

Is heightened environmental-sensitivity responsible for the drop in young adults' driving-licence-acquisition rates?

Postprint of:

Le Vine, S., Lee-Gosselin, M., Sivakumar, A., Polak, J. (2011) Is heightened environmental-sensitivity responsible for the drop in young adults' driving-licence-acquisition rates? Transportation Research Record #2465. <http://dx.doi.org/10.3141/2465-10>

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Abstract

Across a range of developed societies, driving-licence acquisition rates amongst young adults have fallen from their historic peak levels (which in Britain were in the early 1990s). A widely-discussed hypothesis to explain this trend is that heightened environmental sensitivity amongst the current cohort of young adults could be responsible, either fully or, more plausibly, in part. The objective of this study was to establish whether empirical evidence provides support for this hypothesis.

Public-opinion polling data from Britain and the United States and British National Travel Survey microdata were statistically analysed. No evidence was found, either from the U.S. or Britain, of the populace becoming increasingly-inclined towards environmental protection. On the basis of longitudinal trends in public-opinion polling, the opposite seems to be true.

Analysis of British National Travel Survey (n=2,820 unlicensed adults age 17-29) data shows that very few young British adults without driving licences report that sensitivity to the environment is either the main reason or a contributory reason that they have not acquired a driving licence.

Approximately 1% of British adults aged 17 to 29 cite environmental sensitivity as a reason (either main or contributory) for not having a driving licence. By contrast, more than half (59%) of not-fully-licensed young British adults reported that they are either learning to drive (27%), or are put off mainly by the licence-acquisition testing requirements (2%) or by costs associated with motoring (30%).

These findings are evidence contrary to the hypothesis that growing environmental sensitivity is responsible for falling rates of licencing amongst young adults, at least in Britain and the United States.

Key words

Driving licence, environmental sensitivity, young adults

Introduction

An unexpected phenomenon has taken place in a wide set of economically-advanced countries in recent years: in a break from the long-term upward trend, the rate at which young adults acquire driving licences has fallen.

In a multi-article body of research, Sivak and Schoettle provide a broad base of empirical evidence demonstrating this effect in the United States and internationally (1, 2, 3, 4). A number of hypotheses have been proposed, four of which were recently highlighted (5) by the same authors. These are: 1) a theorised dampening effect on licence acquisition due to online activity and texting, 2) the effects of economic recession from 2007 onwards, 3) concentration of young people in large cities where a driving licence has less utility, and 4) that young people tend to be on the forefront of concern about the environment.

The objective of this paper is to investigate empirically the last of these hypotheses – whether environmental sensitivity has played a part in the drop in young people’s licence-acquisition rates.

The rest of this paper is organised as follows. The next two sections discuss background on environmental sensitivity and the drop in young people’s licencing, respectively. The empirical evidence is then outlined, followed by discussion and conclusions.

Environmental sensitivity

It is thought that young people tend to have more pro-environmental attitudes than older adults, a pattern that seems to have held for some time (6, 7). Contemporary [2013] public opinion polling shows that whilst more Americans prioritise economic development over environmental protection (48% vs. 43% when presented with a binary choice), the opposite is found for young adults aged 18-29 (49% vs. 45%) (7). Nevertheless, the overall time-trend in answers to this question show a downward trend in the percentage of American adults prioritising environmental protection, from 70% in 2000, to 55% in March 2007 (prior to, and therefore unaffected by, the financial dislocation that began to unfold later in 2007) and 43% in 2013.

This downward trend in environmental sensitivity has also been found in British public-opinion polling. The percentage of British adults indicating that air pollution from cars is “very” or “extremely” damaging to the environment decreased from 54% in 2000 to 28% in 2010 (8). Table 1 shows how this breaks down by age; it can be seen that whilst the largest fall has been amongst older people, views of the severity of the air pollution caused by cars fell amongst young adults as well, from about a half to about a third of young adults indicating it is very or extremely damaging.

<<Table 1 about here>>

Cars have become cleaner over this timeframe, so one possibility is that the public has become less sensitive to air pollution caused by cars simply due to technological improvements reducing tailpipe emissions. The evidence shows that this cannot be the full story, however. Table 2 shows that amongst British adults of all ages concern about climate change has also decreased. Though this has fallen by a lesser amount than concern about air-pollutants-emitted-by-cars has dropped, it can be concluded that environmental sensitivity did not increase for any age group in Britain in the 2000s.

