

Scottish
Household
Survey

TRAVEL DIARY

1999 and 2000 User Guide

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1. Introduction

1.1 The Travel Diary collects information on personal travel, on the day prior to the interview, from randomly chosen adults (aged 16+) in Scotland. It is part of the Scottish Household Survey (SHS), which is a major cross-sectional survey, commissioned by the Scottish Executive in order to provide reliable and up-to-date information on the composition, characteristics and behaviour of Scottish households, both nationally and at a sub-Scotland level. Please see the separate user guidance, “*Scottish Household Survey: Years 1 and 2 User Guide*” for more information on the “main”, (i.e. “non-travel diary”) SHS data. Technical reports on the SHS can be purchased from the Stationery Office bookshop and found on the following website www.scotland.gov.uk/shs.

1.2 From the outset, it was intended that the main SHS data and the SHS Travel Diary should be made publicly available for analysis. The aim of this document is to provide potential users and other interested parties with a description of the structure and content of the Travel Diary datasets.

1.3 This document has the following structure.

- A brief account of the background and a description of the coverage of the Travel Diary appear in *section 2*.
- The main definitions used for the Travel Diary data and a list of variables are given in *section 3*.
- Brief overviews of collection and imputation of information about journeys and comparisons with the GB National Travel Survey (NTS) are covered in *section 4*.
- Information on how distance is calculated is provided in *section 5*.
- This document also describes how distances between “home and work” and “home and school” are estimated (they are provided in files which are separate to the Travel Diary), *section 6*.
- The *Annex* at the end of this document contains more details of the imputation methods used, and a comparison of the Travel Diary with the GB National Travel Survey (NTS).

2. Background to the SHS Travel Diary

2.1 Background

2.1.1 The SHS Travel Diary is part of the Scottish Household Survey (SHS). The SHS covers a wide range of topics to allow links to be made between different policy areas. There is a particular focus on information on Transport, Social Inclusion and (from 1999 and 2000) Local Government issues. The SHS is financed by the Scottish Executive and undertaken by a partnership of NFO System Three Social Research and MORI Scotland. It started in February 1999.

2.1.2 The sample for the survey is designed to meet a number of criteria. It is designed to provide nationally representative samples of private households and of the adult population in private households. This is achieved by splitting the interview between a household respondent and an adult selected at random from the permanent residents of the household. In order to meet the reporting requirements, the sample is structured to be nationally

representative each quarter and to provide a representative sample for larger local authorities each year (those with an achieved sample of over 750 per year). The randomly chosen adult answers the SHS Travel Diary.

2.1.3 The sample is also designed to provide data for each local authority over a two-year period. This is achieved by disproportionately sampling in each local authority to achieve a target of at least 550 interviews over two years (equivalent to a simple random sample of 500, with "95% confidence interval" for an estimate of 50% of +/- 4%-points). Reweighting factors "correct" for the disproportionate sampling.

2.1.4 Two different sampling approaches are used. In areas of high population density (Glasgow, Edinburgh, Aberdeen, Dundee, etc.) a simple random sample of dwellings is selected covering the entire two-year sample period. These are subsequently clustered into interviewer allocations. In areas of lower population density, census enumeration districts (EDs) are selected with probability proportionate to population. In each ED, 18 addresses are selected, based on achieving 11 interviews from each sampling point.

2.1.5 The sample is selected from the small user Postal Address File (PAF) for Scotland, expanded to take account of addresses which might only be listed once but actually contain multiple dwellings, such as tenement blocks and multi-storey flats. Although the small user PAF excludes many institutional addresses such as student halls of residence or nurses' homes, there are no geographical exclusions from the survey.

2.1.6 The survey questionnaire is in two parts. The Highest Income Householder or his/her spouse/partner completes Part 1 of the interview. Once the composition of the household has been established, one of the adults in the household is randomly selected to complete Part 2 which contains the Travel Diary. In all households with a single adult the same person completes both parts but as the number of adults in the household increases, the probability of the random adult being the same as the household respondent declines.

2.1.7 The Highest Income Holder, or his/her spouse/partner section of the interview deals with topics such as household composition, housing and tenure, health, the vehicles available to the household, the occupation and industry of the highest income householder, household income and housing costs. The random adult section deals with individuals' housing change, tenure change, neighbourhood problems, transport and use of public transport, public services, income and employment as well as travel made on the previous day.

2.1.8 Interviewing was conducted using Computer Assisted Personal Interviewing (CAPI). Instead of using pen and paper to record responses, data is collected on handheld computers.

2.1.9 In 1999/2000, a total of 30,227 valid interviews were carried out with householders. Of these 30,227 households, interviews were achieved with 28,340 random adults (aged 16+) (94%). Of the random adults interviewed, 75% had made a journey on the previous day.

2.1.10 In summary, the SHS Travel Diary is asked of a random sample of adults (aged 16+) living in private households across Scotland about the travel they made on the day prior to the interview. This information is obtained from interviews with one randomly chosen adult per household in the sample. Each adult in the household has an equal chance of selection for these questions. Reweighting factors "correct" for the lower selection probability of individual adults in larger households.

2.2 The coverage of the SHS Travel Diary

2.2.1 The SHS Travel Diary collects information about travel for private purposes or for work or education, provided the main reason for the journey is for the traveller himself or herself to reach the destination. It includes the following types of travel:

- personal travel for domestic, social or recreational purposes - e.g. driving to and from work, travelling into town to go shopping, and going to see friends;
- journeys in the course of work, provided the purpose of the journey is for the traveller to reach a destination - e.g. taking a bus into town to attend a meeting, flying down to London on business;
- journeys made to take or accompany someone else - e.g. taking the children to school, walking someone home.

2.2.2 Journeys made by land, air or water within the United Kingdom are included. Journeys which start or end outwith the UK (e.g. a holiday flight from Spain) are excluded. However, if a respondent were to say that he or she had flown back from a holiday abroad on the previous day, the interviewer should record details of the journey home from the airport (but *not* record details of the flight to the UK).

2.2.3 The SHS Travel Diary does *not* cover:

- journeys which are made in the course of work by people who are employed (e.g.) as drivers or crew of public transport vehicles; to drive lorries; to deliver letters, parcels, leaflets or goods; as police officers or traffic wardens; etc. However, it does cover their journeys to and from their places of work;
- travel away from public roads or highways, such as taking a dog for a walk across some fields, walking or climbing in the hills, and yachting or flying for pleasure;
- journeys of under a quarter of a mile, or less than five minutes on foot;
- journey stages of under a quarter of a mile, or less than five minutes on foot.

2.2.4 The Travel Diary collects information about three different types of journey:

- “single stage” journeys (93.7% of the journeys recorded in 1999 and 2000) - such as driving to an out-of-town shopping centre, or going from home to work by bus (assuming that the bus stop is less than a quarter of a mile, or five minutes walk, from home, and therefore that there is no need to record the part of the journey between home and the bus stop as a separate stage; and likewise assuming that the bus stop at the destination is not far from the place of work);
- “multi-stage” journeys (3.7%) - such as going by bus to the station (the first stage, assuming that the walk to the bus stop is below the threshold) and then catching a train to - say - Manchester (the second stage);
- “series of calls” journeys (2.6%) - in order to reduce the burden on respondents, travel involving a number of stops for the same main purpose and using the same form of transport is treated as one continuous "series of calls" journey from the first such call to the last one. Only shopping and travel in course of work can be treated in this way. Information is collected about the part of the journey to the first call, the total number of calls, and the part of the journey after the last call. In the case of a doctor's round, for example, the interviewer might ask about the travel from (say) the surgery to the first patient, the total number of calls, and the travel from the final patient back to the surgery (or wherever the doctor went after the last call).

The three types are treated differently to facilitate the interviewing process. There are slight differences in the detailed kinds of information collected about each type of journey, which have implications for the processing and analysis of the data but do not affect the main conclusions that can be drawn.

3. SHS Travel Diary datasets and variables

3.1 The data for the 1999/2000 Travel Diary has been supplied in two files: a "Journey" file containing one record per journey (for multi-stage journeys, the record contains details of the origin of the first stage and the destination of the last stage; similarly, for series of call journeys, the record contains the information on the origin of the first call and the destination of the last call); and a "Stage" file containing one record for each stage of each journey, i.e. one record for each single stage journey, one record for each stage of a multi-stage journey, and, in the case of a series of call journey, one record for the first call and one record for the last call.

