



# **Victorian Integrated Survey of Travel & Activity 2009-10**

## **Survey Procedures and Documentation Final Data Release v1.0**

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Conducted for **The Victorian Department of Transport**



by

**The Urban Transport Institute**

**TUTI**

The Urban Transport Institute  
for reliable urban transport information

**I-view Pty Ltd**

**I-view**



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## 1

## Introduction

This report, which documents the procedures involved in the design, conduct and analysis of the 2009-10 Victorian Integrated Survey of Travel and Activity (VISTA09), is based on the Survey Design Checklist developed as part of the book "Survey Methods for Transport Planning" (Richardson, Ampt and Meyburg, 1995).

The Survey Design Checklist was developed as a checklist to ensure that all important design issues had been addressed in the design of the survey, and as a means of documenting the methodological procedures adopted for the survey. The Checklist is based on the recognition that the conduct of a survey is not an informal procedure. Rather, it follows a series of logical, interconnected steps which progress toward the final end-product of the survey. The stages in a typical sample survey are shown in Figure 1.1.

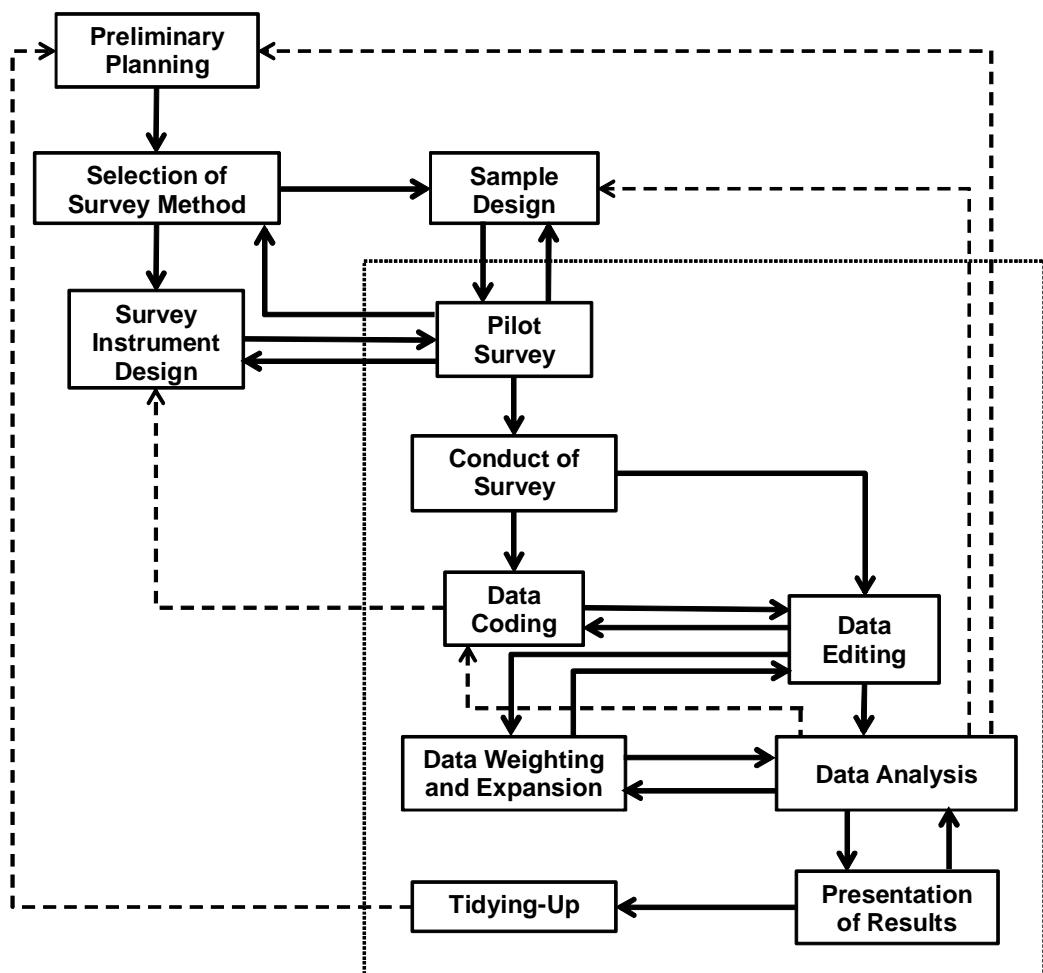


Fig 1.1 The Transport Survey Process



## **2 Preliminary Planning**

### **2.1 Project Objectives**

#### **2.1.1 Why was the Survey Needed?**

The Victorian Department of Transport and other transport planning agencies are required to make decisions on transport infrastructure and services worth billions of dollars. The decision making process for transport planning needs to be informed, accountable and founded on comprehensive, current and reliable data. One of the most important areas of information needed is an accurate description of travel behaviour of the people living in an area. The most effective way for transport planners to gather this information is by the conduct of a household travel survey.

The last survey of this nature that was conducted in Victoria was the 2007-08 Victorian Integrated Survey of Travel and Activity (VISTA07). This survey was run from June 2007 through June 2008. The data collected in VISTA09 will be used to augment the sample collected in VISTA07, and to also be the start of a time series of data in anticipation of future VISTA surveys.

### **2.2 Survey Objectives**

#### **2.2.1 What are the Survey Objectives?**

Two key objectives for the VISTA09 data have been identified:

- As a primary source of information for the development of transport analysis tools and models for personal travel. This allows the estimation/assessment of the impacts and transport outcomes of changes to transport infrastructure, systems and services; and
- To understand and quantify travel behaviour. This allows monitoring of the use of the transport system and assists in assessing the success of transport infrastructure, systems and services. These underpin key planning, policy development and decision-making processes relating to the provision of transport infrastructure and services.

### **2.3 Survey Scope**

#### **2.3.1 What was the scope of the Survey?**

The scope of the VISTA09 survey covers:

- All occupied private residential households within the Melbourne Statistical Division (MSD);
- All occupied private residential households within the regional cities of Geelong, Ballarat, Bendigo, Shepparton and Latrobe Valley (see Figure 2.1);
- Demographics of all persons (excluding visitors) staying at these households on the night preceding the household's Travel Day;
- Travel made by residents aged 5 and above during the survey period (travel by residents under 5 will be estimated as part of the data editing process);
- An additional sample of 33 weeks of surveys of residents living in areas near Activity Centres and in Peri-Urban areas was added for the Department of Planning and Community Development.

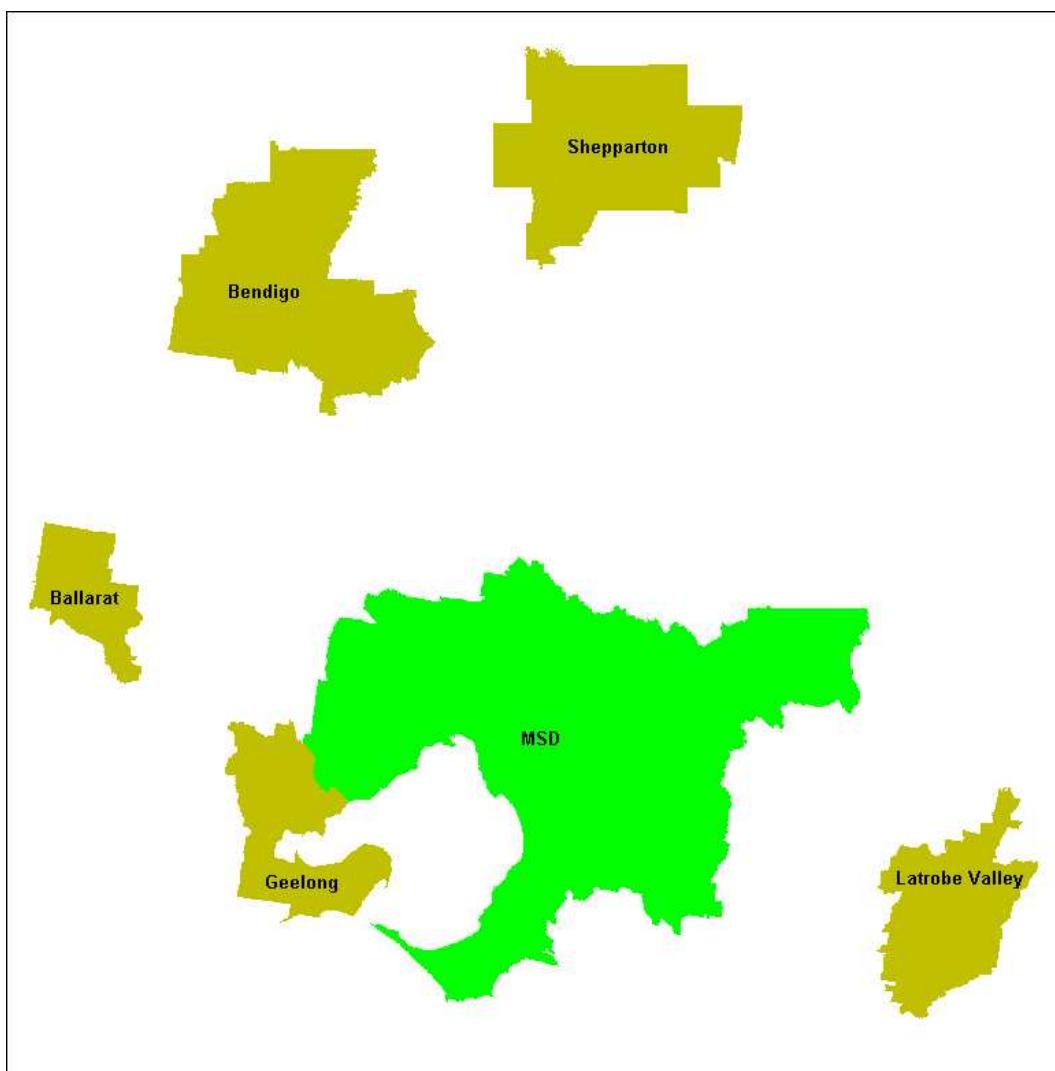


Fig 2.1 VISTA09 Study Areas

## 2.4 Review of Existing Information

### 2.4.1 What prior information was available?

There are three previous surveys that have specific relevance to VISTA09:

#### **Victorian Integrated Survey of Travel and Activity 2007-08**

The Victorian Integrated Survey of Travel and Activity 2007-08 (VISTA07) was conducted in Melbourne and in five regions in Victoria in the period from June 2007 through June 2008. The surveys were designed and conducted for the Department of Infrastructure (and later the Department of Transport) by The Urban Transport Institute, in conjunction with I-view Pty Ltd. A sample of approximately 17,500 responding households was collected in VISTA07. The surveys were one-day travel diary surveys for travel on all days of the year, using a personally delivered self-completion questionnaire to collect data on all trip stages. The VISTA09 methodology is essentially the same as the methodology in VISTA07.

#### **Victorian Activity & Travel Survey 1994-2002**

The Victorian Activity & Travel Survey (VATS) commenced in December 1993. From then until 1998, Tony Richardson was the Project Director (with Liz Ampt from 1993-95). The survey continued, with various changes to the original design, from 1998 to 2002. The survey was a one-



day travel diary survey, using a mailout-mailback self-completion questionnaire to collect data on all trip stages. The survey also included follow-up validation and non-response surveys which were conducted by personal interview. The VATS survey pioneered many of the self-completion techniques used in later surveys and provides a benchmark against which many of the procedures used in VISTA07 could be compared.

### **South-East Queensland Travel Surveys 2003-2009**

The South-East Queensland Travel Survey (SEQTS) was conducted in 2003-04 in Brisbane, Gold Coast and Sunshine Coast, and was repeated again in the three areas for the 2006-08 period, and also in 2009. The surveys were designed and conducted by The Urban Transport Institute, in conjunction with I-view Pty Ltd. The surveys were one-day travel diary surveys for weekday travel (expanded to all days of the week in the 2009 surveys), using a personally delivered self-completion questionnaire to collect data on all trip stages, as in VISTA07. The methodologies and software developed for SEQTS have been refined and re-developed for similar surveys in Auckland and Christchurch, and provided the basis for the VISTA07 methodology.

#### **2.4.2 What secondary information was available for sample expansion?**

The primary source of secondary data is the Australian Bureau of Statistics 2006 Census of Population and Housing. This data is available online through the ABS website. This data is used to expand the sample data up to population totals in the study area. Estimated Residential Population data for 2009 will also be used in the expansion process.

The second source of secondary data is the VISTA07 data. This data is used to check that the travel patterns measured in VISTA09 are relatively consistent with prior expectations. Where significant differences are noted, explanations are provided as to why the two data sets give different results.

The third source of secondary data are various on-ground measurements of travel patterns, such as screenline counts conducted by VicRoads and public transport patronage estimated developed by MetLink. This data is used to give some external estimates of travel to be compared against the VISTA09 results.

### **2.5 Definition of Terms**

**Study Area** - the Melbourne Statistical Division (MSD) as defined by the Australian Bureau of Statistics (ABS), plus the regional cities of Geelong, Ballarat, Bendigo, Shepparton and Latrobe Valley.

**Occupied Private Dwelling** - as defined by the ABS, this term refers to a private residence which was occupied at the time of the survey

**Trip Stage** - a one-way travel movement from an origin to a destination for a single purpose (including change of mode) and by a single mode

**Stop** - a place where an activity (including change of mode) is undertaken

**Trip** - a one-way travel movement from an origin to a destination for a single purpose (including picking up and delivering passengers), but perhaps by multiple modes

**Journey to work** - the first occasion during the day when a person leaves their homeplace and arrives at their workplace (perhaps including other stops during the journey)

**Journey from work** - the last occasion during the day when a person leaves their workplace and arrives at their homeplace (perhaps including other stops during the journey)

**Trip Chain** - a sequence of trips which starts at one place and eventually returns to the same place

**Home-based Trip Chain** - a sequence of trips which starts at home and returns to home



**Work-based Trip Chain** - a sequence of trips which starts at work and returns to work

**Gross Sample** - the complete list of household addresses drawn from the sample frame

**Sample Loss** - those addresses in the Gross Sample from which a response could not reasonably be expected (examples include vacant blocks, commercial premises, demolished houses, vacant houses, and houses that were unoccupied during the period of the survey)

**Net Sample** - the Gross Sample minus the Sample Loss

**Acceptable Household Return** – as defined in the Brief for the survey, an acceptable household return is a household return that when processed (including consistency checks) and delivered to the Principal has at least 90% of all data items completed and all key data items completed. Subsequent discussions clarified the following issues with respect to acceptable household returns:

- The percentage completions described above refer to the data set post-imputation
- Household returns must have completed travel diaries for at least two-thirds of all eligible household members (excluding visitors) before they can be regarded as acceptable

**Key Data Items** – as defined in the Brief, and clarified in subsequent discussions, the following are the Key Data Items for the survey:

- Household Data
  - Household ID number
  - Date of Travel Day
  - Household Address (geocodes randomised to prevent identification)
  - Dwelling Type
  - Dwelling ownership status
  - Number of persons in household
  - Number of household vehicles (cars, motorcycles, vans/trucks)
  - Number of bicycles
- Vehicle Data
  - Vehicle ID number
  - Make and Model
  - Year of manufacture
  - Number of cylinders
  - Fuel type
  - Ownership
  - Payment of operating costs
- Person Data
  - Person ID number
  - Year of birth
  - Gender
  - Relationship within household
  - Licence holding status
  - Employment status
  - Student status
  - Other activity status
  - Occupation and industry of employment
  - Personal income



- Travel Data (based on recording travel by trip stages)
  - Start-of-day Location
  - If no travel undertaken, reason for no travel
  - Trip Stage ID number
  - Trip Stage Starting Time
  - Trip Stage Destination Arrival Time
  - Trip Stage Destination Place-Type
  - Trip Stage Destination Activity
  - Trip Stage Destination Location
  - Accompanying Household Persons
  - Mode of Transport Used
  - Vehicle Type Used
  - Number of Vehicle Occupants
  - Major Roads Used
  - Type and Location of Parking
  - Type of Public Transport Fare
  - Departure Time from Destination

**Response Rate** - the number of Acceptable Household Returns divided by the Net Sample

## **2.6 Survey Timetable**

### **2.6.1 What was the survey timetable?**

The Inception Meeting for the VISTA09 project was held on 6 March 2009. Because of the recent experience with VISTA07, a Pilot Survey was not deemed necessary for VISTA09. The main survey began on 6 July 2009 and is scheduled to run through 4 July 2010, with the final data set being handed over in November 2010. Based on the final Project Management Schedule, the Key Milestones for the project are as shown in Table 2.1.



**Table 2.1 Key Milestones for VISTA09**

Key Milestones	Start Date	Finish Date
Project Commencement	6 Mar 09	-----
Project set-up	9 Mar 09	3 Apr 09
Survey Methodology Design	9 Mar 09	28 Mar 09
Sample Design	16 Mar 09	11 Apr 09
Questionnaire (and other materials) Design	16 Mar 09	18 Apr 09
Coding and Editing Design	16 Mar 09	2 May 09
Recruitment & Training of Main Survey Field Staff	5 May 09	12 June 09
Main Survey	29 Jun 09	11 Jul 10
Main Survey Travel Days	6 Jul 09	4 Jul 10
Interim Data Submission	15 Mar 09	-----
Final Data Submission	25 Nov 10	-----
Draft Final Report Submission	25 Nov 10	-----
Project Completion	-----	30 Nov 10
Ongoing Data Support and File Generation	-----	30 Nov 11



## **3 Selection of Survey Method**

### **3.1 Survey Time Frame**

#### **3.1.1 Cross-sectional or time series?**

VISTA09 was designed as a single cross-sectional survey. However, because VISTA07 was conducted with very similar methods and population, it is expected that these two surveys could also be used as the beginning of a time series longitudinal survey (recognising that they are both cross-sectional surveys and are not a continuous panel survey).

### **3.2 Survey Technique**

#### **3.2.1 What is the General Methodology?**

The VISTA09 methodology is based on a self-completion questionnaire, which is hand-delivered to, and hand-collected from, the survey households. This process is also supplemented by telephone motivational calls, telephone and postal reminders, and telephone clarification calls. The specific steps in the process are:

- Pre-Contact Delivery Preparations
- Pre-Contact Deliveries
- Survey Pack Deliveries
- Motivational Phone Calls
- Survey Pack Pickups
- Survey Pack Processing and Reminders
- Data Coding and Editing
- Clarification Phone Calls
- Final Data Editing and Report Preparation

Flowcharts describing the overall processes are shown in Section 7.2 of this report, and are explained in detail in that section. A more complete description of field procedures is contained in the Field Staff Training Manual, the Table of Contents of which is included as Appendix A to this report.

#### **3.2.2 Why was this method selected?**

The 1994-99 VATS survey used a mailout-mailback self-completion questionnaire, and initially achieved response rates in the high-50% range. Over those six years, however, it was observed that the response rate fell to below 50%. After 1999, the VATS response rate fell well below 40%.

A similar situation had also been experienced in Perth, where TUTI was collaborating in the conduct of the Perth and Regions Travel Survey (PARTS). In that survey, a mailout-mailback survey had been used in the Pilot Survey, with disappointing response rates being obtained. A redesign of the methodology to introduce personal delivery and collection of questionnaires brought a significant increase in response rates. This design had subsequently been used in various surveys in Australia and New Zealand, with response rates between 55% and 60%.

It was therefore decided that personal delivery and collection would be adopted in VISTA07, with a view to obtaining a response rate of approximately 55%. This response rate target was chosen in



view of recent experience with the survey method in two areas of Melbourne (Darebin and Maribyrnong) which gave response rates of 49-52%. Since these two areas were consistently the worst performing in each year of VATS (with an average response rate 7% below the mean for the whole of Melbourne), it was considered that a response rate of 55% was achievable for the VISTA07 survey in Melbourne, with slightly higher response rates in the regional cities.

As it turned out, VISTA07 only obtained a response rate of 49%, necessitating extra weeks and regions to be surveyed at the end of the fieldwork period. This problem was allowed for in the design of the VISTA09 survey by adopting a more conservative estimate of response rate, to ensure that the required number of responding households was obtained.



## 4 Sample Design

### 4.1 Target Population

#### 4.1.1 What was the target population

The target population for the main VISTA09 survey was all residents in occupied private dwellings in the Melbourne Statistical Division (MSD) and in the regional LGAs of Geelong, Ballarat, Bendigo, Shepparton and Latrobe Valley on the night before the specified Travel Day.

#### 4.1.2 How was it defined and identified?

There are four aspects to the definition of the target population, which involve specification of:

- The Melbourne Statistical Division, and the regional LGAs;
- The specified Travel Day;
- Occupied Private Dwellings; and
- Residents and visitors.

The Melbourne Statistical Division, as defined by the Australian Bureau of Statistics, is an area around metropolitan Melbourne, as shown in Figure 4.1, with the regional areas shown in Figures 4.2 through 4.6. For sampling purposes, the MSD was broken up into eleven regions (see section 4.4.1 below).

