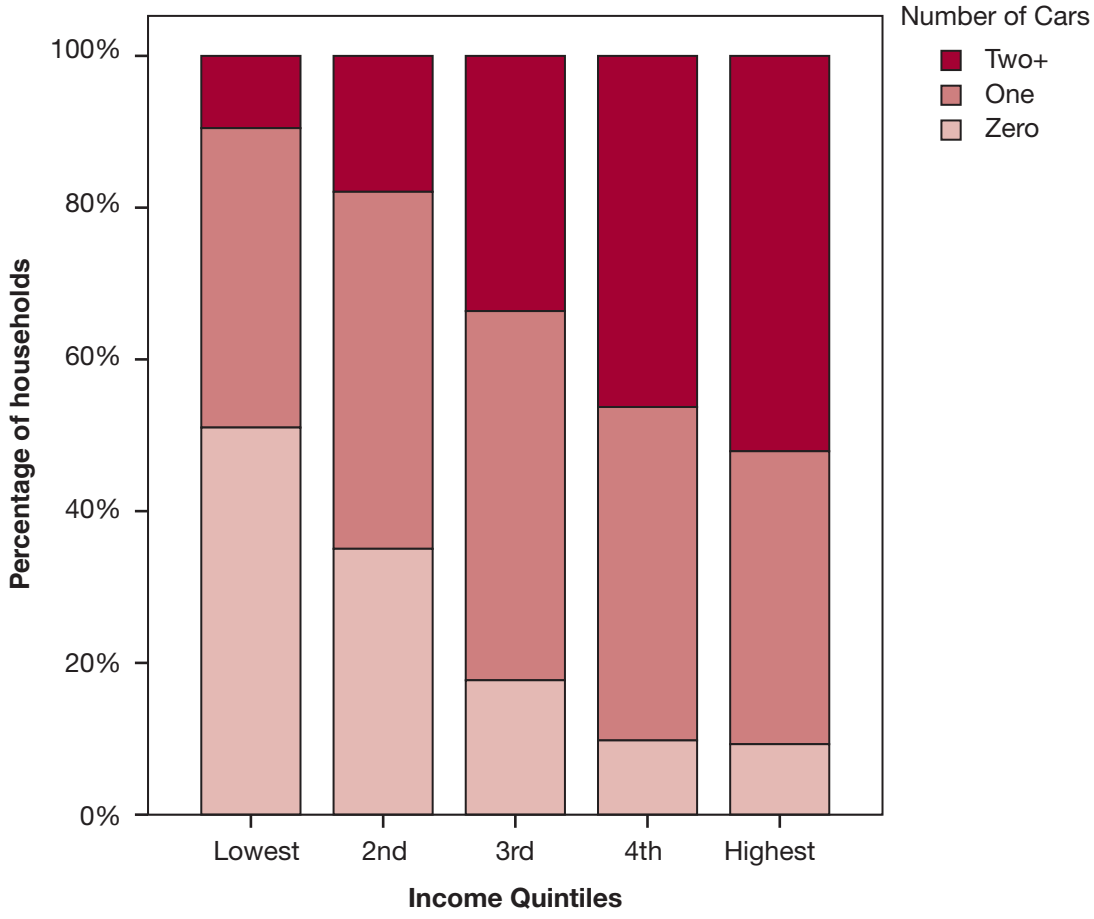
2.2.1 Car ownership levels

In 2006, for most people in Great Britain (82%), living in a car owning household was the norm. There was an average of 1.15 cars per household, and 76% of households owned at least one car. However, there were large differences in ownership levels by population group and type of area.

Figure 2.1 shows the percentages of households with 0, 1 and 2+ cars, in each of the five income quintile bands.

In the lowest income quintile, around half of the households own at least one car; this reaches 90% in the top two income quintiles, suggesting that about 10% of households are unlikely to become car owning, for whatever reason, even where income itself is not a constraint on ownership[2]. Ownership of 2+ cars exceeds 50% among the top income quintile households.

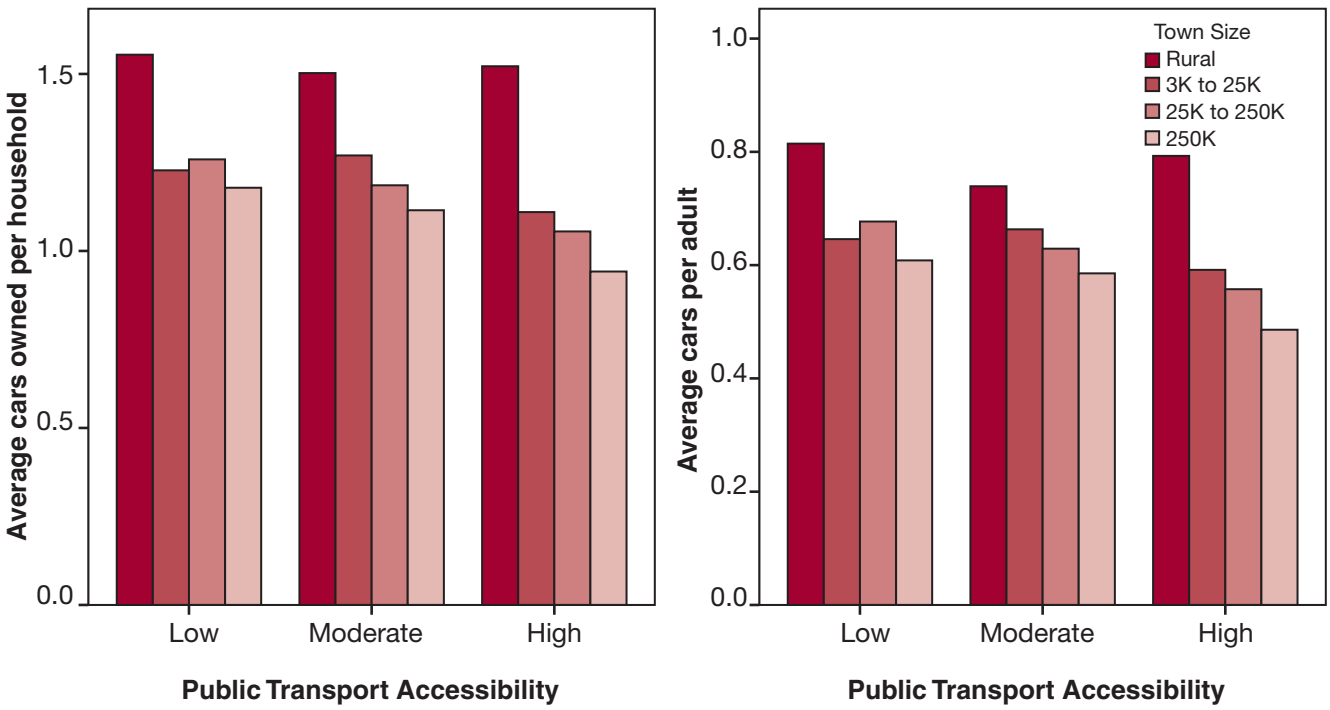
Figure 2.1: Distribution of numbers of household cars by income, 2006



[2] The proportion of households without a car in rural areas is also around 10% (not illustrated here), again suggesting that this may represent a base level of non-car ownership.

Figure 2.2, shows the relationship between average car ownership rates and the combined effect of residential settlement size and public transport accessibility (see Annex to Chapter 2 for definitions), both on a per household and a per adult basis (to allow for the effects of differences in average household size by area).

Figure 2.2: Number of cars per household and per adult, by size of residential area and public transport accessibility, 2006



Household car ownership rates can be seen to be much higher in rural areas than elsewhere, and these rates are unaffected by levels of public transport accessibility. In general, the smaller the settlement size, the higher the car ownership rate; public transport accessibility seems only to be associated with lower car ownership rates in areas of high provision. Similar associations are observed when looking at cars per adult.

2.2.2 Driving licence ownership

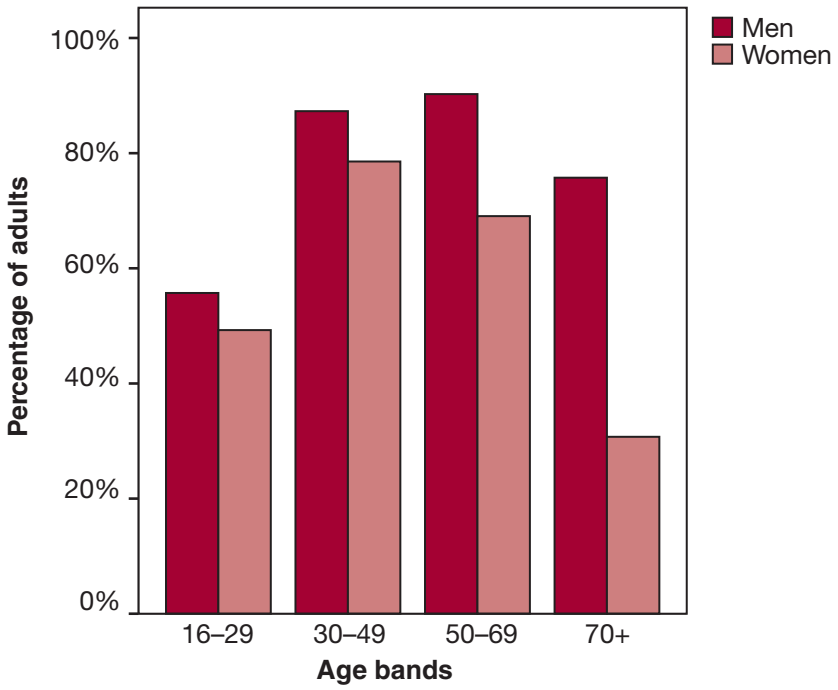
Figure 2.3 illustrates the percentage of adults with a driving licence, according to their gender and age group. This shows several clear patterns:

- In all four age groups, more men have a driving licence than women. This difference increases with age, with only 7 percentage points difference among those aged

16-29, rising sharply to a 35 percentage points difference in the 70+ age group – reflecting social conditions obtaining in previous decades when women were less likely to have learned to drive.

- Most licence holders are to be found in the 30-69 age range where for both genders they exceed two-thirds of the population, reaching a rate of 90% for men in the 50-69 age group. The rate of licence holding is lowest for men in the youngest age group (56%) and lowest for women in the oldest age group (31%). Interestingly, there are slightly fewer men who are licence holders in the 30-49 age group (at 87%) than in the 50-69 age group (90%), while the opposite is found for women.

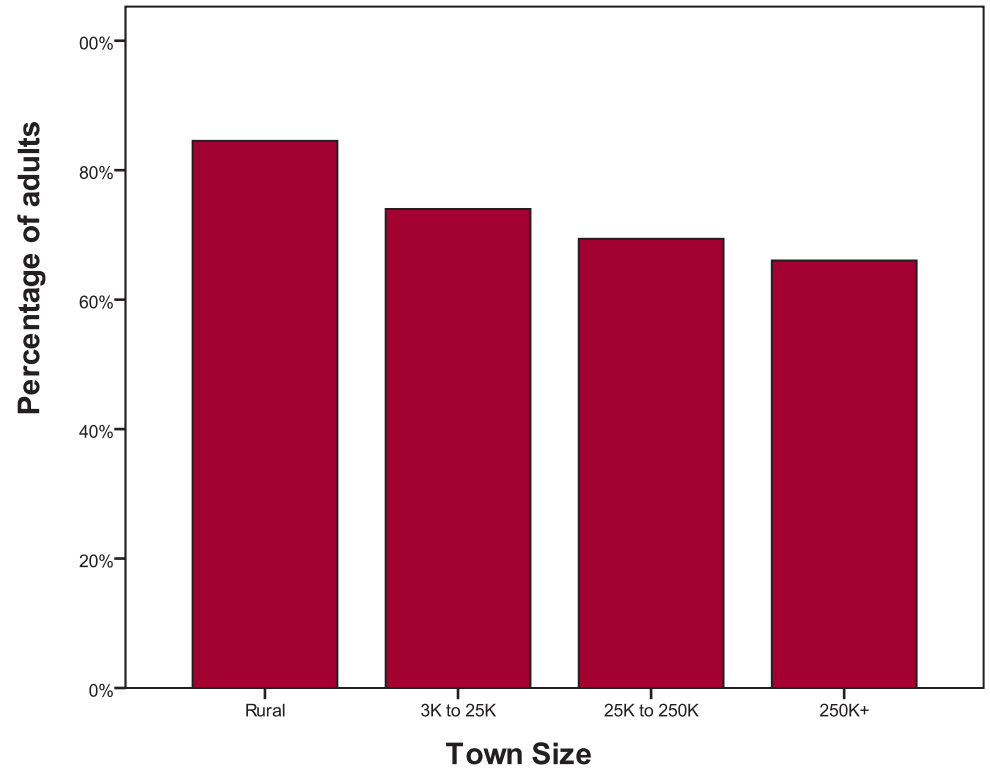
Figure 2.3: Percentage of adults with a driving licence, by age and gender, 2006

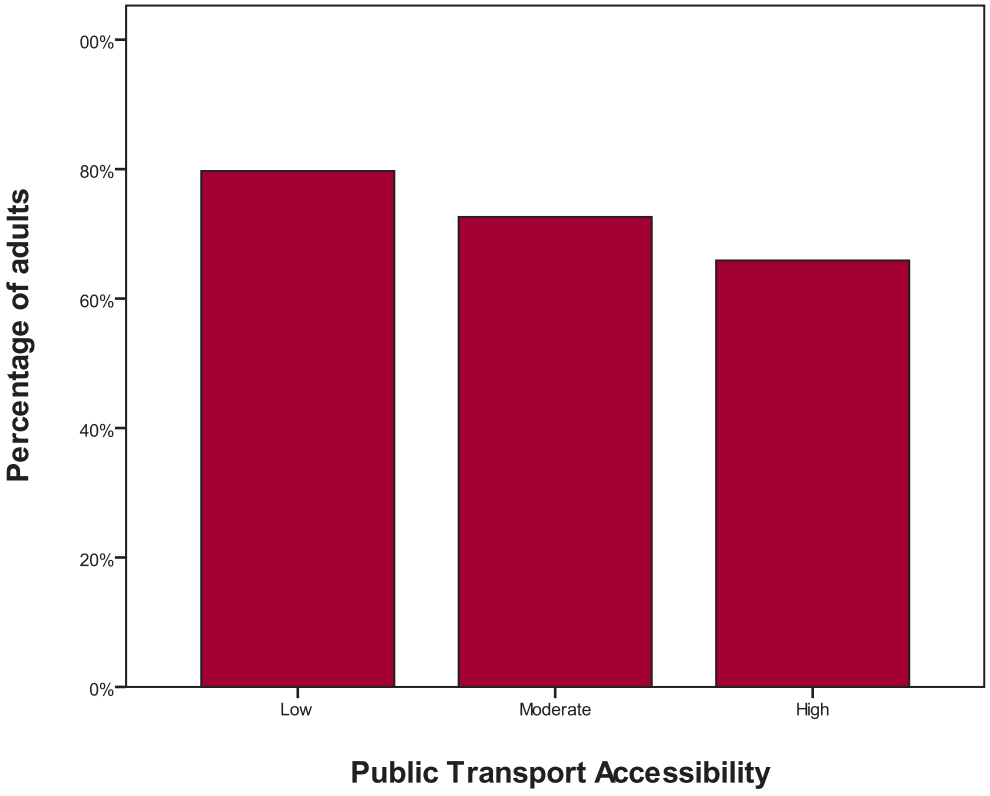


Variations in levels of driving licence holding by type of area are much less than was the case for car ownership, either in terms of settlement size or public transport accessibility level, as shown in Figure 2.4.

Licence ownership rates among adults are highest in rural areas (at 85%), and then drop steadily from 74% in towns up to 25,000, to 66% in the largest category of settlement size. In the case of public transport accessibility, the variation is somewhat less, with average rates falling from 80% in the low accessibility areas to 66% in the high accessibility areas.

Figure 2.4: Percentage of adults with a driving licence, by settlement size and public transport accessibility level, 2006

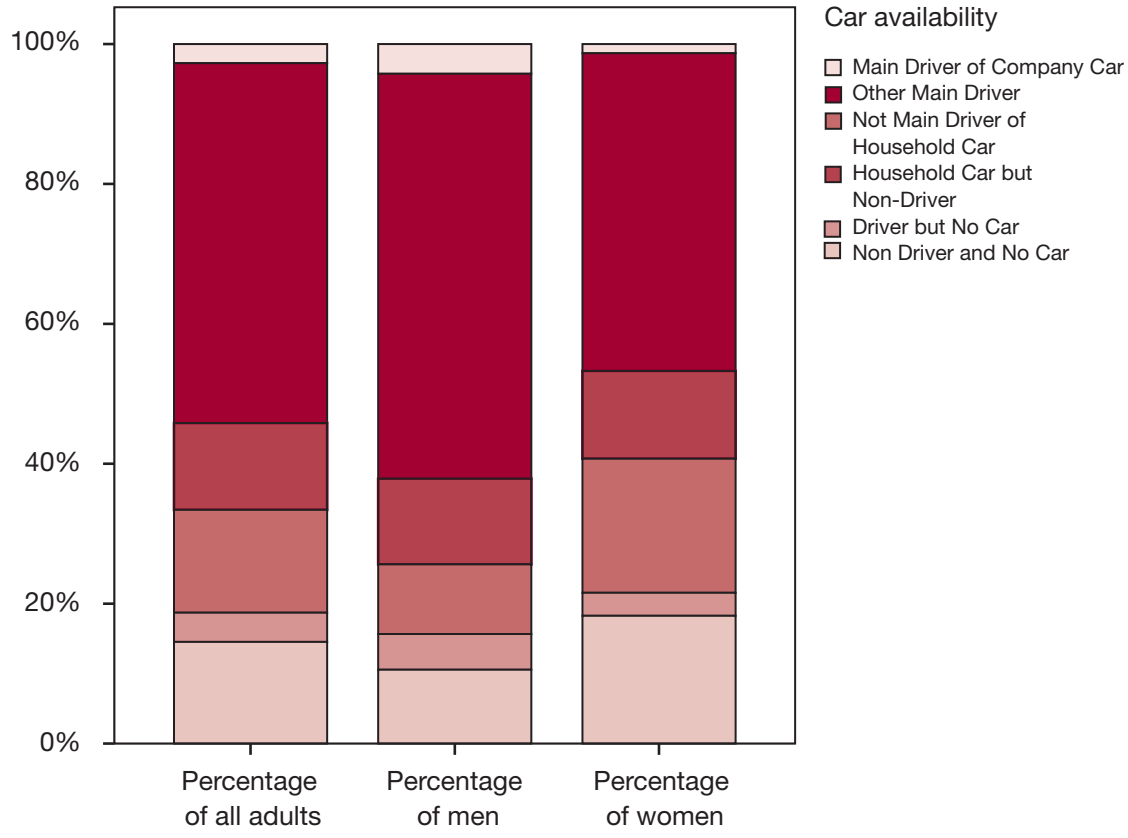




2.2.3 Overall car availability

The extent to which an individual has the opportunity to travel by a household car is influenced by a combination of car access within their household and whether or not they have a driving licence. These two factors are combined into an overall measure of car availability in the following two figures, with Figure 2.5 providing a breakdown by gender and Figure 2.6 by income quintile.

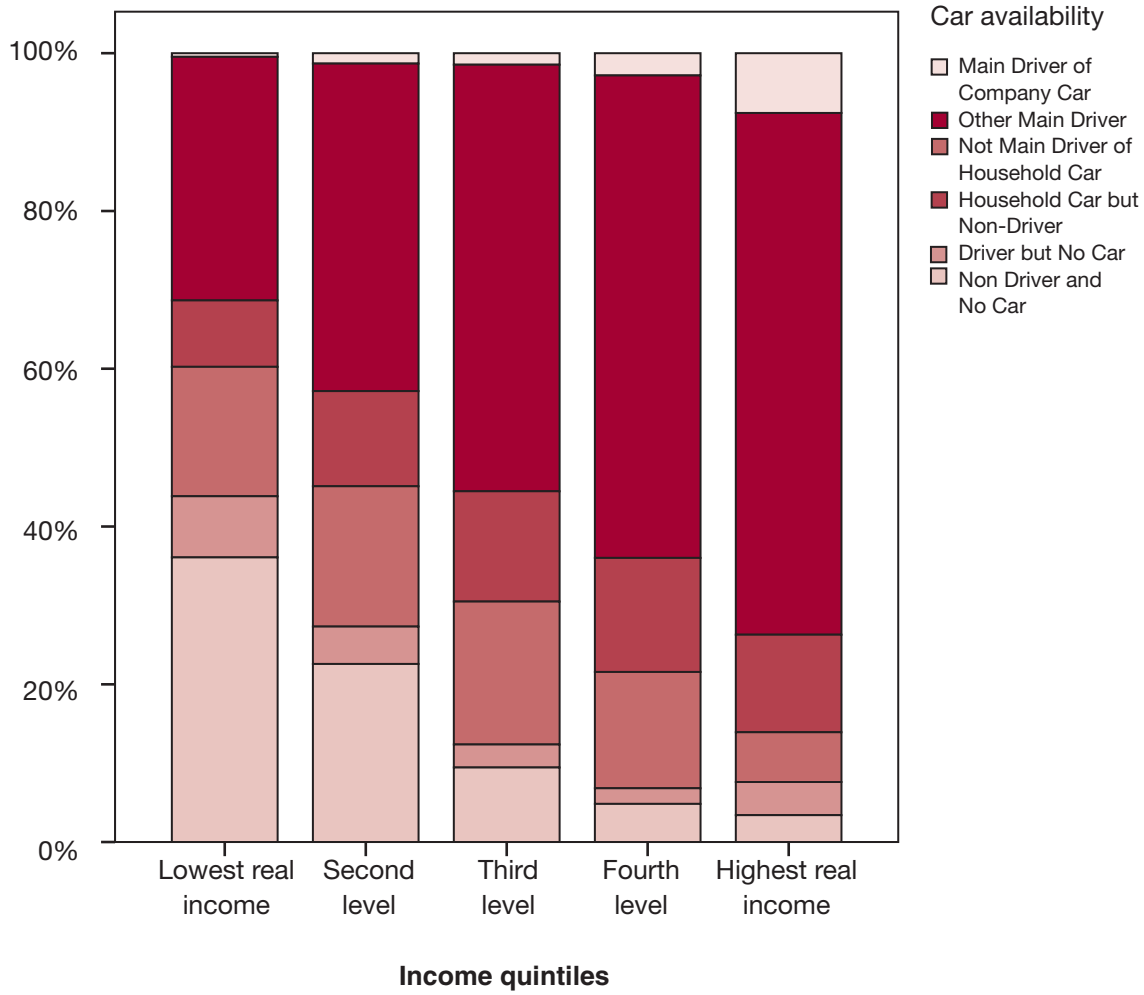
Figure 2.5: Car availability across the total population, in terms of licence holding and household car ownership, by gender, 2006



Across the population as a whole, over half (54%) are the main drivers of a household or company car, and 30% are non-drivers; only 4% are drivers in a household without a car. There are significant differences by gender (Figure 2.5), with 64% of males being the main driver of a car and only 48% of women. Women are twice as likely to be a non-driver in a household with a car than are men (19% vs. 10%).

In terms of income (Figure 2.6), the proportion of people who are the main car driver increases from 31% in the lowest income quintile to 74% in the top quintile. Conversely, the likelihood of being a non-main driver increases with income, from 8% to 12%, whilst the proportion that are not car drivers in a car owning household drops with income, from 16% to 6%.

Figure 2.6: Car availability across the total population, in terms of licence holding and household car ownership, by income quintiles, 2006



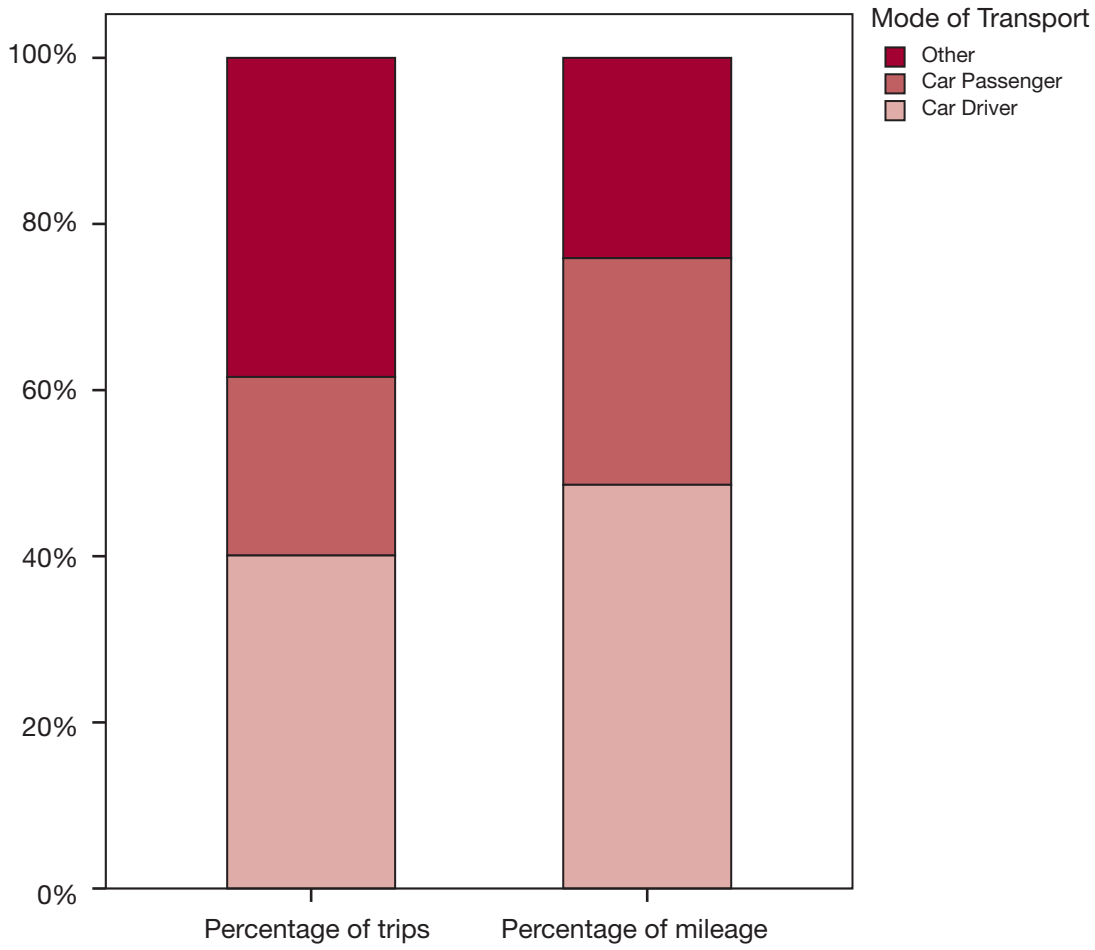
2.3 Patterns of car use in 2006

The car now dominates most people's daily travel. Across the British population as a whole, over 80% of people reported travelling by car (either as a driver or a passenger) at least once during their diary week. This compares to less than 30% who used a bus and around 10% who travelled by rail at least once in their diary week.

2.3.1 Modal share of travel by car

Figure 2.7 shows the percentage of all weekly trips and weekly mileage carried out by car.

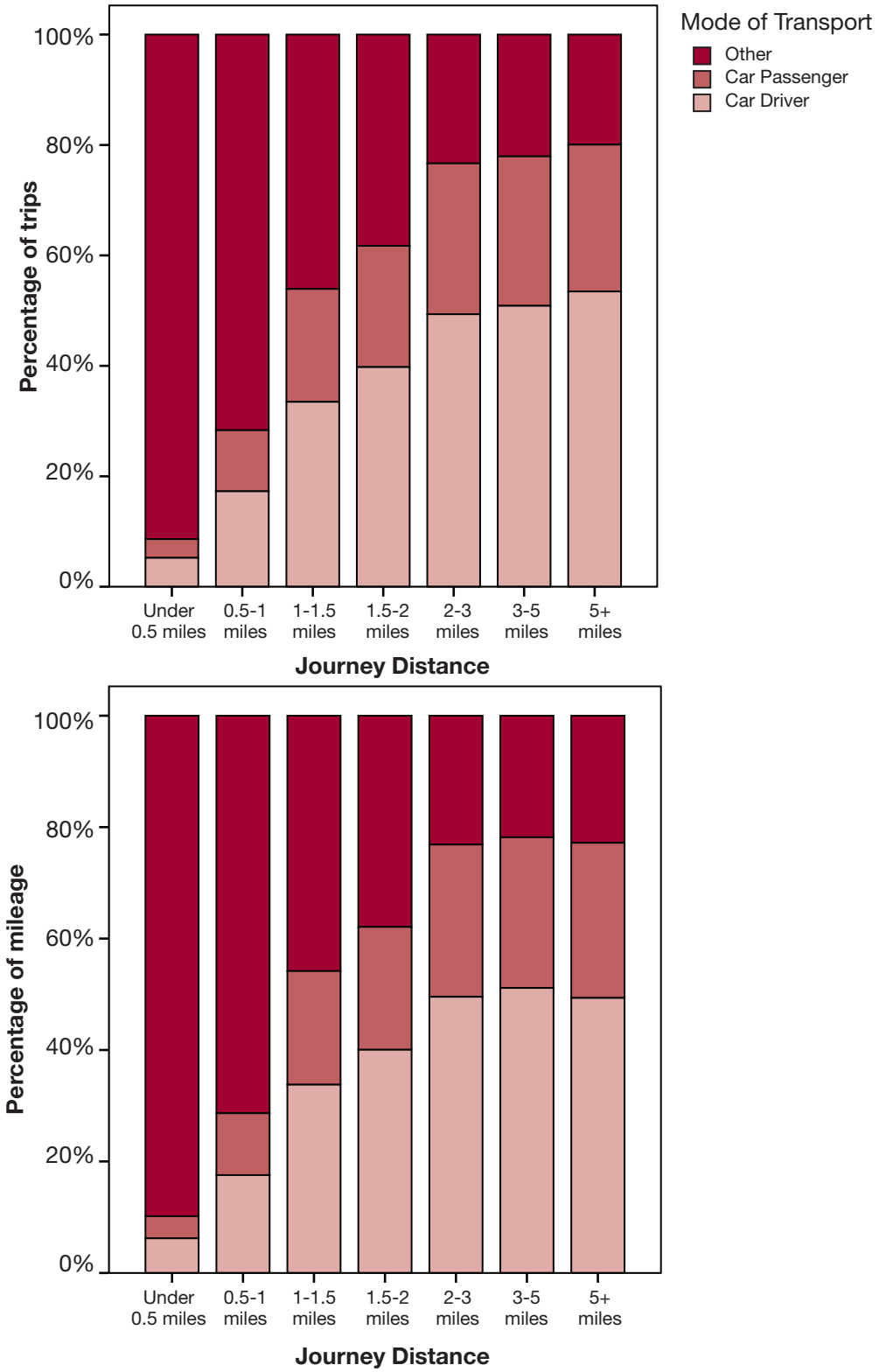
Figure 2.7: Percentage of weekly trips and weekly mileage, as a car driver, car passenger or in non-car modes[3], 2006



Here we can see that average citizens made 62% of their trips by car (40% as a driver) and 76% of their mileage by car (49% as a driver). Hence, non-car travel, by all other domestic modes of transport, only accounts for 38% of trips and 24% of mileage. Figure 2.8 examines how the modal shares of trips and mileage vary according to the length of the trip.

[3] In all the graphs that follow the category 'Other' refers to all non-car modes including public transport, taxis, cycling and walking.

Figure 2.8: Percentage of weekly trips and weekly mileage, as a car driver, car passenger or in non-car modes, by trip length 2006



Car use (both as driver and passenger) accounts for only 8% of the trips under half a mile in length, rising to 76% of all trips in the 2 – 3 mile band and 80% of trips longer than 5 miles in length; above 1 mile, more than half of all trips are by car. Trends are similar with regard to mileage: cars contribute only 10% of the mileage of trips under half a mile in length, rising to 77% of mileage for trips that are 2 miles or longer; again, above 1 mile more than half of all mileage is by car.

Figure 2.9 shows that cars are used for over half of trips for all journey purposes, except education where they account for 30% of total trips and 35% of mileage. It can also be observed that:

- The highest car modal shares are for 'escort (other)', at 84% of trips and 94% of mileage;
- The highest share of car trips and car mileages that are as car passengers are for 'social' and 'recreational' trips, where there is roughly an equal split between passengers and drivers;
- The lowest percentage of car passengers are for 'commuting' and 'business related' trips and mileages.

Socio-demographic factors show the car modal share of total trips and mileage above 50% for all age groups and both genders – see Figure 2.10. In terms of trips (Figure 2.10a), the 30-49 and 50-69 age groups have the highest car modal shares, and in each age group both genders have similar percentage modal shares, except for 70+ group where the figures for women are slightly lower.

Figure 2.9: Percentage of weekly trips and weekly mileage, as a car driver, car passenger or in non-car modes, by trip purpose in 2006

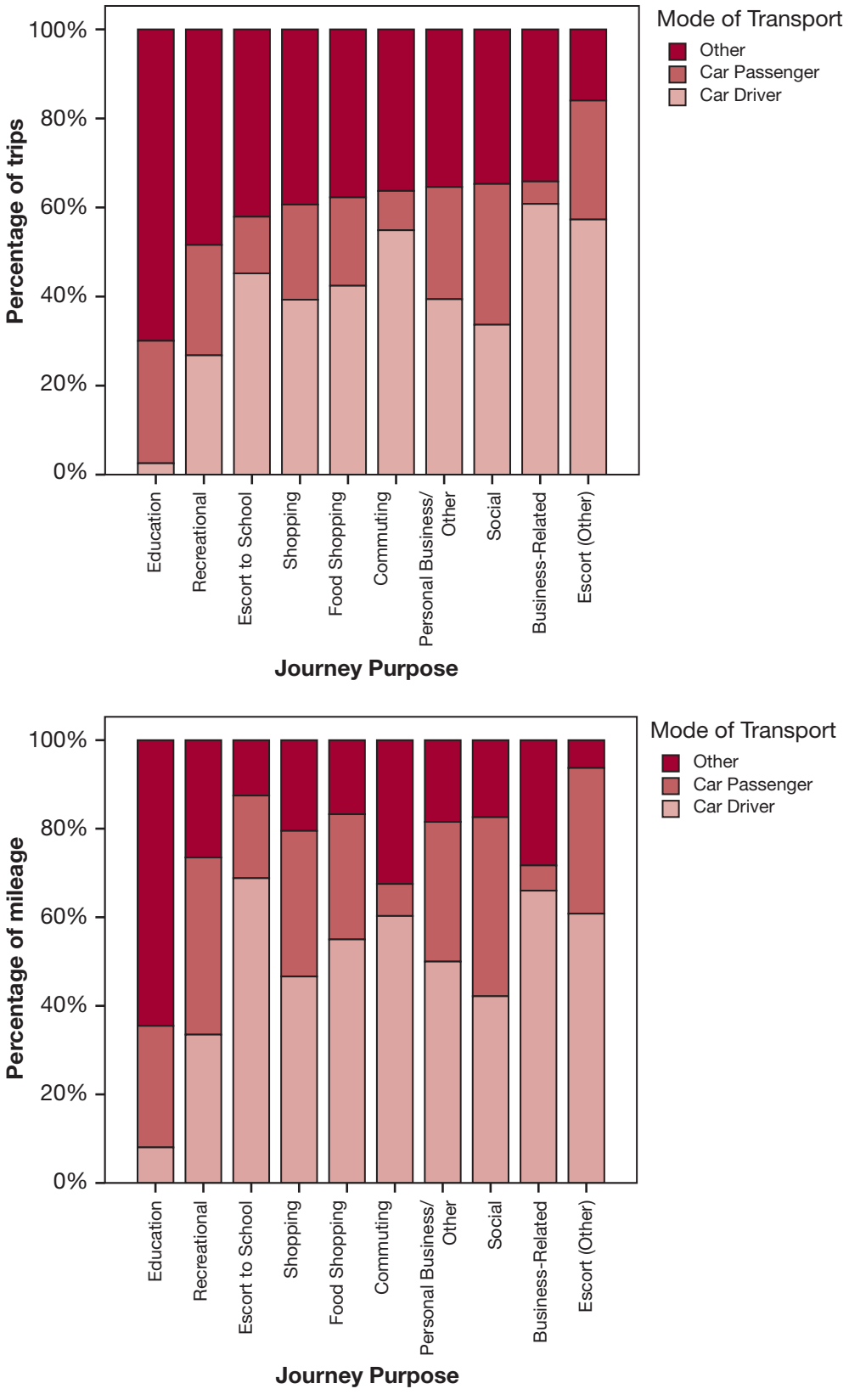
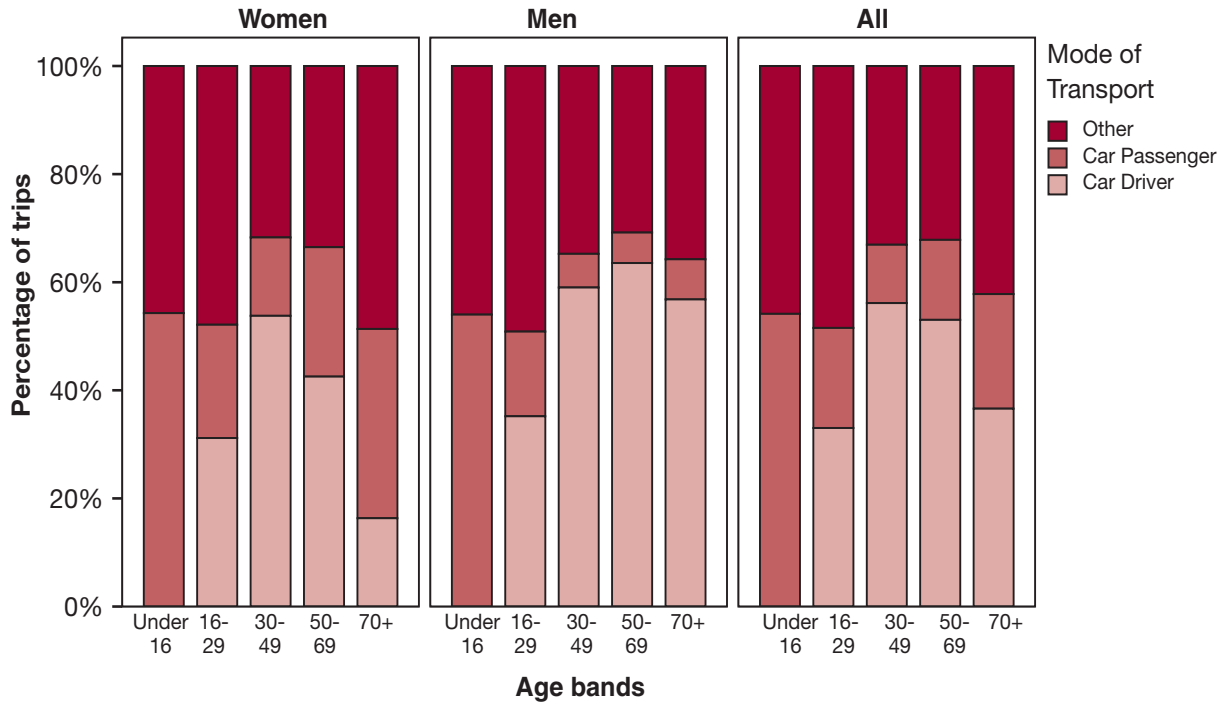
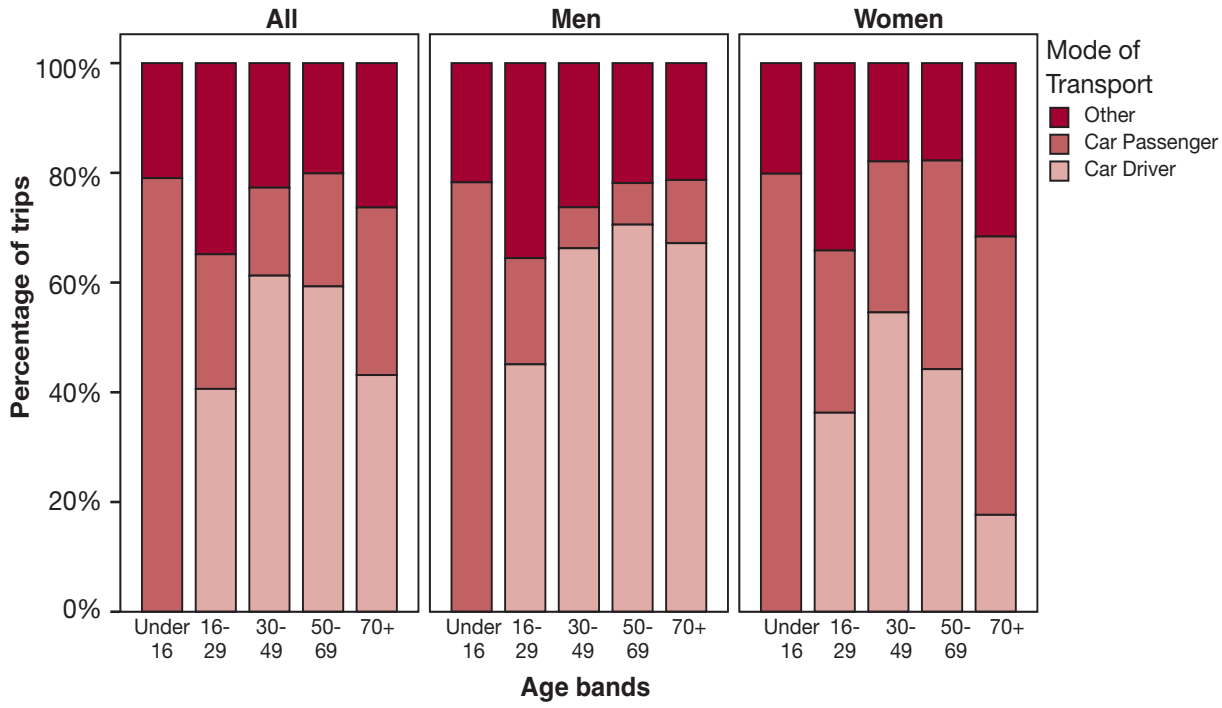


Figure 2.10a: Percentage of weekly trips as a car driver, car passenger or in non-car modes, by age in 2006



In terms of mileage (Figure 2.10b) the picture is more complex, with the 16-29 age group having a lower car modal share than any of the other groups.