3.2 The basic definitions used in the Travel Diary are as follows:

3.2.1 *Journeys*: the basic unit of travel, a journey, is defined as a one-way course of travel having a single main purpose. Outward and return halves of a return journey are treated as two separate journeys. A journey cannot have two separate purposes, and if a single course of travel involves a mid-way change of purpose then it, too, is split into two journeys. However, trivial subsidiary purposes (e.g. a stop to buy a newspaper) are disregarded.

3.2.2 *Stages*: a journey consists of one or more stages. A new stage is defined when there is a change in the form of transport or when there is a change of vehicle requiring a separate ticket.

3.2.3 *Journey purpose*: the purpose of a journey is normally taken to be the activity at the destination, unless that destination is "home" in which case the purpose is defined by the origin of the journey. A number of purposes are distinguished, such as "place of work", "in the course of work", "educational establishment", "shopping", and so on. Separate categories are used when the traveller has no purpose of his or her own, other than to escort or accompany another person; for example, taking a child to school.

3.2.4 *Mode of transport*: in the code-lists which are used by the interviewers to record details of the journeys, vans are counted with cars; taxis and minicabs are in a separate category from ordinary cars; and there are separate categories for (i) rail and (ii) underground, and for (a) school bus, (b) works bus and (c) ordinary (service) bus.

3.2.5 *Main mode of transport*: where a journey involves more than one mode of transport (e.g. first a bus and then a train), the main mode of a journey is defined, as in the GB National Travel Survey, as that used for the longest (in distance) stage of the journey. For example, if a journey involved a two mile bus ride followed by a 50 mile train trip, the main mode for the journey would be "rail". It should be noted that this definition does *not* use the total of the distances travelled by each of the different modes to determine the main mode - for example, a journey involving a 1 mile walk to a bus stop, a 1½ mile bus ride and a 1 mile walk to the ultimate destination would be classified as "main mode = bus", because bus was the mode of transport used for the longest stage of the journey, even though more than half the total distance was covered on foot. If there is no single longest stage, and the two (or more)

longest stages do not involve the same mode of transport, the "main" mode of the journey is defined (as in the GB National Travel Survey (NTS)) as the mode which was used for the last of the longest stages. In practice, because of the way that the distances are calculated (which produces results which appear to be accurate to about the nearest metre, although they will not be as precise as this - see *section 5*), it is unlikely that there will be many journeys which have two stages which involve *exactly* the same distance.

3.3 List of variables on the Travel Diary Datasets

3.3.1 The following table shows the names of each of the travel diary variables, an explanation of what they are, and a list of possible values where applicable.

(J) = on journey dataset only, (S) = on stage dataset only.

<u>VARIABLE NAME</u>	<u>LABEL</u>	<u>VALUE / CODE</u>
UNIQID	Unique household identifier	Any numeric
DYEAR	The year's data the household is included in for the annual reports	1999, 2000, 2001 etc.
QUARTER	The quarter in which the interview took place	1,2,3,4
TRIPNO	Number of the journey – derived in chronological order, derived from the reported start times of each journey	Numeric
STAGE (S)	Number of stage of multi-stage journey	Numeric: <ul style="list-style-type: none"> • 1-n if multi-stage journey • “missing” if single stage journey • 1 if first call of a “series of call” and 2 if last call of a “series of call”
DD	Day of travel	1 - 31
MM	Month of travel	1 - 12
YY	Year of travel	e.g. 1999, 2000, etc.
TRAVDAY	Day of travel	i.e. 1 = Monday, 2 = Tuesday etc.
RE16	Type of journey	1 = Single stage journey, 2 = Multi-stage journey, 3 = Series of calls journey
RE25	Number of calls in series of calls journey	Numeric
TRAV_WT	Travel Diary weight: weighting factor for Travel diary data: “corrects” for differences in selection probabilities between local authorities, between adults in different sizes of household and between days on which people are available to be interviewed. See <i>section 4.2</i> for more details.	Numeric
MODE (S)	Mode of transport used for the stage of	1 = Walking

	the journey	<p>2 = Driver Car/Van 3 = Passenger Car/Van 4 = Motorcycle/ Moped 5 = Bicycle 6 = School Bus 7 = Works Bus 8 = Ordinary (Service) Bus 9 = Taxi/Minicab 10 = Rail 11 = Underground 12 = Ferry 13 = Aeroplane 14 = Horse-riding 15 = Other 16 = Not stated</p>
MAINMODE (J)	Main mode of journey. For multi-stage journeys, this is the mode from the stage with the greatest distance. See <i>section 3.2.5</i> for more details.	Same as MODE.
PURPOSE	Purpose of the journey	<p>1 = place of work 2 = in course of work 3 = educational establishment 4 = shopping 5 = visit hospital or other health 6 = other personal business 7 = visiting friends or relatives 8 = eating/drinking alone or at work 9 = eating/drinking other occasions 10 = entertainment/other public activities 11 = participating in sport 12 = coming/going on holiday 13 = day trip 14 = other not coded 21 = escort - home 22 = escort - work 23 = escort - at work 24 = escort - education 25 = escort - shops 26 = escort - personal 27 = escort - other</p>
NUMOCC (S)	Number of occupants (if mode for the stage is by “car/van”)	Numeric: “missing” if mode not “car/van”
STARTHR	Start hour of stage / journey (as appropriate)	0 – 24 (NB: Midnight’s hour = 24)
STARTMIN	Start min of stage / journey (as appropriate)	0 - 59

ENDHR	End hour of stage / journey (as appropriate)	0 – 24 (There are some cases that end after mid-night e.g. 25, 26, etc)
ENDMIN	End min of stage / journey (as appropriate)	0 - 59
DURATION	Duration in minutes – derived from start time and end time	Minutes
ORIGPLC	Numeric variable showing whether the origin is Home, Work or Other	1 = Home, 2 = Work, 3 = Other
DESTPLC	Numeric variable showing whether the destination is Home, Work or Other	1 = Home, 2 = Work, 3 = Other
ORIGC	Council area of origin	(Not available yet: waiting for GIS matching)
DESTC	Council area of destination	(Not available yet: waiting for GIS matching)
OCODE	Indicator of quality of origin postcode	h = Home postcode, w = Work postcode, d = Definite postcode, n = Notional postcode See <i>section A.1.7</i>
DCODE	Indicator of quality of destination postcode	Same as OCODE.
DISTANCE (S)	Stage Distance (as the crow flies)	Km (with decimal places)
JOURDIST (J)	Journey Distance (as the crow flies)	Km (with decimal places)
IMPUTED	Flag for imputed stages / journeys	Please see <i>section A</i> in the <i>Annex</i> for more details of the values of this variable.
IMPDIST	Flag for imputed distance	Please see <i>section A</i> in the <i>Annex</i> for more details of the values of this variable.

3.3 Linking the Travel Diary to the “main” SHS data

3.4.1 Each household has a unique identifier called “UNIQID”. A combination of “UNIQID” and “TRIPNO” will identify any journey on the “Journey” dataset, and a combination of “UNIQID”, “TRIPNO” and “STAGE” will identify any stage on the “Stage” dataset. If you want to link the “main” SHS data to the Travel Diary you would use “UNIQID”. Make sure you select the random adult’s information for any analysis by personal characteristics (e.g. age, sex etc). The person number of the random adult is contained in the variable “RANDPEO” which is on the “main” SHS dataset. The User Guide for the “main” SHS dataset describes some variables which contain particular pieces of information about the random adult (e.g. the random adult’s age “RANDAGE”, sex “RANDSEX”, current situation “RANDECON”, etc).

3.4 Requesting specialised datasets

3.5.1 The postcodes of the origin and destination of most stages are recorded in the SHS Travel Diary. For reasons of confidentiality, postcodes are *not* available in the version of the Travel Diary at the UK Data Archive. Two types of dataset with more detailed geographical information may be made available in a limited number of special cases by the Scottish Executive, they are:

- Postcode Sector information for origins and destinations, and;
- Self specified zones i.e. one would have to specify zones using a “shape” file which could be sent to the Scottish Executive GIS to be matched to the Travel Diary. In order to ensure that the zones are of a sufficient size, each zone must contain a minimum number of sampled households, which the Scottish Executive will calculate taking account of the sampling fraction(s) for the local authority(ies) concerned, and the number of years data to be provided.