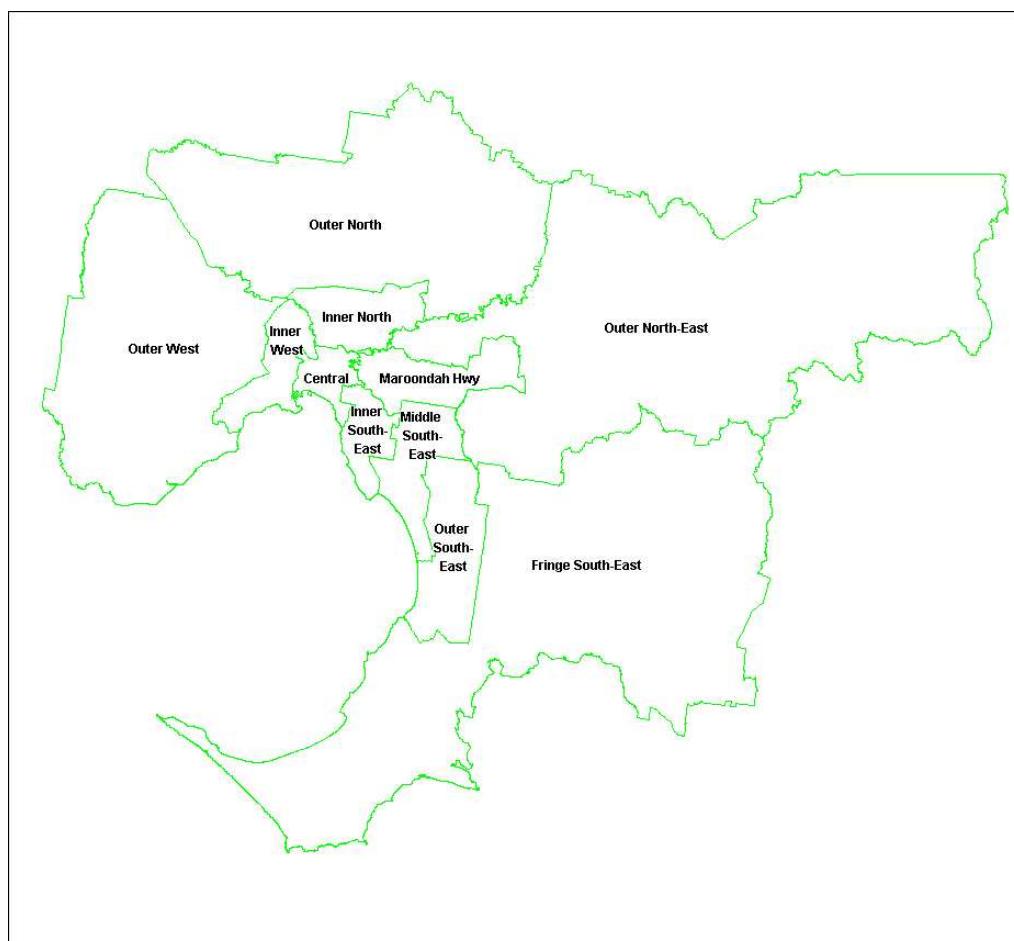


Fig 4.1 The Melbourne Statistical Division for VISTA09

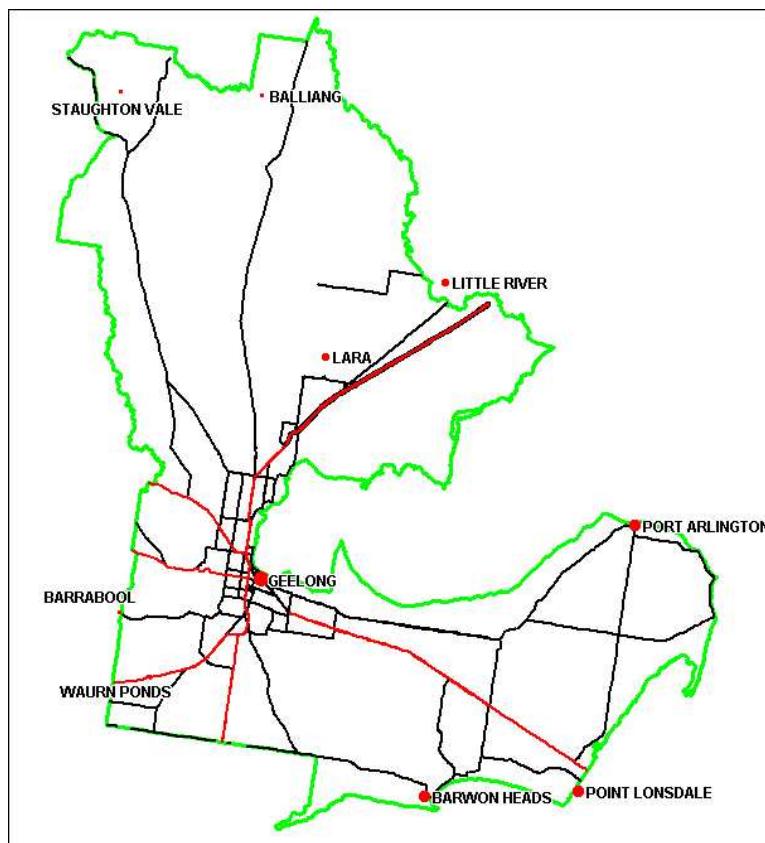


Fig 4.2 The Geelong LGA



Fig 4.3 The Ballarat LGA

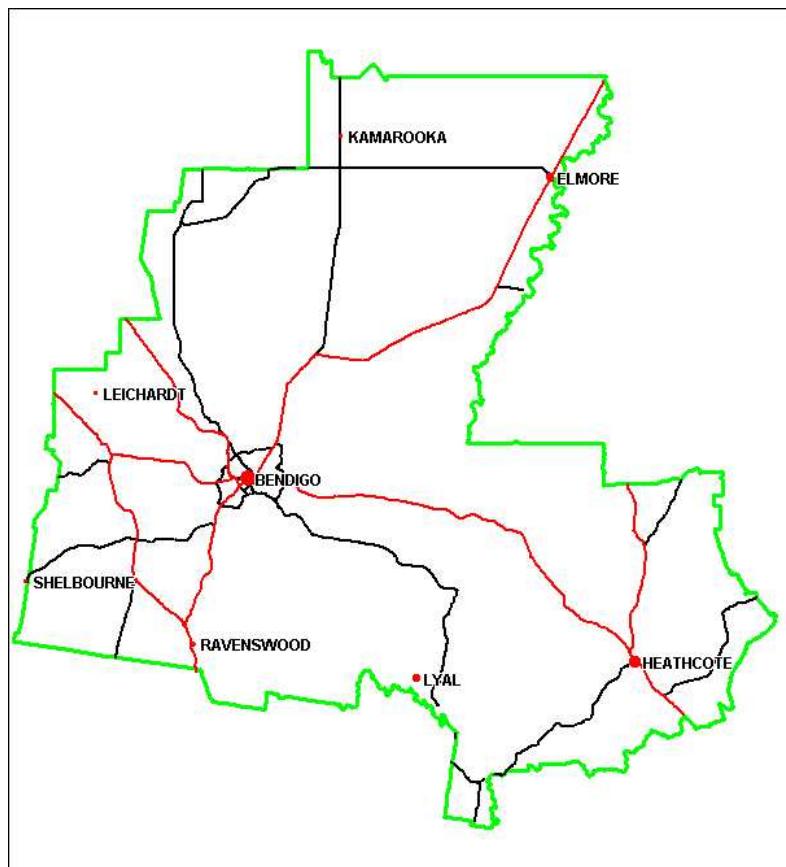


Fig 4.4 The Bendigo LGA

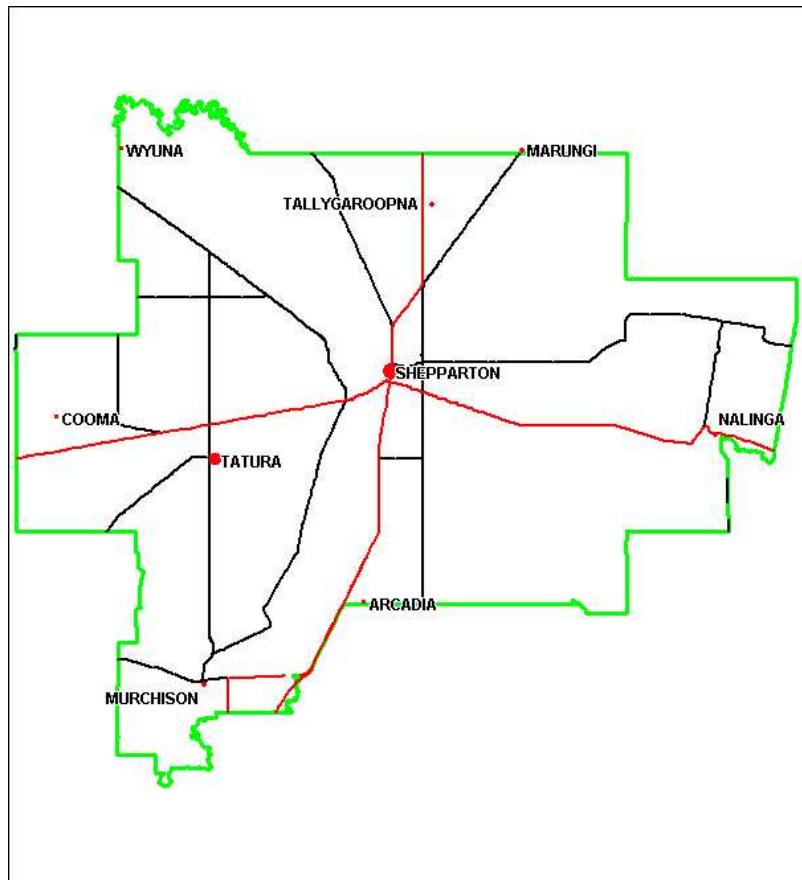
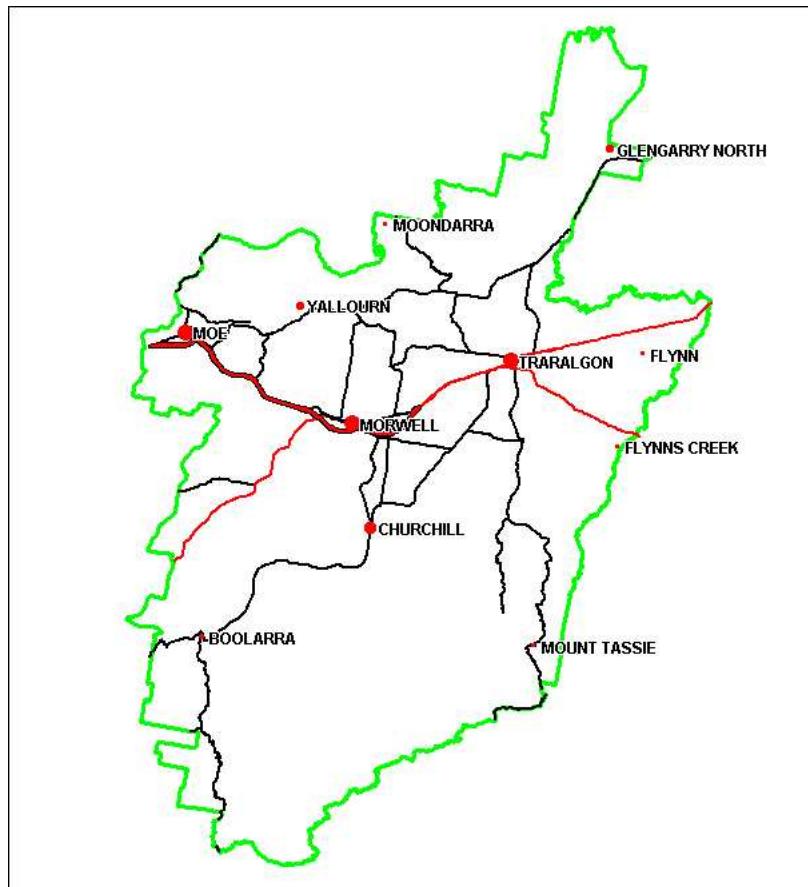


Fig 4.5 The Shepparton LGA



**Fig 4.6 The Latrobe Valley LGA**

The specified Travel Day for each household was obtained by uniformly spreading the sample of households over the 7 days of each week and the 52 weeks of the year (364 days in total) for the survey.

Occupied Private Dwellings consisted of those private residential addresses in the study area which were occupied on the night before the Travel Day.

Finally, residents were defined as those people who normally lived at the residential address (i.e. including those who were temporarily away such as people interstate for a few days, but excluding those who were usually away such as children at boarding school). Visitors were defined as those who did not normally live at the address, but who slept overnight at the address on the night before the Travel Day.

## 4.2 Sampling Units

The Sampling Units are the addresses of occupied private dwellings in the Melbourne Statistical Division and the regional city LGAs.

## 4.3 Sampling Frame

### 4.3.1 What sampling frame was used?

In some previous surveys in Melbourne (in Darebin, Maribyrnong and Moonee Valley in 2004 and 2005), the sample frame was based on list of residential addresses provided by the Local Government Authorities for each area. This was again considered for VISTA07, but was not used because of the difficulty of obtaining such lists in consistent format and in a timely manner from each of the 36 different LGAs (31 in the MSD, plus the five Regional City LGAs).



Instead, the sampling frame for VISTA07 was drawn from GIS-based lists of property addresses and cadastre property boundaries, overlaid with planning zone maps. This ensured that only properties within residential planning zone areas were selected for the sample (full details of the method of drawing the sample are provided in Section 4.4 below). Since this method worked well in VISTA07, the same sampling frame was adopted for VISTA09.

An example of these three databases is shown in Figure 4.7, where the address points (the small diamonds) are overlaid on the property boundaries, and both of these are overlaid by the planning zone map. The residential zones are shown as a tan colour, the business zones are grey, the public use zones are yellow while parks and recreation zones are dark green. The main road is shown as purple while a train line is shown as light green. Only those address points in the tan residential zones are eligible for selection.

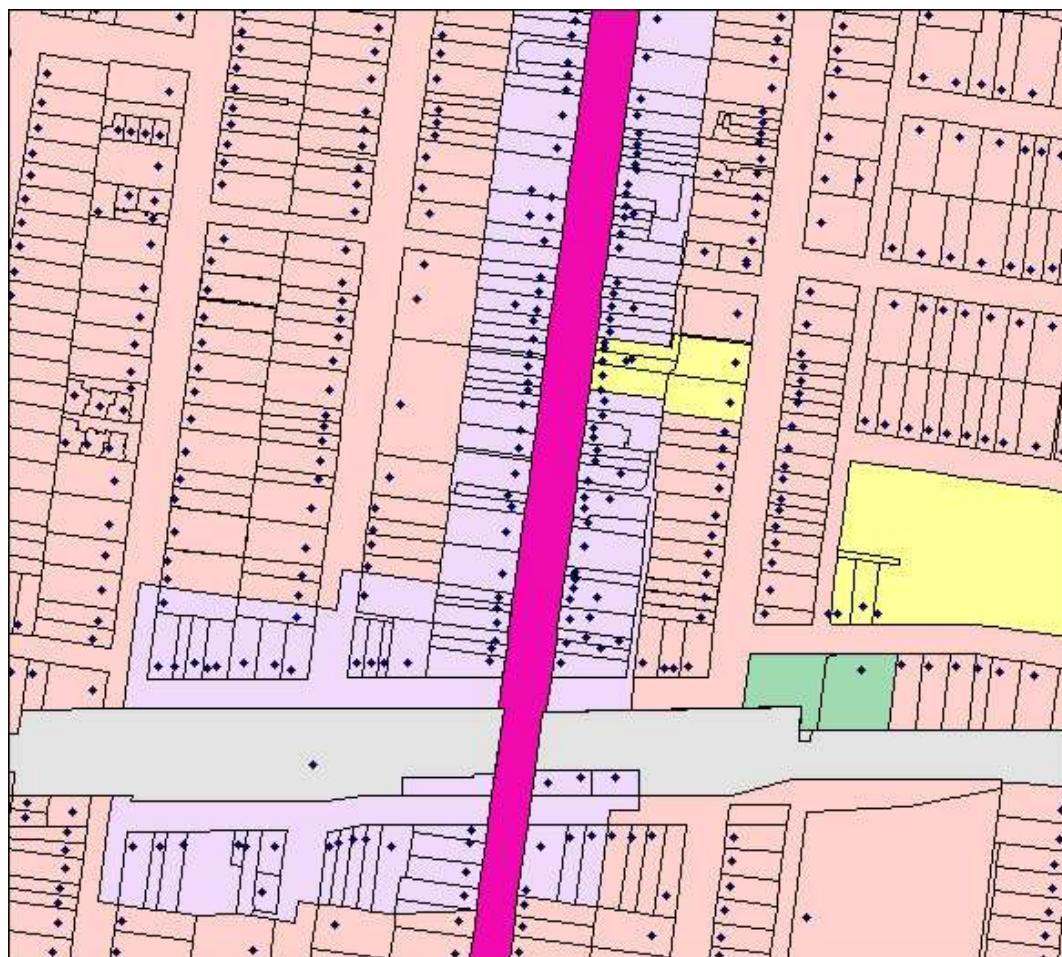


Fig 4.7 Address Points overlaid on Property Boundaries and Planning Zones

#### 4.3.2 Why was it originally compiled?

The GIS-based maps of property boundaries and planning zones have been compiled for a wide variety of purposes within the public and private sectors. The maps were sourced from the Department of Transport in MapInfo format.

#### 4.3.3 How well does it perform?

While the GIS-based maps have been used successfully for a wide variety of purposes, an independent assessment needed to be made of its usefulness as a sampling frame for a travel survey. This assessment was performed in terms of the following factors:



- **Accuracy**

- The property addresses and boundaries were found to be generally accurate, in that the points identified for each address fell within the property boundary for that address. The positioning of the address points was not always consistent across different LGAs, with some having the address point at the centroid of the property, while others had them at the front and centre of each property, next to the road pertaining to that address. The major difference, however, related to the data for multiple-dwelling properties (i.e. apartments and townhouses). Most LGAs correctly identified each multiple dwelling as a separate entity, but the method of plotting each entity varied considerably. Some LGAs provided a separate location (x-y coordinate) for each dwelling, especially for townhouses. Others gave the same coordinates for every dwelling at the same address, so that they could not be separately identified visually. Not all multiple-dwelling properties were correctly identified as containing multiple dwellings (as found when the addresses were visited in the field). The addresses were generally accurate, with two exceptions. Firstly, corner blocks sometimes gave the address in one street, when field inspection showed it belonged in the other street (as indicated by the house numbers). Secondly, some apartment and townhouse complexes that had been developed on more than one house site only had one street number in the data files (e.g. 15 Smith Street) while they had two street numbers displayed in the field (e.g. 15-17 Smith Street). This sometimes also happened in reverse.
- The planning zone maps were very accurate, because they were the statutory planning maps used by the planning authority.

- **Completeness**

- The property address and boundary maps were generally complete, although there were some properties (especially in non-urban areas) that did not have a corresponding address point. As noted above, not all apartments were individually identified in some areas.
- The planning zone maps were complete, with no areas not covered by a planning zone overlay.

- **Duplication**

- There were some apparent duplications when the same address appeared many times within the same property boundary. Usually, however, this represented different apartments on the same property, but without an identifying apartment number. Another situation of possible duplication was where two address points with different addresses lay within the one property boundary. This was often found to be a "granny flat" situation, where two households existed on the one block of land.
- There was no duplication in the Planning Zone Maps, since each location had one, and only one, overlaying planning zone designation.

- **Adequacy**

- As a means of identifying residential addresses, the method of overlaying address points on property boundaries and planning zone maps worked very well, with two provisos. Firstly, residential properties located in non-residential zones (such as residences above shops) were excluded. Secondly, some non-residential properties located in residential zones (such as corner shops, and houses converted to commercial uses) were included in the initial sample. These, however, were later excluded as part of the field check on the validity of the residential address.



- **Up-to-dateness**

- The property address and boundary maps were generally up-to-date, with the exception of some properties in newly-developing residential areas on the outskirts of the urban areas, which had not yet been included in the mapping files.
- The planning zone maps were the latest version available, and were most likely up-to-date except for any rezonings that took place during the year of the survey.

#### 4.4 Sampling Method

##### 4.4.1 What sampling method was used and why?

A multi-stage sampling process was employed whereby Census Collectors Districts (CCDs) were first sampled, and then households were sampled within the CCDs.

Before describing the VISTA09 sampling method, the method used in VISTA07 is described to better place the VISTA09 method in context. The VISTA07 sample in the Melbourne Metropolitan Area used a stratified random sampling method, whereby that Metro Area was first divided into 8 regions (as shown in Figure 4.8, corresponding to the fieldwork regions that would be used each week) with approximately equal numbers of households (such that the probability of selection for each household was approximately equal).

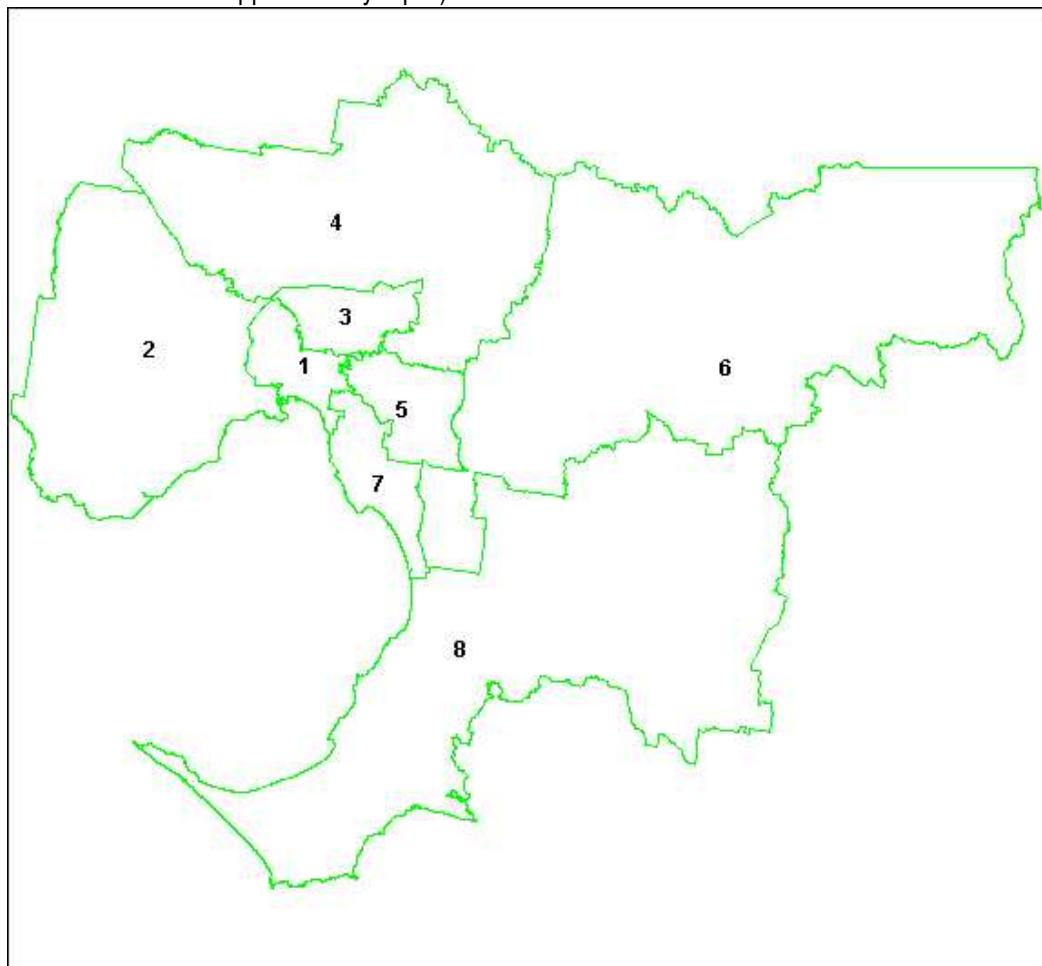


Fig 4.8 VISTA07 Regions in the Melbourne Statistical Division

The regions were composed of whole LGAs, as shown in Table 4.1.