Figure 2.10b: Percentage of weekly mileage, as a car driver, car passenger or in non-car modes, by age in 2006



Among the bottom income quintile, cars are used for 45% of daily trips and 65% of mileage (see Figure 2.11). In terms of car driver trip modal shares, this rises in each successive income band, from 24% in the lowest to 51% in the highest. Conversely, the car passenger modal share is more stable, at 22%/23% for the three middle income quintiles, dropping back to 20% and 18% in the lowest and highest income quintiles, respectively.

Figure 2.11: Percentage of weekly trips and weekly mileage, as a car driver, car passenger or in non-car modes, by income quintile in 2006

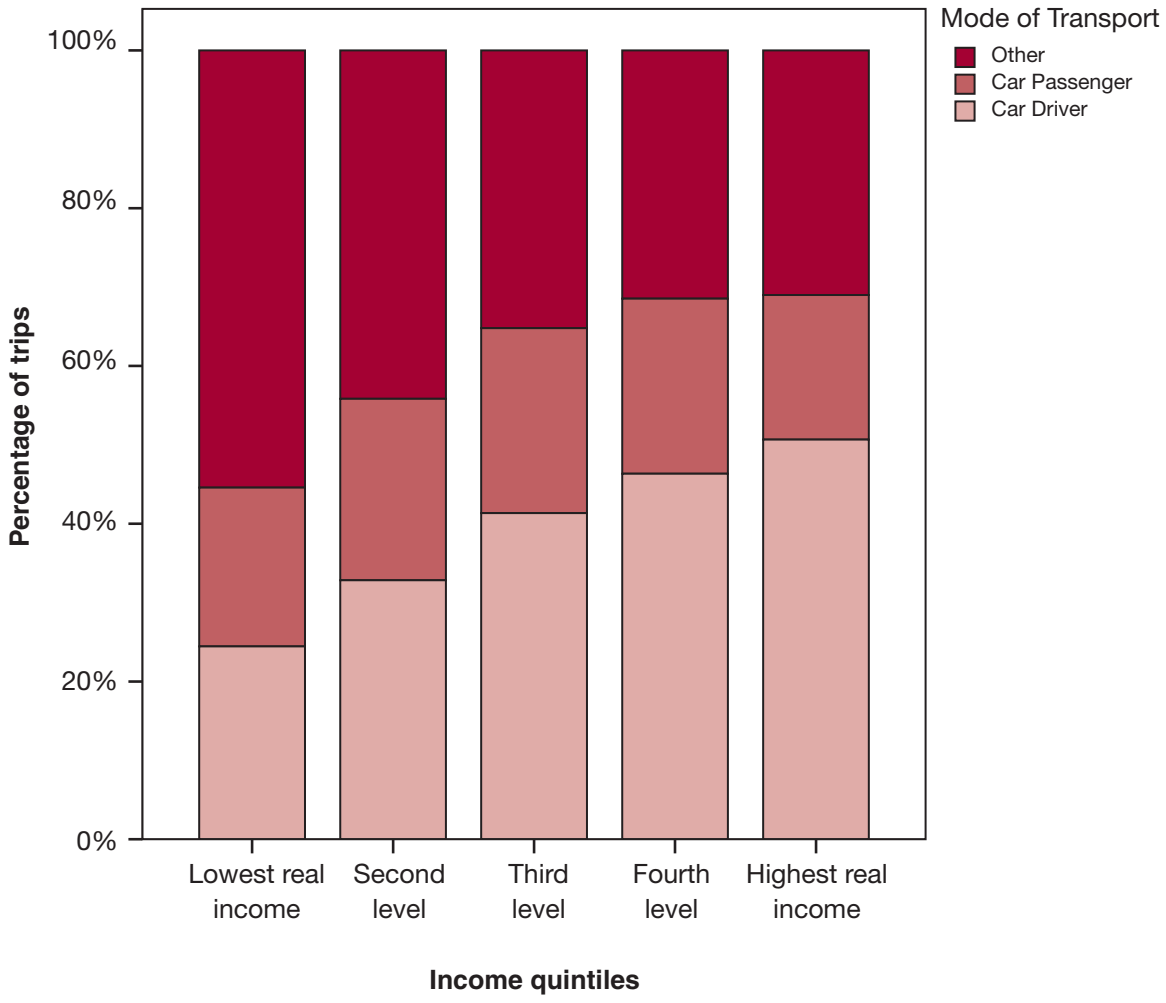
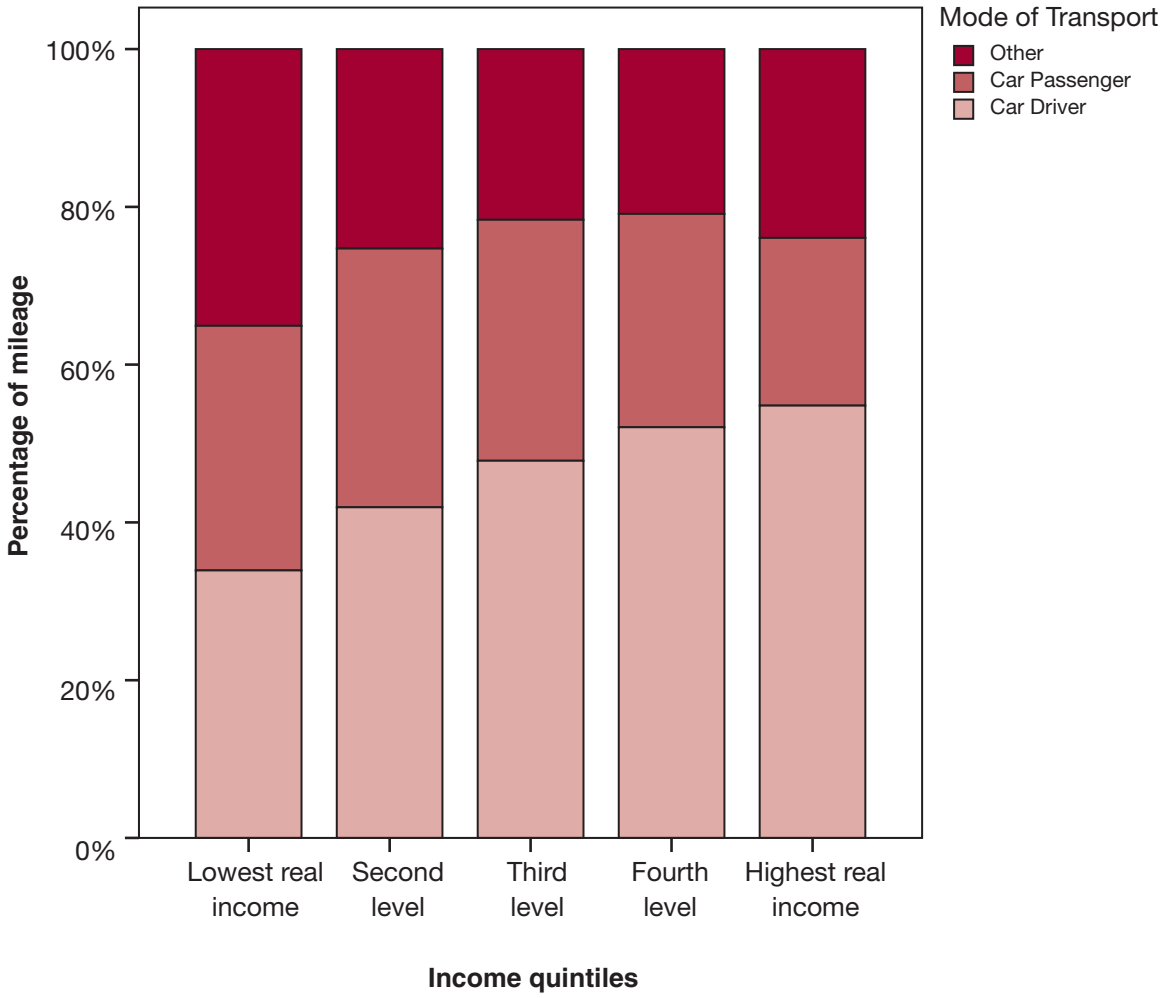


Figure 2.11: Percentage of weekly trips and weekly mileage, as a car driver, car passenger or in non-car modes, by income quintile in 2006 *continued*



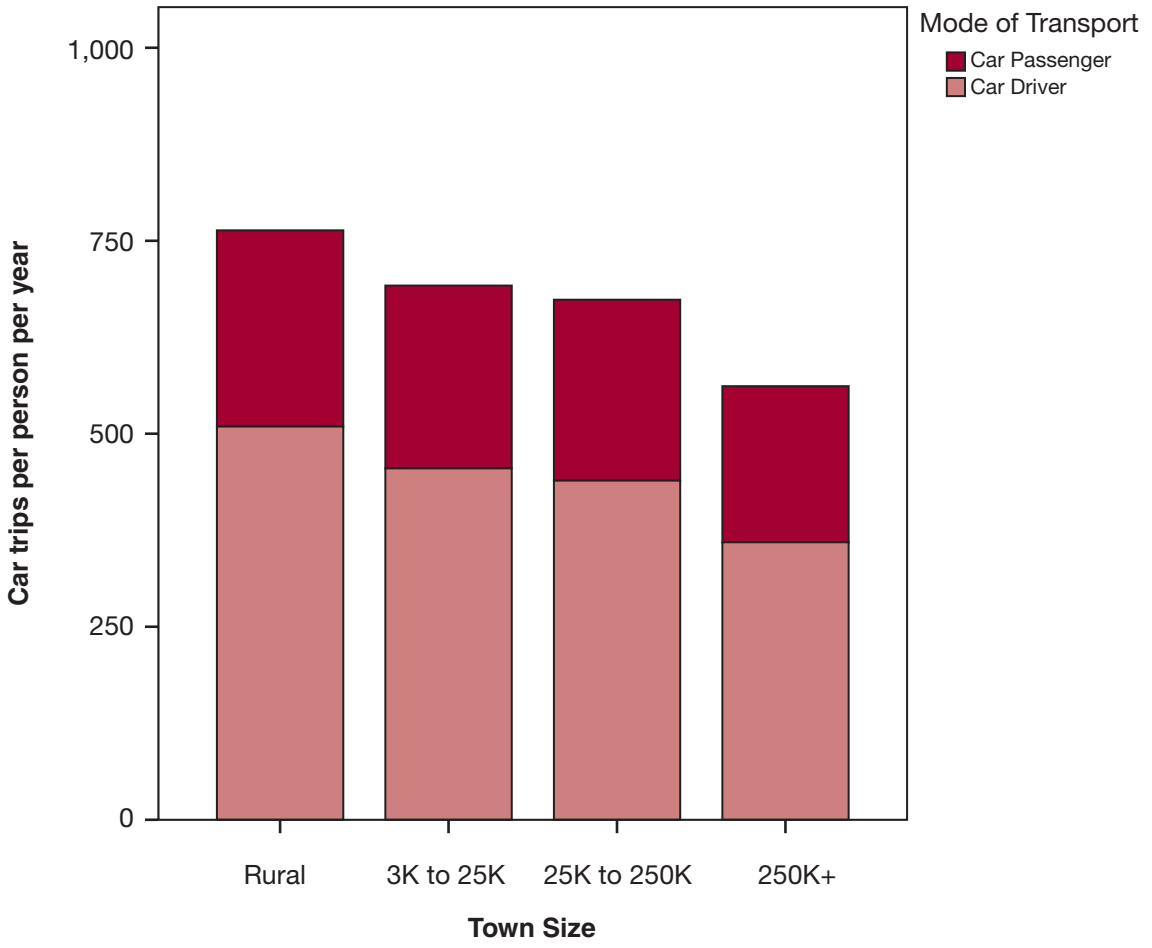
In terms of mileage, the pattern of increasing modal share with increasing income holds for car drivers too (up from 34% in the lowest income quintile to 55% in the highest). For car passengers, modal share is steady among the three lowest groups (at between 31% and 33%), and then declines to 21% in the top quintile leading to a declining car share of total mileage compared to the fourth income quintile.

2.3.2 Levels of trip making by car[4]

Figure 2.12 shows how absolute levels of car trip making per person decline with increases in residential settlement size, from 763 per year in rural areas down to 593 in settlement sizes of over 250,000. There appears to be little difference between the two intermediate settlement sizes in average car driver or passenger trip rates.

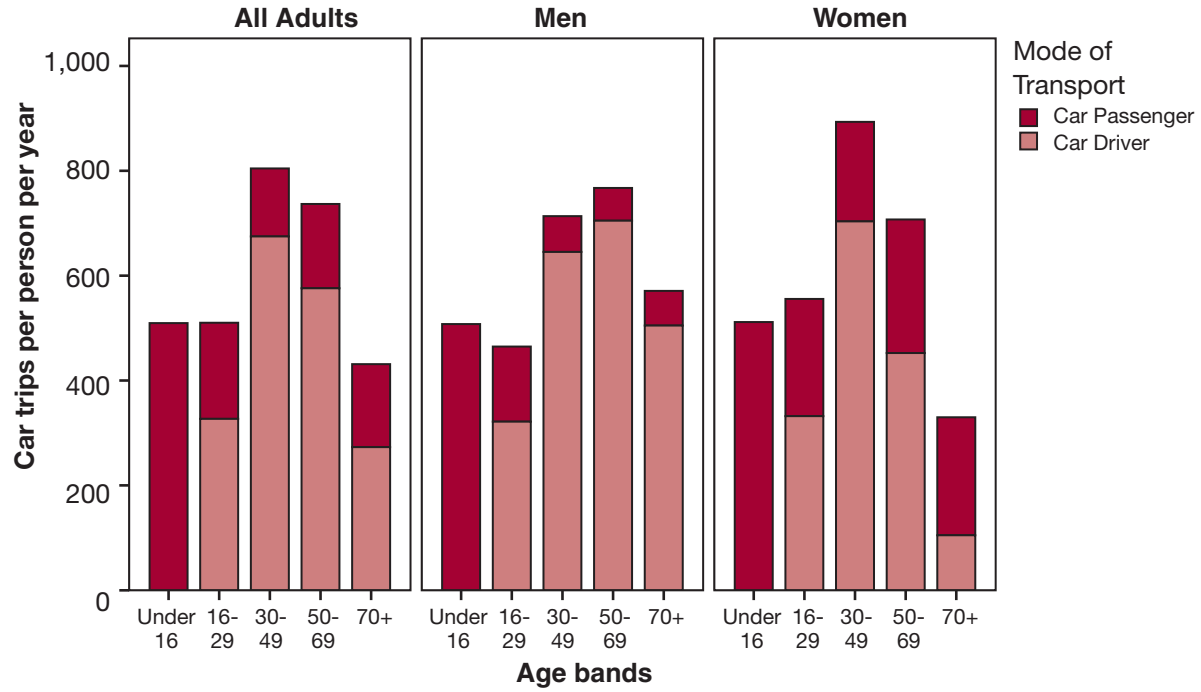
[4] Estimates of annual trip rates and annual mileages are obtained by multiplying the weekly values from the travel diaries by 52

Figure 2.12: Car trips per adult per year, by settlement size, 2006



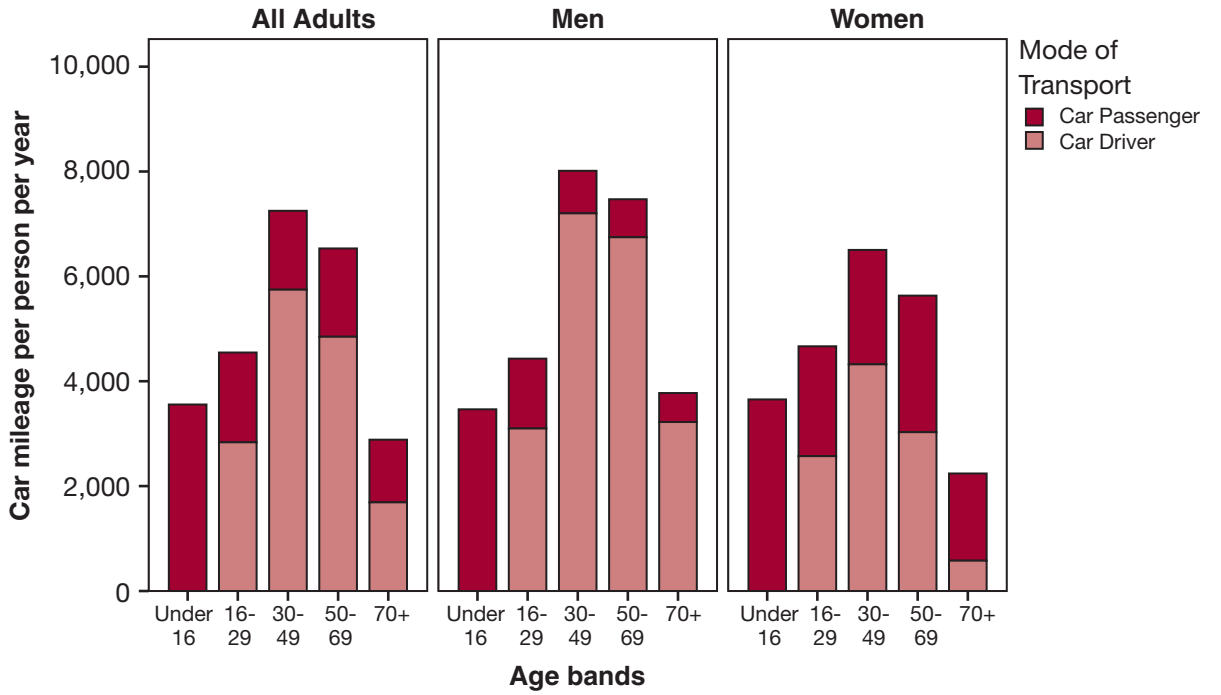
The next two figures look at variations in car travel, by age and gender. Figure 2.13 shows the average number of car trips (as driver and passenger) by people in five age groups and of each gender in 2006. Rather surprisingly, average car trips rates for the under 16 and 16-29 age groups are identical at 510 trips per year, although in the latter case two-thirds of trips are as a car driver. In the younger adult age groups, women make more trips by car than men: 90 more per year for those 16-29 and 179 more for those aged between 30 and 49. The converse applies to older age groups: men aged 50-69 make 61 more per year and above 70 this increases sharply to an extra 241 annual trips by car. Women's car trips peak in the 30-49 age group, whilst men aged between 50 and 69 make more car trips.

Figure 2.13: Average annual car trips per person, by age and gender, 2006



In Figure 2.14, average car mileage per year is shown for the same five age groups, by gender. For both genders, car mileage increases up to 30-49, and then declines with age. In the three older age groups, car mileage for men is higher than for women although, unlike trip rates, rankings of mileage by age group are the same for both genders. A much higher proportion of the male car trips and mileage is as a car driver.

Figure 2.14: Average annual car mileage per person, by age and gender, 2006



2.3.3 Difference in car travel patterns by annual mileage

Figure 2.15 provides a breakdown across the population as a whole of estimates of annual mileage by car. Based on a grossing up of the diary week, only 17% of the population records no mileage by car. Nearly half (46%) travel an annualised amount that lies between 1 and 5,000 miles per year, and 10% complete over 15,000 miles per year.

The next two figures examine differences in patterns of car use according to annual distance travelled: do high mileage travellers make a lot more trips by car? Are they more likely to be travelling for work purposes?

Figure 2.15: Percentage of people with different annual mileages by car, 2006

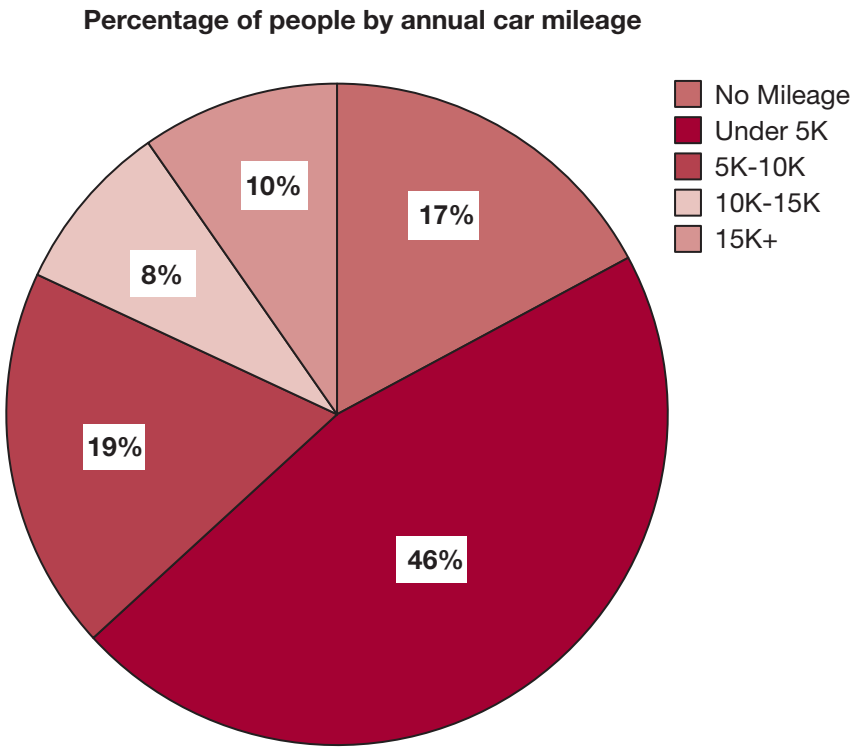
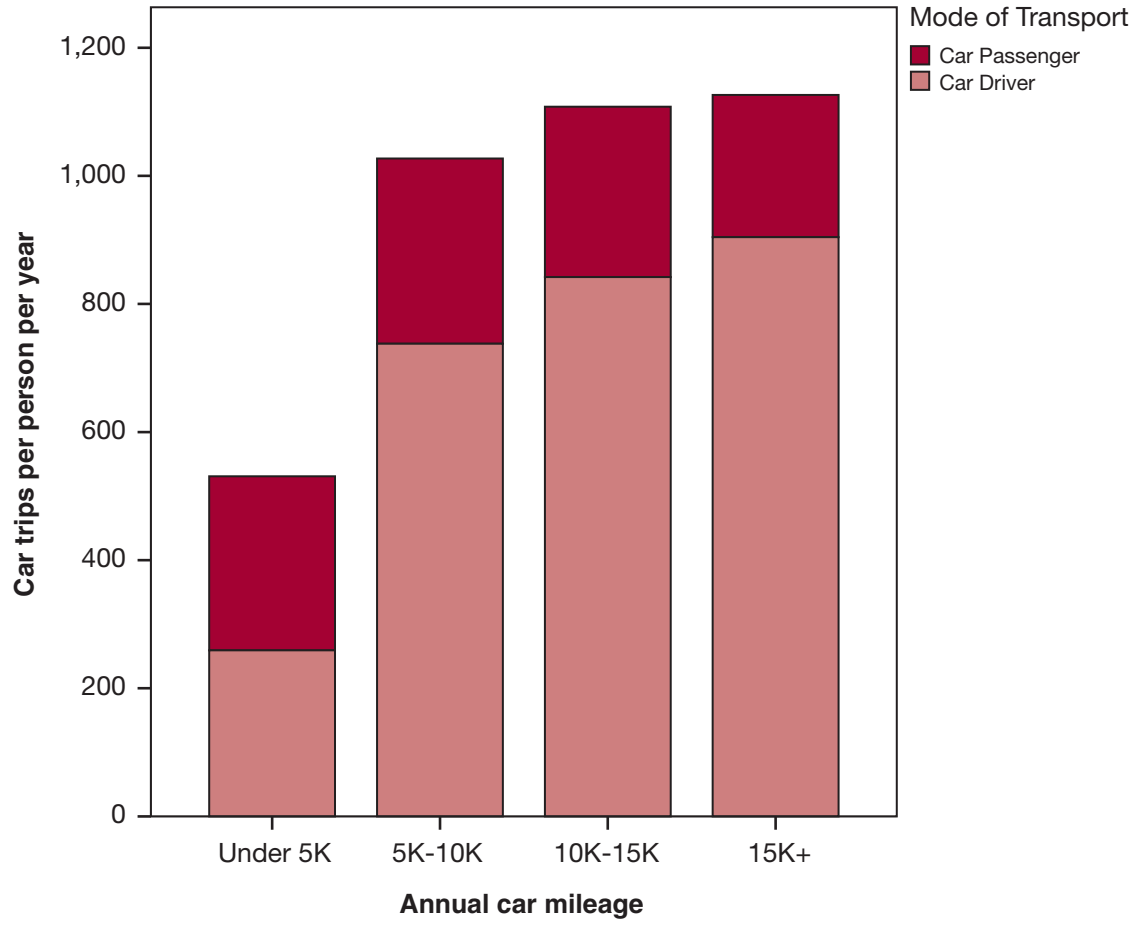


Figure 2.16 shows annualised trip rates by car for the four non-zero car mileage bands used in Figure 2.15[5].

[5] The 'Under 5,000' miles band excludes people who do not make any trips by car in their diary week.

Figure 2.16: Number of car trips per person, by annual mileage band, 2006



As can be seen, there is a near doubling of car trips between the under 5,000 miles band and the 5-10,000 band (i.e. up from 531 to 1,027 car trips). This is entirely due to an increase in car driver trips, but thereafter very little of the increase mileage is due to an increase in trip making by car. What this indicates is that average trip lengths by car are quite similar up to 10,000 miles, after which most of the increased mileage is accounted for by longer trips rather than further increases in car trip making. Note also that, above 5,000 miles, the numbers of car passenger trips decline in each successive mileage band, down from 289 in the 5-10,000 mile band to only 222 car passenger trips in the over 15,000 mile band.

Figure 2.17 examines whether car trips rates at different mileage bands are affected by the size of residential settlement. For example, within a mileage band, do people make fewer but longer trips in rural areas? In fact, the effects are small, variable and, in places, counter-intuitive (e.g. in the 10-15,000 mileage band). Trip rates are only inversely related to settlement size in the 15,000+ mileage band.

Figure 2.17: Car trips per person, by annual mileage and type of residential area, 2006

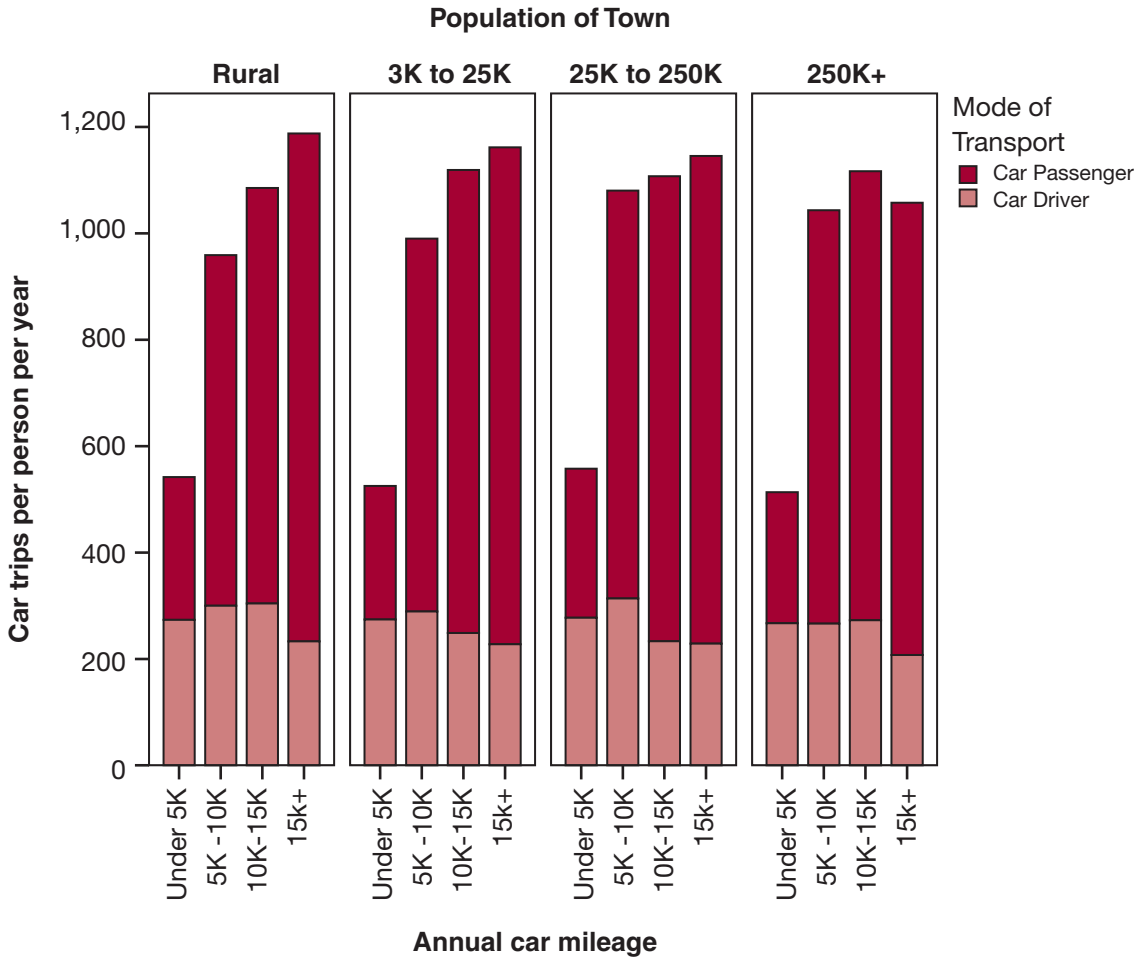
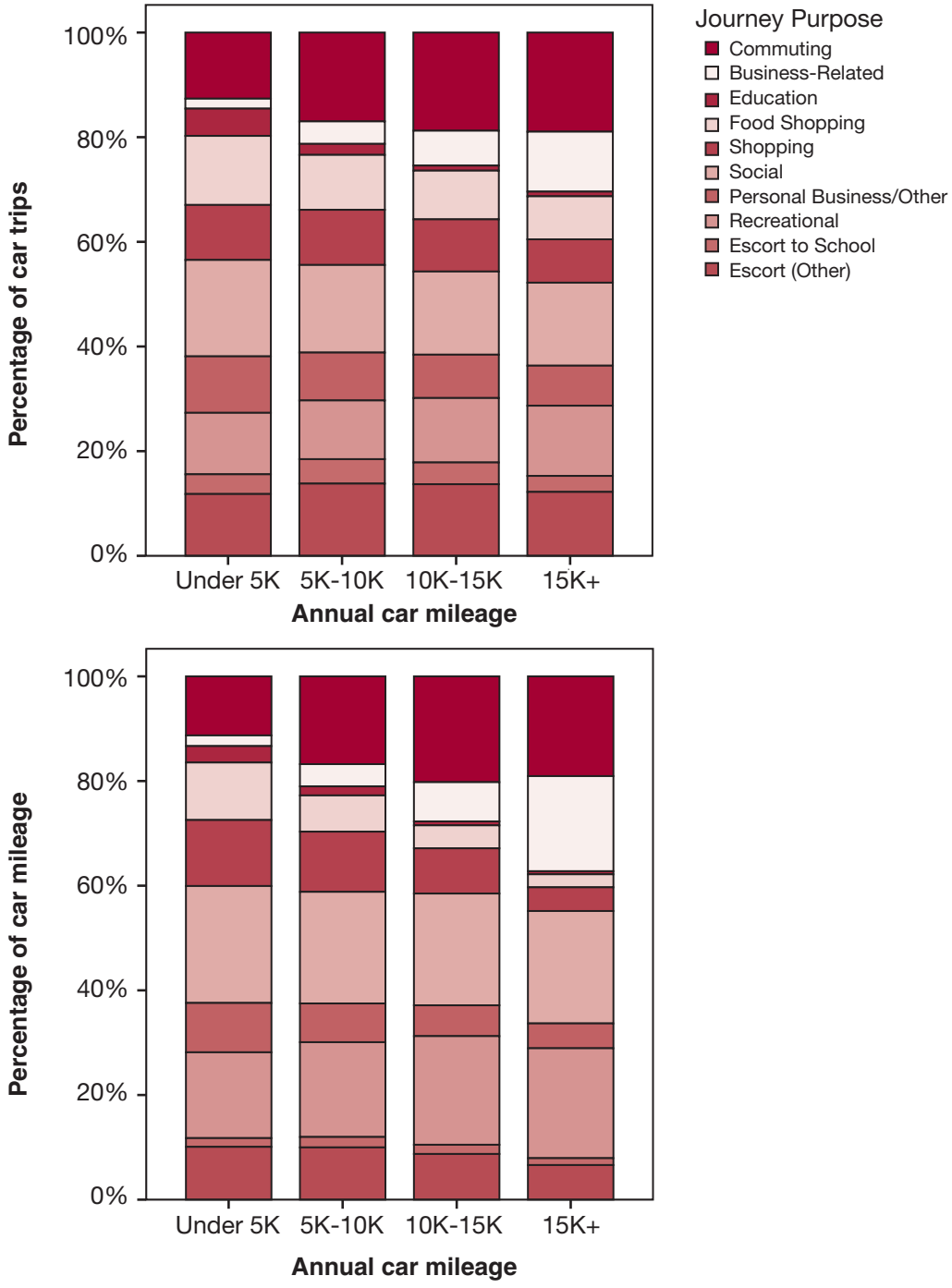


Figure 2.18 Examines how the mix of trip purposes is affected by total annual car mileage, both as a percentage of all car trips and as a percentage of car mileage. In general, the results are consistent, though not as much as might have been expected. The main effect is in business-related travel which increases from only 2% of trips and 2% of mileage for those travelling up to 5,000 miles per year, to 11% of trips and 18% of mileage among those travelling over 15,000 miles per year by car. This is mainly offset by reductions in shopping and personal business travel.

Figure 2.18: Percentage of car trips, by annual mileage and purpose, 2006

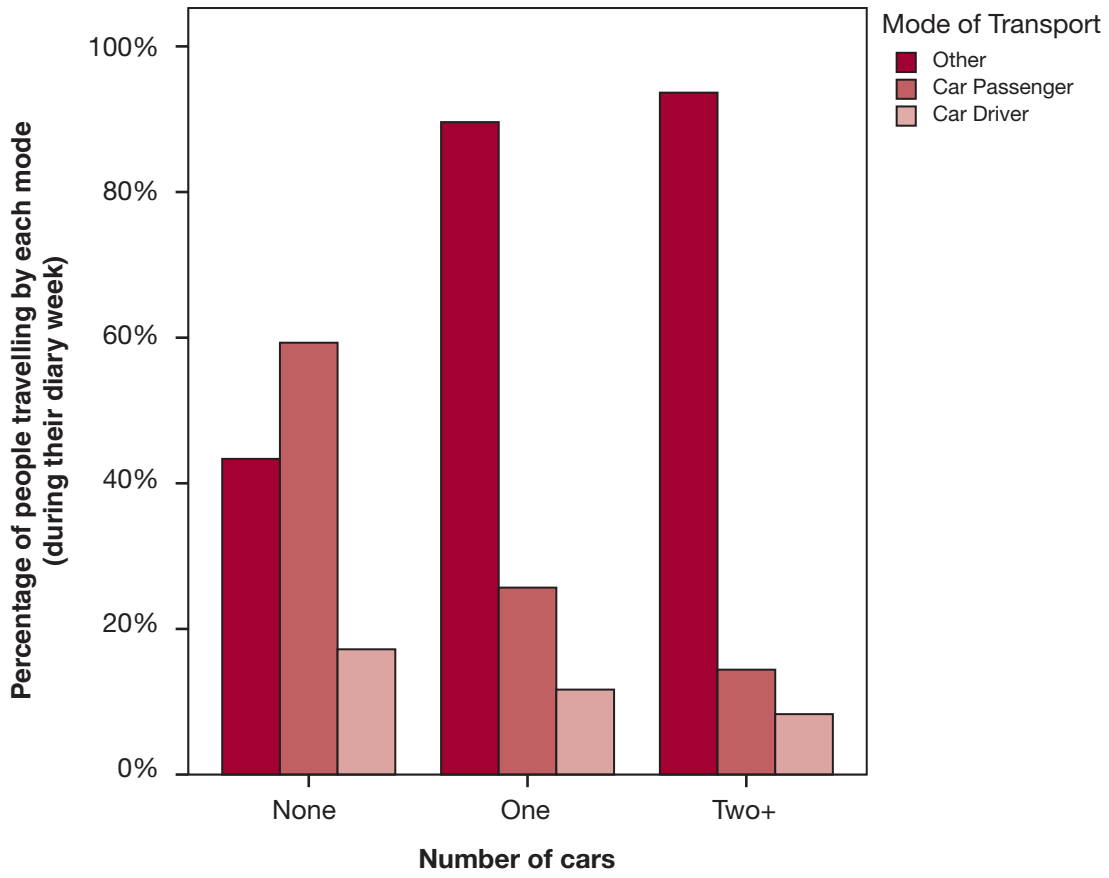


2.4 Car use among non-car owning households

It would be wrong to assume that members of non-car owning households make none of their journeys by car; they may occasionally rent or borrow a car or, more often, obtain a lift from family or friends. But usage is quite low.