In both cases the need for “anonymisation” of data means that only a few variables relating to the household and the random adult will be provided, and that there will be (e.g.) banding of age and income. If you wish to apply for a specialised dataset please contact the SHS Project Manger (*see section 7.1*) to discuss what might be available.

4. The collection and imputation of information about journeys

4.1 The Travel Diary collects information about journeys that were made on the day *before* the interview: so, someone interviewed on Sunday will be asked about the journeys he or she made on Saturday. Journeys which start on one day and finish on another should be counted on the basis of the day on which they *started*: so, if a person interviewed on Sunday went out on Friday evening and returned home in the early hours of Saturday, the journey home on Saturday should be recorded only if it started after midnight (because that would mean that it started on the day before the interview); and if the person went out on Saturday evening, the journey home should be reported provided that it started before midnight.

4.2 Interviews are *not* spread evenly across the week, because some types of people are more likely to be found at home, available for interview, on certain days. Therefore, the results need to be re-weighted using factors, which depend upon the day of the week and the adult's current situation (or economic status), so that, within each category of "current situation", the reweighted number of interviews is spread evenly across the days of the week. The reweighting process covers *all* interviews, including those with people who had *not* made any journeys on the day before the interview. Therefore, the reweighted numbers of people who said that they had made journeys, and the reweighted numbers of journeys themselves, are *not* necessarily evenly spread over the days of the week.

4.3 It may be felt that the SHS's results will be biased, tending to over-estimate the number of journeys, because the interviewer asks only about travel on the previous day: for example, people may be more likely to be interviewed on the days on which they made no journeys than on the days on which they made many journeys, since they are more likely to be available for interview on days on which they have not made any journeys. Therefore, the probability of being interviewed on a particular day depends, to some extent, upon the amount of travel on that day. It follows that the day for which the information about journeys is collected (the day before the interview) does not represent a "completely random" choice of day, and therefore that the Travel Diary results may not be properly representative. However, comparisons with the results of the GB National Travel Survey suggest that the

SHS Travel Diary actually *under*-estimates the number of journeys made by adults. One reason for this is that the SHS does *not* collect information about journeys of less than a quarter of a mile, or of less than five minutes by foot. Another is that details of the previous day's travel are provided "off the top of the head", and therefore some journeys may be overlooked. For example, a person may say that he or she went to work, but may not mention the return journey home, or may overlook a journey in the middle of the day. The way in which the information is recorded by the interviewers' computers does not allow the interviewers to check through the details of the reported journeys in order to identify any errors or omissions. However, some changes have been made to the computer systems to reduce the number of journeys that are overlooked.

4.4 The Scottish Executive has therefore imputed additional journeys, in cases where it is obvious that they are missing – e.g. if the only journey recorded for the day was to work at 8.00 a.m., a return journey was imputed, using the same mode of transport and with the same duration. The imputation process uses information about the time spent at the destination by other people with the same current situation (economic status) who had reported making both an outward journey and a return journey for the same purpose. The average times spent at the destination, and the distributions of such times, are used to impute the times at which the return journeys would start (unless the imputed time would be after midnight, in which case a return journey is not imputed). The Scottish Executive also split what were recorded as "circular"/"round trip" journeys (such as a two-stage journey from A to B and then back to A) into separate outward and return journeys. Imputation in these, and other, cases has increased the total number of journeys in the database by about 9 %. However, it *cannot* compensate for the full extent of under-reporting of journeys, because there will be many "overlooked" journeys that cannot possibly be imputed from the information that was recorded (e.g. in a case where two journeys were recorded - to work and back - one would not know if the person had forgotten to mention - say - mid-day journeys from work to some shops and back). More information on the methods of imputation used can be found in the *Annex* at the end of this document.

4.5 Because the imputation process does not compensate fully for the under-reporting of journeys in the SHS, the published results so far have not included any estimates of the averages of the total numbers of journeys, or of the total distance travelled, per person per year, as such estimates would undoubtedly be too low. Instead, information has been provided about the characteristics of the journeys which were recorded (such as the percentage made using each mode of transport), which should not be affected greatly by under-reporting (unless, for some reason, the journeys which were reported were markedly atypical of all journeys made by adults).

4.6 Initial examination of the data collected in the SHS's first few months of interviews identified a number of problems, as a result of which several improvements were made to the interviewers' computer systems, in order to collect better quality data. However, the nature of the SHS is such that it cannot collect travel data of the same quality as are obtained by the GB National Travel Survey (NTS). There are a number of reasons for this:

- the SHS is a multi-purpose survey, which has transport as just one of its (from 1999 to 2002) three priority topic areas. The NTS is a specialised survey, designed to collect information about travel;
- the SHS collects information about one day's travel by one randomly-chosen adult member of the household. The NTS collects information about seven days' travel by every member of the household, including children;

- the SHS interviewee has to recall, off the top of the head, with no prior warning, details of journeys made on the previous day, during an interview on many topics. In the NTS, each member of the household is asked to record, using a special form, information about journeys which are made in a subsequent period of seven days;
- the SHS does not record journeys of less than a quarter of a mile, or less than five minutes on foot. The NTS includes such journeys. (It should be noted that, in order to reduce the burden on NTS respondents, they are asked to record details of walks of under a mile only on the final day of their travel diary, and these are then "grossed up" to the full seven day period when the data are prepared for analysis);
- the SHS interviewer normally has only one contact with the randomly-chosen adult member of the household. The NTS interviewer makes contact on several occasions (to make an appointment, if necessary; before the seven day period for the travel diaries starts, to explain the procedures to the household; sometimes, a mid-"week" visit to remind and help the household; following the travel diary period, to pick up the completed forms; and, rarely, a telephone call or a further visit if there are outstanding queries);
- the SHS interviewers' computers carry out some simple checks on the information as it is collected (e.g. that the time recorded for the end of the journey is after the time at which it was recorded as starting). The NTS also has computer checks. In addition, at the "pick up" visits, the NTS interviewers check the credibility and completeness of the journeys recorded in the travel diaries, sometimes discovering that some journeys had not been recorded, and obtaining details of them. (Inevitably, such scrutiny of the data, and discussions with respondents about what they did and how they recorded it in the travel diary, will identify errors that could not be detected by any computer check on the details that are keyed in.)

Overall, therefore, the NTS data about travel are undoubtedly more comprehensive and of better quality than those of the SHS. However, the NTS's small sample size in Scotland (only about 300 households per year up to 2001; about 900 households per year from 2002) means that it is not suitable for detailed analyses relating to Scotland, such as looking at the differences in travel patterns between different sub-groups of the population. A more detailed comparison between the SHS Travel Diary and the GB National Travel Survey can be found in the *Annex* at the end of this document.

5. Origins and destinations, and distances travelled.

5.1 *Origin and destination:* the interviewer asks where the person started from, and where he or she went to, and records the origin and destination of each stage of each journey. "Home" and "work" can be recorded easily; for other origins and destinations, the interviewer types in as much detail as possible of the address (e.g. the name of a shop, the street and the town). When appropriate, the interviewer can specify that the previous destination is the origin of the current stage / journey. The contractors determine the relevant postcodes at a later stage in the processing of the data from the survey. In cases where only an approximate location is recorded (e.g. "centre of Edinburgh"), an arbitrary "notional" postcode (such as that of the main post office) is assigned. In some cases, the contractors may be unable to allocate a postcode, and can only provide a less "precise" indication of the location, such as a postal district (e.g. "EH10"). Inevitably, there are occasions on which the contractors cannot provide any indication of the location of the origin or the destination of a journey. Since the survey started, the interviewers' computer systems have been improved, to collect better "address" data.

5.2 The interviewer also records the times at which each stage of each journey started and ended. The recording process will only be accurate to - at best - say the nearest five minutes, for example because many people will not remember precisely, or correctly, the times at which some (or all) of their journeys on the previous day started and finished. Therefore, the estimated durations of some journeys will be subject to possibly large percentage errors.

