TRAVEL CHOICES IN SCOTLAND – THE EFFECT OF LOCAL ACCESSIBILITY ON NON-WORK TRAVEL

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1. INTRODUCTION

Accessibility features prominently in the developing transport policies of both the United Kingdom Government and the devolved Scottish Executive which aim to promote social inclusion in particular and the integration of transport and land use planning more generally. It follows that a detailed understanding of the relationship between accessibility, personal mobility and travel behaviour is critical to the successful implementation of these policies. This paper presents the results of a disaggregate, multi-variate analysis of the Scottish Household Survey (SHS) dataset and attempts to unravel the complex relationship between socio-economical circumstance, geographical access and public transport and revealed non-work travel choices. The socio-economical and geographical diversity of Scotland offers an excellent opportunity to undertake an analysis of this nature.

This paper examines the extent to which the provision of local goods and services affects the travel behaviour of Scottish adults for frequently undertaken activities such as shopping and health visits. Within the analysis presented here, individual and household socio-economical circumstance, available transport resources and the wider regional geographical context were also taken into account. Two related hypotheses were explored. First, it was hypothesised that the spatial proximity to goods and services is negatively associated with distance travelled for non-work purposes. Second, that socio-economical circumstance moderates the influence of spatial proximity of goods and services on non-work travel.

1.1 Study Context

Scotland is a relatively small country. It has around one third of the land mass of Great Britain but less than 10% of the population at just over 5 million. It has a diverse physical geography and the great majority of the population reside in the large towns and cities of the Central Belt and North East. Large areas of the rest of the country are sparsely population and are more than two hours' drive from a major town.

The passing of the Scotland Act in 1998 devolved many transport powers and duties to the Scottish Parliament and Scottish Executive. A new executive agency for transport will be established in Scotland by the end of 2005 which will build on aims and objectives set out in the Executive's White Paper, *Scotland's Transport Future* (Scottish Executive, 2004a) to develop a new

transport strategy for Scotland. Statutory regional transport partnerships are set to be created in the near future. Local authorities will continue to maintain local transport infrastructure, plan and deliver services at local level.

1.2 Trends in Non-work Travel

Personal travel for purposes other than commuting or in the course of work is an increasingly significant proportion of total travel demand. As Table 1 illustrates, between 1989/90 and 2002/03, overall personal travel increased in Great Britain by 6% from 10,421 to 11,032 kilometres per person per year (Department for Transport, 2005). Travel for non-work purposes accounts for this increase as commuting and business travel remain broadly constant over this period. The largest absolute increases arise in shopping, other escort and leisure travel purposes. Table 2 shows the percentage distance travelled per person per year by mode and purpose. It can be seen that, with the exception of the combined education and escort education category, which accounts for a relatively small fraction of overall distance travelled, private transport is used for a higher proportion of the distance travelled for non-work purposes than for business and commuting.

Table 1 Distance travelled per person per year by purpose in Great Britain

	Kilometres per person per year		
	1989/90	2002/03	Difference
Commuting/Business	3,178	3,157	-21
Education	265	325	+60
Escort education	106	166	+60
Shopping	1,202	1,357	+155
Other escort	602	767	+165
Personal business	680	749	+69
Leisure	4,295	4,442	+147
Other	93	68	-25
All purposes	10,421	11,031	+610 (6%)

Table 2 Percentage distance travelled per person per year by main mode and purpose in Great Britain (2002/03)

	Private Transport	Public Transport	Walk / Cycle
Commuting/Business	80.4	18.1	1.4
Education/Escort education	64.8	24.9	10.3
Shopping	85.1	11.1	3.8
Other escort/Personal business	90.4	6.9	2.7
Leisure/Other	85.3	11.7	3.0

1.3 Previous Research

Considerable attention has been devoted in recent years to the study of the influence of land use patterns on travel behaviour. Researchers and planners are interested in whether the reconfiguration of land use is an appropriate instrument of transport policy to reduce the demand for travel overall and to improve the amount of travel undertaken by sustainable modes. There follows a brief review of literature relevant to non-work travel.

