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Commuting Times – the Role of Gender, Children and Part-time Work

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Abstract

It has been widely established in the UK and other developed countries that men commute longer than women and that fathers travel furthest to work while mothers travel least. This paper models a wide variety of factors that affect commuting times including gender, presence of children and working hours (part- and full-time work). It finds that of particular importance to the length of commute are the worker's age, having children, the age of their youngest child, occupation, weekly pay, and mode of transport (with public transport being associated with long commutes). The region of residence was important for men and women working full time but not for part-timers (except for women in London), while ethnicity and owner occupation were associated with commuting length for full-time men only. The results suggest that while gender, working hours and childcare responsibility are often inter-related, it is useful to disaggregate their effects when modelling.

Keywords: Commuting; travel-to-work; gender; children; childcare; part time; full time

1. Introduction

It has long been established in the UK and other developed countries that men commute longer than women and that fathers travel furthest to work while mothers travel least (for example, Dex et al., 1995 and Grieco et al., 1989 in the UK and Turner and Niemeier, 1997 in the USA). For younger age groups, women's and men's commuting times have been converging although social and cultural issues linked to gender still play an important role in explanations of labour market dynamics and travel (Crane, 2007; Law, 1999), possibly influenced to converging wage rates for younger male and female workers. A range of socio-economic factors affect the length of time that workers and job seekers would commute to a job (McQuaid, 2009a), although the influence of many of these have been altering in recent decades, due to factors such as changing access to various modes of transport, employment structures, occupational segregation, earnings, along with a rise in the age at which women have their first child. Four overlapping and interlinked types of explanation of gender differences in travel-to-work times focus on: individual factors (such as a person's qualifications, age or experience); job characteristics and other demand issues (such as differing wage levels or occupational segregation where female dominated jobs may be located nearer to residential areas or they may have fewer job choices); while others focus on households and household relationships (e.g. access to vehicles or the sharing of caring responsibilities or choice of residence favouring one partner's job location (Madden, 1981; Wyly, 1999)); or other factors external to the household (such as availability of housing or public transport). It is argued in this paper that in order to better understand differences in commuting times by gender it is important to disaggregate fundamental factors such as childcare responsibilities and hours of work and how these affect differences within each gender as well as between genders.

Despite some increases in fathers' childcare responsibilities and increasing female employment participation rates, there remain significant differences between mothers' and fathers' working and commuting patterns and also between those with or without childcare responsibilities. Working hours are also important in a number of ways. Paull (2008) identified that the birth of a child had little effect on a father's work time, but considerable effect on the mother's (reducing their work time), and indeed father's work hours might rise. In the UK, 70 per cent of working age women are in the workforce, fathers working full time work longer hours than non-fathers while mothers work fewer hours than other women (45.7 hours, compared to 43.5 hours for those without children working full time; and 38.9 and 40.5 hours for mothers and women without children working full time respectively) (Biggart and O'Brien, 2009, p. 24). Hence, mothers are more likely to work reduced, part time, hours than others, and this will affect their commuting times.

Three ways in which reduced working hours affect commuting include: reduced commuting times per day as a shorter working day changes the balance between wages and commuting costs (as Van Ommeren and Rietveld (2005) suggest that in thin labor markets not all commuting costs are recovered by the worker); reducing the number of days per week someone commutes (Mensah, 1995); and/or the greater household responsibility for females (or in some cases the male) leaving less time for commuting according to the household responsibility hypothesis (Johnston-Anumonwo, 1992; Turner and Niemeier, 1997). There is some evidence for this hypothesis in various countries such as: Brännäs and Laitila (1992) in Sweden and Dex et al. (1995) in the UK, however, Van den Berg and Gorter (1997) find

limited evidence on the effects of gender. The complexities of employment, work life balance and the need for multiple trips to and from work (e.g. for childcare, shopping etc.) also mean that travel to work is not straightforward, especially for parents, especially mothers (e.g. Jarvis, 1999; Kwan, 1999; Skinner, 2005).

Rouwendal and Rietveld (1994) found that a lack of geographical mobility resulted in married workers having higher travel-to-work distances in the Netherlands. The birth of children may result in a household moving to a more suburban location due to property-travel trade-offs and factors such as schooling quality, with a corresponding increase in commuting time (see Crane and Takahashi, 2009). These ties may reduce choices concerning relocating, or where to relocate to, hence resulting in increased commuting times. Dual career households are also more likely to commute further (Green, 1997; Flowerdew, 1992) as their home may be chosen to minimise joint travel time rather than a single work trip and due to difficulties in moving house if the job of one changes.

A further way in which working hours and commuting times are inter-related is through wages. Madden (1981) argues that lower commuting times for women are due to their lower wage rates and shorter working hours resulting in a lower return in terms of earnings per commuting time. Low wages (in total and in wage rate terms) are associated with part-time work (and with mothers more likely to work part time); hence these low wages may also influence their commuting times. Van Ommeren, and Dargay (2006) found higher wages to be associated with higher commuting speeds, so lower wages may be associated with shorter commutes (although high total household incomes may counter this somewhat if their spouse is in a relatively high paid job). This may particularly affect women with childcare responsibilities with Waldfogel (2007) describing the 'family penalty' faced by mothers in terms of lower wages, as women with children earn less than other women, while the reverse is the case for men, with fathers earning more than non-fathers (Booth and van Ours 2008). Ong and Blumenberg (1998) argue that, among welfare recipients in the USA, limited skills and low wages are more important than gender boundaries in determining travel-to-work. Lower paid workers may also trade off job insecurity with housing security and so were less likely to move (resulting in possible longer commutes as they change job but not their residence over time). In the UK, particularly in large cities such as London, low paid workers are likely to have long commutes due to an inability to afford more central housing. The differences in gender commuting times may hence be associated with gender pay gaps (either as a cause, with fewer job opportunities being available for those with shorter commuting ranges, or as an inter-related effect, with those on low pay not commuting so far due, for instance, to high travel costs relative to wages).