5.3 *Distance travelled:* the length of any journey stage is the estimated distance “as the crow flies”, based upon the grid co-ordinates of the "centres" of the postcodes (or whatever types of area were recorded) of the origin and destination of that stage of the journey. Therefore, the estimated distance would be zero in the case of a stage for which exactly the same postcode (or other type of area) was recorded (or derived) for both the origin and the destination. For example, if it was known (or deduced) only that the stage involved travel from (say) "EH10" to "EH10", the estimated distance would be zero. However, if it was known (or deduced) that the journey was from "EH10 6UD" to "EH10 6XE", the "crow flies" distance between the "centres" of the two postcodes would be calculated. Clearly, the percentage error in the estimation of distances will tend to be smaller for longer journeys - such as for a journey from "EH10 6UD" to "EH6 6QQ", or for one from "EH1" to "G1". (Because the distances are estimated using grid co-ordinates recorded to the nearest metre, they may appear to be accurate to about a metre. However, it must be remembered that the grid co-ordinates relate to the "centres" of the areas concerned, and a journey may start or finish some distance from the "centre" of the recorded area, so the estimated distances are not as precise as might be thought from the number of digits that are produced.)

5.4 In cases where the interviewer could not obtain sufficient details of the origin and/or destination to enable the contractors to assign a postcode (or other type of area), the Scottish Executive had imputed the distance travelled. The imputation process uses information about the recorded time taken for the trip and an imputed speed for the trip. The imputed speed is based upon information about the speeds of other trips made by the same mode of transport for the same purpose by people who live in the same type of area (in terms of the "urban"/"rural" category), distinguishing between journeys which start in what may be described as "peak" periods (for this purpose, taken as 7.00 a.m. to 9.30 a.m. and 4.30 p.m. to 6.30 p.m.) and at other times of the day. Both the average speed and the distribution of speeds for each mode / purpose / area / time category were used to impute the speed for each journey for which this was required. The imputed speed was then multiplied by the recorded journey time to calculate the imputed distance. Overall for 1999/2000, the distance was imputed for about 13.1% of all journey stages. It was not possible to calculate or even impute a distance for about 0.6% of journey stages, because there was insufficient or inadequate information about the location of the origin or destination, or about the start or end time of the journey stage.

5.5 The distance of a multi-stage journey was calculated by adding up the distances of each of its component stages. For series of calls journeys, as information is only collected about the first and last calls, there are no estimates of distance for all the intermediate stages, and therefore the total distance is underestimated. In addition, as most journeys are not made in a straight line, the "crow flies" distance will underestimate the actual distance travelled.

6. “Home to Work” and “Home to School” distances

6.1 The SHS interviewer asks the randomly chosen adult for their work address and work postcode (or for as much of it as they know), and asks the Highest Income Householder or

his/her spouse for the name and LA of the randomly chosen school child's school. This information is then used by the contractors to derive the work postcodes where they were not complete (i.e. only the address was provided), and the Scottish Executive uses information collected about the randomly chosen school child's school, to obtain the schools postcode. The straight line "as the crow flies" distance between "home and work" and "home and school" is calculated by the Scottish Executive using grid references. Please see *section 5* above for more details on how distance is calculated.

6.2 Imputation was not carried out for the small percentages of cases where distance was "missing" for "home to work" or "home to school", because it was not felt worthwhile to develop imputation methods for small numbers of "missing" cases. Therefore, a "Home to Work" distance record has only been provided where there were "Home" and "Work" postcodes (and the random adult was not "unemployed" or did *not* "work from home"). Similarly, "Home to School" distance records have only been provided where there were both "Home" and "School" postcodes.

6.3 The "home and work" and "home and school" distances are available as separate files called "HMWK9900" (containing the unique identifier "UNIQID", and the distance between home and work) and "HMSL9900" (containing "UNIQID", and the distance between home and school) respectively.

7. Enquiries and further information

7.1 General enquiries about the SHS should be addressed to the survey's Project Manager:

SHS Project Manager
Social Research
Scottish Executive
Victoria Quay
Edinburgh, EH6 6QQ

Tel: 0131 244 8420
Fax: 0131 244 7573
E-mail: shs@scotland.gsi.gov.uk

7.2 Enquiries about the SHS Travel Diary data should be addressed to:

Esta Clark
Transport Statistics
Scottish Executive
Victoria Quay
Edinburgh, EH6 6QQ

Tel: 0131 244 1457
Fax: 0131 244 0888
E-mail: transtat@scotland.gsi.gov.uk

7.3 Further information about the survey can be found on the SHS *website* at <http://www.scotland.gov.uk/shs>

This website provides some background to the survey, information about the progress of the survey, and the published results.

7.4 Published results from the 1999/2000 SHS Travel Diary are available in the Scottish Executive Statistical bulletin “*Scottish Household Survey Travel Diary results*”, published February 2002. It is available price £2 from the Stationary Office bookshop, or at the following website <http://www.scotland.gov.uk/stats/bulletins/00146-00.asp>. (Please note the Scottish Executive has carried out subsequent data cleaning since this bulletin was published. Therefore, results using the data from the Data Archive might differ slightly from those published. The next edition of this bulletin, which is scheduled to be published in February 2003, will include some revised figures for 1999/2000 and the first analyses of the Travel Diary data for 2001.)

7.5 Please contact the Project Manager if you wish to be added to an *e-mail mailing list* to be kept informed of any significant updates to the information on the SHS website. The Project Manager will also, on request, distribute paper copies of information about the survey, and about significant developments when they occur, to people who are unable to access the website.

ANNEX

A. Details of the problems found and the imputation methods used

A.1 Initial investigation of the Travel Diary revealed the following problems:

A.1.1 Non chronological order of journeys

Some adults' journeys were not recorded in chronological order, because, in some cases, respondents do not report journeys in chronological order. This was corrected by sorting the data in order of the start time of each journey and deriving a new variable called "TRIPNO".

A.1.2 Similar consecutive single stage journeys at different times

A number of similar consecutive journeys at different times were found (*about 2% of journeys*). In such cases, both journeys had the same origin, and both had the same destination e.g. "Home to Work" in the morning and "Home to Work" in the evening with nothing recorded in between.

It was decided to "correct" only consecutive "single stage" journeys. The correction involved swapping the origin and destination of a journey in cases where the origin of the first journey matched the origin of the second journey and the destination of the first journey matched the destination of the second. But which journey should be "swapped" round?

Example A

Journey 1 Home to work from 8 am to 8.30am

Journey 2 Home to work from 5pm to 5.30pm

It would be reasonable to "correct" the second journey to become "Work" to "Home" from 5pm to 5.30pm.

But in the following case:

Example B

Journey 1 Work to Home from 8am to 8.30am

Journey 2 Work to Home from 5pm to 5.30pm

It would perhaps make more sense to "swap" the origin and destination of the first journey.

What should be done could also depend on what the person's current situation is. The above "corrections" make sense if the person works in a "normal" full time job, but, it might not be the case if they are, say, a part time cleaner. Therefore, it was decided to look at "swapping" only in cases where the "swapped" details would be more likely to be correct in general. This meant that only those cases for which the origin was "Home" or the destination was "Home", as these were the only ones for which one can easily apply a "general rule" – e.g. in general one might expect the first journey of the day to start at home. So, if the first journey of the pair is the first journey for the person and it starts at "Home" the origin and destination of the second journey of the pair were "swapped". Or, if the last journey of the pair is the last for the person, and the journey ends at "Home" then the origin and destination of the previous journey of the pair were "swapped".

The "IMPUTED" flag is set to "10" for these cases.

A.1.3 Only one journey made

A large number of people were found to have made only one journey (e.g.) a journey in the morning from “Home” to “Work”, with nothing else recorded for the rest of the day (*about 4% excluding series of calls journeys and those journeys for the purpose of coming back from / going on holiday*). Series of calls journeys were excluded from this method of imputation, as they could be genuine. Circular journeys were also excluded as these were dealt with separately.

It was decided to only impute a reverse journey in cases where either the origin or destination of the only recorded journey was “Home”, as imputing a reverse journey in other cases would probably not be correct e.g. suppose the only recorded journey was a single stage journey from the “shops” to “a friend’s house”. If a return journey was imputed then this person would appear to spend the rest of the day (until after 12 midnight) at the shops!