Handy (1993) investigated the influence of local and regional accessibility on shopping travel in a case study of the San Francisco Bay Area. Her research design recognised that travel is influenced by both the characteristics of the local residential environment and the regional spatial structure. The distance travelled for shopping trips was found to decrease with increasing local and regional accessibility, but shopping trip frequency was not found to be influenced by accessibility at either local or regional scales. Significant correlations were found between average person kilometres travelled and both regional and local accessibility. Interaction effects were also found between local and regional accessibility. Variation in regional accessibility was found to have a greater effect on travel in areas with low levels of local accessibility than with high levels of local accessibility. Furthermore, variation in local accessibility had a greater impact when regional accessibility was low.

The effect of land-use patterns on non-work trip frequencies by car was examined by Boarnet and Sarmiento (1998) in a study of Southern Californian residents. Multiple linear regression was used to assess the statistical significance and relative importance of socio-economic as well as population, retail employment and service employment densities. Little evidence was found of a link between local land-use patterns and non-work trip frequencies.

Van and Senior (2000) studied the trip-making behaviour of residents in three areas in Cardiff, Wales, which possessed varying degrees of land use mix. Propensity for car ownership was controlled by selecting areas with similar average densities and socio-economic profiles. Mixed land use was indicated by the presence or absence of a grocery store within 400 metres of place of residence. This study found that mixed land uses encourage walking and cycling, and deter car use, for light food shopping trips. Little evidence was found that land use mix affects mode choice for heavy food shopping trips.

Regression models predicting distance travelled for shopping and leisure trips in the Netherlands were developed by Dieleman *et al.* (2002). The residential environment was characterised based on its geographical location within the Netherlands and its degree urbanisation. They found that distance travelled by public transport for shopping increased as the degree of urbanisation decreased. Leisure travel outside the three largest cities was found to be significantly higher by car and public transport. Similar results were found by Schwanen *et al.* (2004) who estimated multilevel regression models for total daily travel distance in Holland. They found that travel distance by car falls with increasing urbanisation.

2. RESEARCH APPROACH

The aim of this research was to investigate the extent to which spatial proximity to goods and services influences daily non-work personal travel after controlling for socio-economics and other factors. Four groups of explanatory variables were identified and used in this study.

- personal characteristics;
- household characteristics;
- access to public transport; and
- spatial proximity to goods and services.

The total daily distance travelled for non-work purposes was used as a measure of personal travel. Travel by all modes (excluding aeroplane), travel by private motorised transport and by public motorised transport were each examined. Non-motorised transport (i.e. walking and cycling) was not considered beyond descriptive analyses because of the omission very short journeys from the dataset. This is discussed in more detail below.

Spatial proximity to goods and services was included at two spatial scales using relatively simple metrics. At local level, an index capturing distances to essential services was used. An urban/rural classification scheme was used to capture the available opportunities at the regional level.

Initially, some descriptive analyses were undertaken which explored the relationship between non-work travel and spatial proximity to services, disaggregated by key socio-economic variables. Multiple linear regression was then utilised to test the statistical significance and relative importance of each explanatory variable on non-work travel. The main effects of variables and interaction effects between socio-economics and spatial proximity to goods and services were both included in the regression analyses.

3. DATA

3.1 The Scottish Household Survey

The SHS is a continuous, cross-sectional survey which commenced in April 1999 to provide the Scottish Parliament, the Scottish Executive and other interested parties with information on the composition, characteristics and behaviours of Scottish households (Scottish Executive, 2005a). The survey has a particular focus on transport and social inclusion. The sample for the survey is designed to provide nationally representative samples of private households and of the adult population in private households. The survey is undertaken by face-to-face interview and information is collected in two parts. First, the highest income householder or spouse/partner gives details of the household composition, accommodation, income and available transport resources including access to public transport. Second, a randomly selected adult aged 16 or over provides information on personal travel choices including the completion of a one-day travel diary for travel on the previous

day.

The travel diary collects information about the origin, destination, mode, purpose, time of departure and time of arrival of travel within the United Kingdom (Scottish Executive, 1999). It includes all personal travel for domestic, social and recreational reasons, escort travel and, with certain exclusions, travel in the course of work. The basic unit of travel is the journey (or trip), defined as a one-way course of travel having a single main purpose. All journeys or stages of a journey (where a new stage arises when there is a change in transport mode or when there is a change of vehicle requiring a separate ticket) of five minutes or less by car and of less than a quarter of a mile by foot are excluded. Travel away from public roads, such as hill-walking, is also excluded.