The importance of labour demand and urban form are widely recognised as influencing commuting directly (Manaugh et al., 2010; McQuaid et al., 2001; McQuaid 2006) and may also indirectly influence commuting, for instance through wages. In Switzerland Kriesi et al. (2010) found that job opportunities were strongly dependent on occupational credentials whereas educational attainment played a minor part.

However, the influences of gender, presence of children and working hours (part and full-time work) are highly inter-related and their effects may be conflated, so this paper models their effects on commuting time separately. The next section briefly describes the data set and presents some background data on gender, childcare, travel mode and travel-to-work times in the United Kingdom. Section 3 sets out the methods. Section 4 seeks to disaggregate the

effects of the different factors and presents models of travel-to-work time by gender, childcare responsibilities and part and full-time working. This is followed by conclusions.

2. Background data and descriptive statistics

The data used in this paper are from the UK Labour Force Survey (LFS). The LFS is a quarterly sample survey of households living at private addresses in the United Kingdom collected by the Office for National Statistics with a sample size of around 53,000 households each quarter. The survey records the respondents' personal circumstances and labour market status during a specific reference period, (normally one week or four weeks immediately prior to the interview depending on the topic). The data used in this study were for the 4th quarter 2008. This quarter being chosen as perceived as being the quarter least effected by holidays and weather conditions. This section considers the mean travel time (by gender) for people according to: their individual demographic characteristics; their job characteristics (such as occupation and hours worked); location issues such as where they live; and their travel mode. It then considers the effects of children on travel times.

2.1 Descriptive Statistics

The mean commuting time (each way) for all (male and female) workers was 26 minutes, with Table 1 showing that men travelled for 29 minutes compared to 23 minutes for women (although the median for each was the same at 20 minutes with generally the means emphasising the differences between genders more than the medians). In total, a quarter of workers (23.5 per cent) commuted 30 minutes or more, with men (27.9 per cent) significantly (Chi squared test $P < 0.001$) more likely to do so than women (19.16 per cent).

Rouwendal and Rietveld (1994) and other studies have found that commuting times decreased at older ages, perhaps as older workers are less willing to travel for long periods, and were also low at younger ages, perhaps due to lower access to transport or greater willingness take local jobs. Benito and Oswald (2000) found mixed effects of age, with women's travel-to-work times reducing sharply with age, while that of men increased (after controlling for other job and individual characteristics), while Crane and Takahashi (2009) found, in the USA, that the gender gap was closing for younger people but widening for older ones. In the current study commuting time had an 'n' shape for both genders. Among men, those under 25 had the lowest mean travel (25 min.), slightly below those aged 50 years (28 min.) and lower than the middle age group (31 min.). However, for women the older age groups commuted for slightly less time (21 min.) than those under 25 (22 min.), both being less than the middle group (24 min.). In each case the men travelled significantly longer than women (using independent samples t-test, assuming non equal variances, it is concluded that both males and females have significant differences in their travel time, with and without children for all ages, $P < 0.001$). In total over a quarter (25.98 per cent) of those aged 25-50 years travelled for over 30 minutes.

Table 1 about here

Only a very broad ethnic grouping could be used due to low sample sizes, with non-white men travelling for slightly more time than white men (31 compared to 29 min.), but non-white women travelling much longer than their white counterparts (30 versus 22 min.), linked partly to concentrations of non-white groups in long travel regions and confounding public

transport and income effects. There was no significant difference between travel times for non-white men and women, but there was between white men and women.

Having health problems did not appear to have a large influence on commuting time (22.4 per cent of those with health problems compared to 23.9 per cent of those without health problems travel 30 minutes or more, although this was significant with $P = 0.002$ in a chi-squared test); with the mean travel times for women with and without health problems being the same (23 min.) and for men with health problems being slightly less than for other men (28 versus 30 min.).

'Higher' levels of main occupation (main job) level were associated with longer commutes; as were education levels (see McQuaid, 2009a, for a discussion of these types of variables). Consistent with this, travel time rose with higher educational attainment, with men at level 4 (post school professional qualifications) or above travelling 31 minutes and women 25 minutes, compared to 22 and 19 minutes respectively for those with only Level 1 education. This is closely linked to wages and occupation (see below).

In terms of characteristics related to their jobs, full-time workers travelled much further than part timers (30 and 22 minutes respectively for men and 26 and 19 minutes respectively for women). In total, over a quarter of full-time workers (27.2 per cent) travelled 30 minutes or more; over double the rate for part timers (13.4 per cent). Wages might be associated with longer commutes (as people are willing, or need to, travel further for a high paying job, or it could be lower as people can afford to live in a more expensive area closer to work) (Clark and Dieleman, 1996, in the USA). The descriptive statistics show that commuting times rose in association with wages, especially at the highest levels (over £750 per week compared to median wages of around £500) for both genders. For instance men earning more than £750 had a mean travel time of 43 minutes (women had a mean of 35 min.), compared to 31 minutes for both men and women earning £500-749 per week, or 28 and 26 minutes respectively for men and women earning £350-499 per week. The only exception was for those at the lowest wages (under £250) where men were more likely to commute longer (29 min.) than the next level up and women had the same travel time (22 min.) as the next level up. Although uncertain, this may be due to those men working part time often being in part retirement and not willing or able to move house, or doing a part-time job for a short period only and so being willing to travel further.¹