Examples of the method used are as follows:

Case 1) **Two journeys both** with origin = “Home” and destination = “anywhere else”

Case 2) **Two journeys both** with origin = “anywhere else” and destination = “Home”

In case 1) a reverse journey would be generated x hours later, only if the start time was *not* after 23.59.

In case 2) a previous journey would be generated x hours earlier, only if the start time was *after* 00.00.

For example, for only one “single” stage journey with origin “Home”, the imputation method works as follows:

- a reverse journey would be generated
- the “purpose”, “mode” and “distance” would be the same
- the origin and destination information would be “swapped”
- start time would depend on the end time of the journey from “Home”, the “purpose” of the journey and the person’s “current situation” (e.g. journey “to work” and the person was in “full-time employment”)
- the “end time” would be calculated by working out the duration of the first journey and adding it to the “start time”
- the journey would not be imputed if it started after 23.59

In order to impute the start time of the reverse journey, an estimate of how long the person might have spent at “the place” was derived. This was done by working out the mean and standard deviation of the time spent at “the place” for all the combinations of “purpose” and “current situation” for those people who had made *two* journeys in the day: one from “Home” and one to “Home”. The imputed value was then taken as a random variate from a normal distribution with the relevant mean and standard deviation. However, if there were fewer than ten “donor cases” valid journeys for that combination of “purpose” / “current situation” (e.g. “purpose” of “to work” and “current situation” of “full-time employment”) then the relevant mean was used as the imputed time spent at “the place”.

The “IMPUTED” flag is set to “21” where the reverse journey of a single stage journey has been imputed and “IMPUTED” is set to “22” where the reverse journey of a multi stage journey has been imputed.

A.1.4 Circular journeys

A “circular” journey is one for which the origin and the destination are the same e.g. from “Work” to “Work”. A number of circular journeys were found to have been recorded (*about 2%*). They may be the result of (e.g.) two journeys mistakenly entered as one journey, or perhaps the person took a dog for a walk (i.e. the journey had no “obvious” real destination). (Circular series of calls journeys were excluded from this method of imputation, as they may well be genuine e.g. it would be perfectly valid to record a “series of calls” journey from “Home” to calls at several shopping centres and then back to “Home”.

The imputation method works as follows:

- Circular journeys with only one stage were split into two journeys: one to an unknown destination, and the other the trip back. (It is assumed that the person spends a minute at the unknown destination). (“IMPUTED” is set to “31” in these cases)
- Circular journeys with two stages were split into two journeys with one stage each. (“IMPUTED” is set to “32” in these cases)
- Circular journeys with three stages were split into two journeys. How the stages were split between the two new journeys depended on the “time gaps” between the stages. If the gap between stages 1 and 2 was longer than the gap between stages 2 and 3 the journey was split so that stage 1 became a single journey and stages 2 and 3 became stages 1 and 2 of a new journey. Otherwise they were split so that stages 1 and 2 form the first journey and stage 3 became a new single stage journey. (“IMPUTED” is set to “33” in these cases).
- Circular journeys with 4 or more stages were not included in the imputation process as the number of these journeys was small.

A.1.5 Apparently incomplete sequences of journeys

Investigation also revealed some apparently “incomplete” sequences of journeys, e.g. in cases where a journey 1 was from A to B and journey 2 was from A to C so it appears that there is a missing journey from B to A, (*about 2%*).

It is reasonable to impute journeys to fill the gaps where the origin of the previous journey matches the origin of the next journey e.g.

Journey 1 A to B

Journey 2 A to C

And where the destination of the previous journey is the same as the destination of the next journey e.g.

Journey 1 B to A

Journey 2 C to A

Nothing was done in cases where journey 1 was from A to B, and journey 2 from C to D with a “gap” between B and C, because it would have been too complicated to try to impute a journey to fill the “gap” as there is no information in either of the recorded journeys with which to impute the apparently unreported journey (and B and C might be very close together).

For simplicity, journeys were only imputed where there were single stage journeys on either side of the gap, neither of which was non-circular, and they had either

- (a) the same origin e.g. A to B then A to C – when “B to A” was imputed to fill the gap, or
- (b) the same destination e.g. A to B then C to B – when “B to C” was imputed to fill the gap.

The methodology used was like that described in *section A.1.3* above, except that the mean and standard deviation of the combinations of “purpose” and “current situations” are used for *all* valid journeys.

The “IMPUTED” flag is set to “40” for these cases.

A.1.6 No return journey to “Home” at the end of the day

A large number of respondents’ journeys were found not to end up at home at the end of the day (*about 6%*). Therefore, a return journey has been imputed to home where the last stage is “Home” to “somewhere” – excluding those cases where the final recorded journey had the “purpose” of “coming back from/going on holiday”, series of calls journeys, and cases where the imputed journey would start after mid-night (e.g. a night shift worker’s return journey to home would start after midnight, so would not be imputed). For simplicity, return journeys to home were only imputed for those who made single stage journeys (*about 2%*).

The “IMPUTED” flag is set to “50” for these cases.

A.1.7 Missing or suspect distances

As explained in *section 5* above, distance is calculated from grid references obtained from the postcodes of the origins and destinations of the stages. Missing or incomplete origin and destination postcodes led to missing distance information for about 10% of stages. The following tables give an indication of the quality of the postcodes recorded. (Note the results are from the “Stage” file for 1999 and 2000 *prior* to imputation and that some of the postcodes that were recorded or derived were not complete)

Origin postcode	Number of cases	Percentage of cases
Home	26,276	46.4 %
Work	5,024	8.8 %
Definite (not “Home” or “Work”)	9,377	16.4 %
Notional (usually the nearest post office)	14,513	25.4 %
“Missing”	1,888	3.3 %

Destination postcode	Number of cases	Percentage of cases
Home	21,749	38.1 %
Work	6,028	10.6 %
Definite (not “Home” or “Work”)	10,291	18.0 %
Notional (usually the nearest post office)	16,788	29.4 %
“Missing”	2,222	3.9 %

The methodology for imputing distances was similar to that described in *sections A.1.3 and A.1.5* above. A speed was calculated for each stage, for which a distance had been estimated. It will only be approximate because of the imprecision of the estimates of the distance and the journey time (calculated as the difference between the “start time” and the “end time”). The

mean and standard deviation of the speeds were then calculated for all the combinations of “purpose”, “current situation”, and “Time of day”, which was sub-divided into “Peak” (7-9.30am and 4.30-6.30pm) and “Off Peak” (any other time). In cases where the distance was “missing”, or the calculated speed was “suspect” the speed for the stage was imputed. The following “suspect” speeds were replaced by imputed values:

- Walking speeds greater than 20km/hr
- Driver/passenger car/van, motorcycle/moped, taxi/minicab speeds greater than 150km/hr
- Bus, underground, horse riding, ferry, other speeds greater than 100km/hr
- Aeroplane speeds greater than 1000km/hr.

NB: these thresholds are “high” because of the imprecision of the estimated distance and the estimated time spent travelling (since both the “start time” and “end time” may be rough estimates).

Imputed distance was then calculated as $\text{Distance} = \text{Imputed Speed} * \text{Travelling Time}$. Journey distance (as opposed to stage distance) for multi-stage journeys is the sum of the distances for the individual stages.

If distance has been imputed the “IMPDIST” flag is set to “10”.

