The contribution of benefit-in-kind taxation policy in Britain to the 'Peak Car' phenomenon

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Abstract

Car use has historically grown year-on-year in Britain, with exceptions during fuel crises and times of economic recession. The 'Peak Car' hypothesis notes that this simple relationship no longer holds. In order to forecast traffic demands in coming decades with any confidence – a first order requirement for rational planning of transport infrastructure – it is therefore imperative to discriminate between explanations for 'Peak Car' that are due to specific public policy actions versus others that are due to decentralised demographic, economic, or technological trends.

This paper reports that usage of company cars fell sharply in Britain from the 1990s up to the 2008 recession, and that after accounting for this effect the use of personal cars slowly trended upwards. Concurrently, fiscal policy towards company cars (which are treated as non-salary benefits that are taxed at a lower rate than salary) made it much less advantageous to own a company car. The tax incentives to receive 'free fuel' to use a company car for personal use as part of one's remuneration package also became much less attractive.

It is suggested the downward trend in company car usage in Britain is at least in part due to this targeted application of public policy. As the 'Peak Car' phenomenon is observed in other developed countries that have similar fiscal policies, research is urgently needed to ascertain whether similar effects are found outside of Britain.

1. Introduction

The 'Peak Car' hypothesis – that car travel will no longer grow and may in fact fall – has catalysed an important and overdue debate amongst transport researchers, as it is challenging long-held assumptions about the drivers of car use and spurring research into possible causes that lie outside of traditional areas of focus (Goodwin 2012a). 'Peak Car' includes both factual observations of car usage trends in the past (first noticeable in some places in the late 1990s) and a forward-looking element in which there is seen to be an open question of whether car usage will once again grow, remain stable, or decline.

Taking informed actions in response to the observed-but-unexpected stabilisation in developed-world car travel requires discriminating between the impacts of specific public-sector policies on the one hand and decentralised economic, demographic, and technological trends – over which policymakers have much less leverage – on the other.

BITRE (2012) takes a cross-national perspective on car usage, and suggest that there is a long-term trend towards saturation in car driving mileage per capita (at different levels in different countries), with deviations due to standard economic factors such as unemployment and fuel prices.

Kuhnimohof et al. (2012) show that in demographic terms it is young adults, particularly young men, whose car driving has fallen the most. Metz suggests that demographic change – specifically aging and population growth – will be the 'main determinant of future travel demand' in developed countries (Metz 2012.)

It is widely speculated that telecommunications technologies – particularly mobile ones (Goodwin 2012b) – may reduce physical mobility, as they allow people to perform many activities remotely that otherwise would require physical mobility. It is far from settled, however, that the net effects of such technologies will be less travel; it is also plausible that they stimulate certain types of travel by increasing the efficiency of developing [long-distance] personal or business relationships (van den Berg et al. 2013).

The relevant policy-space extends well outside the transport domain as it has classically been defined. Mackett (2009), for instance, highlights the impacts of public health policy on mobility patterns, specifically the spatial re-structuring of British health-care-delivery facilities into a smaller number of larger sites. Madre et al. (2012) suggest that restrictions on working hours, e.g. France's 35-hour working week, could be an important contributor. Van Ristell (2011) shows that changing state education policy – specifically, empowering parents to choose the school that their children attend – has had far-reaching impacts on transport outcomes. To take another example, public policies that support universal access to broadband internet service can be expected to affect mobility, though as noted above there is considerable uncertainty about both the direction and magnitude of such impacts due to the complex functional links between physical mobility and the performance of human activities in cyber-space.

This paper shows that whilst company cars have never accounted for more than a tenth of Britain's car park, they contribute disproportionately to overall traffic levels and that changes in fiscal policy affecting company cars have been associated with reductions in company car use that have had a major impact on overall car traffic levels. It draws on parts of a recent study that investigated a number of aspects of changing car usage trends in Britain (Le Vine and Jones 2012).

The main dataset used in this paper is the British National Travel Survey (Rofique et al. 2011), which was collected from the 1960s to the 1980s on an ad-hoc basis and has since 1988 been a continuous survey. In the 1990s the NTS had an annual sample size of approximately 3,500 respondent households, which increased from 2002 onwards to around 9,000 households. The data comes primarily from two sources: an interview in which demographic and other questions are asked, and a week-long diary of each household member's travel.

In this paper the term 'company car' refers to a car that is owned by an employer (or a specialist third-party firm that leases the car to the employer) and made available to the employee on a continuous basis for their business *and* private use as part of their remuneration package. A company car is a 'benefit-in-kind' that is received in addition to salary but taxed at a lower rate than salary. Nearly three in five (59%) new cars in Britain are initially registered to a corporate entity (including both private- and public-sector organisations) rather than a person (DfT 2012), though the majority of corporately-purchased cars are not company cars and are instead used in other ways, e.g., as pool cars for exclusively business use, hire cars, and so forth. In this paper we also refer to 'personal' and 'non-household' cars. A personal car is one that is owned by the driver or or another person living in their household. A non-household car is one that is neither a personal car nor a company car (in the sense discussed above).

Three methodological points must be noted. First, prior to 1995 the NTS data cannot be weighted for direct comparison to the 1995-onwards time series, and so have been excluded from this analysis. Second, to ameliorate the effects of small sample sizes once the data are further disaggregated into detailed cross-tabulations, results in the remainder of this paper are presented in the following year groups: 1995/7 (10,597 participating households), 2000/2 (16,339 households), 2005/7 (27,992 households), and 2008/10 (26,827 households). Third, this analysis focuses primarily on trends up to the 2005/7 period. This is in order to discriminate between long-term trends and the effects of the recession (beginning in 2008) and subsequent economic stagnation which continues at the time of writing. Data from the 2008/10 period is however included to permit comparisons.

The remainder of this article is structured as follows. Section two presents results regarding changing trends in company car provision and usage. Section three then investigates how tax treatment of company cars has changed over time, suggesting that changes in benefit-in-kind fiscal policy is associated with the sharp decline in company car usage. Section four concludes this article with a discussion of the implications for long-term trends in personal mobility.

2. Empirical findings

Analysis of the NTS microdata shows that overall driving mileage per capita levelled off in the late 1990s and then stayed basically flat until a substantial fall with the onset of recession in 2008 (Figure 1.)