<<Table 2 about here>>

The British Department for Transport has also surveyed attitudes towards climate change, on an annual basis since 2006. The time trend in the findings from these surveys are similar to the British Social Attitudes Survey results; the percentage of British adults indicating they are prepared in principle to make changes to their transport behaviour to limit climate change fell from 77% in 2006 (n=1,238) to 72% in 2010 (n=1,011) and 65% in 2011 (n=1,137), the most recent available (9). This is not to say that respondents are insensitive to environmental damage, but it is clear that in recent years sensitivity has been falling rather than increasing.

In summary, the literature show that in both the U.S. and Britain the available public-opinion evidence is contrary to the supposition that environmental sensitivity has increased in recent years.

Fall in driving-licence acquisition rates

Structural changes in the population of driving-licence-holders were highlighted in the body of literature noted above, looking at the period from the early 1980s onwards. Relevant aspects of the observed changes are:

- In the US as well as a subset of other countries for which data were made available, licencing has fallen amongst young adults (1).
- Since 2005, women in the US have outpaced men in the number of driving licences that are held, amongst the entire [all-ages] adult population (10).
- Licencing rates in the US and a sample of other countries continue to increase amongst older adults (1). Stokes (11) provides evidence from GB of this being a cohort effect, due to the inertia of licence-holding (once acquired a licence tends to be held for many years).
- In several economically-advanced societies, the drop in licencing has been concentrated amongst young men (12).
- All-but-one US state passed graduated driving licence (GDL) laws between 1996 and 2006 (13).

Empirical evidence has begun to emerge regarding the trends amongst young adults.

The advent of GDL laws, in which new drivers acquire privileges to drive in multiple stages over time, has clearly had a suppressing effect on teens' licencing-acquisition. Williams and Shults (14) provide an extensive literature review on the safety-related impacts of GDL laws, which was followed up more recently by Williams et al. (15). Williams et al. (16), reporting on an expert workshop on GDL-impacts, noted that the negative effect on teens' personal mobility due to GDLs is likely to be most acute in rural areas, and in other work Williams shows that most US teens said they were interested in getting a licence as soon as possible (16). Davis et al. (13) speculate that the deferral of full-driving-privileges due to GDL laws may have discouraged some young people from *ever* acquiring a licence, as official figures show licence-holding rates of 20-34-year-old Americans to also have fallen between 2000 and 2010. (Williams et al. [17] advises caution, suggesting that '*trends in [U.S.] licensing rates are not really known*' due to inaccuracies in the U.S. national database of driving-licence statistics, but more recently Shults and Williams [18] have shown that other more reliable datasets also show a downward trend in licence-holding by high school seniors). Furthermore,

Stokes (11) provides compelling empirical evidence that (in Britain) acquisition of driving licences later in adulthood is associated with lower driving mileage.

Noble (19) presented results from Great Britain in the early 2000s, and shows that there was a sharp one-off drop in licence-acquisition in Britain in 1997, the year when a theory test was first introduced to the licence-acquisition process (to complement the pre-existing practical test). This drop-off then continued at a more moderate pace until 2001 (when it began to increase), so the one-off effect due to the introduction of the theory test cannot be the complete explanation for the observed downward trend. Noble reports an estimate that 5.5% of British adults between age 17 and 29 acquired a driving licence during the course of 2001, versus c.8.5% in the year 1996. This downward trend then changed after 2001, when the rate of licence-acquisition began to trend slowly upwards again. This is despite the introduction in 2002 of the 'hazard perception test' as a new component of the theory test. Noble concluded that the drop in licence-acquisition amongst British young adults seems to have coincided with an increased number of convictions for driving without a driving licence, implying that the increasingly-difficult process of licence-acquisition has played a major role. More recent results show, however, that convictions for driving without a licence in Britain have fallen year-on-year from the peak level in 2004 (207,528 in 2004 to 55,886 in 2012) (20). Interestingly, Foss notes that how GDLs affect economically-disadvantaged young people is an open research question (21); the same appears to be true with respect to the increasingly-difficult and costly British licence-acquisition process. A 2008 study found that the average British learner -driver in the period 2001-05 had taken 52 hours of paid lessons with a professional driving instructor, as compared to 31 hours in 1988-89 (22).