**Table 4.1 MSD Regions in VISTA07**

<b>Region Number and Name</b>	<b>Constituent LGAs</b>	<b>Dwellings</b>
<b>1 – Inner West</b> (dwellings = 159,706)	Melbourne (C) Moonee Valley (C) Port Phillip (C) Yarra (C) Maribyrnong (C)	23948 41931 39754 30090 23983
<b>2 – Outer West</b> (dwellings = 127,362)	Hobsons Bay (C) Melton (S) Wyndham (C) Brimbank (C)	30493 16783 27808 52278
<b>3 – Inner North</b> (dwellings = 143,822)	Darebin (C) Moreland (C) Banyule (C)	49153 52391 42278
<b>4 – Outer North</b> (dwellings = 132,218)	Manningham (C) Nillumbik (S) Whittlesea (C) Hume (C)	37111 18500 35607 41000
<b>5 – Inner East</b> (dwellings = 168,739)	Monash (C) Whitehorse (C) Boroondara (C)	56880 54529 57330
<b>6 – Outer East</b> (dwellings = 176,167)	Knox (C) Maroondah (C) Yarra Ranges (S) Greater Dandenong (C)	48887 36023 47887 43370
<b>7 – Inner South</b> (dwellings = 171,773)	Glen Eira (C) Kingston (C) Stonnington (C) Bayside (C)	48873 50188 39791 32921
<b>8 – Outer South</b> (dwellings = 164,444)	Casey (C) Frankston (C) Mornington Peninsula (S) Cardinia (S)	57534 41924 49413 15573

Given that there were different numbers of CCDs in each region, this resulted in a different CCD sampling fraction for each region at this first stage of selection in VISTA07, as shown in Table 4.2.

**Table 4.2 CCD Sampling Fractions by Region in VISTA07**

<b>Region</b>	<b>Region Name</b>	<b>Total CCDs</b>	<b>Sample CCDs</b>	<b>CCD Sample Fraction</b>
1	Inner West	897	52	5.8%
2	Outer West	698	52	7.5%
3	Inner North	696	52	7.5%
4	Outer North	647	52	8.0%
5	Inner East	793	52	6.6%
6	Outer East	858	52	6.1%
7	Inner South	810	52	6.4%
8	Outer South	928	52	5.6%
	<b>MSD Total</b>	<b>6327</b>	<b>416</b>	<b>6.6%</b>

Given that there were 42 households sampled within each CCD for each of the 52 weeks of the survey, then a total of 2184 households were sampled in each region, giving the Household Sample Fractions as shown in Table 4.3. It can be seen that overall 1.40% of households were



sampled, but this varied from a low of 1.24% in the Outer Eastern Suburbs up to 1.71% in the Outer Western Suburbs.

**Table 4.3 Household Sampling Fractions by Region in VISTA07**

Region	Region Name	Total Households	Sampled Households	Household Sample Fraction
1	Inner West	159,706	2184	1.37%
2	Outer West	127,362	2184	1.71%
3	Inner North	143,822	2184	1.52%
4	Outer North	132,218	2184	1.65%
5	Inner East	168,739	2184	1.29%
6	Outer East	176,167	2184	1.24%
7	Inner South	171,773	2184	1.27%
8	Outer South	164,444	2184	1.33%
<b>MSD Total</b>		<b>1,244,231</b>	<b>17,472</b>	<b>1.40%</b>

Table 4.3 shows the number of households sampled, but over the course of the survey two factors caused the representation of each region in the final respondents to be different. Firstly, not all regions had the same response rate, with the eastern suburbs generally having higher response rates than the western suburbs. Secondly, in the second half of the survey, extra regions and weeks had to be surveyed to ensure that the final number of responding households met the contractual target, and these were not spread exactly equal across the regions. As a result, the Household Response Fractions (as a percent of total households in the region) were different in magnitude and relativities, as shown in Table 4.4. It can be seen that overall 0.90% of households were represented in the final respondents, but this varied from a low of 0.74% in the Inner Western Suburbs (including the Melbourne Central Area) up to 1.08% in the Outer Northern Suburbs.

**Table 4.4 Household Response Fractions by Region in VISTA07**

Region	Region Name	Total Households	Responding Households	Household Response Fraction
1	Inner West	159,706	1176	0.74%
2	Outer West	127,362	1108	0.87%
3	Inner North	143,822	1338	0.93%
4	Outer North	132,218	1426	1.08%
5	Inner East	168,739	1681	1.00%
6	Outer East	176,167	1609	0.91%
7	Inner South	171,773	1491	0.87%
8	Outer South	164,444	1402	0.85%
<b>MSD Total</b>		<b>1,244,231</b>	<b>11,231</b>	<b>0.90%</b>

This variation in response was even more pronounced when the regions are broken down into their constituent LGAs, as shown in Table 4.5. The low response LGAs were now Melbourne and Cardinia (both in absolute and proportion terms), while the high response areas were in the outer northern and eastern suburbs.

**Table 5 Household Response Fractions by LGA in VISTA07**

Region Number and Name	Constituent LGAs	Dwellings	Responses	Response Fraction
<b>1 – Inner West</b> (dwellings = 159,706)	Melbourne (C) Moonee Valley (C) Port Phillip (C) Yarra (C) Maribyrnong (C)	23948 41931 39754 30090 23983	120 347 264 248 220	0.50% 0.83% 0.66% 0.82% 0.92%
<b>2 – Outer West</b> (dwellings = 127,362)	Hobsons Bay (C) Melton (S) Wyndham (C) Brimbank (C)	30493 16783 27808 52278	285 182 350 330	0.93% 1.08% 1.26% 0.63%
<b>3 – Inner North</b> (dwellings = 143,822)	Darebin (C) Moreland (C) Banyule (C)	49153 52391 42278	448 467 442	0.91% 0.89% 1.05%
<b>4 – Outer North</b> (dwellings = 132,218)	Manningham (C) Nillumbik (S) Whittlesea (C) Hume (C)	37111 18500 35607 41000	460 208 406 385	1.24% 1.12% 1.14% 0.94%
<b>5 – Inner East</b> (dwellings = 168,739)	Monash (C) Whitehorse (C) Boroondara (C)	56880 54529 57330	573 596 531	1.01% 1.09% 0.93%
<b>6 – Outer East</b> (dwellings = 176,167)	Knox (C) Maroondah (C) Yarra Ranges (S) Greater Dandenong (C)	48887 36023 47887 43370	539 412 393 300	1.10% 1.14% 0.82% 0.69%
<b>7 – Inner South</b> (dwellings = 171,773)	Glen Eira (C) Kingston (C) Stonnington (C) Bayside (C)	48873 50188 39791 32921	427 446 308 328	0.87% 0.89% 0.77% 1.00%
<b>8 – Outer South</b> (dwellings = 164,444)	Casey (C) Frankston (C) Mornington Peninsula (S) Cardinia (S)	57534 41924 49413 15573	489 367 483 78	0.85% 0.88% 0.98% 0.50%

During the Preliminary Planning phase for VISTA09, concern has been expressed by the Client that these differences in response pose difficulties when trying to analyse the data on a spatial basis (although with the numbers involved in any of the LGAs, care should be taken in doing any analysis at the LGA level of disaggregation). A request was therefore made by DOT that alternative sampling strategies should be investigated, based on the likely number of responding households, and not on the number of households in the original sample. It was also requested that the investigation should also consider whether equal response fractions or equal response numbers in each LGA should be the objective. The following analysis considers those alternatives.

If the sample was based on response numbers in each LGA, rather than sample numbers in each LGA, then consideration needed to be taken of the likely response rate in each LGA. Based on the results obtained in VISTA07, Table 4.6 shows the expected response rates for each LGA in VISTA09 (note these figures are the percentage of the original sample that ends up as a full response, and does not make allowance for sample loss during the process).



Table 4.6 Percent Response by LGA

Region Number and Name	Constituent LGAs	Sample	Responses	% Response
<b>1 – Inner West</b> (dwellings = 159,706)	Melbourne (C)	419	120	29%
	Moonee Valley (C)	882	347	39%
	Port Phillip (C)	714	264	37%
	Yarra (C)	624	248	40%
	Maribyrnong (C)	585	220	38%
<b>2 – Outer West</b> (dwellings = 127,362)	Hobsons Bay (C)	672	285	42%
	Melton (S)	495	182	37%
	Wyndham (C)	894	350	39%
	Brimbank (C)	1131	330	29%
<b>3 – Inner North</b> (dwellings = 143,822)	Darebin (C)	1091	448	41%
	Moreland (C)	1136	467	41%
	Banyule (C)	961	442	46%
<b>4 – Outer North</b> (dwellings = 132,218)	Manningham (C)	838	460	55%
	Nillumbik (S)	378	208	55%
	Whittlesea (C)	1049	406	39%
	Hume (C)	961	385	40%
<b>5 – Inner East</b> (dwellings = 168,739)	Monash (C)	1045	573	55%
	Whitehorse (C)	1090	596	55%
	Boroondara (C)	1048	531	51%
<b>6 – Outer East</b> (dwellings = 176,167)	Knox (C)	966	539	56%
	Maroondah (C)	756	412	54%
	Yarra Ranges (S)	670	393	59%
	Greater Dandenong (C)	798	300	38%
<b>7 – Inner South</b> (dwellings = 171,773)	Glen Eira (C)	882	427	48%
	Kingston (C)	882	446	51%
	Stonnington (C)	754	308	41%
	Bayside (C)	630	328	52%
<b>8 – Outer South</b> (dwellings = 164,444)	Casey (C)	1048	489	47%
	Frankston (C)	798	367	46%
	Mornington Peninsula (S)	1134	483	43%
	Cardinia (S)	168	78	46%

Three sampling options are considered below:

- Sampling with probabilities proportion to size (of LGA in dwellings)
- Equal sample size in each LGA
- A compromise between the above two options

While these three options underpin the sampling methods, the actual numbers derived are also mindful of the practicalities of designing fieldwork workloads. Thus, as in VISTA07, the Metro Area is first divided into regions of approximately equal size (in terms of dwellings), where the regions consist of aggregations of whole LGAs. Each week, one field team covers each region. Therefore, a total of 52 workloads must be assigned to each region across the course of the year. This constraint forces some deviations from the strict application of the three sampling options listed above.



In all the designs described below, it is assumed that 11 regions will be needed in the MSD to obtain the required number of responses.

### **PPS Sample**

The Probabilities Proportional to Size (PPS) sample is based on the concept that each LGA will have the same proportion of households represented in the sample (or more correctly in the responding households). Table 4.7 shows the calculations for the PPS sample, as described below by reference to the columns of Table 4.7.

**Table 4.7 PPS Sample Calculations**

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
V09 Region	V09 Region#	LGA	Dwellings	V07 responses	V07 %response	V07 sample	PPS responses	PPS sample	LGA Workloads	Region Workloads	Adjusted LGA Workloads	Adjusted Region Workloads	V09 Sample	V09 Responses
Central	1	Melbourne (C)	23948	120	29%	419	192	672	16		16		672	192
	1	Port Phillip (C)	39754	264	37%	714	320	864	21		20		840	311
	1	Yarra (C)	30090	248	40%	624	242	608	14	51	16	52	672	267
Inner West	2	Moonee Valley (C)	41931	347	38%	882	337	857	20		21		882	347
	2	Maribyrnong (C)	23983	220	38%	585	193	513	12		15		630	237
	2	Hotsons Bay (C)	30493	285	42%	672	245	578	14	46	16	52	672	285
Outer West	3	Melton (S)	16783	182	37%	495	135	367	9		9		378	139
	3	Wyndham (C)	27808	350	39%	894	223	571	14		14		588	230
	3	Brimbank (C)	52278	330	29%	1131	420	1439	34	57	29	52	1218	356
Inner North	4	Darebin (C)	49153	448	41%	1091	395	962	23		25		1050	431
	4	Moreland (C)	52391	467	41%	1136	421	1024	24	47	27	52	1134	466
	5	Banyule (C)	42278	442	46%	961	340	739	18		17		714	328
Outer North	5	Whittlesea (C)	35607	406	39%	1049	286	739	18		17		714	276
	5	Hume (C)	41000	385	40%	961	330	823	20	55	18	52	756	303
	6	Boroondara (C)	57330	531	51%	1048	461	909	22		20		840	426
Maroondah Highway	6	Whitehorse (C)	54529	596	55%	1090	438	802	19		19		798	436
	6	Maroondah (C)	36023	412	54%	756	290	531	13	53	13	52	546	298
	7	Nillumbik (S)	18500	208	55%	378	149	270	6		8		336	185
Outer North-East	7	Yarra Ranges (S)	47887	393	59%	670	385	656	16		15		630	369
	7	Manningham (C)	37111	460	55%	838	298	543	13		13		546	300
	7	Knox (C)	48887	539	56%	966	393	704	17	52	16	52	672	375
Inner South-East	8	Stonnington (C)	39791	308	41%	754	320	782	19		19		798	326
	8	Glen Eira (C)	48873	427	48%	882	398	811	19		19		798	386
	8	Bayside (C)	32921	328	52%	630	265	508	12	50	14	52	588	306
Middle South-East	9	Monash (C)	56880	573	55%	1045	457	834	20		27		1134	622
	9	Kingston (C)	50188	446	51%	882	403	798	19	39	25	52	1050	531
Outer South-East	10	Greater Dandenong (C)	43370	300	38%	798	349	927	22		29		1218	458
	10	Frankston (C)	41924	367	46%	798	337	733	17	40	23	52	966	444
Fringe South-East	11	Mornington Peninsula (S)	49413	483	43%	1134	397	932	22		22		924	394
	11	Casey (C)	57534	489	47%	1048	462	991	24		23		966	451
	11	Cardinia (S)	15573	78	46%	168	125	270	6	52	7	52	294	137
<b>TOTALS</b>			1244231	11432		25499	10000	2759	542	542	572		24024	10612

Column (a): shows the names of the 11 regions for the VISTA09 sample. The LGAs have been allocated to regions such that the LGAs are contiguous, and the number of dwellings is (approximately) equal. Practical difficulties make this latter condition hard to achieve in practice.

Column (b): the number assigned to each region

Column (c): the name of the LGAs within each region

Column (d): the number of dwellings within each LGA, as per the 2006 Census

Column (e): the number of responses in VISTA07 from each region, as per Table 5

Column (f): the proportion of households responding within each LGA in VISTA07, as per Table 6

Column (g): the number of households in each LGA in the original VISTA07 sample ((e)/(f))

Column (h): the number of responses required from each LGA in VISTA09 if the total number of 10000 responses was divided among the LGAs with probabilities proportional to size (dwellings)

Column (i): the number of households required in the original VISTA09 sample in each LGA, if the same response rate is obtained in each LGA in VISTA09 as it was in VISTA07

Column (j): the number of workloads required to cover the PPS sample, given that there are 42 households in each workload

Column (k): the aggregated number of workloads in each region

Column (l): given that each region must have a total of 52 workloads across the year, the number of workloads for each LGA within a region is adjusted such that the total workloads in each region is 52



Column (m): the adjusted number of workloads in each region (must be equal to 52)

Column (n): the initial sample of households in each LGA in VISTA09 (assuming 42 households in each of the workloads shown in column (l))

Column (o): the expected number of responses in each LGA in VISTA09 (assuming the same proportion responding in each LGA as in VISTA07).

### **Equal Size Sample**

While the sample design shown in Table 4.7 allows for differential response rates, it still has a lower sample in smaller LGAs, which might still cause a problem when undertaking spatial analysis by LGA. Therefore, the second sampling plan attempts to equalize the sample size across the regions as much as possible, as shown in Table 4.8.

**Table 4.8 Equal Sample Calculations**

(a) V09 Region	(b) V09 Region#	(c) LGA	(d) Dwellings	(e) V07 responses	(f) V07 %response	(g) V07 sample	(h) PPS responses	(i) PPS sample	(j) LGA Workloads	(k) Region Workloads	(l) Adjusted LGA Workloads	(m) Adjusted Region Workloads	(n) V09 Sample	(o) V09 Responses
Central	1	Melbourne (C)	23948	120	29%	419	192	672	16		21		882	253
	1	Port Phillip (C)	39754	264	37%	714	320	864	21		16		672	248
	1	Yarra (C)	30090	248	40%	624	242	608	14		15		630	250
Inner West	2	Moonee Valley (C)	41931	347	39%	882	337	857	20		17		714	281
	2	Maribyrnong (C)	23983	220	38%	585	193	513	12		18		756	284
	2	Hobsons Bay (C)	30493	285	42%	672	245	578	14		17		714	303
Outer West	3	Melton (S)	16783	182	37%	495	135	367	9		16		672	247
	3	Wyndham (C)	27808	350	39%	894	223	571	14		16		672	263
	3	Brimbank (C)	52278	330	29%	1131	420	1439	34		57		840	245
Inner North	4	Darebin (C)	49153	448	41%	1091	395	962	23		17		714	293
	4	Moreland (C)	52391	467	41%	1136	421	1024	24		18		756	311
	4	Banyule (C)	42278	442	46%	961	340	739	18		17		714	328
Outer North	5	Whittlesea (C)	35607	406	39%	1049	286	739	18		19		798	309
	5	Hume (C)	41000	385	40%	961	330	823	20		19		798	320
	5	Nillumbik (S)	18500	208	55%	378	149	270	6		14		588	324
Maroondah Highway	6	Boroondara (C)	57330	531	51%	1048	461	909	22		18		756	383
	6	Whitehorse (C)	54529	596	55%	1090	438	802	19		17		714	390
	6	Maroondah (C)	36023	412	54%	756	290	531	13		17		714	389
Outer North-East	7	Yarra Ranges (S)	47887	393	59%	670	385	656	16		17		714	419
	7	Manningham (C)	37111	460	55%	838	298	543	13		17		714	392
	7	Knox (C)	48887	539	56%	966	393	704	17		18		756	422
Inner South-East	8	Stonnington (C)	39791	308	41%	754	320	782	19		19		798	326
	8	Glen Eira (C)	48873	427	48%	882	398	811	19		17		714	346
	8	Bayside (C)	32921	328	52%	630	265	508	12		16		672	350
Middle South-East	9	Monash (C)	56880	573	55%	1045	457	834	20		25		1050	576
	9	Kingston (C)	50188	446	51%	882	403	798	19		27		1134	573
Outer South-East	10	Greater Dandenong (C)	43370	300	38%	798	349	927	22		28		1176	442
	10	Frankston (C)	41924	367	46%	798	337	733	17		40		1008	464
Fringe South-East	11	Mornington Peninsula (S)	49413	483	43%	1134	397	932	22		18		756	322
	11	Casey (C)	57534	489	47%	1048	462	991	24		17		714	333
	11	Cardinia (S)	15573	78	46%	168	125	270	6		52		714	332
<b>TOTALS</b>			1244231	11432		25499	10000	22759	542		572		24024	10718

In Table 4.8, columns (a) through (k) are the same as in Table 7. However, the adjusted workloads in column (l) are based on trying to equalise the number of responding households across the LGAs within each region, rather than making them proportional to the number of dwellings in each LGA. In doing this, it was necessary to make a small re-allocation of LGAs to regions for regions 4, 5 and 6. However, because regions 9 and 10 have only 2 LGAs each (unavoidable since there are 3 LGAs to spread across 11 regions), the LGAs in these regions have more respondents than the LGAs in all other regions.

This sample design has the effect of generally equalising the number of respondents within each LGA (at least within each region). However, it has the effect of oversampling in the smaller LGAs and undersampling in the larger LGAs. While this gives a minimum of about 250 respondents in any LGA, it does this at the expense of moving the overall sample away from being representative of the entire Metro population. While this can be corrected during the weighting and expansion process, it does have the effect of reducing the statistical efficiency of data collection at the Metro level. It also means that the larger LGAs, where traffic may be more of a problem, will have a smaller sample size for analysis than would have been the case in the PPS sample.

### **A Compromise Sample**

To overcome some of the problems with the Equal Size Sample, a Compromise Sample design has been calculated, where the number of workloads in each LGA is a compromise between the first two sample designs. This means that smaller LGAs have a somewhat higher sample than in a PPS sample, but not as high as in an Equal Size sample. On the other hand, larger LGAs have a

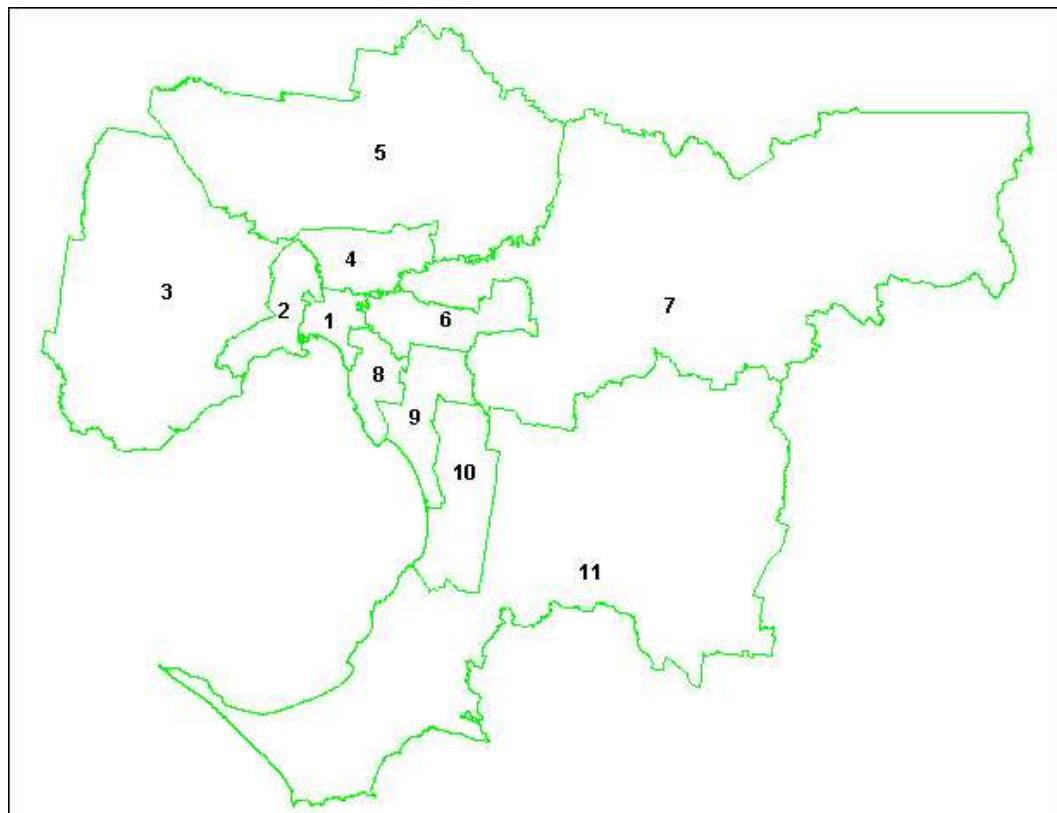


somewhat smaller sample than in a PPS sample, but not as low as in an Equal Size sample. This compromise sample is similar to the sample design employed in the VATS survey from 1993 through 1998. The Compromise Sample calculations are shown in Table 4.9.

