



Young Adults' Licence-Holding and Driving Behaviour in the UK

Full Findings

Ann Berrington & Julia Mikolai
December 2014



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Disclaimer

This report has been prepared for the RAC Foundation by Ann Berrington & Julia Mikolai. Any errors or omissions are the authors' sole responsibility. The report content reflects the views of the authors and not necessarily those of the RAC Foundation.

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Foreword

Today's young adults are experiencing a delayed transition to adulthood. Many young people are staying in education longer, entering employment later and making the transition to residential independence, partnership and parenthood at older ages.



How does this plethora of social change relate to transport use? The question has, until now, largely remained unanswered.

Since the mid-1990s there has been a decline in car use amongst young adults, especially young men. This report presents the individual, household and local level characteristics that are affecting the driving behaviour of 17-34 year olds in the UK.

The findings are fascinating, not only because they help explain the current situation, but because they point towards how car use may change in the future as young people move into employment, form families and change their residential status.

If, as this report suggests, increased levels of education and female employment lead to greater licence-holding among women, car use on the roads tells us something about what is happening in society, which is of interest and relevance beyond transport. Equally, increases in educational enrolment and unemployment, or a rise in the proportion of young adults living in the parental home, may be associated with a decline in the proportion holding a full driving licence.

This report reminds us that transport generally, and car use in particular, provides a means to an end. There is much talk about reducing car use, encouraging modal shift and meeting environmental, social, safety and economic policy ends. But it is too easy to forget that how people travel offers a window into how society is operating, both now and in the future. The study demonstrates the inadequacy of only discussing generalised averages: travel patterns and trends vary considerably between ages, genders and family circumstances. Politicians and decision makers alike would be well advised to take note of these findings as they seek to tackle key social and economic policy challenges.

Stephen Glaister

A handwritten signature in blue ink that reads "S. Glaister". The signature is written in a cursive, slightly slanted style.

Director, RAC Foundation

1. Introduction

Background

Over the past decade, average car-driving mileage per person in Britain has remained roughly constant, although this overall stability masks considerable diversity in the trend according to age, gender, type of car ownership, and area of the country (Le Vine & Jones, 2012). In the period 2008–10, Le Vine & Jones (2012) document a slight decline in car-driving mileage per person. It is not clear whether this levelling off in per-capita car mileage represents a temporary blip in an otherwise increasing trend, in part caused by the current economic recession; or whether car usage will stabilise at around this level, car travel having reached a saturation point (Metz, 2012); or whether the UK has reached a situation of 'peak car' whereby declines in car use will occur in the future (Goodwin, 2012).

A large number of potential explanations have been put forward to account for this stagnation in car use in the UK since the 1990s; amongst them are: increased costs (e.g. of learning to drive, fuel and insurance); changes in population composition and distribution; travel demand saturation; increased congestion; improvements in public transport; changing rules relating to tax treatment of company cars; and technological changes, particularly in relating to the Internet and mobile communications technology (Goodwin, 2012; Headicar, 2013; Latinopoulos et al., 2013; Le Vine & Jones, 2012 Metz, 2013). Better understanding of the factors which influence driving behaviour would be useful to help inform government projections of future car use, and ultimately decisions about where and how to invest government money (DfT, 2013a). There is debate as to the extent to which traditional economic indicators – such as GDP and fuel costs – can be used to predict future trends, or whether there are underlying structural shifts in society which also need to be taken into account (Goodwin, 2012).

Whilst the underlying reasons for this slowdown in car use are contested, researchers agree that young adults have led the way in the reduction of overall car use. Recent research has highlighted declines in the number of young adults with full licences, and also in the average mileage driven by young adults both in the UK and a number of other developed countries (Delbosc & Currie, 2013; 2014; Kuhnimhof et al., 2012). As noted by Delbosc & Currie (2013), understanding the changing travel behaviour of young adults is important because they appear to be leading the trend. Furthermore, as shown by Stokes (2012), orientations towards car use established in young adulthood can potentially persist into the future, leading to a significant shift in future car-driving demand.

Much of the existing research investigating young adults' travel behaviour has focused on aggregate-level trends and correlates over time (Le Vine & Jones, 2012), often in a cross-national framework (e.g. Delbosc & Currie, 2013; Kuhnimhof et al., 2012). These analyses have explored several of the possible causes of young adults' decline in car orientation, including affordability,

location and transport, graduated licensing, attitudes, and e-communication. The findings are reviewed in Section 2 and are used to guide the selection of explanatory variables included in this report. No single, overriding explanation is found (Delbosc & Currie, 2013).

Existing research differs in the outcome measured (licence-holding; access to a car; transport mode; mileage driven) and the methodology used. Many studies rely upon descriptive analyses (e.g. Kuhnimhof et al., 2012; Le Vine & Jones, 2012; Le Vine et al., 2013; Sivak & Schoettle, 2012), whilst others consider using more complex statistical techniques to investigate the complex interrelationships between variables (e.g. Delbosc & Currie, 2013; Le Vine et al., 2014 Forthcoming). For example, young adults who start a family in their teens and early twenties are more likely to have lower levels of education and lower levels of household and personal income (Robson & Berthoud, 2003). Hence, different insights (e.g. into the relationship between living arrangement and licence-holding) are gained depending upon whether the overall relationship between two variables is considered, or whether the focus is on the relationship between these variables once other factors (e.g. income level) are held constant within a multiple regression analysis. In this report, the usefulness of both approaches is demonstrated.

1.1 Aim of this report

As discussed in more detail in section 2.4, young adults' lives have changed considerably over the past few decades, with increasing levels of enrolment in higher education; high rates of youth unemployment and increased economic precariousness for those in work; and the postponement of transitions to partnership and parenthood. This report develops existing research by considering how the demographic and socioeconomic circumstances of young adults relate to car-driving behaviour in the UK. Also, particular attention is paid to gender differences in factors associated with driving licence-holding and mileage driven.

The data analysed come from Understanding Society (UKHLS – the United Kingdom Household Longitudinal Study¹), a large UK panel survey which began in 2009–10 and which follows up annually all the members of around 40,000 households in the UK. The survey contains information on all the resident individuals in a household, and their relationship to one another. As a result, it is possible to examine the relative importance of individual, household and local-area variables in their association with driving behaviour. However, the reader should note that from these cross-sectional data it is possible only to identify significant associations – the direction of causality cannot be established.

1 For further details see www.understandingsociety.ac.uk and Appendix 1

The aim of this report is to examine the association between the driving behaviour of young adults (aged 17–34) in the UK and certain individual, household, and local-area-level characteristics. Four dimensions of driving behaviour are investigated: whether a young adult holds a full UK driving licence; the number of miles driven in the past 12 months (among those who hold a full driving licence); the mode of transport used to commute to work, and the difficulties that young adults report when using the car to commute to work.

1.2 Structure of the report

Section 2 reviews current knowledge on the trends and determinants of young adults' driving behaviour in the UK. Section 3 introduces the analytical framework and the data to be analysed (further details of the data and methods can be found in the appendices). Sections 4, 5 and 6 present the results. The first of these, Section 4, examines the correlates of licence-holding. Section 5 contains an analysis of reported mileage and how this interrelates with the mode of travel used for commuting to work. Reported difficulties experienced when commuting to work by car are examined in Section 6. The report closes with a discussion and conclusions in Section 7.



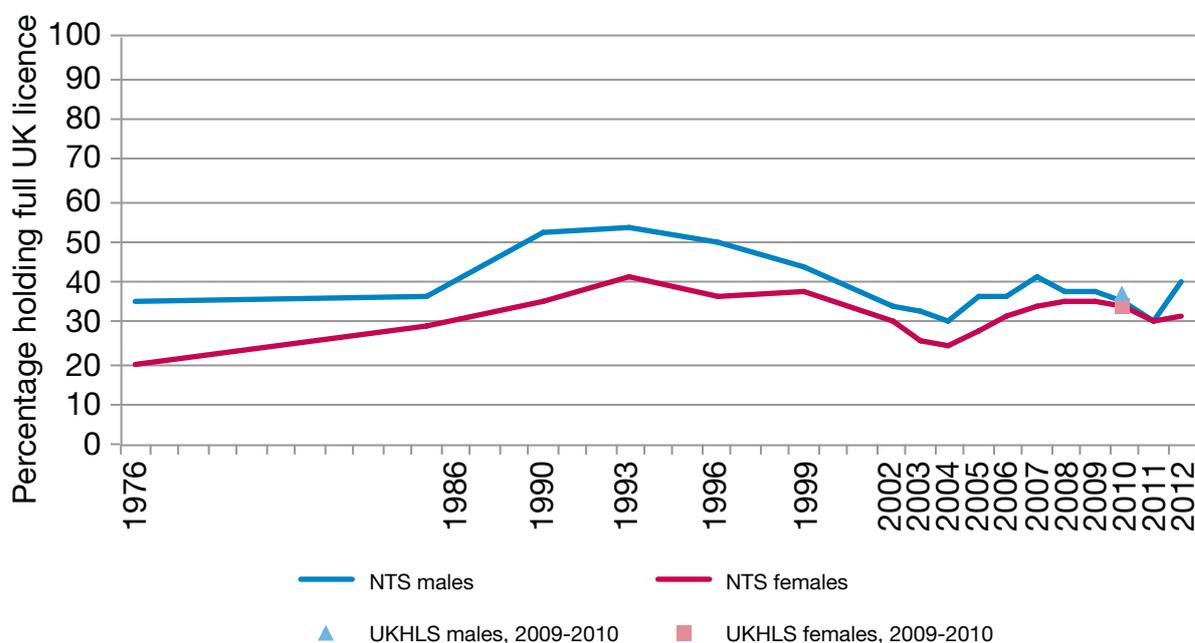
2. Review of Existing Evidence

2.1 Trends in driving licence-holding

Driving licence-holding among UK young adults has declined since the mid-1990s, remaining fairly constant for both genders since 2005. Licence-holding has decreased especially among the youngest age groups, and the decline was larger among men than among women. As a result, the difference in the proportions of male and female licence-holders has decreased over time (Kuhnimhof et al., 2012; Le Vine & Jones, 2012). This phenomenon is not unique to the UK: the proportion of young adults holding a driving licence has decreased in other industrialised countries also (Delbosc & Currie, 2013; Kuhnimhof et al., 2012; Stokes, 2012). The strongest declines in Europe occurred in Norway and Sweden (Delbosc & Currie, 2013). Evidence from Germany suggests that the trend in licence-holding there has remained relatively stable, but that car ownership and use have declined.

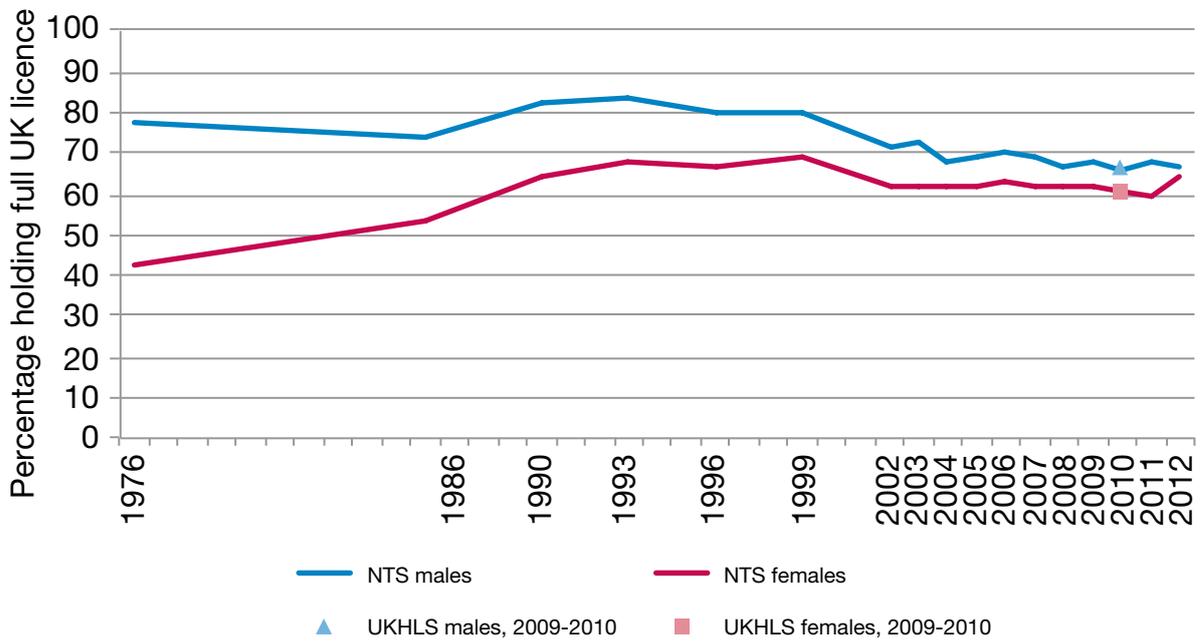
Figures 2.1 to 2.3 show estimates of licence-holding from the National Travel Survey (NTS) from 1976 to 2012, considering those aged 17–20, 21–29 and 30–39 separately. For all age groups, the proportion holding a full licence peaked in the mid-1990s. The decline since the mid-1990s is most pronounced among 17- to 20-year-olds, and least obvious for the oldest age group. Since around 2002/3 the proportion of full licence-holders has levelled off.

Figure 2.1: Changes in the percentage of men and women who hold a full UK driving licence, 1976–2012, 17- to 20-year-olds



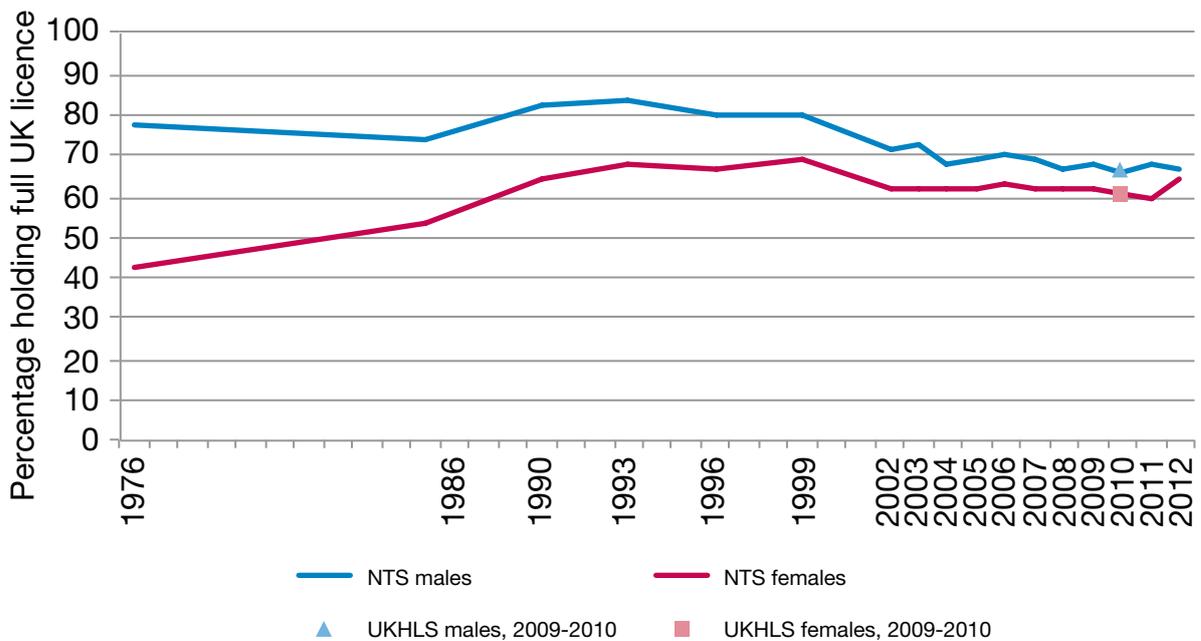
Source: DfT (2013c)

Figure 2.2: Changes in the percentage of men and women who hold a full UK driving licence, 1976–2012, 21- to 29-year-olds



Source: DfT (2013c)

Figure 2.3: Changes in the percentage of men and women who hold a full UK driving licence, 1976–2012, 30- to 39-year-olds



Source: DfT (2013c)

2.2 Trends in car mileage

There have also been significant changes in average car mileage over time (Kuhnimhof et al., 2012; Le Vine et al., 2013). The number of miles driven increases with age among both men and women. However, young men's annual car mileage has decreased in the last 15 years, while young women's mileage has roughly stayed the same. Whilst older men still drive considerably more miles than women (Stokes, 2012), among those in their teens and early twenties there is nowadays little gender difference in the number of miles driven (Le Vine et al., 2013). Declines in the number of miles driven by young adults (especially men) have also been seen in other developed countries, including the US, France and Germany. In Germany, the decline in mileage appears to have been propelled by increased 'multimodality' (or using multiple modes of transport within a given time frame). The shift in travel demand by car owners to other modes of transport explains almost 40% of the decrease in young adults' car mileage between 1998 and 2008 in Germany (Kuhnimhof et al., 2012). Over the past decade, increased diversity in car use by location has been observed, with young adults in London being steadily less orientated towards car use. Le Vine et al. (2013) report that the average annual distance travelled by car per licensed driver aged 18–34 living in London boroughs dropped by one third (from 5,772 miles to 3,907 miles).

Car mileage tends to be higher among employed young adults, but has recently declined among both the employed and unemployed in a selection of industrialised countries including the UK (Kuhnimhof et al., 2012). According to Le Vine et al. (2013), annual car mileage was in the 1990s positively associated with personal income among those aged 18–34 in the UK. However, during the period 1998–2008, declines in the number of miles driven were greatest for those with higher incomes, resulting in a much flatter mileage profile by income nowadays. In part, this trend reflects the fact that higher-income groups (especially men) were more involved in the trend away from the ownership and use of company cars following tax regulation changes in the UK (Le Vine & Jones, 2012). It may also reflect the fact that the move away from car use has been greatest in London, where many high earners are located (Le Vine et al., 2013).

2.3 Trends in transport mode

The car remains the dominant mode of transport in the UK. According to the 2011 Census, two thirds of individuals in England and Wales use private motorised transport as their usual main mode of travelling to work and 18% used public transport, whilst 11% walked and only 3% cycled (Goodman, 2013). At the national level, the decade 2001–11 saw a 1.9% drop in commutes by car and a 1.9% increase in commutes by public transport (this rise being driven primarily by increased train use) (Goodman, 2013). Transport mode is closely linked to locality. London stands out as having much higher (and

increasing) levels of public transport use and declining private motorised transport. London's declining car use relates to a number of factors, including the provision of more and better public transport, a limited roads capacity with increasing lane-miles restricted to buses, the introduction of the Central London Congestion Charging scheme, and seemingly ever higher costs of parking (Goodman, 2013; Metz, 2012). In a 2011 British survey, the main reason given by respondents for not travelling (more) by bus was because it was easier and more convenient to travel by car (46%), although respondents in households without access to a car or van most often mentioned a preference for walking or cycling (16%) (DfT, 2013b). Nevertheless, the proportion of young adults with car availability who are choosing to use public transport appears to be increasing in the UK, especially in London. Recent research from the US suggests that one key advantage of public transport is the possibility to socialise with peers online and to be able to "virtually explore" the local neighbourhood (Sakaria & Stehfest, 2013).

2.4 Explaining changing licence-holding and car use among young adults

Six main classes of reasons have been put forward in the literature as possible explanations of the downward trends in driving licence-holding and car use among young adults. In the discussion that follows, use is made of the categorisation of explanations put forward by Delbosc & Currie (2013) in their review of the evidence.

- 1. Affordability.** To be able to pay for the costs of owning and running a car (fuel, maintenance, insurance, tax etc.), substantial expenditure is needed. It is notable that transport costs are now the second highest expenditure category for UK households (ONS, 2013a). The fact that rates of licence-holding among UK young adults continued to increase through the early 1990s while young adults were experiencing a sharp increase in unemployment (as a result of economic recession) suggests that the overall economic climate may not be that important a factor. Perhaps of more importance are the increasing costs of insurance and learning to drive, which have both risen significantly (Le Vine et al., 2013; Noble, 2005). Le Vine et al. (2013) note that young adults often do not pass their driving test first time, and the cost of driving lessons can thus quickly mount up. Metz (2013) argues that cars nowadays incur higher maintenance costs – as modern cars have become more sophisticated, it is no longer always possible to carry out DIY servicing.² In addition, it is not only the costs of buying and maintaining a car that need to be considered but also the 'burden of a car' (Sakaria & Stehfest, 2013). For example, it might be problematic to find an appropriate place to keep the

² At the same time, it is true that cars nowadays may require less servicing; moreover, new cars often come with free servicing for the first three to five years, although young adults are less likely to buy a new car.

car because of the lack of parking spaces, especially given that young adults are more likely to reside in urban areas, living in flats, houses with multiple occupancy and house-shares. Much media and popular attention has focused on the level of parking fees, although Bates & Leibling (2012) clearly demonstrate that the costs of parking (at least on-street) form a very small proportion of the total expenditure involved in running a car, especially when compared with other categories such as fuel costs.

Le Vine et al. (2013) show that, over the decade 1998–2008, income differentials in the propensity to obtain a driving licence increased. However, partly as a consequence of the move away from the ownership and use of company cars, the extent to which income differences are reflected in overall distance travelled reduced. The importance of affordability as a factor in the decision whether to learn to drive is suggested by results for Great Britain from the NTS as analysed by Latinopoulos et al. (2013). Among those aged 17–29 who do not hold a full car driving licence, over one quarter are currently learning to drive, a further third gave costs associated with motoring as the main reason for not having obtained a licence, with the cost of learning to drive being most prevalent.

- 2. Location and transport.** Young people in urban areas are less likely to have a driving licence than those who live in rural areas (Le Vine & Jones, 2012; McDonald & Trowbridge, 2009). It is, however, not clear whether this is because young adults who do not have a licence move to more accessible areas, or because those who live in such areas might not need a licence to get around. Several studies have found that access to good public transport and being able to get around without driving is a common reason for not holding a driving licence. As noted by Goodwin (2012), some towns and cities have been particularly successful in encouraging the use of public transport, and (notably, in the case of London) of promoting cycling. At the same time the ‘burden’ of owning a car – for example in terms of finding somewhere to park – is higher in a city setting (Sakaria & Stehfest, 2013). As a result, locality may have become increasingly important as a factor in determining young adults’ car use (Le Vine et al., 2013). A number of authors suggest that recent trends in immigration and in land-use policies have tended to increase the proportion of the population living in urban areas, and hence have exerted a downward pressure on per-capita car use (Headicar, 2013; Le Vine & Jones, 2012).