Occupation is closely associated with travel-to-work time and there is a consistent association between the higher the occupation level and longer travel time. Partly this relationship may be due to lower pay (occupation is generally associated with the pay level) making longer journeys less worthwhile to travel (McQuaid, 2009a) and also there being fewer local opportunities for higher level professional jobs meaning that longer commutes must be undertaken (or a lower level, but closer, job being accepted). The three highest occupations (professional, managerial or associate professional) have similar travel times for each gender, but with higher commuting times for men compared to women within each occupation. Slight exceptions were for professional men who travelled a little longer than managers (35 and 34 min. respectively) and for females in skilled trades (18 min.) who travelled slightly shorter

¹ In terms of travelling 30 or more minutes, there is a high level of variation, but no significant differences, between full-time men and women except at the high and low levels (under £250 and over £750 per week), while there are no significant differences between part-time workers except at the lowest end (where again men travel longest).

times than lower level occupations. This latter group may be associated with women living near major skills trades employers, possibly due to caring responsibilities (as is discussed below). However, plant processing is higher paid compared to skilled female workers, although not quite as high for males (otherwise mean wages tend to follow the occupational level).

Housing tenure is often associated with other job related variables (Ong and Blumenberg, 1998; Van Leuvensteijn and Koning, 2004; Cameron and Muellbauer, 1998). Renters are generally more likely to move home than owner occupiers (Forrest and Murie, 1992; Böheim and Taylor, 2003) due to factors such as lower transaction and search costs, so it would be expected that owner occupiers would have longer average work trips over time as when they change jobs they are less likely to change home. As expected owner occupiers were slightly more likely to travel 30 minutes or longer ($P = 0.004$, in a Chi-squared test). Male owner occupiers had a higher mean travel time (30 min. versus 27 min. for renters) but there was no difference for women (23 min. for both). More widely, labour demand, is also important when considering travel-to-work (McQuaid et al., 2001). Those living in an area of multiple deprivation (the lowest 15 per cent of deprived areas) had much shorter mean travel times (21 and 18 min. for men and women respectively) compared to those living elsewhere (31 and 26 min. respectively) perhaps indicating lack of transport to further away work, possibly perceived or real safety issues or mental maps of where it is safe to travel and a greater likelihood of being in low skilled jobs. Geographically the region of usual residence had limited effects on mean commuting times except for Inner and Outer London. Here the travel times were considerably longer than elsewhere (37 and 41 minutes for men and 37 and 37 for women). The surrounding Southeast England had quite long commutes for men (33 min. but similar to other metropolitan regions for women at only 21 min.).

The mode of travel is highly associated with travel-to-work time ($P < 0.001$ in chi-squared test of those travelling 30 minutes or more). There are large differences by mode of travel with those walking or bicycling spending the shortest mean time travelling (17 and 13 minutes for men and women and only a total 6.22 per cent travelling 30 or more minutes), followed by car drivers/passengers at 27 and 21 minutes for men and women respectively (with 19.7 per cent travelling 30 minutes or more), with longer time spent by those using public transport, at 51 and 42 minutes respectively for men and women (59.41 per cent travelling 30 minutes or more). For each mode males spend a longer time travelling to work. These patterns are similar in virtually all regions (although the travel time using railway and tube is more variable than other modes of travel). Hence, the use of, and differential access to, various modes of transport by gender is likely to influence their overall commuting time.

2.2 Gender, children and travel-to-work times

As suggested by the household responsibility hypothesis, the effect of dependent children in the household (defined in this report as children under 19 years old) differed greatly according to gender. Men travelled more time, but women travelled less, when they had dependent children. Men with no children had lower mean travel times (28 min.) than men with 1-3 children (30-32 min.) - men with 4 or more children travelled slightly shorter (27 min.). Figure 1 presents these results graphically (using 95 per cent confidence limits). However, the reverse was the case for women as those without children had longer travel

times (24 min.) than all those with children (20-23 min.). The differences by gender were all significant (each at under 1 per cent except for those with 4+ children where $P = 0.026$).²

Figure 1 about here

Figure 2 shows that full-time workers consistently travel longer than part-time workers (as discussed above), and that full-time workers fathers travel longest (mean nearly 32 minutes) followed by men without children, women without children and women with children. Among part timers, the picture is different with both men with children and those without children travelling further than women with or without children. All part timers have lower journey times than for full-time mothers.

Figure 2 about here

This may be an important point for research involving gender as the groups with no dependent children includes both parents whose children are over 18 years old and those who have never had children.³ If the effects of having had childcare responsibilities continue after their children grow up (i.e. the past casts a shadow over future employment or commuting behaviour), then this will make any differences between parents of children under 19 and those with no child dependents appear smaller than the actual differences (as the no child dependents group includes those with a disrupted career due to children as well as those never having had children). This may partly explain the similar travel time for part-time women with and without children (but many of whom may have had non-dependent, older children).

For those with children, the youngest child's age made little difference (travel time for men varied between 29-30 min. while for females it was 23 min. for all ages). This may be due to people not yet having moved their residence (with having older children perhaps linked to moving to more residential areas closer to schools etc. rather than to work) and younger children may generally be associated with an earlier career stage. For mothers, having very young children is associated with long travel times, which may appear contradictory. However, young children may be in childcare with longer hours than schools, some mothers may have left employment (so are not in the statistics of journey to work) and some mothers may not yet have moved so as to more easily reconcile the caring responsibilities. On closer examination (Figure 3) it can be seen that women who only had a child under 5 years old had the longest commuting times. This may be as they still worked in their previous job and had not changed their job compared to those with older children. As suggested above those with no current dependent children may include some who previously had children which had resulted in them having shorter commutes (for instance as they had moved to lower paid and/or part-time jobs).

² Overall, having children in the household was slightly associated with longer mean commutes, although the percentages travelling over 30 minutes were lower than for those with no children (23.97 per cent of those with no children commuted 30 minutes or more compared to 23.19 per cent of those with one child or 22.84 per cent of those with three children). Only with four children was there a large drop in those with longer travel times (to 18.06 per cent) but also greater variance.