First, Figure 2.19 examines the proportions of people living in households with 0, 1 or 2+ cars who report some travel by car at least once a week.

Figure 2.19: Percentage of respondents using each transport mode at least once per week, by number of cars in the household, 2006

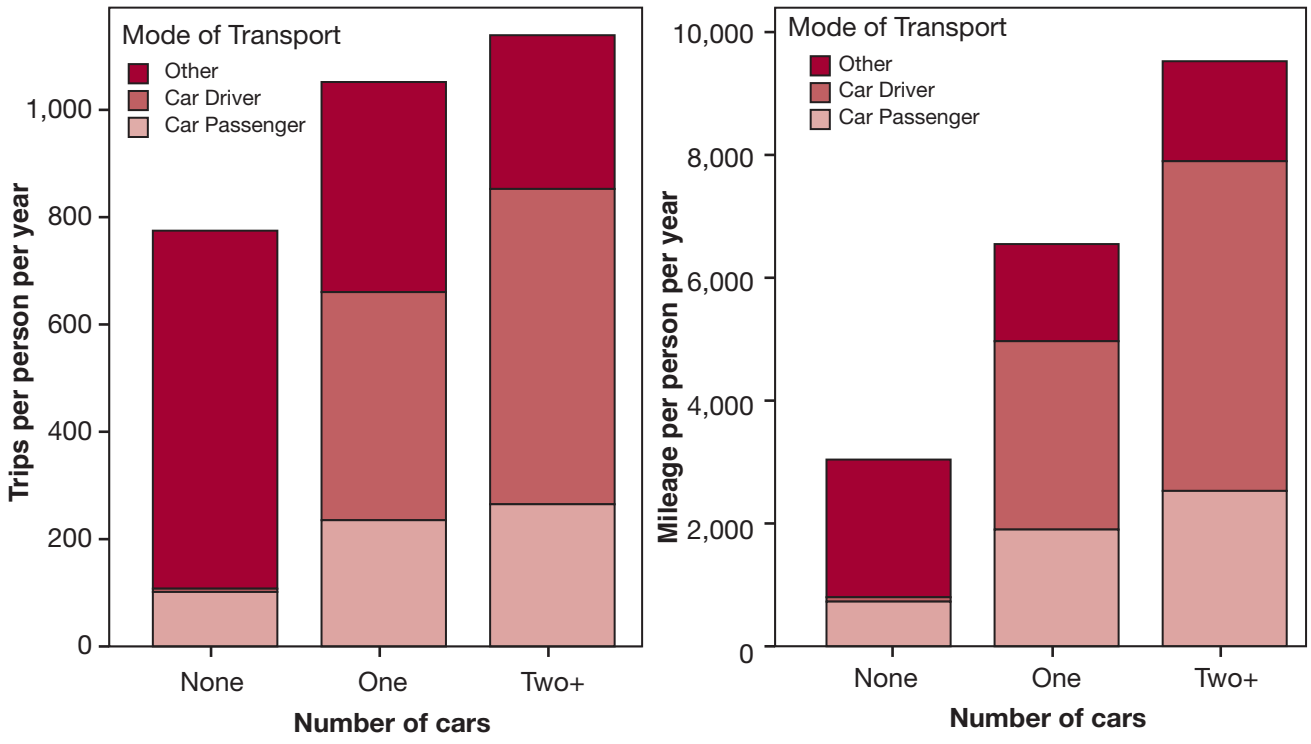


Even in households without a car, well over 40% of household members travel at least once a week by car; this compares to around 90% of members of 1 car owning households and 95% of people in 2+ car owning households.

The opposite result is found for public transport use – both bus and rail. The proportion of people travelling by bus is around 60% in non-car owning households, dropping to 14% in 2+ car households. For rail, the corresponding figures drop from 17% in non-car households to 8% in 2+ car owning households.

However, largely due to income constraints, people in non-car owning households travel much less intensively by car and other modes except walking. Figure 2.20 shows that, on average, adults in non-car owning households make only 107 car trips per year by car, compared to 660 in one car households and 853 in 2+ car owning households. In the first case, nearly all of these are as a car passenger. Proportionate differences are much greater in terms of annual mileage, where adults in non-car owning households travel less one tenth the distance by car per year of those in 2+ car owning households (i.e. 800 miles versus 7,897 miles).

Figure 2.20: Person trip rates and mileage, by household car ownership, 2006



Note that total annual travel per person, by all modes, is substantially lower in non-car owning households. Compared to one-car households, those living in households without a car make 74% the annual number of person trips (774 vs. 1051) and only 46% of total annual mileage (3040 vs. 6548 miles). The increase in average annual mileage between one and 2+ car owning households is much greater than the increase in average trip numbers.

Figure 2.21 investigates whether the percentage of car trips made for different purposes differs according to household car ownership level.

Figure 2.21: Percentage of car trips, by purpose and household car ownership, 2006

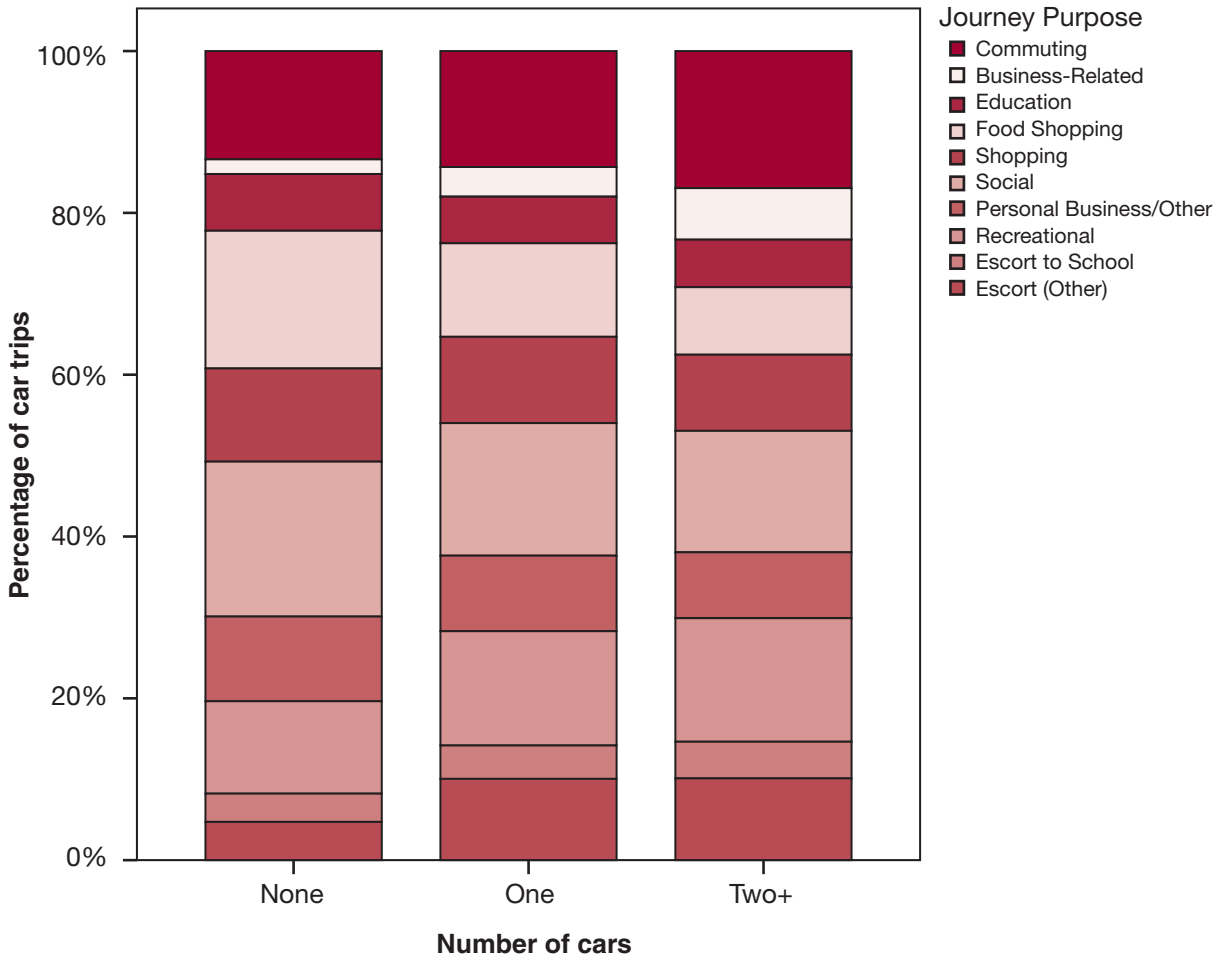


Figure 2.21 shows that households without a car make a higher proportion of food shopping and social trips and a lower proportion of escort (other), business and recreational trips than households with one car. Differences in the distribution of trip purposes by car are relatively small between the one and 2+ car owning households.

Figure 2.22 shows the proportions of households with different levels of car ownership reporting that the car is their usual mode of travel for their main food shopping. As could be expected, 90% of one-car and 96% of 2+ car owning households usually carry out their main food shopping by car, but 22% of non-car owning households also report this as their usual mode of transport.

Figure 2.22: Proportion of households reporting the car as their usual mode for main food shopping, by household car ownership level, 2006

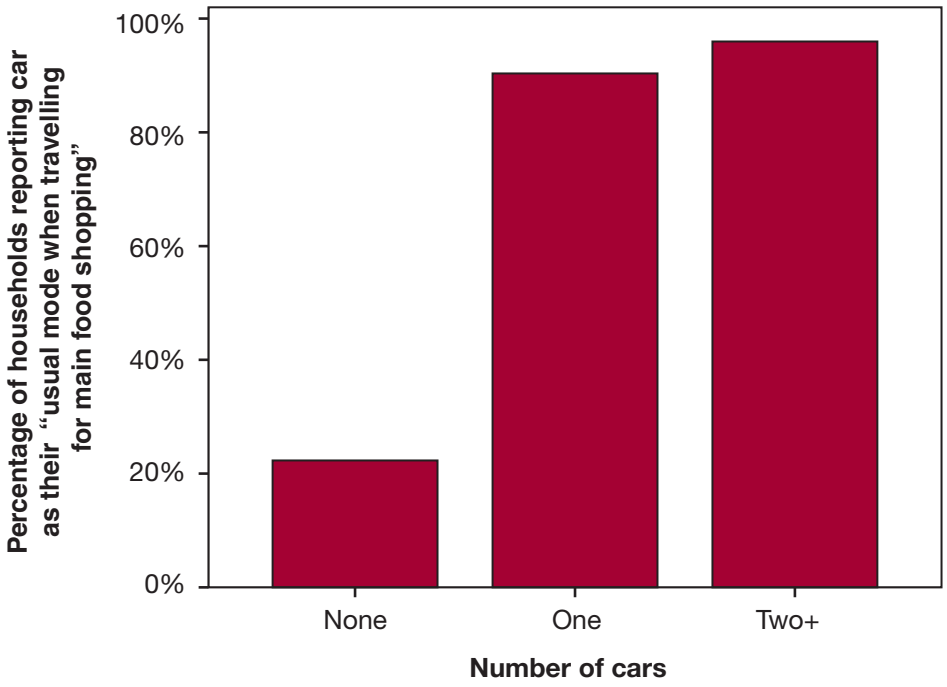
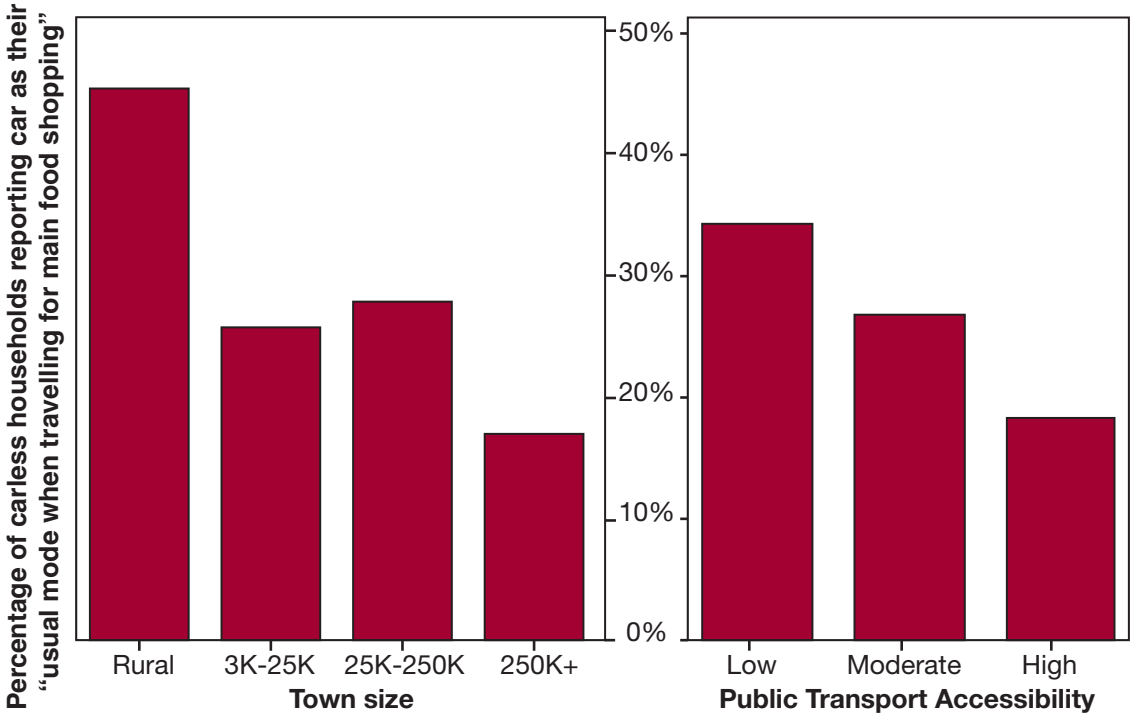


Figure 2.23: Proportions of non-car owning households with the car as their usual mode for main food shopping, by type of residential settlement and public transport accessibility, 2006



The residential location of non-car owning households travelling by car for their main food shopping was investigated to see whether car use for shopping decreases as settlement size increases. The results in Figure 2.23 show that 45% of non-car owning rural households travel by car for their main food shopping, compared to only 17% of households living in settlements of over 250,000; although there is no differentiation between the two intermediate sized areas. There is a more consistent relationship with public transport accessibility, where car use drops from 34% in low accessibility areas to 18% in high accessibility areas.

People using cars for their main food shopping were asked in the 2003 NTS how difficult it would be for them to use a different mode of transport. Results are shown in Table 2.1.

Table 2.1: Self-Reported Degree of Difficulty in Considering a Switch to Non-Car Modes of Travel for Main Food Shopping, 2003

Cars per household	Very Easy	Quite Easy	Neither Easy nor Difficult	Quite Difficult	Very Difficult
Zero	8%	24%	6%	22%	41%
One	10%	28%	8%	25%	29%
Two+	8%	21%	8%	27%	36%
Overall	9%	25%	8%	25%	32%

Nearly two-thirds of food shoppers from non-car owning households reported that it would be “quite” or “very” difficult to use an alternative mode for their main food shopping: the same percentage as those in 2+ car owning households.

2.5 Conclusions

The private car now plays a central role in the lives of the large majority of households and individuals in Great Britain. Across the population as a whole, in 2006 nearly two-thirds of all daily trips were made by car, and around four fifths of domestic mileage was by car; in a typical week 80% of the population travelled at least once by car.

Cars were the most common transport mode for all trips over one mile in length, and the modal share of all trips by car was above 50% for both males and females across all age groups. Among the bottom income quintile, cars were used for 45% of daily trips and 65% of mileage despite the low car ownership levels of this quintile. However, people living in non-car owning households are placed at considerable disadvantage, as many activities essential to daily economic and social life are now less accessible to those who cannot travel by car. This is explored further in later chapters.

Whilst it is important to identify the role of the car in present day British society, it is also important to contextualise it against past trends to capture the dynamic changes in patterns of use over time. This is the subject of the next chapter.

3
Transport trends over the past two decades

Key messages

- While overall car use continued its pattern of strong historical growth throughout most of the 1990s, in recent years it has levelled off, and some aspects of car travel have declined slightly. Depending on the measure used, growth in average car use per person ceased at some point between 1995 and 2002.
- Total car traffic continues to grow more slowly than in previous years, and in recent years has been in line with the growth in the adult GB population.
- If this situation continues, then future aggregate growth rates for car traffic will be less than has historically been the case and may require a reassessment of long-term traffic forecasts.
- The fact that average speeds of car trips have declined over the last decade, down from 25.7 miles per hour in 1995 to 24.6 mph in 2006, suggests the possibility that congestion is one limiting factor that may have contributed to this situation.
- The changing socio-demographic profile of the driving population may also be affecting overall travel trends, as car use has spread throughout the population. Lower income and older drivers tend to travel shorter distances, so lowering the average.

3.1 Introduction

In this chapter we consider broad trends in travel patterns since the previous RAC Foundation car dependence study, which reported on trends up to the end of the 1980s. This looked back on a period of sustained growth in car ownership and use, when there was an increasing penetration of the car into the daily travel patterns of substantial parts of the population. Since that time we can observe two distinct phases in the data:

- First, a period of continuing growth and increasing dominance of the car in facilitating personal travel behaviour, followed by
- A period of stabilisation and on some measures a slight reduction in the proportion of the personal travel market involving travel by car.

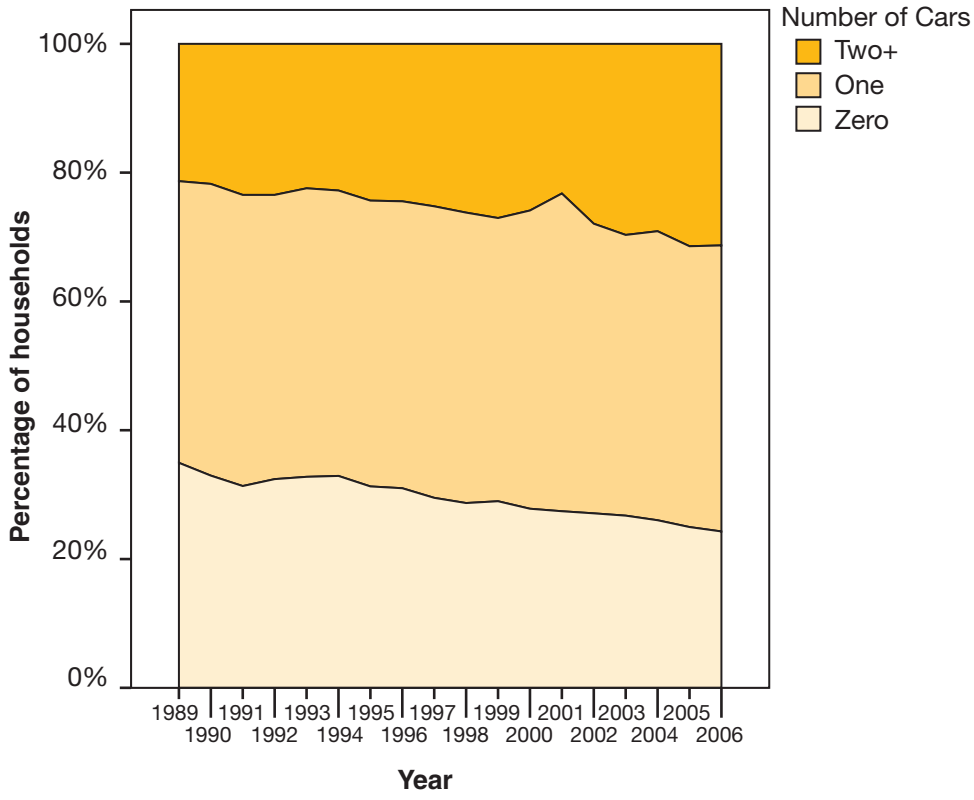
Section 3.2 considers trends in car ownership, licence holding and car availability within households. Section 3.3 then looks at accessibility to public transport, motorway networks, land uses and car travel speeds, to consider how these have impacted on overall car use over time. We then look at trends in general travel patterns (Section 3.4) and consider differences in car use by traveller characteristics over time (Section 3.5). Finally Section 3.6 addresses the question of whether car use has stabilised in more recent years as indicated by some of the data.

3.2 Car ownership, licence holding and car availability

3.2.1 Car ownership

Figure 3.1 shows trends in household car ownership between 1989 and 2006.

Figure 3.1: Distribution of cars per household, 1989-2006



Here we can observe a steady increase in household car ownership, with a gradual decrease in the percentage of zero-car households, down from 35% to 24%, and a corresponding increase in 2+ car owning households, up from 21% to 31%. During this period, the proportion of 1 car households has generally remained stable, at 44%/45%.

Figure 3.2 looks at differences in trends in household and adult car ownership rates, by income quintiles. On a household basis, we can observe a stable rate in the top income group of approximately 1.5 cars per household. In all the other four income groups, household car ownership rates have continued to increase year-on-year, right up to 2006, generally with higher rates of growth at lower income levels – so that differences between the highest and lowest household income groups are reducing slowly.

Similar trends are apparent on a per adult basis, although growth rates are more similar across all five groups and car ownership continues to grow for the highest income quintile too – indicating that the number of adults per household has been declining more rapidly in the highest income group over this period.

Figure 3.2: Average car ownership per household and per adult, by income quintile, 1989-2006

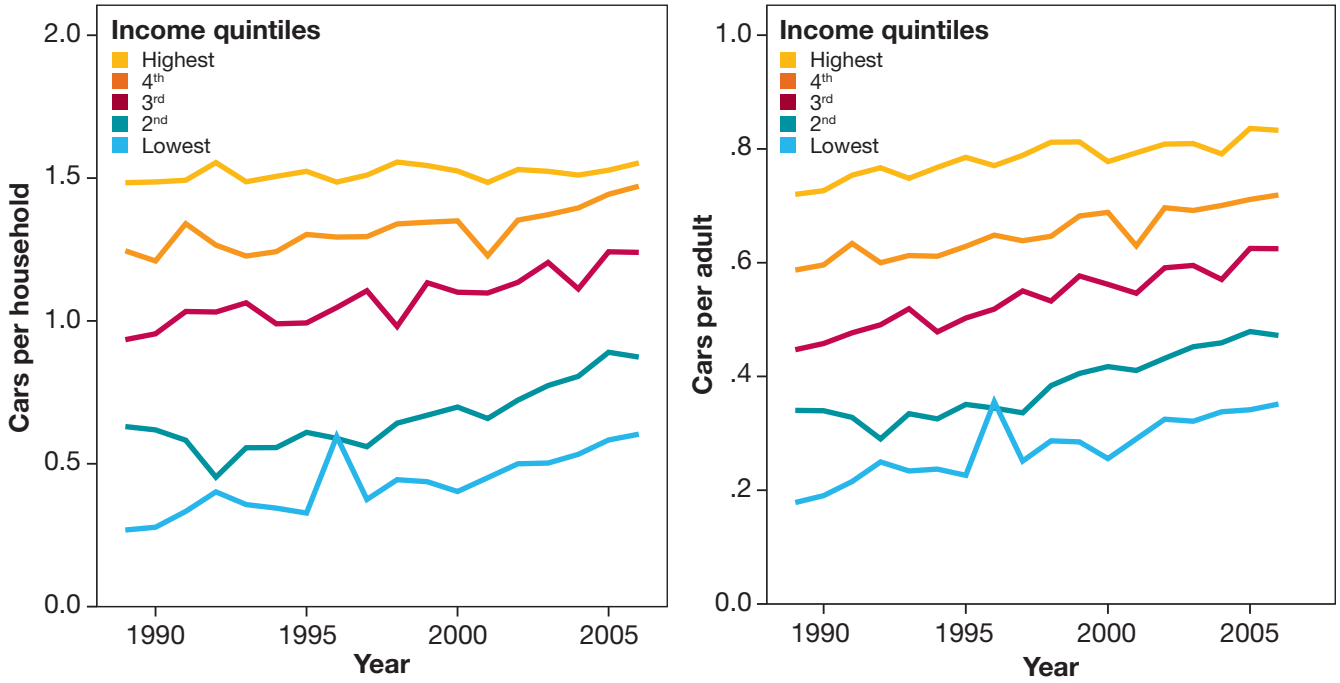
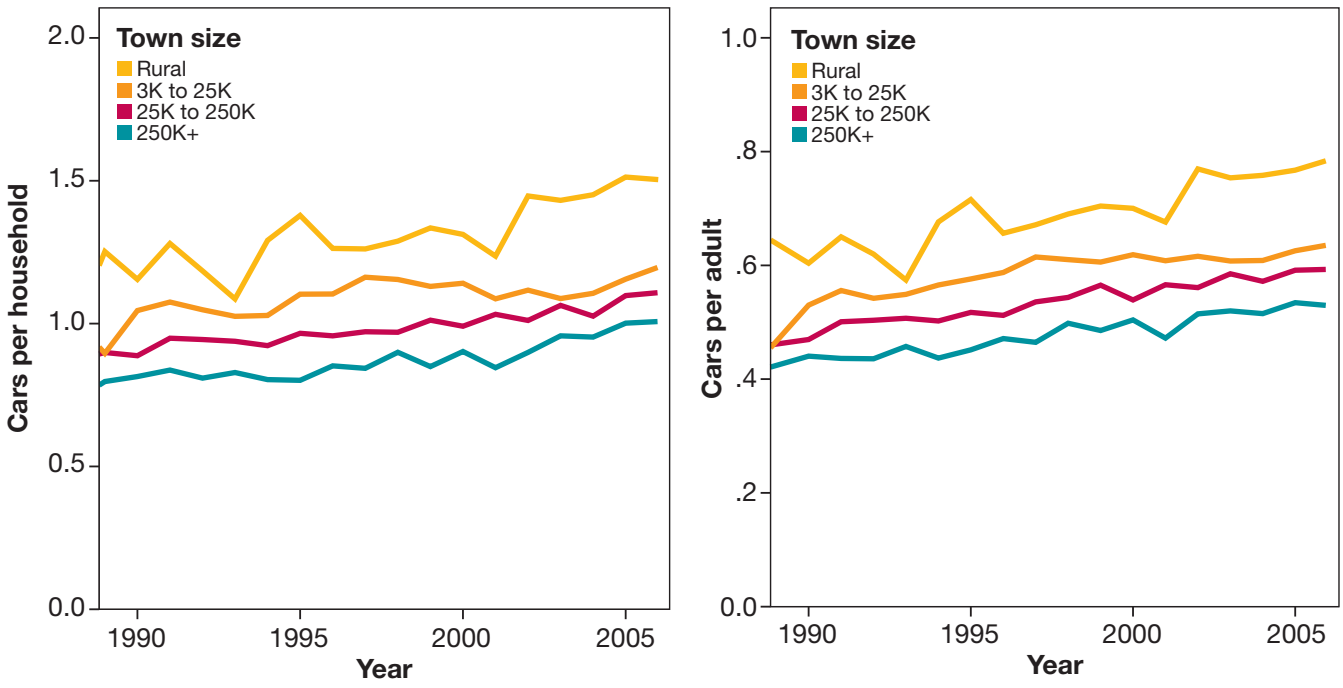


Figure 3.3 shows a clear inverse relationship between size of residential area and car ownership, both on a per household and a per adult basis.

Figure 3.3: Average car ownership per household and per adult, by residential settlement size, 1989-2006

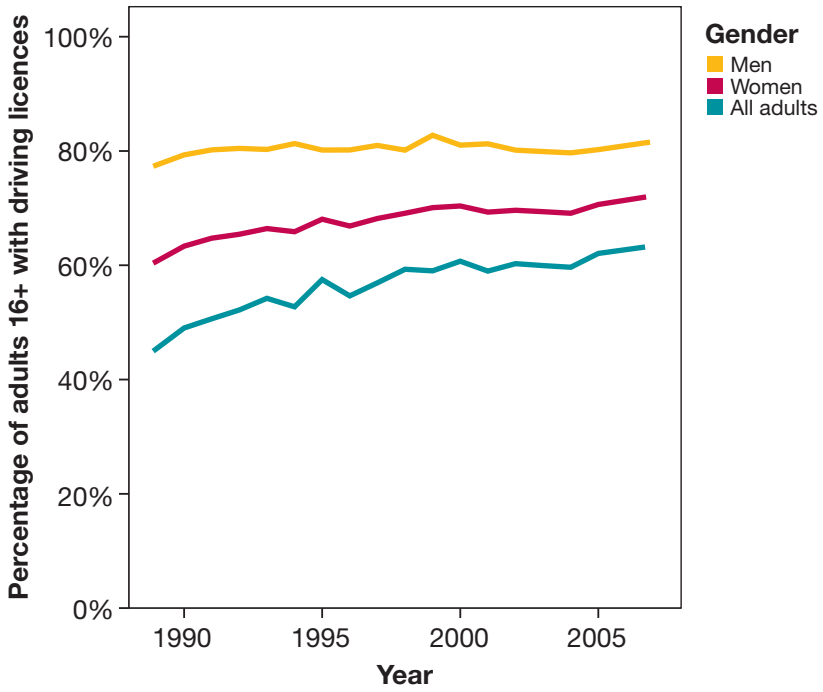


Car ownership has generally grown at a similar rate in all areas over time, although disparities between the rural and other areas seem to have increased.

3.2.2 Licence ownership

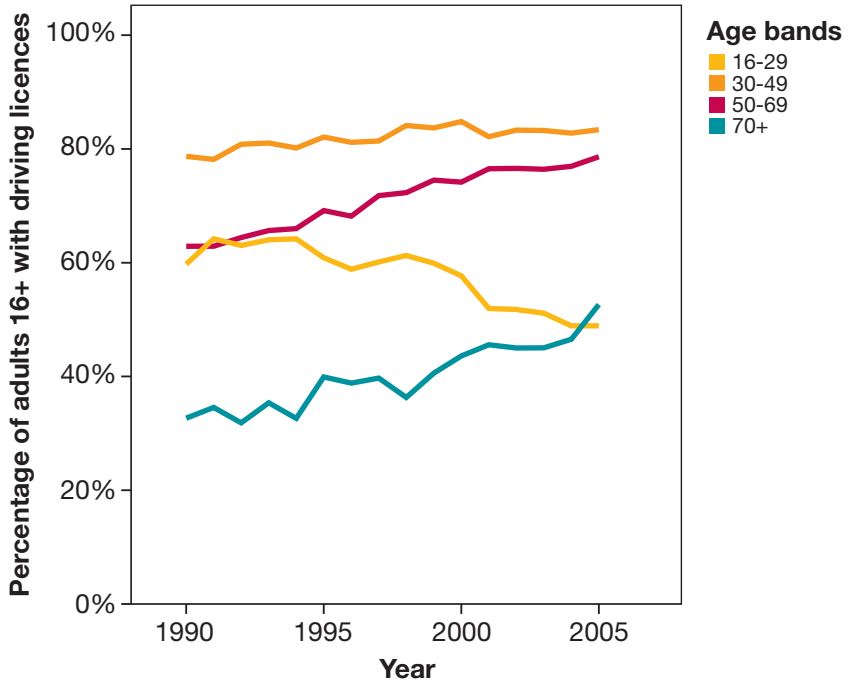
Figure 3.4 shows trends in car licence ownership between 1989 and 2006, both averaged across all adults aged 16+ and separately by gender. Here we can see an average increase from around 60% to 70% of the adult population holding a driving licence, comprising a small increase for men and a much larger increase for women, although across the adult population as a whole the latter remain around twenty percentage points lower than men. The percentage of men holding licences peaked in 1999 and has dropped slightly since then whereas licence holding among women has continued to grow slowly.

Figure 3.4: Percentage of adults with driving licences, 1989-2006



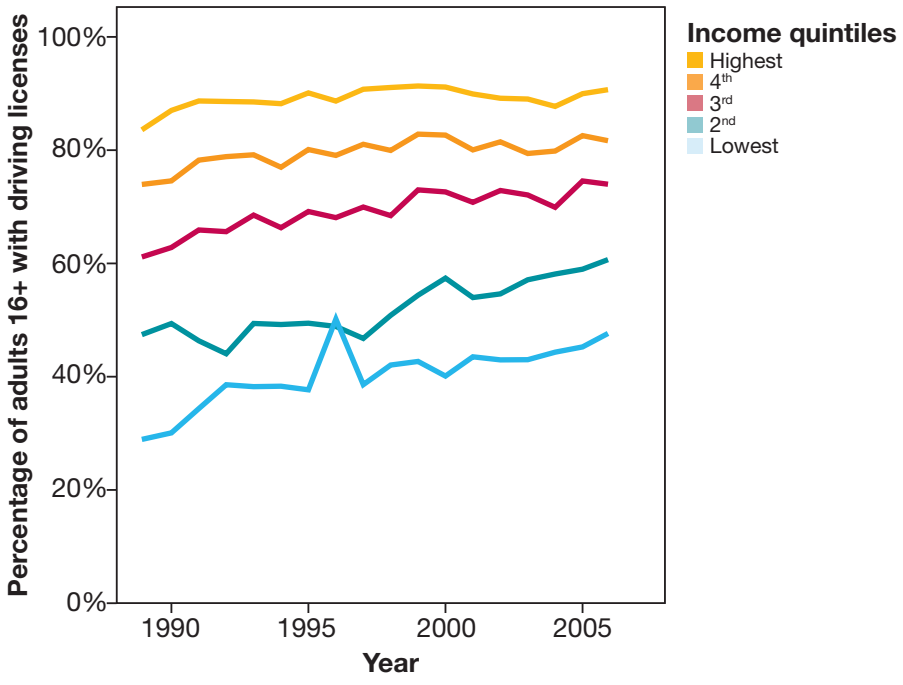
Variations in licence ownership among adults are shown by age in Figure 3.5. Throughout the period, the 30-49 age group has held the highest proportion of licences, at around 80%, but this has grown relatively little. On the other hand licence holding amongst the 50-69 age group has increased rapidly, and is now nearly at the same level as the 30-49 group, suggesting that there has been a saturation rate of around 80% licence holding within an age group for several decades. The two age group extremes show contrasting trends: the percentage of licence holders in the 16-29 age group has dropped over time, from over 60% to 50%; conversely the number of people now aged 70+ who hold licences has increased rapidly, and now matches the rates of the youngest age group.

Figure 3.5: Licence holding by age group, 1989-2006



In the case of income, the trends are more uniform. Figure 3.6 shows that the percentage of adults with a car driving licence is proportionate to income band, being higher for higher income levels.

Figure 3.6: Licence holding by income group, 1989-2006

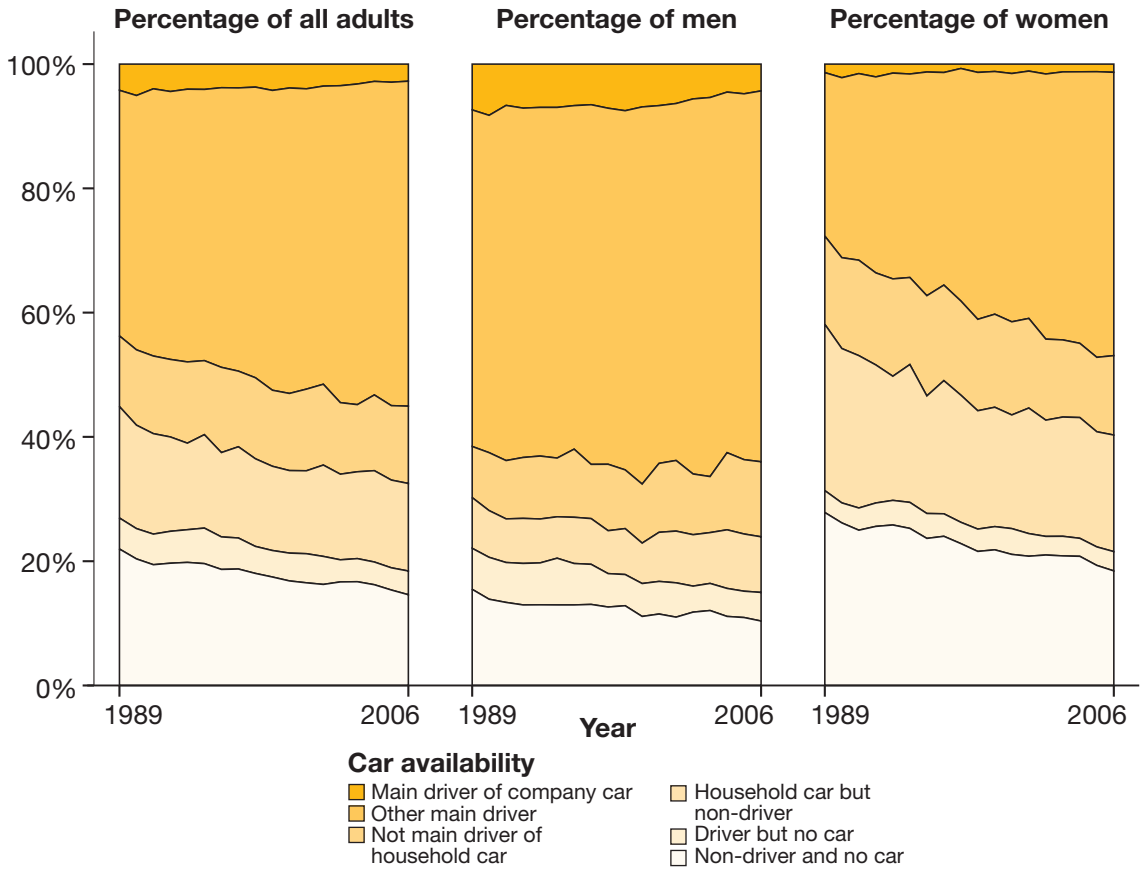


The rate of growth over time is lower for the higher income bands, and has changed little in the top income band since the late 1990s, when it stabilised at around 90%. As a consequence, the total disparity between the highest and lowest income quintiles has narrowed, from a 55% difference in 1989 to 43% in 2006.

3.2.3 Car availability

Figure 3.7 compares car availability (in terms of a combination of car ownership and licence ownership) between men and women, and for the adult population as a whole. Considerable differences can be observed, but these seem to be diminishing over time as a consequence of relatively stable patterns for men and increasing car availability among women drivers.

Figure 3.7: Car availability among men and women, 1989-2006



Men are mostly the main driver of a non company car, and only around 20% are non-drivers. There have been only minor changes over time, with a reduction in company car drivers being offset by an increase in main household car drivers. For women, the changes have been much more marked: the number who are the main household driver has increased substantially whilst the proportion of non-drivers has dropped from over 50% to around 40%. Looking at the total adult sample, we can see that the proportion of main drivers of household and company cars has stabilised at 55% since 2002.