**Table 4.9 Compromise Sample Calculations**

(a) V09 Region	(b) V09 Region#	(c) LGA	(d) Dwellings	(e) V07 responses	(f) V07 %response	(g) V07 sample	(h) PPS responses	(i) PPS sample	(j) LGA Workloads	(k) Region Workloads	(l) Adjusted LGA Workloads	(m) Adjusted Region Workloads	(n) V09 Sample	(o) V09 Responses
Central	1	Melbourne (C)	23948	120	29%	419	192	672	16	51	18	52	756	217
	1	Port Phillip (C)	39754	264	37%	714	320	864	21		18		756	280
	1	Yarra (C)	30090	248	40%	624	242	608	14		16		672	267
Inner West	2	Moonee Valley (C)	41931	347	39%	882	337	857	20	46	19	52	798	314
	2	Maribyrnong (C)	23963	220	38%	585	193	513	12		16		672	253
	2	Hotsons Bay (C)	30493	285	42%	672	245	578	14		17		714	303
Outer West	3	Melton (S)	16783	182	37%	495	135	367	9	57	13	52	546	201
	3	Wyndham (C)	27808	350	39%	894	223	571	14		15		630	247
	3	Brimbank (C)	52278	330	29%	1131	420	1439	34		24		1008	294
Inner North	4	Darebin (C)	49153	448	41%	1091	395	962	23	47	18	52	756	311
	4	Moreland (C)	52391	467	41%	1136	421	1024	24		18		756	311
	4	Banyule (C)	42278	442	46%	961	340	739	18		16		672	309
Outer North	5	Whittlesea (C)	35607	406	39%	1049	286	739	18	55	18	52	756	293
	5	Hume (C)	41000	385	40%	961	330	823	20		20		840	337
	5	Nillumbik (S)	18500	208	55%	378	149	270	6		14		588	324
Maroondah Highway	6	Boroondara (C)	57330	531	51%	1048	461	909	22	53	19	52	798	404
	6	Whitehorse (C)	54529	596	55%	1090	438	802	19		18		756	413
	6	Maroondah (C)	36023	412	54%	756	290	531	13		15		630	343
Outer North-East	7	Yarra Ranges (S)	47867	393	59%	670	365	656	16	50	17	52	714	419
	7	Manningham (C)	37111	460	55%	838	298	543	13		16		672	369
	7	Knox (C)	48887	539	56%	966	393	704	17		19		798	445
Inner South-East	8	Stonnington (C)	39791	308	41%	754	320	782	19	55	19	52	798	326
	8	Glen Eira (C)	48873	427	48%	882	393	811	19		18		756	366
	8	Bayside (C)	32921	328	52%	630	265	508	12		50		630	328
Middle South-East	9	Monash (C)	56880	573	55%	1045	457	834	20	39	26	52	1092	599
	9	Kingston (C)	50188	446	51%	882	403	798	19		39		1092	552
Outer South-East	10	Greater Dandenong (C)	43370	300	38%	798	349	927	22	40	29	52	1218	458
	10	Frankston (C)	41924	367	46%	798	337	733	17		40		966	444
Fringe South-East	11	Mornington Peninsula (S)	49413	483	43%	1134	397	932	22	6	20	52	840	358
	11	Casey (C)	57534	489	47%	1048	462	991	24		19		798	372
	11	Cardinia (S)	15573	78	46%	168	125	270	6		13		546	254
TOTALS			1244231	11432		25499	10000	22759	542	542	572	572	24024	10711

The Metro regions for the latter two sample designs are shown in Figure 4.9.



**Fig 4.9 VISTA09 Regions in the Melbourne Statistical Division**



## **Recommendations**

Option 1 (PPS) perpetuates the perceived problems with the VISTA07 sample, in that the smaller LGAs end up with too few respondents to enable any semi-meaningful spatial analysis to be performed. Option 2 (Equal Size Sampling) on the other hand probably goes too far in giving sample to the smaller LGAs at the expense of the larger LGAs, and would require more significant weighting to arrive at a representative population estimate.

Option 3 (the Compromise Sample) draws a balance between the two extremes, giving more respondents in the smaller LGAs without reducing the respondents in the larger LGAs too much. For this reason, Option 3 was adopted as the basis of the preferred sampling methodology for VISTA09.

Two further refinements requested by the client group were that the sample should be:

- Based on 2008 Estimated Resident Populations (rather than 2006 Census populations)
- Based on stratification on the basis of SLAs, rather than LGAs, so that each SLA was guaranteed of having some sampled households.

As a result of this condition the final sample of CCDs was as shown in Table 4.10. Note that the first two SLAs in Region 1 have zero CCDs sampled, because these SLAs in the Central Melbourne area will be the subject of a separate Pilot Study to determine the best way of obtaining responses from residents of high-rise apartment towers in the Central Melbourne area. The geographic distribution of the sampled CCDs is shown in Appendix B.

**Table 4.10 Final CCD Sample Numbers for VISTA09**

Region	SLA	SLA-CODE	LGA Weeks	SLA Weeks
1	Melbourne (C) - Inner	205054601	13	0
1	Melbourne (C) - S'bank-D'lands	205054605		0
1	Melbourne (C) - Remainder	205054608		13
1	Port Phillip (C) - St Kilda	205055901	22	11
1	Port Phillip (C) - West	205055902		9
1	Yarra (C) - North	205057351	17	11
1	Yarra (C) - Richmond	205057352		8
2	Moonee Valley (C) - Essendon	205105063	19	10
2	Moonee Valley (C) - West	205105065		9
2	Maribyrnong (C)	205104330	17	17
2	Hobsons Bay (C) - Altona	205103111	16	10
2	Hobsons Bay (C) - Williamstown	205103112		6
3	Melton (S) - East	205204651	14	7
3	Melton (S) Bal	205204654		7
3	Wyndham (C) - North	205207261	15	7
3	Wyndham (C) - South	205207264		4
3	Wyndham (C) - West	205207267		4
3	Brimbank (C) - Keilor	205101181	23	11
3	Brimbank (C) - Sunshine	205101182		12
4	Darebin (C) - Northcote	205301891	18	7
4	Darebin (C) - Preston	205301892		11
4	Moreland (C) - Brunswick	205255251	18	6
4	Moreland (C) - Coburg	205255252		6
4	Moreland (C) - North	205255253		6
4	Banyule (C) - Heidelberg	205300661	16	8
4	Banyule (C) - North	205300662		8
5	Whittlesea (C) - North	205407071	20	4
5	Whittlesea (C) - South-East	205407075		6
5	Whittlesea (C) - South-West	205407076		9
5	Hume (C) - Broadmeadows	205353271	21	7
5	Hume (C) - Craigieburn	205353274		9
5	Hume (C) - Sunbury	205353275		5
5	Nillumbik (S) - South	205405713	12	4
5	Nillumbik (S) - South-West	205405715		4
5	Nillumbik (S) Bal	205405718		4
6	Boroondara (C) - Camberwell N.	205451111	19	5
6	Boroondara (C) - Camberwell S.	205451112		5
6	Boroondara (C) - Hawthorn	205451113		5
6	Boroondara (C) - Kew	205451114		4
6	Whitehorse (C) - Box Hill	205506981	18	6
6	Whitehorse (C) - Nunawading E.	205506984		6
6	Whitehorse (C) - Nunawading W.	205506985		6
6	Maroondah (C) - Croydon	205554411	15	8
6	Maroondah (C) - Ringwood	205554412		7
7	Yarra Ranges (S) - Central	205607451	17	3
7	Yarra Ranges (S) - Dandenongs	205607452		3
7	Yarra Ranges (S) - Lilydale	205607453		5
7	Yarra Ranges (S) - North	205607454		3
7	Yarra Ranges (S) - Seville	205607456	16	3
7	Manningham (C) - East	205504211		6
7	Manningham (C) - West	205504214	16	10
7	Knox (C) - North-East	205553672	19	7
7	Knox (C) - North-West	205553673		6
7	Knox (C) - South	205553674		6
8	Stonnington (C) - Prahran	205056351	19	11
8	Stonnington (C) - Malvern	205656352		8
8	Glen Eira (C) - Caulfield	205652311	18	10
8	Glen Eira (C) - South	205652314		8
8	Bayside (C) - Brighton	205650911	15	8
8	Bayside (C) - South	205650912		7
9	Monash (C) - South-West	205504971	26	9
9	Monash (C) - Waverley East	205504974		9
9	Monash (C) - Waverley West	205504975		8
9	Kingston (C) - North	205653431	26	14
9	Kingston (C) - South	205653434		12
10	Gr. Dandenong (C) - Dandenong	205752671	27	13
10	Gr. Dandenong (C) Bal	205752674		14
10	Frankston (C) - East	205852171	25	12
10	Frankston (C) - West	205852174		13
11	Mornington P'sula (S) - East	205905341	18	5
11	Mornington P'sula (S) - South	205905344		7
11	Mornington P'sula (S) - West	205905345		6
11	Casey (C) - Berwick	205801612	21	5
11	Casey (C) - Cranbourne	205801613		7
11	Casey (C) - Hallam	205801616		5
11	Casey (C) - South	205801618		4
11	Cardinia (S) - North	205801452	13	4
11	Cardinia (S) - Pakenham	205801453		5
11	Cardinia (S) - South	205801454		4



From within each of the sampled CCDs, 56 residential addresses were obtained from the property address GIS-database for checking in the field. The field check of the 56 sampled addresses was to identify Sample Loss due to the following reasons:

- The address does not exist or cannot reasonably be found
- The address is vacant land, or has a residence under construction
- A residence exists, but it is clearly non-occupied
- The address is not residential (e.g. a business without an attached residence)

The Pre-Contact list of addresses was organised into 42 primary addresses and 14 replacement addresses. All 42 primary addresses had to be checked in the field. If one of these addresses proved to be Sample Loss, then the nearest address (geographically) on the replacement list was identified and was then checked to see whether it was a valid address for inclusion in the sample. As soon as 42 valid addresses had been identified, the checking of addresses was stopped.

After the checking of addresses in the field (to identify Sample Loss), the 42 valid addresses were used as the sample addresses for that CCD, and had Pre-Contact Letters delivered (by the person doing the checking of addresses). These 42 households were also scheduled for hand-delivery of Survey Packs on the following weekend. A more complete description of the field processes is provided in Section 7.2 below.

#### **4.4.2 Is the sample representative of population?**

The sample of households selected was not totally representative of the population of residential addresses, as a result of the various design compromises described in the previous section. However, because the sampling fractions are known, this non-representativity can be corrected at the weighting and expansion stage later in the process.

### **4.5 Sampling Bias**

#### **4.5.1 What sources of sample bias have been considered?**

Because random sampling processes were used at all stages of the sampling process, no major sources of sample bias were introduced or identified. The only potential sources identified were the exclusion of residences in non-residential planning zone areas, and the possible exclusion of recently established residential areas which may not yet have been recorded in the GIS maps. As noted above, the final sample of households was known to be non-representative. However, because the extent of this deviation was known (and could be corrected at the weighting and expansion stage), it was not considered to be a source of bias.

### **4.6 Sample Size and Composition**

#### **4.6.1 What was the sample size?**

The sample size was specified by the Department of Transport as 10000 acceptable household responses in the Melbourne Statistical Division, and 1000 acceptable household responses in each of the five Regional City LGAs. The Department of Planning and Community Development also provided extra funding to conduct the survey in 33 extra regions, in Activity Centre CCDs in Metropolitan Melbourne and in the Regional City areas, and in some peri-urban regions around Melbourne.



#### 4.6.2 What stratifications were used in the sampling?

The Sampling Strata employed for sampling also constituted the regions within which fieldwork teams operated. Each Regional LGA required a total of 1000 responding households, which was equivalent to 19 responding households per week per region. Given that 42 households were receiving questionnaires per week in each CCD, this meant that approximately 50% of these households would need to respond (after allowing for sample loss) in order to obtain the final number of responding households. This also suggested that if 1000 responses could be obtained from one sampling region per year in the regional areas, then about 900 could be expected from each of the MSD regions. Thus, the MSD (requiring a total of 10000 responses) would need 11 sampling regions (as described in Table 4.10).

Since each MSD region was composed of SLAs, the SLAs themselves were also used as sampling strata to ensure that the sampled CCDs within each region were spread proportionally across the constituent SLAs, as shown in Table 4.10.

### 4.7 Estimation of parameter variances

#### 4.7.1 How will variances in survey results be estimated?

Once the sample data (household, person, vehicle and travel data) have been collected from the households, various statistical descriptions of this data can be calculated. However, realising that these results are obtained from a sample, the results will be subject to a certain degree of sampling error (i.e. if a different sample had been chosen, different results would have been obtained). It is therefore necessary to calculate the level of sampling error associated with each result (this process is often referred to as Sample Variance Estimation).

In surveys that use Simple Random Sampling (SRS), a series of well-known formulas are often used to estimate Sampling Error from the survey data. However, in real-life surveys, such as VISTA09, there are often considerable deviations from the ideas of simple random sampling. Such surveys often include design refinements such as stratification, multi-stage sampling and the use of clusters as sampling units. Whilst it is theoretically possible to extend the SRS equations to account for these complexities, such extensions often become cumbersome, if not mathematically intractable. It is therefore desirable to use other methods to estimate the degree of sampling error in a sample estimate of the mean.

An attractive means of estimating Sample Variance (or sampling error) is through the techniques of Replication Sampling. There are three primary techniques available:

- Jack-knifing
  - where a subset of observations are removed and new parameter estimates are calculated. In the extreme, with a sample size of N, a total of N jack-knife replicates of sample size N-1 can be derived by systematically removing one observation at a time. The variance of results across these N jack-knife replicates is a precise estimate of the Sample Variance for the original sample.
- Bootstrapping
  - where a new sample of size N is generated by taking a sample of size N (**with replacement**) from the original sample. In this new sample, some of the original observations will be represented multiple times, while other observations will not be represented at all. This process is then repeated many times. The variance of results across these N bootstrap replicates is an estimate of the Sample Variance for the original sample. However, unlike the jack-knife estimate, it will not be a precise estimate because there are effectively an infinite number of bootstrap sample variations.



- Replicate Sub-Sampling
  - where the original sample is randomly divided into R sub-samples, each of size N/R. The variance of results across these N replicate sub-samples is a multiple of the Sample Variance for the original sample. The variance obtained is larger than the variance of the original sample, because the original sample is R times larger than any of the sub-samples. Therefore, the variance of the original sample is equal to the variance of the sub-sample results, divided by R (this means that the standard error of the original sample is the standard deviation across the sub-sample divided by the square root of R). Like the bootstrap estimate, it will not be a precise estimate because there are effectively an infinite number of replicate sub-sample variations.

The choice of method to be used depends on the circumstances under which the calculations are being made. While Jack-knifing has the advantage of being precise (in that it is possible to obtain a single result, if all possible subsets are constructed), it is very calculation intensive. For example, with a sample size of 150,000 trips (as will be the case in VISTA09), a total of 150,000 sub-samples must be constructed and have their parameters estimated. On the other hand, Replicate Sub-Sampling (with 10 sub-samples) requires that total of only 10 sub-samples must be constructed and have their parameters estimated. The trade-off is that the results obtained from Replicate Sub-Sampling are not precise, because a different allocation of the observations to the 10 sub-samples will result in a different estimate of Sample Variance.

For VISTA09, therefore, two methods of Sample Variance estimation are used. In all intermediate calculations, Replicate Sub-Sampling (with 10 sub-samples) is used to obtain an estimate of the Sample Variance. The allocation of the observations to the sub-samples is based on a random number between 0 and 9 allocated to each of the observations. This random number is then used to stratify the calculations, such that 10 values of each parameter are obtained (for example in Excel PivotTables) rather than one value of the parameter for the entire sample. For the final results, however, exhaustive Jack-knifing will be used to obtain precise estimates of the Sample Variance (but these calculations will only be performed once on the final data set).

## 4.8 Conduct of Sampling

### 4.8.1 What procedures were used in the final sampling?

The drawing of the sample addresses proceeded in three stages, as described above. In the first stage, TUTI selected CCDs within each sampling region using stratified random sampling; in the second stage, 56 addresses were randomly selected within each CCD; in the third stage, the field checks identified 42 valid residential addresses from the 56 pre-listed addresses for each CCD.

Prior to selection of the sample, the GIS Address File was overlaid on the Planning Zone file, as shown in Figure 4.2, and a Planning Zone code was assigned to each address. Those addresses with “residential” codes were then extracted to a separate file of residential addresses, with information on the full address, the LGA and CCD number, the planning zone code and the longitude/latitude coordinates of the address. A random number was also generated for each address record. For the purposes of this sampling, residential planning zone codes were defined to include:

- R1Z - Residential 1 Zone
- R2Z - Residential 1 Zone
- LDRZ – Low Density Residential Zone
- RLZ – Rural Living Zone
- RUZ - Rural Zone (to catch residences on farms in regional areas)
- MUZ – Mixed Use Zone
- TZ - Town Zone



A Pivot-Table was then created, with SLA and CCD as the stratifying variables, and number of address records as the Count variable. Each SLA/CCD record in the Pivot-Table was then assigned a random number, and the Pivot-Table was sorted within each SLA in ascending order of the random number. The number of CCDs to be selected in each SLA was determined by the fraction of dwellings in that SLA compared to the region in which it lies. For example, as shown in Table 4.10, the Moonee Valley LGA in region 2 has had 19 CCDs selected in accordance with the Compromise sampling design shown in Table 4.9. Within Moonee Valley, there are two SLAs; Essendon and West, and the 19CCDs are split across these two SLAs in rough proportion to population of the SLAs. Given that the list of CCDs within each SLA has been randomised, the first 10 CCDs within the Essendon SLA list would be selected (with the proviso that the CCD must have at least 70 residential addresses, to firstly enable 56 addresses to be drawn and to ensure that no more than 80% of addresses within the CCD are sampled), while the first 9 CCDs on the West Moonee Valley list would be selected.. The 52 selected CCDs within each region were then systematically assigned to one of the 52 survey weeks, so that each quarter of the year contained approximately the same distribution of CCDs across the SLAs.

In the second stage of sampling, the addresses within each sampled CCD were randomly sorted, and the first 56 addresses selected for inclusion in the initial sample. The selected addresses were then sorted by suburb, street name, house number and apartment number (where appropriate). The first three addresses in the list were then assigned to the Primary Sample, while the next address was assigned to the Secondary Sample (which would be used as replacement addresses if any in the Primary Sample were found to be sample loss). This assignment of four households at a time was then repeated through the remaining 52 addresses on the list of 56 addresses. This procedure ensured that the geographic distributions of the Primary and Secondary Samples were approximately the same within each CCD, thus ensuring that a nearby replacement could always be found when required.

In the third stage, field staff checked the validity of the addresses as residential properties, and identified a list of 42 valid residential addresses as the final sample (as described more fully in Section 7.2 below).

## 5 Survey Instrument Design

### 5.1 Question Content

There are four major components to the survey questionnaires; the household form, the person form, the vehicle form and the travel diary forms. These are described in detail below.

#### 5.1.1 The Household Form

The Household Form (see Appendix C) asks questions about:

- The number of people usually in the household
  - This includes people who may be temporarily away from the household (e.g. someone away on a holiday or business trip). If someone in the household usually lives somewhere else (e.g. a student at boarding school), then they should not be counted as members of the household, even though they may be members of the family. It also includes kids under 5.
- The number of visitors staying over on the night before the Travel Day
  - We ask about visitors because they also travel in the Study Areas, just like usual residents of the household. We realise that we are missing out on visitors who do not stay with residents (e.g. those who stay in hotels etc).



- The type of dwelling
  - We ask this primarily to compare with the ABS Census, to ensure that our sample is representative of the population.
- The ownership of the dwelling
  - These questions are of importance in seeing how people in different dwelling ownership groups travel, and because we know from previous experience that households with different dwelling ownership respond at different rates to surveys such as VISTA09.
- How long the household has lived at the address
  - To see how people with different lengths of residency travel, and because we know from previous experience that households with different lengths of residency respond at different rates to surveys such as VISTA09.
- The number of registered vehicles in the household
  - To cross-check on the number described on the vehicle form.
- The number of bicycles (adult and kids bikes) in the household
  - To determine the extent to which households have access to bicycles of different types.
- The number of bicycles (adult and kids bikes) used in the past 14 days
  - To determine the extent to which households make use of bicycles of different types.
- A contact phone number for the household
  - This is so we can contact the household in case we need to clarify any of their answers.

### **5.1.2 The Person Form**

The Person Form (see Appendix D) asks questions of all household residents (not Visitors) about:

- The person's first name
  - We only ask this so that we can make sure that we can link this person to their Travel Diary. It's much easier for them to get their Person Number wrong than their name, which is why we also ask them to write their name on the front of their Travel Diary. This information is not recorded in the permanent computer files of the data.
- The Month and Year of birth
  - A basic demographic variable that can be used to explore differences in travel behaviour. Normally, only the Year of Birth is requested from respondents, but VicRoads wanted a more precise age, especially for those who might hold Probationary driver's licences
- Their gender
  - A basic demographic variable that can be used to explore differences in travel behaviour.
- Their relationship to Person 1 (the oldest resident)
  - So that we can work out the structure of the household (which can be used to explore household travel decisions).



- Their licence holding status
  - A basic demographic variable that can be used to explore differences in travel behaviour.
- Whether they are currently employed
  - A basic demographic variable that can be used to explore differences in travel behaviour.
- Whether they are currently studying
  - A basic demographic variable that can be used to explore differences in travel behaviour.
- What activities they are engaged in if not employed or studying
  - A basic demographic variable that can be used to explore differences in travel behaviour.
- If employed, what work arrangements do they have
  - To understand better the flexibility of travel for work trips.
- If employed, what type of employment do they have
  - So that we can compare with the ABS Census data.
- Their occupation
  - So that we can compare with the ABS Census data.
- Their industry of employment
  - So that we can compare with the ABS Census data.

### **5.1.3 The Vehicle Form**

The Vehicle Form (see Appendix E) asks questions about all household vehicles:

- The type of vehicle
  - To obtain an overall breakdown on vehicle ownership, and as a lead-in to the following questions.
- The make and model of the vehicle
  - This enables information to be gathered about vehicle characteristics that could be useful in environmental modelling.
- The year of manufacture
  - To enable calculation of vehicle fleet age and turnover.
- The type of fuel used
  - For environmental assessments.
- The number of cylinders
  - To identify the precise vehicle model, and to calculate fuel consumption rates.
- Who pays running costs?
  - To understand who pays for the costs of operating the vehicle, and hence the sensitivity of the use of the vehicle to road pricing policies.