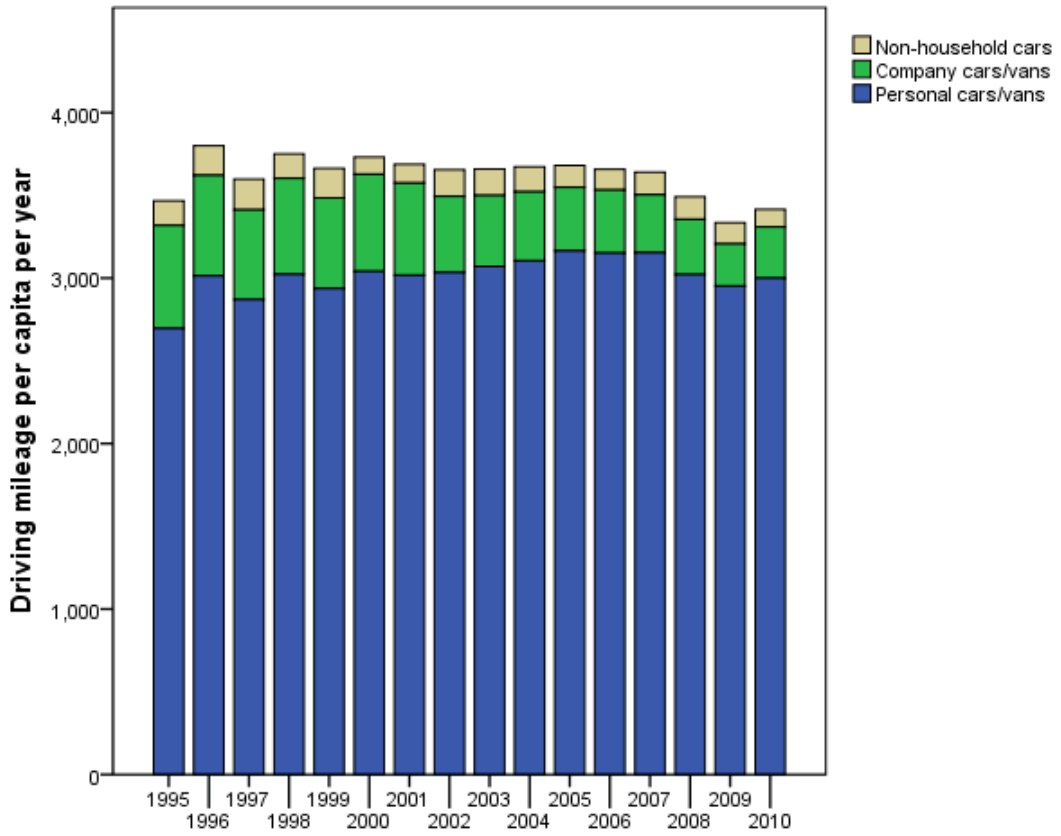

Figure 1: Trend in car usage per capita by type of car ownership: personal car, company cars, and non-household cars

The NTS data identifies the car used on each car journey as personal, company, or a non-household and Figure 1 also shows the breakdown of car driving by these three classes on a per capita basis. It can be seen that the overall stability in car driving mileage per capita is the net result of a decrease in company car use and an increase in driving in personal cars. If we only look at driving in personal cars, then there is no 'peak car' effect prior to the recession.

In proportional terms, company car use per capita fell by 37% from 1995/7 (averaging the three years) to 2005/7, whilst personal car use grew by 10%. Another important result from Figure 1 is that there has not been growth in the use of non-household cars, the category which includes employers' fleets of pool cars. Surprisingly, there is no evidence of a large-scale shift from company cars that employees keep for their continuous use to pool cars that they can use on a one-off basis for specific business-travel needs.

Figure 2 shows driving mileage in all cars (left), personal cars (centre) and company cars (right) by personal income bands. What has happened is that there has been a trend of reduced driving for high-income people and an increase for lower-income people. The fact that wealthier people are reducing their mileage the fastest is an intriguing result: wealthier people tend to be at the forefront of consumer trends.

When the data are disaggregated into personal and company car mileage, it can be seen that much of the effect of falling mileage by high-income people can be accounted for by falling levels of company car usage. In 1995/7 43% of mileage driven by people with personal incomes above

£40,000/year (2010 price levels) was in company cars (12,822 overall, 5,529 in company cars). This declined sharply to 23% of their driving mileage by 2005/7 (9,984 overall, 2,253 in company cars); their personal mileage trended slowly upwards (9%, from 6,804 to 7,409) over the same period. Personal car use trended down somewhat for those in the £10,000 to £39,999/year bands (by a weighted average of 9%, from 5,322 to 4,853), and up by 13% amongst people earning less than £10,000/year (from 1,699 to 1,916 miles per year). Company car use fell for all income classes shown, an effect that increases sharply moving up the income distribution. The rate of decrease has slowed over time, particularly after 2007.