- 3. Driver licensing regulations.** Changing driver licensing regulations might influence young adults towards deciding not to have a driving licence. According to Noble (2005), the UK driving test became “more expensive and more difficult” by 2003. Although this change post-dates the decline in licence-holding for men, it is clear from recent research by Transport for London that learner drivers receive the majority of their driving tuition from an approved instructor, rather than by practising with friends and relatives. Since the median number of hours of lessons with an instructor prior to the practical test was around 40 for a recent cohort of learner drivers (Wells et al., 2008), this equates to a considerable financial cost.
- 4. Attitudes to car use.** Owning a car can be seen as a symbol of independence or of social status. However, it might also be that it is seen as a symbol of adult responsibility and that among the young generation, other electronic gadgets such as smartphones and tablets may have replaced the car as a status symbol (Delbosc & Currie, 2013; Kuhnimhof et al., 2012). Additionally, young adults' environmental attitudes might also have contributed to the decrease in licensing. It can be argued that this young generation has grown up knowing more about the impact of cars on the environment. However, a large-scale survey in the UK found that young people aged 18–24 were the least likely to recycle, cut down on energy and water use, or say that they cut down on car use to save the environment (Defra, 2002). Furthermore, within the NTS, the proportion who mentioned environmental reasons for not learning to drive is negligible, and those who do not hold a licence are not seen to be more environmentally sensitive (Le Vine et al., 2014).
- 5. E-communication.** Some studies (e.g. Sivak & Schoettle, 2012) have argued that the increasing availability of e-communication reduces young adults' need for mobility, as it allows them to connect with each other without actually having to travel. However, others have argued that e-communication cannot replace face-to-face communication but are a supplement to it (Delbosc & Currie, 2013). Rather than being a substitute, the Internet and social media might potentially increase travel. Recently Le Vine et al. (2014) found that among British young adults, greater Internet usage was associated with a higher likelihood of holding a driving licence.



Since it is against the law to use a mobile phone whilst driving, it is easier to stay connected while using public transport. Additionally, smartphone applications might also facilitate the use of public transport, as real-time information about travel times, connections and so forth is increasingly available (Delbosc & Currie, 2013; Sakaria & Stehfest, 2013). It should be remembered, however, that smartphone technology is less than a decade old, whereas the decline in driving licence-holding (from the mid-1990s) predates this. It could be, however, that the reasons for the initial decline in licence-holding could be different from those which underlie more recent trends in licence-holding and mileage driven.

New empirical evidence from qualitative and quantitative research is required to enable greater certainty about the ways in which new information and communication technologies and travel interact (Latinopoulos et al., 2013; Lyons & Urry, 2005).

- 6. Delayed transitions to adulthood.** Transitions to adulthood in terms of moving from school to work, gaining residential independence and starting a family have been increasingly delayed and de-standardised (Billari & Liefbroer, 2010; Holdsworth & Morgan, 2005). Reasons for these trends are complex, as discussed below, but it seems entirely plausible that as young adults spend longer in education, delay entry into the labour force, and form families at later ages, the need for a car – and the financial ability to pay for one – may also be delayed to later ages (Delbosc & Currie, 2013).

To some extent the postponement of transitions to adulthood can be attributed to increased economic difficulties faced by young adults (Stone et al., 2011; Furlong & Cartmel, 2007). However, the full explanation is likely to be multifaceted (Lesthaeghe, 1998). For example, reasons for the postponement of marriage and childbearing to later ages include the increasing age at which young adults leave full-time education (Berrington & Stone, 2013; Ní Bhrolcháin & Beaujouan, 2012); increased female autonomy and the opportunity costs of having to care for children (Becker, 1981); and ideational change, particularly an increased emphasis among young adults, on self-fulfilment and the pursuit of personal goals (Arnett, 2000; Douglass, 2007; Lesthaeghe & Surkyn, 1988). Consideration is now given to how the key transitions made by young people have changed over the past few decades, and how these might relate to patterns of holding a driving licence and using a car.

Transition from school to work

The average age at which young people make the transition from school to full-time work has increased, partly as a result of the collapse of the youth labour market since the 1980s (Ashton et al., 1982). As a result of the restructuring of the labour market, including the decline in manufacturing industries and the globalisation of production, traditional routes from school into employment (e.g. through apprenticeships) have reduced significantly (Francesconi & Golsch, 2005; Furlong & Cartmel, 2007). This has ramifications for young people, especially those with

lower levels of education, who are increasingly find themselves employed in low-paid, insecure jobs (Kalleberg, 2011; Standing, 2011). In the UK, at the end of 2013 the proportion of economically active youth who were unemployed stood at 20% – a level of unemployment similar to that seen in 1984 following the recession of the early 1980s, and slightly higher than the peak of 18% in 1993 following the recession of the early 1990s (ONS, 2014).

Thus, for many young adults, learning to drive, and insuring and running a car are beyond their means – at least without parental or other financial assistance. Qualitative research by Jamieson et al. (2012) suggests that as a result of economic insecurity, learning to drive and owning a car is typically seen by young adults as temporarily “on hold”. Nevertheless, a family, house and car in the suburbs remained a common ideal imagined future.

Partly in response to the changing demands of the labour market for an increasingly educated labour force, the numbers of young adults staying on in education past the age of 16 has risen dramatically over past decades. The proportion of 18- to 24-year-olds in full-time education in the UK increased fourfold from 8% in 1984 to 32% in 2013 (ONS, 2014). Participation in higher education has thus widened across social groups as a result of the expansion of the higher education sector at the end of the 1980s and early 1990s. This expansion included allowing polytechnics to become universities.

Kuhnimhof et al. (2012) note that the timing of the increased enrolment in higher education in Germany was consistent with declines in car licensing from the early 1990s. They suggest that student discounts for public transport in Germany may also have played a role in making car ownership less attractive. Research is required to establish whether this explanation also fits the UK case.

Transitions to residential independence

The rapid expansion in higher education exerted a downward pressure on the median age of leaving home in the UK in the period 1988 to 1998, since many young adults live away from their parents while they attend university (Stone et al., 2011). However, increasing tuition fees for higher education, greater economic uncertainty, welfare retrenchment, increasing private housing costs and the concentration of the social housing sector on those most in priority need have all had the effect of increasing the number of young adults living with a parent since 1998. This trend towards co-residence accelerated during the recent recession. Berrington & Stone (2014) show, for example, that the percentage of young adults aged 22–24 who were living with at least one parent increased from 50% to 57% among young men and from 34% to 39% among young women. Part of this rise in living with a parent is due to an increase in returning home, often precipitated by finishing full-time education, losing a job, or partnership dissolution (Stone et al., 2014).

There is some disagreement in the literature as to whether the increase in living with parent(s) results in reduced car use. On the one hand, young people who live with their parents might have more disposable income to spend on a car, as living in the parental home decreases (or possibly even eliminates) housing costs. Furthermore, living with parents may increase access to a car (Delbosc & Currie, 2013). On the other hand, living with parents might be an indication of financial dependence, and thus the inability to pay for a car. Furthermore, young adults living with a parent may benefit from parental help in their mobility, and hence have fewer requirements to drive themselves (Le Vine et al., 2013).

Partnership and parenthood transitions

In the period 1980–2010, the average age at first marriage in England and Wales increased by seven years – from 23 to 30 years; over the same period, the mean age of mother at first birth rose by five years, from 25 to 30 (ONS, 2013b; 2013c). The postponement of family formation has not been so common among all social groups – women from poorer socioeconomic backgrounds on average continue to form families at an earlier age than those from richer socioeconomic backgrounds (Robson & Berthoud, 2003). Thus, in terms of the need for a car to transport young children around, early childbearing among poorer social groups may lead to increased demand, which may not be met, owing to a lack of affordability.

Emergent adulthood as a new phase?

As a result of these transitions being delayed to older ages, Arnett (2000) suggested that there is now a period between adolescence and young adulthood – a stage which he termed ‘emerging adulthood’. He argued that this period of emergent adulthood typically involves some independence from parents but also frequent changes in circumstances, with young people contemplating various life possibilities with regard to love, work, home and worldviews as a process of identity exploration (Arnett, 2000). However, the emerging adulthood thesis has been criticised for placing too much emphasis on choice, with young adults’ life courses often characterised by social stratification and exclusion (e.g. Bynner, 2005; Furlong & Cartmel, 2007). Both theoretical perspectives might be consistent with a decline in car licence-holding and car use. The social stratification perspective emphasises the economic constraints on car licence-holding and car ownership which some young adults experience. The emergent adulthood thesis could be consistent with a decline in licence-holding and car ownership if young people delay car ownership until they reach adulthood, especially if the car is nowadays less of a symbol of social status, or if car ownership is not helpful to young adults in their exploration of the world.

3. The Approach Taken in This Report

3.1 Analytical framework

The Understanding Society (UKHLS) data permit identification of the family status of young adults and of the characteristics associated with their household and geographical locality. Hence it is possible to investigate whether individual-level characteristics such as gender or age, household characteristics such as tenure, or local-area characteristics such as population density are associated with young adults' driving licence-holding and driving behaviour. The factors associated with four interrelated outcomes are examined: whether or not a young person holds a full driving licence (Outcome 1); the number of miles driven in last 12 months (Outcome 2); whether young adults drive themselves to work (Outcome 3); and whether young adults who commute to work by car experience any difficulties when driving to work, and the nature of any such difficulties (Outcome 4).



The choice of explanatory variables is based on past empirical work and theoretical expectations relating to the determinants of driving licence-holding and driving behaviour as reviewed in section 2.4. In addition to the effects of gender, age, economic activity status, individual income, and urban/rural locality, all of which were previously examined using data from the NTS (e.g. Delbosc & Currie, 2013; Le Vine & Jones, 2012; Le Vine et al., 2013), also identified was the class background of respondents; their own current circumstances in relation to educational qualifications and living arrangement; and their household characteristics – for example in terms of equivalised household income, housing tenure, and car availability.

Parental social class provides a proxy indication of the ability of parents to help support their child in affording lessons, insurance and the cost of a car. One might expect, *a priori*, that young adults from more advantaged (professional, managerial and intermediate) class backgrounds are more likely to hold a licence. At the same time, factors associated with the young adult's own personal circumstances are likely to be key to their driving behaviour, particularly whether they are employed and use a car to commute to work, and their living arrangement. One would expect, *a priori*, that living independently of the parental home, especially living with young children, would be associated with increased demand for car use. However, it is known that early childbearing, i.e. among those in their teens and early twenties, is associated with poorer financial resources. It may be that young parents, and especially lone parents, will be less able to afford to learn to drive and/or use a car. In the UK, Stokes & Lucas (2011) find that lone-parent families are less likely to have access to a car and are likely to drive less miles. They suggest that in part this relates to the lower levels of household income experienced by lone-parent families.

Previous work in Australia shows the importance of household characteristics in influencing car-driving behaviour (Delbosc & Currie, 2014). The availability of another person with a driving licence in the household might imply that young adults do not need to have a licence themselves in order to be able to get

somewhere by car if they need to. On the other hand, car licence-holding tends to *increase* with car availability. Previous work for the UK suggests that there has been an increasing divergence over time between households with more than one car and carless households. Thus an examination is made into how car driving licence-holding of young adults differs according to the number of other young licence-holders in the household and household car ownership.

3.2 Outcome variables

The first three outcomes (licence-holding, mileage and transport mode) are examined using Wave 1 of the UKHLS. The fourth outcome (difficulties of commuting by car) is examined using data from all those interviewed in Wave 2 of UKHLS. Data from Wave 2 were used for the latter analysis because these questions were not asked in the previous wave.

Licence-holding is defined as holding a full UK driving licence.³ The binary variable takes the value 1 if respondents hold a full UK licence, and 0 otherwise. Appendix 2 compares the estimates from the NTS with those from Wave 1 of the UKHLS for 2009–10 (Table A2.1).

Mileage is defined as self-reported miles driven by car by the respondent in the last 12 months.⁴ This is only asked of those who report that they hold a full UK driving licence. It should be noted that this definition differs from the one usually used to measure driving mileage. While in the NTS respondents are asked to keep a record of their driving mileage over a week, in the UKHLS, the data is self-reported and only refers to the most commonly driven car.⁵

Method of transport for journey to work is asked of employees, and of respondents who are self-employed.⁶ The variable has the following categories: driving myself, bus/coach, train (which includes underground, metro, tram and light railway), cycle/walk, and other (which includes getting a lift from someone from the household or from outside the household, motorcycle, and taxi or minicab).

The difficulties of commuting by car are examined among those who use a car or van to commute to and from work. In Wave 2 of the UKHLS these respondents were asked whether they usually experienced any difficulties while commuting to and from work by car or van, and if so which of the following difficulties they experienced: no difficulties, too far, cost of fuel⁷, lack of parking

3 The question is “Do you have a full UK driving licence?”

4 The question is “How many miles would you say you personally have driven in the last twelve months? If more than one car is owned or available to your household please give the mileage for the one you drive most often.”

5 The overall estimates of annual mileage for UKHLS male and female licence holders (7,647) are similar, if a little lower, to that reported by respondents to the 2009 and 2010 NTS (8,300 miles in both years).

6 The question is “And how do you usually get to your place of work?”

7 The exact wording of the UKHLS questionnaire referred to “cost of petrol”. When referring to this question the more general term “fuel” is used throughout this report.

facilities, cost of parking, traffic congestion or roadworks, personal safety concerns, stress of driving, and other.

3.3 Explanatory variables

Parental social class is based on both the mother's and father's social class, and takes the value of the parent whose social class is higher. In the situation where information is only available for one of the parents, this information is used as parental social class. The categories of the resulting variable are: managerial and professional occupations, intermediate occupations, small employers and own-account workers, lower supervisory and technical occupations, and semi-routine and routine occupations.

Highest educational qualification of the respondents is measured with a categorical variable: no qualifications, school-leaving (i.e. GCSEs and other qualifications), and advanced qualifications (including A levels, other higher education and degree-level education). Note that no attempt has been made to separately identify those with degrees, since it is not possible for teenagers to have graduated.

Current economic activity is categorised as employed (including both part- and full-time), full-time student, and economically inactive / unemployed.⁸ For women, an additional category, looking after family, is defined; this separates economically inactive women who declare themselves to be looking after family from others who are economically inactive as a result of (for example) ill health.

Individual income measures the young person's own annual gross income. Income quintiles calculated from the survey data are employed to create five equally sized income groups. The lowest income quintile contains the 20% of those aged 17–34 with the lowest earnings, whilst the top quintile contains the 20% of young adults with the highest gross personal income.

Living arrangement is derived using information on the presence of own children in the household as well as on the structure of the household. As a result, the following categories emerge: living with parents, living with a partner, living with a partner and at least one own child, living as a lone parent, living alone, and sharing the accommodation with others. As the number of lone fathers was very small in all age groups (less than 1% of the age group), lone fathers were coded together with men who live alone.

Housing tenure is measured with a categorical variable: owner-occupied, private and other rented, and social rented housing.

⁸ Unemployed individuals are those currently not employed who are actively seeking work. Economically inactive individuals are those currently not employed who are not currently seeking work.

Equivalised household income is defined as equivalised annual gross household income. Equivalisation adjusts household income to account for different demands on resources, by considering the household size and composition. Equivalised household income was calculated using the OECD-modified equivalence scale, in which a first adult counts as 1, any additional adults and children over the age of 14 count as 0.5, and children aged 0–13 count as 0.3. These are called ‘equivalence values’. In the next step, the total equivalence value is calculated as the sum of the equivalence values of each household member. In the final step, the total annual gross household income is divided by the total equivalence value. The resulting variable is divided into five groups of equal size (quintiles) which range from the lowest to the highest income level.

Number of other young adult licence-holders in the household is measured with a categorical variable with categories: 0, 1, and 2-or-more.

Number of cars in the household is defined as: 0, 1, 2 or 3-or-more cars.

Area type identifies whether the ‘Output Area’ (the lowest level of Census geography) in which the respondent lives is in a rural area, an urban area outside of London, or within London. These categories are created based on the Office of National Statistics’ Rural/Urban Classification of Output Areas. An Output Area was treated as ‘urban’ if the majority of the inhabitants of that Area live in a settlement with a population size of 10,000 or more, and ‘rural’ otherwise (Rabe, 2011).

UK Government Office Region (GOR) consists of GORs in the UK: North East, Yorkshire and the Humber, East Midlands, West Midlands, East of England, London, South East, South West, Wales, Scotland, and Northern Ireland.

3.4 Analysis plan

The plan for analysing the data takes each of the four outcomes in turn. First, descriptive analyses are carried out of the relationship between each of the explanatory variables and the outcome in question; this is followed by a multiple regression analysis.

Bivariate relationships look at the *two-way* relationship between each explanatory variable on the one hand and licence-holding and mileage on the other. This sort of analysis is most appropriate if the aim is to discover which groups have the highest rates of licence-holding, or which groups drive the most miles. Many of the analyses are undertaken separately by gender since it is known that women make the transition to adulthood earlier than men (Berrington & Stone, 2014). Furthermore, women’s behaviour as regards driving licence-holding and car use has been seen to be different to that of men (Kuhnimhof et al., 2012; Le Vine et al., 2013). Since many changes occur

in young adults' lives between the ages of 17 and 34, trends by age groups are also presented where important; the groupings are by ages 17–19, 20–24, 25–29 and 30–34.

Many of the explanatory variables are interrelated (more highly educated people usually have a higher individual income, for example), and the relative importance of each of these factors is often difficult to determine by looking at the bivariate relationships. *Multiple regression* is an analysis technique which allows the inclusion of *all* individual, household, and local-area characteristics *in the same analysis*. What is then revealed is the effect of each explanatory variable on the outcome, while all the other explanatory variables are held constant. This makes it possible to identify the relative importance of each of these factors in determining licence-holding and car mileage. Further details of the survey and methodology can be found in Appendices 1–3.



4. Results – Driving Licence-Holding

In this section the associations between the explanatory variables and whether or not young adults aged 17–34 hold a full UK driving licence are examined. Results are grouped into individual characteristics, household characteristics and area characteristics. Sections 4.1 to 4.4 show the results of descriptive analyses whilst section 4.5 discusses the results of a multiple logistic regression. A summary of the results for licence-holding is given in section 4.6.

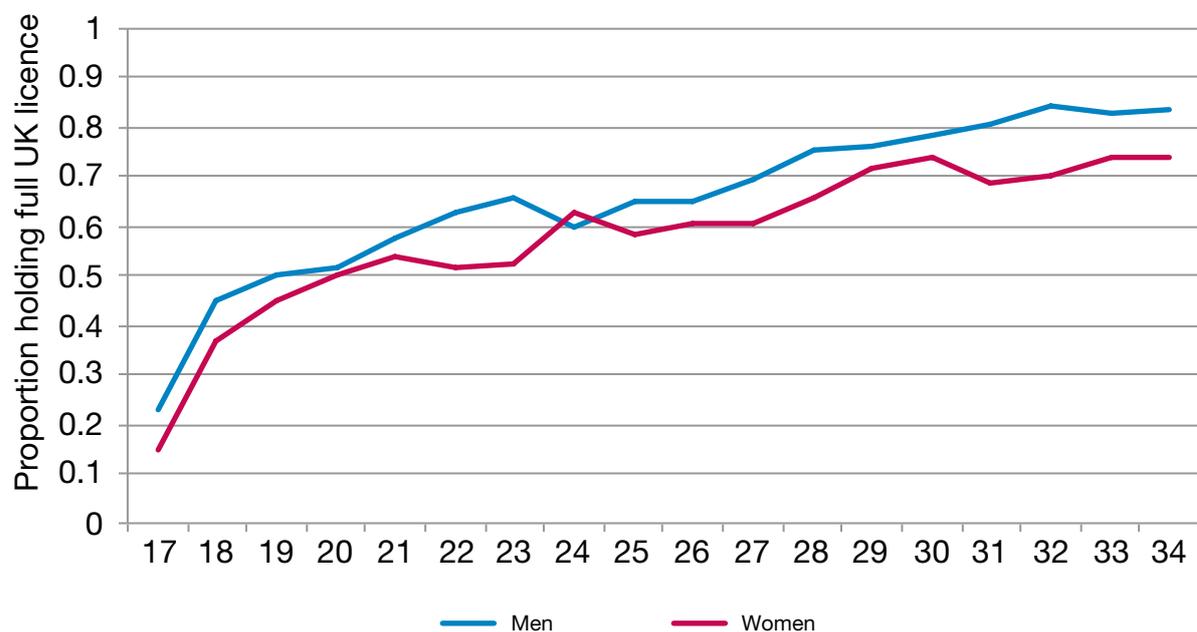


4.1 Individual characteristics

4.1.1 Age and gender

In total, 65% of young males and 58% of young females held a full UK driving licence in 2009–10. The proportion of full licence-holders increases with age, among both young males and young females (Figure 4.1). While only 23% of 17-year-old men and 15% of 17-year-old women hold a full licence, this proportion increases to 45% and 37% respectively among 18-year-olds. After age 18, the trend is overall increasing and reaches 84% for men and 74% for women by age 34. Although the proportion of licence-holders increases with age for both genders, in general more men than women hold a full UK licence. The gender difference is largest among those in their early thirties.