³ I.e. a potential 'tyranny of aggregation' could result through aggregating too disparate a group where in-group differences may be larger than between group differences leads to misleading understanding or policy conclusions (McQuaid, 2009b).

Figure 3 about here

The evidence again strongly supports the view of child caring being strongly gendered with mothers taking the larger role in childcare. These results support the argument that it may be appropriate to model travel to work time by gender, childcare and working hours separately (see below).

3. Methodology

The model used is a binary multiple logistic regression model. The binary dependent variable taking the value of one if the worker travelled 30 minutes or more each way to work and zero if less than 30 minutes. The models were tested for different threshold travel times (45 min. and 15 min.) for the full sample, but with no notable variation in the results. Wald's forward selection modelling was used taking care when entering 'independent' variables to exclude variables which were highly correlated with entered variables so as to avoid problems of multi-collinearity, as this can lead to biased estimates and high standard errors. Variables were allowed in if they were significant at the 10 per cent level. Model fit adequacy was tested using the Hosmer and Lemeshow test, pseudo R^2 and ability to predict who travelled less and 30 minutes or more.

The form of the model was:

$$\log \left[\frac{p_i}{1 - p_i} \right] = \alpha + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_k x_{ik} + \varepsilon_i$$

where p_i represents the probability of individual i commuting for 30 minutes or more, $\log[(p/p-1)]$ is the log odds ratio, and x_{ik} are the independent variables which may influence the probability that individual i will travel 30 minutes or more, in conjunction with the parameter vector β , while ε_i is a normally distributed random variable, which allows for unmeasured effects (the model error).

Separate models were developed by gender, presence of children and hours of work (part or full time). In all five logistic regression models were created for all workers, men full time, men part time, women full time, women part time and these are reported below.

4. Results

The co-efficients, odds ratios and significance levels for the 5 models are shown in Table 2. In this table coefficients and odds ratios as only shown for cases were variables are statistically significant. As expected, the model of all workers indicates that men were more than one and a half times as likely to travel 30 minutes or more to work than women (odds ratio 1.508) and part-time workers were less than two thirds (0.636) as likely to travel that long as full-time workers (both significant at the 1 per cent level). Each of the variables had the expected direction, although ethnicity, the disabled and those with health problems were not significant. Having children was associated with shorter commuting times. However, as discussed above, it was considered important to disaggregate by gender and working hours.

Table 2 about here

Considering now the four models by gender and part or full-time working, age was only significant for full-time workers (men and women). For full-time men those aged 25-49 were nearly a fourth more likely to travel 30 minutes or more (1.241, significant at the 1 per cent level) than those under 25 years old. Older workers were nearly a fifth more likely to travel further than those aged under 25 years (1.179, significant at the 5 per cent level). For women, only the 25-49 year olds were more likely to travel further than those under 25 years (1.152, significant at the 10 per cent level). Health and disability were not significant in any model. Ethnicity (being non-white) was only significant for full-time men (who were more likely to travel longer, 1.268).

The presence of children was significant for each group except part-time working men. As with the descriptive statistics; most full-time men with children travelled slightly longer than those without children (the odds ratios for 1, 2 and 3 children were 1.045, 1.116 and 1.196 respectively, while those with 4+ children were a fifth less likely to travel far, 0.805). This greater likelihood to travel is in contrast to the model of all workers. However, for women having children is associated with a smaller likelihood of travelling 30 minutes or more with full-time women with one or two children being over a tenth less likely to travel far (0.865 and 0.838 respectively) and those with three children only two-thirds (0.629) as likely. For part-time women there is no significant difference between those with one and those with no child (of dependent age), while those with two or three children have a low likelihood of travelling for long (0.630 and 0.469 respectively). There is no significant difference for those with 4+ children.

The age of the youngest child is only significant for part-time women where the older the child, the less likelihood there is of travelling 30 minutes or more (0.820 for those with a child aged 5-10 and 0.551 if their child is 11+) (see discussion above).

Those with high pay (gross weekly pay in their main job) are more likely to travel longer for all groups. Full-time men were around half as likely to travel for 30 or more minutes than if they were in lower pay groups (0.438 to 0.645) and similarly for full-time women (0.495 to 0.879); while for part-time workers the difference was even more marked with part-time men (0.190 to 0.440) and part-time women (0.234 to 0.613) much less likely to travel longer than those earning over £750 (although a part timer earning over £750 is likely to be on a higher hourly wage than a full timer in that pay band).

Compared to elementary occupations as expected those in most occupations were considerably more likely to travel longer and this likelihood generally rose as the occupation level rose. However, both male and female part-time workers generally had considerably higher likelihoods. For example, managers were over four times as likely to travel longer for part-time men and nearly six times for part-time women compared to those in elementary occupations. For full-time men the odds ratios were still high, but lower than part timers, at twice as much as elementary occupation workers (2.176) and full-time women around three times as much (2.906). For men (full and part time), being in a skilled trades occupation was associated with a longer commute, but for women (full and part time) there was no significant relationship.

Housing tenure was only significant for full-time men with, as expected, travel time being a fifth shorter than for owner occupiers (0.823). The regional figures mirrored those of the descriptive statistics (with a high probability of a long commute in and around London) for full-time men and women. However, for part timers, the regions were either totally

insignificant (part-time men) or only significant in Inner and Outer London but insignificant in other regions (part-time females). So regional differences, other than in London, are primarily affected by full-time work rather than gender.

For all groups the transport mode showed exceptionally high probabilities of long commutes for those using public transport (around 20 times more likely) compared to walking or cycling, with those using cars and vans (as driver or passenger) being around three times more likely to have a long commute.