Noble (19) also presented results from pilot-testing of a line of questioning that was later incorporated into the British National Travel Survey (NTS). Non-drivers were asked to indicate (from a list) all reasons that they do not drive, and, if they cite more than one reason, to designate one as the main reason. The pilot for this questioning took place as part of the British Office for National Statistics' Omnibus Survey in Spring 2005; results should be treated with caution as they are sourced from a pilot survey, and also as the sample size of non-drivers was modest. Noble (19) reports that none of the 159 'non-driver' respondents in this 2005 pilot survey aged 17 to 29 stated that 'environmental reasons' were the main reason that they do not drive, and 13% indicated environmental-sensitivity was a secondary reason. (This questioning was subsequently included in the British National Travel Survey, as described in the next section of this paper).

Le Vine and Jones (23), also using data from Britain, showed that young men's rate of licence-acquisition dropped concurrently with structural socio-economic changes generally associated with lower car access and use: deferred marriage and childbearing, an increase in part-time employment and higher-education-participation, a decade-long trend of year-on-year declines in real incomes, and increased residence in rental-property and flat [apartment] style housing.

Empirical data on the linkage between environmental sensitivity and driving-licence-acquisition

Figure 1 shows the time trend in licence-holding rates by teenagers in Britain, as reported by the NTS. The NTS is a nationally-representative, large-sample (approximately 20,000 respondents annually) household travel survey that was first undertaken in the 1960s, and since 2002 has been

performed on a continuous basis (24). The response rate in 2009/10 was 60%, which means that despite weighting for representativeness, there is some potential for non-response bias, in addition to inherent self-reporting bias.

The trends shown in Figure 1 and described below have taken place concurrently with the changes to the British licence-acquisition regime previously described, though throughout this period the age of eligibility for a full car driving licence has remained 17-years-old. It should be noted that there is a discontinuity in 1995, as data before this year are not re-weighted to account for non-response bias whilst the data from 1995-onwards are.

<<Figure 1 about here>>

What is apparent from Figure 1 is that there has not simply been a single step-change drop at a single point in time in licence-holding by teenagers. For male teens, there seems to have been a general downward trend from a peak of 58% in the early 1990s to a minimum of 30% in 2004 (with a period of stability in the late 1990s). This was then followed by an increasing trend until the financial dislocation began, and a downward trend since. Over this time period the gender-gap in licence-acquisition has greatly narrowed, from 17 percentage points in 1989/91 to less than one percentage point in 2011.

Following on from the 2005 pilot-survey described in the previous section, the line of questioning into the main and contributory reasons for not driving was subsequently included in the full British NTS. From 2009, any adult aged 17+ that does not have a full driving licence and is not learning to drive is asked these questions during their face-to-face interview. (After being asked whether they have a driving licence, people in the relevant sub-sample are then asked: *“We are interested to know why some people do not drive. Please look at this card which shows reasons for not driving and tell me which apply to you/name?”* (24). Whilst there is an important distinction between ‘not driving’ and not holding a driving licence, it is noteworthy that despite the efforts in pilot-testing this question this distinction is not made in the wording of the survey.)

Table 3 shows the results from these questions, broken down by age and gender. The sample of people used for the analysis shown in this table consists of all those aged 17 to 29 who do not have a full driving licence. This is because, in addition to the stated-responses to the ‘why do you not drive’ question just described, we have added in people that indicating they are learning to drive (in Code ‘B’), which can be seen to represent a substantial share of not-fully-licenced young people.

<<Table 3 about here>>

Amongst the youngest group shown (ages 17 to 19), 37% of men and 39% of women that do not have a full driving licence indicating that they are presently learning to drive.

There are a number of noteworthy patterns shown in Table 3. Amongst both men and women, the proportion citing driving as unnecessary or not a priority (Code ‘E’ in Table 3) tends to increase with age. Overall this class of reasons accounts for just over a quarter of young unlicenced British adults. Another three in ten are deterred from driving by the costs of motoring (Code ‘D’), which has very different implications. Le Vine and Jones (23, Figure 5.7) show, as one would expect, that costs tend to be cited as a deterrent more frequently by young adults in lower-income households.

The percentage citing safety and health-related deterrents (Code 'F') also increases monotonically with age, for both sexes. For those aged 25 to 29, 8% of men and 12% of women cite this class of reasons to explain why they do not drive.

Relatively few young adults report explicitly that they are put off by the theory or practical tests (the data collected do not permit discriminating between these two tests as separate reasons for not driving). But, a respondent self-reporting that she is learning to drive (but not yet fully-licenced) is not asked the reasons-for-not-driving questions. It is also not knowable from the NTS data whether a person that is learning to drive has attempted and failed one of the driving tests, and therefore there is a distinct possibility that a substantial proportion of young British adults who indicate they are learning to drive have tried to pass the driving tests but not yet succeeded. In 2011/12, the pass rates for the theory and practical tests were 61% and 47%, respectively (25, 26).