The exclusion of very short journeys from the travel diary dataset is a potential source of systematic error since it can be hypothesised that respondents who reside in close proximity to goods and other services have a higher probability of undertaking very short journeys than those who reside in less well-served areas. However, it is considered that the distance travelled on excluded journeys constitutes only a relatively small proportion of the total daily travel distance for non-work purposes.

A second limitation of the dataset is that the travel distance of each stage is estimated by taking the straight-line distance between the centroids of postcodes within which journeys (or stages) start and finish. The distance of multi-stage journeys is calculated by summing the straight-line distances of each of its component stages. This methodology introduces two sources of error. First, the assumed origins and destinations of travel are only approximations of the true origins and destinations. The size of this error increases with the size of postcode area. Second, an error is introduced by taking the straight-line distance rather than a path-based distance measure. Chalasani *et al.* (2004)) report ratios between shortest-time path distances and straight-line distances for three large-scale surveys in Norway and Switzerland. Overall, this ratio was observed to fall as straight-line distance increased, but this reduction became less marked as network resolution increased. These errors must be taken into account when interpreting the results of the research presented in this paper. In particular, it should be noted that the error is likely to be larger in less populated areas where network resolution is lower than in more urbanised areas.

The dataset analysed in this paper was collected between 1999 and 2003 and contains 70,992 valid random adult interviews, of whom 35,482 reported travel for non-work purposes.

To correct for differences in selection probabilities between local authorities, adults in different sizes of household and between days on which people were available to be interviewed a travel diary weighting factor was applied in the following analyses.

3.2 Definition of Non-work Travel

The stated purpose of journeys recorded in the travel diary was used to identify frequently undertaken travel for non-work activities. Table 3 lists the activities included in the definition of non-work used in this paper. Travel to work and to educational establishments and travel in the course of work were excluded for obvious reasons. Also omitted were travel for the purposes of coming or going on holiday and day trips because they were not considered to be undertaken on a regular basis.

Table 3 Travel purposes included and excluded from definition of non-work travel

Included	Excluded
Shopping	Not stated
Visit hospital or other health	To place of work
Other personal reasons	In course of work
Visit friends or relatives	Coming / going on holiday
Eating / drinking	Day trip
Entertainment / other public activities	
Participation in sport	
Escort	

3.3 Explanatory Variables

Table 4 summarises all the explanatory variables used in the following analyses.

Personal attributes contained in the SHS dataset and used as explanatory variables in this analysis were age, sex, employment status and whether or not the SHS travel diary respondent reported difficulty in using various forms of transport. At the household level, net household income and household composition variables were used. Access to public transport was measured in terms of the walk time of an able-bodied person from place of residence to the nearest bus-stop and the frequency of bus services at that bus-stop.

The SHS dataset contains details of car ownership of surveyed households. However, car ownership was excluded from the regression model specification because of the problem of endogeneity. Car ownership is determined, at least in part, by other explanatory variables in the model such as income and accessibility. Its inclusion would potentially bias the coefficient estimates of these variables. The decision to omit car ownership adopts the reduced form model approach taken by Giuliano and Narayan (2003).

The geographical access to services domain index which was developed as part of the Scottish Indices of Deprivation 2003 study (Social Disadvantage Research Centre, 2003) was used here to represent accessibility to local goods and services. This index measures the extent to which people have

poor geographical access to General Practice surgery or health centre, general stores or supermarket, primary school, petrol station, bank or building society and community internet facilities. High values of this index represent poor geographical access. Respondents were allocated the geographical access to services domain index value for the electoral ward which contains the postcode of residence. Figure 1 shows the spatial distribution of this index across Scotland. The index was divided into four quartiles where quartile 1 contained wards with highest levels of local accessibility and quartile 4 contained wards with the lowest levels of local accessibility

The Scottish Executive Urban Rural Classification scheme (Scottish Executive, 2004b) was used to capture settlement size and the wider regional accessibility of respondents' place of residence. Respondents were allocated to one of eight classifications which are defined in Table 4. Figure 2 shows the spatial distribution of this classification across Scotland. Two sub-groups can be identified, namely accessible areas (categories (a) to (d)) and remote (categories (e) to (h)).