A2. Flags for imputed stages and journeys

The table in *section A.3* below summaries the “IMPUTED” and “IMPDIST” flags used in the Travel Diary “Stage” and “Journey” datasets. The coding used for multi-stage journeys can be complicated. If there is an entry in the “IMPUTED” or “IMPDIST” variables for a multi stage journey on the “Journey” dataset this has to indicate whether information has been imputed for the first and/or last stage of the journey. When a four digit code is used, the first two digits relate to the first stage, and the last two digits relate to the last stage. Some examples of this are:

- Suppose the only journey recorded for the day was a multi stage: stage 1: A to B and stage 2: B to C.
 - A reverse journey would be imputed, Journey 2: stage 1 C to B, stage 2 B to A.
 - The “IMPUTED” flag on the “Stage” dataset would be set to “22” for both stages of the imputed reverse journey, and on the “Journey” dataset “IMPUTED” would be set to “2222”.
- Suppose the only journey recorded for the day was a multi-stage journey which had three or more stages then the “IMPUTED” flag on the “Journey” dataset would only indicate if the first or last stage of the journey had been imputed, (e.g.) stage 1 A to B, stage 2 B to C, and stage 3 C to D.
 - A reverse journey would be imputed, Journey 2 stage 1 D to C , stage 2 C to B, and stage 3 B to A.
 - The “IMPUTED” flag on the “Stage” dataset would be set to “22” for all stages of the imputed reverse journey, and on the “Journey” dataset “IMPUTED” would be set to “2222” indicating that the first and last stages of the journey had been imputed.
- If the distance was imputed for the first stage and the last stage of a multi-stage journey the “IMPDIST” flag on the “Journey” dataset would be set to “1010”.

A.3. Number of imputed records generated

The following tables show the number of imputed journeys and stages generated by the imputation process for each “problem” mentioned above. They also show the resulting values of the “IMPUTED” and “IMPDIST” flags.

“Flags” on the “Stage” dataset for 1999 and 2000

Name of problem	Name of “flag”	Value of “flag”	Number of stages in 1999/2000	Percentage of stages in 1999/2000
Similar consecutive single stage journeys at different times	IMPUTED	10	76	0.12
Only one single stage journey made	IMPUTED	21	2,306	3.72
Only one multi stage journey made	IMPUTED	22	425	0.69
Circular journey: one stage	IMPUTED	31	902	1.46
Circular journey: two stages	IMPUTED	32	632	1.02
Circular journey: three stages	IMPUTED	33	678	1.10
Apparently incomplete sequences of journeys	IMPUTED	40	904	1.46
No return journey to “Home” at the end of the day	IMPUTED	50	749	1.21
Missing or suspect distances	IMPDIST	10	8,103	13.09

“Flags” on the “Journey” dataset for 1999 and 2000

Name of problem	Name of “flag”	Value of “flag”	Number of journeys in 1999/2000	Percentage of journeys in 1999/2000
Similar consecutive single stage journeys at different times	IMPUTED	10	76	0.13
Only one single stage journey made	IMPUTED	21	2,306	4.04
Only one multi stage journey made (first and last stage imputed)	IMPUTED	2222	189	0.33
Circular journey: one stage	IMPUTED	31	902	1.58
Circular journey: two stages	IMPUTED	32	632	1.11
Circular journey: three stages	IMPUTED	33	226	0.40
Circular journey: three stages (first and last stage imputed)	IMPUTED	3333	226	0.40
Apparently incomplete sequences of journeys	IMPUTED	40	904	1.58
No return journey to “Home” at the end of the day	IMPUTED	50	749	1.31
Missing or suspect distances	IMPDIST	10	6,667	11.69
Missing or suspect distances (first stage distance was imputed)	IMPDIST	1000	260	0.46
Missing or suspect distances (first and last stage distance was imputed)	IMPDIST	1010	236	0.41

B. Numbers of records before and after imputation*Based on 1999/2000 data (unweighted numbers)***B.1 Number of records**

	before	after	change
Stage Dataset	57,078	61,913	4,835
Journey Dataset	51,912	57,045	5,133

B.2 Number of stages by type of journey

Type of journey	before	after	change
Single stage	48,153	53,421	5,268
Multi-stage	5,917	5,484	-433
Series of calls	3,008	3,008	0

B.3 Unweighted frequencies of “mode” and “purpose”

Mode	stages			% of all stages		
	before	after	change	before	after	diff
Not Recorded	200	200	0	0.35	0.32	-0.03
Walking	11,403	12,703	1,300	19.98	20.52	0.54
Driver Car/Van	28,407	30,552	2,145	49.77	49.35	-0.42
Passenger Car/Van	8,648	9,299	651	15.15	15.02	-0.13
Motorcycle/ Moped	76	81	5	0.13	0.13	0.00
Bicycle	526	566	40	0.92	0.91	-0.01
School Bus	89	91	2	0.16	0.15	-0.01
Works Bus	215	226	11	0.38	0.37	-0.01
Ordinary (Service) Bus	5,055	5,527	472	8.86	8.93	0.07
Taxi/Minicab	1,021	1,109	88	1.79	1.79	0.00
Rail	620	672	52	1.09	1.09	0.00
Underground	117	126	9	0.20	0.20	0.00
Ferry	116	126	10	0.20	0.20	0.00
Aeroplane	71	78	7	0.12	0.13	0.01
Horse-riding	2	2	0	0.00	0.00	0.00
Other	512	555	43	0.90	0.90	0.00

Purpose	stages			% of all stages		
	before	after	change	before	after	diff
not stated	50	50	0	0.09	0.08	-0.01
place of work	11888	12919	1031	20.83	20.87	0.04
in course of work	3306	3419	113	5.79	5.52	-0.27
educational establishment	1397	1524	127	2.45	2.46	0.01
shopping	13490	14641	1151	23.63	23.65	0.02
visit hospital or other health	1416	1547	131	2.48	2.50	0.02
other personal business	3775	4086	311	6.61	6.60	-0.01
visiting friends or relatives	6943	7603	660	12.16	12.28	0.12
eating/drinking alone or at work	245	256	11	0.43	0.41	-0.02
eating/drinking other occasions	1499	1645	146	2.63	2.66	0.03
entertainment/other public activities	1747	1927	180	3.06	3.11	0.05
participating in sport	1429	1536	107	2.50	2.48	-0.02
coming/going on holiday	209	212	3	0.37	0.34	-0.03
day trip	2601	2882	281	4.56	4.65	0.09
other not coded	3093	3443	350	5.42	5.56	0.14
escort - home	1539	1591	52	2.70	2.57	-0.13
escort - work	424	461	37	0.74	0.74	0.00
escort - at work	96	100	4	0.17	0.16	-0.01
escort - education	828	896	68	1.45	1.45	0.00
escort - shops	218	236	18	0.38	0.38	0.00
escort - personal	380	407	27	0.67	0.66	-0.01
escort - other	505	532	27	0.88	0.86	-0.02

C. Comparison with the National Travel Survey

C.1 When the results of the SHS Travel Diary are compared with those of the GB National Travel Survey (NTS), it can be seen that the SHS Travel Diary undercounts the number of journeys made. The following tables show some results from the two surveys. Please note that these are very broad comparisons because (as explained in *section 4.6* above) of the differences between the methods of collecting the National Travel Survey and the SHS Travel Diary. However, it seems clear that the SHS Travel Diary undercounts the number of journeys made. Because the NTS has been conducted in broadly the same way since the mid – 1980s, and its time series shows that the number of journeys per adult does not fluctuate much over time, one can regard the NTS results for Scotland for 1998/2000 as more reliable than might be expected on the basis of their small sample numbers.

C.2 The first two tables shown below come from the statistical bulletin “*Travel by Scottish residents: some National Travel Survey results for 1998/2000 and earlier years*”, published April 2002. The third and fourth tables are from the SHS Travel Diary for 1999 and 2000 combined. (The figures in these tables might differ slightly from those produced from the Travel Diary data deposited at the Data Archive. This is because the Scottish Executive has carried out some subsequent data cleaning since this comparison was carried out and have re-run the imputation process.) The final two tables give broad indications of the estimated percentage undercounting in the SHS Travel Diary compared with the NTS.

C.2.1 Some National Travel Survey results for Scotland for 1998/2000

Because the NTS collects information about travel by all members of the household (children as well as adults), comparisons of SHS and NTS results must use the NTS figures for adults.