5 Conclusions

This paper found considerable differences in travel to work time by gender. However, each gender is not a homogenous group and both the presence of dependent children (under 19 years old) and the interrelated hours of work (part or full time) were found to be important in understanding travel behaviour. A general model with gender and full/part-time work variables identified these factors, but did not fully identify differences between part- and full-time workers within each gender. This suggests that great care needs to be taken in disaggregating gender groups. For instance, the modelling for groups disaggregated by part- or full-time work, gender and presence of children yielded further insights compared to more aggregate modelling.

The paper found that of particular importance to the length of commute were age, having children and the age of the youngest child, occupation, weekly pay, and mode of transport (with public transport being associated with long commutes). The region of residence was important for full-time men and women but not usually for part timers (except for women in London) while ethnicity and owner occupation were associated with commuting length for full-time men only. While there is some support for a household responsibility hypothesis (which should emphasise the links between caring responsibilities, part-time work and pay), a variety of factors beyond purely gender are important, and support is given to more nuanced hypotheses which also emphasise other characteristics of the individual and external factors (such as public transport and housing).

In order to try to improve our understanding of some of the main influences on the complex issue of travel-to-work times, further research into factors such as the effects of working hours, job contracts (e.g. shift working), accessibility to jobs and the influence of relationships (including lone parenthood). Additionally there is a need to disaggregate those who have had children but no longer have dependent children (and whose current opportunities and behaviours are influenced by past child rearing) from those who have never had children. Overall the results suggest that many factors are highly inter-related and it is useful to disaggregate the effects of gender, childcare responsibility and working hours when modelling. Hence, considering gender alone, without the effects of present and past childcare responsibilities and working hours, may sometimes give misleading results.

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Table 1 Descriptive statistics

		Usual home to work travel time (minutes)				
		Male		Female		
		Mean	Total N	Mean	Total N	
Sex	Male	29	58688			
	Female			23	62141	
	Total	29	58688	23	62141	<0
Age bands	<25	25	18150	22	17572	<0

	25-49	31	18438	24	20376	<0
	50	28	20111	21	22726	<0
	Total	29	56699	23	60674	<0
Ethnic group	White	29	51004	22	54605	<0
	Other than white	31	5673	30	6042	0.1
	Total	29	56677	23	60647	<0
Health problems	Yes	28	17946	23	20436	<0
	No	30	40668	23	41583	<0
	Total	29	58614	23	62019	<0
Disabled	Yes	28	11112	23	13155	<0
	No	30	33260	23	35887	<0
	Total	29	44372	23	49042	<0
Number of children	No children under 19 or No children	28	31886	24	32794	<0
	1 child	30	9117	23	10504	<0
	2 children	32	11494	21	12298	<0
	3 children	31	4424	20	4703	<0
	4 children or more	27	1767	21	1842	0.0
	Total	29	58688	23	62141	<0
Youngest child age band	<5	30	10810	23	11314	<0
	5-10	29	8197	23	8630	<0
	11-18	30	8334	23	8864	<0
Level of the highest qualification	Level 1	22	479	19	684	0.0
	Level 2	24	1596	19	2553	<0
	Level 3	28	1310	21	2219	<0
	Level 4 or above	31	363	25	479	0.0
	Total	26	3748	20	5935	<0
Full-time or part-time	Full time	30	24744	26	14683	<0
	Part time	22	3379	19	11028	<0
	Total	29	28123	23	25711	<0
Gross weekly pay range in main job	<250	29	53101	22	58034	<0
	250-349	24	1110	22	1443	0.0
	350-499	28	1465	26	1180	0.0
	500-749	31	1667	31	1011	0.6
	750	43	1345	35	473	<0
	Total	29	58688	23	62141	<0
Major occupation group (main job)	1 Managers and Senior Officials	34	5417	28	2986	<0
	2 Professional occupations	35	3865	28	3135	<0
	3 Associate Professional and Technical	34	3735	27	4032	<0
	4 Administrative and Secretarial	30	1226	23	5019	<0
	5 Skilled Trades Occupations	28	5306	18	455	<0
	6 Personal Service Occupations	24	731	19	3963	<0
	7 Sales and Customer Service Occupations	23	1251	19	2830	<0
	8 Process, Plant and Machine Operatives	23	3284	18	470	<0

	9 Elementary Occupations	22	3253	17	2801	<0
	Total	29	28068	23	25691	<0
Accommodation type	Owned	30	41702	23	43425	<0
	Rented	27	16959	23	18682	<0
	Total	29	58661	23	62107	<0
Deprived or not	deprived	21	767	18	2585	<0
	Not deprived	31	5780	26	4511	<0
	Total	30	6547	23	7096	<0
Region of usual residence	Tyne and Wear	26	1118	21	1167	0.0
	Rest of Northern region	26	2021	18	2090	<0
	South Yorkshire	29	1354	23	1393	<0
	West Yorkshire	28	2269	22	2389	<0
	Rest of Yorks and Humberside	28	1592	20	1737	<0
	East Midlands	26	4474	21	4644	<0
	East Anglia	26	2310	20	2409	<0
	Inner London	37	2314	37	2447	0.8
	Outer London	41	3791	35	4053	<0
	Rest of South East	33	11227	24	11844	<0
	South West	26	5036	20	5197	<0
	West Midlands (met county)	28	2444	24	2467	<0
	Rest of West Midlands	25	2689	21	2874	<0
	Greater Manchester	28	2442	24	2588	<0
	Merseyside	27	1160	23	1287	0.0
	Rest of North West	26	2410	20	2599	<0
	Wales	25	2812	20	3089	<0
	Strathclyde	30	2016	25	2310	<0
	Rest of Scotland	28	2886	21	3089	<0
	Northern Ireland	25	2323	20	2468	<0
	Total	29	58688	23	62141	<0
Usual method of travel to work	Walk and bike etc.	17	2761	13	3510	<0
	Car, van etc.	27	17950	21	14840	<0
	Bus and rail etc.	51	2940	42	3271	<0
	Total	29	23651	23	21621	<0

Source: LFS.