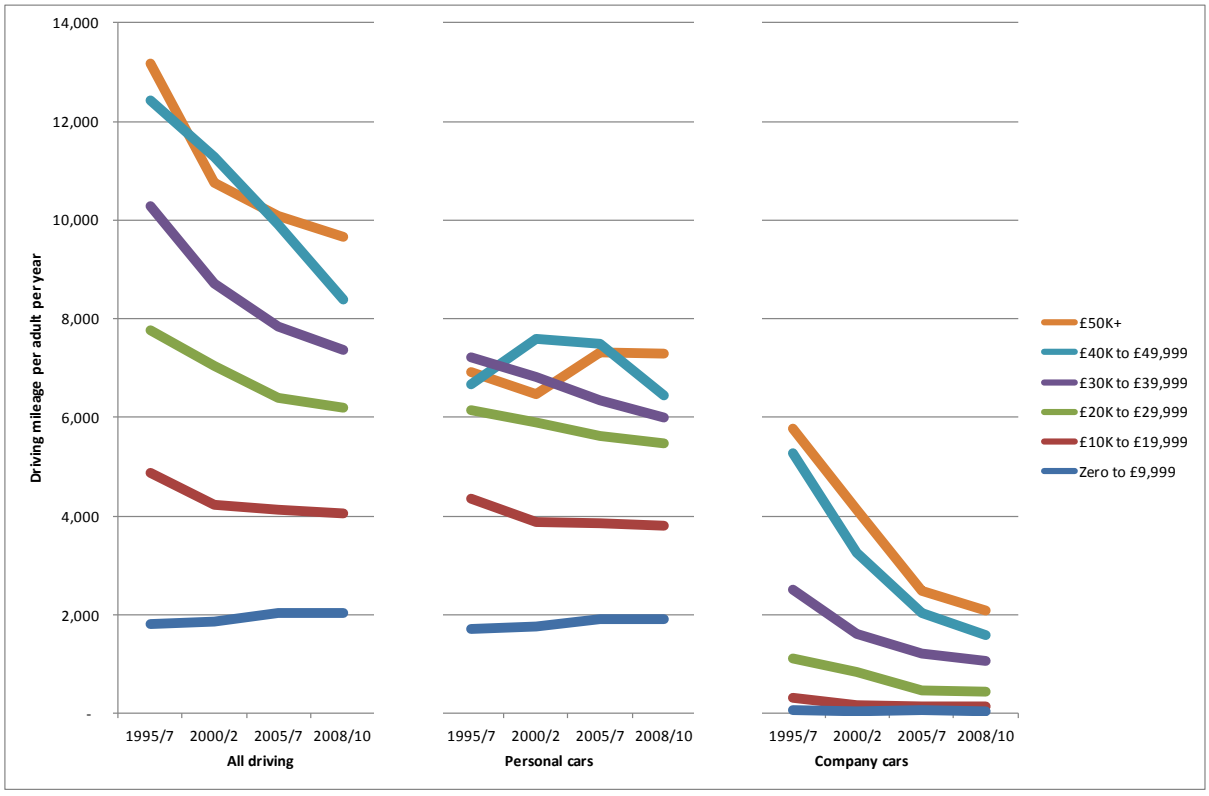

Figure 2: Trend in car usage per capita by type of car ownership (left: all driving, centre: personal cars, right: company cars) and income band

Table 1 shows how income levels for company car drivers and other adults have trended over time. It is unsurprising that company car owners tend to have high incomes; this is the group most likely to be in an occupation where a company car is available, and the tax advantages of a company car are most substantial for people in higher-income tax brackets. What is more interesting is that, in real terms, the incomes of company car owners have trended down since around 2000/2, while for all other adults mean income trended upwards until the recession and then fell by one per cent versus 7% for company car owners. Some of this latter effect will be due to the decreasing prevalence of company car ownership (see Table 2): fewer high-income people having a company car means more of them in the 'all other adults' category. The fact that real incomes for company car owners have fallen seems to indicate that company car ownership has fallen most amongst the wealthier. One possible interpretation is that the remaining company cars have a greater tendency to be 'functional' and in the hands of front-line staff – rather than a fringe benefit provided to senior staff – though this is only speculation pending further enquiry.

	Drivers of company cars	**All other adults**

1995/7	£41,000	£14,100
2000/2	£42,200	£16,600
2005/7	£39,600	£17,300
2008/10	£37,000	£17,100

Table 1: Mean income of company car drivers and other adults in 1995/7 and 2005/7

Table 2 shows that company car ownership has fell21% on a per capita basis between 1995/7 and 2005/7, whilst mileage per company car dropped 22%. In other words, the reduction in aggregate company car mileage is due in roughly equal part to lower ownership and less intensive use of each remaining company car, which is contrary to what might be expected. Personal car ownership trended upwards (17%) whilst their average mileage fell about 5% on a per-car basis. This time trend for personal cars is more logical: one would expect that the marginal cars added to the car park would likely not be driven very intensively, as people with the greatest need for car use would tend not to be on the margin. Section three looks at a possible explanation for why both company car ownership and use-per-company-car fell concurrently.

	Personal cars per 1,000 population	**Average driving mileage per year, personal cars**	**Company cars per 1,000 population**	**Average driving mileage per year, company cars**
1995/7	390	7,228	29	20,460
2000/2	426	7,102	29	17,111
2005/7	458	6,868	23	15,909
2008/10	462	6,444	20	15,341

Table 2: Car ownership disaggregated for personal and company cars

From Figure 3 it can be seen that company car use has predominantly been a middle-age-male phenomenon. As a consequence, the fall in company car use has predominantly taken place amongst men, such that in relative terms women now account for a much larger proportion of company car travel than in the 1990s. In 1995/7 men drove more than seven miles in company cars for each one that women drove, this ratio in mileage fell to under 4:1 in the most recent data (2008/10).

There has also been an aging of company car drivers. The age of the average company-car-driver, weighted by vehicle-kms, increased from 41.5 years in 1995/7 to 44.2 years in 2008/10. This was about a third (32%) faster than the aging of Britain's adult population, but a third (32%) slower than the increase in the average driver age of personal car vehicle-kms.