Table M: Trips per person per year by main mode, and by age and then by sex

Scottish residents: 1998/2000

	Children				Women			
	under 16	16 - 29	30 - 59	60 +	Men 16+	16+	All adults	<u>All people</u>
Walk	370	270	281	302	268	300	285	302
Driver of car, van or lorry	0	351	646	328	618	405	504	407
Passenger in car, van or lorry	419	200	157	143	88	222	160	210
Other private transport	54	33	18	9	22	14	18	25
Local bus	83	132	51	93	61	91	77	78
Other public transport	17	71	41	21	35	45	40	36
All modes	943	1,057	1,195	896	1,091	1,080	1,085	1,058
<i>Sample size (number of people)</i>	<i>371</i>	<i>268</i>	<i>839</i>	<i>448</i>	<i>716</i>	<i>839</i>	<i>1,555</i>	<i>1,926</i>

Table N: Trips per person per year by purpose and by age and then by sex**Scottish residents:1998/2000**

	Children under 16	16-29	30-59	60+	Men 16+	Women 16+	All adults	All persons
Commuting or business	21	292	328	49	300	191	241	199
Education	286	79	8	0	15	20	18	70
Escort education	28	24	36	2	12	35	24	25
Shopping	102	160	279	304	229	297	266	234
Other personal business or other escort	182	126	217	177	191	189	190	188
Visiting friends at home	141	192	118	115	109	148	130	132
Visiting friends elsewhere	32	63	38	35	46	38	42	40
Sport / entertainment	88	62	67	82	81	61	70	74
Holiday / day trip	21	25	27	38	33	27	30	28
Other (incl. "just walk")	41	32	77	94	76	72	74	68
All purposes	943	1,057	1,195	896	1,091	1,080	1,085	1,058
<i>Sample size (number of people)</i>	371	268	839	448	716	839	1,555	1,926

C.2.2 SHS Travel Diary results for 1999 and 2000 combined**Journeys per adult (16+) per year by main mode: SHS Travel Diary 1999 and 2000 combined after imputation of journeys**

	16 - 29	30 - 59	60 +	Men 16+	Women 16+	All adults
Walk	229	142	109	144	145	144
Driver of car, van	350	528	183	507	295	386
Passenger in car, van	178	125	95	84	154	124
Other private transport	17	9	2	13	4	8
Ordinary (Service) Bus	114	58	65	57	77	69
Other public transport	69	36	20	39	33	36
All modes	962	898	474	844	708	767
<i>Sample size (number of adults 16+)</i>	4,356	14,540	9,444	12,139	16,201	28,340

Journeys per adult (16+) per year by purpose: SHS Travel Diary 1999 and 2000 combined after imputation of journeys

	16-29	30-59	60+	Men 16+	Women 16+	All adults
Commuting or business	285	300	29	268	163	208
Education	77	16	3	17	24	21
Escort education	12	16	2	6	14	11
Shopping	152	188	166	161	186	175
Other personal business or other escort	107	133	88	131	101	114
Visiting friends	155	90	60	89	90	90
Sport / entertainment	62	48	36	56	39	46
Holiday / day trip	31	35	37	39	32	35
Other (incl. "just walk")	82	71	51	76	59	66
All purposes	288	898	474	844	708	767
<i>Sample size (number of adults 16+)</i>	4,356	14,540	9,444	12,139	16,201	28,340

C.2.3 Broad comparison of the SHS Travel Diary (post imputation) with the National Travel Survey

Rough comparison of the SHS Travel Diary (post imputation) with the National Travel Survey **Main mode: % difference**

	16 - 29	30 - 59	60 +	Men 16+	Women 16+	All adults
Walk	-15	-50	-64	-46	-52	-49
Driver of car, van (or lorry)	0	-18	-44	-18	-27	-23
Passenger in car, van (or lorry)	-11	-20	-34	-4	-31	-23
Other private transport	-50	*	*	-40	*	*
Local bus/Ordinary (Service) Bus	-13	12	-30	-5	-15	-11
Other public transport	-3	-13	-7	13	-28	-12
All modes	-9	-25	-47	-23	-34	-29

* no percentage shown, as NTS estimate is less than 20.

C.2.3.1 It can be seen from the above table that, compared with the NTS, the SHS Travel Diary undercounts the number of journeys made per adult per year by roughly 29%. This comparison shows that walking journeys in particular are undercounted. This is because the SHS Travel Diary does not record journeys of less than a quarter of a mile or less than 5 minutes by foot. More information about the differences between the SHS Travel Diary and the NTS is given in *section 4.5* above.

C.2.3.2 When looking at this comparison it is worth bearing in mind that the categories used the SHS Travel Diary and the NTS are not the same. For example, the NTS category for "Driver.." includes car, van or lorry whereas the SHS Travel Diary category for "Driver.." only includes car or van. This is the same for passenger categories. However, the differences in the treatment of "lorry" will affect the comparison only slightly. Also, the time periods the surveys cover are not the same. Because of the NTS's small sample, three years are put together (1998/2000) whereas the SHS Travel Diary refers to 1999 and 2000. Again, the difference will affect the comparison only slightly.

Rough comparison of the SHS Travel Diary (post imputation) with the National Travel Survey **Purpose: % difference**

	16-29	30-59	60+	Men 16+	Women 16+	All adults
Commuting or business	-2	-8	-40	-11	-15	-14
Education	-3	*	*	*	16	*
Escort education	-50	-55	*	*	-59	-55
Shopping	-5	-32	-45	-29	-37	-34
Other personal business or other escort	-15	-39	-50	-31	-46	-40
Visiting friends	-40	-43	-60	-42	-52	-48
Sport / entertainment	0	-28	-56	-31	-36	-34
Holiday / day trip	20	31	-3	18	17	17
Other (incl. "just walk")	154	-7	-45	0	-18	-10
All purposes	-73	-25	-47	-23	-34	-29

* no percentage shown as the NTS estimate is less than 20.

C.2.3.3 The SHS's apparent over-counting of "Education" journeys, and considerable under-counting of "Escort Education", might be because some "Escort Education" journeys are being incorrectly recorded in the SHS Travel Diary as "Education". Most of the other categories do *not* directly correspond between the two surveys. Therefore, these tables just

give very broad indications. However, it seems clear that the SHS Travel Diary under-counts the numbers of journeys made for the two main purposes: commuting (apparent 14% undercount), and shopping (34% undercount).

D. SCOTTISH HOUSEHOLD SURVEY TOPIC LIST 1999-2002

Household Section

(Questions to the Highest Income Householder¹ or his/her partner/spouse)

HA - Household composition

For each member of household:

- Relationship to highest income householder
- Date of birth, age
- Sex
- Main economic activity, Marital status
- Ethnic group (codes changed from 2001)
- Religion (from 2001)

HB - Property

- Property type
- Number of floors and lowest level of floor
- Tenure, type of landlord

HC - Amenities

- Sharing/concealed households, number of rooms shared, whether by choice
- Number of bedrooms in property
- Whether household has full, partial or no central heating (from 2002)
- Consumer durables in household (telephone, computer/PC)
- Access to email/internet from home (1999 and 2000 only)
- Which household members have access to the Internet for their personal use and where internet is accessed (from 2001)

HD - Transport

- Personal mobility (for each adult aged 16+)
 - Whether holds driving licence and which type
 - Frequency of driving
 - Reasons for driving (1999 and 2000 only)
- Eligibility for reduced fares, concessionary passes (for each adult 16+)
- Orange badge holders (*or* Blue European Parking card from April 2000)
- Vehicles available to household (for each vehicle)
 - Vehicle type; own or company car; Vehicle Registration Mark (1999-2001) or age of vehicle
 - Principal and other drivers of each vehicle
 - Annual mileage of vehicle (banded from 2002)
 - Subsidisation by employer and personal fuel costs (1999-2001)
 - Number of vehicles available 12 months ago (from 2000)
- (Adult) bicycles available to household (1999, 2000 and from 2002)
- Public transport
 - Time to nearest bus stop
 - Frequency of buses

¹ The Highest Income Householder (HIH) is taken as the household reference person for the first part of the interview. This must be a person in whose name the accommodation is owned or rented, or who is otherwise responsible for the accommodation. In households with joint householders, the person with the highest income is taken as the household reference person. If householders have the same income, the older is taken as the household reference person.

HE – Young people in household

- Use of childcare (paid or unpaid) (1999 to 2001)
 - Reasons for using childcare
 - Weekly childcare payments

For randomly chosen school child:

- Name and location of school (from ‘pop-up’ list)
- Satisfaction with child’s schooling
- Usual mode of transport to school and reasons
- Usual mode of transport from school and reasons (1999 and 2000 only)
- Suitability of public transport for school journeys and reasons for non-use

HF - Health, disabilities and care

- Which household members, if any, have a limiting long-standing illness, health problem or disability
- Description of condition (from 2001)
- Which household members, if any, require regular care or help
 - Who provides care
 - Weekly hours of care provided by household members/non-household members

HG – Economic activity**Applies to Highest Income Householder and partner/spouse**

- Whether in paid work.