Table 2 Logistic regression of likelihood of travelling 30 minutes or more to work

Indicator (Baseline)	Variable	Total model		Male full time		Male part time		Female full time		Female part time	
		Coeff.	Odds ratio	Coeff.	Odds ratio	Coeff.	Odds ratio	Coeff.	Odds ratio	Coeff.	Odds ratio
Elementary Occupations	Major occupation group (main job)	0.000		0.000		0.000		0.000		0.000	
	1 Managers and Senior Officials	1.32**	2.807	0.77*	2.176	1.41*	4.099	1.067*	2.906	1.78**	5.930
	2 Professional occupations	1.09**	2.975	0.847**	2.334	1.302*	3.676	1.133*	3.105	1.761*	5.820
	3 Associate Professional and Technical	0.99**	2.716	0.732**	2.080	1.06*	4.933	1.055*	2.902	1.524*	4.589
	4 Administrative and Secretarial	0.608**	1.837	0.397**	1.487	0.087**	2.488	0.068**	1.951	1.107*	3.025
	5 Skilled Trades Occupations	0.597**	1.818	0.44**	1.552	0.219	1.244	-0.060	0.942	0.211	1.235
	6 Personal Service Occupations	0.238**	1.268	-0.013	0.987	0.071**	2.184	0.000	1.259	0.0732*	2.080
	7 Sales and Customer Service Occupations	0.157*	1.171	0.117	1.124	0.06	1.026	0.026	1.2592	0.0457*	1.579
8 Process, Plant and Machine Operatives	0.124*	1.132	-0.082	0.921	0.0493*	1.638	0.006	1.006	0.0773*	2.166	
Walk and bike etc.	Usual method of travel to work	0.000		0.000		0.000		0.000		0.000	

					0		0	0			
	Car, van etc.	1.0 86* **	2.9 63	1.0 94 **	2. 98 6	1. 14 3*	3.1 38	1. 08 2*	2.9 51	0. 91 7*	2.5 03
				*		**		**		**	
	Bus and rail etc.	2.9 64* **	19. 38 4	2.8 74 **	17 .7 15	3. 20 8*	24. 74 2	2. 90 4*	18. 25 5	3. 14 7*	23. 27 2
				*		**		**		**	
Tyne and Wear	Region of usual residence	0.0 00		0.0 00				0. 00 0	0. 00 0		
	Rest of Northern region	0.1 59	1.1 73	0.3 *	1. 35 0			0. 09 4	1.0 98	- 0. 35 6	0.7 01
	South Yorkshire	0.5 14* **	1.6 72	0.4 98 **	1. 64 5			0. 69 2*	1.9 97	0. 08 5	1.0 89
				*				**			
	West Yorkshire	0.4 54* **	1.5 75	0.5 78 **	1. 78 3			0. 37 3	1.4 53	0. 17 0	1.1 86
				*							
	Rest of Yorks and Humberside	0.3 26* *	1.3 85	0.3 44 *	1. 41 0			0. 48 7*	1.6 27	- 0. 30 2	0.7 40
								*			
	East Midlands	0.3 66* **	1.4 42	0.4 1* **	1. 50 6			0. 51 4*	1.6 72	- 0. 12 8	0.8 80
				**				*			
	East Anglia	0.5 02* **	1.6 52	0.5 24 **	1. 68 8			0. 59 5*	1.8 13	0. 11 9	1.1 26
				*				**			
	Inner London	0.8 07* **	2.2 41	0.7 31 **	2. 07 8			0. 86 7*	2.3 80	1. 15 8*	3.1 84
				*				**		**	
	Outer London	1.1 47* **	3.1 47	1.2 81 **	3. 59 9			1. 28 2*	3.6 04	0. 64 8*	1.9 11
				*				**		*	
	Rest of South East	0.6 67* **	1.9 49	0.7 99 **	2. 22 3			0. 67 3*	1.9 60	0. 07 8	1.0 81
				*				**			
	South West	0.3 23* **	1.3 81	0.3 7*	1. 44			0. 30	1.3 51	0. 20	1.2 21