Figure 3.8 shows car availability by income quintile. Here some very consistent trends can be observed:

- The large majority of company car drivers are in the top income quintile, and this proportion has declined over time.
- The proportions of adults who are main drivers of household cars increase over time in all the income quintiles; conversely, the proportions of non-main drivers in households with cars has change relatively little – and is greater in the higher income quintile groups.
- The proportion of non-drivers in non-car owning households has dropped sharply in the bottom two income quintiles while it has hardly changed at all in the top two quintiles.
- Generally speaking, the distribution of car availability in 2006 in one income quintile broadly matches the distribution in the adjacent higher quintile that existed in 1989.

Figure 3.8: Car availability by income group, 1989-2006

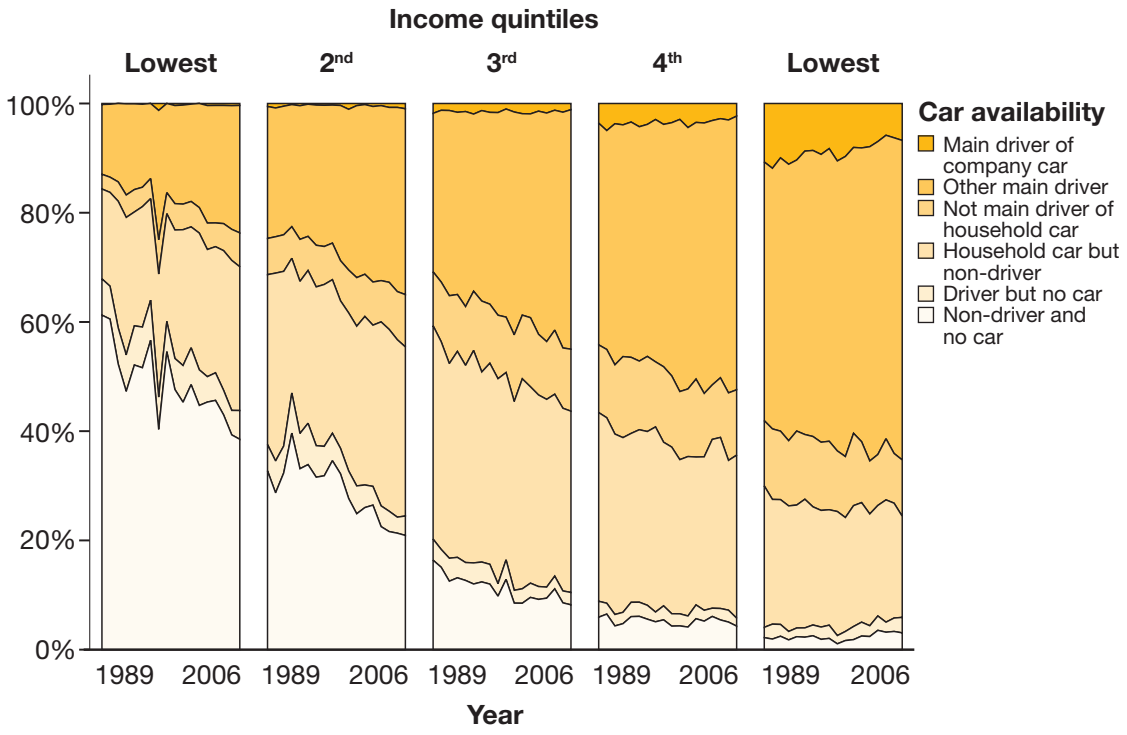
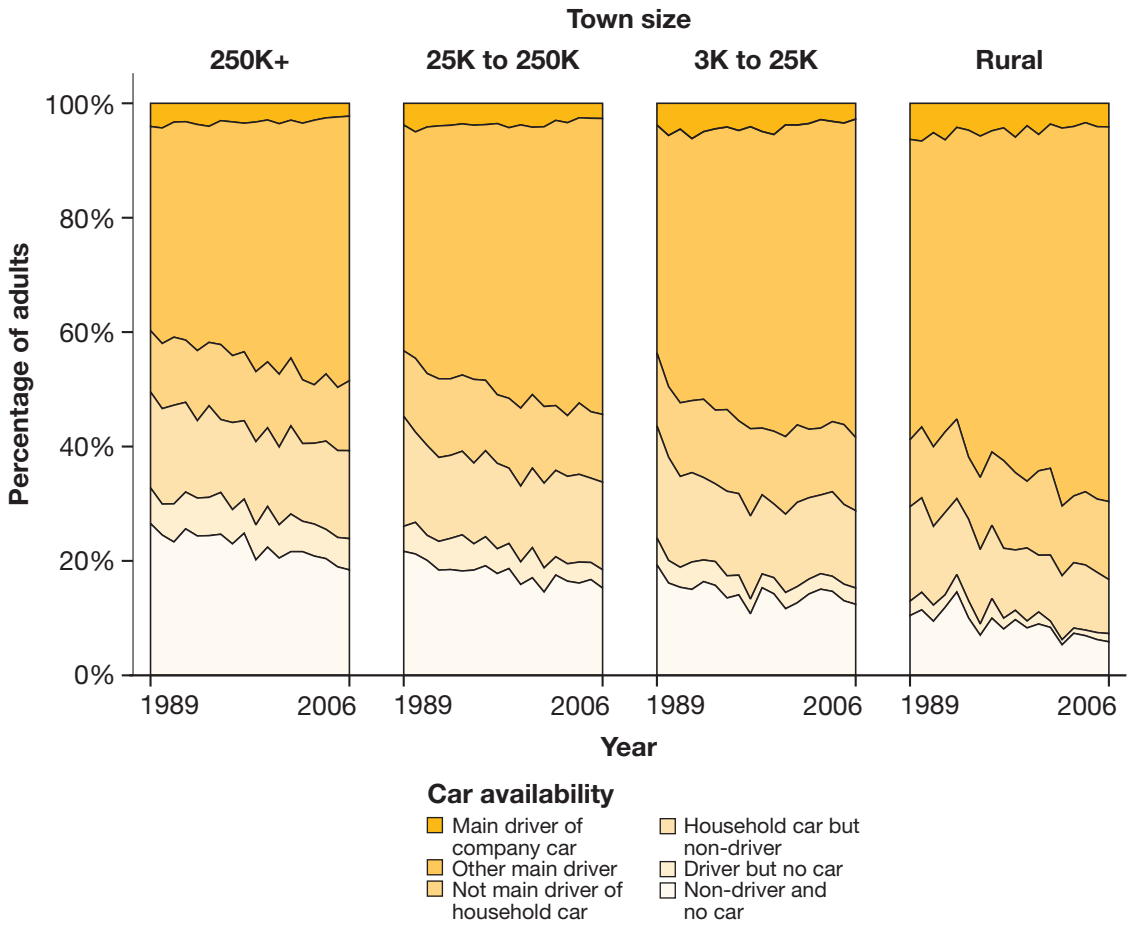


Figure 3.9 shows differences in car availability by size of residential settlement. Here a steady progression of increasing levels of car availability in different settlement sizes can be observed over time. The proportion of licence holding adults with access to a car at home reaches 84% in rural areas, but only 61% in the largest urban areas, mainly due to a 20% points drop in main drivers of household cars. Adults who are drivers in a non-car owning household are least common in rural areas and most common in the largest settlement category. Coincidentally, the various percentages in 1989 roughly correspond to the 2006 values in the next larger settlement size.

Figure 3.9: Car availability by settlement size, 1989-2006



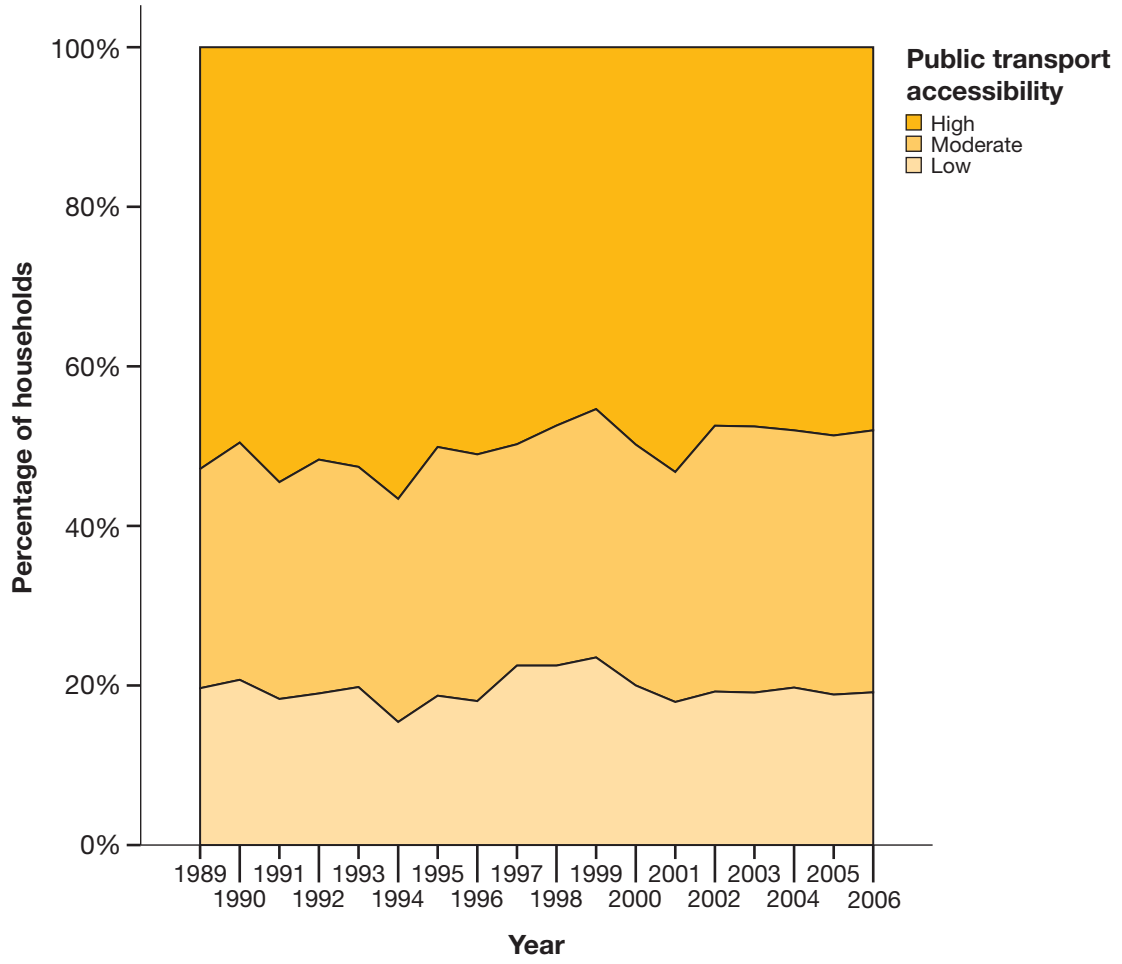
3.3 Transport, land uses and journey speeds

This section investigates how the characteristics of the transport systems and land use patterns have changed over time.

3.3.1 Public transport accessibility

Figure 3.10 shows the percentage of households living in areas with high, moderate and low levels of access to public transport services, annually between 1989 and 2006. In the early years there appear to be quite large annual fluctuations (due to smaller sample sizes at that time). The proportions in each of the three categories have stabilised since 2002, with around 48% of households experiencing high levels of public transport accessibility – but this is a lower percentage than in most of the preceding years.

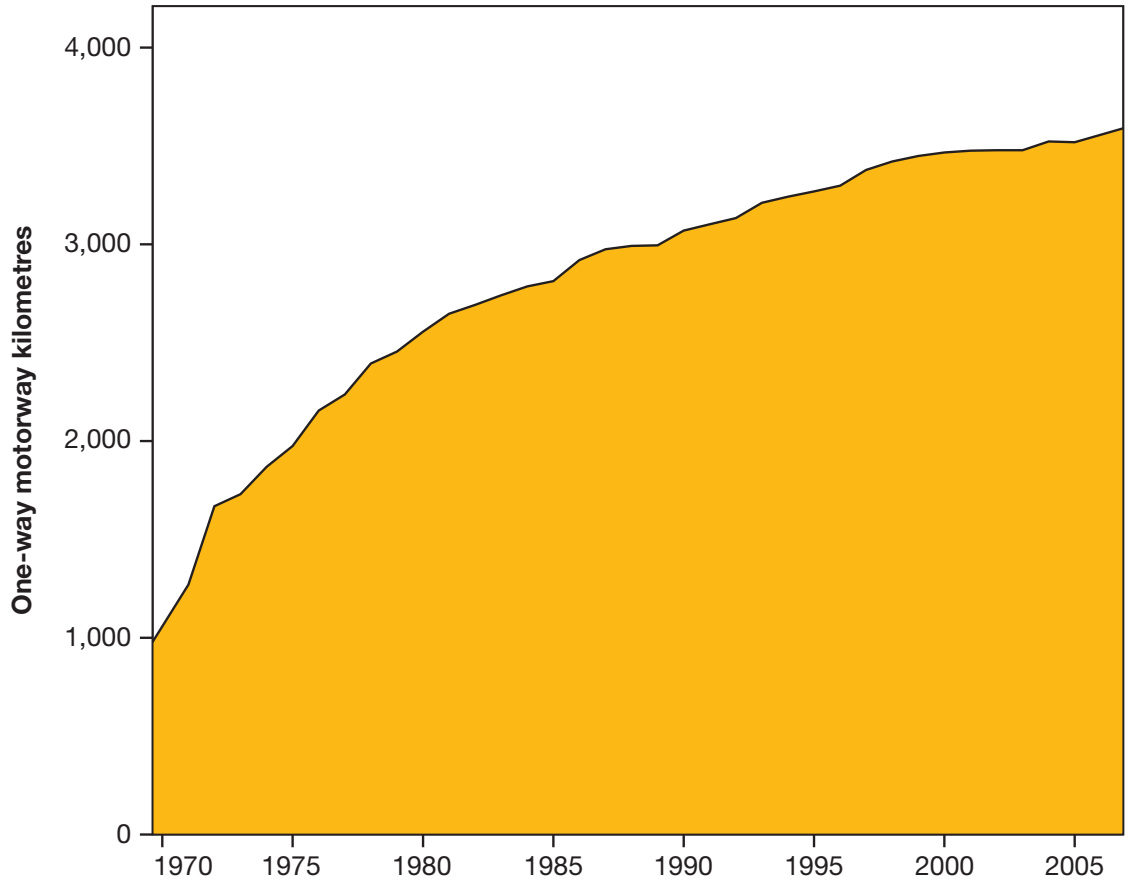
Figure 3.10: Percentage of households with different levels of public transport accessibility, 1989-2006



3.3.2 Development of the national motorway network

Figure 3.11 shows the increase in the length of the national motorway network, between 1970 and 2006. The fastest rates of growth were in the 1970s, when the length of motorways increased from around 1,000 kilometres to 2,500 kilometres; but there were also substantial increases during both the 1980s and the first half of the 1990s, since when there has been little additional development.

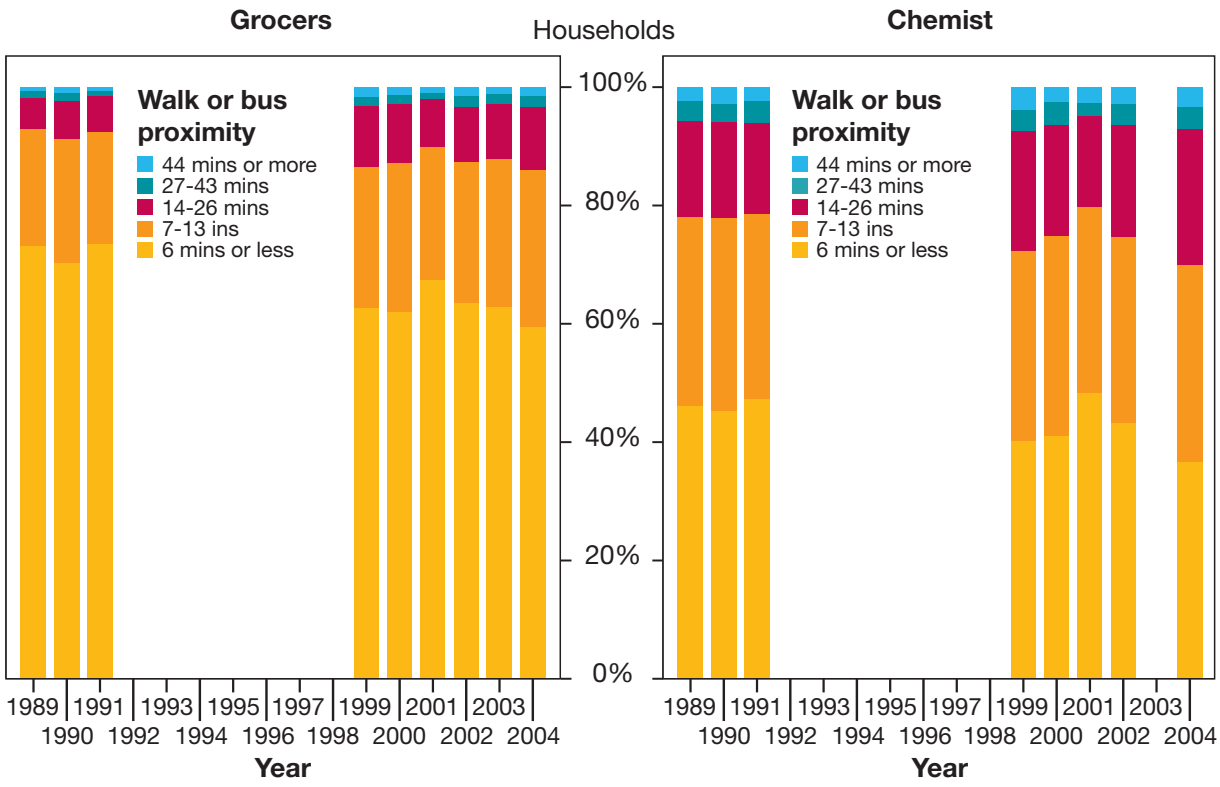
Figure 3.11: Length of national motorway network



3.3.3 Non-car access to particular facilities

In some years, the NTS asks for an estimate of the time required to reach certain facilities from the respondents' homes, on foot or by public transport (whichever is quicker). Figure 3.12 shows overall responses for two facilities: nearest grocers and nearest chemist.

Figure 3.12: Travel time to nearest grocers and chemist

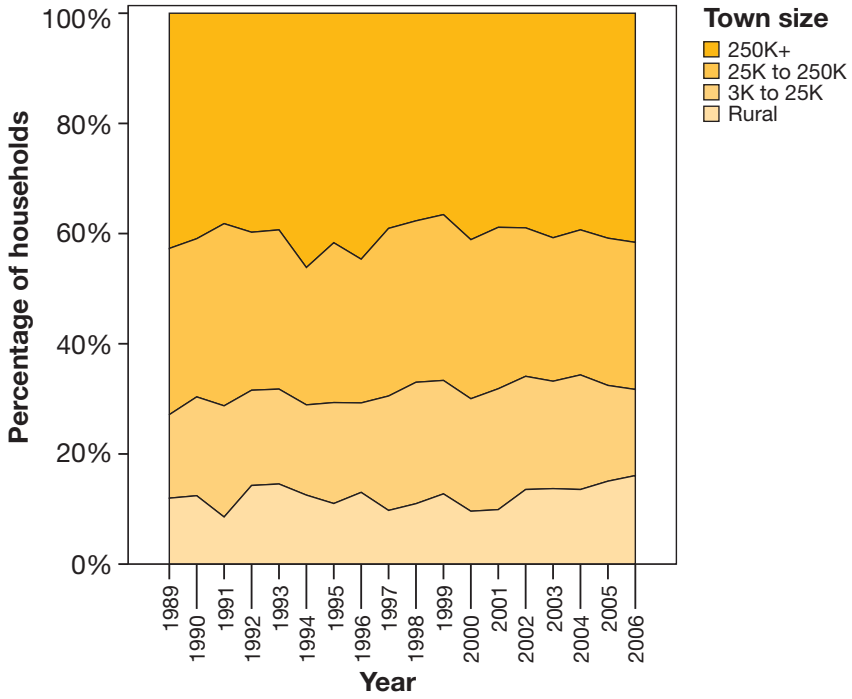


For both facilities, there has been a tendency for the proportion of households within 6 minutes of the facility, on foot or by bus, to decline. In the case of grocers, there has been a corresponding growth in both the 7-13 and the 14-26 minute time bands, whereas for the nearest chemist the growth has mainly been in the 14-26 minute time band.

As a more general proxy for level of access to goods and services, Figure 3.13 looks at the changing distribution over time of households among four settlement types, from towns of over 250,000 population to settlements below 3,000.

There has been considerable fluctuation from year to year, reflecting NTS spatial sampling variations. A slight tendency for a higher proportion of the samples to be taken from larger urban areas and rural areas in recent years and a reduction in the 3-25k sample can be observed - but with no consistent overall trend.

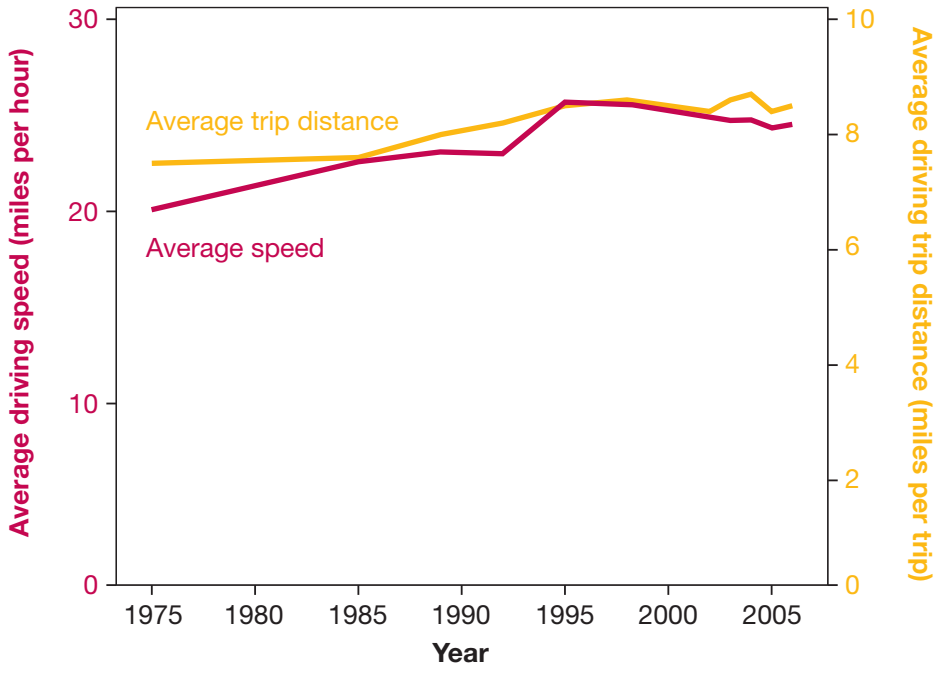
Figure 3.13: Percentage of households living in different settlement sizes, 1989-2006



3.3.4 Changes in average travel speeds by car

Finally, by comparing changes in reported trip distances and travel times by car, we can estimate changes over time in average door-to-door journey speeds by car. Findings are shown in Figure 3.14.

Figure 3.14: Comparison of average driving speed and average distance travelled per car trip, over time, 1975-2006



As can be seen, the mean speed per trip increased from 20.1 miles per hour in 1975, to 23.1 mph in 1989 and then up to 25.7 mph in 1995, since which time there has been a slight decline in average speeds, to around 24.5 mph. One possible explanation could be an increase in shorter distance trips by car, on lower speed roads; but Figure 3.14 also shows that average car trip distances have stabilised in recent years, at around 8.5 miles per trip – so it is more likely that speed reductions have been caused by increases in traffic congestion.

3.4 Trends in travel patterns over the past two decades

Having looked at trends in car and licence ownership in public transport provision and access to land uses, the net effect of these various changes on patterns of travel will now be assessed.

3.4.1 Changes in general trip-making patterns over time

In this section aggregate changes in total trip making by all modes of transport are examined in terms of total trips, distances and travel times.

Figure 3.15 shows a steady decline in total number of trips per person per year across the population as a whole (including children), down from 1103 trips in 1989 to 987 trips in 2006. This has mainly resulted from a reduction in non-car trips (down from 519 to 382), with car driver and car passenger trips increasing until the late 1990s, since when they have generally stabilised. The decline in the numbers of non-car trips has mainly been in the non-motorised modes and has halted recently.

The annual distance travelled per person per year (Figure 3.16), increased steadily from 1989 to 1998, mirroring the increase in car trips, since when it has stabilised, with a slight drop in car passenger mileage offset by an increase in average mileage by other modes of transport.

The trends regarding average time spent travelling per annum are different again (Figure 3.17). Here a slight reduction can be observed between 1989 and 1992 (from 373 to 361 hours per annum), since when numbers have stabilised. Within this total, the car driver share has increased (from 114 hours in 1989 to 136 hours in 2006), offset by a decline in non-car hours, from 181 to 151 per annum. The car passenger hours have remained broadly stable over this period.

Figure 3.15: Average number of trips per person per year, by car and other modes of transport[6], 1989-2006

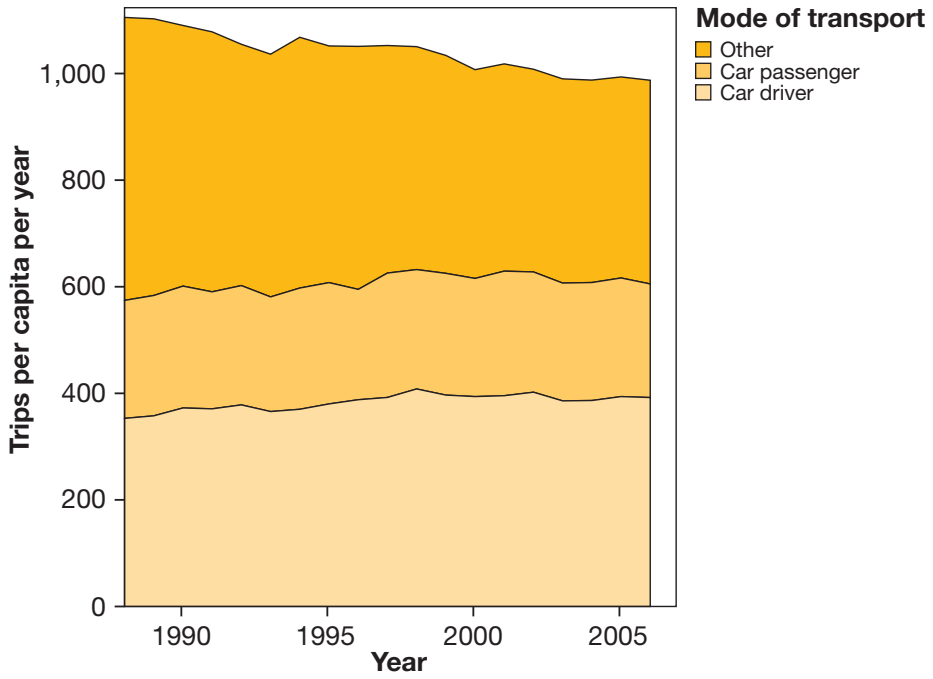
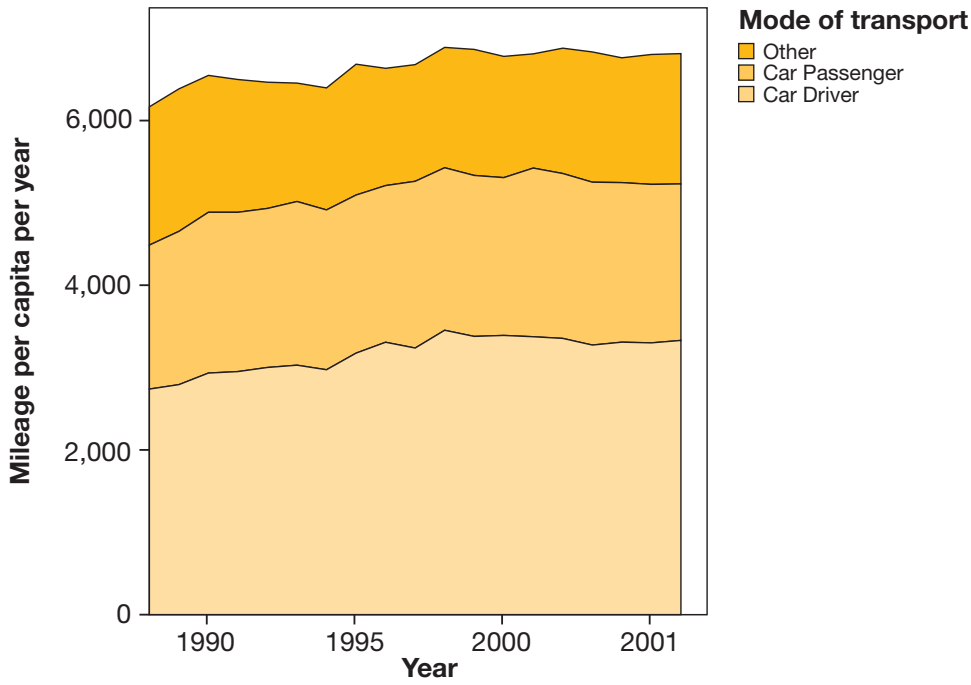
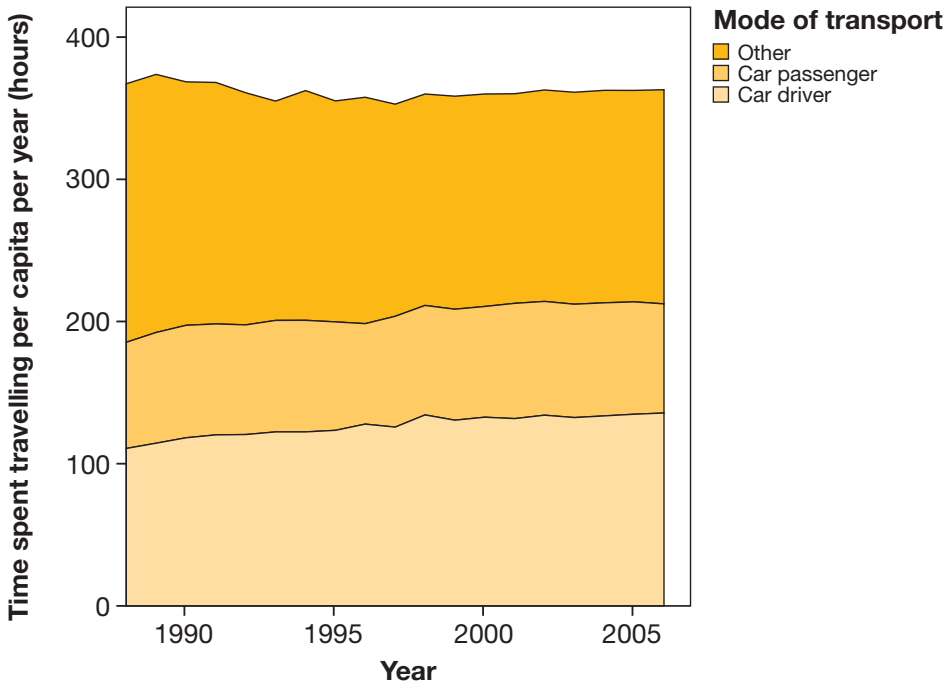


Figure 3.16: Average mileage travelled per person per year, by car and other modes of transport, 1989-2006



[6] As for the previous chapter, 'other' denotes all non-car modes including public transport, taxis, walking and cycling.

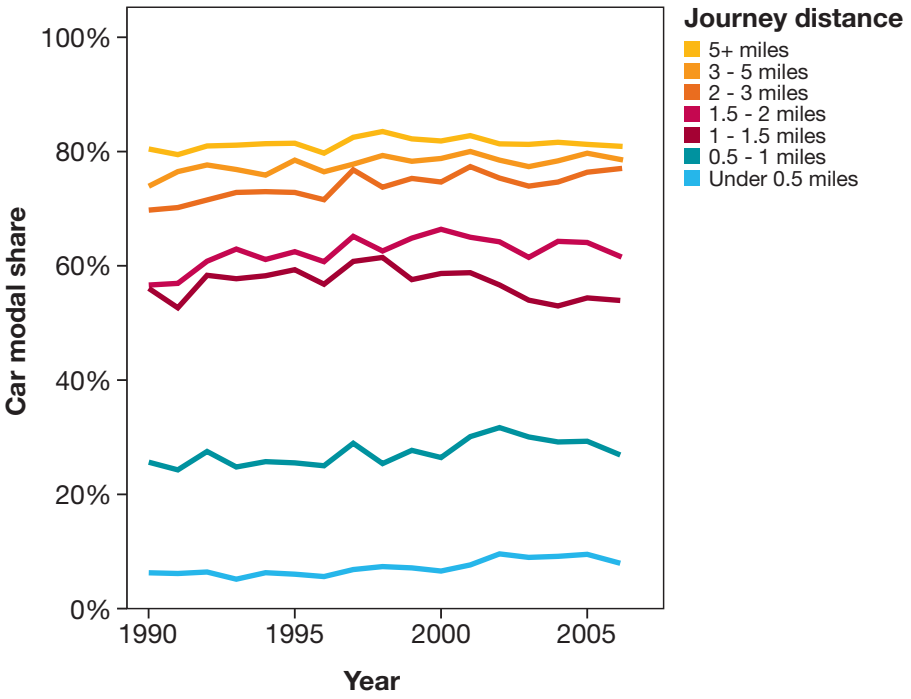
Figure 3.17: Average travel time per person per year, by car and other modes of transport, 1989-2006



3.4.2 The pattern of car trips by distance

Figure 3.18 illustrates the percentage modal share of trips by car (including both drivers and passengers) for different trip distance bands.

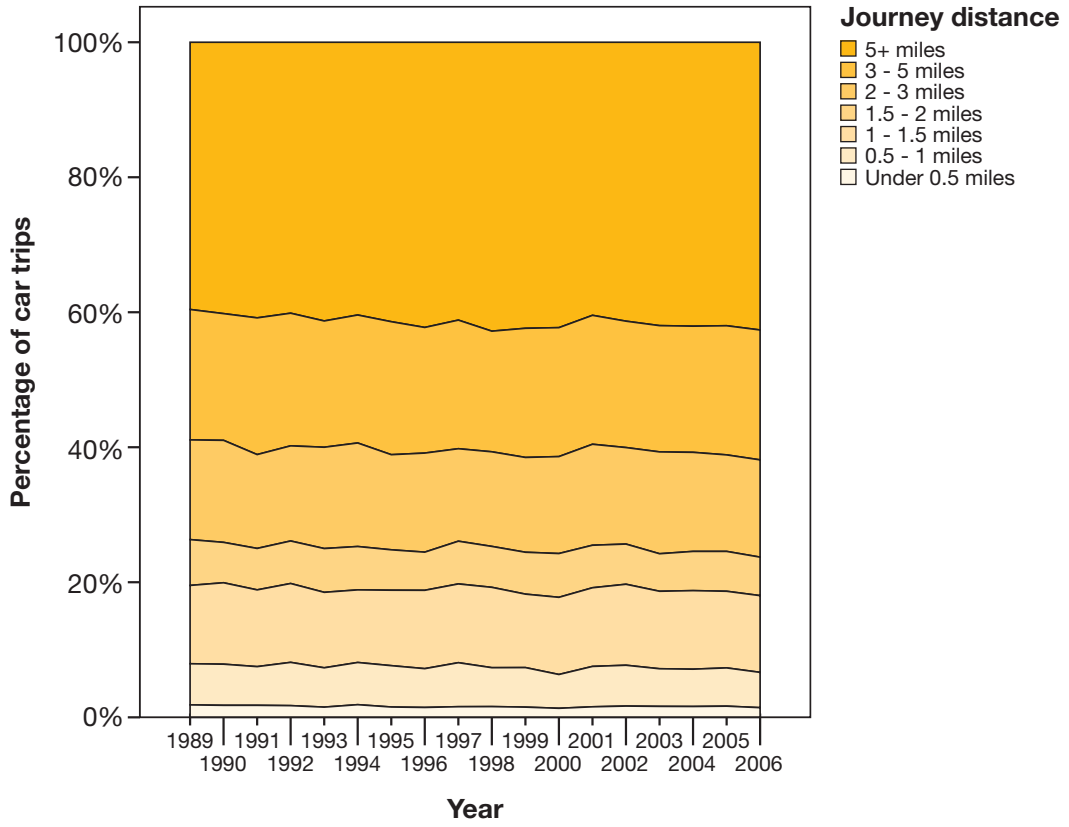
Figure 3.18: Car modal share of trips, by distance bands, 1989-2006



For any given year between 1989 and 2006, car modal share increases with trip distance, from under 10% for trips under half a mile to around 80% for trips over 5 miles in length. Within most distance bands, the car modal share has increased steadily over time until the late 1990s/early 2000s, since when it has dropped slightly.

The distribution of total car trips across the different distance bands since 1989, as shown in Figure 3.19[7], has shown relatively little change. There has been a slight tendency for trips over 5 miles to take up an increasing share of all car trips – up from around 40% in 1989/1990 to 42%+ in 2005/2006 – and trips shorter than 2 miles to drop, as overall average trip lengths have marginally increased.

Figure 3.19: Percentage distribution of car trips, by distance bands, 1989-2006



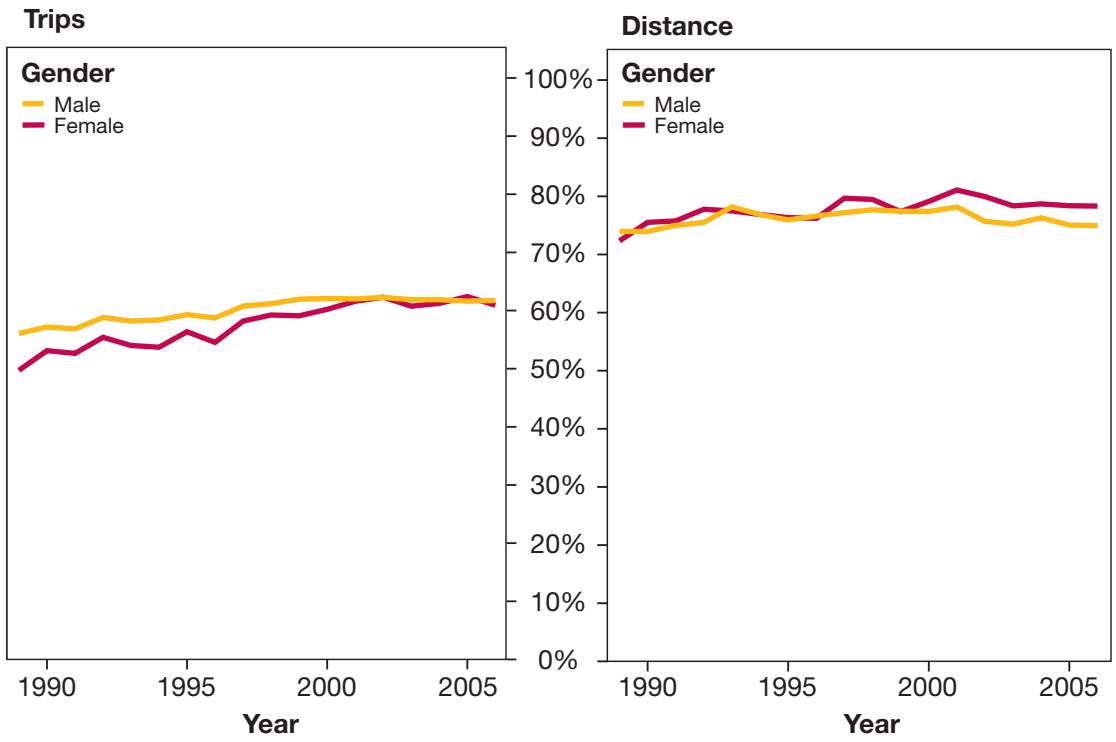
3.5 Differences in car use by traveller characteristics over time

3.5.1 Trends by gender

In terms of the modal share of all journeys that are made by car (both as a driver and as a passenger), very little difference between the two genders can be detected, either by looking at the car share of total trips or at the car share of total distance travelled (see Figure 3.20).