### 5.1.4 The Travel Diary Form

The Travel Diary form (see Appendix F) has four components:

- Page 1 – the cover page
- The Stops pages (2-14)
- Page 15 – the Income question, and completion details
- Page 16 – the Comments sections

Page 1 of the Travel Diary asks questions about:

- The identity of the person
  - We ask for their person number (from the red person form) and their name so that we can definitely link this Travel Diary to the correct person.
- The date of their Travel Day
  - The day of the week of their Travel Day is printed on the form, but we need them to tell us which date it was that they are reporting about.
- Where they were at 4.00a.m. on the Travel Day
  - We need to know where they started their day, so that we can make sense of the rest of their daily travel patterns.
- Whether they undertook any travel on the Travel Day
  - Not all people travel every day; therefore, we start by asking whether they did any travel at all.
- If so, what time did they start travelling
  - The timing of travel is important as it affects the build-up of peak periods.
- If not, why did they not travel
  - Given that about 15% of people don't travel on any given day, we want to understand the variety of reasons why people don't travel.
- If they didn't travel, when did they last travel
  - This lets us know whether their "non-travel" was an infrequent or a regular occurrence.

The Stops pages (pages 2-14) are all of the same basic format. A Stop is our name for a place that someone goes to as they travel around. Each Stop page asks questions about:

- What was the nature of the Stop
  - The question asks for a description of the type of place that the person went to, if possible accompanied by the name of that place (e.g. the name of a shop).
- Where was the Stop
  - In order to calculate travel distances, and to understand the geographic spread of travel, we need to know where people went to. We do this by assigning x-y coordinates to all the places that people go to. In order to do this, we need information from which it would be possible to find the location on a map. For this purpose a full street address would be best, but realising that most people don't know the full street address of everywhere they go, we offer a variety of ways of saying where they go to.



- Who (from the household) travelled with the person to the Stop
  - Since we don't ask kids under 5 to fill in Travel Diaries, this question is asked so that we can reconstruct their travel patterns for the large number of trips where they are accompanied by someone else in the household. It can be used as a check on completeness of travel for other members of the household including the number of household members travelling together in a private vehicle.
- Why they went to the Stop
  - This question gives us information on the reasons why people travel. We have provided categories for some of these reasons, but we obtain most of our information from people's responses to the "other reason" answer at the bottom of the question.
- How they got to the Stop
  - This is concerned with what method of transport they use to get to their Stop. In addition to a broad answer (private vehicle, walking, bicycle etc) there are some specific questions for those who use a private vehicle.
- Details of any Private Vehicle Travel
  - For those who use a private vehicle, there are a number of additional questions:
    - What type of vehicle was used, to cross-check on vehicle information obtained from the Vehicle Form.
    - Whether the person was the driver or a passenger.
    - How many people, including the driver, were in the vehicle.
    - Whether the vehicle used was from the household and listed on the red Household form (this allows us to determine how each type of vehicle is actually used)
    - What major roads they used on the trip, so that we can get an idea of the route they used
    - Whether the vehicle was parked and, if so, where (not all vehicles are parked at the end of a trip, such as when a passenger is simply dropped off and the vehicle continues on without parking)
    - If the vehicle was parked, was a parking fee paid and, if so, by whom?
    - We do not ask for the full geographic details of exactly where the vehicle was parked, but rather we ask how far away (in minutes) it was parked from the final destination. This gives us some information about the accessibility of parking locations to final destinations.
- When they arrived at the Stop
  - We would like this information as accurately as possible (but we realise that many people round off to the nearest 5 minutes). The timing of travel is important for analysis of travel demand throughout the day.
- If they made more travel, when did they leave the Stop
  - Finally, we ask if the person made any more stops after this one, and if so when did they leave this Stop. Importantly, we want to know how and when they came home after their outing.

Page 15 of the Travel Diary is mainly devoted to a question about personal income. Some people are a bit sensitive about answering income questions, and so we put it at the end of the Travel



Diary for two reasons. Firstly, the Travel Diary is about their personal travel patterns, so it makes sense to ask about their personal income in the same book. Secondly, having answered all the travel questions, answering one more question about income is not as much of an extra burden. The income question is exactly the same as the ABS 2006 Census question, so that we are able to compare our results with theirs. We ask about income because we know that people with different incomes travel in different ways, and this can be a significant consideration in transport planning and policy development.

Page 15 also asks some questions about who actually completed the Travel Diary, and when it was completed. This information is used later in the calculation of Non-Reported Trip weights (see Section 10.3).

Page 16 of the Travel Diary allows the respondents to tell us in their own words what they think about the transport system, and what they think about the survey. Positive and negative comments are welcomed on both topics. The opportunity to provide open feedback was included both for the valuable insights it provided, and because such an opportunity is known to increase response rates to the entire survey.

## **5.2 Trip Recording Techniques**

### **5.2.1 What techniques were used for recording travel?**

As shown on the Travel Diary form in Appendix F, the details of travel were obtained within the context of an out-of-home activity framework. That is, respondents were asked where they participated in their next out-of-home activity, and only after that information was obtained were questions about how they travelled to that activity asked. This method has been found easier for respondents to trace through their day, recording their activities and then their travel. The travel is also recorded in the form of trip stages, where a “trip stage” is a piece of travel with a single purpose and mode (where the purpose may simply be to ‘change modes’).

## **5.3 Physical Nature of Forms**

### **5.3.1 Cover letters**

Two different Cover Letters were used in the survey. The first was the Pre-Contact Letter that was delivered to all households in the sample in the week prior to them receiving their questionnaires. This letter was on Department of Transport letterhead paper, in a Department of Transport envelope. An example of the Pre-Contact letter is shown in Appendix G.

The second cover letter was enclosed with the questionnaire materials delivered to the survey households. This letter was on VISTA09 letterhead paper, signed by the Travel Survey Manager from TUTI. An example of this Cover Letter is shown in Appendix H.

### **5.3.2 Brochures**

To explain the survey to potential respondents, a double-sided, three-fold A4 brochure was produced, and included with the Pre-Contact Letter delivered to all sampled households. A copy of this brochure is shown in Appendix I (note that this brochure was double-sided and three-fold, and so the pages that appear in Appendix I seem to be out of order).

### **5.3.3 Questionnaires**

There were two types of questionnaire in each Survey Pack. The first was a folded A3 sheet (making a 4-page booklet) used for the Household/Person/Vehicle questionnaires (see Appendices C, D, and E). These questionnaires were printed in landscape layout in tones of red on 80 gsm paper. The second questionnaire was a Travel Diary booklet for each member of the household.



This booklet was a 16-page stapled document, printed in portrait layout in tones of blue on 80 gsm paper (see Appendix F).

### **5.3.4 We-Missed-You Postcards**

Four different types of postcard were printed (on 200 gsm cardstock) for use when deliveries and collections were made at households. Each postcard had the same design on the front, but different messages on the back (see Appendix J). The first green postcard was used at the delivery stage if contact was not made with a member of the household. The postcard was left attached to the Survey Pack plastic envelope that was left at the doorstep or in the mailbox. A different postcard was used for deliveries for weekday Travel Day households (which would be collected on Sundays) and weekend Travel Day households (which would be collected on Mondays). The second grey postcard was used at the collection stage on Sundays if contact was not made with the householder. It informed the householder that the field staff person would be in the area again on Monday and would make another attempt to contact them for collection of the questionnaires. A blue postcard was used at the collection stage on Monday if contact was not made with a member of the household. The postcard was left attached to a Reply-Paid-Envelope that was left at the doorstep or in the mailbox for the household to return their completed questionnaires in the mail. The fourth yellow postcard was also used at the collection stage, but was left at the household when a collection was made from the doorstep. The postcard was left in exactly the same place from which the survey pack was collected, to let the respondent know that we had indeed picked up the survey pack that they had left out for us.

### **5.3.5 Reminder Letters**

On the Thursday after completed questionnaires were collected from households on the weekend, those households that had not yet returned their questionnaires in the mail were attempted to be phoned. Those that could not be contacted by phone were sent a Reminder Letter on the Friday. An example of this Reminder Letter is shown in Appendix K.

## **5.4 Question Instructions**

### **5.4.1 What instructions were provided for respondents?**

While the questionnaires were designed to be as self-explanatory as possible, instructions were given to respondents in five ways, namely:

- Verbally at the Doorstep
  - For those households spoken to personally at the delivery stage, field staff gave a brief description of the survey and what was required from the members of the household.
- Cover Letter
  - The Cover Letter included with each Survey Pack (see Appendix H) explained what the household should do to complete the survey.
- Bottom of Vehicle Form
  - On the bottom of the red Vehicle Form (see Appendix E), there were instructions for what to do after the Red Form was completed.
- Example Booklet
  - The most involved part of the survey for the respondent was the completion of the Travel Diaries. For this reason, a detailed Example Booklet was prepared (see Appendix L) and included in each Survey Pack. This booklet took a case



study of a person with a typical (but more complex than average) travel day, and showed how that person would record their travel day activities in the Travel Diary.

- Back of Survey Pack Envelope
  - On the back of the Survey Pack plastic envelope (see Appendix P), there were instructions for what to do before returning the completed questionnaires.

Despite all these instructions, it was realised that most respondents don't actually read the instructions, and hence the questionnaires still needed to be as self-explanatory as possible.

#### **5.4.2 What instructions were provided for field staff?**

The field staff going into the field to deliver and collect questionnaires were given three types of instructions. At the Training Sessions, they were given a Training Folder which contained copies of all the survey materials, plus copies of the PowerPoint slides used in the Training Session. They were also given a copy of the Field Staff Training Manual which described all the details of the procedures to be followed in the field. This Manual also contained a set of Frequently Asked Questions (and Answers) which field staff were expected to understand and learn by heart before going into the field. Finally, the major steps involved in the three field stages (Pre-Contact Letter Delivery, Survey Pack Delivery and Survey Pack Pickup) were summarised from the Field Staff Training Manual and printed on a single double-sided A4 sheet, which was then laminated and included in the field staff satchels that they took into the field (see Appendix M). Slightly different versions of the Summaries were produced for metropolitan and regional field staff teams.

Two de-briefing and re-training sessions were also held for all field staff during the 12 months of the survey.

## **6 Pilot Survey**

### **6.1 Nature of Pilot Survey**

#### **6.1.1 What was the nature of the Pilot Survey?**

Because the contractors had recent experience with similar survey designs in Victoria (VISTA07) and in other states of Australia, a full-scale Pilot Survey was not conducted for the main VISTA09 survey. The questionnaire materials had been fully tested in the same area, while the survey procedures were well known by the survey supervisors.

However, because of the low number of responses in the Central Melbourne area (CBD, Southbank, Docklands) in VISTA07, the DOT was interested in testing alternative methodologies in the Central Melbourne area in VISTA09 to see whether an increase in responses from this area could be obtained. This was to be undertaken in the form of a Pilot Survey, the results of which could be incorporated into the final data set if the data was compatible with that obtained in the main VISTA09 survey. The design and results of this Pilot Survey are described in this section.



## 7 Survey Administration

### 7.1 Training Procedures

#### 7.1.1 Questionnaire Delivery and Pickup field staff

A full day Training Session was held on Monday 29th June 2009 for all field staff working on the Main Survey. At the Training Sessions, all field staff were given a Training Folder which contained copies of all the survey materials, plus copies of the PowerPoint slides used in the Training Session. They were also given a copy of the Field Staff Training Manual which described all the details of the procedures to be followed in the field. This Manual also contained a set of Frequently Asked Questions (and Answers) which field staff were expected to understand and learn by heart before going into the field. Finally, the major steps involved in the three field stages (Pre-Contact Letter delivery, Survey Pack Delivery and Survey Pack Pickup) were abstracted from the Field Staff Training Manual and printed on a single double-sided A4 sheet, which was then laminated and included in the field staff satchels that they took into the field (see Appendix M).

#### 7.1.2 Kew Office Staff

A separate field office for the project was established at 53 Molesworth Street, Kew (this office was moved in December 2009 to 1/1 Oxley Road, Hawthorn). All Office Staff working on the project also attended the field staff Training Session, and received all the training materials.

#### 7.1.3 Data Coders, Editors and Clarification Call Interviewers

All I-view staff working on the data coding, editing or clarification calls attended a half-day data processing staff Training Session. At the Training Sessions, all data entry staff were given a Training Folder which contained copies of all the survey materials, plus copies of the PowerPoint slides used in the Training Session. They were also given a copy of the Field Staff Training Manual which described all the details of the procedures to be followed in the field. In addition, they were given instructions on the Speedit computer program developed by TUTI for data entry, geocoding and clarification calls, and then undertook a supervised practice session where they learned the details of operating the program. This supervision continued for about 2 days, until the data entry staff were completely confident with operation of Speedit. For the remainder of the project, the Senior Data Supervisor (Mr. Amryn Simmons) oversaw all data entry operations on a daily basis, and also checked every questionnaire entered via Speedit. The co-programmer of Speedit (Mr. David Richardson) was also on-hand in the data entry room on a daily basis to rectify any programming issues, and monitor outputs from the program.

### 7.2 Survey Procedures

The VISTA09 methodology is based on a self-completion questionnaire, which is hand-delivered to, and hand-collected from, the survey households. This process is also supplemented by telephone motivational calls, telephone and postal reminders, and telephone clarification calls. Flowcharts describing the overall processes are shown in Figures 7.1 through 7.9, and are explained in the following sections. A more complete description of field procedures is contained in the Field Staff Training Manual.

#### 7.2.1 Pre-Contact Delivery Preparations

This phase of the survey included the selection of the sample from the GIS sample frame, the preparation of maps, control sheets and pre-contact letters, and the assembly of Pre-Contact Letter (PCL) packages for use by the field staff.



### 7.2.2 Pre-Contact Deliveries

This phase of the survey included finding the sampled household, checking the address, selecting a replacement household (if necessary), delivering the Pre-Contact Letter, recording the outcomes on the PCL Control Sheet (see Appendix N for an example) and returning the PCL materials to the survey office. All Pre-Contact deliveries were made on the Tuesday of the week preceding the Travel Day for each household.

### 7.2.3 Survey Pack Delivery Preparations

This phase of the survey included entering the data recorded on the PCL Control Sheets onto spreadsheets and then importing them into the Admin Program (see Section 7.2.10 for a brief overview of the Admin Program). Any changes and additions to the location of households on the maps provided to field staff were also recorded, and the maps amended in MapInfo. The Survey Pack Delivery (SPD) Control Sheets and cover letters were then prepared and the Survey Packs to be delivered were assembled.

### 7.2.4 Survey Pack Deliveries

This phase of the survey included re-finding the sampled household, then attempting to make contact with a member of the household (with up to four attempts over two days). All Survey Pack Deliveries were made on the Saturday and Sunday preceding the Travel Day for each household. If contact was made on any of the attempts, the survey was explained and the Survey Pack delivered (unless a refusal was encountered). If contact was not made, then the Survey Pack was left at the household with a We-Missed-You postcard. If the Survey Pack was undeliverable (for example, because dogs prevented access to the house), then the Survey Pack was brought back to the Survey Office and mailed to the household. If an unconvertible refusal was encountered, the field staff member immediately asked the person two short questions in an attempt to learn more about the non-respondents. The field staff also marked the location of any households that were still not on the delivery maps, recorded the outcomes on the SPD Control Sheet (see Appendix O for an example) and returned the SPD materials to the survey office. All questionnaire materials were delivered to households in a special prepared sealable plastic envelope (made of recycled plastic film), with the survey name printed on the front and some reminders for the household printed on the back (see Appendix P for images of the front and back of the envelope). This waterproof envelope ensured that questionnaires left at households reached them in good condition, and that completed questionnaires left out for collection reached the Survey Office in good condition.

### 7.2.5 Survey Pack Pickup Preparations

This phase of the survey included entering the data recorded on the SPD Control Sheets onto spreadsheets and then importing them into the Admin Program. From this data, the Motivational Call call-sheets for that week were prepared, as were the SPP Control Sheets.

### 7.2.6 Survey Pack Pickups

This phase of the survey included re-finding the sampled household, and checking to see whether the Survey Pack had been left out for collection. If it was not visible, an attempt was made to contact the householder to see whether the survey had been completed. Depending on the response, the survey pack was either collected (and a yellow postcard left to indicate it had been collected) or a reply-paid envelope was left for the household to return the questionnaires in the mail. Once again, if a refusal was encountered, the two non-response questions were immediately asked. For collected Survey Packs, the field staff checked them for completeness (after they had left the household) and checked back with the household if they were found to be incomplete (in terms of the expected number of completed diaries). The field staff recorded the outcomes on the SPP Control Sheet (see Appendix Q for an example) and returned the SPP materials to the survey



office. The Survey Pack Pickups were performed on a Sunday for those households with a weekday Travel Day, and on a Monday for those households with a weekend Travel Day.

### **7.2.7 Survey Pack Processing and Reminders**

This phase of the survey included opening of all the collected Survey Packs to see whether they contained completed or blank survey forms, and to recycle unused materials. All fully completed Survey packs were then sent to the Data Entry room for data entry and editing. All incomplete Survey Packs (e.g. those with missing diaries) were attempted to be made complete by means of phone calls to the households to determine why there were missing components. The data recorded on the SPP Control Sheets was input onto spreadsheets and imported into the HotSpot Admin Program. Any Survey Packs returned through the mail during the previous week were logged into HotSpot by ID number for completed and blank forms. On the Thursday of each week, all households that had not yet responded, and for which we had a phone number, were phoned to remind them to return their Survey Packs, or, if they had not completed the survey, to answer the two non-response questions. Non-responding households which could not be contacted by phone on Thursday night were sent a mailed reminder on Friday. Each week a complete backup of the HotSpot data was made and sent to TUTI for safekeeping and further analysis.

### **7.2.8 Data Entry and Editing**

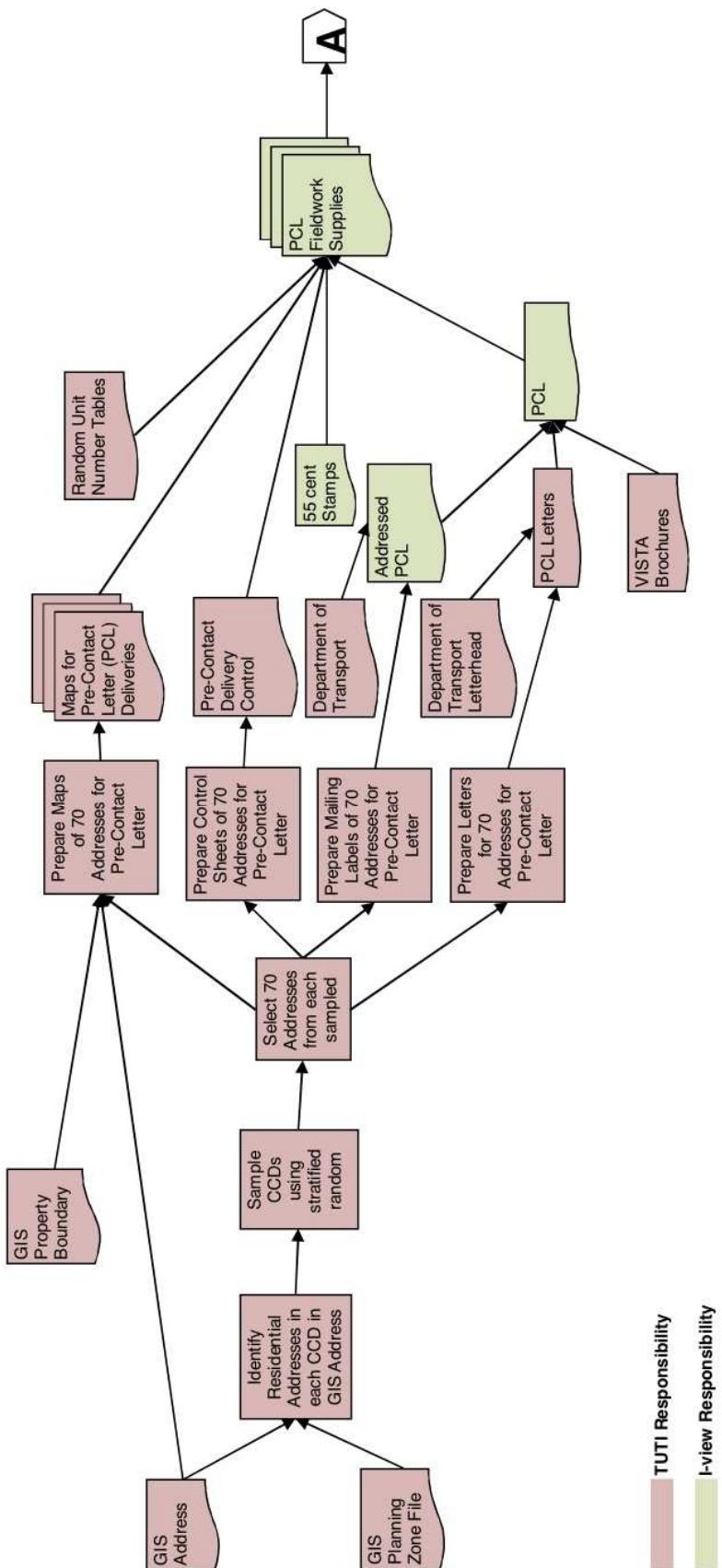
Once the completed Survey Packs arrived in the data entry room at Kew, the data from the questionnaires was entered into computer files using the Speedit program (see Section 8.5). As the data was entered, editing routines within Speedit were run to identify any data that needed clarification (i.e. missing or inconsistent responses). The clarification questions identified during this stage were then transferred to phone interviewers who later contacted the households to obtain or clarify the missing or inconsistent information. Once the data had been clarified and recombined with the original data, the data files were sent to a small team of senior validation editors, who checked that the data entered was consistent with that on the physical forms and logically consistent (see Section 8.6.4). Any problems were referred back to the original data enterers for correction (and education). Once the data was determined to be clean after validation, it was flagged as validated VISTA09 data. Every month, the validated data was extracted and sent to TUTI for final editing.

### **7.2.9 Final Data Editing and Report Preparation**

The two data sets sent to TUTI on a regular basis were the Admin data from HotSpot and the Survey data from Speedit. The HotSpot data was analysed to monitor the performance of the survey fieldwork procedures in terms of Pre-Contact Letter deliveries, Survey Pack Deliveries, Survey Pack Pickups and overall Response Rates. These performance indices formed the basis of an Administrative Procedures report. The Kew Office manager also sent a weekly file containing details of expenditures incurred in the Kew Office each week. This, along with time and kilometre data on the Control Sheets entered into HotSpot, formed the basis for the calculation of field staff payrolls each week. The Survey data extracted from Speedit was imported into the final database formats and then checked for omissions, errors and inconsistencies. The Travel Diaries of the under-five year olds were then reconstructed from the other travel diaries, and then the Trip file was created. By comparing the sample data with the ABS 2006 Census data, demographic weights were then calculated. Non-reported trip weights were also calculated, based on who completed the trip diary and when it was completed.