Figure 4.1: Proportion of men and women holding a full UK driving licence in 2009–10, by age (weighted estimates)

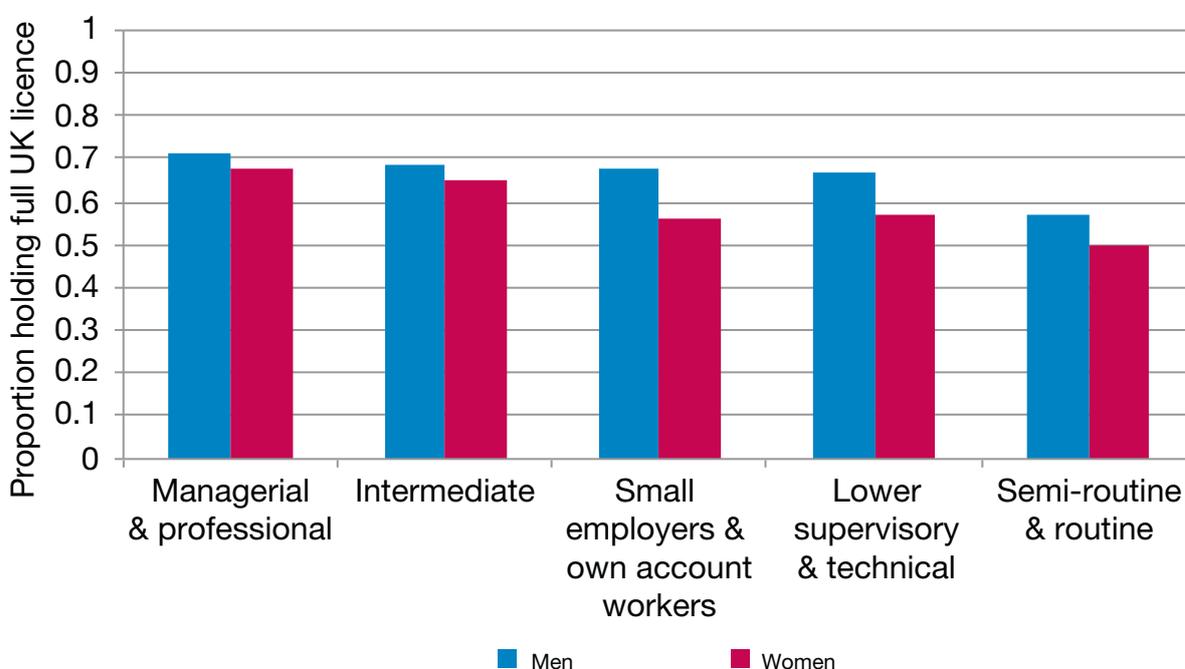


Source: Authors' own calculations using Wave 1 of UKHLS

4.1.2 Parental social class

Figure 4.2 shows the bivariate relationship between parental social class and the proportion holding a full driving licence, for men and women aged 17–34. There are relatively small differences in young men's licence-holding according to parental social class. However, women from more advantaged class backgrounds are more likely than other women to hold a licence. Almost seven out of ten young women from professional and managerial backgrounds hold a driving licence, compared with only half of those from semi-routine and routine class backgrounds. These patterns are replicated when the analyses are repeated for individual age groups, so these results are not shown.

Figure 4.2: Proportion holding a full UK licence, by gender and parental social class, 17- to 34-year-olds (weighted estimates)



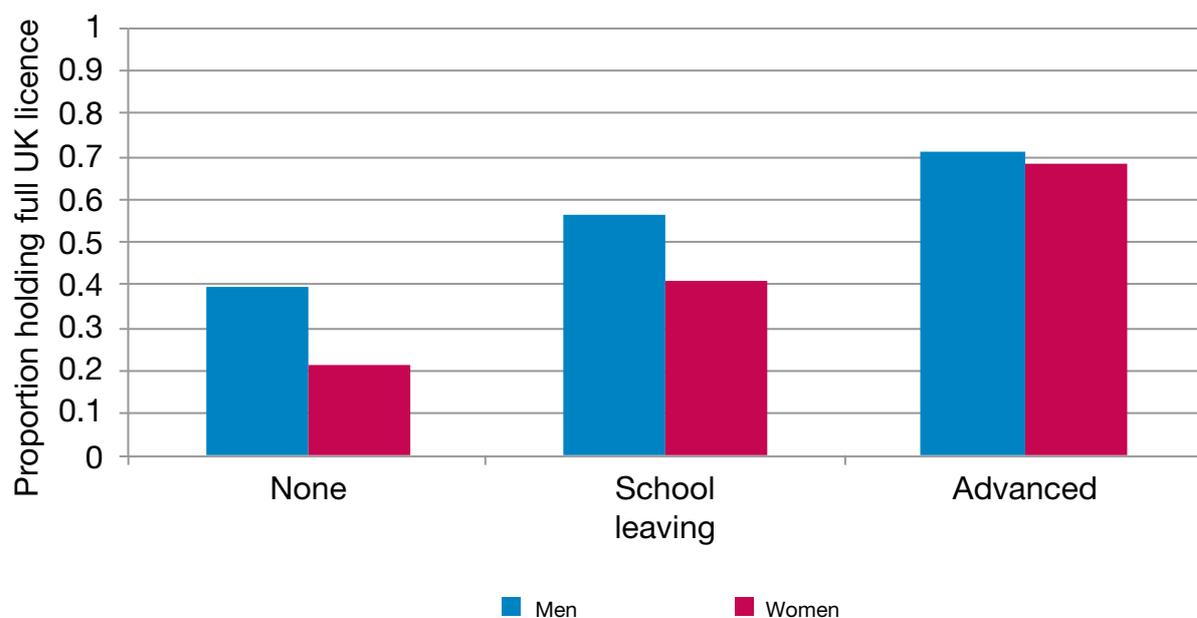
Source: Authors' own calculations using Wave 1 of UKHLS

4.1.3 Education

An individual's highest educational qualification is an indicator of human capital. In comparison with those with no qualifications, those with school leaver or advanced qualifications will be more likely to be in work and to have higher incomes. Figure 4.3 suggests a clear educational gradient in the proportion of men and women who hold a full UK driving licence; those with school leaver qualifications, and even more so those with advanced ones, are more likely to hold a licence. However, educational differences in licence-holding are larger for females than for males. Among young women, almost 70% of those with A-level or degree-level qualifications hold a

licence in comparison to just 20% of those with no qualifications. Having no qualifications appears to be less of a barrier to licence-holding among young men: 40% of men aged 17–34 with no qualifications held a licence – twice as many proportionally as their female counterparts.

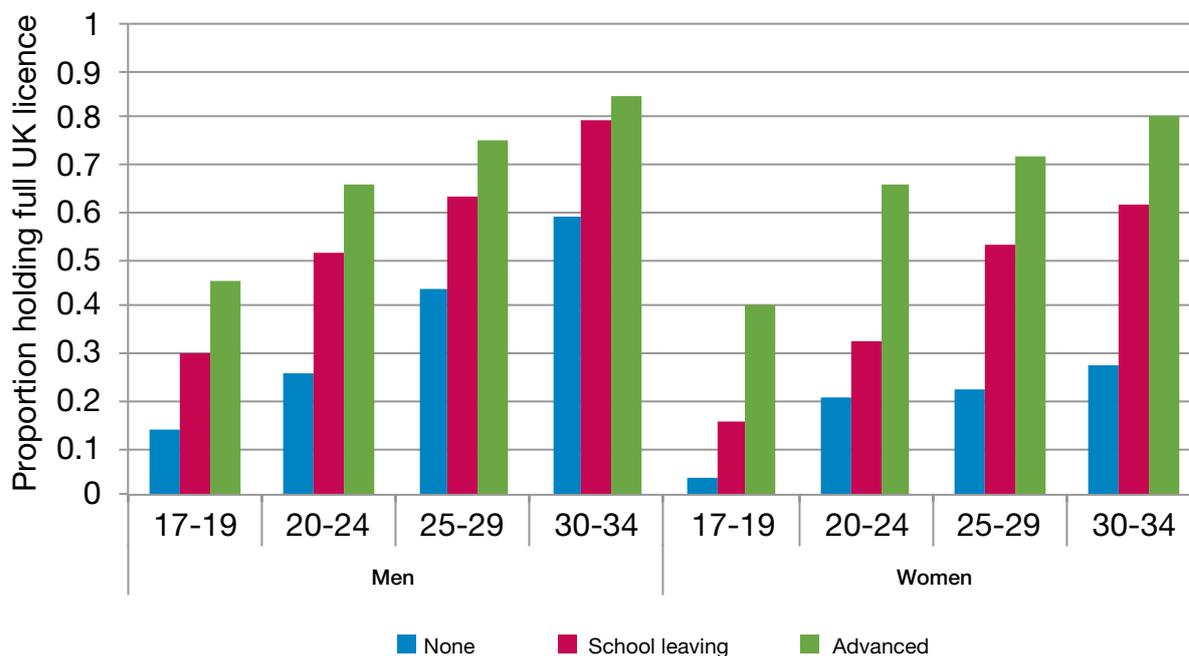
Figure 4.3: Proportion holding a full UK licence, by gender and educational qualification, 17- to 34-year-olds (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

Next the issue of how educational differences in the likelihood of holding a driving licence change according to age (Figure 4.4) is examined. Within all age groups there is a positive educational gradient in licence-holding, but differences in licence holding according to education are especially large in the youngest age groups. By their early thirties, men with school-leaving-age qualifications and men with no qualifications at all almost catch up their more educated peers. However, this is not the case for women with no qualifications, who remain far less likely to hold a driving licence than more educated women. Among women in their early thirties, eight out of ten with A-level or degree-level qualifications hold a licence, as compared with just over one quarter of those with no qualifications. It is not possible to tell from this bivariate analysis the extent to which these gender differences relate to the different sorts of jobs that less-qualified men and women undertake.

Figure 4.4: Proportion holding a full UK licence, by gender, educational qualification, and age (weighted estimates)

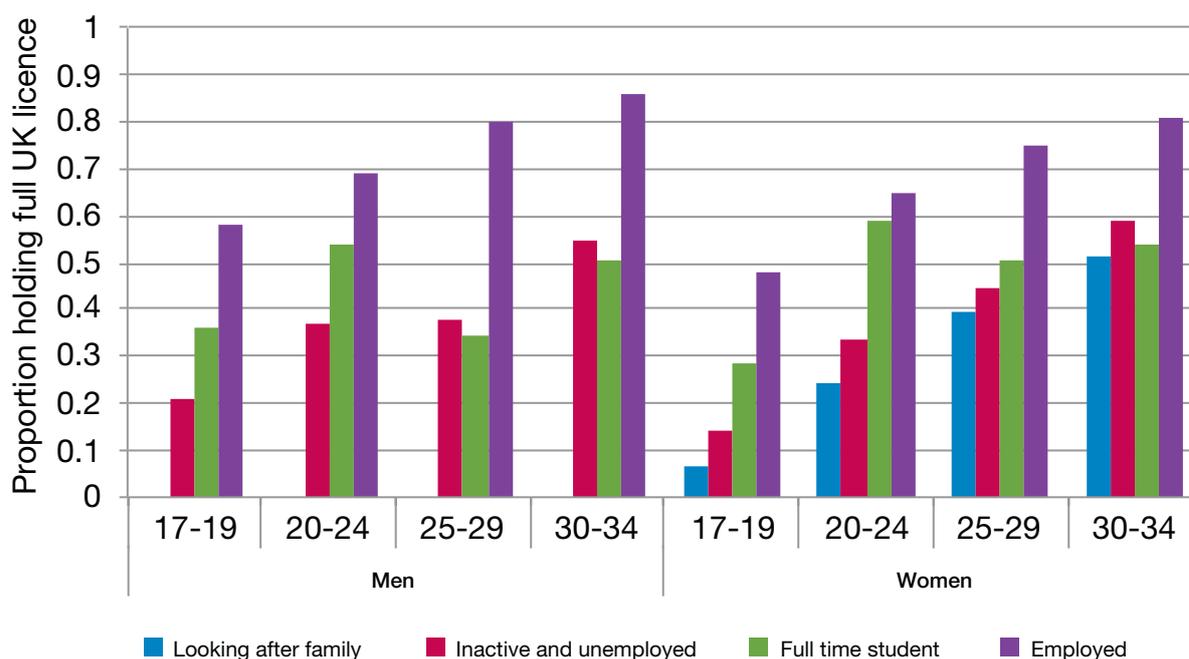


Source: Authors' own calculations using Wave 1 of UKHLS

4.1.4 Economic activity

Since economic activity is related to age, the proportions holding a full driving licence by economic activity are shown, controlling for gender and age (Figure 4.5). At all ages, those who are employed are the most likely to hold a full driving licence. Unemployed / economically inactive men are significantly less likely to hold a licence, especially at the youngest ages. At ages 17–19 full-time students are less likely to hold a licence than those employed but are more likely to hold one than those unemployed / inactive. Among students aged 20–24, the proportion holding a full driving licence is not far behind those employed. By their early thirties, eight out of ten employed men and women hold a licence compared to only 50% of those who were still in full-time education, unemployed / economically inactive, or undertaking family care. It is not possible to tell from these cross-sectional data whether this relationship results from the process whereby having a job facilitates being able to afford driving lessons and gain a full licence, or whether holding a driving licence facilitates getting a job.

Figure 4.5: Proportion holding a full UK licence, by gender, economic activity, and age (weighted estimates)



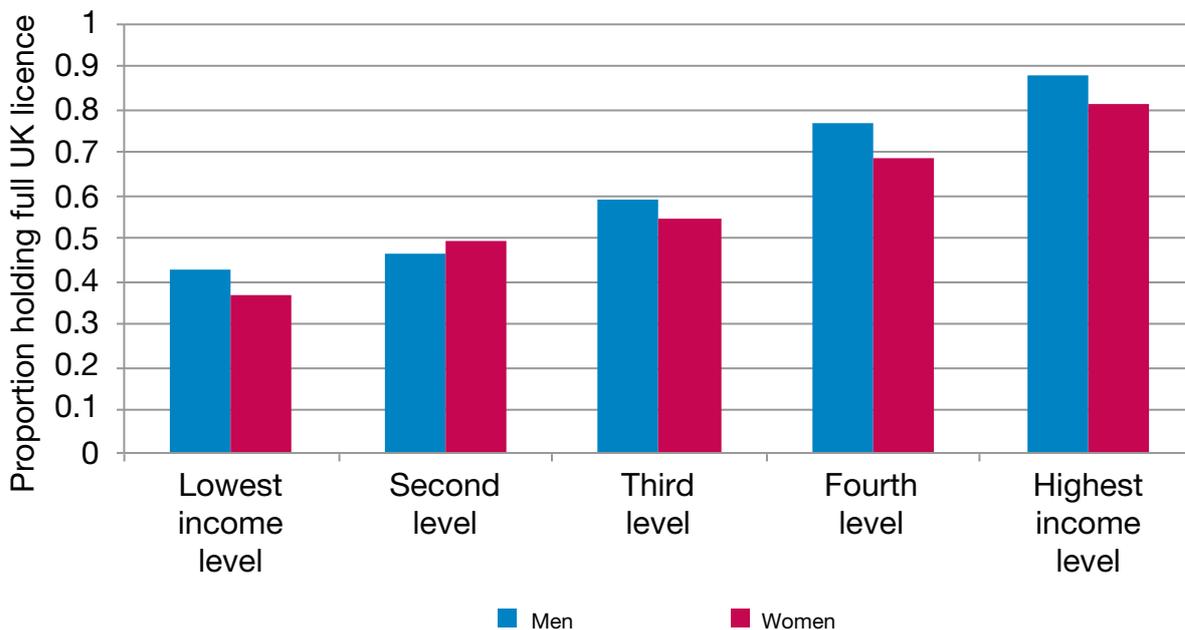
Source: Authors' own calculations using Wave 1 of UKHLS

4.1.5 Individual income

Consistent with findings from the NTS (Le Vine et al., 2013), a strong positive relationship between individual income and the likelihood of holding a full licence is found, for both men and women, when all those aged 17–34 are considered as a single group (Figure 4.6). The proportions holding a licence among the highest individual income quintile are roughly double those for the poorest quintile. However, since individual income and the propensity to hold a full driving licence both increase with age, it is important to stratify this relationship by age (Figure 4.7).



Figure 4.6: Proportion holding a full UK licence, by gender and individual income, 17- to 34-year-olds (weighted estimates)

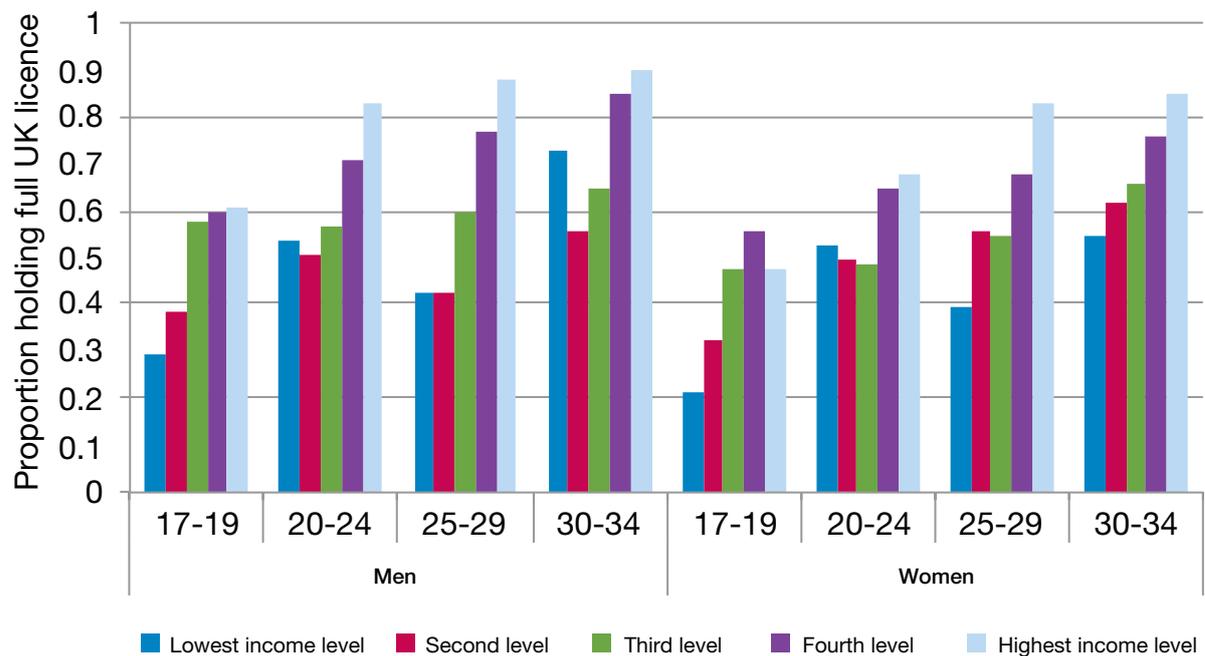


Source: Authors' own calculations using Wave 1 of UKHLS

When the relationship between individual income and licence-holding is examined controlling for age, a more complex pattern is seen, especially for men. At most ages, higher individual income is associated with increased licence-holding. But among men in their early thirties, those in the lowest individual income quintile are actually more likely to hold a licence than men with intermediate levels of individual income.



Figure 4.7: Proportion holding a full UK licence, by gender, individual income and age (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

4.1.6 Living arrangement

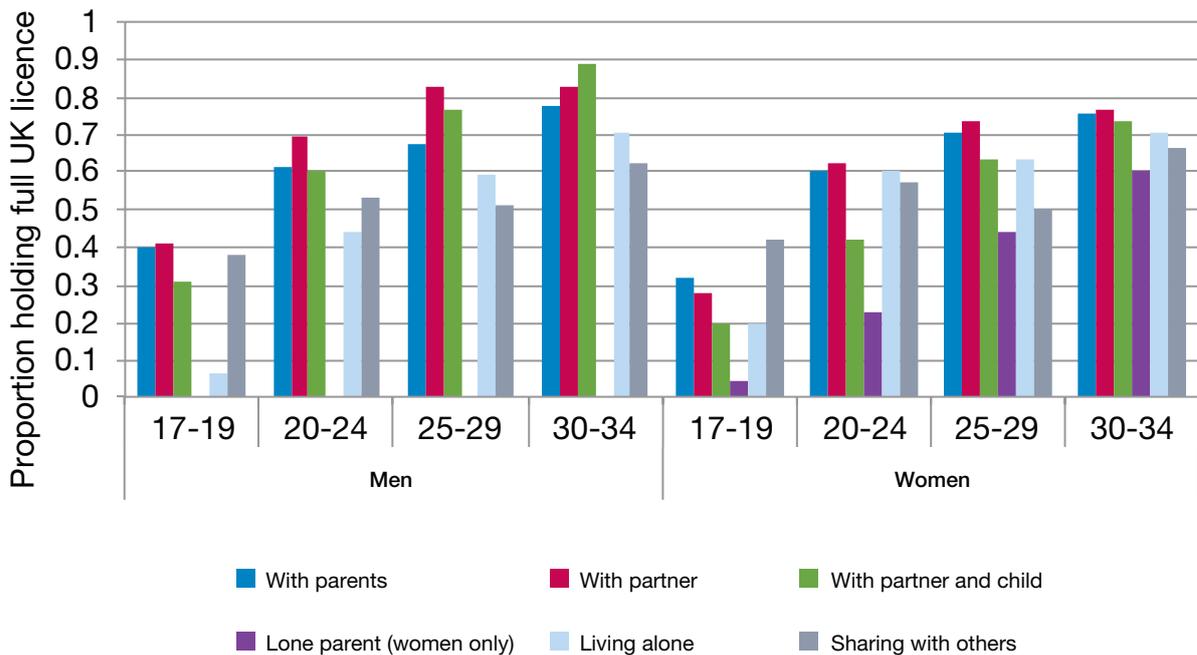
The measure of living arrangement chosen and used in this research identifies first of all those living with at least one parent (whatever their partnership and parenthood status), and then, among those living independently of the parental home, distinguishes between whether they have a partner and/or children, and whether they live outside of a family (either alone or sharing with others). Since the proportion of people living away from the parental home and licence-holding both increase with age, it is appropriate to examine the relationship between living arrangement and licence-holding within each age group. The reader should keep in mind that the sample sizes of those living away from the parental home at ages 17–19 are small, and therefore differences in licence-holding by living arrangement in the youngest age group will not be statistically significant.

A complex pattern is seen (Figure 4.8), wherein the relationship between holding a driving licence and living arrangement differs according to gender, and also changes over age. Among men in their early twenties there are small differences in licence-holding according to living arrangement. Slightly higher levels of licence-holding are seen among those living in the parental home and those living with a partner independently of the parental home. By their early thirties, however, those living outside of a family (i.e. living alone or sharing with others) are significantly less likely to hold a licence than those living in a couple. Men remaining in the family home have fairly similar probabilities of holding a licence to those living in a new family.