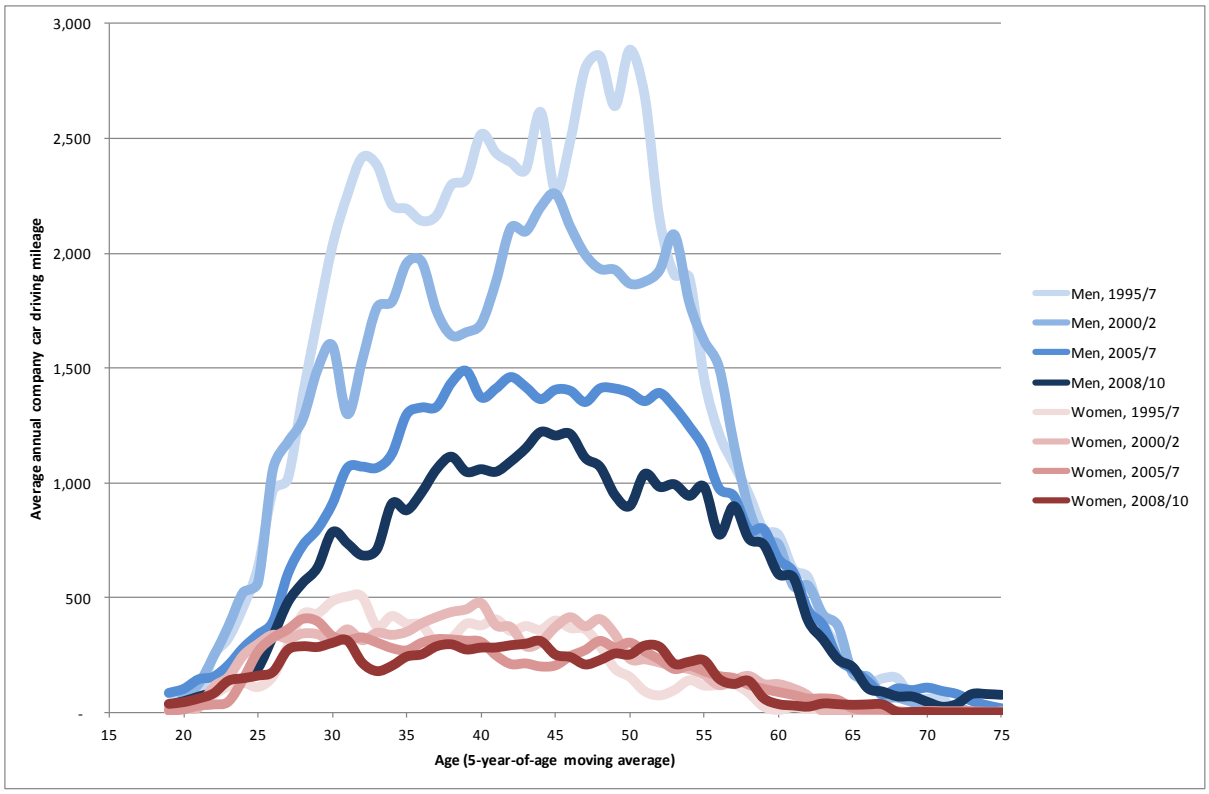

Figure 3: Company car driving mileage per capita, by age and sex

Figure 4 shows how company car ownership varies by the socio-economic group (SEG) of workers. The highest ownership levels are amongst occupations that fall within the 'employer/manager' class; in the mid-1990s more than one in five of these workers had a company car. Professional workers have the next highest rate of ownership, and interestingly their rate of ownership has fallen most sharply of all amongst these classes.

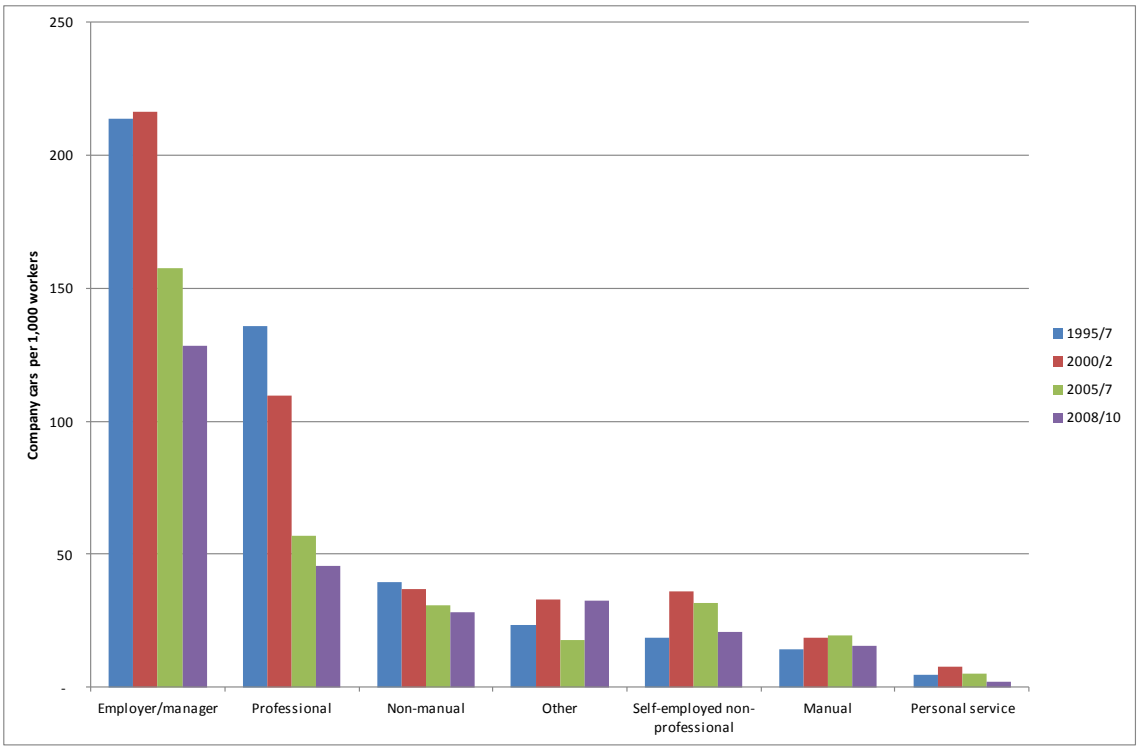

Figure 4: Company car ownership by socio-economic group

There have been divergent trends in the spatial distribution of company cars, which not surprisingly breaks down differently for the Greater South East of England (the London, South East, and Eastern NUTS1 regions) and the rest of Great Britain. In 1995/7 the prevalence of company cars (cars per 1,000 population) was 32% greater in the Greater South East than the rest of Britain, by 2008/10 this had reversed and it was 6% lower in the Greater South East than elsewhere.

Indeed, the drop in company car activity in London was sharp enough to be a major contributor to London's falling traffic levels, which had not previously been recognised. Company car mileage by London residents was down 65% from 1995/7 to 2005/7. Table 3 shows that the trend in driving by London residents by type of car ownership; the fall in company car driving had a larger impact on VKT by London residents than the 8% drop in personal car driving, prior to the recession. It should be noted that this analysis looks at travel by London residents, which does not consider London residents driving outside of London nor vice versa. It is also noteworthy that driving by non-household cars fell for London residents as it did nationally (see Figure 1). At both the regional (Greater London) and national (Britain) geography there is, quite interestingly, no evidence of a shift from use of company cars to use of non-household cars, which includes employers' pool cars.

It was only after the onset of the financial crisis that VKT by London residents in private cars fell substantially (a 17% fall from 2005/7 to 2008/10); interestingly the data show mileage in company cars to have risen in the recession-affected years, though at a low mileage level of mileage (134 miles per London resident per year in 2008/10 v. 111 in 2005/7). Researchers will be closely examining more recent NTS data as it becomes available to determine whether this is a temporary blip due to data noise or of a more structural nature.

	Personal cars	Company cars	Non-household cars
Average driving mileage per London resident per year, 1995/7	1,836	315	170
Average driving mileage per London resident per year, 2000/2	1,767	279	108
Average driving mileage per London resident per year, 2005/7	1,682	111	62
Average driving mileage per London resident per year, 2008/10	1,400	134	68
Difference in mileage (1995/7 to 2005/7)	-154	-204	-108
Difference in mileage, in percentage terms (1995/7 to 2005/7)	-8%	-65%	-64%
Percentage of reduction in car driving mileage (1995/7 to 2005/7)	33%	44%	23%

Table 3: Trend in car usage per resident of London by type of car ownership: personal car, company cars, and non-household cars

Figure 5 and Figure 5 look at groups who commute or make business trips on at least two days in their diary week by any mode of transport, for men and women respectively. Each figure distinguishes between four groups: London residents travelling for commuting/business on two-plus days per week, non-London residents who come into London for commuting/business purposes on two-plus days a week, other workers who do not visit London, and all other adults.