Pre-Contact Delivery Preparations



## **Fig 7.1 Pre-Contact Delivery Preparations**



## Pre-Contact Deliveries

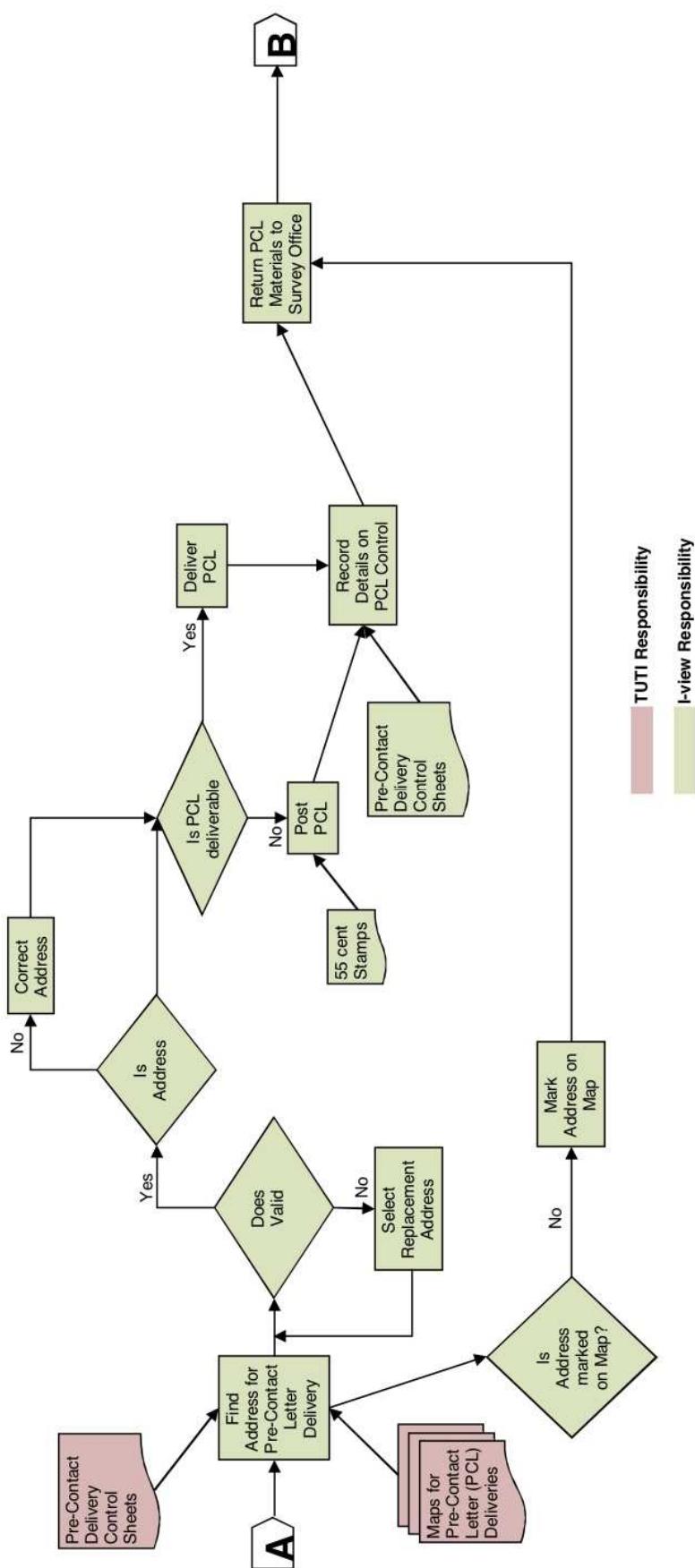


Fig 7.2 Pre-Contact Deliveries



## Survey Pack Delivery Preparations

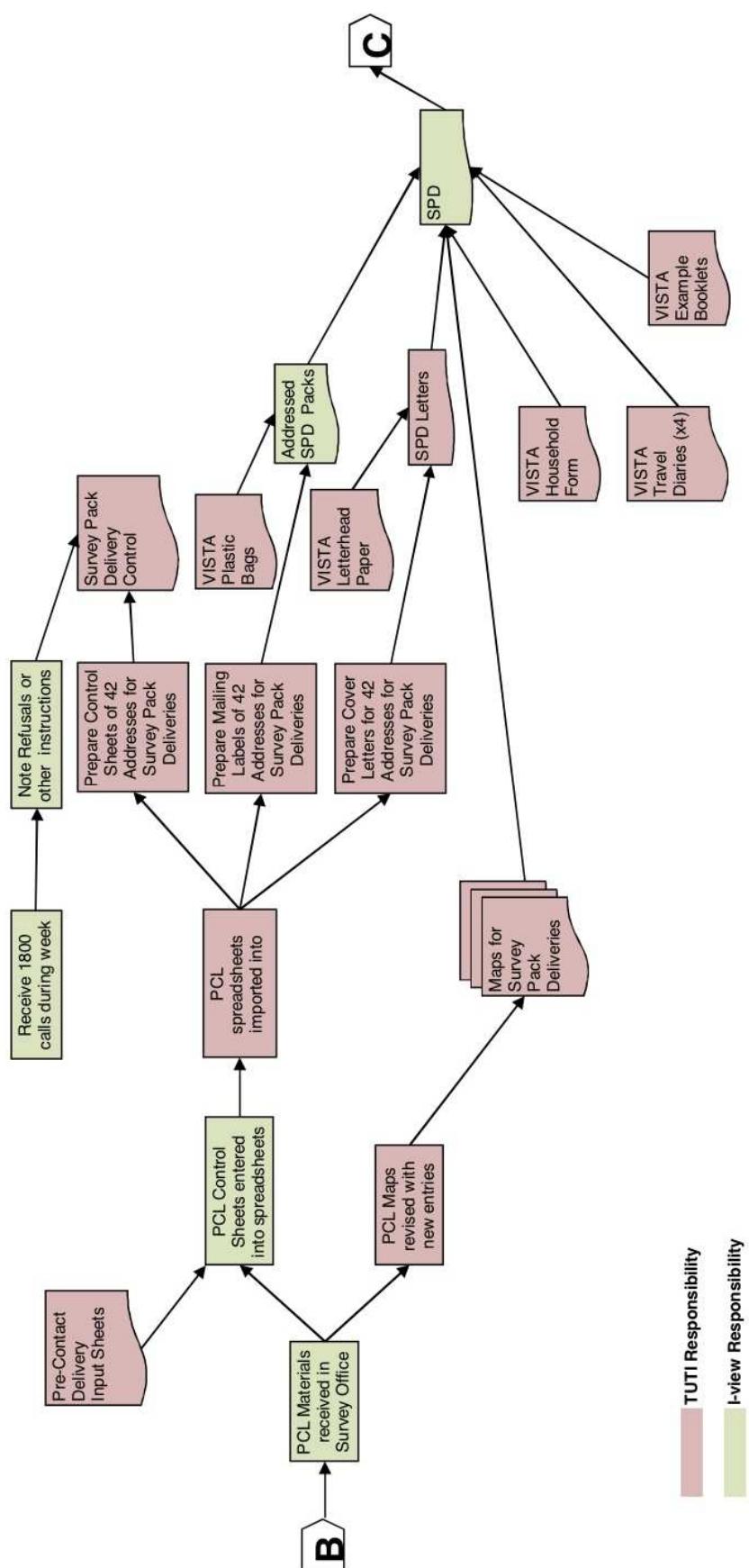


Fig 7.3 Survey Pack Delivery Preparations



## Survey Pack Deliveries

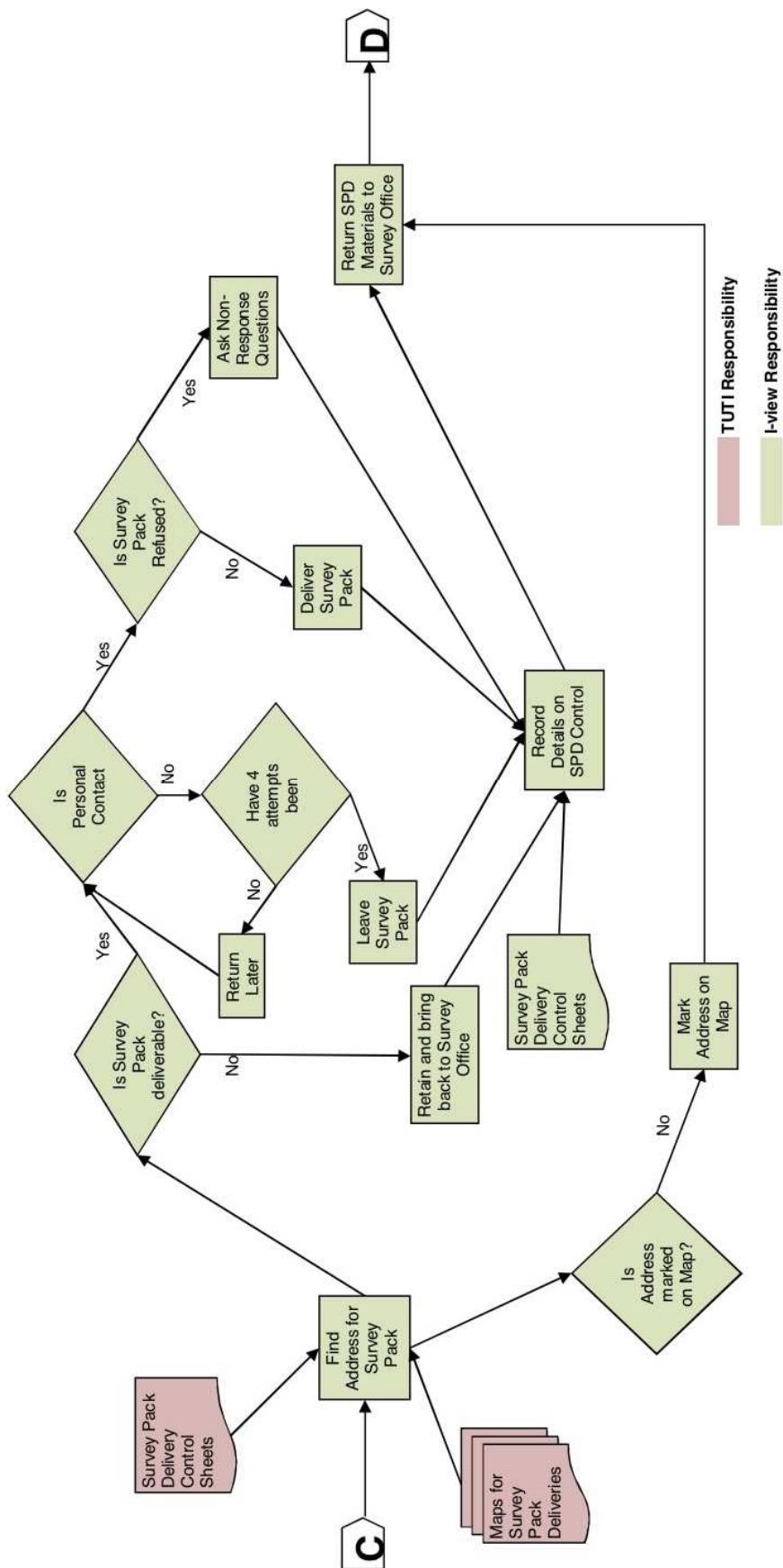


Fig 7.4 Survey Pack Deliveries



## Survey Pack Pickup Preparations

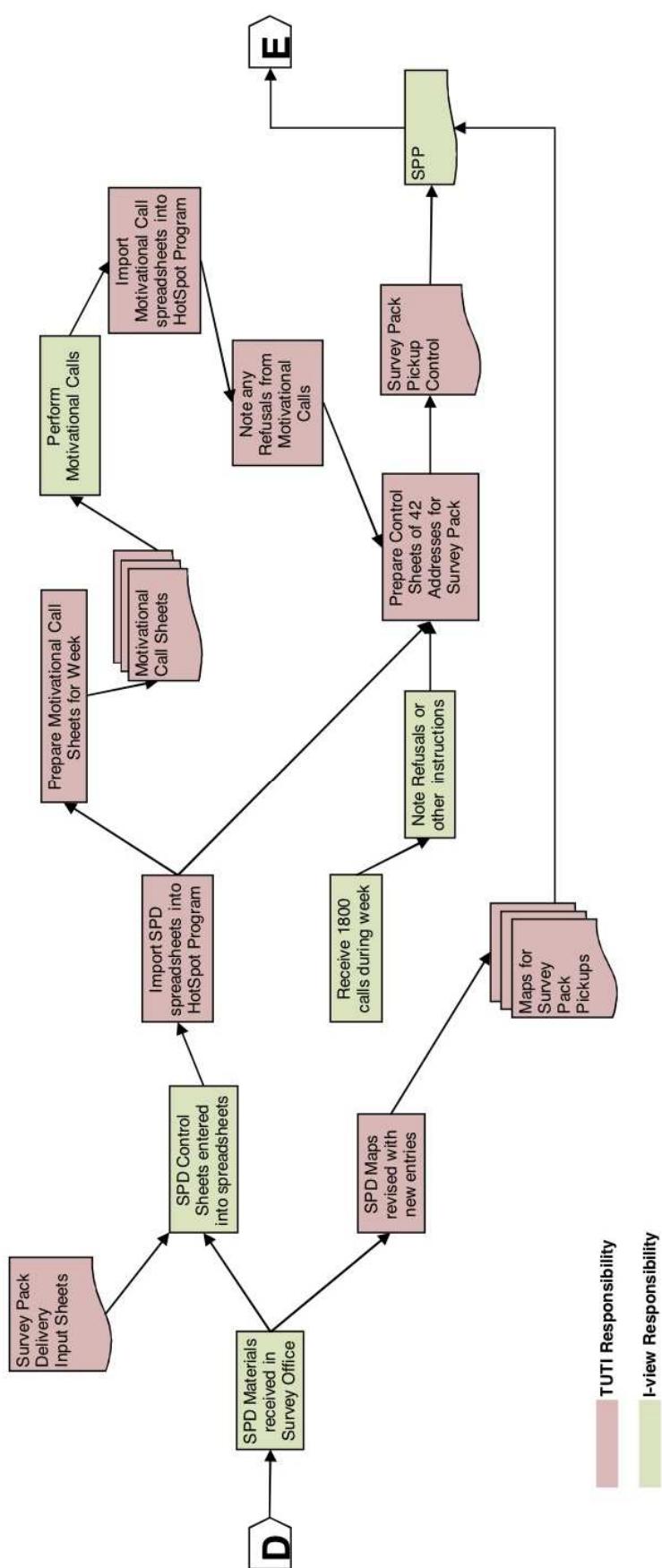


Fig 7.5 Survey Pack Pickup Preparations



## Survey Pack Pickups

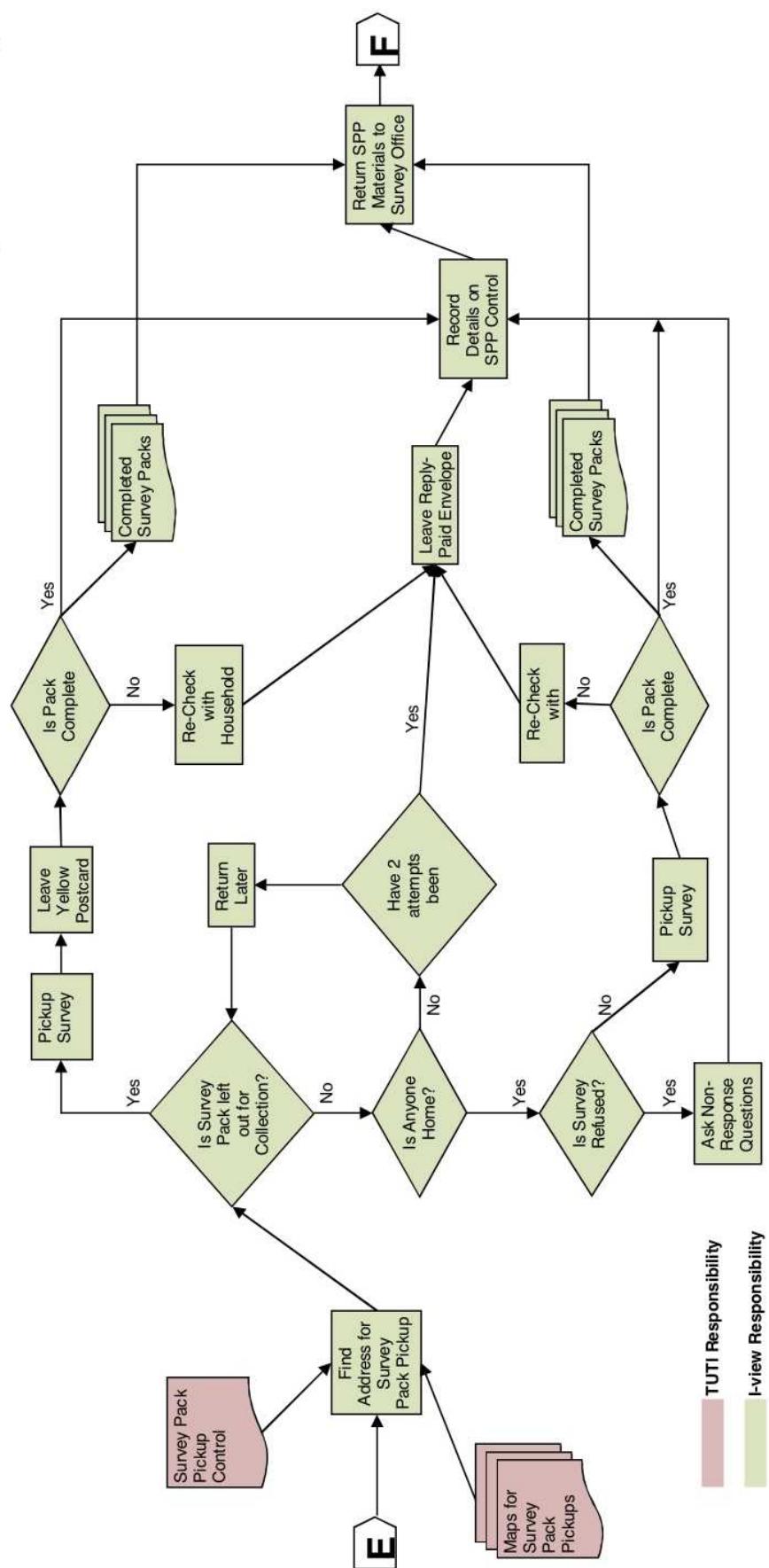


Fig 7.6 Survey Pack Pickups



## Survey Pack Processing and Reminders

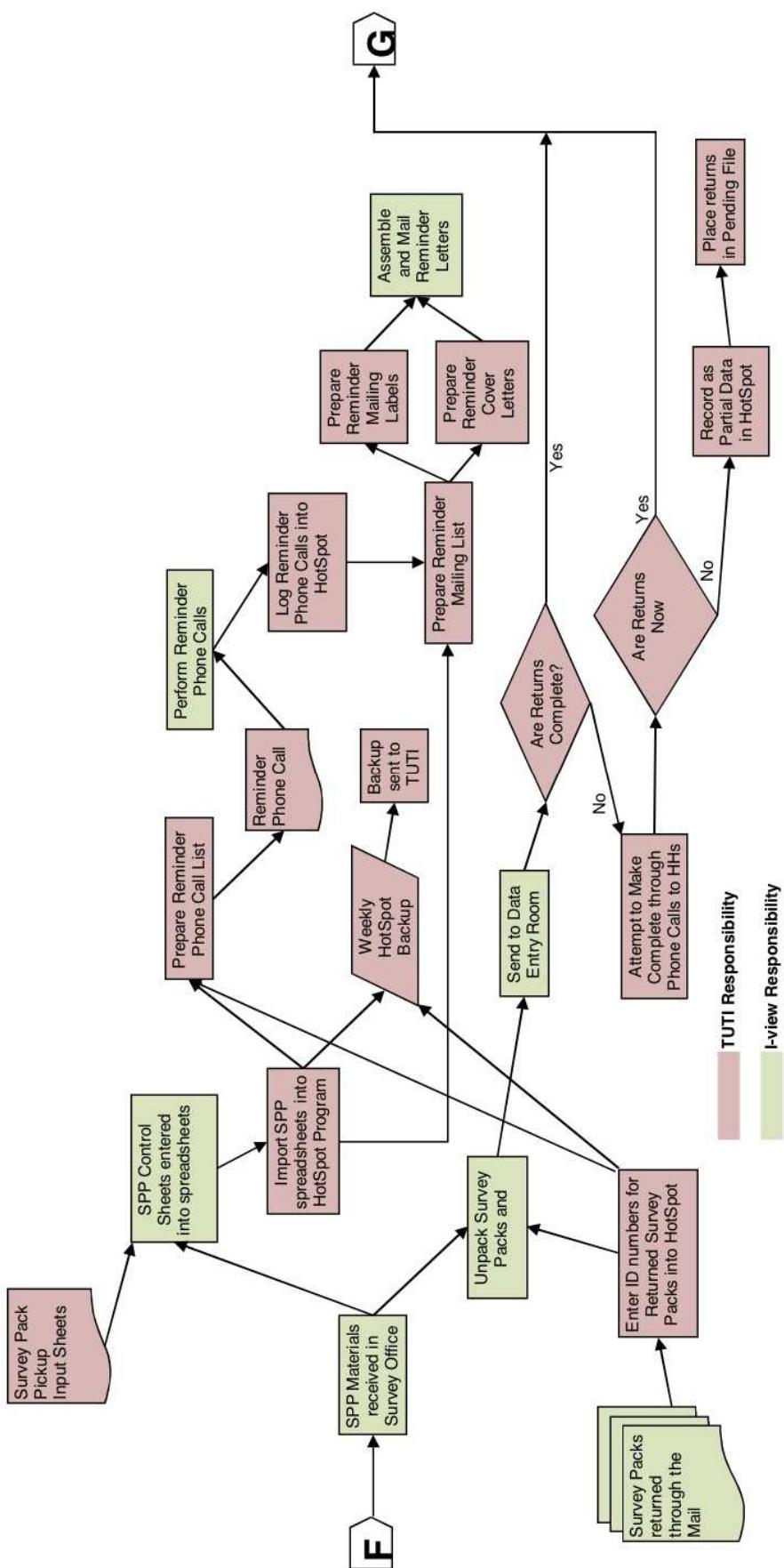


Fig 7.7 Survey Pack Processing and Reminders



## Data Entry and Editing

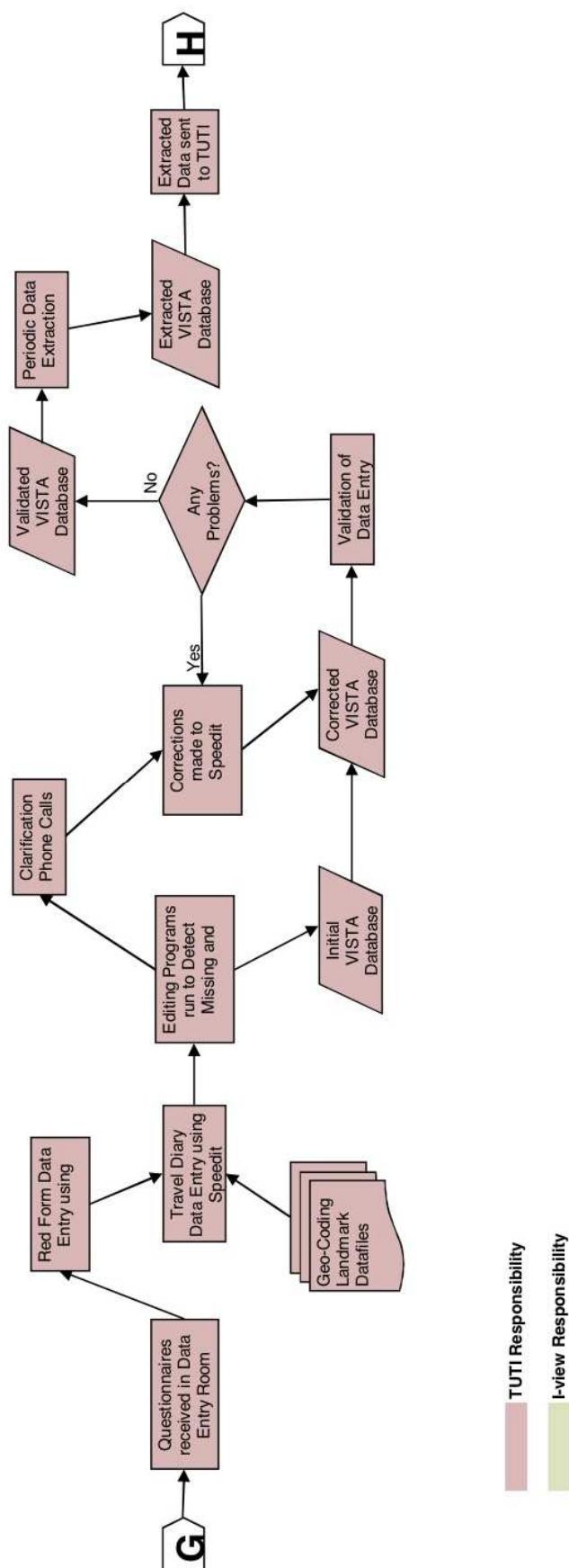


Fig 7.8 Data Entry and Editing



## Final Data Editing & Report Preparation

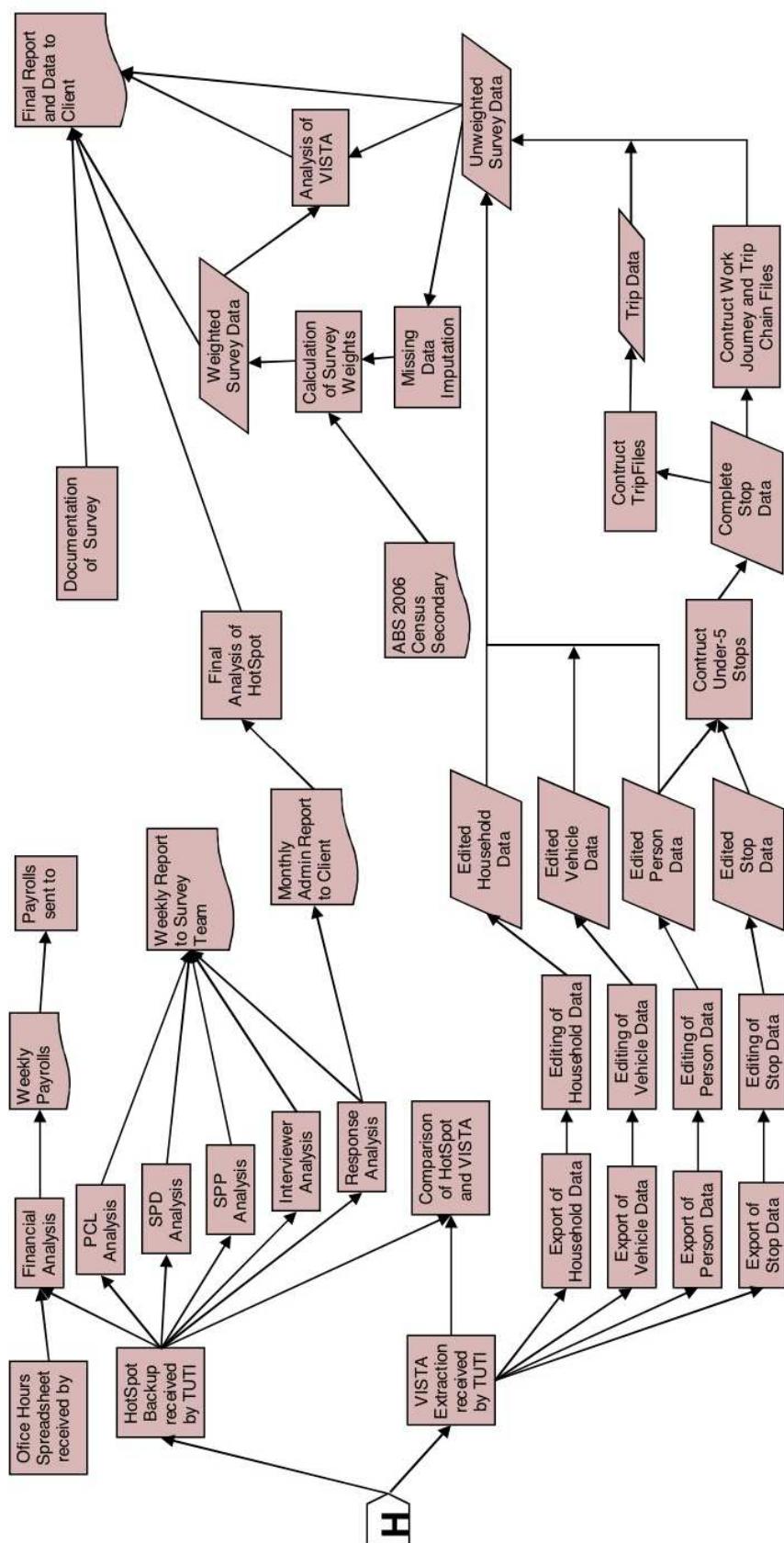


Fig 7.9 Final Data Editing, Analysis and Report Preparation



### 7.2.10 The Admin Program

Given the complexity and the number of overlapping fieldwork activities taking place in any one week (after the initial ramp-up period), it was essential to automate as many of the procedures as possible for the main survey. To this end, an Admin Program (HotSpot – Household Travel Survey Program for Operational Techniques) was written (in Excel using VBA macros) to facilitate the production of fieldwork materials and the collection of fieldwork data. A screenshot of the main Control Panel worksheet of the HotSpot program, as used in VISTA07, is shown in Figure 7.10.

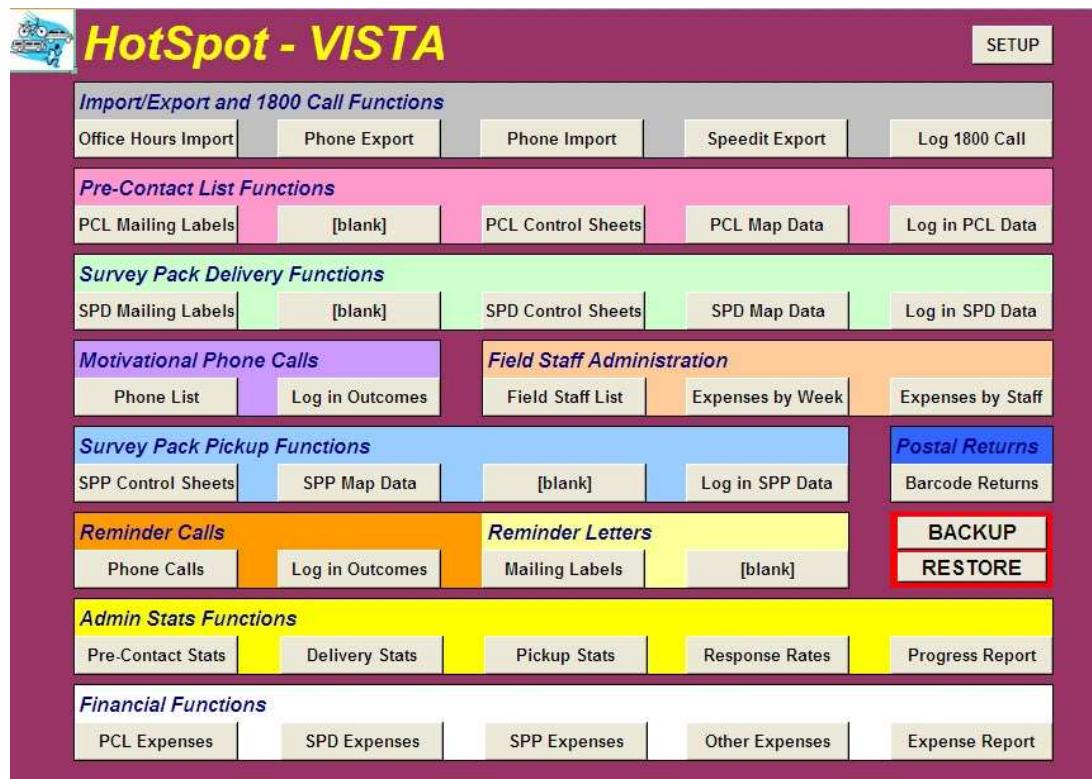


Fig 7.10 The VISTA07 HotSpot Admin Program Control Panel

The layout of the HotSpot screen in VISTA07, and other earlier surveys, was neat and grouped by category (e.g. all the PCL functions together), but it did not assist in the use of the program. A separate paper-based checklist system was used to keep track of when tasks should be performed and to note when they had been completed each week. Therefore, during VISTA09, the layout of the main HotSpot screen was re-organised so that it also acted as a reminder of the order in which the various tasks should be undertaken, and also allowed for a note to be made of which tasks had already been completed in that week.

The revised HotSpot screen is shown in Figure 7.11. It can be seen that the Control Panel is now laid out in a diary format, showing which tasks need to be performed each day of the week, and the order in which they should be performed. The current date is shown under the day names, while the week of the survey (in terms of the Travel Days) is shown at top-right. Next to each task, where appropriate, is the week of the survey pertaining to that task. Some tasks appear more than once (e.g. View DPU Sheet) when that task is performed more than once per week. After each task has been performed, a tick-box can be selected to indicate completion of that task for this week. At the start of each week, the “Clear Ticks” button can be clicked to set the program up for the new week. This new layout greatly facilitates the use of the program, especially when on the road and away from the paper-based diary system used previously.

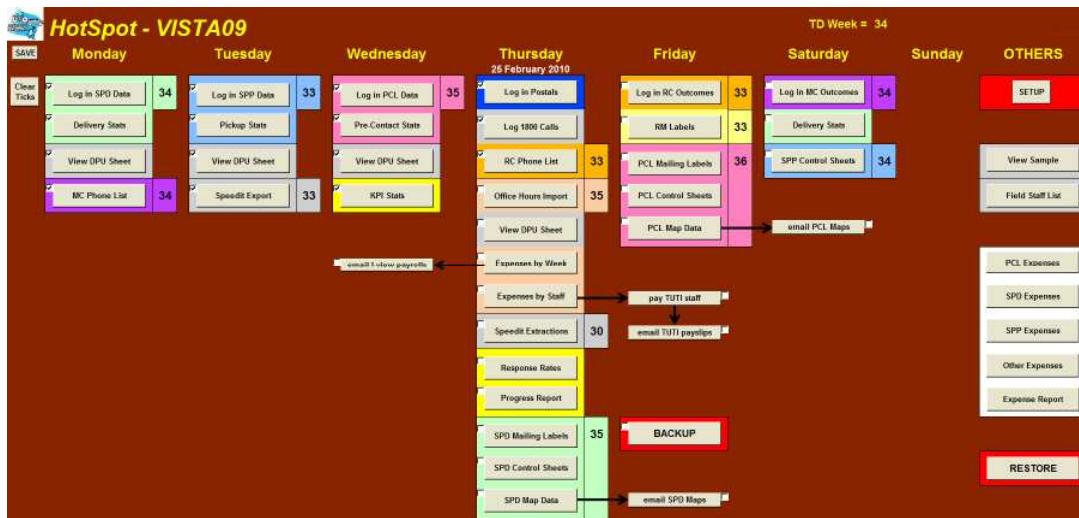


Fig 7.11 The VISTA09 HotSpot Admin Program Control Panel

While the operation of the HotSpot Admin Program is described in more detail in a separate report, an overview of the main functions is provided below, by day of week.

### Monday

- **Log in SPD Data** – this routine imports the SPD Input spreadsheets into which the data from the SPD Control Sheets have been entered from the deliveries over the week.
- **Delivery Stats** – this routine gathers the information from the SPD Input Sheets, and calculates a range of statistics related to the SPD phase of the field work, by region and by week of the survey. The main statistic being checked at this stage is the “% Personal Delivery”.
- **View DPU Sheet** – this routine gathers the information from the SPD Input Sheets, and shows who performed the task, the time they spent on the task and the kilometres travelled. At this stage, a check is made on the validity of the field staff IDs entered onto the SPD Input Sheets, the hours worked (especially checking for negative hours) and the kilometres travelled (especially checking for very large or negative distance arising from errors in entering one of the odometer readings).
- **MC Phone List** – this routine produces the lists of phone numbers to be used each night to make the Motivational Calls (MC), with space to record the outcome of the calls. It also produces Input spreadsheets that are later used for the entry of data recorded on the MC Phone Lists. These lists must be produced by 4pm each Monday to allow the Monday night calls to be made.

### Tuesday

- **Log in SPP Data** – this routine imports the SPP Input spreadsheets into which the data from the SPP Control Sheets have been entered each Monday.
- **Pickup Stats** – this routine gathers the information from the SPP Input Sheets, and calculates a range of statistics related to the SPP phase of the field work, by region and by week of the survey. The main statistics being checked at this stage is the “% Personal Collection” and the “% Collected from the Door”.
- **View DPU Sheet** – this routine gathers the information from the SPP Input Sheets, and shows who performed the task, the time they spent on the task and the kilometres travelled. At this stage, a check is made on the validity of the field staff IDs entered onto the SPP Input Sheets, the hours worked (especially checking for negative hours) and the kilometres travelled (especially checking for very large or negative distance arising from errors in entering one of the odometer readings).



- **Speedit Export** – given that data entry for the collections made on the weekend will start on Wednesday, this routine exports data from HotSpot about each sampled household, for import into the Speedit data entry program, to serve as a basis for the data entry process.

### Wednesday

- **Log in PCL Data** – this routine imports the PCL Input spreadsheets into which the data from the PCL Control Sheets have been entered each Tuesday. It also imports a file of household coordinates that may have been modified during the PCL map-making process.
- **Pre-Contact Stats** – this routine gathers the information from the PCL Input Sheets, and calculates a range of statistics related to the PCL phase of the field work, by region and by week of the survey.
- **View DPU Sheet** – this routine gathers the information from the PCL Input Sheets, and shows who performed the task, the time they spent on the task and the kilometres travelled. At this stage, a check is made on the validity of the field staff IDs entered onto the PCL Input Sheets, the hours worked (especially checking for negative hours) and the kilometres travelled (especially checking for very large or negative distance arising from errors in entering one of the odometer readings).
- **KPI Stats** – this routine combines data from the various field activities and calculates a series of Key Performance Indices (KPIs) for the PCL, SPD and SPP activities. These stats are provided to the Field Supervisors, so that they can review comparative performance by field staff, and bring any problems to the attention of the field staff before they go out into the field again.

### Thursday

- **Log in Postals** – this routine records the ID numbers on Survey Packs returned in the mail, and codes them as received in the database. This includes Postal Returns containing completed questionnaires and Postal returns containing blank questionnaires. This prevents these households from being included in any reminder activities.
- **Log 1800 Calls** – this routine enables the details of all 1800 calls (and Australia Post returns to sender) to be logged into the database, to prevent these households from being included in any reminder activities and to note their status on the SPD and SPP Control Sheets to be prepared later.