[7] Percentages rather than absolute values have been used for ease of comparison as, while numbers fluctuate, the average number of car trips per capita has increased very little over this time period.

Figure 3.20: Car modal share of total trips and distance, by gender, 1989-2006

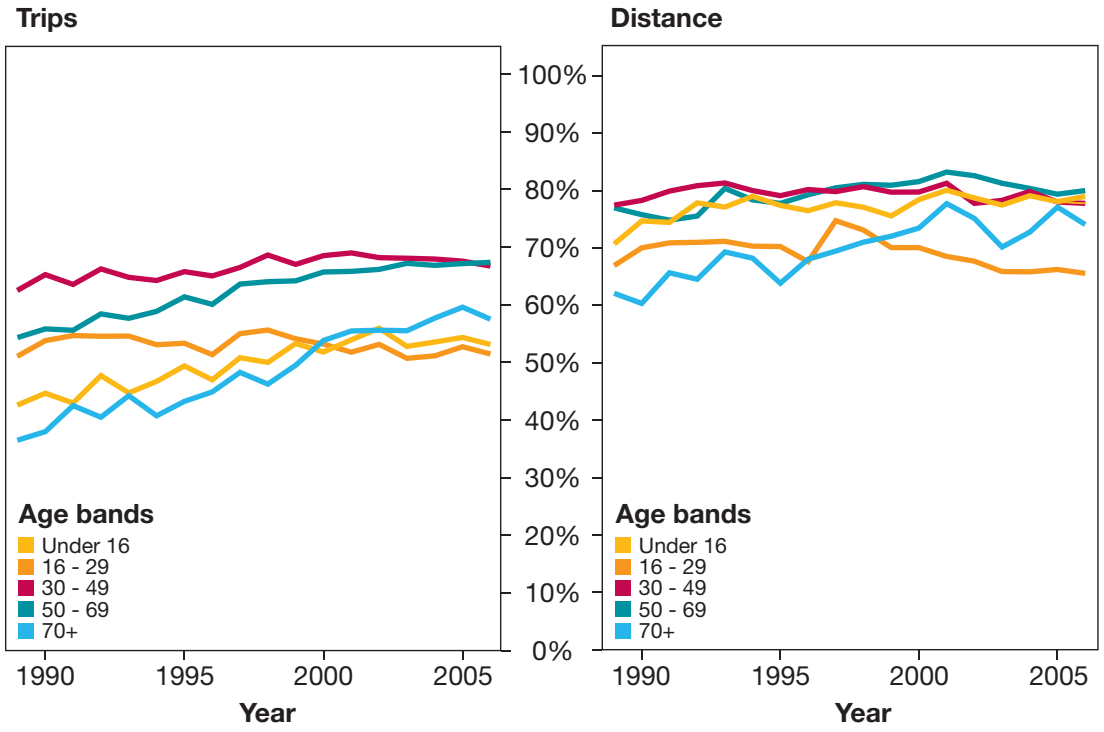


In 1989 women's modal share of total trips was about six percentage points below that of men. After that it increased steadily until 2001 when the modal shares for both genders converged and stabilised at roughly the same percentage. When modal share is examined in terms of total distance travelled, however, we see a different picture. The car distance modal share for men and women was the same from the late 1980s until about 2000. Since then it has been consistently about three percentage points higher for women than for men, with a slight year-on-year percentage reduction for both groups.

3.5.2 Trends by age group

Car modal shares by five age bands are shown in Figure 3.21, both as a percentage of trips and of distances travelled. The 30-49 age group has had the highest modal share of car trips over the period 1989 to 2006, and that this has remained relatively stable, within the range of 63% to 68%. Over this period, the car trip modal share of the 50-69 age group has gradually risen, from 54% to 67%, and now equals that of the next younger age group. At the start of the period, the 70+ age group had the lowest car trip modal share, at 37%, but this has grown rapidly to 60% in 2005. By the year 2000, the 70+ age group had overtaken the car modal share of the 16-29 age group, which has been largely stable over this period, at between 51% and 55%. The car modal share for the under 16s has followed a similar trend to the 70+ age group.

Figure 3.21: Car modal share of total trips and distance, by age group, 1989-2006

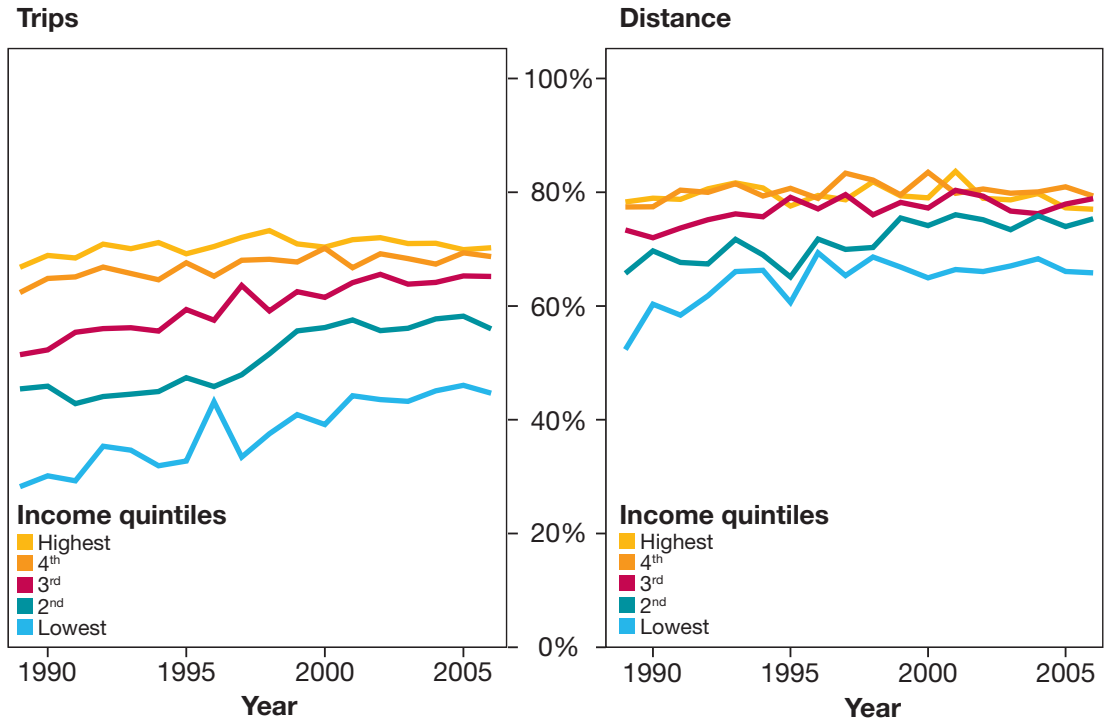


A slightly different picture emerges from an examination of car modal share on a total distance basis. Here no change can be observed over time for the 30-49 age group, with car modal share fluctuating between 78% and 81%. A small increase can be seen for the 50-69 age group, from 75% to 80% whilst the car distance modal share for the under 16 age group has also shown little change since the mid 1990s. For the 16-29 age group, the figure has fluctuated between 66% and 71%, with a downward trend in recent years. In the oldest age group, car distance modal share has grown from 60% to 77% - again overtaking the 16-29 age group. In all cases, the car distance modal share has dropped slightly in recent years.

3.5.3 Trends by income group

Figure 3.22 shows the trends in car modal share over time by income quintile, both in terms of trips and total distance travelled. Here we can observe that modal share increases with income, and that the differentials have been narrowing, although there were still quite large differences in 2006, particularly on a per trip basis: 44% car modal share of trips in the lowest income quintile versus 70% in the highest quintile – about twice the difference found on a distance basis. There has been relatively little increase in modal share among the top two income groups since 1989, but the lower income quintiles have increased modal share over this period. In all cases, modal shares have stabilised since around the year 2000, with a slight reduction among the top two income groups.

Figure 3.22: Car modal share of total trips and distance, by income group, 1989-2006



3.5.4 Car ownership level

The next two figures investigate the effects of car ownership on the modal share of trips by car over time, first for total trips and then in terms of total distance travelled.

In the case of the car modal share of trips (Figure 3.23), only 12% of daily trips were made by car in non-car owning households in 1989, and this gradually increased to 17% in 2001, since when it has reverted to 14% in 2006; nearly all of these trips were as a car passenger. In car owning households, there was a stronger growth in car modal share up to around the year 2000, after which it fell a little. Whilst total car modal share is higher in households with more than two cars than it is in those which own only one due to an increase in car driver modal share, car passenger share is the same in both types of household, and has not increased over time.

The picture is broadly similar for car modal share by distance (Figure 3.24), although values for non-car owning households are much more volatile. Car distance modal share is around 30% in non-car households, with no clear trends over time; again, this mainly relates to the car passenger mode. In car owning households, it is around 80%, with only a few percentage points increase in 2+ car owning households. Here, over time, the car passenger share has decreased slightly and the car driver share of distance has increased.

Figure 3.23: Car modal share of total trips, by household car ownership, 1989-2006

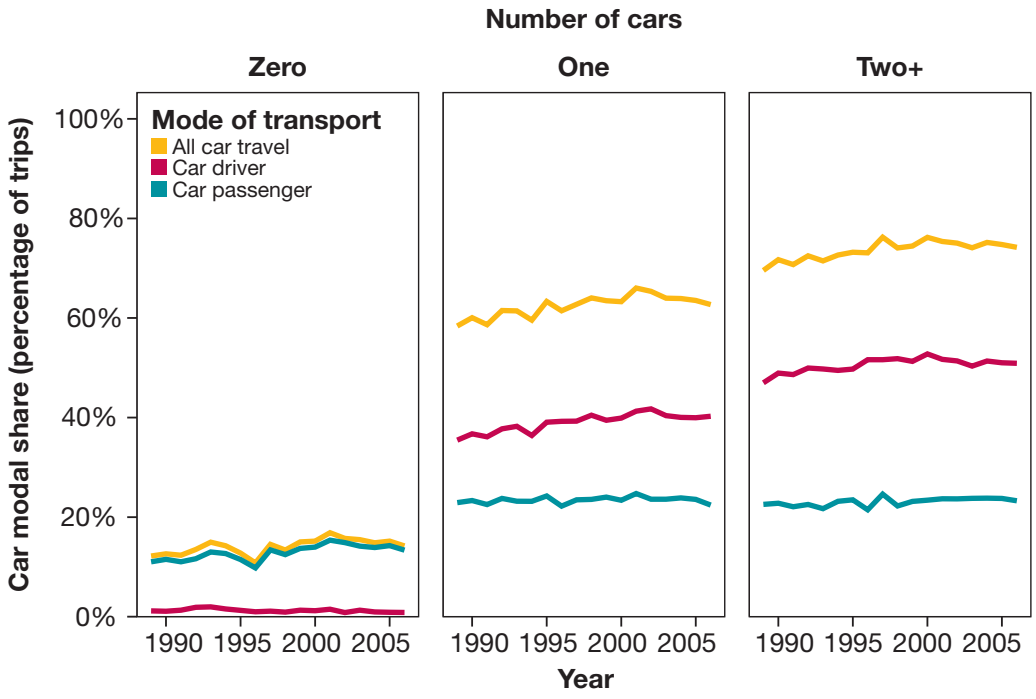
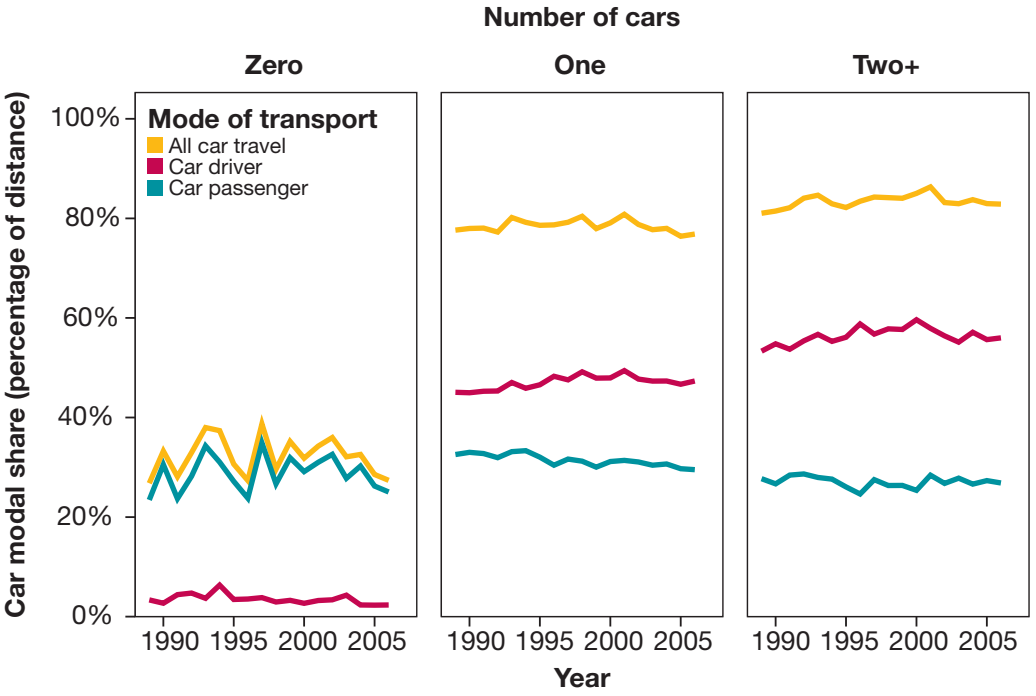


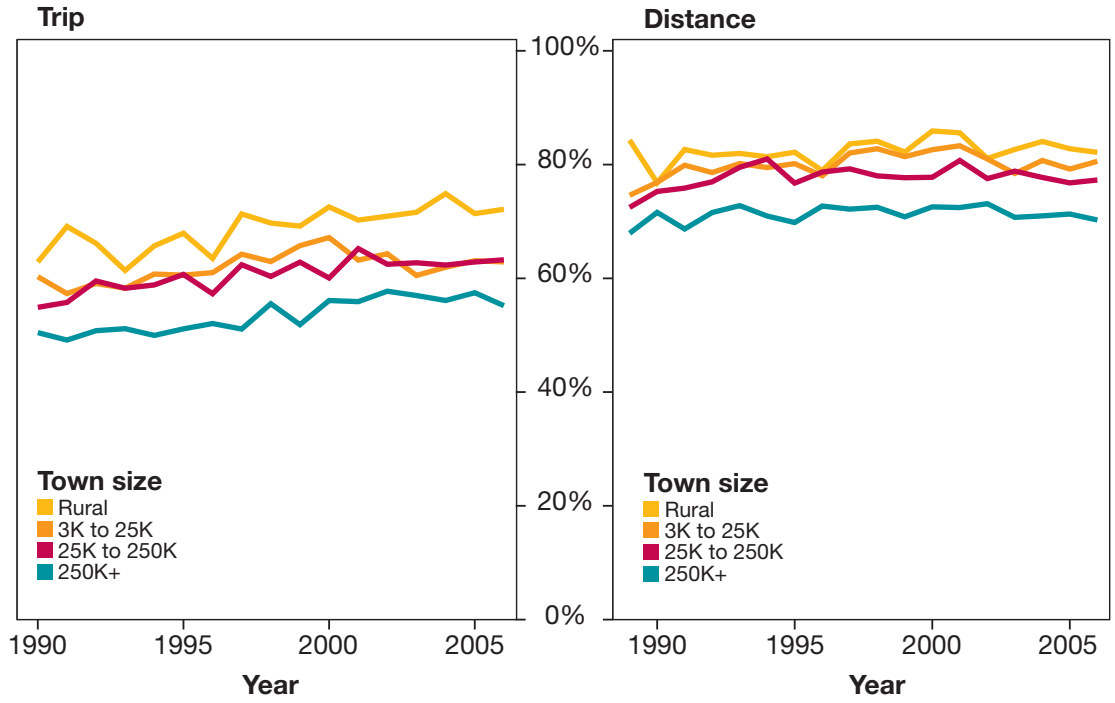
Figure 3.24: Car modal share of total distance, by household car ownership, 1989-2006



3.5.5 Size of residential settlement

Figure 3.25 shows that, on a per trip basis, car modal share has continued to grow in rural areas, but in the three other areas it has levelled off. In the two intermediate sized areas it has actually shown a slight decline since 2002. However, the modal share by distance has shown no significant trends since 1989.

Figure 3.25: Car modal share of total trips and distance, by settlement size, 1989-2006



3.6 Has car use stabilised?

The previous RAC Foundation car dependence study, which reported on trends up to the end of the 1980s, was able to look back on a period of sustained growth in car ownership and use and report an increasing penetration of the car into the daily travel patterns of substantial parts of the population. However, there is some evidence that this penetration has now stabilised, at least on a per person basis. As noted in Section 2.3, a situation has now been reached where the car is the dominant travel mode for most journey purposes and demographic groups.

3.6.1 Trends in car use per person

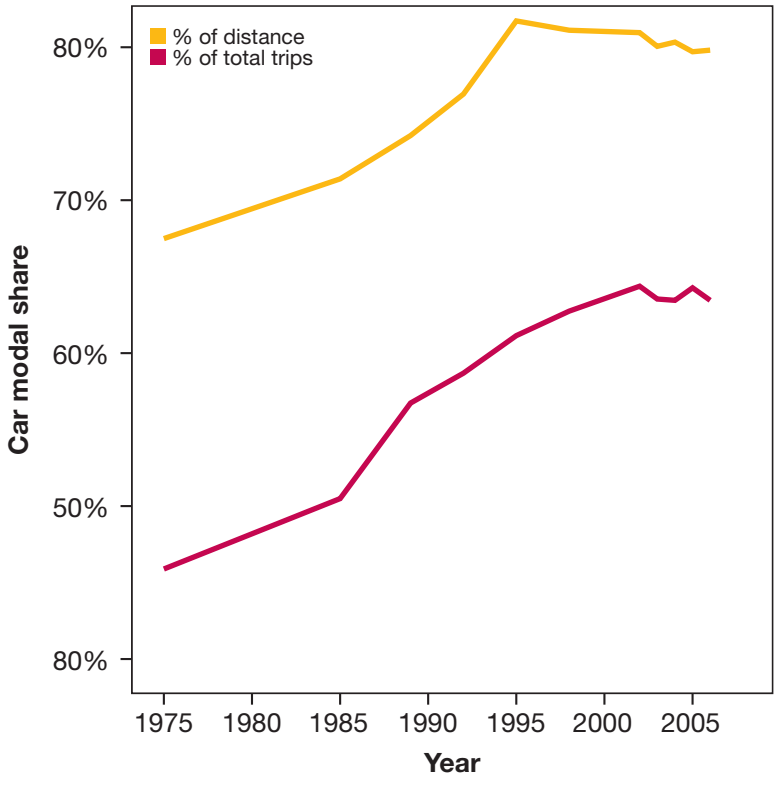
Since the late 1980s we can observe two distinct phases:

- A period of continuing growth and increasing dominance of the car in facilitating personal travel behaviour.
- A period of stabilisation, and on some measures a slight reduction in the proportion of the personal travel market involving travel by car.

The timing of this inflection point differs according to whether we are looking at trips or distances, but in both cases has occurred several years in advance of the sharp fuel price increases and the current recession. However, during this period absolute car mileage has continued to increase, in line with the growth of the adult population in Great Britain.

Figure 3.26 shows the modal share of total travel by car per capita (both as a car driver and a car passenger) between 1975 and 2006, as a proportion of total personal trips and in terms of annual distance travelled, from the National Travel Survey. An increasing rate of growth can be observed in the car share of total mileage per person between 1975 and 1995, when it reached 82%, after which there was an inflection and since 2002 the mileage by car has dropped back to around 80%. When measured as a modal share of all trips, growth continues for a longer period until the inflection point is reached in 2002, since when numbers have fluctuated between 63% and 64%.

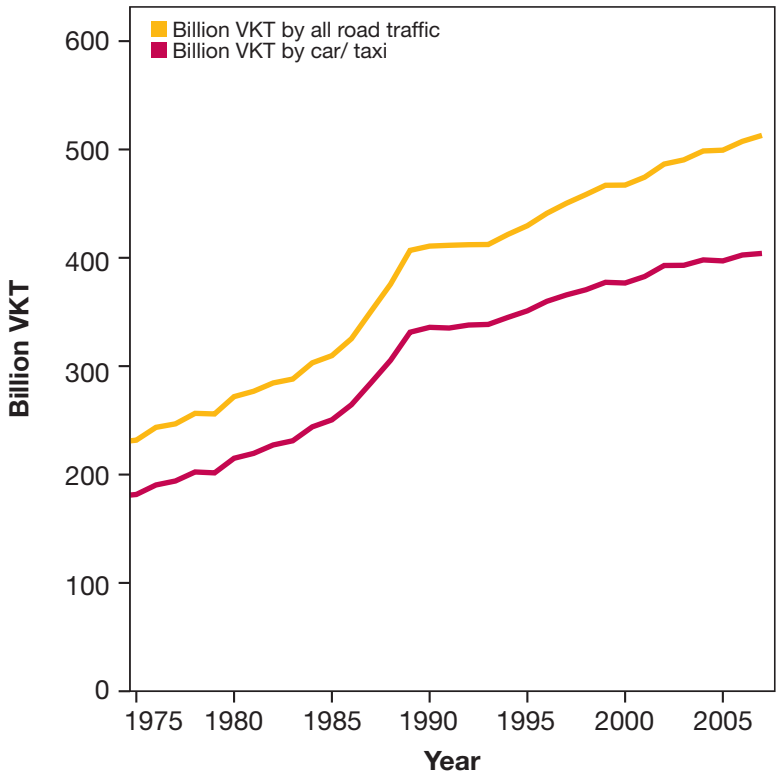
Figure 3.26: Modal share of travel by car on a trip and distance basis, 1989-2006



3.6.2 Trends in national traffic flow

The evidence from the National Travel Survey that, across the population as a whole, car use has stabilised in recent years seems at first glance to be at odds with data from national road traffic counts, which shows a continual (though reduced) rate of growth in road traffic, as can be seen in Figure 3.27.

Figure 3.27: Growth in road traffic over time, 1974-2007



Closer inspection, however, shows that the two sets of data are consistent, when two factors are taken into account. First, while total road traffic has continued to increase, the growth in car/taxi traffic has been tailing off, so that it is now a decreasing proportion of all roads traffic, as shown in Figure 3.28. Car and taxi traffic peaked in 1993 at 82.1% of all road traffic: in 2007 it was down to 78.8%, which is the same as 1978/79 levels.

Second, the population of driving age has been growing at an increasing rate in recent years. In the twenty years between 1981 and 2001, the population aged 16+ increased from 43.8 million to 47.3m (an increase of 3.5m or 0.4% per annum), while in the six years between 2001 and 2007, it increased by a further 2.2m, to 49.5m, at an annual rate of nearly 0.8%.

When this is taken into account, and car-taxi kilometres on a per adult basis are considered (in Figure 3.29), it can be seen that the annual average kilometres peaked at 8,265 per adult per annum in 2002, since when it has dropped back slightly. This is consistent with the NTS data shown in Figure 3.26.

Figure 3.28: Car/taxi VKT as a percentage of all road traffic VKT, 1975 to 2007

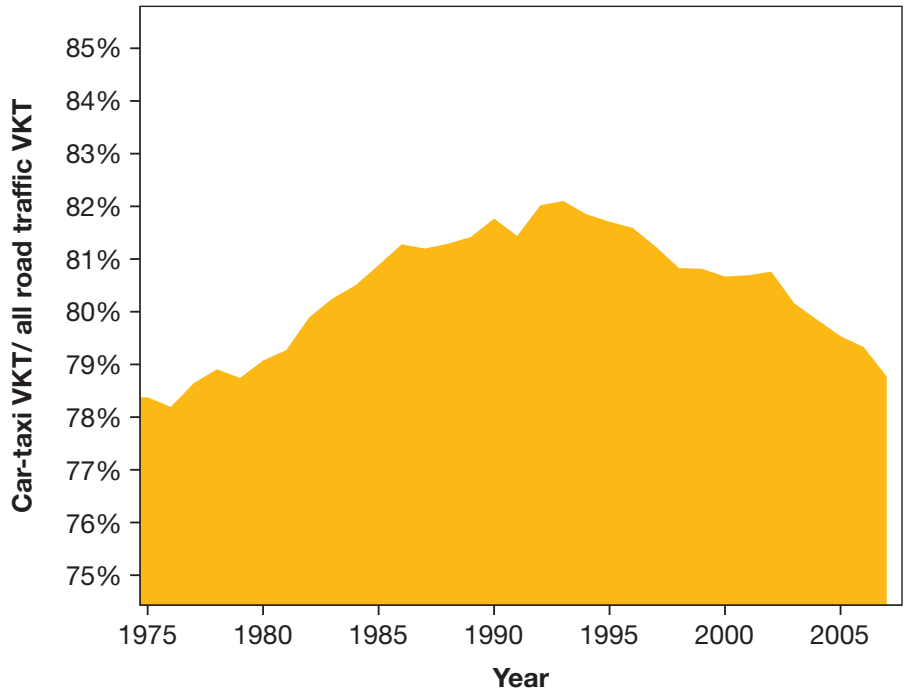
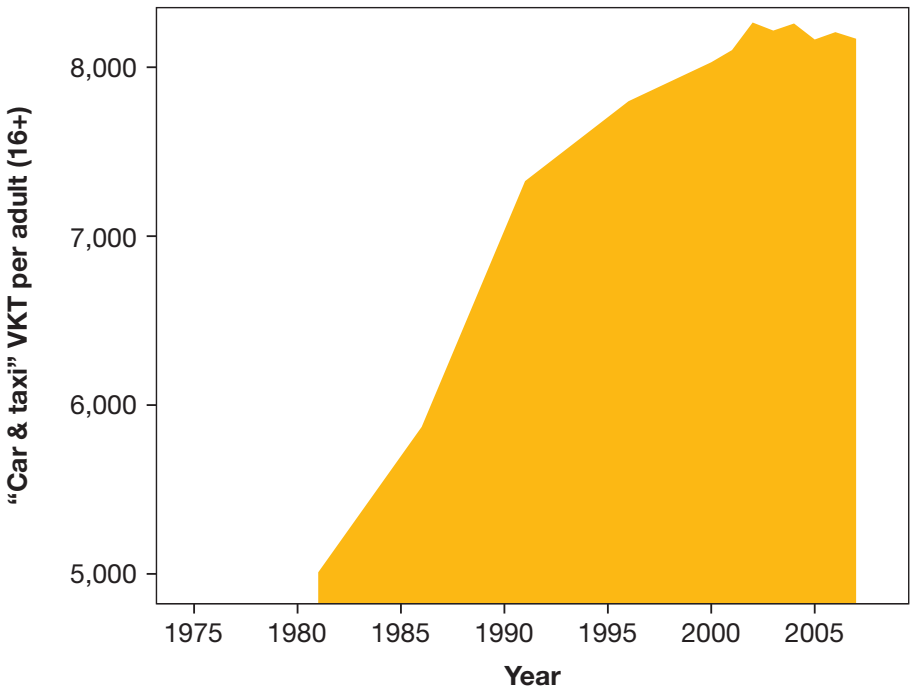


Figure 3.29: Average annual car/taxi kilometres per adult aged 16+

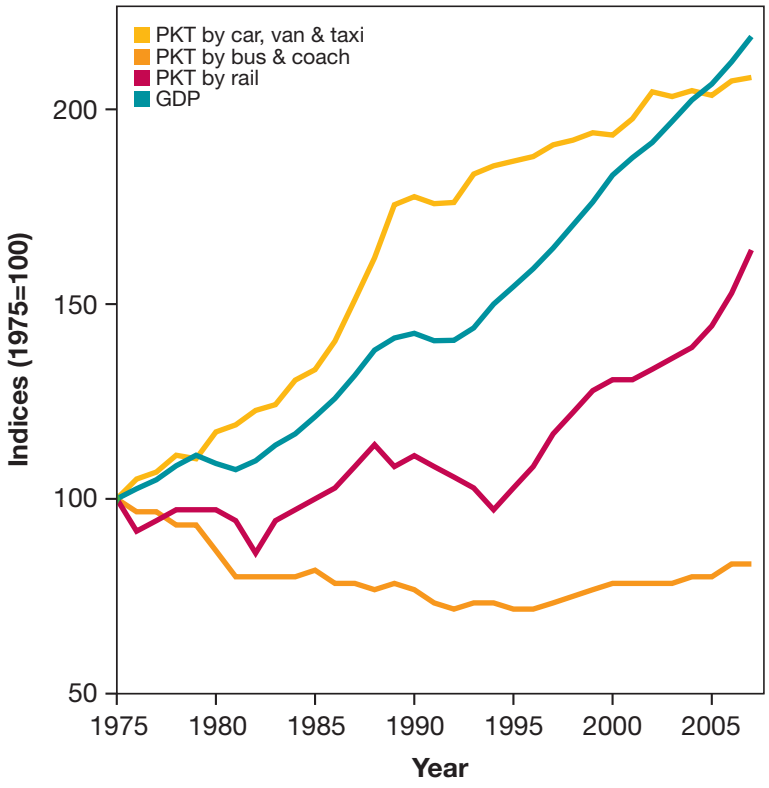


3.6.3 Trends in the broader travel market

Figure 3.30 shows the growth in total annual surface travel in Great Britain by mode, in passenger kilometres, indexed to 1975, together with changes in GDP (gross domestic product).

Since 1975 there appears to have been a consistent relationship between GDP and trends in rail passenger kilometres, with a small lag effect: in the early 1980s and the early 1990s, a drop in GDP was followed by a sharp fall in rail demand. A much smaller dampening effect can be observed for travel by car, van and taxi, in the late 1970s and early 1990s. Since around 2000, however, this relationship seems to have changed. While GDP and rail travel have continued to grow strongly, there has been a recent levelling off in passenger kilometres by car, van and taxi (which correlates with the trends in vehicle kilometres shown previously), but which is not matched by changes in GDP.

Figure 3.30: Growth in total surface travel in Great Britain, indexed to 1975, plus growth in GDP



This suggests that recently observed levelling off in car travel is not associated with changes in economic conditions, but reflects structural changes in the patterns of car-based travel behaviour.

3.7 Conclusions

This time series analysis, shows that car ownership has continued to grow since the late 1980s, both on a per household and a per person basis, although among the top two income quintiles a saturation level of around 90% of car owning seems to have been reached.

In terms of personal characteristics, there has been a convergence in total car modal shares between men and women, although men are recorded as drivers more often than women who are recorded more often as passengers. Amongst drivers aged between 16 – 29 years a reduction in the number of miles travelled by car has been recorded. However, the 70+ age group has been responsible for offsetting these figures by travelling further and more often in recent years. There is some convergence in car use between income groups, but the differences are still large. Licence holding per adult has also levelled off in recent years, at around 80% in the middle age groups, with reductions among younger people being offset by increases among older people.

While overall car use continued its pattern of strong historical growth throughout most of the 1990s in recent years it has levelled off, and some aspects of personal car travel have declined slightly. Depending on the measure used, growth in average car use per person ceased at some point between 1995 and 2002. The halt in the increase in average car use per person can be reconciled with a continuing growth in car ownership because cars are being used less intensively.

Total national car road traffic continues to grow slowly in line with increases in the national population of driving age. If this situation continues, then future aggregate growth rates for car traffic will be less than has historically been the case and may demand a reassessment of our long term traffic forecasts: car traffic may simply mirror the increase in the number of adults in the population.

A recent study of driving patterns in the USA has come to a similar conclusion (Puentes and Tomer, 2008). The per capita vehicle miles travelled (VMT) reached a plateau in the year 2000, and has fallen slightly since 2005 – trends which predate the increases in fuel prices in 2007 and 2008 and the current recession.

There have been short periods in the past when traffic growth in Great Britain has stopped, but these have been associated with economic downturn. The recent change has occurred during a period when the economy has been relatively strong, and rail use – which historically has also correlated with GDP – has continued to grow strongly. There could be several explanations for this phenomenon, including the collective impacts of UK policies to encourage car restraint and modal shift, or the displacement of some travel to overseas destinations – but there is no substantive evidence on the collective impacts of such effects nationally.

The fact that average car speeds have declined over the last decade, down from 25.7 miles per hour in 1995 to 24.6 mph in 2006, suggests the possibility that congestion is a limiting factor that may have contributed to the situation. In some places, road space reallocation and the rephasing of traffic signals might have led to significant reductions in capacity – though, again, it is difficult to gauge what effect this has had nationally.

Other possible explanations for the levelling off in car use might include an increase in people living in larger settlements, with better local access to goods and services by non-motorised modes, and in areas with good public transport accessibility. However, the evidence from the NTS does not show any consistent trends of this type.

Whatever the reasons, the evidence suggests either that car use has reached a natural 'saturation' level, with the population as a whole now having achieved its desired or realisable levels of domestic mobility by car (Metz, 2009), recognising that not everyone is or will be able to own a car; or that it has reached a level which is in equilibrium with current transport provision and land use patterns – major changes in either of which could lead to further changes in aggregate patterns of car use. Determining which (if either) of these explanations is correct will have major implications for travel forecasting and for the development of British transport policy and responses to sustainability objectives in the coming decades.

4
Public attitudes towards cars and car use

Key messages

- In public attitude surveys, most people said work or home location were the main reason for having a car and that shopping was the main trip that they could not do without a car.
- People enjoyed mostly the freedom, independence, convenience and sense of personal space that the car has to offer them.
- Non-car owning households saw huge benefits in owning and driving cars and many relied on their friends and families to drive them around in the absence of alternative travel choices.
- People also recognised the disbenefits of car ownership and use, the most significant of which was the related costs and some people said they would prefer not to drive but felt they had no choice.
- Some people recognised that they often used their cars out of habit and laziness and that a number of the trips they made were not essential to their well-being.
- Some people who did not own cars or could not drive said they felt isolated and that they were a burden on their friends and families.
- Although one third of people in attitude surveys said that they could switch to walking or cycling for short trips rather than using their car, nearly half said that this would not be possible.
- These remarks were consistent with the findings of our discussions with the public, which found that shopping and child escort trips were the most difficult to manage without a car.

4.1 Introduction

The previous chapters have shown that, although in recent years overall car use has levelled off, this follows a continuing historical pattern of strong growth throughout most of the 1990s, to the point where the car is now the dominant mode for most people's travel and has a strong influence on their daily lives.

The next step will be to look at people's attitudes towards the car and the various roles it plays in their daily lives. These issues were examined in three ways by the study:

- First, we analysed a number of surveys of public attitudes to car use that have been conducted at regular intervals in the UK over the last ten years;
- Secondly, we considered the wider literature on the benefits and disbenefits of car use to individuals, households and society at large; and
- Thirdly, in the focus group discussions we included questions about the value of the car to people's livelihoods and lifestyles.

This chapter presents the outcome of these explorations.

4.2 Public attitude surveys

Several UK surveys have investigated public attitudes relating to car ownership and car use, in some cases over several decades. In this section we draw on three of these surveys: the Lex/RAC Report on Motoring, the British Social Attitudes Survey and a study for DEFRA in 2007, carried out by the British Market Research Board (BMRB).

Until 2008, the annual Lex/RAC Report on Motoring survey was carried out face-to-face, with annual samples of between 1200 and 2000 regular car drivers, (i.e. those who drive at least once a month). In 2008 an Internet survey was used for the first time.

The British Social Attitudes Survey has been conducted annually since 1993. Each year around 3,300 randomly selected adults (both drivers and non-drivers) are asked to give their views on an extensive range of topics in a face-to-face interview. The figures quoted in this section come from the 2008 report, based on data collected in 2006.

The 2007 Survey of "Public Attitudes and Behaviours Towards the Environment" for DEFRA, is based on a representative sample of 3,618 individuals in England during Spring 2007.

4.2.1 Reasons for having a car

In the 2001 Lex Survey, motorists were asked, "what would you miss most if you did not have a car?" with the majority of people answering that they would be concerned about the loss of personal freedom. Responses are shown in Table 4.1. In terms of impacts on particular trips, most frequently mentioned was the impact on their ability to go shopping, followed by commuting trips, leisure activities and visiting relatives.

Table 4.1: What drivers would miss most of they did not have a car

	1st mention	Other mentions	All mentions
Sense of freedom	42	19	61
Ability to go shopping	12	29	41
Ability to get to work	21	15	36
Going to a leisure activity	5	26	31
Visiting relatives	5	20	25
Going on holiday	1	9	10
Taking children to school	2	7	9

Source: 2001 Lex Report on Motoring

The 2004 RAC Survey asked motorists for the main reason they needed to retain their car. The three most common responses are shown below in Table 4.2 by type of residential area. In rural areas, half of respondents referred to work or home location as being the determining factor, whereas in cities it was the convenience of the car that was most frequently mentioned. More people in rural and urban areas than in cities mentioned the unreliability of public transport.

Table 4.2: Main reason for motorists retaining their car

	All	City	Urban	Rural
Need car due to nature of work/location of home	43	37	40	50
Convenience of car	35	41	34	32
Unreliability of public transport	18	12	19	18

Source: 2004 RAC Report on Motoring

4.2.2 Availability of alternatives to cars

In 2004, drivers in the RAC Survey were asked what would be the next best alternative means of transport for their car journeys (Table 4.3).

Table 4.3: Best alternative modes to the car for different trip purposes

	Shopping	Commuting	School runs	Social events	Longer motorway journeys
Bus	37	33	23	13	7
Train	3	18	2	7	59
Taxi	32	7	7	59	4
Walk	15	8	44	6	0
Bicycle	1	8	1	1	0
Don't know	12	26	23	15	30

Source: 2004 RAC Report on Motoring

As can be seen, the chosen mode varies by purpose, reflecting the importance of both differences in average trip lengths (e.g. commuting vs. school runs) and the nature of the activity (e.g. social events). The trip with the highest proportion of 'don't know' responses (at 30%) was longer motorway journeys, and the one with the lowest percentage (12%) was shopping.

The British Social Attitudes Survey asked drivers in 2006 whether they agreed with the following statement: "Many of the short journeys I now make by car I could easily switch", and how their answer would vary with the alternative mode available.

See Table 4.4. Here we can see that around one third agreed that they could walk or cycle instead of going by car, but on the other hand, nearly one half disagreed. Comparable figures for switching to bus travel revealed around 28% agreed and 54% disagreed. So, even for short trips, more car drivers think it would be difficult to switch mode than think it could be done so easily.