In all four groups men have higher average annual car driver mileages than women, but in some cases the time trends are different. The lowest annual car-driving mileages are among adults who do not make at least two commuting or business trips per week (by any mode); this group shows a slight increasing trend in driving mileage over time for both sexes, but virtually none of this is in a company car. The next lowest annual mileage is by economically-active London residents; here, men show a reduction over time that is largely due to reduced mileage in company cars and to a smaller degree due to non-household cars; the reduction for females is much smaller.

In aggregate, the annual car mileage by employed people who do not visit London has remained steady over the ten-year period, but this is made up of a slight decline over time among males offset by a slight increase among females. For males, a reducing mileage in company cars is partly offset by a growth in mileage in private cars.

The highest annual car mileages are to be found among adults living outside London who visited it on two or more occasions in their NTS diary week for commuting/business-related purposes. Here we observe a large reduction in car mileage by men – down from 17,210 to 12,067 miles between 1995/7 and 2005/7; most of this reduction is due to less company car mileage and occurred between 1995/7 and 2000/2, before the introduction of congestion charging in central London. Women in this group, on the other hand, saw an overall increase in their average driving mileage (up from 6,329 to 8,060 miles per year) despite reductions in their company car mileage. Most of this increase occurred between 2000/2 and 2005/7, and indeed the effect of the recession seems to have been a major reduction in driving mileage for this group, to just under their level in 2000/2.

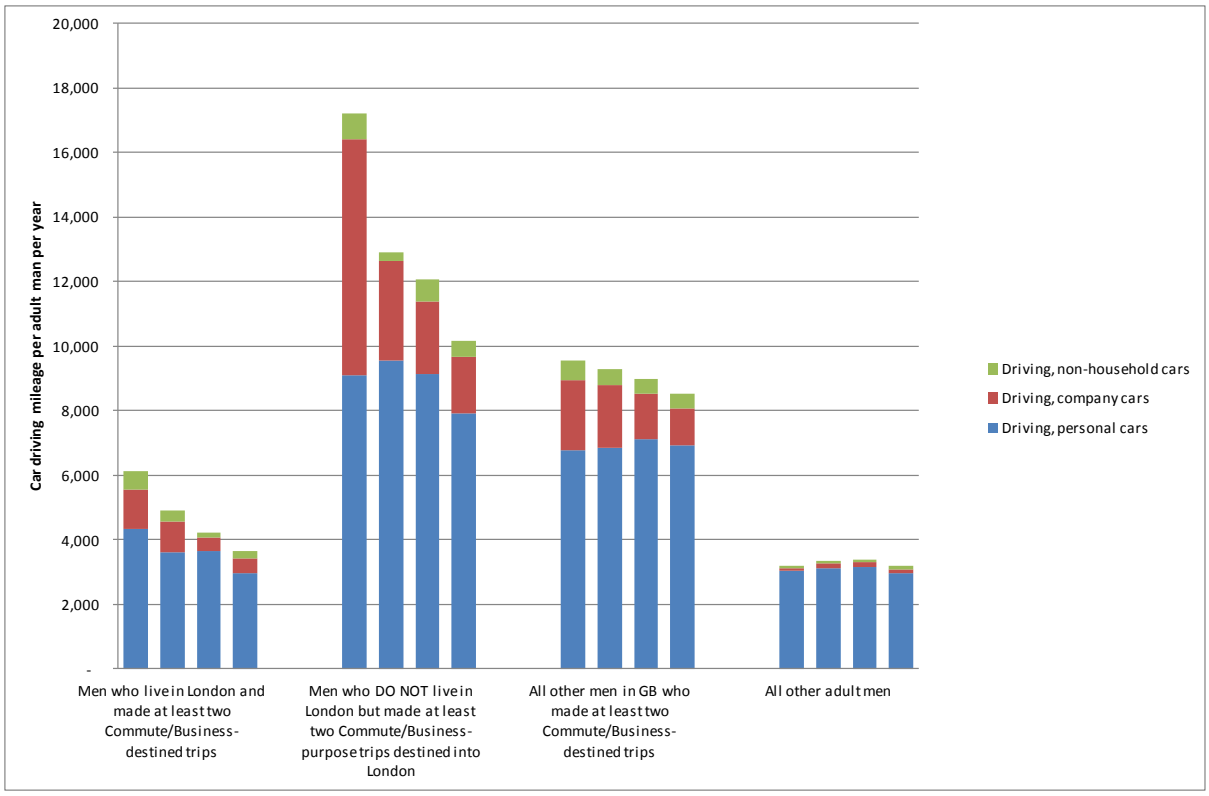

Figure 5: Car driving mileage per man, disaggregated by type of car ownership and home- and work-related locations