- **RC Phone List** – this routine produces the lists of phone numbers to be used each Thursday night to make the Reminder Calls (RC), with space to record the outcome of the calls. It also produces Input spreadsheets that are later used for the entry of data recorded on the RC Phone Lists.
- **Office Hours Import** – this routine imports the latest copy of the Office Hours spreadsheet supplied weekly from the Survey Office. Separate OH Sheets are imported for I-view staff (involved in field and office duties) and TUTI staff (involved in Data Entry operations).
- **View DPU Sheet** – the DPU Sheet is viewed one last time to check for errors in staff IDs, hours worked and kilometres travelled, before the production of the weekly payrolls.
- **Expenses by Week** – this routine enables weekly payrolls to be calculated for all I-view and TUTI staff. The I-view payrolls could be of two types; the main one is for work performed in the previous 7 days; a secondary payroll is also produced for work already paid by the I-view payroll office but not yet recorded in the HotSpot system. A checkbox is provided to indicate that the I-view payrolls have been sent to the I-view supervisors.
- **Expenses by Staff** – this routine enables a cumulative paysheet to be calculated each staff member. This is used particularly for TUTI staff, whose weekly payslips are generated by subtracting what they have already been paid from their cumulative pay due to date. A checkbox



is provided to indicate that the TUTI payroll has been paid by Electronic Fund Transfer directly into accounts, and that payslips have been sent to the TUTI staff.

- **Speedit Extractions** – each week, the Data Entry office sends a list of household IDs for those households for whom data entry is complete, and whose data has been transferred from the working files to the archived files. These extractions are compared with the response data inside HotSpot to monitor the proportion of responses that do not make it through the data entry process (because their responses are incomplete). This ensures that response numbers are based on valid complete responses.
- **Response Stats** – this routine combines data from the Pickup Stats worksheet with information about postal returns, sample loss and data entry room losses, to calculate response rates by week and region
- **Progress Report** – this routine combines data from the various Admin Stats worksheets to produce an overall Progress Report by week and region. This provides the basis for weekly reports to the client and other parties. It is also provided to the field office supervisors, to provide feedback to field staff about overall survey performance.
- **SPD Mailing Labels** – this routine produces the mailing labels to be used on the Survey Packs to be delivered to households
- **SPD Control Sheets** – this routine produces the SPD Control Sheets that are used by fieldwork staff in the field. It also produces SPD Input spreadsheets that are later used for the entry of data recorded on the Control Sheets
- **SPD Map Data** – this routine produces a list of household addresses and geocodes which are used to produce the maps to be used by fieldwork staff in the field to locate the sampled households. The actual maps are produced outside of HotSpot, but a checkbox is provided to note when the SPD Maps have been produced and sent to the field offices (including the regional field staff).

#### **Friday**

- **Log in RC Outcomes** – this routine imports the RC Input spreadsheets into which the data from the RC Phone List have been entered on Thursday night.
- **RM Labels** – this routine produces the mailing labels to be used on the Reminder Letter envelopes, which are prepared and mailed each Friday.
- **PCL Mailing Labels** – this routine produces the mailing labels to be used on the Pre-Contact Letter (PCL) envelopes.
- **PCL Control Sheets** – this routine produces the PCL Control Sheets that are used by fieldwork staff in the field. It also produces PCL Input spreadsheets that are later used for the entry of data recorded on the Control Sheets.
- **PCL Map Data** – this routine produces a list of household addresses and geocodes which are used to produce the maps to be used by fieldwork staff in the field to locate the sampled households. The actual maps are produced outside of HotSpot, but a checkbox is provided to note when the PCL Maps have been produced and sent to the field offices (including the regional field staff).
- **BACKUP** – this routine makes a backup copy of the volatile data currently in the HotSpot databases (the data is also retained in the HotSpot program itself) and labels it with the date of the backup.



### Saturday

- **Log in MC Outcomes** – this routine imports the MC Input spreadsheets into which the data from the MC Phone Lists have been entered during the week. It is especially important to ensure that the MC Input Sheets for calls made on Friday evening and Saturday afternoon have been received and entered at this stage.
- **Delivery Stats** – the Delivery Stats sheet is checked again, to note the percentage of households receiving Motivational Calls (to ensure no blank MC Inout Sheets have been accidentally imported).
- **SPP Control Sheets** – this routine produces the SPP Control Sheets that are used by fieldwork staff in the field. It also produces SPP Input spreadsheets that are later used for the entry of data recorded on the Control Sheets. No new SPP maps are produced; the maps produced for the SPD phase are re-used because the household numbers and locations will not have changed.

### Sunday

- There are no specific tasks scheduled for HotSpot on Sundays.

### OTHERS (these are tasks not scheduled for any particular day of the week)

- **SETUP** – this routine enables HotSpot to be customised for any particular survey of the same type as VISTA09. It records file names and pathnames, colour schemes, length of survey, number of regions, starting dates of key activities, number of households on PCL and SPD lists, and payrates for different types of field staff.
- **View Sample** – this routine allows to user to quickly view the full sample (56 addresses per region per week) and the final sample (42 addresses per region per week), simply by entering the region and week number.
- **Field Staff List** – this routine enables details of all field staff to be entered, to be used in various other routines.
- **PCL Expenses** – this routine gathers the information about field staff hours and kilometres travelled from the PCL Input Sheets, and calculates the costs of running the PCL phase of the field work, by region and by week of the survey
- **SPD Expenses** – this routine gathers the information about field staff hours and kilometres travelled from the SPD Input Sheets, and calculates the costs of running the SPD phase of the field work, by region and by week of the survey
- **SPP Expenses** – this routine gathers the information about field staff hours and kilometres travelled from the SPP Input Sheets, and calculates the costs of running the SPP phase of the field work, by region and by week of the survey
- **Other Expenses** – this routine gathers data from the imported Office Hours spreadsheets, and calculates the costs of running the Survey Offices and other expenses not recorded on the PCL, SPD and SPP input sheets
- **Expense Report** – this routine combines data from the various Financial Function worksheets to produce an overall Expense Report by task, week and region. This report is used to track project expenses, and to compare against budgeted expenses.



- **RESTORE** – this routine restores a copy of a backup file previously created by the HotSpot program. The specific file to be restored can be specified by the user by selecting the date of the Backup.
- **SAVE** – this button is just a quick way of saving the current version of HotSpot, including any changes that have been made in the underlying databases.
- **Clear Ticks** – at the end of each week, all of the tasks should have been ticked to indicate that they have been completed. To start a new week, this button can be clicked to remove the ticks from all the boxes on the screen.