4. RESULTS

4.1 Descriptive Analyses

The extent to which socio-economic circumstance and access to goods and services is explored in this section by disaggregating median distance travelled for non-work purposes against explanatory variables discussed above. The median was chosen as the most appropriate measure of central tendency for this analysis because the distribution of distance travelled was highly positively skewed. Travel by all modes, by private motorised, public transport and walk / cycle are examined.

Table 5 shows how median distance travelled varies with sex, age and net household income. It can be seen that males travel further than females in total and within each modal category. The greatest difference was in private motorised travel. Disaggregation by age shows that total travel increases to a maximum in the age range 45 – 59 and then declines. Adults aged 75 years or over travel the shortest distance. This pattern is repeated for travel by private motorised means. In contrast, travel by public transport and for walking / cycling is highest in the 16 – 24 years category. There is a steady decline in the distance travelled by public transport and walk / cycle with increase in age. Median distance travelled increases with increasing net total household income. Individuals with a household income greater than £35,000 travel over twice as far as those in the lowest income category.

Table 4 Explanatory variables used in analyses

Grouping	Variable	Categories
Personal	Age (years) Sex Employment Status Difficulty with using car / bus Orange badge holder	 Male; female In employment; not employed
Household	Household income (£000s) Household composition	 Single adult; small adult; single parent, small family; large family; large adult; older smaller; single pensioner
Access to transport resources	Walking time to nearest bus stop (minutes) Frequency of bus service (buses per hour)	
Spatial proximity to opportunities	Geographical access to goods and services (domain score) Scottish Executive 8-fold urban/rural classification	 (a) Large Urban Areas (settlements with over 125,000 people) (b) Other Urban Areas (settlements with 10,000 to 125,000) (c) Accessible Small Towns (settlements between 3,000 and 10,000 and within 30 minutes drive of a settlement of 10,000 or more) (d) Accessible Rural (settlements of less than 3,000 people and within 30 minutes drive of a settlement of 10,000 or more) (e) Small remote town (settlements of between 3,000 and 10,000 and with a drive time of between 30 and 60 minutes to a settlement of 10,000 or more) (f) Very remote small town (settlements of between 3,000 and 10,000 and with a drive time of over 60 minutes to a settlement of 10,000 or more) (g) Remote rural (settlements of less than 3,000 people and with a drive time of between 30 and 60 minutes to a settlement of 10,000 or more) (h) Very remote rural (settlements of less than 3,000 people and with a drive time of over 60 minutes to a settlement of 10,000 or more)