Table 4.4: Level of agreement that short car trips could be switched to alternative modes

N=931	Strongly agree	Agree	Neither or agree disagree	Disagree	Strongly disagree	Never travel by car	Can't choose	N/a
Walk	8	26	8	33	14	7	3	1
Go by bus	4	24	8	34	20	6	2	1
Cycle - if I had a bike	7	28	9	29	17	6	3	2

Source: British Social Attitudes Survey 2008 (2006 data)

The 2001 Lex survey approached this issue in a different way, by asking drivers: "If you could switch one journey a week from your car to public transport, which journey would it be?" The results in Table 4.5 show that shopping was the most frequently mentioned trip purpose, followed by 'into town centre'.

Table 4.5: Which one journey a week respondents said they could switch to public transport

	All	City	Urban	Rural
Shopping	21	19	18	28
Into town centre	13	11	16	8
Journey to work	8	9	7	9
To leisure facilities	6	6	8	5
Visit to relative or friend	6	9	6	4
None, wouldn't, couldn't	29	24	30	30
Could not specify a journey	14	15	14	12

Source: 2001 Lex Report on Motoring

There were some differences by type of residential area, though these were relatively small, with 39% of people living in cities saying either that they could or would not switch a car trip, or could not specify a journey, compared to 42% in rural areas.

Some insight into the advantages offered by the car compared to other modes of transport were obtained from the 2000 Lex Survey, where motorists were asked for an indication of the relative times and costs of making different journeys by car and by public transport. The two charts have been reproduced below in Figures 4.1a and 4.1b.

In most cases the car is perceived to be cheaper and quicker than the public transport alternative, but the time differentials are generally much greater than the cost differentials.

On the cost side, average increases incurred by switching from the car to public transport range from 25% for work (£4.00 versus £3.20) to 120% for escorting children (£1.00 versus £2.20). But in the case of journey times, the increases range from 62.5% for visiting friends and family (65 mins. versus 40 mins.) to 236% for commuting trips (84 mins. versus 25 mins. by car).

4.2.3 Effect of environmental impacts on attitudes to car use

The 2006 British Social Attitudes survey asked a series of questions about attitudes to driving in relation to the environment. People were asked whether current levels of car use are having a serious effect on the climate? 82% of drivers agreed with this statement –a higher percentage than non-drivers at 76%. See Table 4.6.

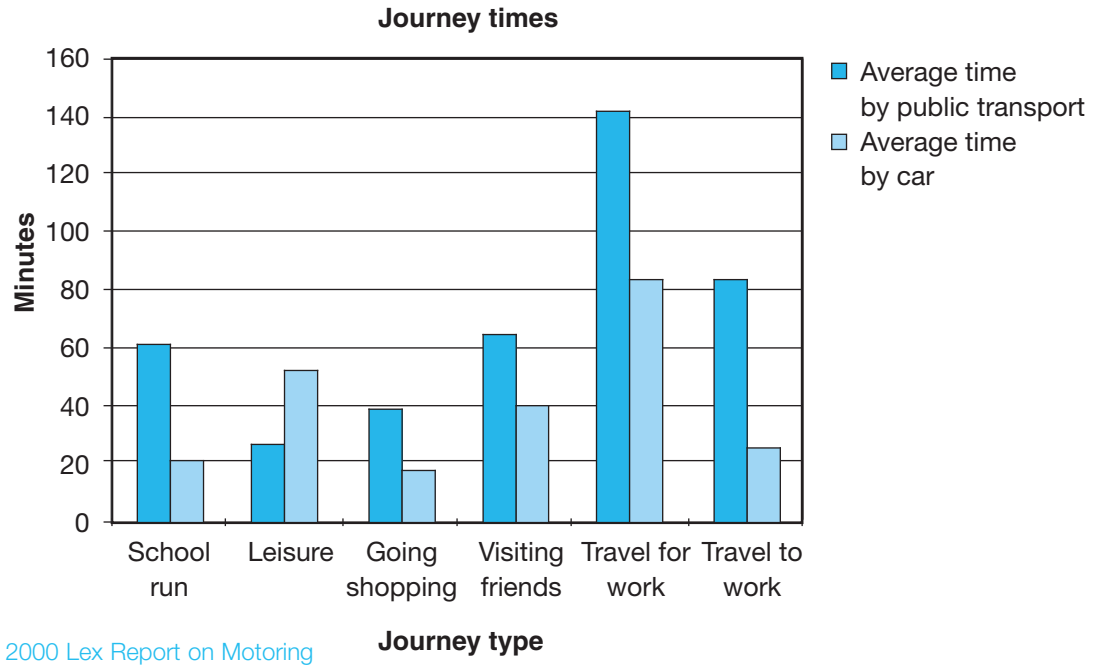
Respondents were next asked whether they agreed that everyone should reduce their car use, for the sake of the environment (Table 4.7). 66 per cent of both drivers and non-drivers were in agreement with this statement, and around one quarter were undecided.

Table 4.6: Level of concern about environmental impacts of car use

N=3220	Drivers	Non-drivers	Total
Current level of car use has serious effect on climate- % agreeing	82	76	80
% Very or fairly concerned about effect of transport on climate change	84	76	81

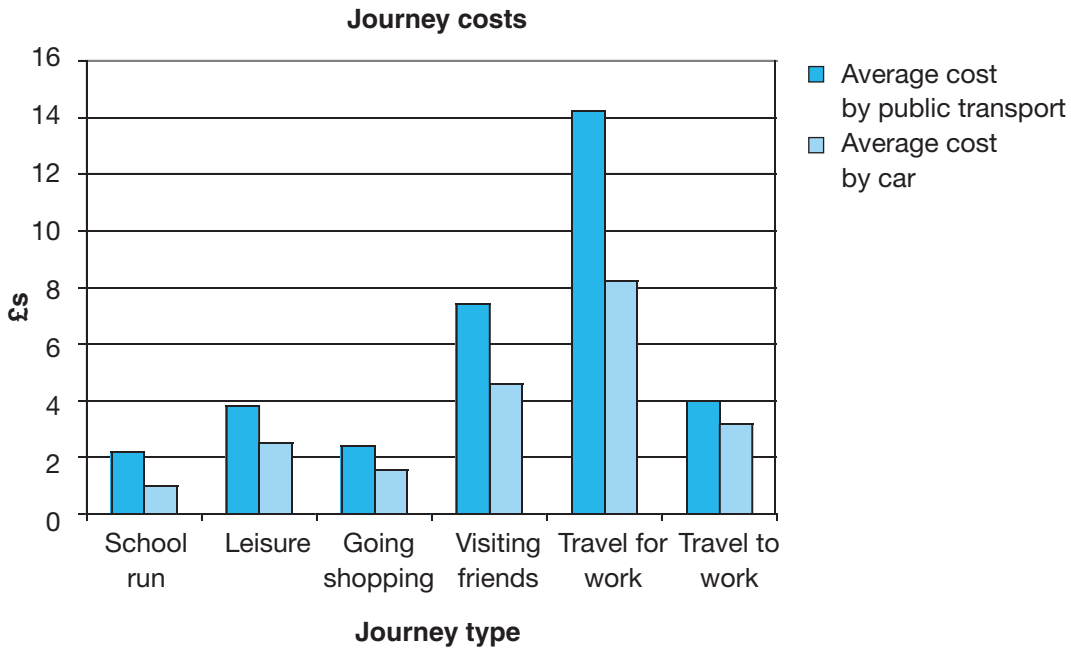
Source: British Social Attitudes Survey 2008 (2006 data)

Figure 4.1a: Respondents' estimated comparative journey times for car and public transport, by trip purpose[8]



Source: 2000 Lex Report on Motoring

Figure 4.1b: Respondents' estimated comparative costs for car and public transport journeys, by trip purpose[9]



Source: 2000 Lex Report on Motoring

[8] It should be noted that the figures in these graphs are based on respondents own estimates of both journey times and costs and that a large number of people stated that they "did not know" in response to these questions.

[9] See above.

Table 4.7: Support for reductions in car use, for the sake of the environment

N=980	Drivers	Non-drivers	Total
For the sake of the environment everyone should reduce how much they use their car			
Agree %	66	66	66

Source: British Social Attitudes Survey 2008 (2006 data)

The next two statements in the survey were more negative in tone. The first argued that one person changing his or her own car use would make no difference in helping the environment (Table 4.8), to which the majority of both groups disagreed. However, it is interesting to note that drivers were more likely to disagree (62%) than non-drivers (51%).

Table 4.8: Level of agreement with the statement that one person's reduction in car use makes no difference

N=980	Drivers	Non-drivers	Total
Anyone who thinks that reducing his or her own car use will help the environment is wrong. One person doesn't make any difference			
Agree %	13	22	16
Disagree %	62	51	59

Source: British Social Attitudes Survey 2008 (2006 data)

Finally, respondents were asked whether they agreed that people should be able to use their cars as much as they liked, even if this causes damage to the environment (Table 4.9). Here 23% of drivers and 24% of non-drivers agreed with the statement. Just under 40% disagreed in both groups, leaving around one third undecided.

Table 4.9: Agreement with view that people should be able to use their car as much as they like

N=980	Drivers	Non-drivers	Total
People should be allowed to use their cars as much as they like even if it causes damage to the environment			
Agree %	23	24	23
Disagree %	39	38	39

Source: British Social Attitudes Survey 2008 (2006 data)

4.2.4 Willingness to reduce personal car use

The 2007 DEFRA Survey explored the extent to which people would be willing to reduce their own car use. Findings are shown in Table 4.10.

Table 4.10: Support for statements concerning reductions in car use

	Agree	Disagree
I would like to reduce my car use, but there are no practical alternatives	45%	21%
It would be easy for me to reduce my car use	24%	45%
Driving my car is too convenient to give up for the sake of the environment	30%	30%

Source: 2007 Survey of "Public Attitudes and Behaviours Towards the Environment" for DEFRA.

The first two statements consider ease of reducing personal car use, but approach the subject from opposite directions. Just under one quarter believe that they do have alternatives and could reduce their car use, while 45% in both cases report that reducing car use would be difficult or impractical. The third statement finds respondents evenly divided (at 30% each way) on whether they could give up their car for the sake of the environment, with the largest proportion (40%) undecided or unwilling to comment.

There are clear differences in agreement levels amongst different types of residential area, as shown in Table 4.11. In each case there is a consistent gradation, with big city car users being most likely to have alternatives to the car and village/rural dwellers being least likely to do so. The range is greatest in relation to an acknowledged availability of alternatives, at 19% (i.e. 58% vs. 39%), and least in relation to willingness to consider giving up car use for the environment, at 8% (35% vs. 27%).

Table 4.11: Variation in levels of agreement in Table 3.10 by type of area

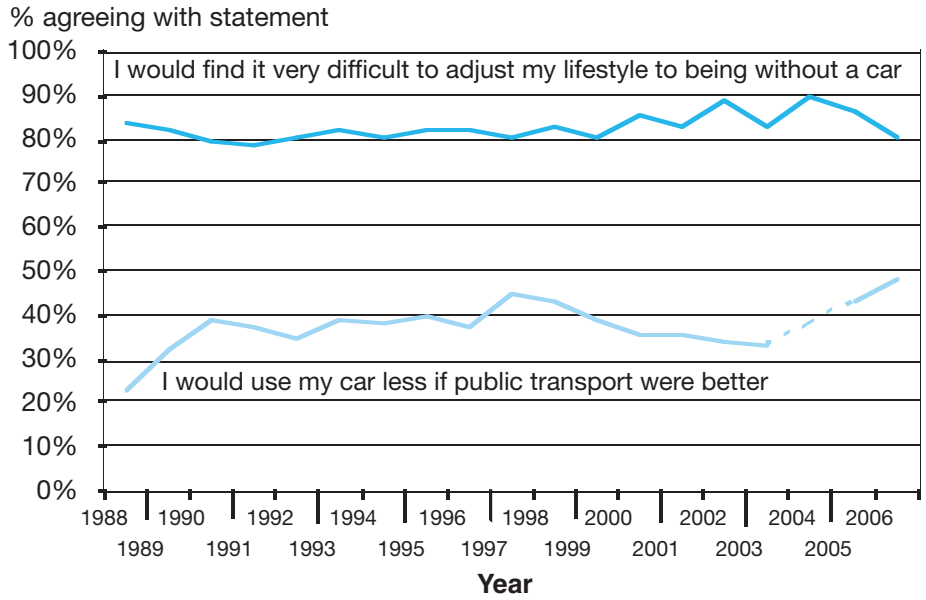
	Agreement		
	Big City	Town/ small city	Village/ rural area
I would like to reduce my car use, but there are no practical alternatives	39%	44%	58%
It would be easy for me to reduce my car use	27%	25%	16%
Driving my car is too convenient to give up for the sake of the environment	27%	31%	35%

Source: 2007 Survey of "Public Attitudes and Behaviours Towards the Environment" for DEFRA.

The Lex/RAC Surveys have regularly repeated two general questions that relate to the car dependence of the current lifestyles of respondents, and their willingness to use improved public transport services. Figure 4.2 shows that over the past 20 years, between 78% and 90% of respondents believe they would find it very difficult to adjust their lifestyle to being without a car. The figures fluctuate from year to year, but there is no overall trend.

The responses to the question about willingness to reduce car use if public transport were better, revealed a much greater fluctuation from year-to-year, with between 23% and 48% agreeing with this proposition in different surveys. There is probably a long-term upward trend in the proportions agreeing with this statement, though it is not consistent from year to year.

Figure 4.2: Changes in attitudes to car dependence and willingness to use public transport, over time



Source: Lex/RAC Report on Motoring surveys

The British Social Attitudes Survey report 2008 identifies a number of different groups, based on their attitudes and views about how easy it would be to cut down on car use for short journeys:

- Nearly one in two drivers (45%) say they are both willing and able to reduce their car use. They might benefit from more encouragement and support to make the switch away from their cars.
- One in nine drivers (12%) are able to reduce their car use, but are unsure whether they are willing to do so. They too might benefit from more encouragement and support.

- Nearly one in five drivers (18%) say they are willing to reduce their car use but are unable to do so. This group might benefit from improved public transport and improved walking or cycling facilities.
- 10% are unsure if they are willing to reduce car use and claim to be unable to use alternatives. 5% are unwilling, but able and 6% are willing but unable.

4.3 The benefits and disbenefits of car ownership and use

There is a large and varied literature on the benefits and disbenefits of car use, which are briefly summarised in Figure 4.3 below and examined in more detail in the sections that follow.

Figure 4.3: Scorecard of personal and social benefits and disbenefits of car use

	Benefits	Disbenefits
To users	• Freedom to travel where & when desired • Cheap travel at point of use • Access to wider range of goods and services • Ease of movement (for passengersd & goods) • Sense of power & identity	• Costs of car purchase and maintenance (if on low income) • Stress of driving • Lack of physical exercise • Chauffeuring requirements • Traffic accidents
To society	• Expands labour and customer markets • Facilities greatere diversity of skills and activities • Important manufacturing and service sector	• Conjested road networks • Contributions to local air and noise pollution • Contribution to CO_2 emissions • Car-based developments preclude non-car access

Source: Authors' own.

Car use can be seen as having a wide range of advantages, both for the individual and society and the economy as a whole.

- Individual car users benefit from car use in two ways. Firstly, there is the physical advantage of being able to access a wider range of goods and services at low marginal cost, at any time of the day or night, and in a way that is usually very convenient. Secondly, there is a psychological benefit that can be gained from a sense of freedom, status, identity and even power.
- Society benefits from the widespread availability of car-based mobility, as this expands both labour and customer markets (except perhaps in the central/inner areas of large cities), and facilitates a greater diversity of skills and activities. The car industry also represents an important manufacturing and service sector within the UK economy.

Conversely, some groups in society, such as low-income households or non-drivers may disproportionately disbenefit from the increasing need to own and drive a car in order to fully participate in contemporary society. This may be down to the fixed costs of car ownership and maintenance, which would take up a high proportion of their disposable income. On the other hand, high levels of car use can also bring disbenefits, both locally and globally. At a local level, congested roads and air and noise pollution hotspots arise, whilst at a global level, there are increasing CO_2 emissions. High levels of car use have also encouraged the construction of residential, commercial and public sector developments that are not readily accessible by non-car modes. These planning decisions thereby induce a degree of car reliance, and reduce the opportunities for those without access to a car. This effectively leads to a dynamic of car dependence within society.

The remaining sections of this chapter consider the published literature and the evidence from our focus groups, in relation to the perceived benefits and disbenefits of car use.

4.3.1 Benefits of car use: findings from the literature

Our literature review identified that there are huge advantages to be gained from car-based travel, both in terms of the increased access to key economic and social activities it offers the individual driver and to society as a whole, as a result of these activities. Numerous textbooks and academic articles refer to this as a derived demand, implying that it is not the car travel itself that is the primary benefit, but rather the opportunity to access goods and services that it allows.

The intrinsic value of travelling

Mokhtarian et al (2001) on the other hand, argue that travel has an intrinsic positive value in and of itself, which is largely overlooked by theorists and practitioners alike. The 21st century however, now witnesses the curtailment of some of these benefits by congestion, the introduction of speed cameras and traffic calming measures.

Our review found that the more psychological benefits of car-based travel are often down-played in the literature on reducing car dependence, but they nevertheless play an important role in the public's continued reliance on the car. This is evidenced by the focus group discussions and other case study material.

A recent report from the CSS (previously the Society for County Surveyors) Transport Futures Group (2008), which was compiled from the contributions of a large number of UK transport academics and practitioners, noted:

> *'Travel is part of the way we live our lives and this must be taken into account as we look ahead to consider the options open to us for how we live within and as part of our environment'*
>
> (CSS, 2008: 4)

The report concludes, that whilst there is evidence that some people are responding to the suggestion that a fulfilment of our social responsibility would mean that we use our cars less, the advantages of the car over other available modes of transport mean that the car is unlikely to diminish in importance for the foreseeable future. The authors point out that throughout history and in all economic conditions, people on average have travelled for around 80 minutes per day; the authors argue that this would allow the average person to cover about 4 miles walking, 15 miles cycling, and 80 miles driving or 150 miles by high speed train.

The convenience and flexibility of car travel

Repeated surveys have demonstrated that the majority of today's population (even those who do not themselves own cars) favour car travel over any other mode of transport. Travel by car allows us to decide when and where we travel and to control the microenvironment in which we do it.

In his report for the Reason Foundation, Balaker (2007) succinctly encapsulates the many perceived advantages of the car over public transport:

> *'Travelers can reach relatively few destinations directly by transit, but motorists can go from (almost) anywhere to (almost) anywhere. Transit service frequency varies according to schedules, but motorists can travel whenever they like. Their travels are not as restrained by fatigue as are walkers and transit users who trek to and from transit stops. Simple conveniences, like trunk-space, make it easier to carry things and additional seating makes it easier to transport small children, the elderly, and handicapped. The enclosed space of a car can also spare travelers from the rain, snow, its own risks, many people feel safer traveling at night or through unfamiliar areas within the confines of a car.'*
>
> (Balaker, 2007: 4)

Different benefits for different people

Clearly, however, different sectors of the population place more or less importance on their mobility and hold different values for different types of trips, modes and journey purposes; this also changes at different life stages. The recent evidence–based review on mobility for the Department for Transport (2007) finds that from childhood people have distinct mobility needs and experiences, which can largely be categorised by life stages. For younger primary school children the escorted trip to and from school (mostly by car or walking) has an important focus, whereas for older children, independent mobility (commonly by public transport) is seen as positive, exciting and adventurous; aspects which are often outweighed for young teenagers by feelings of dissatisfaction with the level of service.

The review finds that as we get older, the need to travel is largely determined by the demands that are placed upon us: to travel to work, escort children to school, shop, etc. It suggests that the high reliance of parents on their cars reflects the multiple demands on, and time pressures of their busy lives. Gender also plays a big part in determining the diversity of travel needs and experiences among adults. Men are still more likely to have access to a car, make more commuter trips and be less likely than women to be responsible for the home and childcare, including shopping for food and escorting children to school. Declining mobility and health in older age can often mean having to give up driving, with associated reductions in the ability of older people to access essential services.

Greater independence and well-being for older people and women

In their study of the car use of Finnish men and women over the age of 65, Siren and Hakamies-Blomqvist (2004) argue that independent community-related mobility is a fundamental factor in the continued well-being of older people. They identify reduced mobility as associated with loss of independence, reduced general activity, poorer health and increased depression. Not surprisingly, leisure trips (broken down into those for no special purpose, hobby-related and those to access outdoor exercise) and shopping trips are of highest importance to both men and women in this group. The study found that women wanted to undertake more of these trips than men, but were also often less able to do so. Another main finding of the study was that after controlling for background demographic factors, the lack of a driving licence and geographic inequalities in infrastructure were the most significant factors contributing to the poor mobility of different sub-groups within the sample.

Improved accessibility

In many ways, therefore, the benefits of car ownership can be identified in direct relation to the accessibility problems people experience when they don't have regular access to private transport. For example, the 2003 Social Exclusion Unit (SEU) study identified that job seekers who can drive are twice as likely as non-drivers to secure a job in the first six months of their unemployment. It also found that getting to hospital is particularly difficult for people who have to rely on public transport, leading to missed health appointments and associated delays in medical intervention; 31 percent of people without a car say they have difficulties travelling to hospital compared with 17 percent with a car. People without cars also find it more difficult to access healthy affordable food and to carry out social and leisure activities; a further contributing factor in determining health inequalities. These problems are particularly acute amongst non-car owning households in rural areas, but are also prevalent in the urban periphery, particularly on social housing estates.

In a recent DfT survey of low-income car drivers in the UK, Taylor et al (2009) find that:

'Car usage performs a demonstrably important role in facilitating access to, and participation in, a wide range of key services and opportunities for low income households. This helps to account, at least in part, for the perhaps surprising levels of car ownership amongst low income groups, given the high financial cost associated with them.'

(Taylor et al 2009: 55)

4.3.2 Benefits of cars: findings from the focus groups

In common with the above study's findings, much of the discussion in this study's five focus groups centred on the benefits of car travel over the transport alternatives that the participants saw as available to them.

Personal freedom and independence

A central (and often reported) theme in the focus groups was the sense of personal freedom and independence their cars gave them. People in the 'new drivers' group valued their ability to travel at will rather than at set times of the day:

'If you are having to get the train and it's at a set time you feel restricted … when in a car you could just go when you wanted to.'

Male participant, new drivers group, Banbury

At the other end of the age spectrum one of the older participants told us:

'You can't rely on other people, if you want to shop at our age, you don't want to walk miles to it. In the country, you really do need a vehicle, a lot more than in the town.'

Male participant, over 75s group, Banbury

Some participants, but surprisingly very few across all the groups, expressed a feeling that they were psychologically attached to their cars. For example, one man told us:

'I don't see myself living in a world where I have no car … I think the problem is at the back of my mind I've got this psychological barrier that says I cannot abandon ship.'

Male participant, voluntary switchers group, Nottinghamshire

Perhaps understandably, the more emotive comments about the value of a car came from a number of people in the 'banned drivers' group, where people cited the pleasure of speed and being in control, as well as the enjoyment of driving, purely as an activity, especially if it was a decent car:

'Just I suppose if you're going fast it's like being on a roller-coaster if you're going fast but I suppose it's even more exciting because you're doing it, you're

controlling it…It makes you feel good the fact that you can drive your car at high speeds and still be in control'.

Male participant, banned drivers group, Nottingham

The most extreme demonstration of love for a car came from a young woman who told us how she had chosen her car over her boyfriend:

'I finished with my boyfriend when I started driving … I had better things to do, I would just much rather be out in my car than be sat in his house … When I first passed my test I was just constantly looking out the window like I really want to be out in my car and I just found excuses to go and I just had better things to do to be honest. He thought I was really sad … because I was always cleaning it, he said I was sad … We actually split up over my car. Yes, I'd much rather enjoy my car than have a man any day.'

Female participant, new drivers group, Banbury

In contrast, a large part of the 'non-car owners' group discussion focused on the lack of freedom and independence and the strong social and familial networks that need to be in place in order to survive without a car. The general feeling in the group was that if they could, they would get a car. For some of them the sheer pleasure of driving was reason enough to want a car and a female participant said:

'When I did have a little car, I just used to go off on my own and play my music loud - on my own. At night.'

Female participant, non-car owners group, Banbury

This was echoed by a male participant in the group who also valued the sense of having his own space that the car offered:

'Driving and music - a great combination! Cuts everything else out, you're in your own space.'

Male participant, non-car owners group, Banbury

Improved access to goods and services

However, there were also plenty of less emotive reasons for people's preference to use their car. These were most often expressed in terms of improved access to locations and services. For most people, travelling to work and servicing family needs, such as going shopping, were the main journeys that people felt they could least do without a car.

Participants in the 'banned drivers' group were more vigorous in their articulation of the frustration of being without a car, finding their situation irritating and annoying. One of the retired participants in the group told us about his experiences travelling by public transport since the loss of his licence:

> *'I want to go and see someone who lives 10 miles away. I've got to try and get a bus and there isn't one that's suitable and that's frustrating.'*
>
> Male participant, banned drivers group, Nottinghamshire

Another male respondent in the group was physically very isolated by the geography of his home, which was a two-mile walk from the nearest bus stop. It transpired that he lived in a purpose built retirement settlement, from which a bus went twice a week, providing limited transport to local shops. His wife had consequently changed her shopping habits and was faced with reduced choice and higher costs in the local shops.

The single mother in the group had also changed her shopping patterns and now used more local, but more expensive and less well-stocked, shops. She told us:

> *'I use (a local branch of a supermarket chain). It's bloody ridiculous, never got anything in it and it's very expensive.'*
>
> Female participant, banned drivers group, Nottinghamshire

4.3.3 Public views on inadequacy of public transport alternatives

Poor access to desired destinations

A commonly held theme regarding public transport use across all five of the groups, was that buses often do not run to the locations where people want to go, particularly in the outlying villages, as explained to us by one woman in the 'voluntary switchers' group:

> *'There are so many buses for Arnold but they don't go to where I need … I have to walk another ten minutes [from the bus stop] to get to my house though it's still in Arnold.'*
>
> Female participant, voluntary switchers group, Nottinghamshire

It was felt that bus routes in Banbury do not serve the main supermarkets, which made them virtually redundant as a means of transport for older people:

> *'You can get to town alright, but Sainsbury's is a mile and a half that way, Tesco's is a mile and half the other way. There's no supermarket in the centre of town.'*
>
> Male participant, over 75s group, Banbury

The most common issues held about public transport were the cost of fares in comparison to the car; personal safety and fear of crime whilst travelling on public transport; poor bus driver attitudes and behaviour; the general inconvenience of public transport in terms of poor bus frequencies, particularly at night and on the weekends; bad routeing resulting in the need for multiple interchanges or over-long journey times; lack of timetabling and other information and; non-integrated ticketing.

Cost of bus fares

The buses in Nottinghamshire were generally considered pricey for a family to use, not helped by the lack of an integrated ticket scheme, which meant that people have to pay more than once to complete a single journey if they change bus companies. For example one woman told us:

> *'… when I've got two or three children with me it's more expensive to get the bus and if we go as a family because I've got a sixteen year old, my husband, myself and two younger children, it costs an arm and a leg to get into Nottingham and back, an absolute fortune'.*
>
> Female participant, voluntary switchers group, Nottinghamshire

This was echoed in the 'non-car owners' group in Banbury, where single person bus fares were considered relatively cheap (£1.70 return from a village on the edge of Banbury) but taxis were considered cheaper if you were travelling with others; although the respondents identified that their cab fares had risen recently. We were told that the cost of a mother with three children on a bus (£7.50) was too expensive compared to a cab fare and the fact that cab drivers often helped with bags was seen as an extra incentive.

Fear of crime

As is common in such discussions, crime and, more importantly, fear of crime were raised as important reasons for not using the bus, not only in the evening, as is the usual perception, but also during the day, as described by one participant:

> *'I've actually had in day time where the bus driver has actually had to stop the bus and go upstairs and sort things out which was a bit unpleasant and I think the driver should be purely driving the bus, not having to do that, I think it's awful.'*
>
> Female participant, voluntary switchers group, Nottinghamshire

Loss of personal control

People also talked a lot about the loss of personal control and independence they felt when having to rely on public transport:

> *'Yes because it's out of your control as to what time the bus is going to come, how crowded it's going to be, if it's going to come because they do take the odd one off don't they whereas you choose what time you leave home, what time you get to work and if you leave work early you can walk straight out the door, straight in your car and you're home.'*
>
> Female participant, voluntary switchers group, Nottinghamshire

The unnotified cancellations of scheduled buses were considered a real disincentive for using them, particularly in the more rural outskirts of Banbury, where buses were not frequent anyway and thus a long wait time could ensue. This meant that people did not generally rely on the buses for important trips:

> *'If I know I've got to be somewhere, it's imperative that I've got to be somewhere, then I won't plan it round a bus route.'*
>
> Female participant, non-car owners group, Banbury

One woman in the 'non-car owners' group said she had a free bus pass, but it was no use to her because of the lack of buses outside of peak operating hours:

> *'Especially if you live in rural areas, because you don't have a service that takes you through the night. I'm not that old. If you want to stay out till 10 or 11 at night, you can't.'*
>
> Female participant, non-car owners group, Banbury

Some of the participants said they had difficulties using public transport, but when pushed, articulated that it was a combination of inconvenience, the lack of personal space, not being able to get onto trams in rush hour and the prohibitive costs of trains and buses that kept them either walking or not undertaking a trip. One woman told us:

> *'I would have to get on a bus to the train station, then get on the train, then from the station in Derby get another bus to campus. I hate public transport. I just won't do it.'*
>
> Female participant, banned drivers group, Nottingham

Travelling from one rural area to another, where friends might live, was also described as very difficult without a car:

> *'If you live in villages then it is almost a necessity because the bus comes here once every hour and a half and that's if it turns up and it's not precise on time, it turns up when it wants to then it's gone.'*
>
> Male participant, new drivers group, Banbury

People's expectations of public transport were quite low in all three of the Banbury groups:

> *'I don't expect it to be on time all the time, I don't expect to be able to get a seat because I've quite an experience of using the train, I used to use it seven days a week before I had my car so yes, I don't expect anything from it and so I don't find it disappointing.'*
>
> Female participant, new drivers group, Banbury

It seemed that the local Dial-a-Ride option was not really a viable alternative either, even if you were eligible:

> *'You can with a lot of difficulty get a vehicle to fetch you but it's an all day job, it probably goes round three or four villages, when you get there you might be finished in two hours, you've got to wait another four hours if somebody else is in and they're not done so it's really [not an option]'*
>
> Male participant, over 75s group, Banbury

4.3.4 Disbenefits of car use: findings from the literature

There is also a wide-ranging academic and policy literature base focusing on the disbenefits of car travel. This mostly takes a macro or wider societal perspective, concentrating on the negative externalities of the car on the national economy, the environment and public health and welfare. There is more limited case study evidence of the concerns of drivers and non-car drivers in relation to the negative impacts of car-based travel. From the literature however, it is possible to identify that the main concerns are as follows:

- Impact of congested road networks on the national economy
- Declining bus use reducing its viability and efficiency outside major cities
- Contributions to local air and noise pollution
- Contribution to CO_2 emissions
- Pedestrian and cyclist safety
- Car-based developments precluding non-car access
- Impact on heritage buildings and quality of the built environment

Some of these concerns are better covered by the literature than others and have more developed policy responses. It is clearly not appropriate to revisit this narrative in full, but the key tenets of the discourse are that rising car ownership, combined with other economic and socio-demographic changes in our society, have meant an increasing shift of both populations and our industrial and economic activities from the centre of cities to edge-of-town or out-of-town developments. In a chicken and egg fashion, this has encouraged a greater need to own and use a car in order to carry out essential daily activities and an increasing demand for car-base development.

Urban congestion

As car ownership and use has spread through the population, it has become increasingly economically and physically impossible to meet the spiralling demand for road infrastructure. This has meant that many urban and some interurban roads are now experiencing high levels of congestion. Some of the costs associated with congestion are borne by employers, for example the costs of inefficiency, missed

appointments, late arrivals, and overrun schedules. These costs are currently estimated by the Treasury to equal approximately £20 billion and are likely to continue to rise (Wellings and Lispson, 2008).

Declining public transport use outside of London

Car use also had a direct knock-on effect on the use of public transport, particularly buses. The popularity of car use has led to a fall in bus patronage, which as a result, has led to deterioration in the frequency and quality of services in rural and peripheral urban areas as well as increases in fares. For example, the website of Trent Barton Buses (2009) notes that although just about everything regarding bus services has improved dramatically in the last ten years, reliability is still poor and this is the most important thing for encouraging people out of their cars and onto buses. The company attributes the majority of its unreliability to worsening traffic congestion, but with no two days ever the same, robust bus scheduling remains problematic.

In recent times, Trent Barton Buses has had to extend journey times considerably to allow for increased traffic, often meaning they must use extra buses (for example the Derby - Sandacre - Nottingham rainbow 4 service used to take twelve buses but now uses fourteen to deliver exactly the same frequency). Trent Barton Buses estimates that each additional bus they employ costs close to £100,000 a year to run. Therefore, congestion impacts heavily upon public transport operating costs, with a knock-on effect for fares.

Child pedestrian accident rates and obesity

Meanwhile, measures to speed up the flow of the increased volumes of traffic have often caused deterioration in the conditions for other 'softer' modes, such as walking and cycling. Children and pensioners are shown to be at greatest risk from road traffic accidents. The pedestrian fatality rate for children in the UK is the highest in Europe and as with the fatality rate for people over 75 years of age, it is many times higher than the national average. Children in social class V are five times more likely to be involved in a road accident as pedestrians than those in social classes I and II. There are nearly 30 times more child pedestrian deaths in the UK than there are deaths of child car occupants (Sonkin et al, 2006).

Children from higher income families, who are increasingly being chauffeured by car to their daily activities, are experiencing negative physical and psychological health effects. Reduced physical activity is strongly linked with the rapid increases in childhood (and adult) obesity that have been witnessed in most Western societies in recent years. Reductions in freedom and independence of movement can also undermine children's mental development (see for example Fyhri and Hjorthol, 2008).

Accessibility and social exclusion

More than a quarter of households in the UK still do not have regular access to a car (comprising roughly one fifth of the total population). Non-car owning households are overwhelmingly concentrated in the lowest income quintile of the population, with less than half (47 per cent) owning cars, although car ownership among this quintile is increasing more rapidly year on year than for the other income quintiles (Department for Transport, 2006).

According to the Department for Transport's (DfT) National Travel Survey in 2006, a person in the highest income bracket will travel 11,588 miles per year whilst those in the lowest income bracket will travel less than half that distance; only 4,124 miles per year on average. As the CSS report notes, once the benefits of travel are identified, this mobility disparity represents a significant constraint on both the opportunities and quality of life of lower income households.

This was confirmed in a 2002/3 study by the Government's Social Exclusion Unit (now the Social Exclusion Task Force), which found that a lack of transport was a significant contributing factor in the exclusion of many low-income groups and communities. The study identified that the most significant factor determining someone's ability to participate in society and access its services was car availability within households, i.e. non-car drivers in low-income households found it more difficult to access key services than did their car owning counterparts across all areas of the UK.

In urban and suburban areas, the combination of road and junction design, traffic speeds, congestion and inappropriately parked vehicles can cause severance of communities and severely limit pedestrian activity. In rural areas, where there are often inadequate or non-existent footpaths, walking and cycling is virtually ruled out altogether in the interests of personal safety. This means that people without access to a car are incrementally disadvantaged in their ability to travel, as services have increasingly developed with the majority car user in mind. Furthermore, these tend to be the very people who are already most economically and socially disadvantaged within our society e.g. low-income groups, the elderly, young people (SEU, 2003).

CO_2 and greenhouse gas emissions

Over the majority of the past 50 years, travel distances by car have been steadily increasing across all income groups, as Chapter 3 of this report demonstrates. Despite considerable improvements in vehicle fuel efficiency, the increasing distances people are travelling and the growth in population mean that energy consumption and CO_2 emissions are still rising and are unlikely to fall without both dramatic innovations in vehicle technology and radical reductions in people's personalised travel demands. Based on the latest data from the Department of the Environment, Food and Rural

Affairs (Buchan, 2008), transport is responsible for about 28% of all greenhouse gas emissions produced in the UK and passenger cars are the main source of this, followed by heavy goods vehicles and light duty vehicles, including vans.

The Climate Change Act 2008 commits the UK Government to an 80% reduction in CO_2 emissions based on 1990 levels by 2050 and the Secretary of State has committed to setting carbon budgets for each sector for three periods of five years beginning with the period 2008-2012. The Department for Transport has not yet produced a detailed strategy for delivering its carbon budget, but this is likely to rely on future technological advancement and innovation over the longer term from 2014–2050 and on existing voluntary behavioural change measures. The Department recognises that it is unlikely to meet its reduction targets to 2012 (Department for Transport, 2008).

Local air pollution from road traffic

The links between air pollution from road traffic and health are increasingly recognised (WHO, 2005). Since the 1998 Transport White Paper, local authorities have been required to undertake an annual review and assessment of air quality in their area to assist them in carrying out their statutory duty to work towards meeting the national air quality objectives. If a local authority finds any places where the objectives are not likely to be achieved, it must declare the location an Air Quality Management Area. However, the UK has repeatedly failed to meet the air quality targets laid down by EU Law over the last ten years and in January 2009, the European Commissioner started legal proceedings in the EU Court of Law. Air pollution near many roads in British cities averages well over twice the World Health Organisation's maximum recommended level. In addition, the EU has recommended that if Britain is to reduce PM10 levels it will need to substantially reduce traffic congestion, which could mean unpopular congestion charging and low emission zones (Vidal, 2009).

4.3.5 Focus group perceptions of the disbenefits of car use

Although we did not specifically set out to examine the disbenefits of driving in the focus groups, this topic often emerged spontaneously, as identified in the following sections.

Cost of motoring and vehicle maintenance

The most pressing concern for a number of participants, particularly young drivers and those in the 'over 75s' group, was the high cost of running and maintaining a car. As one male participant commented:

> *'I was going to say one thing is that as we all know, when you run a car it's very, very expensive.'*
>
> Male participant, over 75s group, Banbury

All the participants in the 'over 75s' group commented upon how much driving costs e.g. insurance and tax, had risen. They felt that this was 'an awful lot of money' considering what they use the car for. They also commented that recently they had had to think twice before using their cars. A further observation made by this group was the increased cost of motor maintenance. One of the men in the group noted:

> *'Gone are the days when you could do your own maintenance, because the vehicles are so electronically advanced now, that you just can't do anything yourself. You've got to go to a garage.'*
>
> Male participant, over 75s group, Banbury

In a previous study for the Joseph Rowntree Foundation, Lucas et al (2001) identified that, on average, motoring costs account for 24% of the total household expenditure of UK car owning households in the lowest income quintile.