For women, the pattern is different. Younger mothers (irrespective of whether they are living in a couple or as a lone parent) are less likely to hold a full driving licence than either women residing in the parental home or childless women living away from their parents (whether living as a couple or sharing with others). For example, among women in their early twenties, around 60% of those living with their parents, living independently, or as a childless couple hold a licence compared to around 40% of women living in a couple with children, and 22% of lone mothers.

Among mothers, the probability of licence-holding increases steeply with age, and by their early thirties the differences in licence-holding for women according to living arrangement are relatively small. As will be seen later on in the report, young mothers tend to be less well off, and so it is likely that this relationship is being affected by the association between early motherhood and poor socioeconomic resources. Section 4.4 examines what happens to this relationship when individual income and other variables are controlled for.

Figure 4.8: Proportion holding a full UK licence, by gender, living arrangement, and age (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

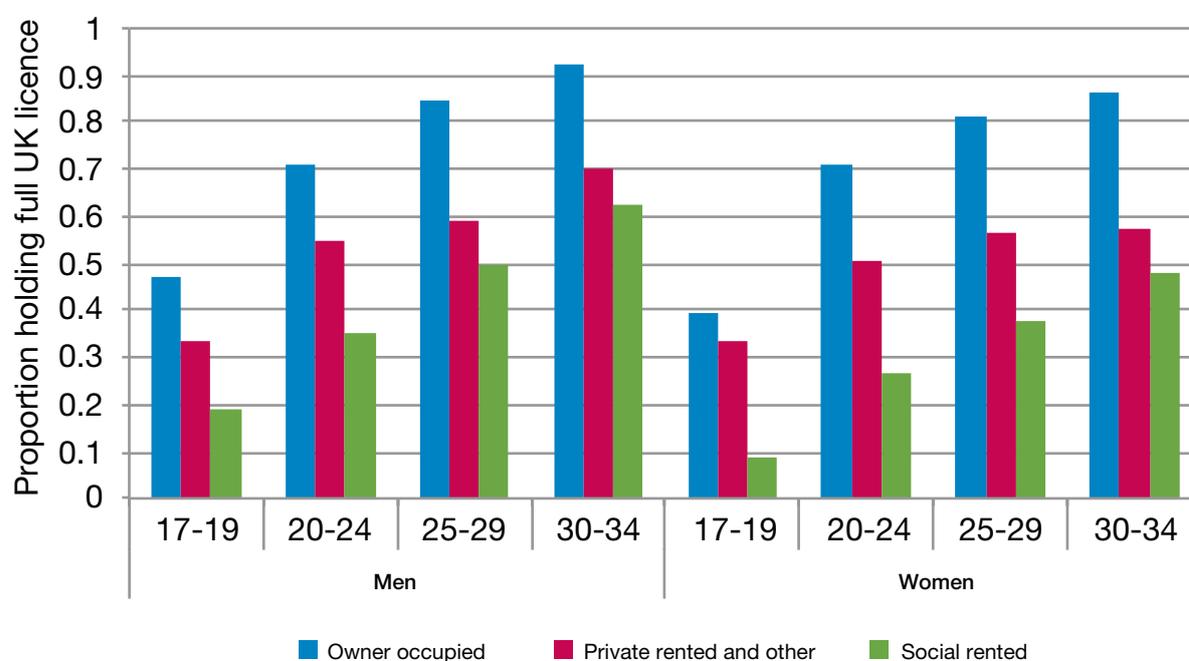
4.2 Household characteristics

4.2.1 Housing tenure

Among both young men and young women, the proportions holding a full licence are higher for those living in owner-occupied housing, medium for

those in private rented accommodation and lowest for those living in social housing (Figure 4.9). Tenure differences are greatest in the youngest age group, where less than two in ten men and less than one in ten women living in social housing are seen to hold a full licence as compared to around four in ten men and women living in owner-occupation. This said, even among those in their early thirties over 90% of male owner-occupiers hold a licence in comparison with 70% of private renters and 63% of social renters. Women living in social rented accommodation appear to be significantly less likely to hold a licence than men living in social rented accommodation. For example, among those in their early thirties 47% of women living in social rented housing hold a full licence compared to 63% of male social renters.

Figure 4.9: Proportion holding a full UK licence, by gender, housing tenure, and age (weighted estimates)



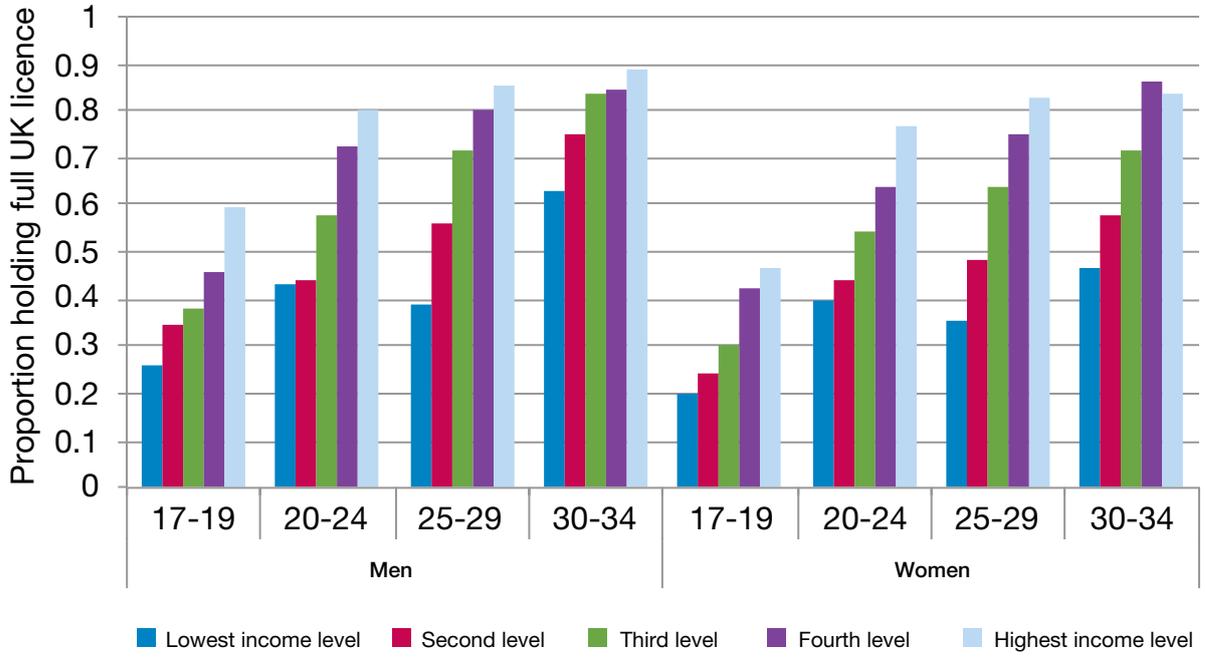
Source: Authors' own calculations using Wave 1 of UKHLS

4.2.2 Equivalised household income

Young men and women from households with higher equivalised income are more likely to be in possession of a full driving licence. Studying this relationship by age (Figure 4.10) reveals that among 30- to 34-year-old men, there are smaller differences in the probability of licence-holding by household income than in the younger age groups. However, this is not the case for women; large differences in licence-holding by equivalised household income are visible across all age groups. It is worth noting that these household income differentials in licence-holding are far larger than those seen in relation to class background (see Figure 4.2). Household income appears to be strongly

related to licence-holding, but is of course also related to many of the other explanatory variables such as education and employment status.

Figure 4.10: Proportion holding a full UK licence, by gender, equivalised household income, and age (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

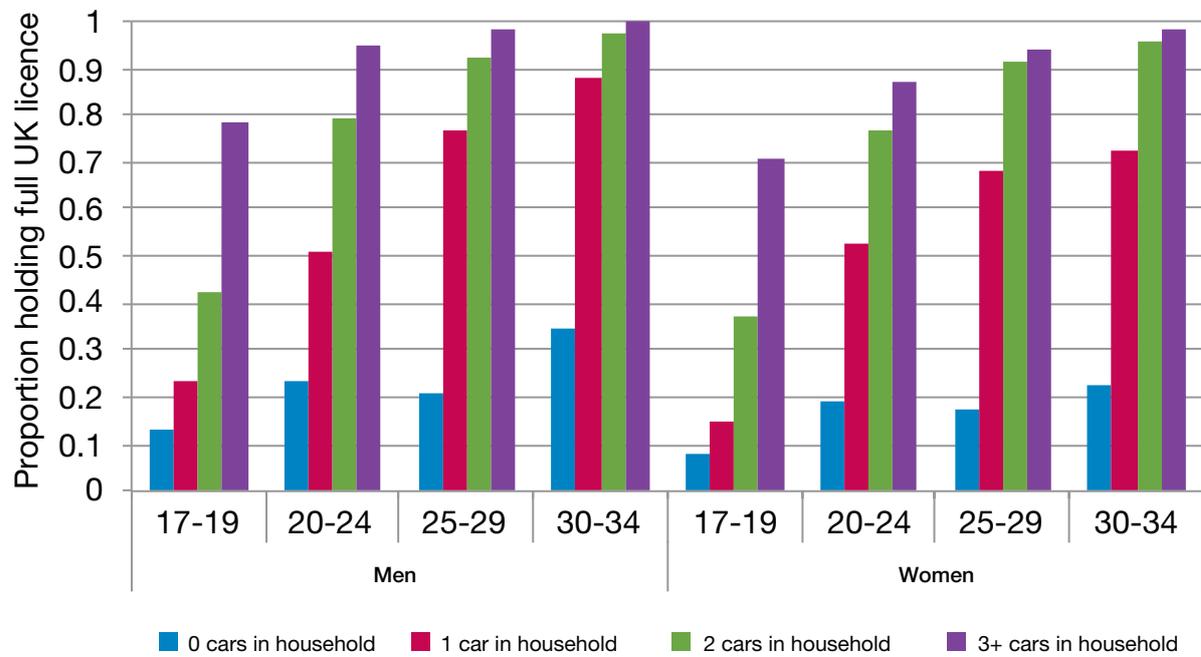
4.2.3 Number of cars

Not surprisingly, the more cars there are in the household, the more likely young people are to hold a licence (Figure 4.11). However, this factor seems to matter more at younger ages, when perhaps young adults cannot afford to buy a car themselves. However, it is interesting to note that in households where there are no cars, the proportion of licence-holders remains very low in all ages. This variable might be inversely related to licence-holding, as it is possible that having acquired a licence encourages young adults to buy a car, rather than the presence of a car motivating them to get a licence. Since the



number of cars is to some extent an outcome of licence-holding, this variable is not entered into the multiple regression analysis.

Figure 4.11: Proportion holding a full UK licence, by gender, number of cars in the household, and age (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

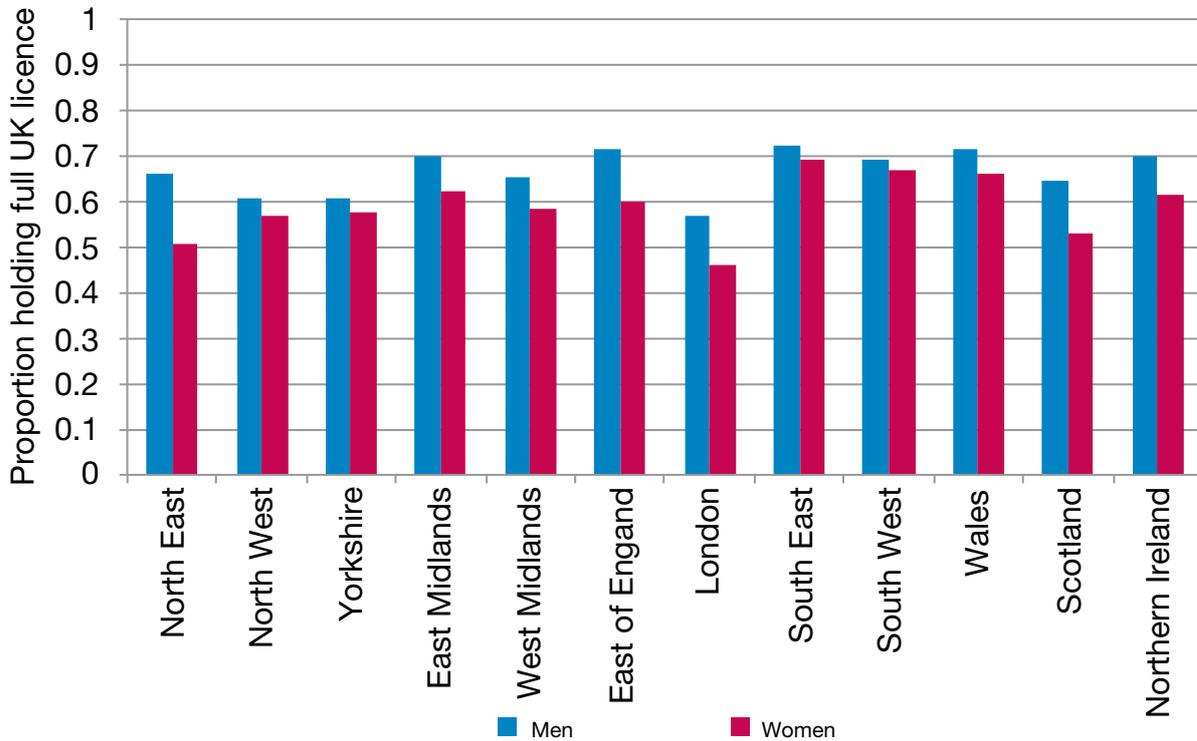
4.3 Characteristics of the local area

4.3.1 Government Office Region

Figure 4.12 shows that in all GORs, more young men than young women hold a full UK driving licence. Additionally, the proportion of licence-holders is the lowest among those who live in London, which is consistent with earlier findings (Le Vine & Jones, 2012). The same regional pattern is seen when examining this relationship by age, so those results are not presented.



Figure 4.12: Proportion holding a full UK licence, by gender and GOR, 17- to 34-year-olds (weighted estimates)



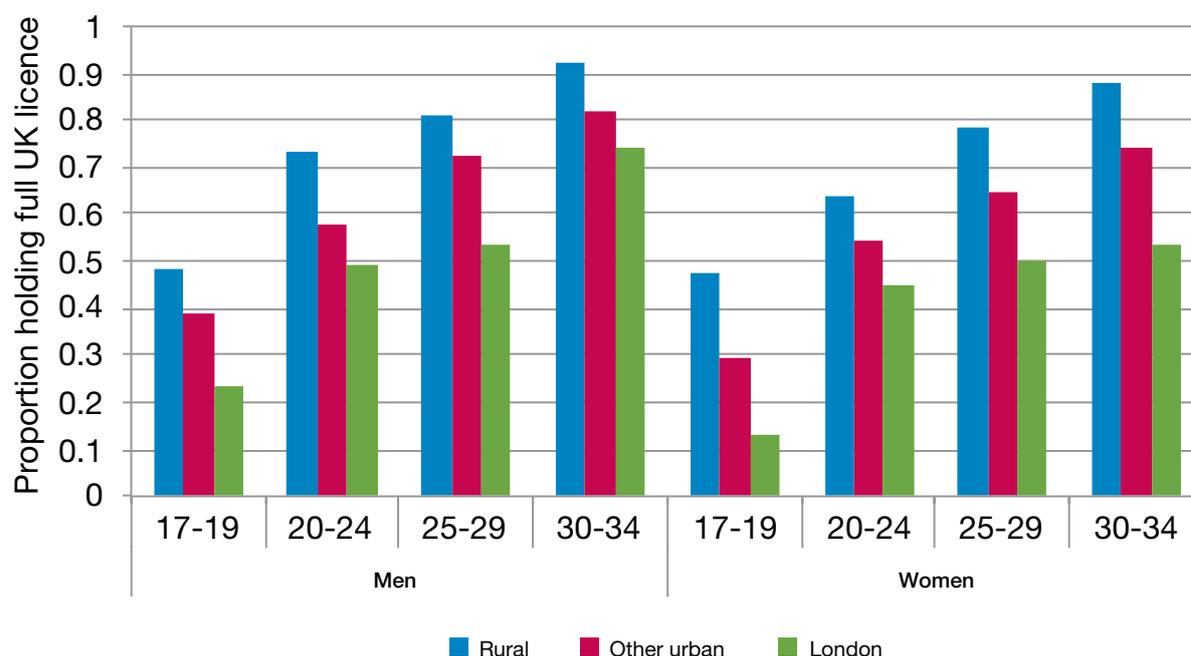
Source: Authors' own calculations using Wave 1 of UKHLS

4.3.2 Area type

Consistent with evidence from the NTS (Le Vine & Jones, 2012), young men and women who live in London are the least likely to hold a full licence, followed by those who live in other urban areas (Figure 4.13). Those who live in rural areas are the most likely to hold a full licence. As one moves from rural areas to more urban areas, the gender gap in licence-holding increases. The biggest difference between men's and women's rates of licence-holding is seen in 30- to 34-year-olds living in London; the proportion of women who hold a full licence in this group is 20 percentage points lower than that of men. It is also remarkable that there is a 10 percentage point difference between men and women who live in London in the youngest age group.



Figure 4.13: Proportion holding a full UK licence, by gender, area type, and age (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

4.4 Interrelationships between explanatory variables

The descriptive findings presented above have revealed differences in the proportions holding a full driving licence according to gender, age, education, economic activity, individual income, housing tenure, equivalised household income, living arrangement, number of cars, and the type of area where respondents live. This type of analysis is essential, for example, to summarise patterns in the data, to highlight groups which have particularly low levels of driving licence-holding, and to indicate whether the relationship between an explanatory variable and licence-holding differs according to gender. For example some evidence has been seen for a stronger association between education and licence-holding among women than among men.

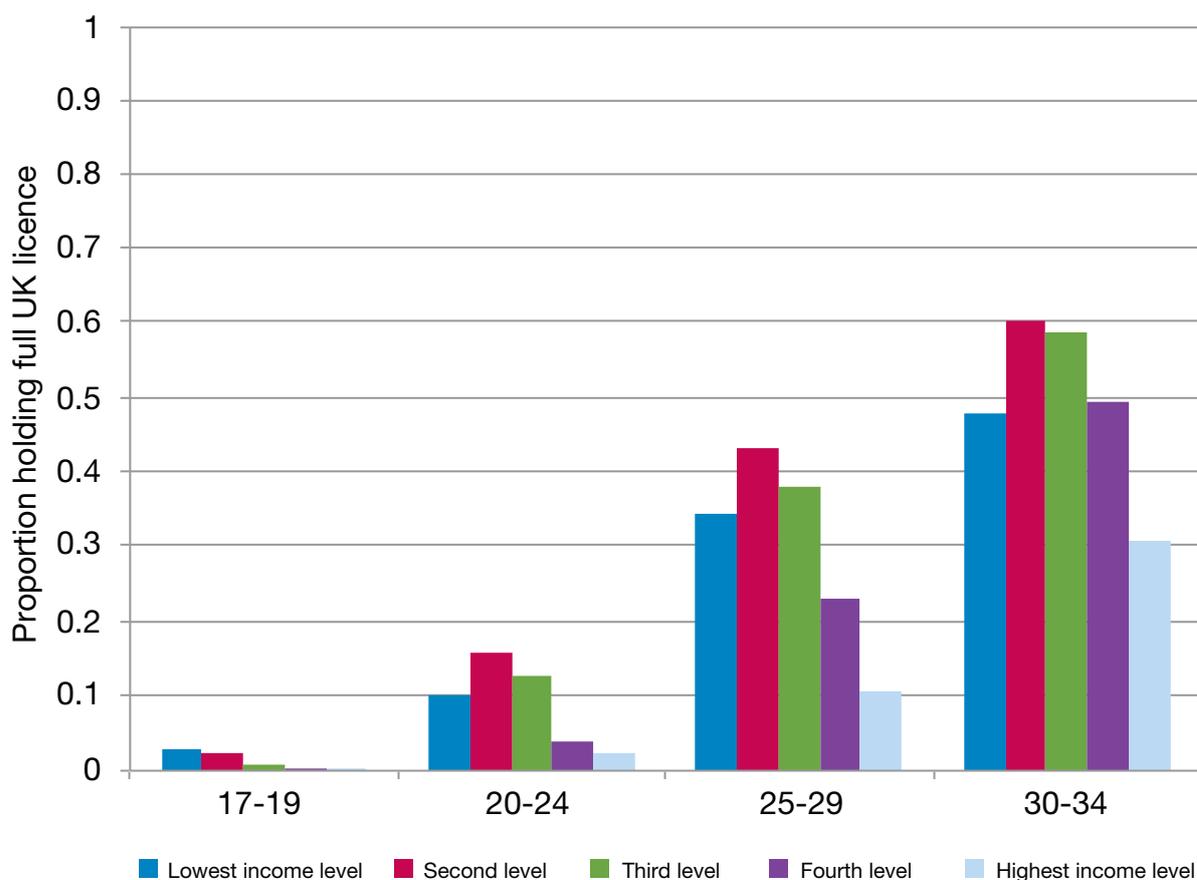
However, it is important to bear in mind that many of the explanatory factors are related to each other. Multiple logistic regression enables the examination of the association of each of these variables on licence-holding, net of the relationship of other variables in the model (i.e. when these other variables have been taken account of). Two examples of where variables are interrelated, and hence the results of the multiple regression analysis of licence-holding are different to the bivariate analyses, are discussed below.

Older, employed, owner-occupiers are more likely to be living in a high income household. For example, whilst a third of owner-occupiers are in the highest household income quintile, only 3% of those in social housing are in the top quintile. It is possible, therefore, that the strong relationship between driving licence-holding and household income is mediated through these other

variables. If this is the case then household income may not be significantly related to licence-holding in the multiple regression analysis.

Young adults from disadvantaged backgrounds tend to form partnerships and to become parents at an earlier age than young adults from more socioeconomically advantaged backgrounds. This is reflected in the pattern shown in Figure 4.14, which shows the proportion of young adults living independently with a partner and child by household income quintile. Only a tiny minority of teenagers are seen to be living independently in a couple with a child. The proportion living in a couple with children increases rapidly with age, but is delayed for those living in households with the highest equivalised income. Thus low rates of licence-holding among young adults with children found in the descriptive findings (Figure 4.8) may relate to the lower-than-average household incomes of those who make an early transition to parenthood. Once other variables are controlled for in the multiple regression, it might be found that the impact of living with children on licence-holding is positive.