Figure 1 Access to goods and services in Scotland

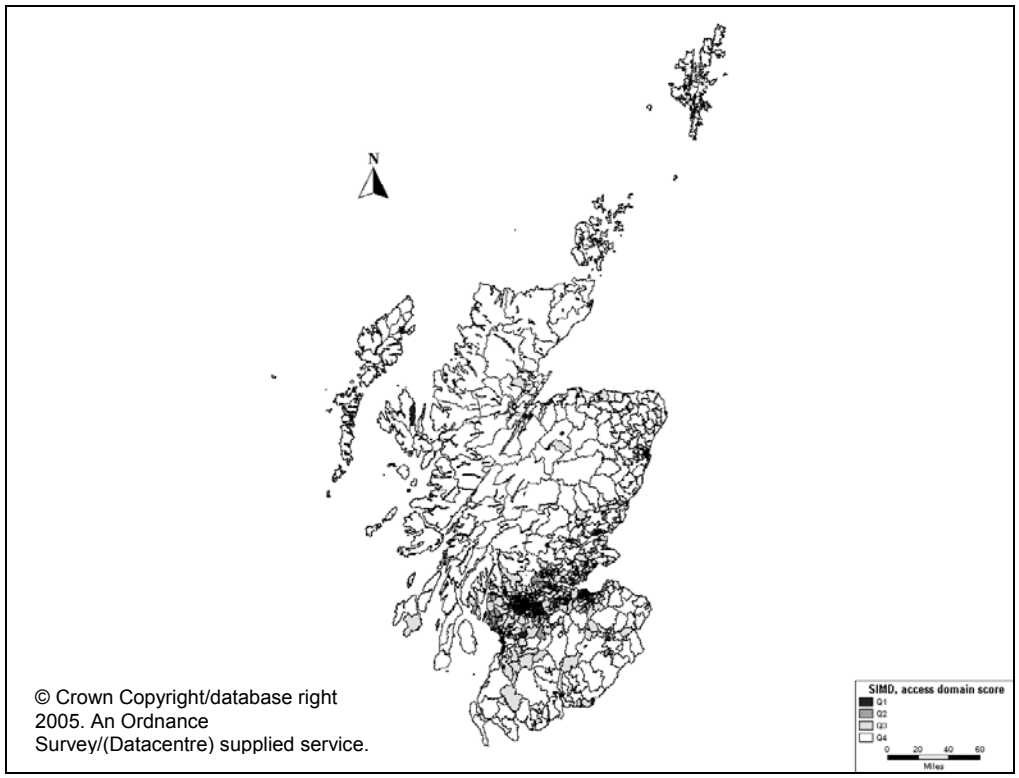
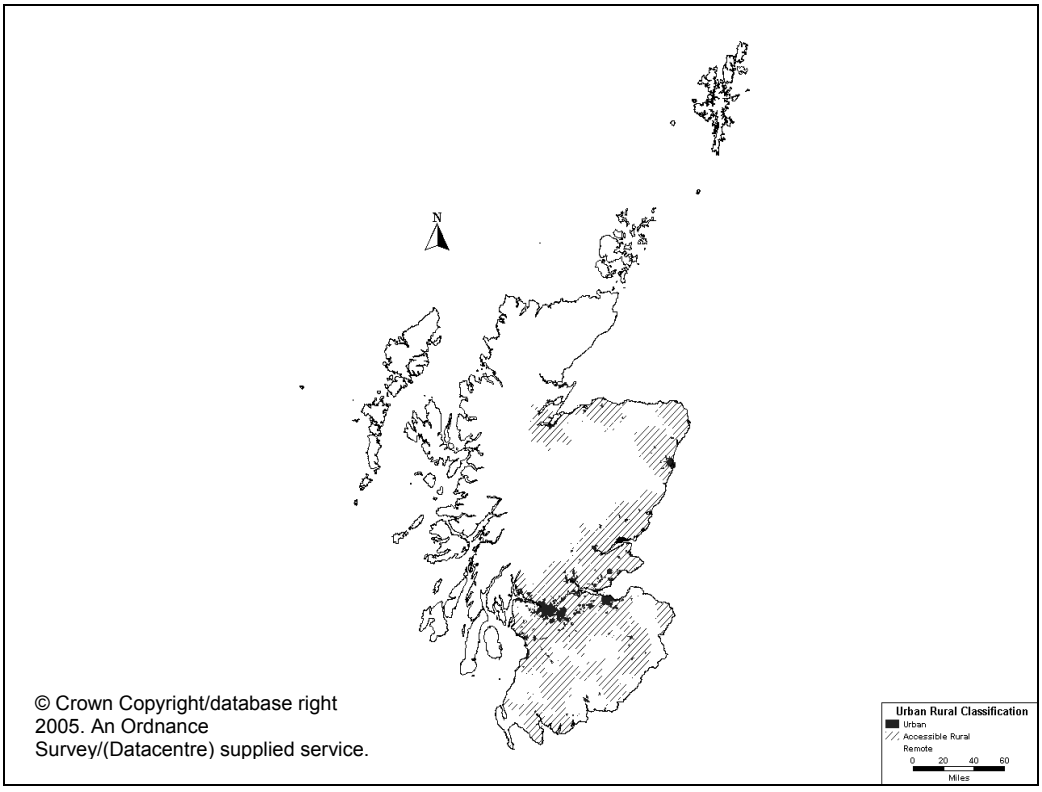


Figure 2 Urban rural classification in Scotland



Tables 6 shows the variation in median distance travelled with access to goods and services and with the wider regional setting. As stated above, the quality of access to local goods and services ranges from 1 (highest) to 4 (lowest). A clear trend of increasing median distance travelled by all modes and by private motorised modes with decreasing quality of access to local services emerges. This trend is replicated for public transport travel, albeit with significantly lower travel distances. Median distance travelled by walking or cycling declines with decreasing quality of access to local services.