The stress of driving

The stress of driving was also an issue and there were at least one or two 'reluctant drivers' in each of the five groups. For example, one of the 'banned drivers' who was being driven to work by a colleague said that this meant he didn't have a stressful start to the morning. He realised he had more time to listen to music, watch TV or think about building his career. He also noticed that it was easier on the company car park, which had one less car to deal with. Another man in the 'new drivers' group told us:

> *'I don't enjoy driving as much [as my friends], I see it as a means of getting around and I don't enjoy doing it whilst I'm doing it.'*
>
> Male participant, new drivers group, Banbury

Three of the young women and one young man in this group agreed with him and said they would prefer not to drive if they didn't have to. One woman in the 'over 75s' group also admitted that she only drove to the local shops and was very unhappy driving long distances now. She said:

> *'To be honest, it's my age. I feel like I've become a little bit of a coward, of getting in it sometimes and taking it very long distances whereas I used to do much longer journeys. I'm a little bit frightened of driving too far.'*
>
> Female participant, over 75s group, Banbury

Another woman in the group sympathised with this feeling and told us:

> *'I'm almost afraid of stopping driving for fear that I won't want to start again.'*
>
> Female participant, over 75s group, Banbury

A female driver in the 'voluntary switchers' group told us how she was almost looking for an excuse to stop driving:

'It was touch and go if it passed its MOT. I thought if it fails I could save myself a fortune and I could walk to work and I wouldn't have to go to the gym and I was actually working out how I could cope without it and it wasn't going to be a major problem.'

Female participant, voluntary switchers group, Nottinghamshire

Lack of physical exercise and obesity

Most people were also very aware of the obesity debate and discussed concerns about the effect of their car-reliant lifestyles on both their own and their children's health and independence. One woman told us:

'I think when you get a car, when you have a car you do become idle, you know just going to the corner shop, oh I'll get in the car. Whereas, normally, if you haven't got the car you have to walk.'

Female participant, voluntary switchers group, Nottinghamshire

A number of people in the 'banned drivers' group noted their increased fitness since their ban and one woman said she had lost weight. One of the women in the same group has five children and said that losing her car had been 'a mixed blessing' where they were concerned. She told us that because whilst she could no longer drive the younger kids to places in the summer, she found very creative solutions for them indoors and allowed them to play in the local area. She that both her and her children found the change satisfying, because they drew on their own resources and felt more integrated into the local community.

Damage to the environment

The partner of one participant in the 'non-car owners' group was an environmental scientist. This had led her to have concerns about the health of the planet and she also felt that her family benefited from walking and biking. For her, solutions to not having a car arose when necessary and she saw the positives of not being a car owner:

'The longer it is that you haven't got a car, the more you adapt to your circumstances.'

Female participant, non-car owners group, Banbury

Feelings of burden and indebtedness

While highly valuing trips by car, the participants in the 'non-car owning' group talked about the need to be able to offer something of themselves back in the form of babysitting or cooking a nice meal to say thank you, or offering to take friends out for a sandwich and a coffee. The feeling of being beholden sometimes came through with a hint of resentment:

'I hate that terrible burden, you know that you, you tend to think that they're going oh Christ, B's going to want a lift again, but they're not, but you always get that feeling that that's what they're thinking.'

Male participant, non-car owners group, Banbury

4.4 Conclusions

Our analysis of the available attitude survey data suggests that people's attitudes to driving have remained fairly consistent over the last twenty years, with between 78 to 90 percent of people still saying that they would find it difficult to adjust their lifestyles to being without a car (Lex/RAC Report on Motoring surveys). There does appear to be a slight increase in the last three to four years in the numbers of drivers who would be prepared to use their cars less if public transport was better, but it is unclear whether this is as a result of perceptions of a worsening of public transport opportunities over time, a change in people's attitudes or a change in the survey method over this period.

Repeated surveys have demonstrated that currently, the majority of the population (even those who do not themselves own cars) tend to favour car travel over any other mode of transport and the benefits of car-based travel are reflected in some of the academic literature. Cars provide flexibility, convenience and freedom, and are associated with status and self esteem.

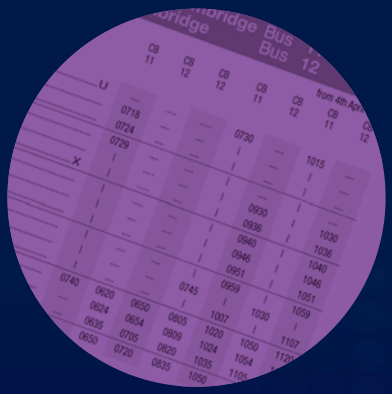
However, there is also a growing body of literature referring to the disbenefits of mass car ownership to society as a whole. This is most often expressed in terms of the negative impacts of current levels of road traffic on the economy from congestion, on climate change from CO_2 emissions and on social well-being and public health, due to the diminished accessibility of non-car owning households, accidents, local air quality and sedentary lifestyles.

Our focus groups have indicated that car owners value highly the freedom and independence having a car offers them, as well as the wider access to goods and services it can provide. Conversely, public transport is seen as being outside of their control and many of the 'non- car owners' we spoke to found themselves largely reliant on their car owning friends and families to get them to the places they needed to go. This made them feel a burden and isolated and was a particular problem for the older people, single parents and rural dwellers in the groups.

This is not to say that many people in the groups did not also recognise the disbenefits of car ownership and use, both for themselves and their families and also for wider society. Many people noted the considerable expense of maintaining and running a car and there were at least one or two 'reluctant drivers' in each of the five groups. Some people said having a car has made them lazy and they expressed the desire to walk or

use public transport more, but at the same time they felt that this was often impossible, either because there were no suitable alternatives available to them or because their lives were too busy to allow for such a switch. However, it should also be noted, that in almost all cases, the participants felt that the benefits of having a car available to them far outweighed any of the disbenefits, both to themselves and wider society.

5
Car use – a matter of choice or necessity?



Key messages

- The literature identifies numerous factors underlying people's choices of travel mode, which include practical and economic considerations as well as personal preferences, habits, social normalisation and prestige.
- The term car dependence is used in a multiplicity of ways in the academic literature to describe a broad spectrum of quite different kinds of car use behaviours and dependencies – which is confusing and unhelpful.
- Discussions with the public found that most people can discriminate between car trips made for convenience and those made out of necessity. Whilst most people are reliant on their cars for trips they deem 'practical', the vast majority of people do not display any addictive tendencies in this respect.
- Car reliance and dependence tend to grow over time. There is a 'ratchet' effect, in which households become locked into travelling increasingly by car, due both to personal factors and changes in public transport and land use. For these reasons, car- owners are relatively unresponsive to many policy measures designed to encourage modal shift, and to sudden increases in the price of fuel.
- From a careful analysis of existing car use patterns, it is possible to identify trips that could relatively easily be carried out via another mode. Modal shift however, is unlikely to contribute substantially to the desired level of CO_2 reduction now being discussed.

5.1 Introduction

The previous chapters have demonstrated that in the large majority of households the car now dominates people's daily travel patterns and is central to their lives. While it appears that the historical penetration of the car into daily travel patterns may have reached or be approaching some limit, and that future growth will be driven mainly by population increases, there are also likely to be downward pressures on car use, both economically, via higher oil prices and politically, as the Government strives to implement policies to reduce CO_2 emissions associated with road transport. In addition, with an ageing population it is likely that more people will have to give up driving for health reasons and will attempt to maintain their lifestyles without such ready access to a car.

Given this situation, the question arises as to whether households could easily adjust to a reduced level of car use: are current patterns of car use a matter of choice or constraint? This distinction is crucial to assessing the ease with which society and the economy could adjust to a less car-dominated way of life.

The chapter begins by looking at the factors that influence travel choices (section 5.2) and then considers the concept of car 'dependence', as highlighted in the 1995 RAC Foundation report of the same name (section 5.3). The dynamics of car dependence and how this has built up over time are discussed in section 5.4, followed by an assessment of the extent to which current car trips are matters of choice or constraint (section 5.5). Some conclusions are drawn in section 5.6. The chapter draws in particular on a literature review and findings from the focus groups.

5.2 Factors influencing car ownership and travel choices

Most behavioural theorists adopt an economic 'rational choice' model as the starting point for a discussion of consumer behaviour. This assumes that individuals make choices by calculating the outcome with the highest net utility for themselves, based on calculations of the various costs and benefits that will arise from the different available courses of action. In many ways, both car ownership and car use could be seen as simply another form of consumer behaviour. However, for at least some people, the car serves to be much more than simply a utility item, because it also feeds their social and psychological need, as human beings, to conform to social norms and expectations and plays a part in their sense of self-esteem and autonomy.

Jackson (2005) identifies two ways in which consumer goods, such as cars, are more than simply physical devices for helping to meet economic needs; serving many other social and psychological functions and becoming pervasive within daily behaviour. In particular he notes that:

i) Material goods are important to us not only for their functional uses, but for the huge symbolic role they play in our lives.
ii) Far from being able to exercise deliberative choices about what we consume, most people most of the time are 'locked in' to their existing consumption patterns.

This lock-in occurs through economic and institutional constraints, inequalities of access and restricted choice, as well as personal habits, routines and expectations and wider social norms and cultural values.

5.2.1 The motivations behind people's travel behaviours

There have been several important attempts in the academic literature to identify the motivations underpinning people's car use behaviours. For example, Bamberg and Schmidt (2003) applied three different models of general behaviour: Schwartz's Norm Activation Theory (1977), Ajzen's Theory of Planned Behaviour (1991) and Triandis's Theory of Interpersonal Behaviour (1977)), to assess which one best explained the car use behaviours of university students when travelling to their campus in Boston, USA.

These three models were selected because they consider controversial core issues raised within the psychology of the behaviours literature, namely:

> *'Are pro-environmental behaviors mainly normative, moral behaviors (due to the norm activation model) or mainly guided by the calculation of personal utility and costs (theory of planned behavior)? Is the enactment of everyday environmentally relevant behavior mainly under conscious control (theory of planned behavior), or is it activated in a more automatic, habitualized fashion (theory of interpersonal behavior)?'*
>
> (Bamberg and Schmidt, 2003: 266)

Their main finding is that Triandis's model proved to be the best predictor of car use, leading them to conclude that habit – the key feature of the model (or rather an habitual choice process that, although first rooted in initial considerations about pros and cons, then evolves into *routine-shaped automatic associations between stimulus situations and habitually chosen options*), proved more influential in determining the end behaviour of car use than even the intention to use a car (as contained in Ajzen's Theory of Planned Behaviour). In addition, the study found that 'role beliefs' (*what a type of individual like me should do*) were much more influential than 'subjective norms' (*what society says I should do*) in determining outcomes. The upshot of this analysis is that, for these university students at least, Schwartz's moral (including pro-environmental) principles did not have a significant impact.

Partly in contradiction of Bamberg and Schmidt's findings, in their meta-analyses of 23 unique datasets measuring car use behaviour and/or intentions, Gardner and Abraham (2008) found that in addition to habit, both intention and personal behaviour constraint has a large effect on individuals' decisions on whether or not to drive. Their analysis thus largely endorses Ajzen's Theory of Planned Behavior (TPB) (1991), which suggests that behaviour is determined by intentions, which in turn inform attitudes based on a person's perception of the consequences of, and control over, their own actions.

However, they also suggest that:

> *'The emphasis of the TPB on rational agency may fail to adequately capture effects of habit on repeated car use decisions: unlike deliberative cognitions, habits refer to cue-response behaviour initiated outside of awareness [and that, therefore] future TPB applications might benefit from supplementing car use cognitions with measures relating to non-car travel.'*
>
> (Gardner and Abraham, 2008: 8-9)

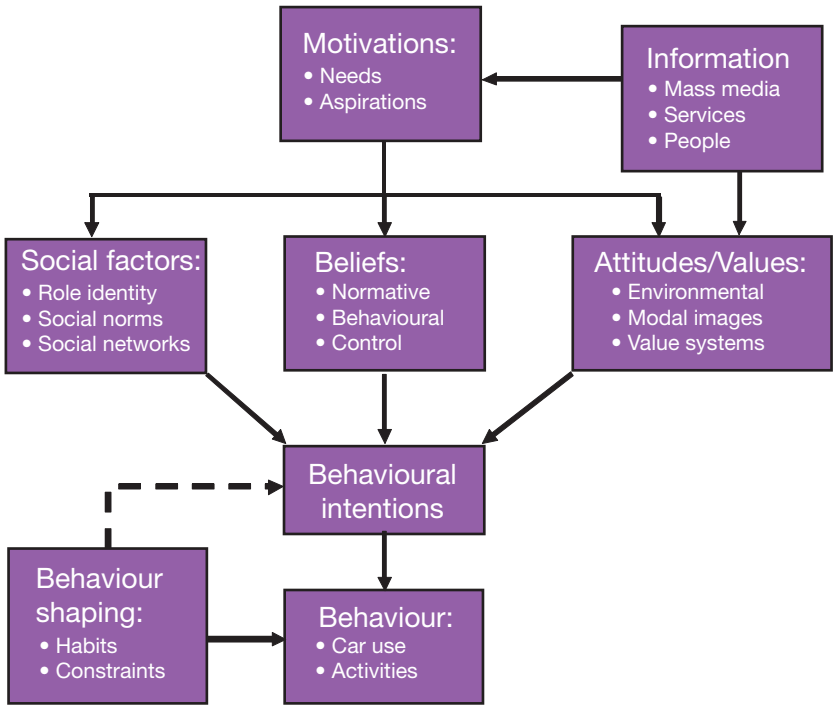
Gardner and Abraham go on to suggest that people's reluctance to adopt alternative transport modes may result more from the perceived unattractiveness of alternative

options than the direct appeal of the car. However, they also warn that car drivers may form negative attitudes towards these alternatives based on imperfect information and/or lack of personal experience of them.

Figure 5.1 presents a summary of the key factors that have been identified through the literature as potentially having an influence on individual travel behaviours and the ways in which these are related.

Motivations tend to underlie choice processes, and their influence on behavioural intentions is mediated through social factors, personal beliefs and attitudes/values – which in turn may be influenced by information and marketing. In common with most socio-psychological theories of human behaviour, such frameworks tend to underplay the physical barriers and constraints on any given behaviour, as these are seen as lying outside of the model; in Figure 5.1 they enter obliquely in the 'behaviour shaping' box. This is not to say that they are considered unimportant by such theorists but simply that they lie outside of the individual's and his/her peer group's sphere of influence and thus are external to this particular line of enquiry.

Figure 5.1: The personal or internal factors influencing car use behaviours



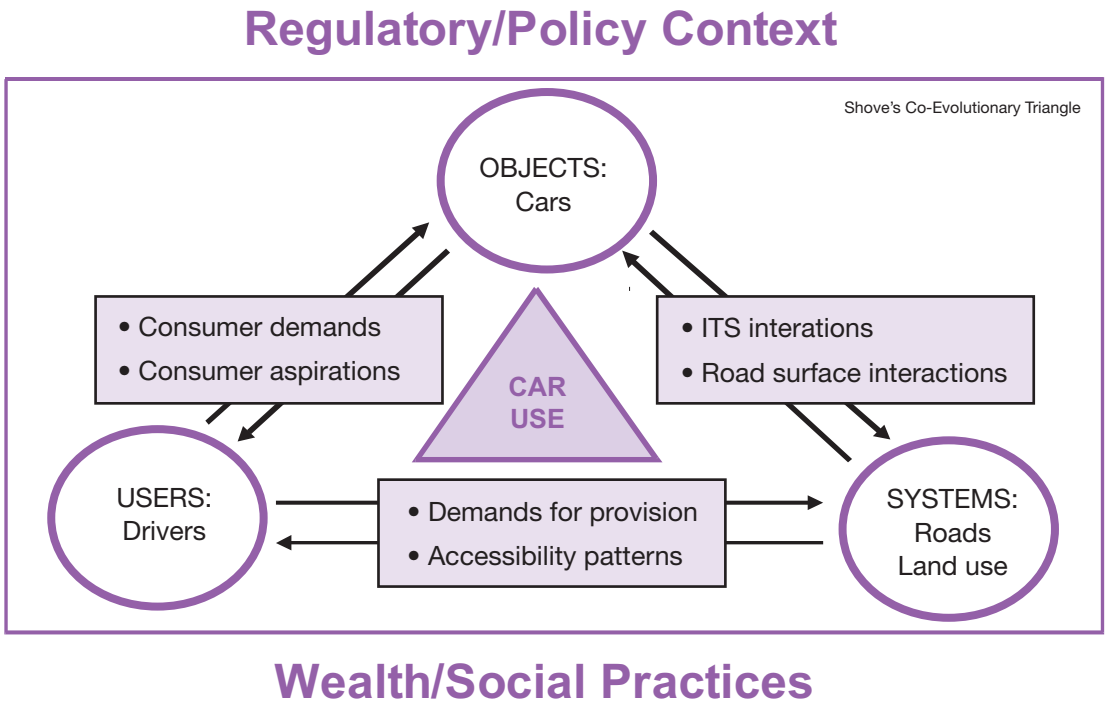
Source: Jones (2008) Working Paper 4: Conceptual Components

5.2.2 External influencing factors

There are a number of wider external factors which come into play in determining people's car purchasing and use behaviours, such as general market forces and conditions, the transport systems available to people, the overarching regulatory and policy framework, and wider wealth and social practice considerations. These interactions are typically two-way, and the evolution of patterns of car use is shaped by various changes and leads and lags in the state of these factors and their interactions over time.

Figure 5.2 attempts to capture some of the interactions among these wider external influencing factors. For example, car manufacturers not only meet consumer needs, but also contribute to shaping consumer aspirations; car users demand provision of facilities for various activities in purpose built structures, but the scale and location of these are shaped by car availability and transport provision; and there are links between car characteristics and road network provision, both in terms of physical contact and the supply of ITS systems. These relationships feed into the temporal dynamics of car dependence, which is considered further in section 5.4.

Figure 5.2: Some wider external factors influencing car use behaviours



Source: Jones (2008) Working Paper 4: Conceptual Components

Faber Maunsell (2008) examined some of these external influencing factors in a recent study for the DfT, examining public perceptions of, and responses, to motorway congestion. It found that the main initial reason respondents gave for continuing to use busy motorways was that there was normally no viable alternative for their journeys. On further discussion, however, it was established that this was not true and that public transport was available for many of these journeys, but that it was seen as less convenient and/or slower than the car.

Generally, sitting in congested traffic conditions was seen as being more comfortable than waiting for a train or bus and drivers felt more in control. More confident drivers reported that they enjoyed driving even in congested conditions, because there were often open stretches of motorway where they could pick up speed and enjoy the driving experience. Drivers also saw the benefits of time alone, safety and independence and enjoyed the lifestyle benefits of their cars. Nervous motorway drivers tended to be those with children and, although they said that they would prefer to use public transport, they didn't do so because of the lack of seating and storage and the cost of paying for more than one fare.

5.3 The nature of car 'dependence'

One of the key problems with the debates in the academic literature has been that the term 'car dependence' has often been used loosely to describe a broad spectrum of quite different kinds of car use behaviours and dependencies.

Table 5.1 illustrates some of the different terminology that has been used in the literature to characterise various degrees of dependence on car use.

In practice, writers refer more frequently to forms of 'reliance' than of 'dependence' and these can relate to different aspects of the trip or the traveller. Thus, references can be found in the literature to car reliant trips (those where no alternative form of transport is available), car reliant locations (which are not served by alternative forms of transport), car reliant activities (those which cannot reasonably be undertaken without a car, such as shopping trips or complex trip chaining activities), or car reliant people (e.g. who have mobility restrictions). Where the constraints are less binding, people refer to car 'convenient' trips.

Other writers use categories that identify car trips which are open to behavioural change, but which are currently constrained by intervening factors such as cost, poor alternative transport availability or other barriers; in some cases this can be associated with almost addictive driving behaviours.

This list is not exhaustive and the categories are not mutually exclusive, but what Table 5.1 serves to illustrate is that we need to be clear exactly, which of these

Table 5.1: An interpretation of the uses of terms associated with the concept of 'car dependence' in the international literature

A car reliant trip	Where there is no other form of motorised transport available and the journey distance is too long to walk or cycle.
A car reliant activity or journey purpose	Where it would be very difficult to make the journey another way because of carrying shopping or other heavy goods or undertaking a complex multi-destination trip.
A car reliant location	Where it is virtually impossible to access a given location by any other mode of transport, or where it is impossible to live in place without a car (e.g. a deeply rural village with no local facilities).
A car reliant lifestyle	Where it would be difficult to retain existing activity patterns and maintain a current way of life without a car.
A car reliant person	Someone who would not be able to get around without a car, because of his or her limited mobility.
A car convenient journey	Where the car is most convenient, as the alternatives are perceived as less attractive or unreasonable, due to additional cost or longer journey time, or escorting young children.
A car dependent person	Someone who uses their car as a statement of status or for reasons of self-esteem or identity.
A car addicted person	A car fanatic, who talks incessantly about cars and whose whole life revolves around the need to drive.
A car reliant society	High and increasing levels of car use are observed among the population as a whole and where people without cars are excluded from essential activities.

Source: Lucas and Le Vine (2008) Working Paper 1: Literature Review

behaviours we are dealing with, since what motivates one of these behaviours may be entirely different from what motivates another.

The 1995 RAC Foundation report on car dependence points out that, although many people depend on their cars for many regular journeys, this is far from the 'dependency culture' that is described in some of the theoretical and policies literature. It notes that:

> *'For many people, the word 'dependence' does not accurately describe their perception of how car use helps them to resolve these constraints. Rather, they see cars as providing independence, with concrete other advantages including the immediate convenience to make journeys without planning, real financial*

> *savings (and some illusionary ones), privacy from unpleasant people who might be using public transport, enjoyment of a feeling of control over choices affecting their daily lives and pleasure in performing active driving tasks.'*
>
> RAC Foundation, 1995: 9

In their report for Transport for London (TfL), Steer Davies Gleave (2005) describe car dependency as a lifestyle and find that once people have experienced the benefits of the car it becomes ever more integrated into their lives. They suggest that this is because the car works at many levels, both functional and aesthetic, which in combination lead to its being largely used out of habit with little thought for any alternatives that might be available. However, they also find that it is not the car itself that most people are dependent on, but rather what it delivers in the context of our time constrained, spatially dispersed and highly security conscious lifestyles.

In many ways Urry (2000) concurs with this assessment. He describes the car and what he terms automobility as a global icon of our times, through which people gain considerable social status from its sign-values of speed, home, safety, career success, freedom, masculinity, genetic breeding and sexual desire. He also finds that it is only by 'inhabiting the car' that we are able to carry out the multiple socialities of family life, community, leisure and work, which society now demands of us. This is because what Freund (2003) refers to as the 'structure of auto space' effectively forces people to carry out their lives over much greater distances and more fragmented times and spaces than previously.

Society's move towards hyper-mobility also serves to increasingly disable or exclude people who are not car drivers (Social Exclusion Unit, 2003) from fully participating in essential activities. Many business and enterprise parks, hospitals, shopping centres and colleges in our towns and cities are extremely difficult to access without a car. Urry (2000, page 4) goes as far as to describe this automobility as:

> *'… a Frankenstein-created monster, extending the individual into realms of freedom and flexibility whereby inhabiting the car can be positively viewed, but also constraining car 'users' to live their lives in spatially-stretched and time-compressed ways … Automobility coerces people to juggle fragments of time in order to assemble complex, fragile and contingent patterns of social life, patterns that constitute self-created narratives of the reflexive self.'*
>
> Urry (2000, page 4)

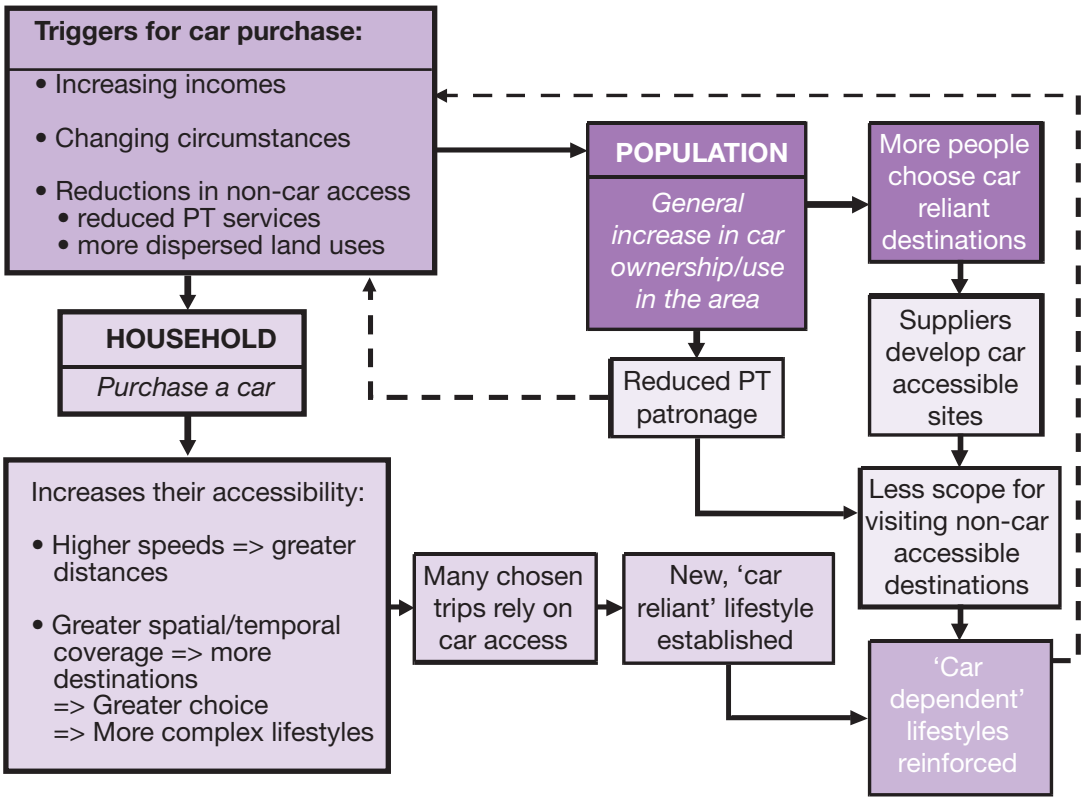
It is difficult to assess from the literature at what point people's car use transcends into car 'reliance', or when this reliance becomes 'dependence' or, indeed, may be considered to be a pathological dependency or addiction. Clearly, there is a spectrum of behaviours and a huge degree of subtlety is needed in determining whether an individual or household is genuinely car reliant or merely wedded to their car, because of habits, social norms and other non-physical factors.

5.4 The dynamics of car 'dependence'

In general, the literature recognises that car dependence is a process that, for many people, intensifies over time and across three levels. First, car acquisition often leads to voluntary and unanticipated changes in household lifestyles (and associated changes in travel behaviour) that are perceived to be richer and more flexible as they become more car based. Secondly, individuals then become habitualised in their use of the car for many of their trips (as identified in section 5.2), so that it is their automatic choice of mode – unless there are clear constraints to car use (e.g. high parking charges) – and their knowledge of modal alternatives declines. Thirdly, as a result of many households adopting car-based lifestyles, this in turn has macro economic and social effects by influencing aggregate patterns of land use and public transport provision, which can reduce opportunities to travel conveniently without a car, and so lead to a growing structural form of car dependence.

These processes are illustrated schematically in Figure 5.3. A variety of triggers encourage car purchase, such as rising incomes, social aspirations and changing family circumstances, as well as declining accessibility by non-car modes.

Figure 5.3: The dynamic development of car dependence within a society over a period of time



Source: Jones (2008) Working Paper 4: Conceptual Components

For an individual household, acquiring a car gives enhanced speed and spatial coverage, and so a much greater range of destination choices, both by time of day and over space; this can lead to new forms of activity/travel patterns that are strongly car-based, with little consideration of the availability of alternatives.

Over time, a car-reliant lifestyle is established, but in the short-term, often still with considerable scope for using non-car modes and destinations, if required or preferred. However, over time at an aggregate level, general increases in car ownership among the population in an area can result in reductions in public transport service levels, and the location of new developments at out-of-town sites that are often only accessible by car. When this happens, what were largely voluntarily chosen car-reliant activity/travel patterns gradually become car-dependent lifestyles.

There is a 'ratchet' effect, and households become inadvertently locked into travelling by car. They are thus relatively unresponsive to many policy measures designed to encourage modal shift, and to sudden increases in the price of fuel.

The car is not the only technological development that has come to fundamentally shape aspects of daily life for many people during the twentieth century. Another historical example would be refrigeration (Garnett and Jackson, 2007), which has had a major domestic influence on household food purchase and storage patterns, and a global influence on food distribution logistics.

One participant in the focus groups identified a recent technological development that has swiftly moved from being a luxury to being a necessity, with increasing social exclusion implications for those without access:

> *'It's the same as a mobile phone, everyone survived before, never had one before and now can't live without them.'*
>
> Male participant, new drivers group, Banbury

Findings from Chapter 3 suggest that this process of aggregate public transport and land use adjustments in response to the increasing penetration of car ownership and high levels of car use among the population, as a whole has now largely run its course. The next section considers where this has left us, in terms of degrees of car dependence, and hence potential responsiveness to policy measures designed to encourage reductions in travel by car.

5.5 Current degrees of car 'dependence'

The population collectively engages in a very wide range of activities and displays a diversity of lifestyles. One important group of activities that people regularly take part in are carried out at home, or in close proximity to home; some others can be accessed from home via tele-services, but the large majority usually require travel via some

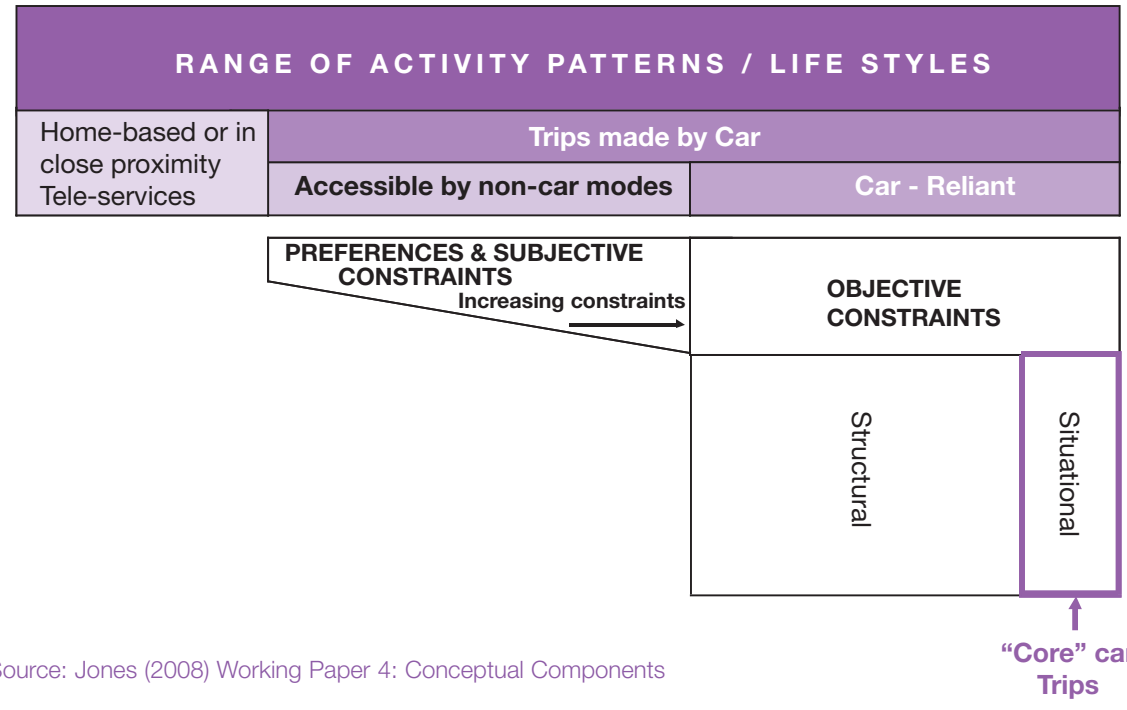
mechanised form of transport. For car- using households, except those in larger urban areas, most of these mechanised trips tend to be undertaken by car.

In several cases, these trips could be made by non-car modes, with varying degrees of difficulty. As noted in section 5.2, the reasons for car use are partly subjective in nature, for example, a lack of information about alternatives, or image concerns about using public transport. In many cases, however, there are currently no reasonable or practicable alternatives to car use that can sustain the kinds of activity patterns and lifestyles that people have built around their daily use of the car.

Figure 5.4 illustrates this spectrum of degrees of car dependence and the extent to which particular activities or trips are either car-preferred or car-reliant, in different situations. The size of each part of the diagram broadly reflects its relative importance, as explained in the remainder of this section.

There is a wide variation in extent to which people are or perceive themselves to be reliant on their cars, as well as how they feel about this. This is best conceptualised as a distribution of differences in both journeys and individuals. At the one end are the journeys where the car is the only available mode, or the individual is constrained from using another mode for reason of disability or load carrying requirements. Moving through the distribution we find situations where there is a lack of knowledge about the available alternatives, or there are strong disadvantages of time or cost in using these. At the opposite end of the distribution, are situations where people are fully aware of the alternatives and could easily use them, but actively reject doing so.

Figure 5.4: Different degrees of car dependence, across a range of activity patterns and lifestyles



Source: Jones (2008) Working Paper 4: Conceptual Components

Recent research by Socialdata and others has attempted to quantify the extent to which car use is a matter of preference or subjective constraint, or is due to objective constraints that make it impractical to use an alternative mode (other than a taxi) for a journey to that particular location, by that kind of person or group of travellers, for that type of activity, at that time of day.

Using data from the three DfT Sustainable Travel Demonstration Towns (Socialdata and Sustrans (2004)), Table 5.2 shows the proportions of car trips made within those towns[10] that have been identified as being either subjectively or objectively constrained, before any awareness raising interventions were carried out.

As can be seen, roughly half of these trips are judged to be subjectively constrained, ranging from 39% in Peterborough to 56% in Darlington. Early indications are that the voluntary behaviour change initiatives are succeeding in switching between 20% and 30% of these subjectively constrained car trips to alternative travel modes (DfT, 2007).

Table 5.2: Proportion of urban car trips that are subjectively constrained and objectively constrained

	Darlington	Peterborough	Worcester
Subjective car use: alternatives available	56%	39%	46%
Objective constraints: no modal alternatives	44%	61%	54%

Source: Socialdata and Sustrans (2004)

Note that the definition of what is a subjective or an objective constraint depends crucially on what is considered to be a 'reasonable' modal alternative. In this analysis, public transport is considered to offer an alternative if it would have taken up to twice as long as going by car, subject to a maximum increase of 15 minutes travel time. Walking and cycling are seen as possible alternatives if the trip distances are up to 2km and 6km, respectively.

Figure 5.4 further divides the objectively defined car trips into two categories:

(i) **Structurally** constrained: due to patterns of transport service provision and land use location that make it impractical for people to use an alternative mode without experiencing undue hardship; in the case of public transport, this may reflect a complete lack of competitive public transport services to that destination, or a lack of service at the chosen/required time of day. (Note that, in principle, many of these deficiencies could be removed or reduced).

(ii) **Situationally** constrained: reflecting the requirements of the traveller or trip itself, such as the need to carry large or heavy items, or to transport people with mobility

[10] This analysis only included residents' car trips that started and ended within their hometown: this excluded between one-quarter and one-third of all car trips, and a much higher proportion of car mileage.

restrictions. Here some form of door-to-door transport is likely to be required, and so these tend to represent 'core' car (or taxi) trips.

The Socialdata analysis also distinguishes between car trips in this way, as shown in Table 5.3.

Table 5.3: Proportion of objectively constrained car trips that have structural or situational constraints

	Darlington	Peterborough	Worcester
Structurally constrained	73%	78%	72%
Situationally constrained	27%	22%	28%

Source: Socialdata (2004)

Here it is apparent that situational constraints (relating directly to the traveller or the purpose of the car trip) only apply in around one quarter of these cases, indicating that – in principle – it would be possible to provide viable alternatives for the majority of car trips through changes in transport or land use policies.

5.6 Conclusions

The literature demonstrates that there have been numerous theoretical attempts to understand the underlying motivations for people's car ownership and car use behaviour. It is clear that the car relates to people's lives at many levels, both physical and psychological, but in many cases it is not the car itself that people are dependent on, but rather what it delivers for them in the context of time constrained, dispersed and highly security conscious lifestyles. In many cases, there are alternative forms of transport available, but they are generally perceived by the public as less convenient or reliable and can also often be more expensive. In general, people prefer to use cars for most of their trips, and this also applies to those people who do not themselves currently have access to one.

Discussion groups with members of the public have found that people are able to distinguish between occasions where they are using their cars out of choice or convenience, and where car use is a matter of necessity, in order to support a particular employment pattern or lifestyle. In some instances, they recognise that their car use behaviours are undermining aspects of their well being, for example in terms of encouraging themselves to carry out the sometimes burdensome task of escorting their children to out-of-school social activities or by way of enabling them to lead largely sedentary lifestyles.

Car dependence is a dynamic process, which builds up over time, both as a result of people becoming personally used to a car-based lifestyle, and as a result of the supply responses in terms of reductions in public transport provision and relocation of amenities to out-of-town sites, that have been made as a result of the large scale increases in car availability and use across the population.

Recent research into the nature of car dependence suggests that around half the car trips that are now made within medium sized urban areas could be substituted by other transport modes; although existing 'smarter travel' initiatives have only been able to tap around a quarter of this potential. But, so far, such initiatives have not extended to the car trips by urban residents to rural destinations or inter-urban car trips. These account for a relatively high proportion of annual car mileage. Around 10% to 15% of all intra-urban car trips are truly car dependent, in that a car is required because of the nature of the trip or the mobility restrictions faced by the individual. This leaves a large proportion of car trips, which in principle could switch to alternative modes, with little chance of doing so, even if new services were provided or land use reorganised.

Given the current lack of 'smarter travel' initiatives therefore, the introduction of more coercive measures to reduce people's car use would be extremely unpopular; particularly if significant improvements in both the availability and cost of public transport and the local provision of goods and services were not provided. The most vulnerable in this respect are likely to be older people and lone parents living in rural areas, and low-income workers who are reliant on a car commute to access their employment. These issues are explored more fully in the latter half of the next chapter.

6
The cost of adjustment to individuals and society in moving to a low carbon future

Key messages

- Current policy debates on the need to reduce car use in order to meet the recently announced CO_2 emission targets (Climate Change Act 2008) do not fully consider the impact that this might have on people's lifestyles and livelihoods, especially those who have limited travel alternatives.
- Empirical evidence relating to the economic and social consequences of significantly reducing people's car use is currently very limited.
- Limited experimental studies suggest that in the short term people absorb such costs, but in the medium term some groups may experience economic and social hardships.
- We also do not know what the knock-on effects of a reduced ability to travel might be on the wider economy and society and this is largely not considered by the literature.
- Some useful research has been undertaken in other disciplines about the broader costs of adjustment to economic shocks, which may have lessons that could usefully be applied to the transport field.
- Our focus groups demonstrated that many people have already adjusted their car use and the way they drive as a result of recent economic pressures and environmental concerns.
- Most people cannot envisage a future without their cars and most would go to considerable lengths to maintain their ownership and a reasonable degree of use. Many also said they would use public transport more if it was more readily available, convenient and cheaper, but this is rarely the approach people take in reality.

6.1 Introduction

This chapter first briefly considers the Government's position on private vehicle use, as outlined in its latest strategy guidance (DfT, 2008), and discusses what this might mean in terms of people's future travel in the UK (section 6.2). It then, in section 6.3, presents the views of policy makers and practitioners, as elicited through exploratory interviews with a range of professionals, in order to establish what is actually happening on the ground, in response to the recent national transport policy agenda.

Section 6.4 reviews the theoretical evidence from the wider social sciences literature to explore how much is already known about what the economic and social consequences of more coercive car use reduction measures might be, triggered either by substantially increased fuel costs, or politically-led pressures to reduce vehicle CO_2 emissions and restrain car travel.