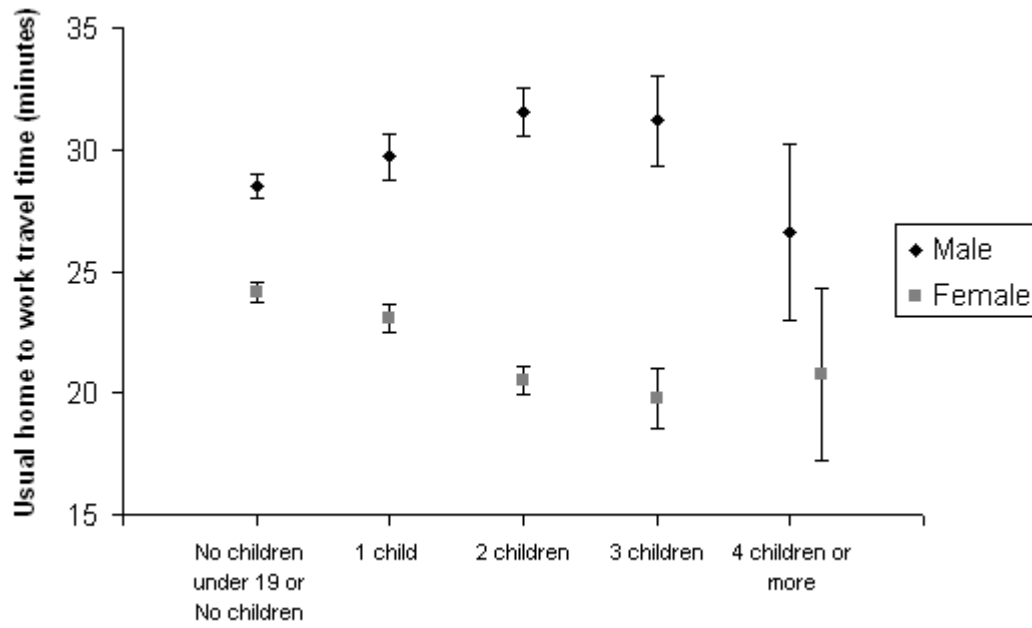
		**		*	8			1		0	
	West Midlands (met county)	0.4 35* **	1.5 46	0.4 86 **	1. 62 6			0. 60 2*	1.8 26	0. 10 3	1.1 08
	Rest of West Midlands	0.4 7** *	1.6 00	0.4 74 **	1. 60 6			0. 55 8*	1.7 47	0. 10 5	1.1 10
	Greater Manchester	0.5 36* **	1.7 09	0.4 44 **	1. 55 8			0. 68 9*	1.9 92	0. 47 4	1.6 06
	Merseyside	0.3 04* *	1.3 55	0.3 13	1. 36 8			0. 39 2	1.4 80	- 0. 04 5	0.9 56
	Rest of North West	0.3 99* **	1.4 90	0.4 53 **	1. 57 3			0. 58 1*	1.7 88	- 0. 21 5	0.8 07
	Wales	0.1 25	1.1 33	0.2 50	1. 28 4			0. 02 3	1.0 23	- 0. 09 6	0.9 08
	Strathclyde	0.5 11* **	1.6 68	0.5 6* **	1. 75 1			0. 46 **	1.5 84	0. 30 8	1.3 61
	Rest of Scotland	0.3 57* **	1.4 29	0.4 16 **	1. 51 6			0. 45 **	1.5 69	- 0. 18 5	0.8 31
	Northern Ireland	0.2 92* *	1.3 39	0.3 27 *	1. 38 7			0. 37 6	1.4 56	- 0. 12 7	0.8 81
<25	Age bands	0.0 00		0.0 08		0. 02 6		0. 00 0			
	25-49	0.1 91* **	1.2 10	0.2 16 **	1. 24 1	0. 28 5	1.3 30	0. 14 2*	1.1 52		
	50+	0.0 55	1.0 57	0.1 64 **	1. 17 9	- 0. 13 8	0.8 71	- 0. 14 4	0.8 66		
750+	Gross weekly pay range in main job	0.0 00		0.0 00		0. 04 5		0. 00 0		0. 00 0	

	<250	- 0.6 0.5 09* **	- 0.4 98 ** *	0.60 8 57 1*	- 1.08 0.42 2*	- 0.20 0.56 1.45 **	- 0.60 0.56 1.45 **	- 1.34 1.45 4*	0.20 0.34
	250-349	- 0.5 0.6 7** *	- 0.8 26 ** *	0.43 8 65 9*	- 1.90 0.70 2*	- 0.10 0.95 0.86 6*	- 0.40 0.95 0.86 6*	- 0.21 0.86 6*	0.40 0.21
	350-499	- 0.5 0.5 25* **	- 0.5 85 ** *	0.55 7 02 1	- 1.60 0.44 6*	- 0.30 0.44 6*	- 0.60 0.40 1.14 2*	- 0.19 1.14 2*	0.30 0.19
	500-749	- 0.7 0.3 27* **	- 0.4 38 ** *	0.64 5 82 1	- 0.40 0.12 9	- 0.80 0.79 0.48 9	- 0.60 0.79 0.48 9	- 0.13 0.48 9	0.60 0.13
<5	Youngest child age band	0.0 01						0.00 0	
	5-10	- 0.9 0.1 02* *						- 0.19 0.19 8*	0.80 0.20
	11+	- 0.8 0.1 9** *						- 0.59 0.59 7*	0.50 0.51
No. children under 19 or No children	Number of children	0.0 48	0.0 44			0.00 3	0.00 0		
	1 child	- 0.9 0.0 71*	0.0 44 5	1.04 5	- 0.14 5*	- 0.80 0.65 15 4	- 0.80 0.65 15 4	- 0.80 0.57	0.80 0.57
	2 children	- 0.8 0.1 16* *	0.1 09 **	1.11 6	- 0.17 7*	- 0.80 0.38 0.46 2*	- 0.80 0.38 0.46 2*	- 0.30 0.30	0.60 0.30
	3 children	- 0.8 0.1 72* *	0.1 79 **	1.19 6	- 0.46 3*	- 0.60 0.29 0.75 6*	- 0.60 0.29 0.75 6*	- 0.69 0.69	0.40 0.69

	4 children or more	- 0.286*	0.751	- 0.217	0.0805	- 0.037	0.173	- 0.07	0.0428	- 0.052
Owned Accommodation	Rented	- 0.17**	0.844	- 0.195*	0.823	- 0.03*	0.095	- 0.03**	0.038	- 0.028
White	Other than white			0.238**	1.268*					
No health problems Disabled Female	Health problems Not disabled Male	0.411**	1.508							
Full time	Part time	- 0.453**	0.636							
	Constant	- 3.243**	0.052	- 2.918*	0.054	- 2.223*	0.108	- 3.503*	0.030	- 2.342*
Pseudo R sq	Cox and Snell R Square	17.40%	15.70%	15.00%	16.70%	15.00%	16.60%	15.00%	15.20%	15.00%
	Nagelkerke R Square	26.30%	22.30%	26.00%	24.80%	24.00%	28.90%	28.00%	28.60%	28.00%
Hosmer and Lemeshow Test	P Value	.097	.138	.473	.364	.286	.364	.286	.286	.286
% correctly predicted	80.30%		75.50%		85.40%		80.00%		88.00%	