It can also be seen from Table 6 that there is considerable variation in median distance travelled with urban/rural classification. Overall very remote small towns have the shortest distances travelled by all modes, by private motorised means and by public transport. Small remote towns also exhibit low values of median distance travelled by all modes, although distance travelled by car is higher in small remote towns than in large urban and other urban areas. There is a marked difference in distance travelled between remote towns and remote / very remote rural areas for all modes, private motorised and public transport.

Turning to urbanised regions of Scotland and their rural hinterland, travel by all modes and by private motorised transport is lowest in large urban areas, and travel is observed to increase in other urban, small accessible towns and rural accessible areas in turn. Travel by public transport is substantially lower in large urban and other urban areas than in small accessible towns and rural accessible areas.

The joint effect of local access to goods and services and household income on median distance travelled by all modes is shown in Figure 3. It was hypothesised that socio-economical circumstance moderates the influence of spatial proximity to goods and services. More specifically, it was hypothesised that high income households were less dependent on the quality of local access to goods and services than low income households. Overall, the relative increase in travel between quartiles 1 and 4 is less for high earners than that for low earners. This evidence tends to support the hypothesis, although the relative difference is not particularly large. Furthermore, the relative increase between quartiles 1 and 3 is actually less for low earners than for high earners and it is only the sharp increase between quartiles 3 and 4 for low earners that changes the overall pattern.

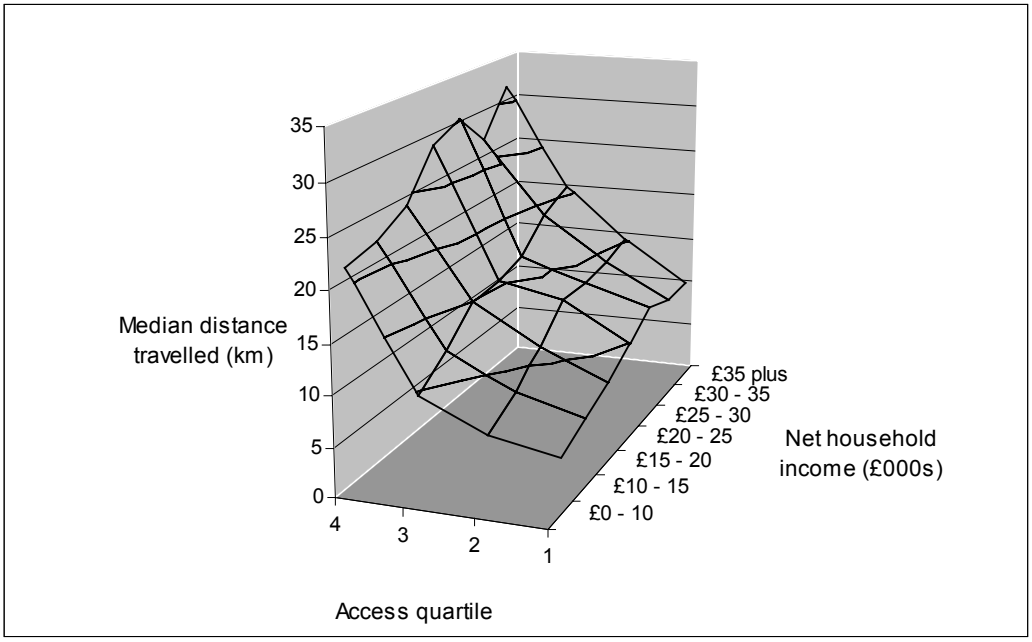
Table 5 Median distance (kms) travelled disaggregated by socio-economic attributes

		All Modes	Private Motorised	Public Transport	Walk / Cycle
Sex	Male	11.93	16.51	9.69	2.37
	Female	10.76	14.56	8.58	2.12
Age	16 – 24	8.67	12.79	10.49	2.66
	25 – 34	11.72	16.09	9.18	2.29
	35 – 44	13.02	16.00	9.76	2.42
	45 – 59	13.36	17.38	9.40	2.21
	60 – 74	10.41	14.28	8.28	2.03
	75 plus	6.81	10.36	6.87	1.77
Income	£0 - £10,000	7.51	12.49	7.76	2.19
	£10,001 - £15,000	9.77	13.06	8.66	2.21
	£15,001 - £20,000	12.30	15.07	10.66	2.12
	£20,001 - £25,000	14.58	16.74	10.44	2.25
	£25,001 - £30,000	15.65	17.03	12.12	2.3
	£30,001 - £35,000	16.01	17.94	18.63	2.52
	£35,001 plus	18.12	20.95	10.49	2.65