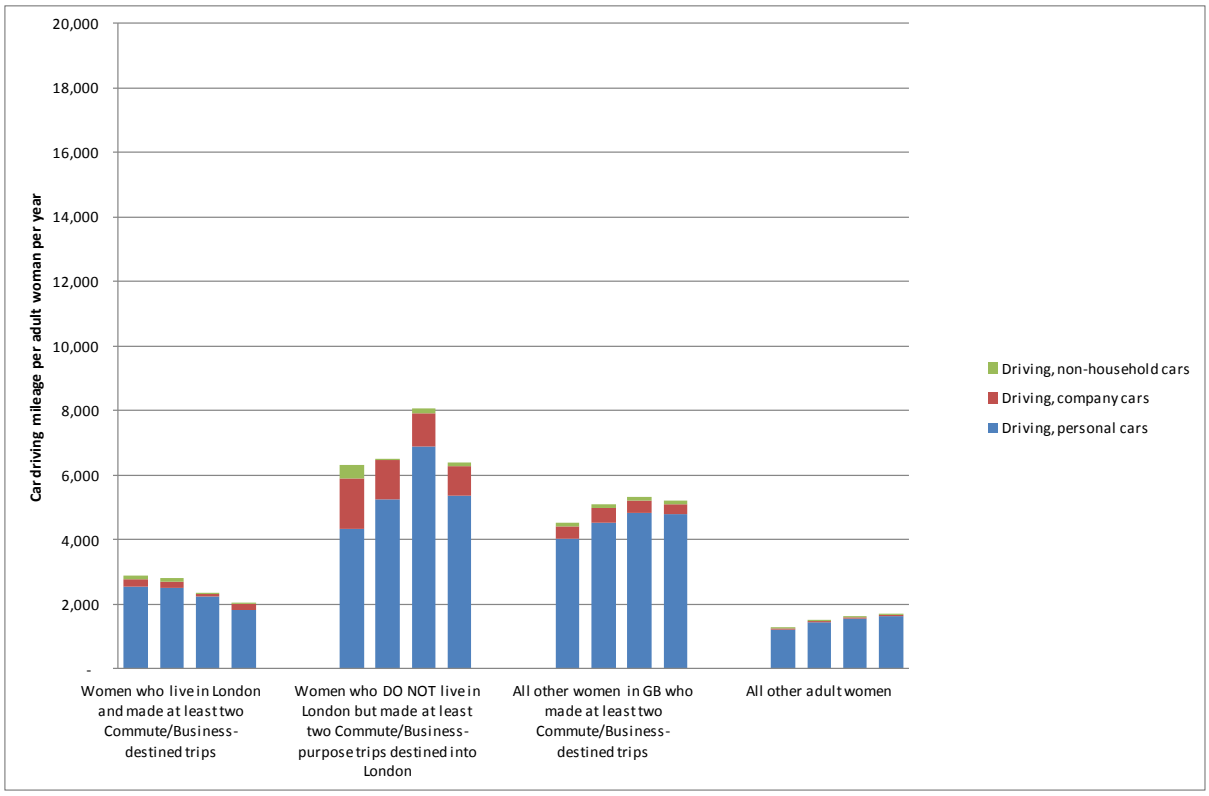

Figure 6: Car driving mileage per woman, disaggregated by type of car ownership and home- and work-related locations

An important question raised by the sharp and sustained drop in company car travel is whether this mobility has simply been foregone (and if so to what degree), or whether it is being manifested in different forms of travel. On the basis of our research (LeVine and Jones 2012), it seems that at least some of this travel has shifted from company cars onto trains. Figure 7 looks at this issue by plotting, for each sex, changes in company car mileage (from the mid-1990s to just before the recession) on one axis against the growth in mileage by rail on the other axis, for several major journey purposes. Here we see a very strong negative relationship for men's business mileage (with an r^2 value of 0.89) but for women on average a small growth in business mileage, both in company cars and by rail. For men, the line of best fit has roughly a -4:1 slope: so that for each mile of reduction in company car use for business travel, roughly a quarter-mile seems to have shown up as increased rail use. There is a somewhat weaker relationship for men (but, again, not for women) between company car and rail mileage for the visiting-friends-and-relatives-at-private-homes journey purpose; here the slope is roughly -1:2, with an r^2 value of 0.64.

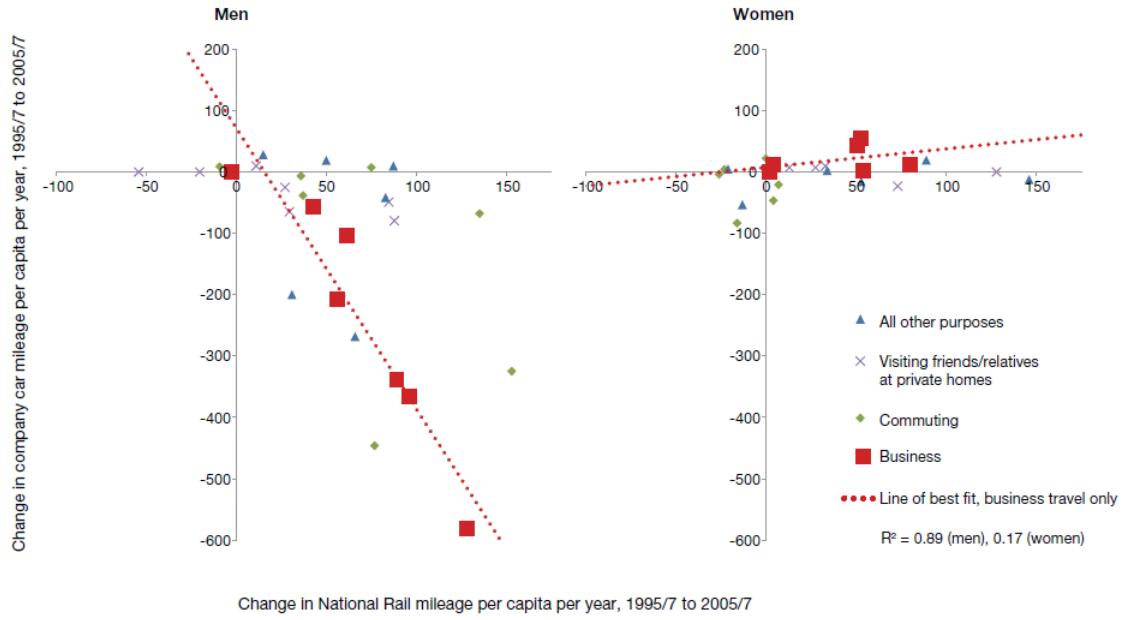

Figure 7: Changes in company car business mileage plotted against changes in rail business mileage, by age and sex groups.

3. Company car policy in the UK

The analysis in Section two has highlighted the important and hitherto overlooked role of 'company cars' – specifically those reserved for the use of a particular employee as a benefit in kind – in contributing to the aggregate levelling off in national car traffic levels per capita. This section investigates how changes in government policy towards company cars appear to have encouraged this reduction in company car ownership and use.

In the 2009/10 tax year, 970,000 UK taxpayers paid tax for use of a company car, a drop of 41% from the 1995/6 figure of 1,650,000 (Figure 8, HMRC 2012a).