Turning to the question of the salience of environmental sensitivity, it is evident from Table 3 that very few young British adults indicate that they are deterred from driving *mainly* for environmental reasons. Table 4 brings into the analysis young adults who reported that sensitivity to the environment was a *secondary* reason that they do not drive. We see that just under three percent of unlicenced British young adults said that environmental reasons contributed to their not having a driving licence, either as the main or a contributing reason.

<<Table 4 about here>>

55.5% of British adults between aged between 17 and 29 have full driving licences. 2.9% of the remaining 44.5% of this age group (those without full licences) indicate that environmental sensitivity is a reason, either the main or a contributing one, that they do not have a driving licence. Thus, we can conclude that 1.3% of all young British adults indicate they are deterred from driving mainly or partly due to environmental reasons. This is shown in Table 5, along with the breakdown by age and gender. It should be noted that any social desirability bias (propensity amongst survey respondents to portray their motivations as altruistic rather than selfish) would imply that this is an overestimate.

<<Table 5 about here>>

Discussion and conclusions

This paper investigates the hypothesis positing that environmental sensitivity has played a role in the drop in licence-holding by young adults. In the U.S. some question still remains over whether the apparent trend is simply a data artefact in the FHWA database, though in Britain it is clear that there has been a real drop from the rate in the early 1990s.

First, it was shown that environmental sensitivity seems to be *decreasing* in both the U.S. and Britain. This trend is inconsistent with the hypothesis that environmental-awareness is leading an increasing number of young adults to not acquire a driving licence.

Second, it was shown that in Britain just over 1% of young adults indicate that they are deterred from having a driving licence for environmental reasons, either as the main reason they do not drive or a secondary reason. The drop in licence-acquisition rates has been much larger, thus these

results imply that environmental sensitivity has not likely played a substantial role in falling rates of driving-licence acquisition.

Third, it was shown that nearly 60% of unlicensed young British adults self-report that they are learning to drive, deterred from having a licence by the required theory/practical tests, or deterred by the costs of motoring. This is despite there being no minimum requirement in Britain for supervised driving in advance of taking the on-road driving test.

This study focused exclusively on licence-holding; a related research question, which is not answerable with the British NTS data employed in this study, is whether environmental sensitivity causes some people to drive less than they otherwise would (as opposed to not acquiring a driving licence).

This study indicates that the environmental-sensitivity is not likely to be what is causing a growing share of young people to remain unlicensed. Substantial uncertainty therefore remains regarding what is behind the fall in licence-acquisition in economically-advanced societies.

Graduated driving-licence laws and other new requirements (e.g. the implementation of the theory test in Britain) seem to be important, but the available evidence does not make clear, in a quantitative manner, how much of the observed trends can be explained by these heightened barriers-to-licence-acquisition. In Britain the average amount of professional driving lessons taken by learner-drivers increased sharply from the late 1980s to the early 2000s. It is noteworthy that the drop in licence-acquisition in Britain has not been a single, large one-off effect, and this appears to be the case in the US as well. To improve the evidence base for assessing the impacts of the testing regime, in the section of the British NTS that asks about the reasons for not having a driving licence it would be worthwhile to ask respondents to identify which of the licence-acquisition tests is deterring them from driving. It would also be useful to know whether people that are learning to drive have already taken the tests and failed, or have not taken the tests.

The line of questioning currently in the British NTS should be modified to more clearly distinguish between 'not driving' and 'not holding a driving licence', and could also be broadened, by asking young people that have recently acquired a licence their motivations for doing so. Such data would help further the state-of-knowledge regarding possible changes in young people's attitudes to learning to drive. Finally, given the structural implications for future traffic levels of changes in the profile of licence-holders, it would make sense to consider including questions modelled on those used in the British NTS in other countries' national travel surveys.

Beyond heightened barriers-to-licence-acquisition, there may well be other causal mechanisms. The hypothesis that the rise of online-activity (and potentially also the costs of the relevant electronic gadgets) could be causing young people to forego acquiring a driving licence is intriguing, though the evidence to date is inconclusive (4,5,27) and further research is urgently needed.