Table 6 Median distance (kms) travelled by proximity to opportunities

		All Modes	Private Motorised	Public Transport	Walk / Cycle
Access to goods and services	Quartile 1	7.39	10.76	7.40	2.29
	Quartile 2	10.15	13.02	8.58	2.17
	Quartile 3	14.28	17.24	11.26	2.36
	Quartile 4	25.70	28.76	23.31	1.94
Urban Rural Classif'n	Large urban	8.89	11.81	8.20	2.33
	Other urban	9.72	12.32	7.58	2.27
	Small accessible town	17.36	23.12	19.36	2.11
	Rural accessible	24.52	27.22	16.04	1.85
	Remote small town	8.18	17.13	7.32	1.97
	Very remote small town	3.84	4.46	5.68	1.33
	Remote rural	30.15	33.57	33.77	1.54
	Very remote rural	20.52	23.37	43.68	1.59

Figure 3 The effect of local accessibility and income on median distance travelled



4.2 Multiple Regression Analyses

In the preceding analyses, the influence on distance travelled of key socio-economic and proximity to opportunities was examined individually and jointly in the case of local access and income. In order to study the combined influence of personal and household attributes, access to transport resources and proximity to opportunities multiple linear regression analysis was undertaken.

Multiple regression models were estimated for all modes, private motorised modes and public transport using the method of least squares, where distance travelled was the response variable and explanatory variables represented personal and household attributes, access to transport resources and proximity to opportunities. The models also contained a product term to capture any interaction effects between net household income and local accessibility.

Initial development of the model revealed that a better model fit was produced by taking the natural logarithm of distance travelled in kilometres as the dependent variable and that age and the age squared should be entered as predictor variables to capture the effect whereby distance travelled initially increases with age and then decreases. Also, walk time to nearest bus stop and frequency of bus service were found to be highly correlated with urban rural classification and so were omitted from the final models. The results of the regression models are presented in Table 7. Stepwise regression was used and only the coefficients of statistically significant variables at $p \leq 1\%$ are shown.

A broadly similar pattern emerges in each of the three estimated models. Most notably, access to local goods and services was the first explanatory variable to enter the models in the stepwise procedure. Regressing this predictor on its own against distance travelled explains 5.3%, 4% and 3.7% of the variation for all modes, private motorised modes and public transport respectively. As expected the coefficient of this predictor was positive, which means that distance travelled is predicted to increase as the quality of local access declines.

For all modes, it can be seen that just over 10% of the variation in distance travelled is explained by the model which is broadly comparable with previous studies of the nature. In comparison with distance travelled in large urban areas, travel is predicted to be higher in small accessible towns and in accessible rural areas. A larger variation in travel was detected in remote areas of Scotland than in accessible areas. Distance travelled in very remote small town is significantly lower than large urban areas suggesting a degree of self-containment in these areas. In contrast, travel in remote rural and very remote rural areas is significantly higher than in large urban areas.

With reference to socio-economical variables in the model for all modes, females are predicted to travel less than males and the effect of age predicts a rise and then a fall in travel. As expected total net household income is positively associated with distance travelled.

The term for bilinear interaction between access to goods and services and household income is statistically significant with a negative coefficient. This evidence supports the hypothesis that household income moderates the influence of local accessibility on distance travelled. The interaction term coefficient can be interpreted as representing the number of units than the slope of travel distance on local access changes given a unit increase in income. A key difference between the all modes model and the models for private motorised and public transport modes is that the interaction terms between income and local access were not found to be statistically significant.

5. CONCLUSIONS AND DISCUSSION

From this study it can be concluded that distance travelled for non-work purposes is significantly influenced by spatial proximity to goods and services across Scotland after allowing for personal and household circumstances. This conclusion applies to travel by all modes, travel by private motorised means and public transport. Both access to local goods and services and the wider geographical setting were found to explain variation in distance travelled.