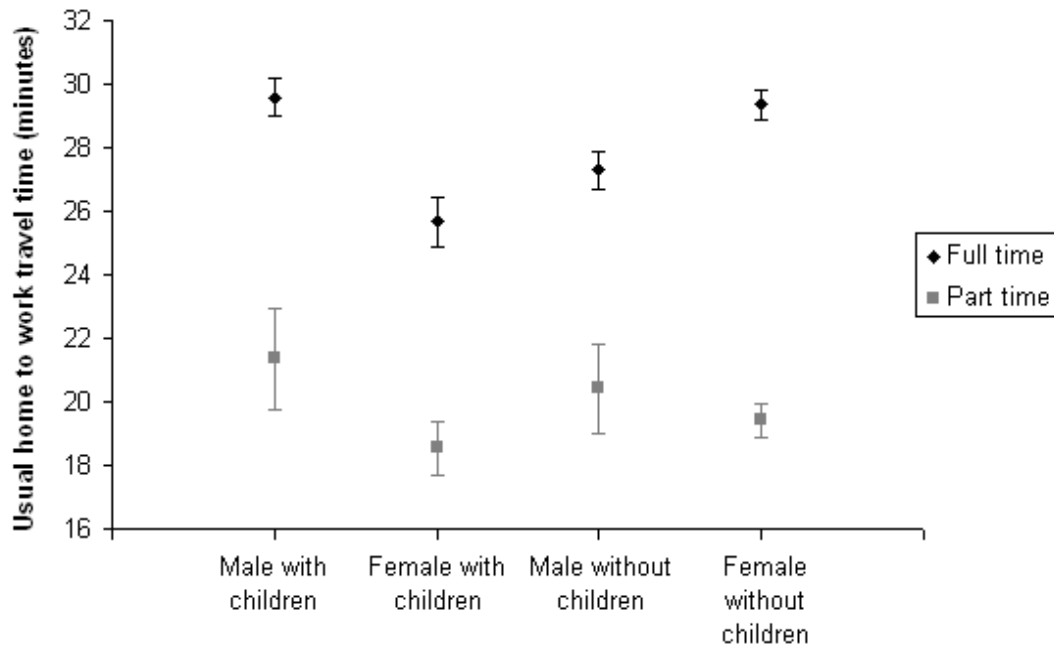
Note: *-significant at 0.1, **-significant at 0.05, ***- significant at 0.01.

Figure 1 Travel-to-work times by gender and number of dependent children (Labour Force Survey) (95% confidence limits)



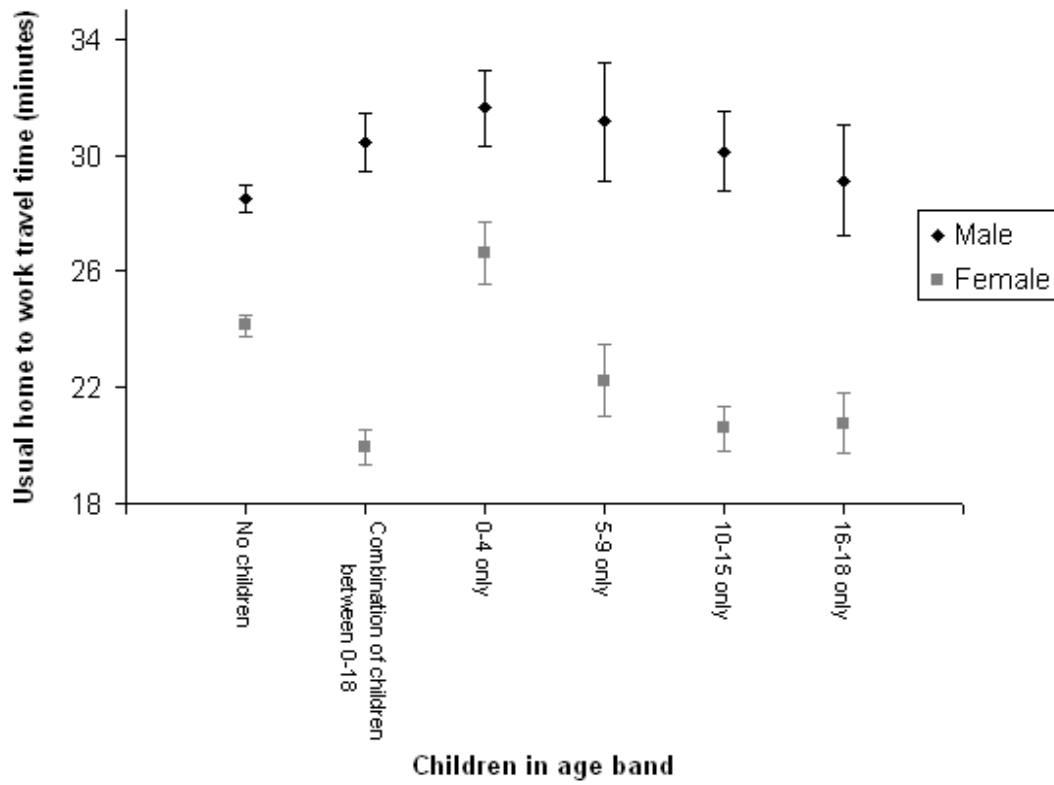
Source: LFS.

Figure 2 Travel-to-work times by gender, dependent children and full or part time (Labour Force Survey) (95% confidence limits)



Source: LFS.

Figure 3 Travel-to-work times by gender and age of dependent children (Labour Force Survey) (95% confidence limits)



Source: LFS.