Paperwork and documentation requirements for acquiring a driving licence have increased, particularly in the post-9/11 era. With laws in an increasing number of U.S. states requiring voters to produce identification (28) – which in practice mainly takes the form of a driving licence – political implications arise from the degree-of-ease to acquire a driving licence. Driving-licence-issuing agencies are responsible to administrators appointed by elected officials, who have a direct interest

in the nature of the electorate. Hood and Bullock (29) studied the impacts of voter-identification laws in Georgia (U.S.) and reported: 1) ethnic minorities were less likely to hold the required photo-identification, 2) registered voters lacking photo-identification were less likely to vote, and 3) evidence linking a voter's lack of photo-identification to the political party with whom they identify. A hypothesis requiring further research is that barriers to licence acquisition may be due in part to attempts to manipulate which groups of the population vote, for partisan political reasons.

Immigration seems to be relevant as well. Le Vine et al. (30) report a negative association between licence-holding and immigrant-status in Britain, and Blumenberg and Smart (31) highlight similar effects in the U.S.

There has also been sustained growth in higher education participation in Britain. In 2009/10 36% of young people aged 18 or 19 entered higher education, as compared to 30% in 1994/5 (32). This growth may well be linked with falling rates of licence-acquisition, due to the distinctive activity-participation patterns, and wider lifestyles, of students in higher education, an issue discussed further by Noble (19).

In terms of economic pressures, Le Vine and Jones (23, Figure 5.2) point out that in Britain taxpaying (i.e. excluding the unwaged) men ages 20 – 29 have seen year-on-year decreases in real income since at least the year 2001; this is a structural trend rather than simply a post-2007 recession effect. The historic increase in housing prices starting in the late 1990s provided a form of economic rent to existing homeowners at the expense of would-be homeowners, many of whom will be young adults. Student debt loads have also increased during the relevant timeframe. It remains for future research to identify the degree of explanatory power due to each of these economic pressures on young adults (and others, for instance rising car insurance premia). Clearly, however, the current cohort of young adults faces economic constraints that are different than prior generations, and these pressures began well in advance of the recession that began in 2007.

Whilst further research is required to identify the relative saliency of these various hypothesised mechanisms for falling licence-acquisition rates, it can be concluded on the basis of this study that heightened environmental-sensitivity amongst young adults is not a significant contributing factor.

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Tables and Figures

	2000 (n=972)	2010 (n=928)	Change in percentage points
18 to 34 years old	51%	34%	-18%
35 to 54 years old	54%	27%	-27%
55 to 64 years old	58%	29%	-29%
65+ years old	56%	21%	-35%

Table 1: Percentage of British adults indicating that air pollution from cars is “very” or “extremely” damaging to the environment, from British Social Attitudes Survey. (Reproduced from [7]: 103)

	2000 (n=972)	2010 (n=928)	Change in percentage points
18 to 34 years old	52%	48%	-3%
35 to 54 years old	49%	48%	-1%
55 to 64 years old	56%	43%	-13%
65+ years old	47%	28%	-19%

Table 2: Percentage of British adults indicating that the rise in the world’s temperature caused by climate change is “very” or “extremely” damaging to the environment, from the British Social Attitudes Survey. Reproduced from [7]: 103)