An examination of the interaction between socio-economics and accessibility was undertaken. For non-work travel by all modes, a relatively small interaction effect was observed between total net household income and access to local goods and services. This showed that the relative importance of the quality of access to local goods and services reduces with increased

income. One plausible explanation of this observation could be that higher income households are generally more mobile, indirectly through car ownership and directly through being able to afford more travel. As a result these households are less likely to rely on spatially proximate services. In contrast, low income households are more reliant on the closest goods and services to home. There is clearly more scope to investigate interaction between *person* and *place* and between local accessibility and regional context in future studies.

In this study relatively simple metrics for accessibility were used on the basis that these were readily available for the whole of Scotland and they could be considered as surrogates for the location of available opportunities relative to place of residence. Nonetheless, there is scope to utilise more sophisticated measures of accessibility in analyses of this kind which would take into account connectivity by different modes as well as the quality (*cf* the existence) of opportunities. Furthermore, the spatial resolution of the accessibility measures varied with population density since the study was based on electoral wards. The adoption of a consistent and sufficiently detailed spatial resolution for the entire study area would improve the quality of the results.

The focus of this analysis has been on travel undertaken. No account has been taken of those respondents who reported no travel for non-work activities on the previous day. Any variation in the proportion of respondents who chose not to travel across areas of differing accessibility would have important implications for the interpretation of these results.

Finally, as discussed elsewhere (e.g. Giuliano and Narayan, 2003) daily travel is conditional upon longer-run decisions concerning residential location, place of employment and car ownership. Consideration of these longer-term choices within a more advanced model system would advance understanding of non-work travel behaviour.

Table 7 Results of multiple regression analysis

	All modes		Private motorised		Public transport	
	Unstandardised Coefficients		Unstandardised Coefficients		Unstandardised Coefficients	
Variable	B	SE	B	SE	B	SE
Constant	**1.939**	0.046	**2.290**	0.057	**2.416**	0.047
Random adult variables						
Age	**0.020**	0.002	**0.017**	0.002	-	-
Age Squared	**-0.023**	0.002	**-0.020**	0.003	**-0.007**	0.001
Female	**-0.051**	0.013	**-0.093**	0.014	**-0.104**	0.029
Employed	**0.129**	0.015	-	-	-	-
Difficulty using car	-	-	-	-	-	-
Difficulty using public transport	**-0.132**	0.033	**-0.225**	0.038	-	-
Orange badge holder	**0.192**	0.034	**0.094**	0.037	-	-
Household variables						
Total net h/hold income (£000s)	**0.005**	0.000	**0.003**	0.000	**0.009**	0.002
Household composition (Ref = Single adult)						
Small adult	**0.078**	0.018	**0.058**	0.019	-	-
Large adult	**0.056**	0.019	-	-	-	-
Single parent	**-0.116**	0.034	-	-	-	-
Small family	-	-	-	-	**-0.139**	0.052
Large family	**-0.052**	0.023	**-0.095**	0.024	-	-
Older small	**0.157**	0.021	-	-	**0.184**	0.050
Single pensioner	**-**	-	**-0.103**	0.034	**0.152**	0.056
Day of travel						
Ref = weekday						
Saturday	**0.239**	0.017	**0.227**	0.019	**0.196**	0.035

Sunday	**0.199**	0.018	**0.222**	0.020	**0.265**	0.060
Spatial proximity to opportunities						
Access to goods and services domain score	**0.254**	0.014	**0.154**	0.013	**0.167**	0.023
Ref = Large urban						
Other urban	-	-	-	-	-	-
Small accessible town	**0.242**	0.021	**0.325**	0.024	**0.527**	0.056
Accessible rural	**0.447**	0.022	**0.499**	0.024	**0.390**	0.062
Small remote town	-	-	**0.186**	0.061	-	-
Very remote small town	**-0.514**	0.054	**-0.545**	0.063	-	-
Remote rural	**0.527**	0.043	**0.598**	0.046	**0.701**	0.152
Very remote rural	**0.149**	0.043	**0.264**	0.046	**1.071**	0.148
Access * Income	**-0.001**	0.001	-	-	-	-
R^2 (adjusted)	0.102		0.086		0.095	
N	35,139		25,349		5,136	

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