Figure 4.14: Proportion of young adults living with a partner and child, by equivalised household income and age (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

4.5 Results from multiple logistic regression analyses of licence-holding

4.5.1 Interpreting odds ratios

Separate models are fitted for men and women to identify possible gender-specific relationships with licence-holding. Full details of the model results are given in Appendix 3. Three variables⁹ examined in the earlier bivariate analyses do not appear in the final regression model as discussed in Appendix 3. Once the remaining variables are controlled for in the model, the effect of household income is not statistically significant at the 5% level (because of its relationship with other variables such as housing tenure already in the model). Figure 4.15 shows the odds ratios associated with each category of an explanatory variable, comparing the odds of holding a full driving licence for individuals in that category of the variable, relative to the reference category for a variable. An odds ratio of 1 indicates that the odds of licence-holding for that category of the explanatory variable are no different to the baseline category. Odds ratios less than 1 indicate a lower likelihood of holding a full driving licence, whilst odds ratios above 1 indicate a positive association with licence-holding. The further the value of the odds ratio from 1, the stronger the size of the effect. For example, looking at Figure 4.15 it can be seen that the odds of holding a licence for men aged 20–24 are just over double the odds for men aged 17–19, holding all other variables constant.

4.5.2 Key findings from multiple regression analysis of licence-holding

All explanatory variables are categorical. The largest effect sizes for the likelihood of holding a full driving licence are found for: age, educational qualifications, individual income and area type. Differences in licence-holding according to age, education, and individual income are somewhat larger for women than for men. However, the impact of living arrangement on licence-holding appears stronger for men than for women.

The multiple regressions show that when controlling for all other factors in the model, older men and women are more likely to have a licence; this relationship is almost twice as strong for women as for men.

Higher levels of education are a key predictor of licence-holding, even after controlling for individual income. This relationship is particularly strong among women; in comparison with those with no qualifications, females with school-leaving qualifications are twice as likely, and those with A-level or higher-level qualifications are over four and a half times more likely, to have a licence.

⁹ Equalised household income, Government Office Region and number of cars in the household.

Once other factors are controlled for, employed young adults continue to be more likely to hold a full licence than those who are economically inactive / unemployed. For example, in comparison with employed women, women who are looking after family are half as likely to hold a full licence (with an odds ratio of 0.49), whilst male full-time students are also about half as likely as employed men to hold a full licence (with an odds ratio of 0.51).

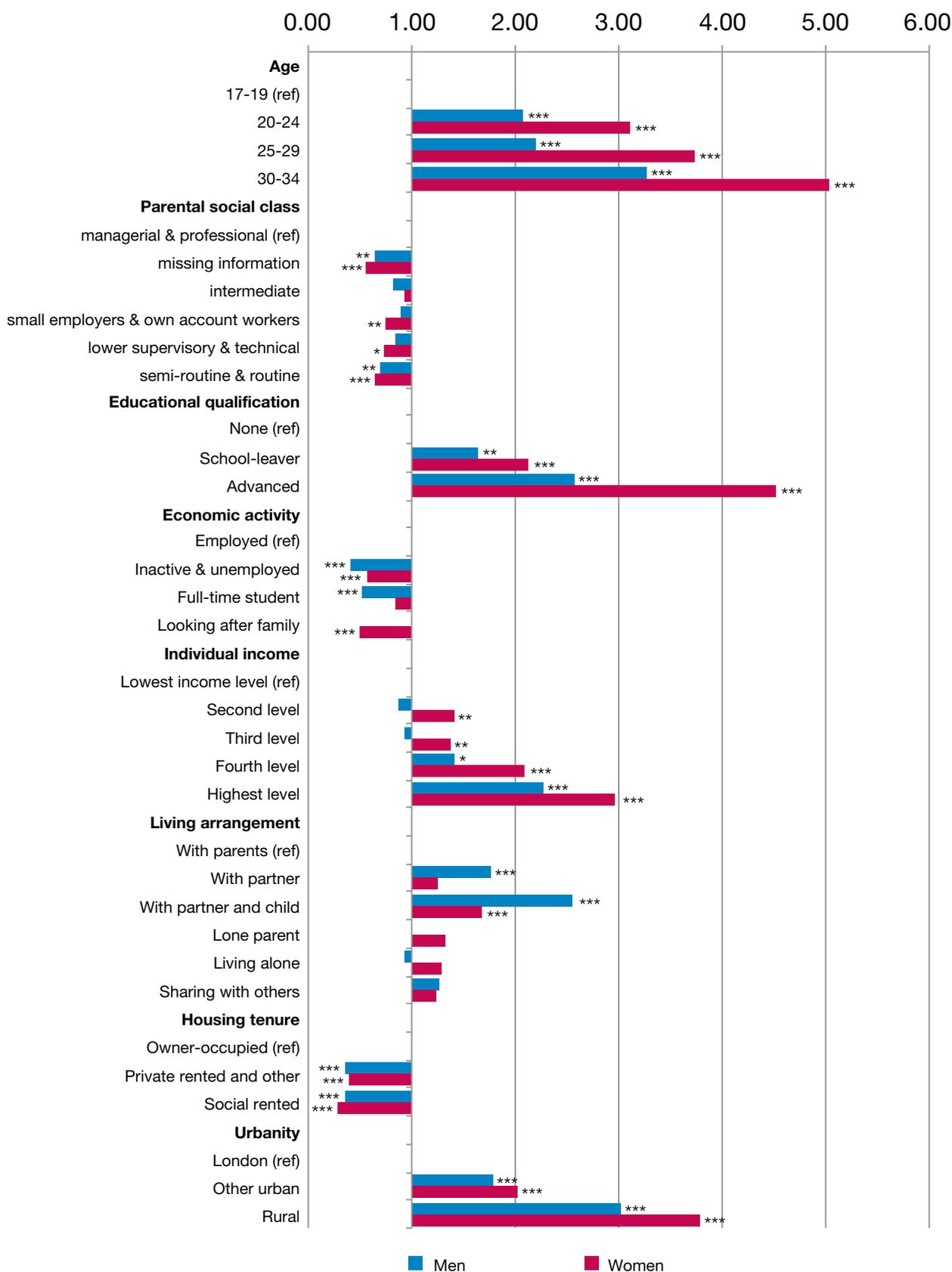
Individual income has a positive association with the likelihood of licence-holding. This relationship is much more pronounced among women than among men. In comparison with the lowest individual income quintile, the odds of holding a full licence are 3 times higher for females in the top quintile and 2.3 times higher for males, once other factors are controlled for.

Once other factors are controlled for, young adults living independently from the parental home, especially those living with a child, are more likely to hold a driving licence. Women who live with their partner and have at least one child are 1.7 times more likely to have a licence than those who live with their parents. Among men, this relationship is stronger (with an odds ratio of 2.6). For women, these 'adjusted findings' are different to the bivariate relationship shown in Figure 4.8: they suggest that once the lower socioeconomic circumstances of young families is controlled for, they are more likely than young single adults to hold a licence.

Even when other characteristics are held constant, housing tenure and area type show the same relationship with licence-holding as was found in the bivariate relationships: owner-occupiers are significantly more likely to hold a licence than those in private or social renting, and those living in rural areas than those living in urban areas, particularly London.



Figure 4.15: Results from logistic regression predicting licence-holding in the UK – young adults aged 17–34, by gender: odds ratios¹⁰



Significance levels: * p < 0.05, ** p < 0.01, *** p < 0.001

Source: Authors' weighted analyses using Wave 1 of UKHLS

10 See section 4.5.1 for an explanation as to how to interpret odds ratios.

4.6 Summary

Net of the effect of other factors, the strongest predictors of licence-holding among men and women aged 17–34 are: age, education, economic activity status, individual income, living arrangement, housing tenure and rural/urban locality. Parental social class is associated with women's probabilities of holding a licence, but not with men's. Once these factors are held constant, household income is no longer related to licence-holding. Differences in licence-holding according to age, education, individual income and locality are particularly strong for women. In the bivariate analyses, women living independently of the parental home with children of their own were found to be less likely to hold a driving licence. However, once the poorer socioeconomic characteristics of these young families is taken account of in the multiple regression analysis, it is seen that family formation and living away from the parental home is generally associated with a *higher* likelihood of owning a licence. Living arrangement, that is to say whether or not the respondent is living in a couple independently of the parental home, is a particularly strong predictor of licence-holding for men.



5. Results – Annual Car-Driving Mileage Among Full Licence-Holders, and Place of Work

In this section, the first relationship to be looked into is that between mean annual car-driving mileage among full licence-holders and selected individual, household and local-area factors. Then the relationship between mileage and place of work is investigated to better understand the implications of certain occupations that require young adults to drive as part of their job. This is followed by the exploration of the relationship between method of transport used to commute to work and mileage. Finally, the main determinants of mean annual car-driving mileage are examined using multiple regression techniques.





5.1 Individual characteristics

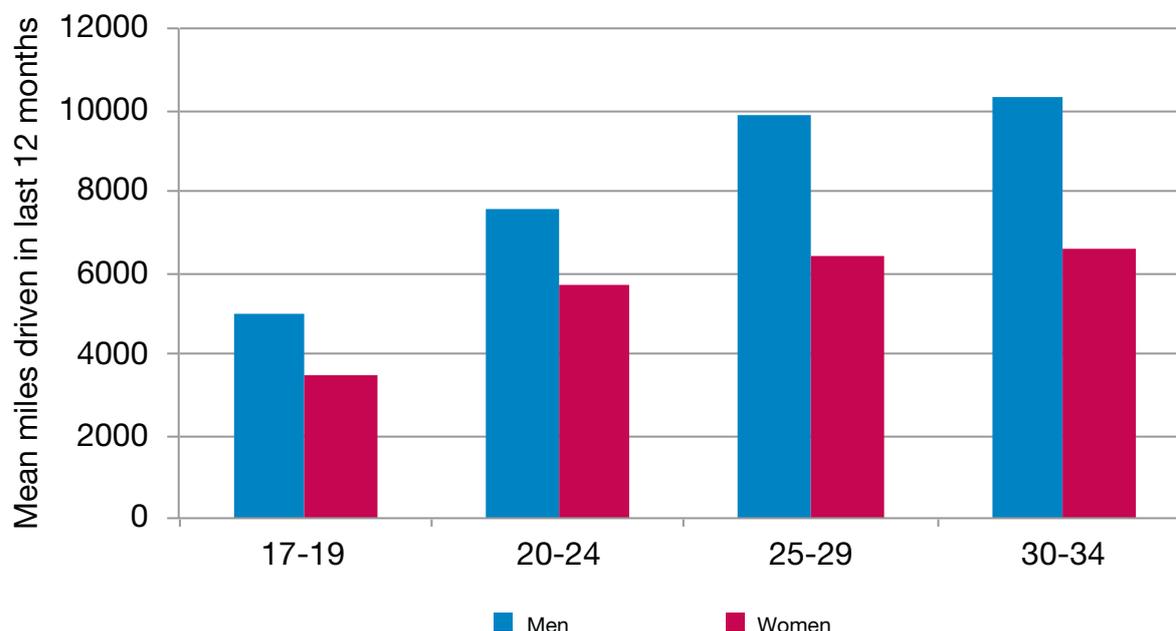
This subsection examines the association between individual-level characteristics (i.e. gender, age, education, economic activity and individual income), and mean annual car-driving mileage. Parental social class and current living arrangement were not found to have a significant relationship with mileage among licence-holders, so these results are not shown.

5.1.1 Age and gender

According to the self-reported annual car-driving mileage responses given in the UKHLS, male licence-holders clock up on average around 8,970 miles a year, whilst this figure is around 6,067 miles for females. The average annual car-driving mileage increases with age; this is especially the case for men, and less so for women (Figure 5.1). Thus the gender gap in the number of miles driven increases with age. This finding is in line with what others have found using data from the NTS (Le Vine & Jones, 2012). To sum up, on average, men drive more than women, and this is more so among the older age groups of young adults.



Figure 5.1: Mean annual car-driving mileage among full licence-holders, by gender and age (weighted estimates)



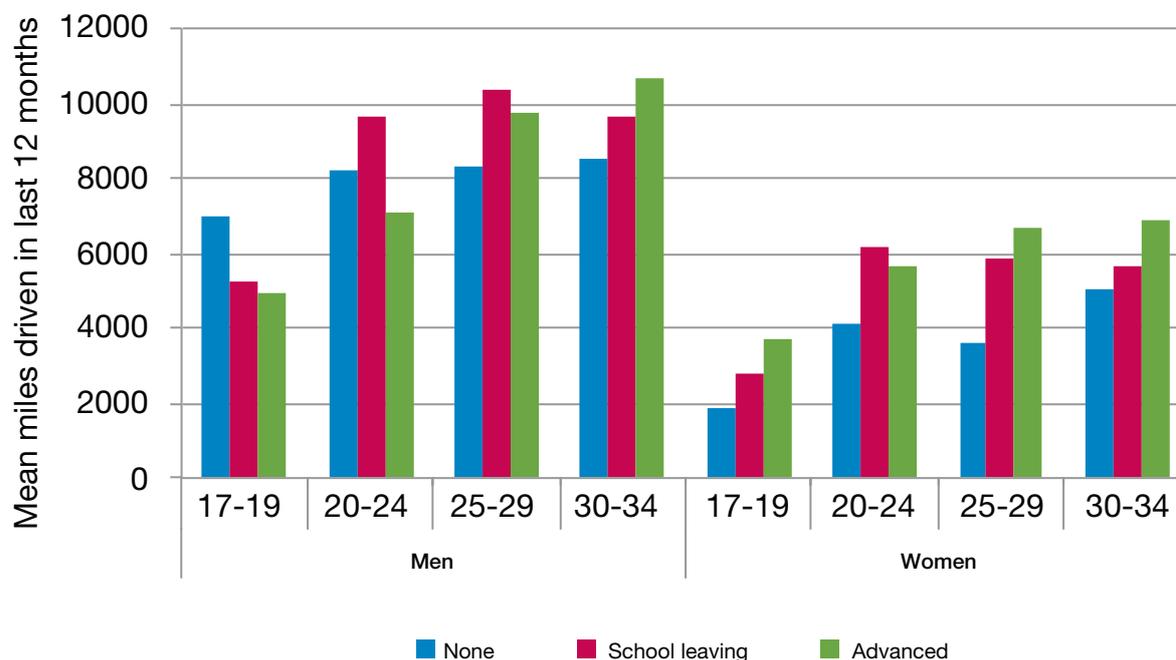
Source: Authors' own calculations using Wave 1 of UKHLS

5.1.2 Education

The overall picture for all young adults aged 17–34 is that mean annual car-driving mileage is higher for licence-holders with advanced or school-leaving qualifications and lower for those with no educational qualifications. However, breaking down this relationship by age shows that among men in the two youngest age groups (aged 17–24), and among women aged 20–24, the story is somewhat different from this overall pattern (Figure 5.2). Among 17- to 19-year-old male licence-holders, those with lower educational qualifications actually drive more miles than the more-educated. Additionally, among 20- to 24-year-old men, the highest annual mean car-driving mileage belongs to those with school-leaving qualifications, followed by those who have no qualifications. Among 20- to 24-year-old women, the highest average annual mileage is found among those with school-leaving qualifications, followed by those with advanced education.

So the relationship between mileage and education differs by both gender and age. Further research is needed to understand whether a possible explanation is that young male licence-holders with low levels of education may have entered the labour market at a relative early age and may be more likely to be engaged in jobs that involve driving.

Figure 5.2: Mean annual car-driving mileage among full licence-holders, by gender, age, and education (weighted estimates)

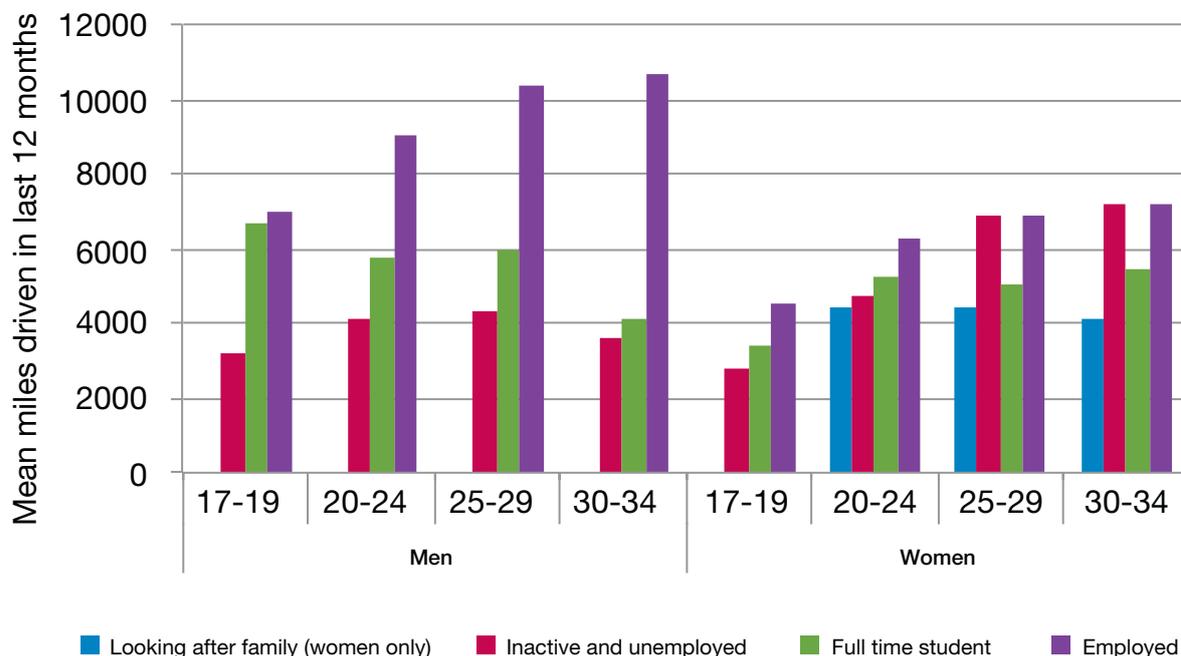


Source: Authors' own calculations using Wave 1 of UKHLS

5.1.3 Economic activity

Among licence-holders, employed men report the highest average annual car-driving mileage (Figure 5.3). Differences between employed men and those unemployed / economically inactive are very large for those in their late twenties and early thirties, as indicated by the difference between the purple and the red bars. Interestingly, there are much smaller differences in annual car-driving mileage according to economic activity among female licence-holders. Furthermore, the overall pattern is different for women, with unemployed and economically inactive women reporting similar mileages to those employed. Women who report that they are looking after a family display the lowest annual reported car-driving mileage. To summarise, among licence-holders, the highest annual car-driving mileage is seen among employed young men and women.

Figure 5.3: Mean annual car-driving mileage among full licence-holders, by gender, age, and economic activity (weighted estimates)



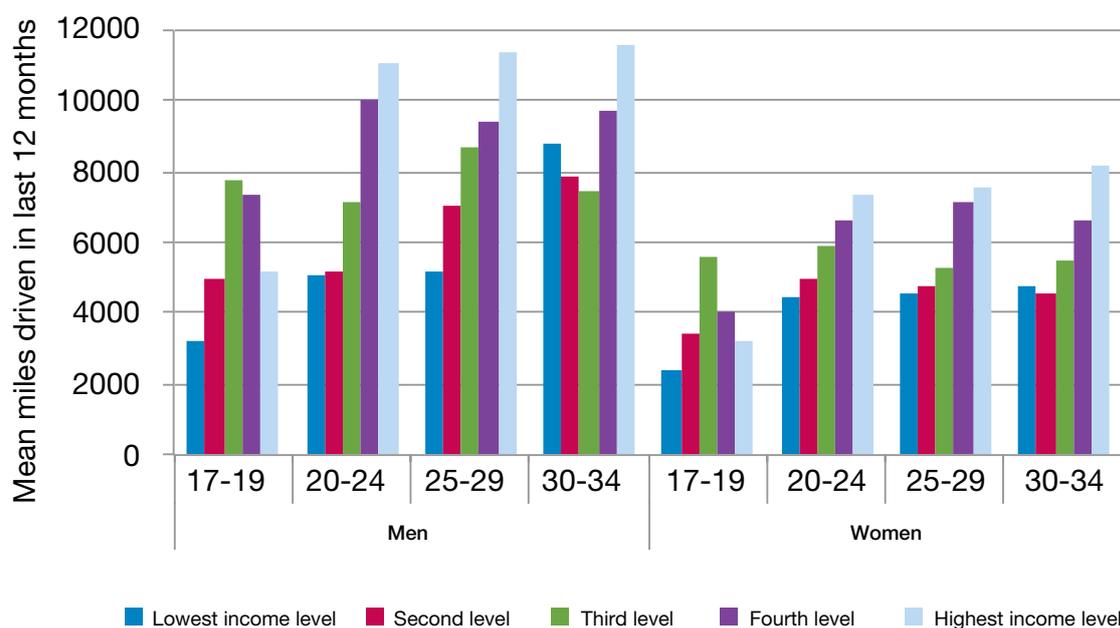
Source: Authors' own calculations using Wave 1 of UKHLS

5.1.4 Individual income

Except for teenagers, licence-holders with higher individual incomes tend to clock up a higher car mileage (Figure 5.4). For example, among men in their early thirties who are in the top income quintile, average mileage is around 11,500 miles, whereas for men in the lowest three income bands it is closer to 8,000 miles. The respective figure for women in their early thirties is 8,000 miles for those in the top income group, and a little over 4,000 miles for those with the lowest levels of income.

Among teenagers a different relationship is seen, wherein the highest mean annual car-driving mileage belongs to men and women with intermediate levels of individual income (green and purple bars). Once again, it is impossible to tell from these data whether this is a consequence of the types of jobs being undertaken by teenage licence-holders with intermediate levels of individual income.