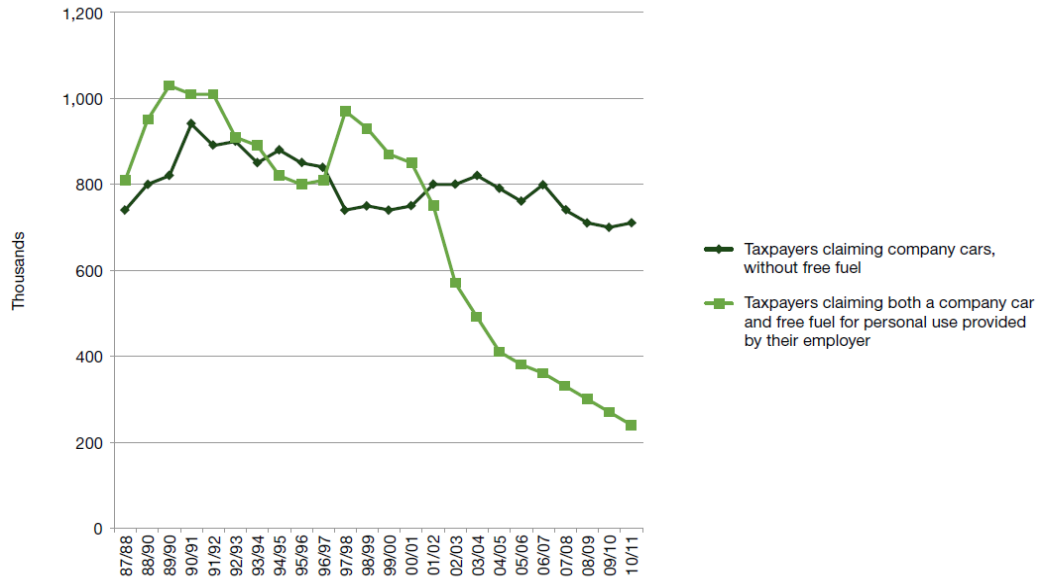

Figure 8: Number of taxpayers claiming a company car as a benefit-in-kind, 1987/8 to 2010/11 (HMRC 2012a)

Of the company car drivers registered with the tax authorities in 1995/6, around half (48%, or 800,000 taxpayers) reported also receiving free fuel from their employer for their personal use, whereas only 28% (270,000 taxpayers) did so in 2009/10. What has happened is that the number of company car drivers that receive no free fuel has fallen by only 16%, whilst the number receiving free fuel for personal use has dropped by 70%.

Cars as a benefit first emerged in the UK as a means of providing staff with in-kind value that did not violate the wage freezes of the 1970s; prior to the Finance Act of1976, with the relevant sections coming into effect in the 1977/8 tax year, company cars attracted no tax liability (Great Britain 1976). From 1987/8 to 1993/4, company cars were taxed on the basis of age, engine size, and their original value when new. The 'scale charge' – the amount taxpayers were required to add to their taxable income – escalated rapidly year-on-year in the early 1990s: for a car under four years old with an engine size between 1.4 litres and 2.0 litres, the charge grew from £1,031 in 1987/8 to £3,226 in 1993/4 (both quoted at 2010 prices) (HMRC 2012a).

The scale charge also depended on how much the car was driven – the 18,000th mile driven for business purposes led to an abrupt 50% drop in taxation, providing a strong incentive for company car drivers to reach that threshold (HMRC 2012a).

Employers could also provide unlimited 'free' fuel to an employee, with the staff member incurring only a *fixed* tax liability – an amount that was invariant with respect to the amount of fuel used.

Thus, driving high levels of mileage was further encouraged, as having fuel paid for by one's employer made financial sense only if enough fuel was consumed to justify the tax liability (the 'fuel scale charge'). Interestingly, the fuel scale charge changed most rapidly from the late 1990s to the early 2000s (Figure 9), more than doubling (in real terms) from about £1,400 in 1997/8 to £3,600 in 2001/2 (both in 2010 prices), for a petrol car with an engine size between 1.4 litres and 2.0 litres.

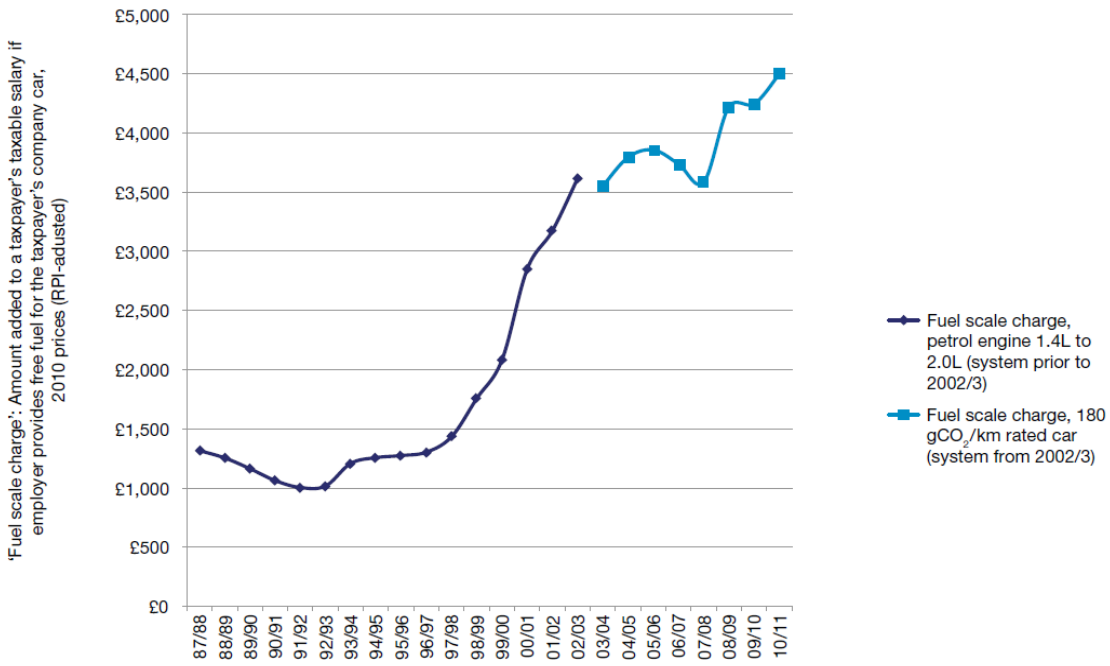

Figure 9: Changes over time in the fuel scale charge for receiving free fuel for personal use as a benefit-in-kind (HMRC 2012a)

Table 4 shows that driving mileage by both types of company cars – with and without free fuel provided – has fallen over time, as recorded in the NTS. Company car drivers who also receive free fuel tend to drive more mileage in their company car (33% in 2005/7). When disaggregated by journey purpose, the biggest 'mileage gap' is in the distance driven for commuting, as opposed to other business mileage and driving for personal purposes.