Applies to those not in paid work

- Whether on a government training scheme
 - Type of scheme
- Whether away from paid job or doing unpaid work for own or a relative’s business.
- Whether looking for paid work/government training
- Whether waiting to take up a job that they have already obtained (from 2000)
- Availability for work and reasons for non-availability
- Reasons for not looking for work or training/length of time looking
- If retired, duration of retirement
- If unemployed, duration of unemployment (1999 only)
- Whether had a paid job in last 5 years
- Number of spells of unemployment in last 5 years
- Reasons for leaving last job and time there

Applies to those in paid work

- Number of current jobs
- Main job (or last job if unemployed < 5 years or retired < 5 years)
 - Job title, type of industry, supervisory duties
 - Whether employee or self-employed
 - Full- or part-time
 - Temporary (seasonal) or permanent
 - (*SIC, SOC, SEG, RG Class can be derived from this data*)

HH - Household income**Applies to Highest Income Householder and partner/spouse**

- Income from paid employment/self-employment
 - Net pay (usual and at last time), period covered by this, hours worked. For main and other jobs
- Benefit income
 - Benefits received, which partner is eligible, value of each benefit received (or total benefit income, if not known separately), period of payments
- Other regular income
 - Sources of this, main recipient, amount from each source, period of payments

HI - Assets and savings

Applies to Highest Income Householder and Spouse:

- Whether has bank/building society account
- Whether has a credit union account (from 2002)
- Other savings or investments
- Total value of savings/investments (banded)

HJ - Housing costs

- Whether household has a mortgage/loan on this property
- Mortgage/loan repayments
- Rent costs - before and after Housing Benefit, period of payments

HK – Household finances

- Whether household has home contents or house/building insurance
- Household money worries (1999 and 2000 only)
- How household is managing financially

Permission to be re-contacted for follow-up research**Individual Section**

(Questions asked of the Randomly Selected Adult (Aged 16+))

RA - Housing

- Time at current address
- Any change in tenure at current property
- If at present address less than 12 months then previous tenure, type of landlord, household formation and address (1999 and 2000 only)
- Experience of homelessness (from 2001)
 - Number of times in last 5 years
 - Whether ever applied to Council because of homelessness
 - Whether ever had to sleep rough
- Whether wishes to move to separate home/household (from 2001)
 - Length of time looking for a separate home
 - Whether name is on Council or Housing Association list
 - Whether planning to rent or buy

RB - Local neighbourhood/community safety

- General satisfaction with local neighbourhood
- Particular likes and dislikes about local neighbourhood
- Perceptions of crime problems/‘incivilities’ in local neighbourhood
- Fear of crime
 - Frequency of travelling by bus (from 2001)/train (from 2001)/walking in the locality (2001 only) in the evening and perceptions of safety during these activities (RA4aa/RA4ab)
 - Perception of safety when walking alone in neighbourhood at night or alone at home at night (from 2002)
 - Respondent’s level of worry about being a victim of crime, including housebreaking, theft, vehicle crime, assault, harassment (from 2002)
 - Effect of fear of crime on respondents quality of life (from 2002)
- Social Networks
 - Contact with relatives/friends/neighbours in past fortnight (from 2000)
 - Involvement in local community (from 2000)
 - Ability to rely on people living in neighbourhood (from 2000)
- Disputes with neighbours (from 2000)
 - Number of disputes with neighbours in past 12 months

- Whether reported to police or local council
- Satisfaction with the way the police/council responded to the dispute
- Experience of crime
 - Household's experience of housebreaking (1999-2001), vehicle crime (1999-2001) or other crime against property (2001 only) in the last year
 - Experience of physical assault/attack/mugging in neighbourhood (from 2001)
- Fire Safety
 - Whether household has a working smoke alarm, any fires in the last 12 months, frequency, cause(es), location, method of discovery (1999-2000)

RC - Education and Lifelong learning

- All educational qualifications held
- Whether currently in education or training
- Whether participated in education, training or learning in past 5 years (from 2001)
- Likelihood of participating in education, training or learning activity in next 12 months (from 2001)
- Internet access (from 2001)
 - When first used the internet (from 2002)
 - Hours per week spent using internet for personal use
 - Methods for accessing internet
 - Whether has a broadband internet connection and which type (from 2002)
 - Uses that are currently made of the internet and aspirations for future uses

RD - Transport to work/educational establishment:

- Location of (main) place of work/educational establishment
 - If works at or from home
 - what the balance is between home and elsewhere (from 2002)
- Usual mode of transport and reasons
- If by car/van
 - How this is arranged (i.e. own car, car-sharing etc.)
 - Type of parking
 - Suitability of public transport

RE - Other Transport

- Annual personal mileage not paid for by employer (banded from 2002)
- Amount spent on public transport fares in last week
- Frequency of cycling in previous week (travel/leisure)
- Frequency of walking in previous week (travel/leisure)
- If non-driver (from HD), reasons for not driving
 - Reasons for never learning to drive (1999-2000)
- Extent of use of local bus and train in last month and attitude to different aspects of bus service and train service (from 2002)
- Reasons for not using buses more often (from 2002 only asked to those who use buses less than once a week)
- Whether injured in a road accident in past 12 months, and whether driver, passenger, pedestrian etc

Travel diary (for each journey made on previous day. For multi-stage journeys, information is collected about each stage)

- Whether a single journey or a series of calls
- If a single journey:
 - Purpose
 - Mode (If car, number of occupants)
 - Origin and destination
 - Start time and end time

- If a series of calls
 - Purpose
 - Mode
 - Total number of calls
 - Travel to first call - origin and destination, start and end time
 - Travel from final call - origin and destination, start and end time

RF - Services and local government

- Contact with local council over past 12 months
 - Satisfaction with way enquiry was handled
- Length of time since last use of different local services (1999-2000)
 - Satisfaction with local services used (1999-2000)
- Frequency of use of recycling facilities and satisfaction with these facilities (1999 only)
- Which types of items, respondent has recycled in last month (from 2000)
 - If none, then reasons
- Knowledge of local councillor
 - Whether any contact in last 12 months and satisfaction with local Councillor (1999-2001)
- Perceptions of local council performance and attitude to voting in local elections.
- Volunteering (from 2000):
 - Whether gave up any time to help any clubs, charities, campaigns or organisations in an unpaid capacity in last 12 months
 - Number of organisations and type
 - Type of activity
 - Number of hours given up in past 4 weeks
- Donations to charity, and whether immediate, through purchase or planned (2000 only)
- Perception of convenience of local services (including post office, bank, doctor, grocers pharmacy, hospital outpatients department, public transport)

(July-September 1999: questions regarding voting behaviour in local council elections, the Scottish Parliament election on 6th May 1999 and the European Parliament election held on 10th June 1999)

RG – Health and disability

- Self-perception of general health in last 12 months
- Whether registered with GP
- Number of times seen GP in past 12 months
 - How many of these were home visits (from 2002)
- Satisfaction with GP/family doctor service
- Whether has long-standing illness, health problem or disability
 - Limitations on daily activities (e.g. climbing stairs, walking, using a bus)
 - Existence of adaptations to home or equipment to help *respondent*
 - Need for any further equipment or adaptations
- Whether has a home help
 - Who provides service
 - Satisfaction with service provided
- Whether provides regular help or care to any non-household members, relationship to this person/people
 - Number of hours per week
 - Limitations this puts on paid work
- Smoking behaviour

Sections RH and RI asked only:

IF the random adult is *not* highest income householder or their partner/spouse

OR the random adult is highest income householder or their partner/spouse BUT the data is missing in the Household Section

RH - Economic activity

- Same questions asked as in Household Section

RI - Income

- Same questions asked as in Household Section

SM1 - Social mobility (2001 only)

- Job title and staff responsibility of father when respondent was 14 years old
- Job title and staff responsibility of mother when respondent was 14 years old

Permission to be re-contacted for follow-up research