Figure 5.4: Mean annual car-driving mileage among full licence-holders, by gender, age, and individual income (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

5.2 Household characteristics

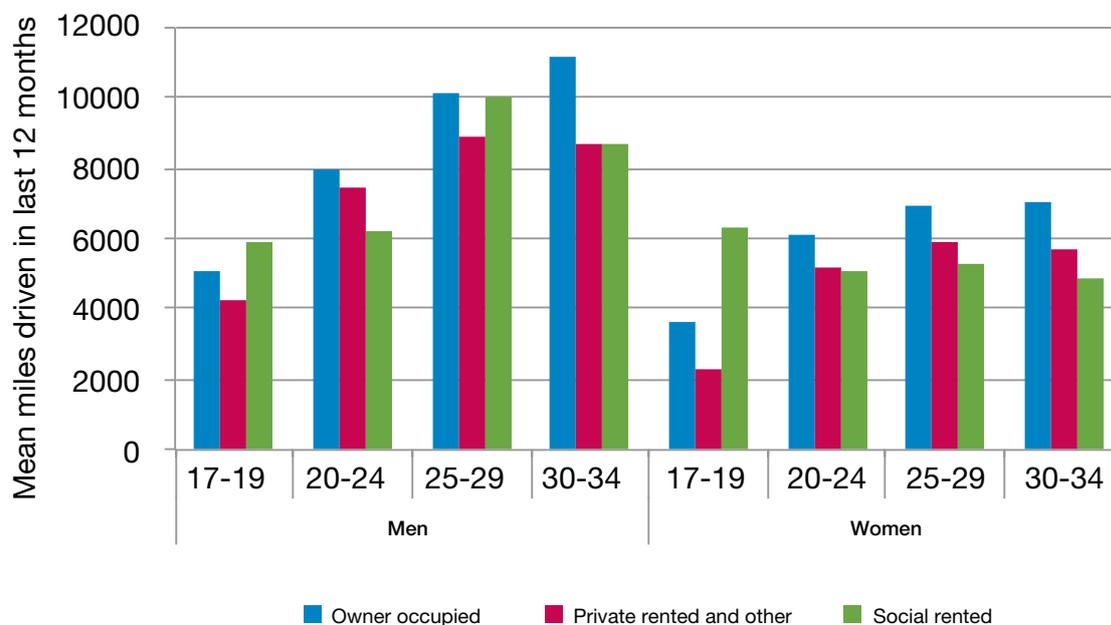
This subsection examines the relationship between household characteristics (i.e. housing tenure and equivalised household income), and mean annual car-driving mileage among those who hold a full driving licence.

5.2.1 Housing tenure

Figure 5.5 shows the relationship between housing tenure and average car-driving annual mileage, by age and gender. In general, men and women who own their home tend to drive more than those who live in private or social rented housing. For example, among men in their early thirties owner-occupiers drive around 11,000 miles on average compared to around 8,700 miles for those in private or social renting. However, there are some deviations from this trend. In particular, teenage licence-holders living in social rented accommodation reported the highest annual car-driving miles, and this is strikingly so in the case of women. To some extent this finding may relate to the relatively small numbers in this population, but it may also be due to a selection effect. Recall from the analyses of licence-holding (Figure 4.9) that the chances of holding a car licence among teenagers living in social renting is significantly smaller than for other tenure groups. Hence, the select group who do have a licence may be particularly motivated to drive more – although it is not possible to tell from these data whether this is a result of necessity or preference.

To sum up, overall, young homeowners' annual car-driving mileage is the highest, except in the youngest age group.

Figure 5.5: Mean annual car-driving mileage among full licence-holders, by gender, age, and housing tenure (weighted estimates)



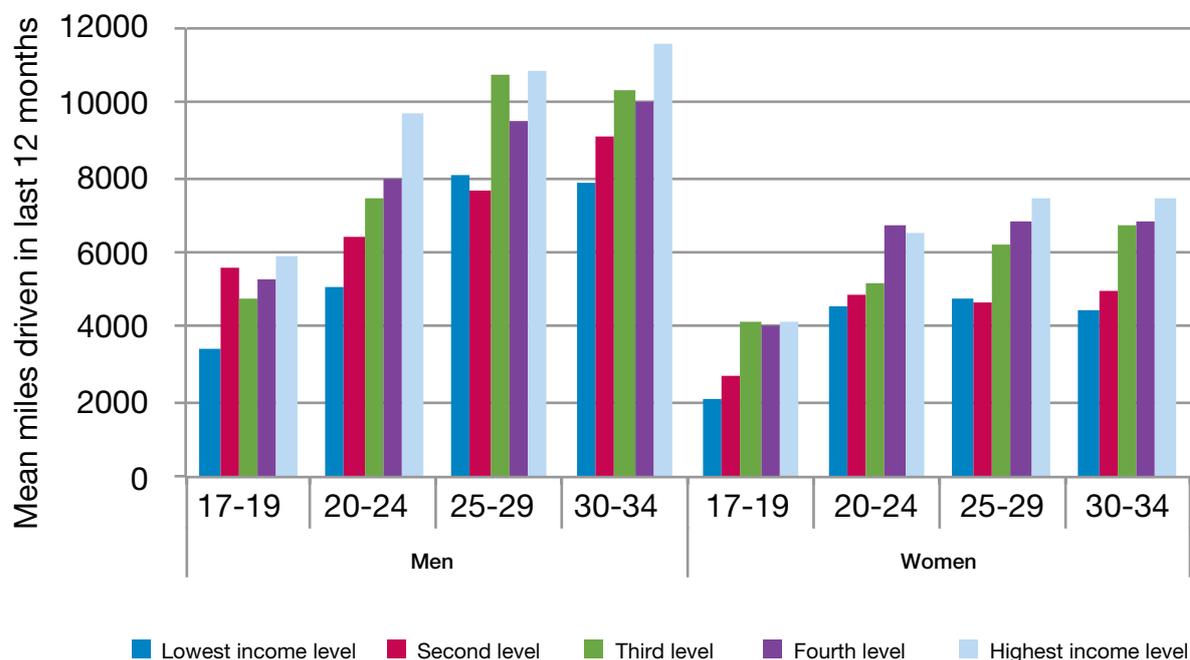
Source: Authors' own calculations using Wave 1 of UKHLS

5.2.2 Equivalised household income

For both genders, mean annual car-driving mileage increases as equivalised household income rises, in all age groups (Figure 5.6). In other words, licence-holders with higher household income drive more. Teenage men and women in the lowest household income quintile report particularly low annual mileage. Considering average mileage for those aged in their early thirties, men and women in the top household income quintile drive 50% and 66% more miles respectively than men and women in the lowest household income quintile.



Figure 5.6: Mean annual car-driving mileage among full licence-holders, by gender, age, and equivalised household income (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

5.3 Characteristics of the local area

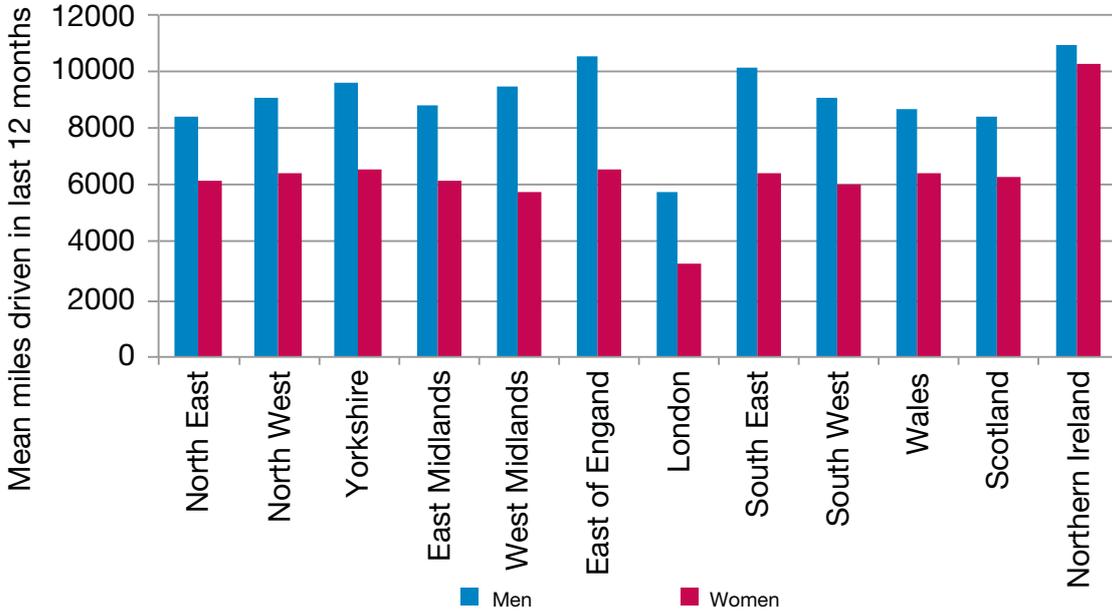
This subsection examines the relationship between local-area characteristics (i.e. GOR and area type) and annual car-driving mileage.

5.3.1 Government Office Region

Figure 5.7 shows how self-reported car-driving mileage differs according to GOR. Mileage is lowest for licence-holders living in London, while it is the highest in Northern Ireland, where gender differences are also the smallest.



Figure 5.7: Mean annual car-driving mileage among full licence-holders, by gender and GOR, 17- to 34-year-olds (weighted estimates)



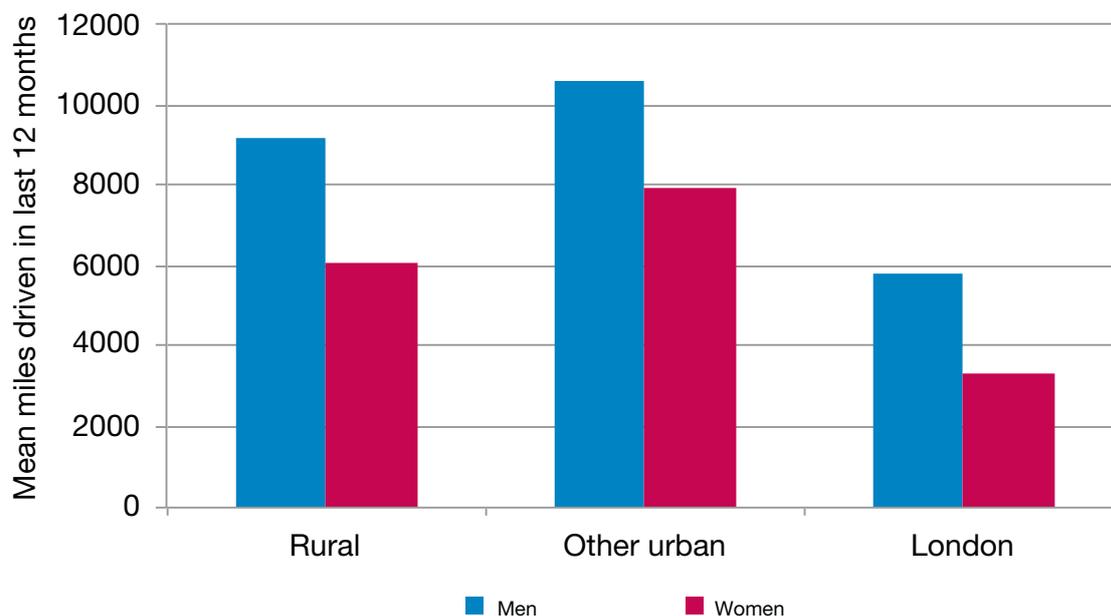
Source: Authors' own calculations using Wave 1 of UKHLS

5.3.2 Area type

Figure 5.8 shows that the highest number of miles driven in the last year is reported by licence-holders who live in other urban areas, followed by those who live in rural areas and, lastly, those who live in London. These findings reflect the fact that commuting to work in London is dominated by public transport (particularly Underground, rail and bus), which reduces car use. However, in other urban areas and rural areas the car might be the preferred means to commute to work owing to the limited availability or reliability of public transport services.



Figure 5.8: Mean annual car-driving mileage among full licence-holders, by gender and area type, 17- to 34-year-olds (weighted estimates)

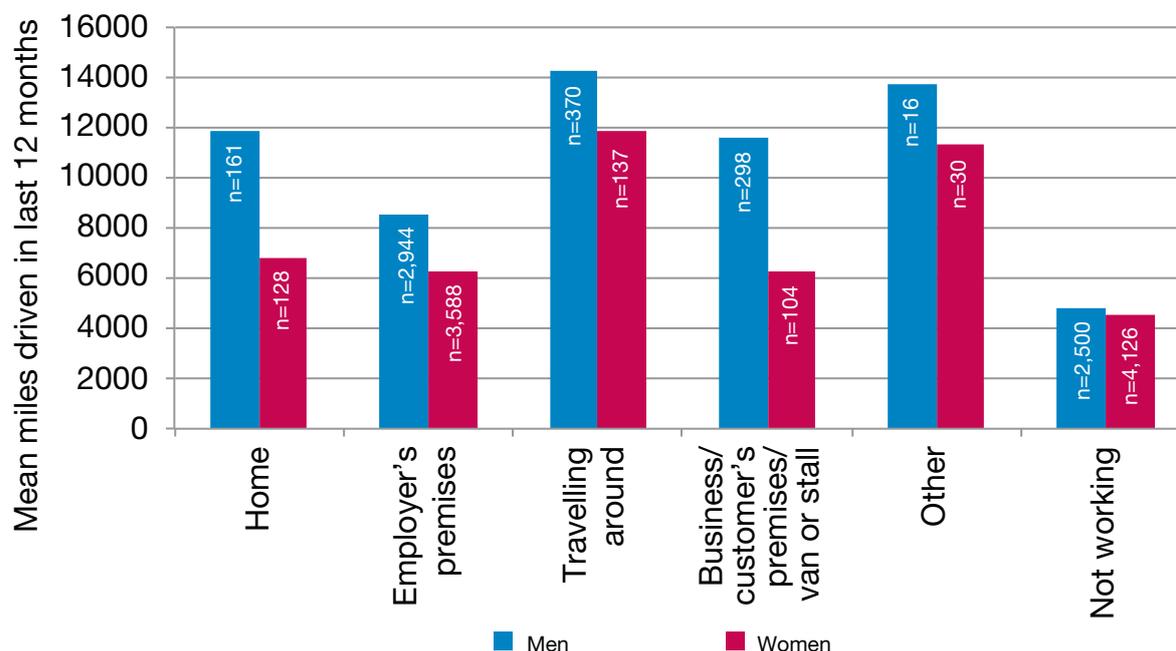


Source: Authors' own calculations using Wave 1 of UKHLS

5.4 Place of work

Some occupations may require young adults to drive as part of their job. For example, 5% of employed young men and 1% of employed young women indicated that their workplace was “business premises, van or stall, or customers’ premises”. An additional 6% of employed men and 2% of employed women reported that their workplace was “driving or travelling around”. The nature of these jobs is likely to increase respondents’ annual car-driving mileage. Therefore, it is important to examine the relationship between the place of work and annual car-driving mileage among licence-holders. Figure 5.9 shows that, indeed, these workplaces are associated with increased mileage compared to, for example, working at employers’ premises. Although these young adults drive more, they constitute a small group numerically and they are evenly distributed among the different sociodemographic groups. This implies that place of work is not likely to significantly influence the overall trends in car mileage by, for example, income or education.

Figure 5.9: Mean annual car-driving mileage among full licence-holders, by place of work and gender, 17- to 34-year-olds (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

5.5 Commuting to work

In section 5.5.1 all young adults who are employed, irrespective of whether or not they hold a full driving licence, are examined with regard to the probability that they drive themselves to work. The following section (5.5.2) takes the sample of licence-holders aged 17–34 and examines how mean annual car-driving mileage differs for young adults who do, and do not, drive to work.

5.5.1 Who drives to work?

More than half of young adults (52%) aged 17–34 drive themselves to work, 18% cycle or walk to their workplace, 10% use the train or underground train, 9% take a bus or coach, and 11% use another means (including getting a lift from someone from the household or from outside the household, and going by motorcycle taxi or minicab). Young adults are less likely to commute to work by car than adults who are aged 35 or older (of whom 68% do) and they are more likely to cycle or walk to work than older adults (14% of them do). Additionally, only 7% of adults aged 35 or above use the train or underground, 6% take a bus or coach, and 6% use other means to commute to work.

Table 5.1 shows that the proportion of young adults aged 17–34 who drive to work is slightly higher among employed men (53%) than among

employed women (50%). The proportion who drive to work increases with age, educational qualifications, individual income, and equivalised household income. Driving to work is least common among employed young adults living in London (23%) and most common among employed young adults in rural areas (68%).



Table 5.1: Mode of transport used to commute to work, by gender, age, education, individual income, household income, and area type, all employed UK young adults

| | Drive myself | Bus/coach | Train | Cycle/walk | Other ¹¹ | Unweighted sample size |
|-------------------------------------|--------------|-----------|-------|------------|---------------------|------------------------|
| Gender | | | | | | |
| Men | 53% | 8% | 10% | 18% | 11% | 3,855 |
| Women | 50% | 11% | 10% | 18% | 11% | 4,404 |
| Age | | | | | | |
| 17–19 | 29% | 13% | 4% | 29% | 25% | 815 |
| 20–24 | 46% | 13% | 9% | 20% | 12% | 1,937 |
| 25–29 | 55% | 9% | 10% | 16% | 10% | 2,618 |
| 30–34 | 61% | 7% | 12% | 14% | 6% | 2,889 |
| Education | | | | | | |
| none | 38% | 10% | 7% | 23% | 21% | 329 |
| school-leaving | 49% | 10% | 5% | 21% | 15% | 1,804 |
| advanced | 53% | 9% | 11% | 17% | 9% | 6,122 |
| Individual income | | | | | | |
| lowest income level | 30% | 13% | 9% | 25% | 24% | 269 |
| second level | 36% | 14% | 6% | 28% | 16% | 1,234 |
| third level | 46% | 14% | 6% | 21% | 14% | 1,888 |
| fourth level | 58% | 8% | 8% | 15% | 10% | 2,340 |
| highest income level | 61% | 5% | 16% | 12% | 6% | 2,528 |
| Equivalised household income | | | | | | |
| lowest income level | 37% | 13% | 11% | 28% | 12% | 569 |
| second level | 40% | 15% | 5% | 27% | 14% | 1,079 |
| third level | 49% | 12% | 7% | 19% | 14% | 1,904 |
| fourth level | 56% | 9% | 7% | 16% | 11% | 2,454 |
| highest income level | 57% | 7% | 16% | 13% | 8% | 2,253 |
| Area type | | | | | | |
| rural | 68% | 5% | 5% | 11% | 12% | 1,217 |
| other urban | 54% | 9% | 3% | 20% | 14% | 5,435 |
| London | 23% | 17% | 40% | 14% | 5% | 1,217 |

Source: Weighted analyses using Wave 1 of UKHLS

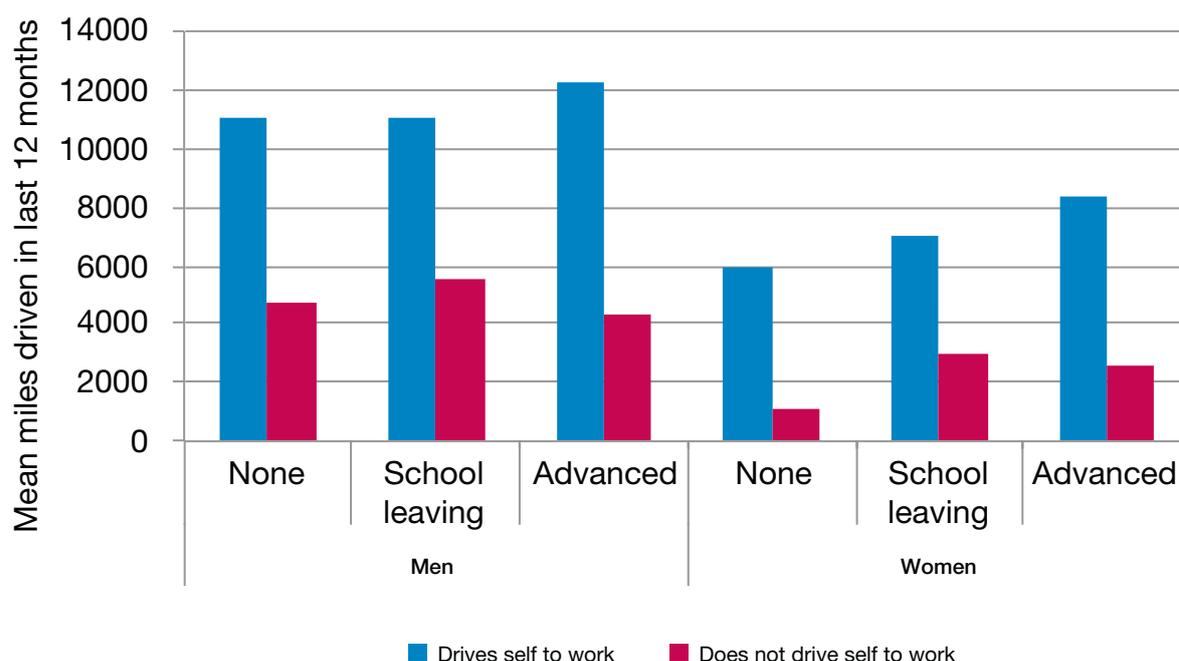
Note: This table includes all employed young adults including those who do and do not hold a full driving licence.

¹¹ This category includes getting a lift from someone from the household or from outside the household, commuting by motorcycle, and using a taxi or minicab.

5.5.2 Differences in mileage between those who drive to work and those who do not

There are very large differences in annual car-driving mileage between young adults who drive to and from work and those who do not. As shown in Figure 5.10, men and women in all educational categories who drive themselves to work rack up a far larger annual mileage than those who use a different mode of transport to commute to work. What is interesting, however, is that the educational gradient in miles driven among licence-holders is different between those who do and do not drive themselves to work. Among young adults who drive themselves to work, there is a positive association between mileage and educational level (especially for women). But for those who do not drive themselves to work, it is those with intermediate levels of education (e.g. GCSEs) who tend to have the highest mileage.