Section 6.5 then considers this in light of our discussions with members of the public, who were asked to consider three future policy scenarios as part of the focus group exercises:

1. Where the cost of motoring is significantly more (at least double) as a result of continuing increases in petrol prices due to global barrel price increases;
2. Where additional cost is placed on the use of cars through either road user charging or place-based congestion or parking charges;
3. Where their car use is restricted due to petrol rationing or the introduction of a personal carbon allowance.

We were particularly interested to find out how the participants thought their lifestyles and livelihoods might be affected and what they saw as the key benefits and disbenefits for themselves, their families and dependents and wider society of a transition to a less car reliant lifestyle.

The chapter concludes (Section 6.6) by considering the implications for future policy arising from these explorations.

6.2 Delivering a Sustainable Transport System

The latest strategy document to emerge from the DfT, *Delivering a Sustainable Transport System* (DaSTS) (DfT, 2008) outlines five key goals for transport, focusing primarily on economic growth and reduced greenhouse gas emissions, but also considering better safety, security and health, greater equality of opportunity and improved quality of life. It acknowledges the Government's commitment to an overall reduction in greenhouse gas emissions of 80% by 2050 compared to 1990 levels, and recognises this presents a significant challenge for the transport sector. Transport is identified as responsible for approximately half of the UK's CO_2 emissions, or about 40% of greenhouse gas emissions. For domestic transport, approximately 96% of these emissions come from road transport, with passenger cars accounting for over 50% of this.

Although the DfT's policies and proposals to reduce its carbon budget are still in development, it is clear that increased vehicle efficiency is high on the agenda, but so is encouraging behaviour change, through land use planning measures, public transport investment, and demand management in the form of congestion charging and smarter travel choices. Traffic is expected to continue to grow over the next twenty years but the DfT's own recent modelling (as well as our analysis for this study) suggests that there is considerable doubt about the rate of that growth.

It is interesting to note that in planning its national framework for transport over the next 10 years, the Government appears to suggest that transport investment is largely

either already committed or out of its hands. It states that the Government now owns very little transport infrastructure and that most transport spending is by households or regional and local authorities and the private sector. Its stated spending priority to 2014 is on making better use of the existing network, combined with a targeted programme of improved capacity, reliability and safety. Funding beyond 2014 will not be announced until next year, but it looks unlikely that there will be any surprises.

DaSTS appears to suggest that it is largely in the hands of individuals and the private sector to make the key decisions in a future world of growing uncertainty surrounding the shape of the transport system. However, this statement appears to overlook that the majority of the English Trunk Road Network remains in the hands of the Highways Agency, whilst Network Rail is a public body and Local Transport Authorities also receive the majority of their capital funding from Government, even if it doesn't directly control these assets.

6.3 Local policy makers' perspectives

Against this policy backdrop, it seemed pertinent to assess what directions local authorities themselves were taking in relation to levels of car travel in their areas. We spoke to policy officers from two Government Offices and four local authorities (one County, one Passenger Transport Executive (PTE) and two Metropolitan cities), and also a national bus operator and a property developer to gauge their perspectives on this. The following sections present their current thinking in this respect.

6.3.1 Recognising the complexity of people's transport decisions

Local authority officers and the bus operator both commented on the complexity of people's underlying motivations for their current car use patterns, and the need to concentrate car restraint measures where there are already viable alternatives to the car, such as around town centres and along high frequency public transport corridors. They suggested that there has been a fundamental shift in transport policy in recent years, from trying to move people as much as possible out of cars and onto public transport, to trying to make the most of the assets that are already available and adopting more of a balanced approach towards all modes.

One officer told us:

> *'We have to be much cleverer at understanding what journeys can be made by other means and indeed that some journeys are better made by car …Local transport policy is not necessarily about getting people out of cars. Other options are not always viable.'*
>
> Director, local transport authority

The general view in our interviews was that there is still some way to go before the 'low hanging fruit' is plucked, as identified by the following quotes:

'We have seen local benefits- reduced car dependence in certain areas. We now need to become more ambitious for the future … If people can get there by car, we're still trying to create the public transport option. Breaking down various barriers – not just 'is there a bus', but safety, attitudes, etc.".

Transport planner, local transport authority

Overall, current policy appears to focus on car use management, but with a much more segmented and sophisticated approach towards tackling different aspects of this:

'In the optimistic days of the White Paper, we almost felt we could have a blanket approach and we've learned that we can't. We can't tackle the problem without breaking it down - carbon emissions, etc. At the moment they're probably the stronger argument. Remove that and we still have to deal with the sheer volume [of traffic], there will still be a need to tackle the total demand for movement. There are always going to be reasons to try to manage the movement by car – free flowing, ambience, visual, safety, quality of life areas where people can walk around without being intimidated.'

Director, local transport authority

6.3.2 Managing congestion

Discussions with a representative from one of the larger bus operating companies identified that congestion often undermines improvements in bus operations:

'[We] have to manage congestion to allow public transport to take a big step forward'.

Representative from a national bus operating company

A local authority representative suggested that local pricing is an important means of tackling congestion, but that it is likely to require strong leadership by central Government, which is currently absent:

'Ultimately, some form of pricing might be needed to manage congestion, but it would not be immediately accepted in smaller cities and towns. Pricing is seen as a tax: not part of an overall package of charges, but an infringement. Government is abdicating – there are some things a local authority can't do without a fully supported national framework.'

Director, local transport authority

6.3.3 Concerns about social exclusion and accessibility

There was also a general understanding that car dependence is often situational and that it can cause or compound social exclusion. Local authority officers expressed particular concerns, that currently, public transport networks do not supply access to the full range of work opportunities that the car network does, so the focus is on remedying this, through travel planning schemes, as well as targeted service improvements. It was also noted that in some cases, the changed nature of urban employment means that large, peripheral manufacturing jobs have diminished, which tends to increase car dependence, as it was more possible to provide public transport to these locations than to the current more dispersed sites.

It was felt that Accessibility Planning has made a difference through:

> *'Working closely with the Environment Agency, Housing and Highways Agency… The Accessibility Planning agenda has helped a lot. Transport is not always the solution now.'*
>
> Transport lead, Government Office

It has also helped with partnership working in some instances:

> *'It has made a difference, bringing together different services to work on exclusion.'*
>
> Transport lead officer, Government Office

Nonetheless, the feeling was that the efficiencies gained from consolidating health and (post-primary) education on larger sites is likely to outweigh transport considerations:

> *'The health sector will reorganise to concentrate care and you can see the business case for that. To some extent, transport is just expected. Everybody expects transport to sort itself out … All the drivers in education and health are against putting services in local areas. They do consult us, but it's more 'if we close these four to make one, where is the best place to put it?'*
>
> Director, local transport authority

Although in some areas housing is being planned to fit with accessibility objectives, there was generally little indication that land use planning is currently recognising the need to facilitate a sharp reduction in people's car use. For the long run, the signs are more encouraging, as Regional Spatial Strategies are focusing new land use development on high-density corridors, which can more easily be served by public transport. However, these Strategies are often not being linked with commensurate plans for new Government investment in public transport infrastructure in these areas, which suggests their impact on car use reduction will be limited.

6.3.4 Integrating transport with wider local policy objectives

One hope for the future was seen to be better integration of car use reduction policies into other areas of local policy delivery that are often given higher priority by politicians. Car use reduction can often be fitted into that context, as one officer commented:

> *'Members are often more interested in other issues, e.g. social services. Getting recognition among politicians of the fundamental role of transport in making society hang together. Social services can't be effective if people can't access the services.'*
>
> Transport planner, local authority

The practitioners described the decision-making and delivery structures for local transport as highly complex, made more so by the need for more integrated transport and land use planning and the involvement of other key stakeholders in the economic and social spheres. Within transport policy itself, decision making is also fragmented; Passenger Transport Authorities, Metropolitan Districts, Counties, rural Districts and Unitary authorities all have different and often conflicting views of the best way forward, as well as differing powers and capacities to deliver.

6.3.5 A changing policy agenda?

It was clear from the interviews that that there has been a change of emphasis in local transport policy since the RAC Foundation's 1995 Car Dependence report. In practice, local authorities have adopted a range of different demand and supply-side policy measures, with their Local Transport Plans aimed at encouraging people out of their cars and these have been implemented to a greater or lesser degree over the last ten to fifteen years.

Our interviews suggest that local authorities are moving away from blanket policies to target modal shift towards a more balanced policy approach across all modes. This is partly in reflection of transport's place as part of Regional Spatial Strategies and Regional Economic Strategies: the objectives are wider and the partnerships more complex, but all interviewees saw benefits from this structure, as it integrates land use with transport (among other things). The significant shift in the policy agenda on the Local Transport Authorities and Government Office horizons is the Sub National Review (HMT et al, 2007), which is expected to change the structures behind regional and local policy. Again, this was largely seen as positive by our interviewees, since it will further integrate transport decisions and delivery with land use, economic and social policy.

As identified above, a further significant shift in the policy agenda is the Climate Change Act 2008, which commits the Government to reduce CO_2 emissions by 80% by 2050, based on 1990 levels. At this stage, it is unclear how local authorities anticipate

they will be able to deliver the necessary steps to achieve this carbon reduction in the context of their current strategies and programmes. At present they seem to be looking to central Government for a steer on how, where and when it is appropriate to enact such a strategy locally. However, the Department for Transport also appears to have reached something of an impasse at present. Despite a clear indication that it is aware that the transport sector needs to make a significant contribution to reducing greenhouse gas emissions, there is as yet very little evidence of how this will be achieved (DfT, 2008). From the limited available documentation, it would appear that four broad policy directions are envisaged:

1. Improved vehicle and traffic management technology
2. Travel planning and other softer measures
3. Road-based user charging, road tolling and congestion charging in inner urban areas
4. Personalised carbon allowances and carbon trading schemes

It is unclear what level of contribution the Department feels each of these broad strategies will deliver, but it is evident that three of the four are aimed at encouraging reductions in overall car use through behaviour change. With behaviour change firmly on the agenda, and road pricing still in the policy toolbox, it is essential that we fully understand the impacts of changing policies on car-reliant people and places.

In the next sections, we qualitatively examine the likely impacts of the cost of adjustment, for individuals and society at large, in adopting a more coercive approach to car use reduction, with a view to informing future policy.

6.4 Costs of adjustment to significantly reduced car use

Notwithstanding nuances in the trajectory of transport policy over the past decade, it is clear that the Government's commitment to achieve an 80% reduction in CO_2 emissions by 2050 (based on 1990 levels) will lead to considerable pressure for substantial changes in existing patterns of car use. Such changes are likely to involve a combination of new vehicle technologies and reductions in car use. Changes in technology and behaviour on the scale necessary to achieve the Government's CO_2 targets would be unprecedented and may involve elements that are more coercive in nature than existing or past policy.

Considering such changes, raises important issues regarding how such adjustments might be made and, in particular, what the costs to individuals and businesses will be from making such adjustments. At present, the understanding and measurement of these processes and their associated costs in a transport context is rather limited. The aim of this section is therefore briefly to review existing knowledge and evidence from transport and related domains regarding such adjustment processes.

6.4.1 Conceptual issues

Behavioural scientists typically identify several different types of costs associated with behavioural adjustment processes. In the context of travel and activity participation, these costs would include:

1. The cost to the individual of seeking information, considering alternatives, and other "search" and cognitive costs incurred in the process of assimilating the stimulus and developing and evaluating a response.
2. The cost to the individual of accepting a revised activity-travel pattern. These costs will in general include economic, psychological, social and emotional components.
3. The costs of adapting the public and private infrastructure stock to adjust to new activity-travel patterns.

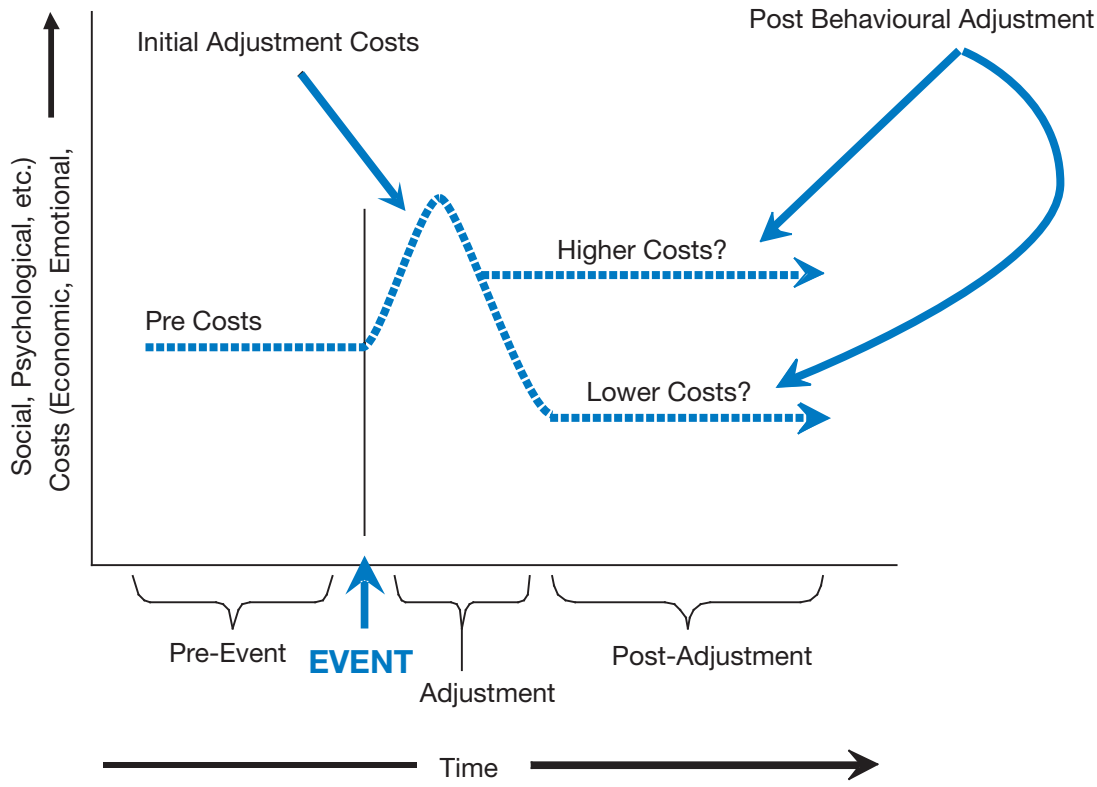
Existing evidence from studies of travel behaviour (and behaviour in other domains) suggests that individuals seek to adapt to changed conditions in a way that will allow them to preserve the status quo as far as possible and to minimise their costs of adjustment.

Classically, adaptation was seen as a sequential process, with the initial stimulus leading to a period of re-structuring and evaluation and ultimately, potentially, to an adjustment in behaviour. The contemporary view however, sees adjustment instead as an iterative process, emphasising the importance of how individuals gradually learn through experience about new conditions and apply their creativity to develop potentially novel responses.

Based on the existing literature, Figure 6.1 depicts a simplified archetypal view of how the costs a person or household bears might be affected by a disruptive event, leading to an involuntary reduction in car usage.

As the diagram illustrates, costs rise steeply immediately following the event, as the person considers coping strategies and an initial adjustment in behaviour is undertaken. At this point in time, behaviour is in a state of flux. In this initial adjustment stage, the person incurs more costs than previously as they seek to accommodate the post-disruption reality. These costs may be both tangible and intangible, such as time and energy spent in the adjustment process that one otherwise might spend at leisure, meeting social obligations, or in paid work. During this period of flux, costs have unambiguously risen above pre-event levels. Following the period of initial adjustment, the person or household tends towards a new equilibrium, which may involve either higher or lower ongoing costs than in the pre-event situation.

Figure 6.1: The effects of cost of adjustment on an individual's behaviours over time



Source: Lucas and Le Vine (2008) Working Paper 1: literature Review

6.4.2 Evidence from the transport domain

An experimental study by Doherty et al., conducted in 2002, elicited coping mechanisms and strategies, in as realistic a manner as possible, from a small sample of people, in response to either a step-increase in fuel price or the unforeseen loss of a household vehicle. The authors noted that at the outset of the change, some households simply accepted and absorbed the added costs or burden and continued their lives as usual. This depended on the household's ability to reschedule its activities.

They found that in the mid-term, certain economic and social hardships, or lack of independence may accrue, but that if this could be withstood, more significant changes in people's activity patterns, vehicle ownership and lifestyles may take place over the longer term, and households may also choose to conduct more activities in the home via teleworking or teleshopping.

Gärling et al. (2002) also speculated on a similar set of likely impacts of reduced car use, in terms of potential coping strategies and second-order effects, as demonstrated in Table 6.1.

Table 6.1: Potential negative effects of car use reduction

Short-term effects	Intermediate effects	Long-term effects
Compressing activities in time	Changing residence, workplace or work hours	Reduced subjective and objective well-being
Switching to slower travel modes	Teleworking	Worse family functioning
Increased trip chaining	Change of leisure activities	Psychological and physiological stress
Increased combination of activities and coordination of trips		

Source: Gärling et al. (2002: 99)

We note that while this listing of effects is plausible, there are two major complications. First, effects are likely to be specific to the chosen car restraint policy, whether quota-based, financial disincentives/incentives, personalised travel planning, or otherwise. Further, the timescales of impacts are likely to depend on the degree of advance knowledge of the policy in general and its perceived permanence.

A limited body of literature also exists on people's behavioural responses to congestion, which has the advantage of being revealed-behaviour. For instance, Mokhtarian et al. (1997) report (within the context of city workers in San Diego, California) three key findings:

1. Individuals perceive the set of alternative coping strategies, as consisting of strategies ordered on the basis of costs. Thus, individuals are likely to adopt low-cost strategies before they adopt higher-cost strategies.
2. Individuals who face increasing congestion view the choice of alternative coping strategies in a manner, which is, among other things, dependent upon their socio-economic and demographic characteristics.
3. Policy measures designed to reduce travel may have a smaller impact than expected, as individuals try first to maintain current levels of travel while reducing the personal impacts of congestion.

Looking more broadly at the literature on life shocks, as might be expected, the structure of ongoing post-adaptation costs appears to be a function of the type of life-disrupting event. Clark et al. (2008) presents empirical evidence that people are able to adapt more or less fully to certain life-disrupting events (e.g. divorce, widowhood, childbirth), but not to others (unemployment in particular.)

At first glance, we may expect that the ongoing adjustment costs following a car use reduction scenario will be necessarily higher than those pre-event. Travel, being in general a derived demand, is for the most part undertaken to serve the positive valuation that people place on the destination activities. Disruption to people's personal activity choices – and how/whether they are accessed – would be expected to exact costs on the individual.

However, the concept of a travel burden has been put forward, as a situation in which a car use reduction scenario might actually result in lower ongoing costs, by considering travel to be an encumbrance. Another conceivable cost-saving mechanism would be savings on maintenance of road infrastructure and the automobile stock. These seem unlikely to be larger in magnitude than the cost-increasing effects; however, without prior knowledge it is an open research question whether ongoing costs might rise or fall overall relative to before car restraint policies were enacted.

6.5 Public perceptions of the cost of adjustment

In our focus groups with the public, we asked people how they would respond to more coercive measures to encourage car use reduction. The groups were asked to consider their travel, activity and wider lifestyle responses to the three potential future scenarios, laid out in Section 6.1, in relation to their own car use. The following three sections of this chapter present their responses to each of these scenarios.

6.5.1 Reactions to increased fuel costs

It was clear that recent rises in fuel costs during the first half of 2008 had already made many participants think more carefully about how to use their cars, doing more with each journey and planning ahead, as demonstrated by this quote:

> *'To some extent we have cut down. We've got to a point where we think before we get into the car. We do more with a single journey.'*
>
> Female participant, voluntary switchers group, Nottinghamshire

Another participant told us:

> *'I did actually have a bigger car, a Land Rover; it cost me a lot of money, tax going up for four-wheel drives. I really liked it but got a smaller car, tax and petrol are less. I almost gave it away. Nobody wanted to buy it.'*
>
> Female participant, voluntary switchers group, Nottinghamshire

One participant in the 'over 75s' group had got rid of his second car and now also car-shared with his neighbour:

> *'Well we've gone down from two cars to one car. My wife and I used to have a car each but she only used to use her car once a week to go to the hairdressers, so we done away with the second car and we palled up with another couple and we take it in turns, so that has saved on petrol because we're both going to the same place at the same time and coming away at the same time.'*
>
> Male participant, over 75s group, Banbury

The participants recognised that, in a future where petrol was scarce or travel distances restricted in some way, patterns of work would change and jobs might be taken on the basis of how close to home they were. For instance, a long-distance lorry driver in one group said that he would consider sleeping in his lorry over-night for five days a week and only go home at weekends. Over the long term, he said he would consider re-locating his employment closer to home, but this would mean taking a lower paid job. He noted that there was no chance that he would consider relocating his family closer to his job, because their quality of life would suffer due to the loss of close family and social networks locally.

On the other hand, some people just couldn't conceive being without their cars on a long-term basis, no matter what the increased cost. For example in the 'banned drivers' group (in which participants were probably more aware of the consequences of not having a car due to their current position), two respondents said they would take another job rather than risk losing the use of their car altogether:

> *'I'd do everything I could to keep the car. I'd probably get another job. It wouldn't bother me really, the freedom you get from your car compared to the time you spend working to provide for it just doesn't compare.'*
>
> Female participant, banned drivers group, Nottingham

Where people said they would consider giving up the car altogether because of increased costs, they suggested that this would mostly mean nothing more radical than rethinking some trips and planning ahead more. For example one woman told us:

> *'I'd probably get up earlier and go down before work or go after work or do more on Saturday.'*
>
> Female participant, voluntary switchers group, Nottinghamshire

It was mostly the people in the 'voluntary switchers' group who responded in this way, which suggests that they were not particularly car reliant in the first place and could easily adapt to a no-car situation.

6.5.2 Responses to direct charges on car use

Participants were asked their opinion on the introduction of national road user charging or area charging schemes. Two participants in the 'voluntary switchers' group (one male, one female) didn't like the idea of restrictions or congestion charges at all, out of principle:

> *'I wouldn't pay them. I just don't like the idea of paying these charges, congestion, toll, that would force me off the road, but it's not likely to stop me using the car. It would stop me driving into those areas.'*
>
> Male participant, voluntary switchers group, Nottinghamshire

> *'Yes that's right yes, I don't like being made to pay more for the same journey no matter how much I like the car, it's just the principle behind it'.*
>
> Female participant, voluntary switchers group, Nottinghamshire

This was by no means the general sentiment of the participants, however, and a number of people were in support of place-based charging schemes, such as the London Congestion Charge, particularly in the centre of major cities:

> *'I think that actually it's probably quite a good idea in major town centres, I don't think it should just be rolled out everywhere as an extra tax, but London I used to do, I used to run a cab and courier company in London and the centre of London was absolutely near gridlock virtually all the time every day. So I think that in that respect probably Manchester and Birmingham could probably afford to do the same for the same reasons but not just everywhere'.*
>
> Male participant, non-car owners group, Banbury

There was general agreement across the groups that public transport would need to be excellent if charges were to be introduced, so that any restrictions on car use were balanced by a substantial increase in the supply of public transport. London was put forward as an excellent example of where public transport is of high quality inside the congestion zone and thus people are not inconvenienced by not being able to drive their cars into central London.

6.5.3 Travel rationing

In the travel rationing scenario, most people agreed that their social needs would compete with domestic and family needs and that that there would be a real struggle deciding what aspects of their current car travel to give up:

> *'There would be a fine line between what I wanted to do and what I should do.'*
>
> Female participant, non-car owners group, Banbury

When pushed they said they would sacrifice clothes, hairdos and charity donations to keep the car and maintain their lifestyles.

A number of people recognised that they could potentially switch some of their shopping activities to online, car share or walk. However, it was a scenario that was generally conceptualised by people as being well into the future, by which time it was often felt that other solutions would materialise, as one participant observed:

> *'I think by that time the technology might increase and the cars will be driving under solar power.'*
>
> Male participant, banned drivers group, Nottingham

6.5.4 Wider impacts on family, friends, and society

Many people said that greater restrictions on driving would mean having to choose which kids did what on what night or alternating the activities for fairness. One woman told us:

> *'It would mean my children wouldn't get as many different places as what they do now, they wouldn't be able to do as many clubs and social things. Shopping would be difficult because I'd have to try and get to work, get out to the shop, get back, pick the children up, pick them up and take them, it would be very difficult time-wise for me.'*
>
> Female participant, voluntary switchers group, Nottinghamshire

One participant in this group said that she would not be able to visit her elderly mother so often and there was a general sentiment that informal care networks for the elderly would be quite seriously eroded in this respect. For one or two of the 'new drivers' not being able to drive would throw them back into a situation of dependence on their parents:

> *'I'd probably become more dependent on my dad again because he has a company car so he gets the petrol paid for, so I'd probably spend more time with my dad.'*
>
> Female participant, new drivers, Banbury

On the other hand, it was suggested by some that the effects of less car use on the community as a whole, could be quite positive in terms of reducing pollution, giving people more personal time for reflection, such as reading a book or 'seeing' places that are local but ignored and encouraging greater on street activity and community spirit. One woman noted that:

> *'I think it would be amazing, people would actually speak to each other and you would see people'*
>
> Female participant, voluntary switchers group, Nottinghamshire

On the downside, it was suggested that there might be more reported sickness off work, if petrol was rationed or scarce:

> *'It's like a few years ago when we had that petrol strike, it had a knock-on effect where I worked, people weren't coming in because they said well I'm not going on public transport, I'm not spending hours to get to work (a) I can't afford it and (b) I haven't got the time, so the sickness rate really went up through the roof.'*
>
> Female participant, voluntary switchers group, Nottinghamshire

But on the other hand, it was noted that more people would probably work from home.

One participant noted that greater restrictions on the car would be likely to impact on rural settlements the most:

> *'I think that the younger people that have got employment would have to look for housing nearer there, so it would change the whole structure of rural life again. Because there'd be an awful lot of the young people that are still employed actually leaving the villages to go to towns or cities and, once again, you come back to the situation where the small rural villages are more elderly people than there is [young people] so that the actual balance of the village goes out as well.'*
>
> Male participant, over 75s group, Banbury

6.6 Conclusions

This chapter has reviewed some of the recent developments in UK transport policy, in particular what the UK Government's recent commitment to an 80% reduction in greenhouse gases by 2050 (based on 1990 levels) might imply for people's private vehicle use in the UK. It has identified the responses of local policy makers in relation to these new challenges and also explored the perception and potential adaptations of individuals and households to a range of potential car use reduction measures, as these were explored through a series of focus group exercises for this study.

The key concept linking these various elements of the chapter is the concept of the cost of adjustment. As policy interventions become more coercive, so it is likely that these costs will rise. The existing behavioural literature provides some insights into the nature of adjustment processes and the nature of the costs entailed. However, there is very little empirical evidence that quantifies the magnitude of these costs or how they relate to specific policy measures. Thus, we conclude that developing a sounder empirical understanding of these issues presents a significant new research challenge.

The focus groups provided some useful insights into the degree of car dependence that might currently exist within the UK in 2008, which influences the scope for low cost adjustments. These insights broadly supported the findings of our literature review, that car dependence is a complex and varied phenomenon, which is experienced differently by different people in different circumstances. Such exercises can clearly offer only a snapshot of the situation and are in no way intended as a true representation of the wider picture. Nonetheless, it was clear from the discussions that a number of people in each of the groups were willing to give up their cars given the right inducements, such as better or cheaper public transport, whilst others were more embedded in patterns of car use.

However, our interviews with local policy makers suggest that many authorities already implement many of the policy instruments they are legally sanctioned to adopt. Although these have been successful in producing minor levels of modal shift and/or reduced car use, they fall far short of the levels in reduction that might be needed to meet the Government's new emissions targets. They also feel that it is unlikely that local congestion charging would be an acceptable option for them politically. There was strong support among the professional interviewees for a project, which would seriously consider the range and nature of the costs of adjustment that might result from more coercive measures for car use reduction.

7
Conclusions and recommendations

7 Conclusions and recommendations

The exploratory analysis presented in this report has revisited the issue of car dependence within the contemporary policy context and has identified a wide-ranging debate on its nature and extent. This partly reflects substantive differences in viewpoints, but it is often more the result of confusing and conflicting use of terminology, describing numerous and very different aspects of people's patterns of car ownership and use under the banner of 'car dependence'. From this we conclude that it is not a particularly useful or accurate descriptor to encapsulate the current role of cars within UK society.

The report identifies that car use in the UK has continued to spread across the population since the RAC Foundation's 1995 *Car Dependence* study. This is particularly the case for groups that have traditionally not had access to a car, such as lower income households, older people and women. Car owners are also continuing to drive later in life, especially men, as people are living longer than ever before and are keen to retain their active lifestyles. Even non-car owning households make an average of two car trips a week and a quarter of all their shopping trips are by car. The relationship between household income and car ownership is weakening, as lower income households are acquiring cars. This suggests that for most of UK society, car use is now the norm.

It is also the case that the type of area where people live and their level of access to public transport is becoming a stronger predictor of people's car use than the traditional predictor, household income. This suggests that the role of place and the different opportunities that it offers in providing viable alternatives to the car will be an important consideration in any future policy measures for car use restraint. The differential impact of policies for different people in different places is a highly under-researched area and also has been largely overlooked by policy makers.

Despite the growing penetration of car ownership and use across the population, in recent years car use per person has levelled off and some aspects of personal car travel have declined slightly. Depending on the measure used, growth in average car use per person ceased at some point between 1995 and 2002. The halt in the increase in average car use per person is consistent with a continuing growth in car ownership, because cars are being used less intensively over time.

Looking at a more aggregate level, national car road traffic continues to grow slowly, but in the recent, pre-recession years, only in line with increases in the national population of driving age. If this situation continues, then future aggregate growth rates for car traffic will be less than has historically been observed and may require a reassessment of our long term traffic forecasts- car traffic may simply mirror the increase in the number of adults in the population. A recent study of driving patterns in the USA has found a similar pattern.

Even if car use is stabilising, there are likely to be a variety of economic and environmental pressures to curtail car use in the future. Despite some successes with voluntary policies to reduce people's car use through place-based parking charges, travel awareness and other personalised travel campaigns, central and local policy has largely been unable to affect drivers' choices to use their cars for most journeys. The literature has demonstrated that the needs and circumstances of the driving population vary enormously, in terms of their socio-demographic characteristics, social and psychological drivers and motivations, their economic and physical circumstances and their roles and responsibilities.

This means that some people are more resistant to change than others and some more vulnerable. The Lex/RAC Motoring Reports consistently shows that between 78 to 90 per cent of drivers say they would find it very difficult to adjust their lifestyle to being without a car. Loss of freedom and personal control is a big factor in this, but also the perceived lack of availability of viable public transport alternatives for some or all of their journeys.

Our focus groups show that many people are currently prepared to hold on to their existing car use behaviours, even when this requires compromising other areas of household expenditure or putting up with challenging driving conditions, such as in traffic congestion. This is largely due to both their personal circumstances and the wider constraints and inconveniences they perceive they will experience if they switch their journeys onto public transport. Emotional or psychological attachment to the car is an issue for some people, but for most, the practical utility and lower cost of the car is the key.

Our professional interviews suggest that local authorities are moving away from blanket policies to target modal shift, towards a more balanced policy approach across all modes. However, it is unclear how they anticipate they will be able to deliver the necessary change in car use reduction to achieve a low carbon future in the context of their current strategies and programmes. At present the focus remains on 'picking the low-hanging fruit', whilst waiting for central Government to determine how, where and when such a strategy should be delivered. However, the Department for Transport also appears to have reached something of an impasse at present; despite a clear indication that it is aware that the transport sector needs to make a contribution to reducing greenhouse gas emissions.

From the limited available documentation, it would appear that four broad policy directions are envisaged:

1. Improved vehicle and traffic management technology
2. Travel planning and other softer measures
3. Road-based user charging, road tolling and congestion charging in inner urban areas
4. Personalised carbon allowances and carbon trading schemes

It is, as yet, unclear what level of contribution the Department feels each of these broad strategies will deliver, but it is evident that three of the four are aimed at encouraging reductions in overall car use through behavioural change. It is also clear that the achieved reductions will need to be significantly greater than the 11% reductions that have already been witnessed through best practice travel planning initiatives in urban areas. This suggests that future policies will need to place a far greater emphasis on road pricing and/or rationing car use in some way.

Considerable research has been carried out since the mid- 1990s and the transport profession has gained experience in observing the ability of policies to influence car use through a variety of initiatives, from the London Congestion Charging scheme to the Nottingham tram lines and the application of 'smart travel choices'. However, most adjustments made by travellers have been marginal in nature and there is a general lack of understanding of the likely consequences, both for the economy and society, of major reductions in car use, beyond those which can be achieved by voluntary means within a stable environment.

This is clearly a subject for significant further research, in order to better inform policy debates in several government departments and to help to reduce the negative impacts of future economic pressures and policy measures on car-using families. While there will be scope to explore some of these issues through the re-use of existing data sets, we recommend that detailed empirical research is needed in order to fully examine the nature and extent of the 'costs of adjustment', particularly where economic and political pressures result in households having to cut back their car use, beyond which they would voluntarily. This should seek to identify the kinds of measures that could be taken, both by the public and private sectors, to reduce any undue burden and/or social exclusion arising from economic or political pressures to reduce car use.

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Appendices

1. Procedures for Estimating Public Transport Accessibility Measure (Chapter 2)

The NTS includes a set of variables relating to public transport accessibility:

1) Walk time to nearest bus stop
2) Frequency of bus service at nearest bus stop

3) Walk time to nearest train station
4) Bus time to nearest train station
5) Frequency of train service at nearest train station

6) Bus time to nearest doctor's office
7) Bus time to nearest post office
8) Bus time to nearest chemist
9) Bus time to nearest food store
10) Bus time to nearest shopping centre
11) Bus time to nearest hospital

It was not possible to use variables 6 through 11, as they were not collected in 5 (and in some cases 6) years of the time series (which covers 1989 – 2006).

We note that the accessibility indicators are limited to only the single closest bus stop and train station to a respondent's residence. Whilst this is a restriction, it is recognised in the literature that there is no single measure which encompasses all aspects of accessibility; even the well-known PTAL [Public Transport Accessibility Levels] system is limited, in that it does not take into account the destinations served by transit.

The format of the NTS dataset prevents us from using the PTAL system, therefore the following alternative classification schemes were developed for bus accessibility and train accessibility, based on the categorisation of the NTS data:

Bus Accessibility Measure					
	More frequent than once every 15 minutes	More frequent than once per half hour	More frequent than once per hour	More frequent than once per day	Less frequent than once per day
Less than 6 minute walk	High	Moderate	Moderate	Low	Low
7 – 13 minute walk	High	Moderate	Moderate	Low	Low
14 – 26 minute walk	Moderate	Moderate	Moderate	Low	Low
27 – 43 minute walk	Low	Low	Low	Low	Low
More than 44 minute walk	Low	Low	Low	Low	Low

Rail Accessibility Measure			
	More frequent than once per hour (throughout the day)	More frequent than once per hour (rush hours)	Less frequent than once per hour (all day)
Less than 6 minutes (walk or bus, whichever is faster)	High	High	Low
7 – 13 minutes	High	Moderate	Low
14 – 26 minutes	Moderate	Moderate	Low
27 – 43 minutes	Moderate	Low	Low
More than 44 minutes	Low	Low	Low

In order to combine the bus and rail accessibility measures into an overall measure of public transport accessibility, another simple mapping procedure was employed for each possible combination:

Public Transport Accessibility Measure			
	High Rail Accessibility	**Moderate Rail Accessibility**	**Low Rail Accessibility**
High Bus Accessibility	High	High	Moderate
Moderate Bus Accessibility	High	Moderate	Low
Low Bus Accessibility	Moderate	Low	Low

The subjective categorisation was developed with the dual aims of defining intuitively-appealing categories and a reasonable balance in the percentage of households in each of the categories.

The percentages of households in each category of this public transport accessibility measure are:

YR	LOW	MOD	HIGH
1989	20	27	53
1990	21	30	50
1991	18	27	55
1992	19	29	52
1993	20	28	53
1994	15	28	57
1995	19	31	50
1996	18	31	51
1997	22	28	50
1998	22	30	47
1999	24	31	45
2000	20	30	50
2001	18	29	53
2002	19	33	47
2003	19	33	48
2004	20	32	48
2005	19	32	49
2006	19	33	48

2 Research methods for the focus groups and professional interviews

Focus groups

We conducted a limited number of exploratory focus group discussions as part of the study, in order to begin to get a better understanding of the public's perceptions of their car use behaviours and to examine whether or not they considered themselves to be dependent on their cars, either practically or psychologically. In all, we held five focus groups, two in Nottingham and three in Banbury, with randomly selected members of the public who were recruited according to a pre-determined set of recruitment criteria, as follows:

1. Voluntary switchers: these were people of a range of ages who had made a voluntary switch from their cars to public transport for some journeys, as a result of reduced fares or free bus tickets that were recently introduced by Nottingham City Transport.
2. Banned drivers: these were people of a range of ages that had received an enforced driving ban of over six months in the last year.
3. Over 75s drivers: these were elderly drivers living in and around Banbury who might be considering giving up driving in the near future because of their age.
4. New drivers: these were young people of between 18 and 25 years old living in and around Banbury, who had passed their tests within the last year.
5. Non-car owners: these were people living in and around Banbury in non-car owning households and without regular access to a car.

The groups took place during the first two weeks of September 2008 and each discussion was approximately two hours in duration. This report is largely based on the transcripts from these discussions.

The groups were designed to probe both the actual travel patterns, daily activities, attitudes to transport, perceptions and experiences of car use of the people who participated in them, as well as their travel, activity and lifestyle responses to three potential future scenarios in relation to their car use:

1. Where the cost of motoring is significantly more (at lease double) as a result of continuing increases in petrol prices due to global barrel price increases.
2. Where additional cost is placed on the use of cars through either road user charging or place-based congestion or parking charges.
3. Where their car use is restricted due to petrol rationing or the introduction of a personal carbon allowance.

We were particularly interested to find out how the participants thought their lifestyles would be affected and what they saw as the key benefits and disbenefits for themselves, their families and dependents and wider society, of a transition to a less

car reliant lifestyle. We also wanted to better understand the cost of this adjustment economically and socially. The groups and locations were specifically identified, because it was felt that they would be able to shed light on these questions and might also be in a position to offer specific insights on the activity and lifestyle effects of more coercive measures to reduce car use, as a result of their own personal experiences.

Professional interviews

We spoke to policy officers from two Government Offices and four local authorities (one County, one PTE and two Metropolitan cities). As this was a small scoping study, the interviews at this stage were more intended to engage local authorities in the subject of the research than to empirically examine their position. Our primary objectives for the interviews were:

1. To identify their current policy position in relation to car use and car restraint measures;
2. To identify whether they have undertaken their own studies to explore the issue of reduced car availability (either through restraint measures or economic constraints arising from escalating fuel costs) and the likely impacts on households/activities. If so, will they share this with us?
3. To identify what they see as the key policy challenges in this respect and how (if) they are planning to meet them;
4. To identify whether they would be interested in exploring these issues further, in light of their proposed implementation strategies.

The interviews were conducted during Summer 2008, the majority of which were face to face, but some were held over the phone. Questions were posed in an open-ended format and notes of people's responses taken rather than full transcripts. Wherever possible, we aimed to speak to the Chief Officer or a key representative of each organisation.