		Drivers of company cars with 'free fuel' not claimed as a complementary benefit-in-kind	Drivers of company cars with 'free fuel' claimed as a complementary benefit-in-kind	Difference, in percentage terms
Commuting	1995/7	4,708	6,851	46%
	2000/2	4,141	5,275	27%
	2005/7	3,418	5,959	74%
	2008/10	3,368	5,478	63%
Other business	1995/7	5,651	6,013	6%
	2000/2	5,049	6,269	24%
	2005/7	5,067	5,490	8%
	2008/10	4,656	5,969	28%
All other [personal] use	1995/7	7,819	9,293	19%
	2000/2	5,971	8,060	35%
	2005/7	5,993	7,764	30%
	2008/10	6,050	6,904	14%
All use	1995/7	18,178	22,157	22%
	2000/2	15,161	19,603	29%
	2005/7	14,478	19,212	33%
	2008/10	14,074	18,350	30%

Table 4: Driving mileage per company car driver, by journey purpose and whether employer also provides free fuel for personal use

From 1993/4 the system for company car ownership (though not the one for free fuel as a benefit-in-kind) was revised, with the annual taxable amount now set at 35% of the car's original market value; engine size and age no longer affected it. But the tax incentives for driving high business mileage remained: the 35% charge fell by a third after the first 2,500, and by two thirds after 18,000 miles. The system was updated again in 1999/2000, with the effect of reducing somewhat the tax incentives accruing from high business mileage (to a reduction of 29% after 2,500 miles, a drop from the previous 33% savings, and 57% after 18,000, rather than 67%) (HMRC 2012b).

The system was more radically overhauled in the 2002/3 tax year, such that the scale charges both for having a company car and for receiving free fuel now depended on the car's CO_2 emissions band, with rates ranging from 15% for the lowest-emissions bands up to 35% for the highest per-mile emitters. Perhaps most importantly, the tax incentives for reaching specific mileage thresholds that had been in place since the 1980s were removed in 2002/3.

In more recent years, company car tax policy has further incentivised lower-emitting cars, to the point that zero-emission cars (e.g. electric cars) have not been subject to any company tax since 2010/11, which the responsible government deparment (Her Majesty's Revenue and Customs) has publicly stated will remain until 2015/16 (HMRC 2012b). In other words, company car policy once again provides large tax incentives for employers to compensate staff with vehicles (paid for by the employer with pre-tax money) instead of salary, but in its contemporary form providing much

stronger incentives for lower-emitting cars. What has not returned, however, is tax policy that encouraged employers to provide 'free' fuel to company car drivers, and that then encouraged those drivers to maximise their mileage.

In addition to the UK, company cars receive favourable tax treatment (relative to monetary compensation) in many of the European Union's other major economies (Macharis and De Witte 2012), as well as other OECD countries (CRA 2012). It has been estimated that the market distortion due to favourable tax treatment of company cars in the European Union is equal to roughly a half per cent of EU-area gross domestic product (Naess-Schmidt and Winiarczyk 2009).

4. Discussion and conclusions

This paper has shown that the sharp decline in company car use has been an important and previously-under-appreciated element of trends in car travel in Britain since the 1990s. The distinction between personal and company cars provides a fresh perspective on the stabilisation in per-capita car driving levels prior to the onset of the current recession. In London, for instance, the falling company car usage has been a larger contributor than the drop in personal car usage to the decline in overall car driving per capita.

It is shown that the sharp fall in company car usage has been associated with structural changes in tax policy during this time period. We cannot however discount the possibility that the apparent policy impacts are confounded with contemporaneous changes in attitudes towards company cars (e.g. the rise of the 'corporate social responsibility' agenda). It is also quite possible that the [relative] functional value of [various types of] company cars has not been completely stable over time, due to wider economic and/or technological trends. Whilst these possibilities cannot be excluded on the basis of the present evidence, the fact that the outcome (a collapse of company car usage) coincides temporally with the apparent stimulus is strongly suggestive, and indeed is a more convincing linkage than empirical results that serve as the basis for much real-world policy-making. As is typically the case in the domain of personal mobility, we do not have the chance to run a controlled experiment at sufficient scale; nevertheless the strength of the policy stimulus approximates this unattainable ideal in some ways.

One lesson of this research is that travel survey designers must be sensitive to the policy environment in domains adjacent to personal travel. In this instance, different 'modes' of car ownership (which are defined in Britain for historical fiscal reasons) were shown to be important as in practice they have wildly different cost structures and mobility outcomes.

The apparent impacts on levels of car use of employers providing staff with 'free fuel' (which functions as fuel paid for with pre-tax, rather than post-tax, earnings) may have implications for how electric vehicles will affect mobility patterns, given that marginal operating costs could be much lower for electric vehicles than for internal-combustion vehicles.

There are also important issues of temporal uncertainty associated with receiving 'free fuel' as a benefit-in-kind. Neither the staff member nor the employer can know in advance precisely how much fuel the staff member will wish to use for personal purposes in a future tax year; they must both independently estimate the value of 'free fuel' ex ante in order to determine whether to offer/accept the benefit. Then, once the free-fuel benefit-in-kind has been agreed, the staff

member is incentivised financially to maximise their use of it. Conversely, they may for strategic reasons not wish to be seen by their employer (who will learn the outturn cost of the free fuel provision ex post) as taking improper advantage. In other words, imperfect information and strategic considerations may mean that behaviour associated with using this benefit-in-kind may well be more complex than a simple response to the re-structuring of the costs of motoring.

Future research is needed along several lines of enquiry. First, properly establishing the distinction between company cars that are essential for performing business functions and those that are provided as simply a fringe benefit for senior staff is necessary, as is identifying whether there have been divergent trends in use of these different kinds of company car. This will help in understanding how company car travel could trend in the future. A related point is that traffic forecasting methods require updating to take account of the unique characteristics of company cars; it is clearly a much different regime of car access than owning a personal car.

This study did not directly address two important research questions: 1) What are the mobility patterns of people who do not now have a company car but in years past would likely have had one? and 2) What impact does the presence of a company car within a household have on the mobility of other household members besides its main driver? The former would be best addressed with a panel data set, while the latter could be analysed using the NTS data sets used in this study.

A linked issue is the possibility of path dependency associated with past company car ownership. It is entirely plausible that having a company car which is then taken away by one's employer (or changed to another type of benefit) is associated with different mobility outcomes than never having had a company car, though in the absence of appropriate empirical evidence there is no strong *a priori* expectation of whether the net effect on mobility is positive or negative. Stokes (2012) has shown that acquiring a driving licence after one's teenage years is associated with lower-than-average levels of car use; it is plausible that, for instance, past experience with a company car might have an opposite effect, though innovative data sources will be needed to investigate this issue.

This study did not discriminate between cars and light vans, which is an issue of growing relevance to overall traffic levels on Britain's roads. It is inconceivable that this distinction does not matter; future research is needed to understand the determinants of the differences in how cars and vans are used, particularly at the margin as the light van fleet is growing rapidly.

Though much work remains to be done to understand the contribution of public policy to the stabilisation of per-capita car travel in Britain, it is hoped that this study will encourage in-depth investigation to assess whether there is evidence of analogous effects in other OECD countries.

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