Figure 5.10: Mean annual car-driving mileage among full licence-holders, by gender, education and whether respondents drive themselves to work, 17- to 34-year-olds (weighted estimates)

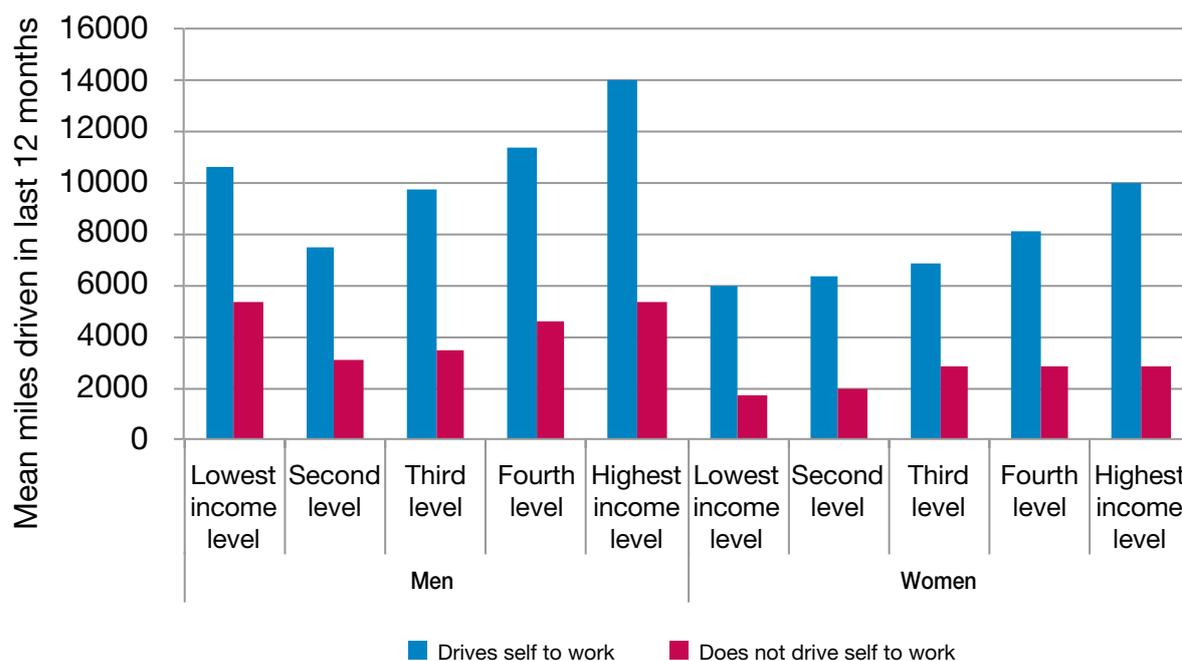


Source: Authors' own calculations using Wave 1 of UKHLS

Figure 5.11 shows how self-reported mileage differs by individual income level among full licence-holders depending on whether they do or do not commute to work by car. Among women who drive themselves to work there is a strong positive, monotonic relationship between individual income and mileage. In other words, among women who commute to work by car, those with higher individual income drive more than those with lower individual income. Among men who drive themselves to work the relationship is more J-shaped, with

high mileage also being reported among men in the lowest individual income quintile. It is somewhat surprising that men in the lowest income who do not drive themselves to work have annual mileages which are higher than the other income groups.

Figure 5.11: Mean annual car-driving mileage among full licence-holders, by gender, individual income and whether respondents drive themselves to work, 17- to 34-year-olds (weighted estimates)



Source: Authors' own calculations using Wave 1 of UKHLS

5.6 Results from multiple regression analyses of mileage

Because of the nature of the mileage variable, the analyses are performed in two steps. First, the characteristics of those who are in possession of a full UK licence but report that they drove zero miles in the last 12 months are examined using logistic regression. In other words, an investigation is made into how individual, household, and local-area characteristics are associated with the likelihood that those who hold a full UK licence have not driven in the past year. Second, an examination is made of the predictors of annual mileage for the group of licence-holders who have driven at least one mile in the past 12 months.¹² Again, all analyses are conducted separately for men and women, to enable an understanding of whether the importance of the factors examined differs by gender. Details of the analytical approach can be found in Appendix 4.

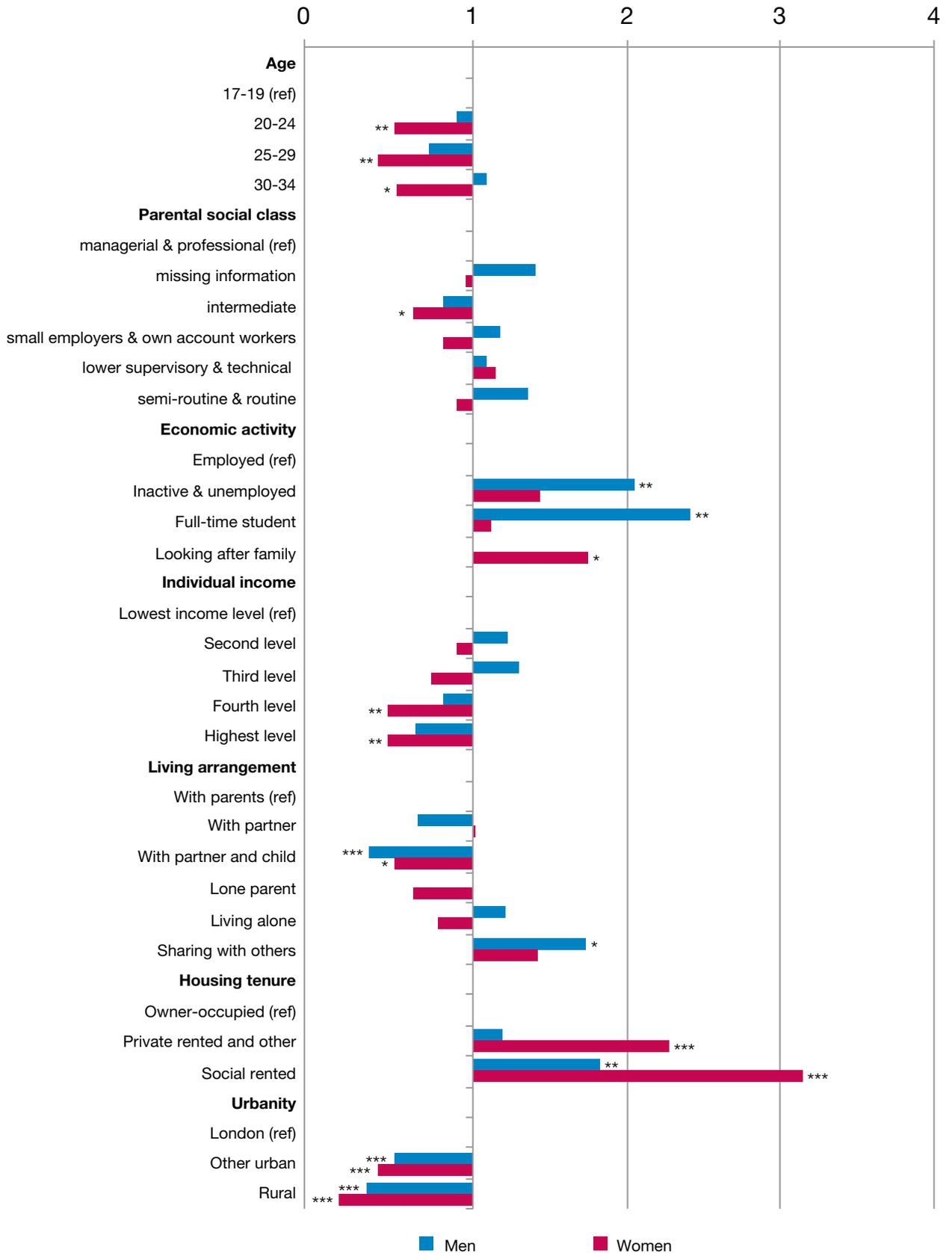
¹² Note is taken of the fact that young adults who have recently passed their test may not be reporting a full year's worth of driving, but since the date of passing the driving test is not asked this cannot be adjusted for.

5.6.1 Licence-holders who do not drive

Figure 5.12 shows the results of the logistic regression analyses for whether licence-holders have driven zero miles in the last 12 months. This figure shows only the results of those variables where the coefficients were significant at the 5% level either for men or for women; the full table can be found in Appendix 4 as Table A4.1. Odds ratios larger than 1 indicated a higher likelihood of not having driven in the past year despite being in possession of a full licence.



Figure 5.12: Results from logistic regression predicting the likelihood (odds¹³) of not driving for those who hold a full UK licence – young adults aged 17–34, by gender: odds ratios



Significance levels: * p < 0.05, ** p < 0.01, *** p < 0.001

Source: Authors' weighted analyses using Wave 1 of UKHLS

13 See section 4.5.1 for an explanation of how to interpret odds ratios.

Net of other factors, the key variables associated with a greater likelihood of driving zero miles, despite owning a full licence are: age, economic activity, individual income, living arrangement, housing tenure and area type. Among female licence-holders, those in the youngest age group, 17–19 years, are significantly more likely not to have driven than are older women. Among both male and female licence-holders, those with lower individual income and those who are unemployed / economically inactive are also more likely not to have driven in the past 12 months. The association between social disadvantage and not having driven is also suggested by the fact that men and women living in social rented accommodation are less likely to have driven.

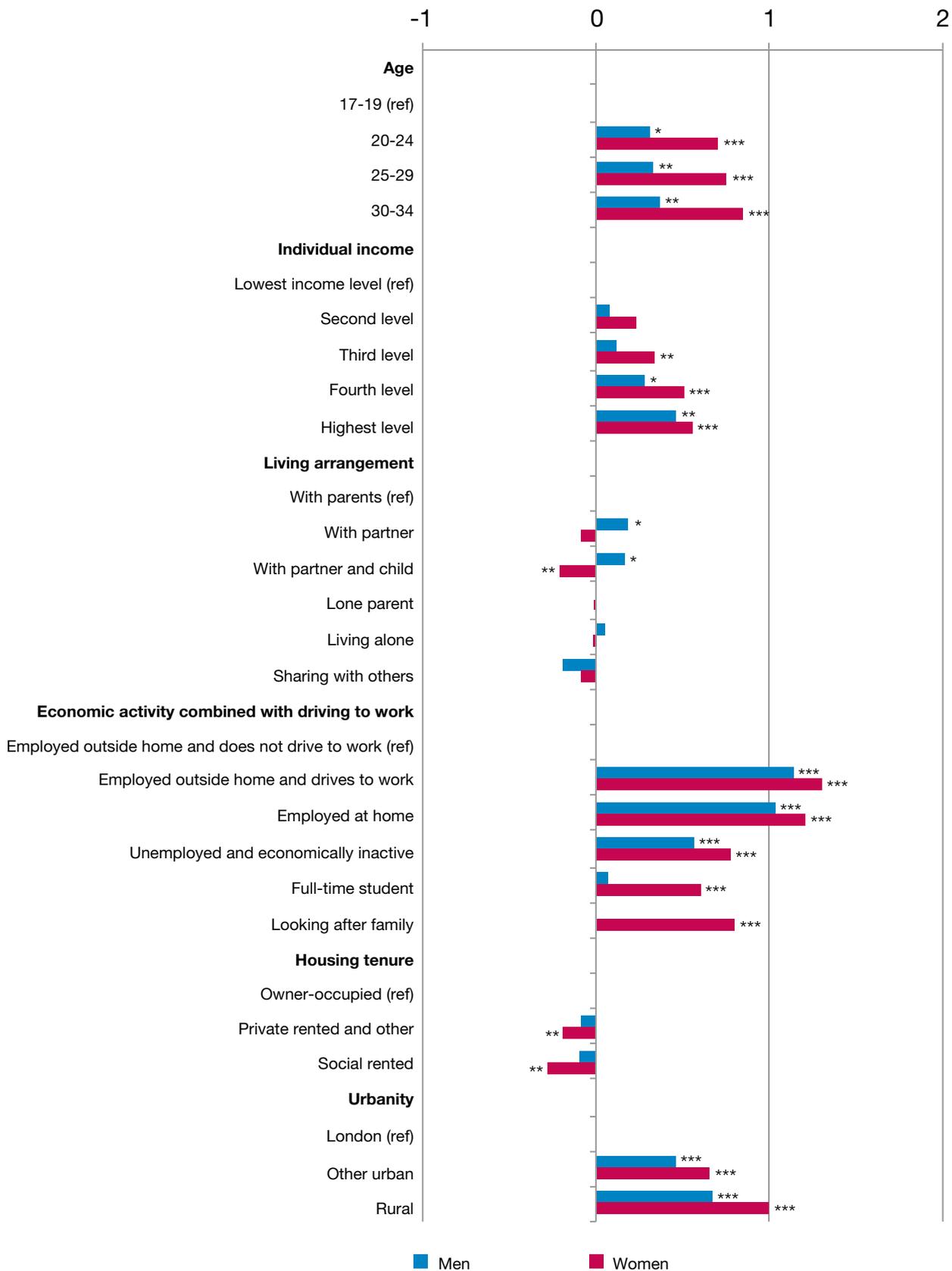
These data suggest that young adults living in London, full-time students (for men especially), those living in the parental home or in shared accommodation, and those (especially women) in the private rented sector are more likely not to have driven in the past 12 months despite holding a licence. In contrast, among those who have made the transition to living in a couple and especially to parenthood are far more likely to have driven in the past 12 months.

5.6.2 Mean annual mileage among full licence-holders who have driven in the past year

Figure 5.13 shows how the individual, household and local-area characteristics which were examined influence young adults' mean annual car-driving mileage. This figure shows only the results related to those variables that had a significant association at the 5% level, either among men or among women. The full table of results and the technical details of the analyses are presented in Appendix 4 (in Table A4.2 and Table A4.3).



Figure 5.13: Results of ordinary least-squares regression of log mileage – young adults aged 17–34, by gender: regression coefficients



Significance levels: * p < 0.05, ** p < 0.01, *** p < 0.001

Source: Authors' weighted analyses using Wave 1 of UKHLS

As has been shown in the previous section where an examination was made of the bivariate relationship between individual characteristics and mileage, whether someone commutes to work by car is an important determinant of annual mileage. However, this question is only applicable for those respondents who are employed.¹⁴ Therefore, it was necessary to create a combined indicator of the respondents' economic activity and whether they drive to work. The combined variable has the following categories: employed outside home and does not drive to work, employed outside home and drives to work, employed at home, unemployed / economically inactive, full-time student, and (for women only) family care.

It is found that, among those who drove in the past 12 months, annual mileage increases with age for both men and women. Additionally, men and women in higher individual income categories tend to drive more than those who earn less. This is the case for men who belong to the fourth or fifth individual income category, while women who belong to the third individual income level also tend to drive more miles than women in the lowest individual income category. Men who live with a partner (with or without a child) drive more on average than those who live with their parents. However, for women, the opposite holds true: those who live with a partner, particularly if also with a child tend to drive less than those who live with their parents.

Among licence-holders who have driven in the past 12 months, it is seen that men and women who are employed outside home and drive to work drive more than those who are also employed outside the home but do not drive to work. Interestingly, men and women who work at home also have higher mileage than those who work outside home but do not drive to work.

Unemployed / economically inactive men and women tend to drive more than those who are employed outside their home and do not drive to work. Additionally, among women, full-time students and those who are looking after family also display higher annual mileage than those who are employed outside home and do not drive to work. Average mileage for licence-holders who drove in the past year is significantly higher among men and women in rural areas and other urban areas as compared to those who live in London.

5.7 Summary

To sum up, an examination of bivariate relationships between individual, household, and local-area characteristics and mean annual car-driving mileage has shown that on average, older, more educated, employed young adults with higher individual and household income who own their homes and live in urban areas other than London have the highest mean annual car-driving mileage. It has also been established that a relatively small number of young

¹⁴ If we had included a separate variable indicating whether the respondent drove to work, this would have resulted in anyone not in employment being excluded from the regression analyses.

adults are required to drive as part of their job, but that these adults are equally represented in all socioeconomic groups. Finally, mean annual car-driving mileage is strongly affected by whether young adults commute to and from

work by car, with those travelling to work by car reporting significantly higher annual mileage than those who use other modes of transport.

These descriptive analyses suggest that self-reported annual car-driving mileage is largely determined by whether the young adult drives themselves to work. On average, those on higher individual incomes and with higher levels of education are more likely to drive themselves to work. Furthermore, an important 'London effect' is evident, wherein those who reside in the London region are far more likely to commute by train or tube than by other means.

Among those who do drive to work, an important gender difference is observable in the relationship between socioeconomic status and mileage: for women, education and individual income show a strong positive relationship with mileage, suggesting perhaps that women in higher-status jobs tend to commute longer distances. However, for men, a J-shaped relationship between individual income and mileage is seen for those who drive to work, suggesting that many low-income men are driving long distances. One might speculate that many such men are driving as part of their job.

When examining the association of all of these characteristics in a multiple regression model, it is seen that overall, annual car-driving mileage, for those who did drive at all in the past year, increases with age and with individual income. Additionally, men who live with a partner and child tend to exhibit higher mileage, while women in the same situation display lower mileage than those who live with their parents. Confirming the findings from the bivariate analyses, men and women who work outside home and commute to work by car drive a higher annual mileage than those who also work outside home but do not drive to work. The lowest annual mileage belongs to young adults who live in London, while those who live in rural and other urban areas tend to drive more car miles.



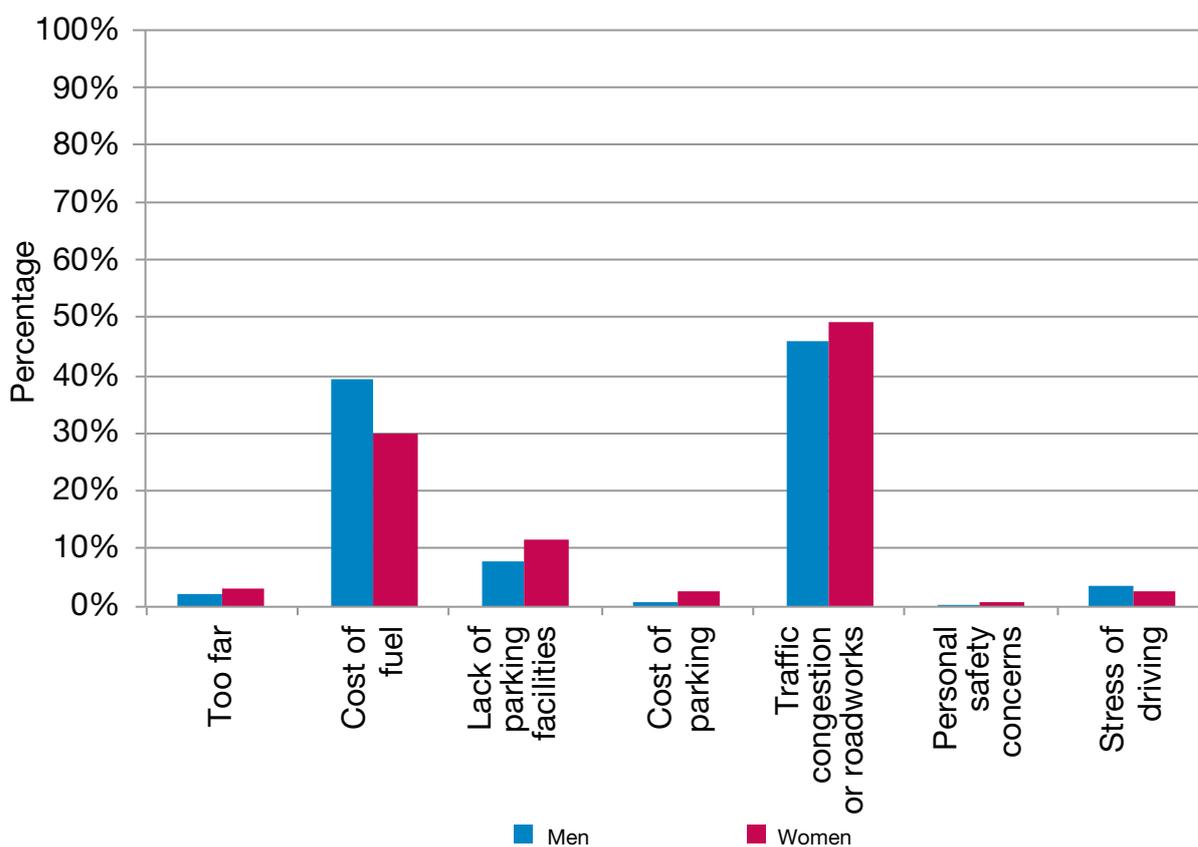
6. Results – Difficulties in Commuting by Car

Using data from Wave 2 of the UKHLS, which was the first wave to ask these questions, it is possible to examine whether people who travel to and from work by car or van usually experience any difficulties while commuting. Respondents were given a list of possible difficulties to choose from: no difficulties, too far, cost of fuel¹⁵, lack of parking facilities, cost of parking, traffic congestion or roadworks, personal safety concerns, and stress of driving. The proportion of men who mentioned at least one difficulty was 54%, and of women 52%. A combined variable was created which takes the value of the difficulty that people experience if they only mentioned one of the possible options; if they mentioned more than one, it takes the value of the main difficulty that they experience. Figure 6.1 shows the distribution of this variable for men and women.

¹⁵ The exact wording of the UKHLS questionnaire referred to “cost of petrol”. When referring to this question the more general term “fuel” is used throughout this report.



Figure 6.1: Main difficulty experienced when commuting to work by car – young adults aged 17–34, by gender (weighted estimates)



Source: Authors' weighted analyses using Wave 2 of UKHLS

Almost 50% of men and women perceive traffic congestion or roadworks as the main difficulty when commuting to and from work by car. The second most commonly mentioned difficulty was the cost of fuel (cited by 40% of men and 30% of women), and around 10% mentioned the lack of parking facilities as the main difficulty in commuting to work by car. The other alternatives were chosen by 1–3% of men and women.

7. Conclusions

Over the last decades, young adults in the UK appear to be driving less. Partially, this is due to a decline and stagnation in the number of young adults obtaining a full UK driving licence, but it is also related to a decline in the annual number of car miles driven per driving licence-holder. As young adults seem to be leading a trend away from car use, their current and future driving behaviour is key in understanding future trends in car travel. The aim of this report has therefore been to examine the factors associated with young adults' driving behaviour, and in particular to investigate the link between individual, household, and local-area-level characteristics and four dimensions of driving behaviour: whether a young adult holds a full UK driving licence, the number of miles driven in the past 12 months (among those who hold a full driving licence), the mode of transport used to commute to work, and the difficulties that young adults report when using the car to commute to work. The analyses used data from the UKHLS Understanding Society survey.