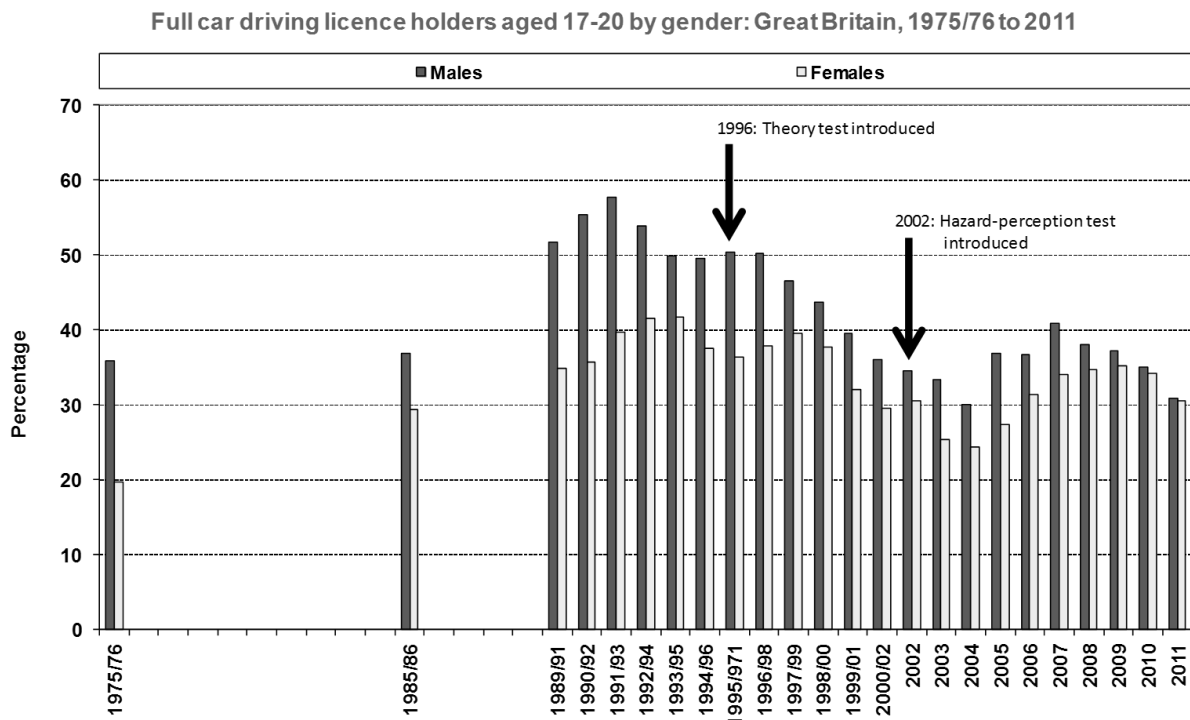


Figure 1: Full-car-driving-licence-holders aged 17 to 20, by gender, in Britain. (adapted from 33, 34)

	Age						
	17 – 19, men	20 – 24, men	25 – 29, men	17 – 19, women	20 – 24, women	25 – 29, women	Total (17 – 29, both sexes)
A	0.4%	0.4%	1.2%	0.0%	1.4%	0.0%	0.6%
B	36.9%	22.6%	23.5%	38.8%	18.4%	21.3%	27.0%
C	0.3%	1.6%	2.7%	0.8%	2.9%	1.2%	1.6%
D	28.6%	33.6%	21.2%	33.4%	33.9%	27.6%	30.3%
E	21.4%	29.7%	38.5%	17.3%	30.0%	33.7%	27.9%
F	3.5%	7.3%	8.3%	4.8%	9.4%	11.6%	7.4%
G	7.4%	4.7%	3.9%	4.6%	3.4%	3.8%	4.7%
H	1.3%	0.0%	0.7%	0.2%	0.6%	0.7%	0.6%
Sample size	510	446	290	565	562	447	2,820

Codes:

- A: Environmental reasons
- B: Currently learning to drive
- C: Put off by theory/practical test
- D: Cost of learning to drive / insurance / buying a car / other general motoring costs
- E: Family/friends drive me when necessary; Other forms of transport available; Too busy to learn; Not interested in driving
- F: Safety concerns / nervous about driving; Physical difficulties/disabilities/health problems
- G: Other
- H: Don't know / Refused

Table 3: Self-reported main reason for not driving by British young adults, by sex and age band. Authors' analysis of 2009/10 British NTS microdata.

	Age						
	17 – 19, men	20 – 24, men	25 – 29, men	17 – 19, women	20 – 24, women	25 – 29, women	Total (17 – 29, both sexes)
Percentage of unlicensed age/gender group members indicating that environmental reasons are the main reason they do not drive	0.4%	0.4%	1.2%	0.0%	1.4%	0.0%	0.6%
Percentage of unlicensed age/gender group members indicating that environmental reasons are a secondary reason they do not drive	1.0%	2.0%	2.8%	1.7%	3.3%	3.2%	2.3%

Table 4: Of British young adults without a full driving licence, the percentage reporting that environmental reasons are the main reason or a secondary reason they do not drive, by sex and age band. Authors' analysis of 2009/10 British NTS microdata.

	Age						
	17 – 19, men	20 – 24, men	25 – 29, men	17 – 19, women	20 – 24, women	25 – 29, women	Total (17 – 29, both sexes)
Percentage of all age/gender group members indicating that environmental reasons are a main or secondary reason they do not drive	0.9%	1.0%	1.1%	1.2%	2.1%	1.1%	1.3%

Table 5: Of all British young adults, the percentage of British young adults reporting that environmental reasons are the main reason or a secondary reason they do not drive, by sex and age band. Authors' analysis of 2009/10 British NTS microdata.