Reported levels of licence-holding in the Understanding Society survey are similar to those reported in the National Travel Survey. By using multiple regression analyses and the wide range of individual, household and local-area characteristics available in the survey, the key variables associated with licence-holding and car mileage among young adults in the UK have been identified. Controlling for other factors, the most important correlates of licence-holding among men and women aged 17–34 are: age, education, economic activity status, individual income, living arrangement, housing tenure and rural/urban locality. Net of the effect of other factors, variables most associated with reported mileage among young adult licence-holders who drove in the past year are: age, whether or not they use a car to travel to work, economic activity status, individual income, and area type. It thus becomes apparent that many of the important predictors of licence-holding are also key predictors of car mileage.

Some young adults report that they did not drive in the past 12 months, even though they possess a full UK licence. It has been demonstrated that, controlling for other factors, this behaviour is related to characteristics associated with either low socioeconomic status (e.g. low individual income, being unemployed / economically inactive, or living in social housing), or characteristics associated with the extension of the age at which young adults leave full-time education – the phenomenon of ‘emerging adulthood’ (e.g. being in full-time education, living in a shared house, and (in the case of women only) renting from the private sector); and that it is also associated with living in London.

The descriptive analyses have shown that one of the most important correlates of annual car mileage is whether respondents drive themselves to work. Those who drive to work display significantly higher annual mileage than those who do not. It is also seen that the impact on average mileage of other variables for example education and income, depends upon whether the young adult drives themselves to work. This interaction may be an important area for future study.

The richness of the Understanding Society (UKHLS– the United Kingdom Household Longitudinal Study) data also permitted the examination of how the characteristics of the young adults' workplace was associated with reported mileage among licence-holders: 5% of employed young men and 1% of employed young women indicated that their workplace was “business premises, van or stall, or customers' premises”. An additional 6% of employed men and 2% of employed women reported that their workplace was “driving or travelling around”. Not surprisingly, average mileage is much higher among these groups of young adults. But, since they constitute a small group numerically and they are evenly distributed among the different sociodemographic groups, place of work is not likely to significantly influence the overall trends in car mileage by, for example, income or education.

The proportion of young adults aged 17–34 who drive to work is lowest in London and increases with age, educational qualifications, individual income, and equivalised household income. Just over half of young adults who commute to work by car mentioned at least one difficulty in using the car to travel to work. Over 40% of those who had a concern mentioned traffic congestion or roadworks. A further 30–40% cited the cost of fuel. Well behind, in third position, was concern with lack of parking places, which was mentioned by around one in ten respondents as their main difficulty.

Particular attention was paid to gender differences in young adults' licence-holding and driving behaviour, and it has been shown that the main factors predicting licence-holding and mileage are generally the same between the genders. The relationship of some variables with licence-holding and mileage is similar for men and women – for example locality and housing tenure. However, a consistent pattern has emerged wherein the socioeconomic gradient in the likelihood of holding a full licence is more consistent and sometimes steeper for women. In other words, a higher proportion of poor, low-qualified teenage men hold a driving licence than do women in the same socioeconomic position.

Further research is needed to understand whether these trends relate to the different types of jobs undertaken by low-income young men and women, and the greater likelihood that women on low incomes will be out of the labour force looking after young children than is the case for men. Further research is also needed to understand whether this finding reflects a greater persistence among low-income men, as compared with high income men, of the car and licence-holding as a ‘rite of passage’.

This report has shown that research should consider young adults in their household and wider context when studying their driving behaviour. Although the research reported here suggests that the individual's own circumstances are far more important than parental social class, the intergenerational transmission of wealth might be an important factor in young adults' driving behaviour. Recent research has shown that parents provide intergenerational

gifts and/or loans to their children in relation to house purchase (Heath & Calvert, 2013). Similarly, it is likely that parents support their children financially when it comes to the costs of driving. More research is needed to understand who gets parental or other financial help with paying for the costs of driving lessons and driving tests and with purchasing and maintaining a car, with particular attention paid to insurance costs. These analyses have shown that higher household and individual incomes are both associated with increased licence-holding. They are not, however, able to indicate whether and to what extent there are intergenerational financial flows involved which mean that young adults from better-off families will have a higher propensity to hold a full licence and to drive a car.

What are the implications of these findings for future trends in young adults' driving behaviour and, as a result, trends of travel by car? In drawing conclusions it is important to bear in mind that these multiple regression results are based on cross-sectional data. Hence causal relationships between the explanatory variables and the outcomes have not been established, merely associations. The results suggest that any future increase in enrolment in education and unemployment, or a rise in the proportions of young adults living in the parental home may be associated with a lower likelihood of holding a full driving licence. Furthermore, increases in the proportion of the young population residing in urban areas, particularly London, might also imply a decrease in licence-holding. At the same time, increased female education and employment are associated with an increase in licence-holding among women.

The proportion of young adults who hold a driving licence started to decline around the mid-1990s, and the timing of this decline comes in the middle of the period of the expansion in higher education. Further research is needed to determine whether this is a coincidence, or whether the expansion of higher education has directly influenced the decline in licence-holding among young adults in the UK.



Whilst levels of youth unemployment may decline as the UK economy recovers from the recession, there have been important structural changes in the way that young adults make their transition from school to work, characterised by increased educational enrolment, economic uncertainty and economic precariousness, which suggest that licence-holding among *teenagers* is unlikely to start to increase. The age at which young adults are able to establish themselves in a job may further increase, even when the economy recovers. This trend will be reinforced by the future increase in the compulsory school leaving age of future cohorts to 18. This might trigger a later transition to full-time employment, residential independence and family formation which, in turn, may further suppress the proportion of full UK licence-holders among young people.

If the decline in licence-holding among those in their teens and early twenties is a phenomenon associated with the delayed transition to adulthood, some recovery would be expected in licence-holding when young adults come to the stage, or stages, in life in which the active use of a car is a feature, particularly when family formation takes place. This research supports the idea that living independently in a couple, especially with children, is associated with increased licence-holding (and increased car mileage among men).

However, it is also possible that young adults increasingly have different lifestyles and preferences that do not necessarily fit with owning or driving a car. If this is the case, one would expect that as this generation grows old and the upcoming generations learn their attitude and behaviour in relation to car travel, car use would decrease at the national level. This report has found that concerns regarding traffic congestion and roadworks were a key difficulty reported by young car users, but further quantitative and qualitative research is required to understand whether there is a fundamental shift in young adults' preferences. Key areas where knowledge is needed include the role of technology not only in replacing the need for face-to-face meetings, but also in facilitating real-time data acquisition which makes public transport easier to navigate; and the extent to which young adults have responded to policies aimed at improving public transport and encouraging people away from car use.

Appendix 1 – Description of Understanding Society (UKHLS)

This report analyses data from 2009–10 and 2010–11, i.e. the first and second waves of Understanding Society – the United Kingdom Household Longitudinal Survey (UKHLS). Data collection for each wave of the survey takes place over two calendar years. This is a household panel study that follows the same households over time. The UKHLS is desirable for this research as it includes a large nationally representative sample of around 40,000 households and a very rich set of individual, household, and local-area characteristics that might be associated with young adults' licence-holding and driving behaviour.

The sample for Wave 1 of the UKHLS consisted of two main components: a general population sample and an ethnic minority 'boost' sample (Lynn, 2009). The general population sample was based on a proportionally stratified, clustered, equal probability sample of residential addresses from the Postcode Address File. In Scotland, England, and Wales, the sampling was carried out in two stages; the first stage involved selecting the primary sampling units (PSUs) and the second stage selected the addresses within each PSU. In Northern Ireland, the sample was unclustered.¹⁶ Individuals in institutions, including young adults living in university halls of residence, are not included in the sample (although students living in shared private housing are included). Once the addresses were selected, all individuals in the household aged 16 or above were asked to fill out an adult questionnaire. If a household member was temporarily absent from the household, a request was made for a proxy questionnaire to be filled out by another member of this household. This proxy questionnaire asked basic questions about the most important characteristics of the absent household member. In Wave 1, information concerning driving licence-holding is available for both full responders and proxy responders. Information on annual mileage and commuting mode is only available for full responders.

The sample for Wave 2 included respondents who were previously included in Wave 1, as well as respondents from the last wave (Wave 18) of the British Household Panel Study (BHPS) (Lynn, 2009). In Wave 2 of the UKHLS, a commuting module was asked to those who drive themselves to work. This report investigates young adults' reported difficulties in driving to work using this Wave 2 data. The sample size for this subgroup analysis is smaller, since these analyses include only those who are currently in employment, and who currently drive to and from work. Nevertheless it is useful to add these insights to those gained from the Wave 1 data.

The response rate in Wave 1 among households in the general population sample was 57%. The response rate in Wave 2 among individuals from the general population sample who responded in Wave 1 (and were not known to have died) was 75% (Lynn et al., 2012). These response rates are

¹⁶ The regression models are fitted using clustered errors to account for the multistage survey design of UKHLS.

roughly comparable to that of the NTS (62% in 2012). Weights are used in order to account for survey design, household and individual non-response. This research uses cross-sectional individual weights for the wave being analysed. The specific cross-sectional weight used depends upon whether the information was collected from proxy respondents in addition to individuals who responded personally to the interview.

Appendix 2 – Comparison of NTS and UKHLS Estimates of Licence-Holding in 2009–10

Table A2.1 compares NTS estimates and weighted estimates from Wave 1 of the UKHLS of the proportion of full UK licence-holders for 2009–10. Note that the UKHLS estimates refer to the two years 2009 and 2010, while the NTS data was collected annually. While for the 21–29 and 30–39 age groups the UKHLS estimates are the same as the NTS estimates, they are slightly higher for the 17- to 20-year-olds. Dargay & Hanly (2007) examined changes in the levels of car ownership in the UK over time using data from the BHPS and found that compared to the NTS, the BHPS also overestimated car ownership. It is not clear why these differences persist between the two data sources, as the sampling strategy and levels of non-response in the two surveys were similar.

Table A2.1: Comparison of NTS estimates and UKHLS Wave 1 weighted estimates of licence-holding, by NTS age groups and age, 2009–10

| Age group | NTS males, 2009 | NTS males, 2010 | NTS females, 2009 | NTS females, 2010 | UKHLS males, 2009–10 | UKHLS females, 2009–10 |
|---------------------|-----------------|-----------------|-------------------|-------------------|----------------------|------------------------|
| 17–20 | 37% | 35% | 35% | 34% | 42% | 37% |
| 21–29 | 67% | 66% | 62% | 60% | 66% | 60% |
| 30–39 ¹⁷ | 84% | 86% | 76% | 77% | 85% | 75% |

Appendix 3 – Analyses of Licence-Holding

Appendix 3 contains the results of logistic regression analyses of licence-holding for young adults aged 17–34 by gender, as discussed in relation to Figure 4.15. The variable indicating area type rather than GOR is included (the London region is identified in both, hence only one variable can be included). The number of cars in the household is not retained in the final model since they are found to be too closely related to the dependent variable. Including them either means that the association with another variable cannot be estimated or it results in biased estimates. Once the remaining variables are controlled for in the model, the effect of household income is not statistically significant (largely because of its co-linearity with other variables already in the model as discussed above).

¹⁷ Note that for this table only we have extended the age range analysed using UKHLS to age 39 so as to be comparable with NTS reports.

Table A3.1: Results from logistic regression predicting licence-holding in UK – young adults aged 17–34, by gender: odds ratios (weighted estimates)

| | Men | | Women | |
|---------------------------------------|------------|--------------------|------------|--------------------|
| | Odds ratio | Significance level | Odds ratio | Significance level |
| Age | | | | |
| 17–20 (ref) | 1.00 | | 1.00 | |
| 20–24 | 2.07 | *** | 3.10 | *** |
| 25–29 | 2.19 | *** | 3.73 | *** |
| 30–34 | 3.26 | *** | 5.04 | *** |
| Parental social class | | | | |
| managerial & professional (ref) | 1.00 | | 1.00 | |
| missing information | 0.64 | ** | 0.56 | *** |
| intermediate | 0.81 | | 0.94 | |
| small employers & own-account workers | 0.89 | | 0.74 | ** |
| lower supervisory & technical | 0.84 | | 0.74 | * |
| semi-routine & routine | 0.69 | ** | 0.65 | *** |
| Educational qualification | | | | |
| none (ref) | 1.00 | | 1.00 | |
| school leaver | 1.65 | ** | 2.13 | *** |
| advanced | 2.58 | *** | 4.51 | *** |
| Economic activity | | | | |
| employed (ref) | 1.00 | | 1.00 | |
| inactive / unemployed | 0.42 | *** | 0.58 | *** |
| full-time student | 0.51 | *** | 0.85 | |
| looking after family | | | 0.49 | *** |
| Individual income | | | | |
| lowest income level (ref) | 1.00 | | 1.00 | |
| second level | 0.88 | | 1.41 | ** |
| third level | 0.93 | | 1.37 | ** |
| fourth level | 1.40 | * | 2.09 | *** |
| highest level | 2.26 | *** | 2.97 | *** |
| Living arrangement | | | | |
| with parents (ref) | 1.00 | | 1.00 | |
| with partner | 1.77 | *** | 1.26 | |
| with partner and child | 2.55 | *** | 1.68 | *** |

| | Men | | Women | |
|--------------------------|------------|--------------------|------------|--------------------|
| | Odds ratio | Significance level | Odds ratio | Significance level |
| lone parent | | | 1.32 | |
| living alone | 0.93 | | 1.28 | |
| sharing with others | 1.27 | | 1.23 | |
| Housing tenure | | | | |
| owner-occupied (ref) | 1.00 | | 1.00 | |
| private rented and other | 0.36 | *** | 0.39 | *** |
| social rented | 0.35 | *** | 0.29 | *** |
| Area type | | | | |
| London (ref) | 1.00 | | 1.00 | |
| other urban | 1.79 | *** | 2.02 | *** |
| rural | 3.01 | *** | 3.78 | *** |
| Model statistics | | | | |
| constant | 0.41 | *** | 0.09 | *** |
| unweighted N | 6,700 | | 8,276 | |
| Probability > F | 0.000 | *** | 0.000 | *** |

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix 4 – Analyses of Reported Annual Mileage

Appendix 4 contains the full results of two sets of regression analyses of reported mileage as discussed in relation to Figures 5.12 and 5.13 in the main report.

The dependent variable, mean annual mileage (among those who hold a full UK driving licence) is a continuous variable which ranges from zero to 200,000.¹⁸ Usually linear regression is used to examine factors associated with a continuous outcome. However, in this case the normality assumptions of the linear regression model are not fulfilled, since the distribution of annual mileage is skewed to the right both for males and females. By taking the natural logarithm of mileage the variable is transformed into one which is approximately normal. Hence the outcome variable for the linear regression models of annual mileage is log mileage.

7.3% of men and 7.2% of women reported that they drove zero miles in the past 12 months. Since $\log(0)$ cannot be interpreted, those who have a driving

¹⁸ Note that we have removed the one individual who reported that they drove 2 million miles in the past 12 months since they are an outlier and could potentially bias the results.

licence but who drove zero miles are removed from the analysis of annual mileage. To understand who those men and women are who own a full UK driving licence but do not drive, logistic regressions were performed separately for men and women. The outcome variable is coded 1 if the respondents indicated that they drove zero miles and it is coded 0 otherwise. The results of these logistic regression models are shown in Table A4.1 and Figure 5.12.

Ordinary least-squares linear regression was then carried out to model the association between several individual, household and local-area characteristics on the log of mean annual car-driving mileage. The result of this analysis is presented in Table A4.2 and Table A4.3 for women and men respectively.

Table A4.1: Results from logistic regression predicting the likelihood of not driving among those who hold a full UK driving licence – young adults aged 17–34, by gender: odds ratios (weighted estimates)

| | Men | | Women | |
|---------------------------------------|------------|--------------------|------------|--------------------|
| | Odds ratio | Significance level | Odds ratio | Significance level |
| Age | | | | |
| 17–19 (ref) | 1.00 | | 1.00 | |
| 20–24 | 0.88 | | 0.48 | ** |
| 25–29 | 0.71 | | 0.38 | ** |
| 30–34 | 1.08 | | 0.50 | * |
| Parental social class | | | | |
| managerial & professional (ref) | 1.00 | | 1.00 | |
| missing information | 1.40 | | 0.94 | |
| intermediate | 0.79 | | 0.61 | * |
| small employers & own-account workers | 1.17 | | 0.80 | |
| lower supervisory & technical | 1.08 | | 1.14 | |
| semi-routine & routine | 1.35 | | 0.89 | |
| Educational qualification | | | | |
| none (ref) | 1.00 | | 1.00 | |
| school leaver | 0.78 | | 0.95 | |
| advanced | 0.64 | | 0.71 | |
| Economic activity | | | | |
| employed (ref) | 1.00 | | 1.00 | |
| inactive / unemployed | 2.05 | ** | 1.43 | |
| full-time student | 2.40 | ** | 1.11 | |
| looking after family | | | 1.75 | * |

| | Men | | Women | |
|---------------------------|------------|--------------------|------------|--------------------|
| | Odds ratio | Significance level | Odds ratio | Significance level |
| Individual income | | | | |
| lowest income level (ref) | 1.00 | | 1.00 | |
| second level | 1.22 | | 0.88 | |
| third level | 1.30 | | 0.73 | |
| fourth level | 0.81 | | 0.44 | ** |
| highest level | 0.62 | | 0.43 | ** |
| Living arrangement | | | | |
| with parents (ref) | 1.00 | | 1.00 | |
| with partner | 0.63 | | 1.01 | |
| with partner and child | 0.31 | *** | 0.48 | * |
| lone parent | | | 0.60 | |
| living alone | 1.20 | | 0.77 | |
| sharing with others | 1.73 | * | 1.41 | |
| Housing tenure | | | | |
| owner-occupied (ref) | 1.00 | | 1.00 | |
| private rented & other | 1.19 | | 2.28 | *** |
| social rented | 1.82 | ** | 3.15 | *** |
| Area type | | | | |
| London (ref) | 1.00 | | 1.00 | |
| other urban | 0.49 | *** | 0.38 | *** |
| rural | 0.30 | *** | 0.13 | *** |
| Model statistics | | | | |
| constant | 0.16 | *** | 0.52 | |
| unweighted N | 4,419 | | 4,587 | |
| probability > F | 0.000 | *** | 0.000 | *** |

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A4.2: Results of ordinary least-squares regression of log mileage – young adults aged 17–34, women: regression coefficients (weighted estimates)

| | Regression coefficient | Significance level |
|--------------------------------------------------------|------------------------|--------------------|
| Age | | |
| 17–19 (ref) | 0.00 | |
| 20–24 | 0.70 | *** |
| 25–29 | 0.74 | *** |
| 30–34 | 0.85 | *** |
| Parental social class | | |
| managerial & professional (ref) | 0.00 | |
| missing information | -0.16 | |
| intermediate | 0.07 | |
| small employers & own-account workers | -0.05 | |
| lower supervisory & technical | -0.12 | |
| semi-routine & routine | -0.05 | |
| Educational qualification | | |
| none (ref) | 0.00 | |
| school leaver | 0.01 | |
| advanced | 0.05 | |
| Individual income | | |
| lowest income level (ref) | 0.00 | |
| second level | 0.23 | |
| third level | 0.34 | ** |
| fourth level | 0.51 | *** |
| highest level | 0.56 | *** |
| Living arrangement | | |
| with parents (ref) | 0.00 | |
| with partner | -0.08 | |
| with partner and child | -0.20 | ** |
| lone parent | -0.01 | |
| living alone | -0.01 | |
| sharing with others | -0.08 | |
| Economic activity combined with driving to work | | |
| employed outside home and does not drive to work (ref) | 0.00 | |
| employed outside home and drives to work | 1.30 | *** |

| | Regression coefficient | Significance level |
|------------------------------------|------------------------|--------------------|
| employed at home | 1.21 | *** |
| unemployed / economically inactive | 0.78 | *** |
| full-time student | 0.61 | *** |
| looking after family | 0.79 | *** |
| Housing tenure | | |
| owner-occupied (ref) | 0.00 | |
| private rented & other | -0.18 | ** |
| social rented | -0.27 | ** |
| Area type | | |
| London (ref) | 0.00 | |
| other urban | 0.66 | *** |
| rural | 0.99 | *** |
| Model statistics | | |
| constant | 5.66 | |
| unweighted N | 4,276 | |
| probability > F | 0.000 | |
| R squared | 0.24 | |

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A4.3: Results of ordinary least-squares regression of log mileage – young adults aged 17–34, men: regression coefficients (weighted estimates)

| | Regression coefficient | Significance level |
|---------------------------------------|------------------------|--------------------|
| Age | | |
| 17–19 (ref) | 0.00 | |
| 20–24 | 0.31 | * |
| 25–29 | 0.33 | ** |
| 30–34 | 0.37 | ** |
| Parental social class | | |
| managerial & professional (ref) | 0.00 | |
| missing information | -0.20 | * |
| intermediate | -0.09 | |
| small employers & own-account workers | 0.07 | |

| | Regression coefficient | Significance level |
|--------------------------------------------------------|------------------------|--------------------|
| lower supervisory & technical | -0.12 | |
| semi-routine & routine | -0.03 | |
| Educational qualification | | |
| none (ref) | 0.00 | |
| school leaver | -0.01 | |
| advanced | -0.06 | |
| Individual income | | |
| lowest income level (ref) | 0.00 | |
| second level | 0.08 | |
| third level | 0.12 | |
| fourth level | 0.28 | * |
| highest level | 0.46 | ** |
| Living arrangement | | |
| with parents (ref) | 0.00 | |
| with partner | 0.19 | * |
| with partner and child | 0.16 | * |
| lone parent | | |
| living alone | 0.06 | |
| sharing with others | -0.19 | |
| Economic activity combined with driving to work | | |
| employed outside home and does not drive to work (ref) | 0.00 | |
| employed outside home and drives to work | 1.14 | *** |
| employed at home | 1.04 | *** |
| unemployed / economically inactive | 0.57 | *** |
| full-time student | 0.08 | |
| Housing tenure | | |
| owner-occupied (ref) | 0.00 | |
| private rented & other | -0.08 | |
| social rented | -0.09 | |
| Area type | | |
| London (ref) | 0.00 | |
| other urban | 0.46 | *** |
| rural | 0.67 | *** |

| | Regression coefficient | Significance level |
|-------------------------|------------------------|--------------------|
| Model statistics | | |
| constant | 6.86 | |
| unweighted N | 4,141 | |
| probability > F | 0.000 | |
| R squared | 0.26 | |

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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