### 7.2.11 Timing of the Process

As noted above in the discussion of HotSpot, the various processes outlined in Figures 7.1 through 7.9 above follow a timing sequence as shown in Figure 7.12. For each week of Travel Days, the survey process covers a three week period, starting with the PCL processes in the week prior, then the SPD processes on the weekend before the Travel Days, then the SPP processes on the Weekend after the Travel Days, and finishing with the Reminder Mailing on the Friday after the Travel Days. Data entry starts on the Tuesday after the Travel Days and is designed to be completed during the week after the Travel Days, including Clarification Calls. Postal Returns will continue to be received for a few more weeks, while the Data Entry Validation may continue until about 4 weeks after the Travel Days (before all data from that week of Travel days is ready for final extraction).

Week	Day of Week						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
0	Prepare PCL	PCL	Analyse PCL		Prepare SPD		SPD
1							
2	Weekend SPP	Analyse SPP		Data Entry		Data Clarification	
					Postal Returns		
					Reminder Calls	Reminder Letters	

Fig 7.12 Timing of the Survey Administration Processes

### 7.2.12 Outcomes of the Survey Procedures

For each of the procedures described above, records of the outcomes were maintained in the HotSpot program, enabling reports to be produced each week to track the progress of the survey. This section of the report highlights the major procedural outcomes for the survey so far (up until week 34 of Travel Days, which is when this report was written, rather than the period covered by the data in the interim data release) in relation to the Sample Check and Delivery of Pre-Contact Letters (PCL), the Survey Pack Deliveries (SPD), the Motivational Calls (MC), the Survey Pack Pickups (SPP) and the overall responses.

#### 7.2.12.1 Sample Check and PCL Delivery

One of the main functions of this stage of the survey was to detect ineligible addresses in the sample frame and replace them with randomly selected eligible addresses. As noted earlier, 56 addresses were randomly chosen at this stage for each region for each week – 42 primary addresses and 14 replacement addresses. Field staff checked all 42 primary addresses and if a Sample Loss address was discovered it was replaced with the geographically nearest replacement address. Once an



address had been identified as valid, the PCL was delivered to the mailbox. Once 42 valid addresses had been identified, the process was complete for that region for that week.

The overall results of the sample check are shown in Table 7.1. It can be seen that 91% of addresses on the original lists proved to be valid addresses. The main reasons identified for Sample Loss at the PCL delivery stage were that No Such Address could be found in the field, that the land at that address was either a vacant block or that a dwelling was under construction (or sometime renovation or demolition) or that the building at that address was non-residential.

**Table 7.1 Overall Sample Check Outcomes**

Sample Check Outcome	% of Addresses
Not Sample Loss	91%
No such address	2.3%
Vacant Land/Under Construction	2.4%
Vacant Premises	1.1%
Non-residential	2.3%
Other reason	0.5%

The proportion of addresses proving to be Sample Loss varied considerably across the sampling regions, as shown in Table 7.2. The Melbourne Metro regions had Sample Loss ranging from 4% (Inner North) to 14% (Central Metro). The Regional Cities generally had higher Sample Loss, while Shepparton had by far the highest Sample Loss at 23% (because of the many low-density rural areas included in the sample for Shepparton).

**Table 7.2 Sample Loss in different Sampling Regions**

Sampling Region	% Sample Loss
Central Metro	14%
Inner West Metro	5%
Outer West Metro	8%
Inner North Metro	4%
Outer North Metro	8%
Maroondah Highway	6%
Outer North-East Metro	6%
Inner South-East Metro	5%
Middle South-East Metro	5%
Outer South-East Metro	6%
Fringe South-East Metro	9%
DPCD Activity Centres	12%
Geelong	8%
Ballarat	11%
Bendigo	10%
Shepparton	23%
Latrobe Valley	6%
TOTAL	9%

In any one week, the Sample Loss could vary considerably, depending on the specific CCDs chosen for surveying in that week. As shown in Figure 7.12, the weekly Sample Loss varied from a low of around 4% up to a high of around 18%. As indicated by the Trend Line, the average Sample Loss stayed relatively constant over the 52 weeks of the survey at around 8-9%.

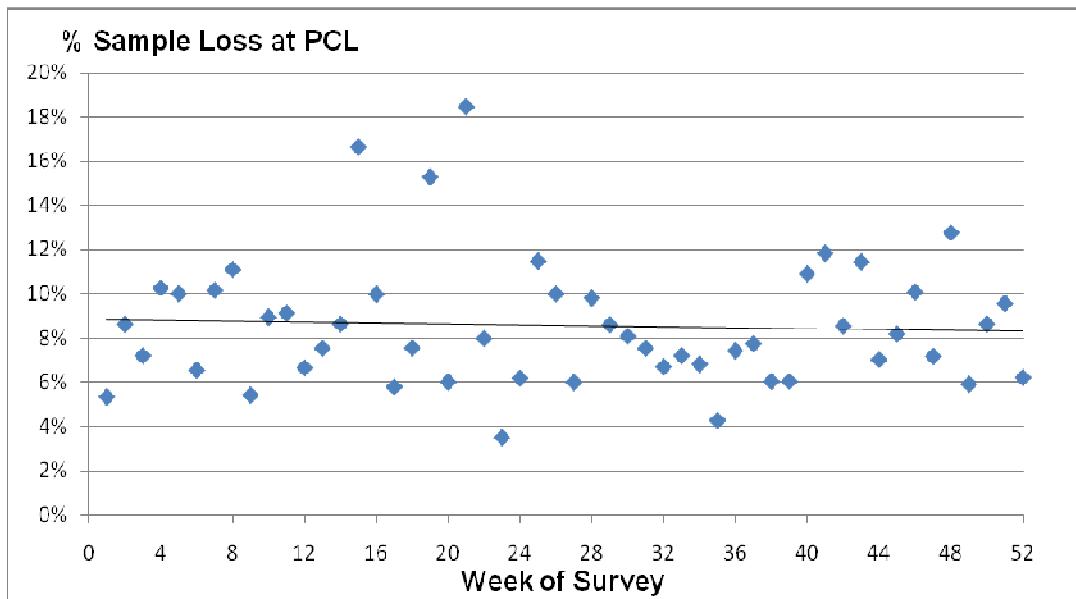


Fig 7.12 Sample Loss at PCL Delivery by Week of Survey

#### 7.2.12.2 Survey Pack Delivery (SPD)

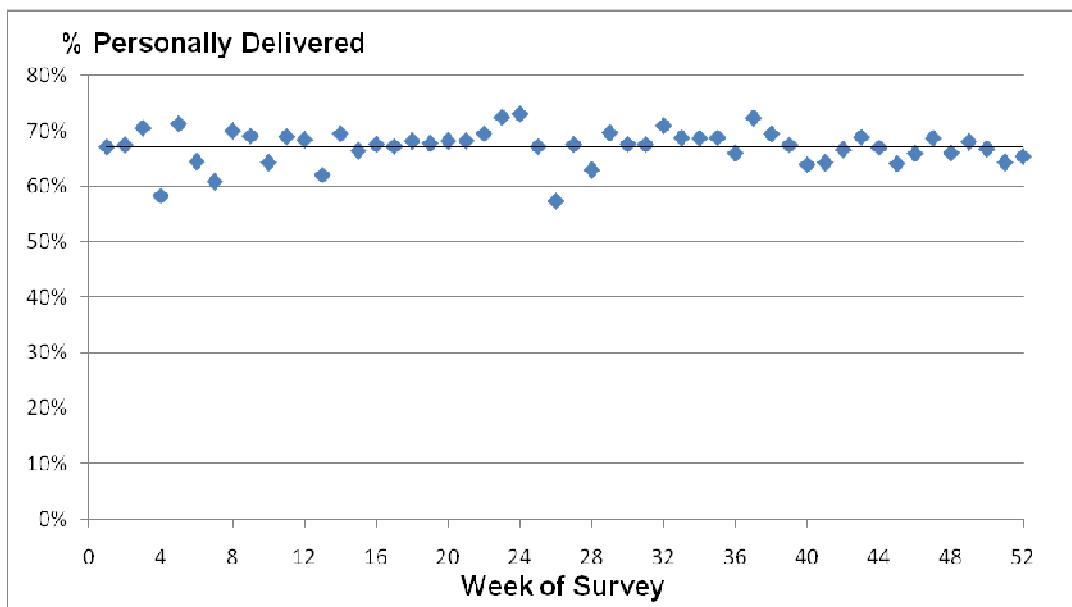
For the 42 valid addresses in each region, Survey Packs were delivered on the weekend before their Travel Day. Given the importance of making personal contact, as a means of increasing response rates, every effort was made to make personal contact for delivery, with field staff returning to the address up to 4 times, on the Saturday and Sunday. The outcomes of the SPD process across the entire survey period are shown in Table 7.3.

Table 7.3 Overall SPD Outcomes

SPD Outcome	% of Addresses
Personally to householder	67%
Left in mailbox/on doorstep	21%
Refusal	9%
Not Delivered - Sample Loss	2%
Not Delivered - Mailed	1%

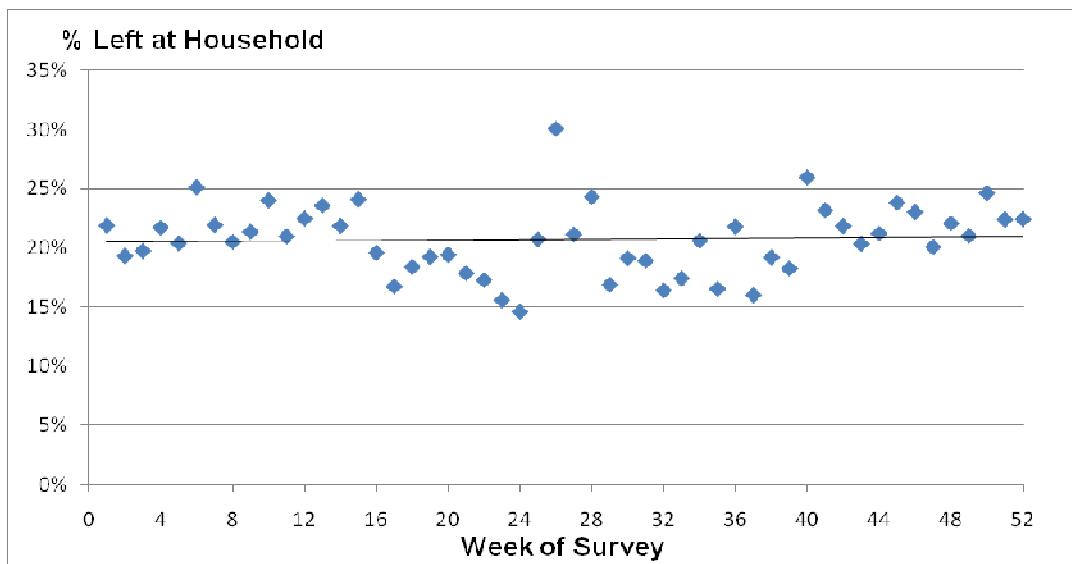
It can be seen that 67% of the survey packs were personally delivered to householders. Another 9% of householders were contacted, but they refused to participate in the survey and would not accept the survey pack. 21% of households could not be personally contacted, after the 4 attempts, and survey packs were left at the doorstep. Although Sample Loss was meant to be identified at the PCL Delivery stage, 2% of addresses at the SPD stage also turned out to be Sample Loss (this was almost always because the residence was found to be vacant at this stage, which was the first time that the front door had been approached). Some survey packs (1%) could not be delivered and were mailed by Australia Post (this was often because of dogs in the yard, or other obstructions, which prevented the field staff from getting to the front door).

The variations in the SPD outcomes across the 52 weeks of the survey are shown in Figures 7.13 through 7.17. The variation in the proportion delivered personally is shown in Figure 7.13. It can be seen that it stayed fairly constant at around 67% for the entire 52 weeks, apart from a drop to less than 60% during the Christmas period (W25).



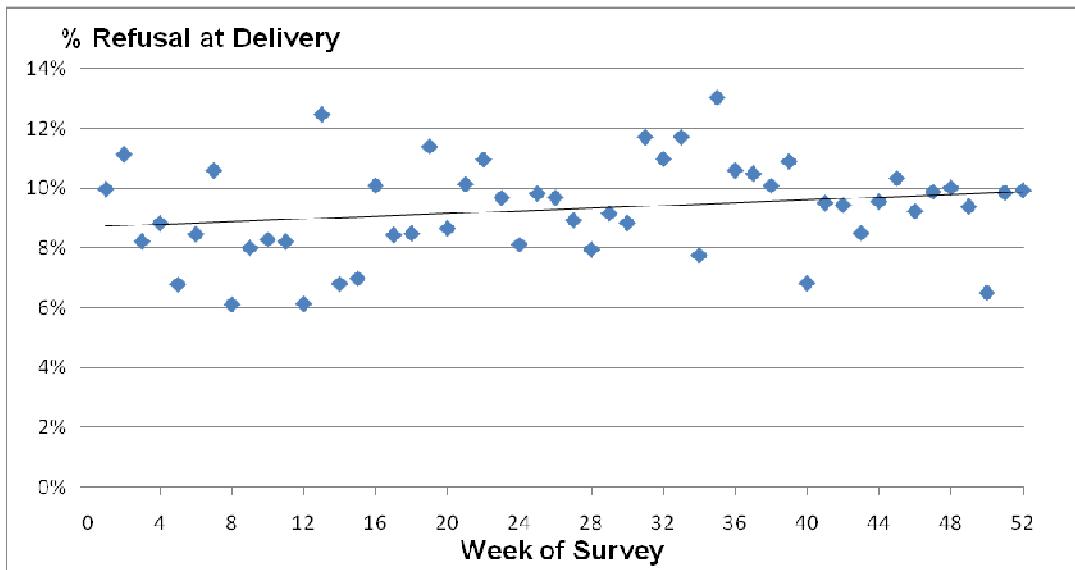
**Fig 7.13 Proportion of Personal SPD Deliveries by Week of Survey**

The percentage left at the household stayed constant at around 21% over the period of the survey, except for an increase to 30% during Christmas week, as shown in Figure 7.14.



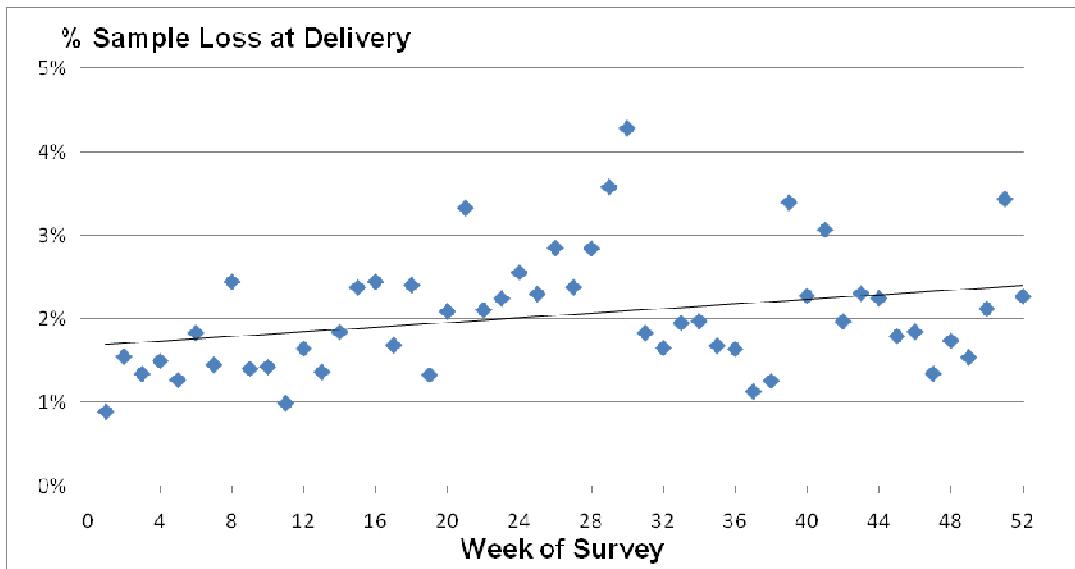
**Fig 7.14 Proportion of SPD Deliveries to Doorstep by Week of Survey**

The percentage of Refusals at the SPD stage across the weeks of the survey are shown in Figure 7.15. It can be seen to vary by week from about 6% to 12%, and to increase slightly over the 52 weeks of the survey from about 9% to 10%.



**Fig 7.15 Proportion of SPD Refusals by Week of Survey**

The variation of Sample Loss at the SPD stage is shown in Figure 7.16. Sample Loss at SPD started out at around 1.5%, but gradually rose to about 3.5%. At the training and retraining sessions, it was stressed to the PCL field staff that it was important that Sample Loss households should not be allowed to progress to the SPD stage, since Sample Loss addresses discovered at the SPD stage could not be replaced, whereas Sample Loss addresses found at the PCL stage could be replaced. The PCL staff were therefore instructed to be especially diligent in uncovering Sample Loss at the PCL stage. It appears from Figure 7.16 that this retraining might have been effective, as the sample loss at the SPD stage fell substantially after the re-training session in Week 30.



**Fig 7.16 Sample Loss at SPD Delivery by Week of Survey**

Personal Delivery of the Survey Packs is just one outcome of householders being personally contacted, irrespective of the outcome. As shown in Figure 7.17, the percentage of households personally contacted (which resulted in either a SPD delivery or a refusal) stayed fairly constant at about 76%, with the exception of the dips experienced around Christmas (week 25) where the percentage personally contacted fell below 70%

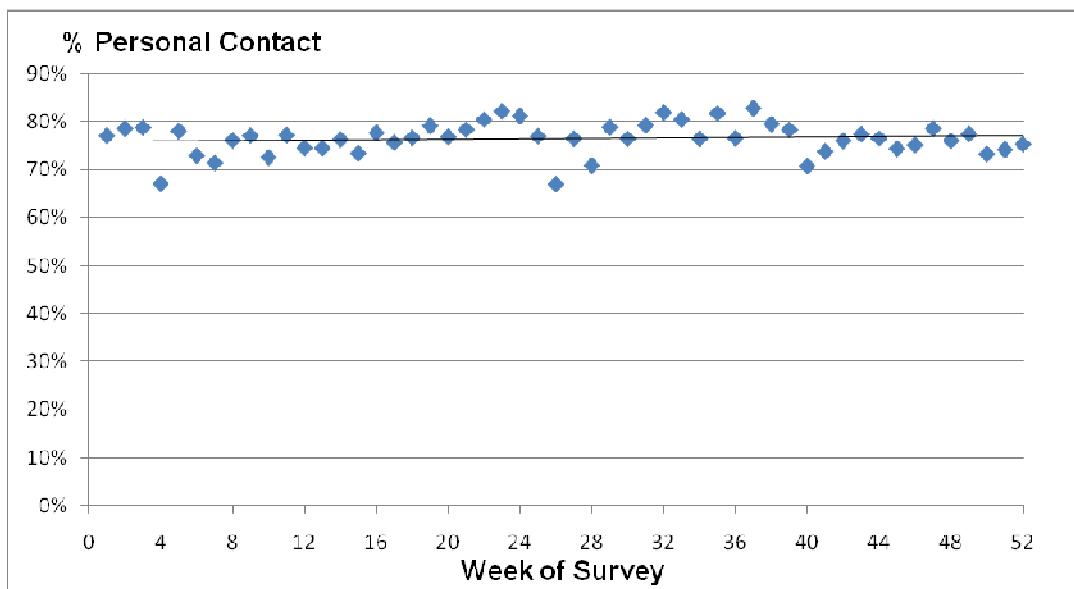


Fig 7.17 Total Personal Contact at SPD Delivery by Week of Survey

#### 7.2.12.3 Motivational Call (MC)

Each household that received a Survey Pack was attempted to be phoned on the evening of their Travel Day in order to ensure that they had received the survey materials, to answer any questions they might have and to remind them that today was their Travel Day. Phone numbers for the Motivational Calls were obtained from two sources; phone numbers were asked of householders when survey materials were delivered to them, and numbers were obtained from a phone number matching service (Data Solutions Australia – DSA) based on the residential address. Not all addresses were able to be matched through DSA (flats and apartments had lower matching rates), and many of the DSA matchings simply repeated information obtained from the householders. At the start of the project, DSA matchings were obtained for the entire sample of addresses.

The outcomes of Motivational Calls that could have been placed to households still in the survey by the time of their Travel Day are shown in Table 7.4 (households that had already dropped out of the survey by this time are not included in Table 7.4).

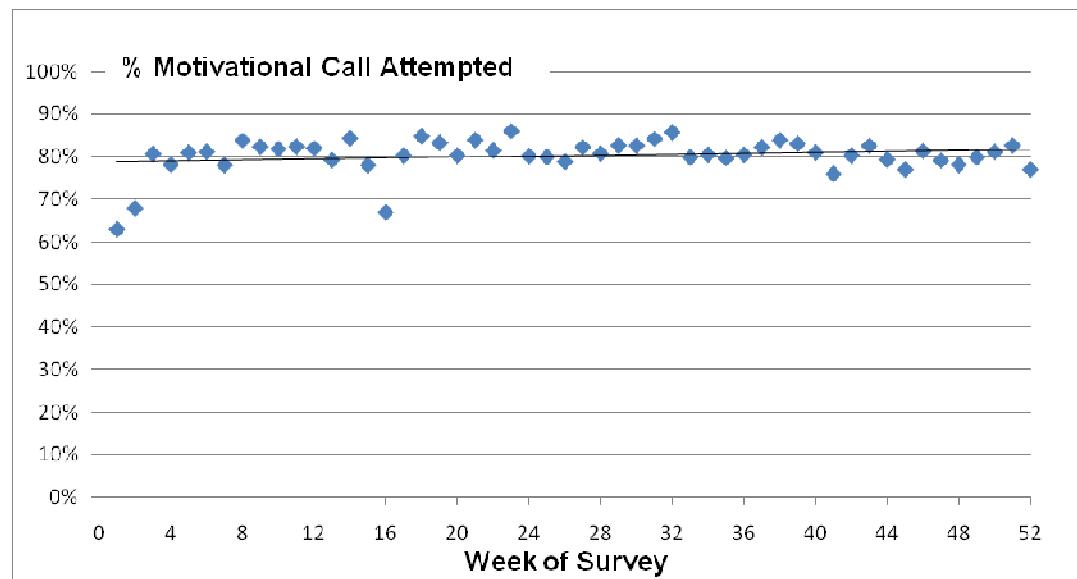
**Table 7.4 Overall MC Outcomes**

MC Outcome	% of Households
Successful Contact	49%
Answering machine	11%
Refusal	2%
No contact	18%
No Call Made	20%

It can be seen that Motivational Calls were attempted with 80% of the households (all those for whom a phone number was available). Successful contact and coverage of the three issues (receipt of materials, questions answered and reminded of Travel Day) was achieved with 49% of households. No contact was made with 18% of households (after 2 attempts), an answering machine was encountered on 11% of occasions (whereupon a message was left on the machine), while the respondent did not want to talk or said they would not do the survey on 2% of occasions. These “refusals” were not removed from subsequent stages of the survey, because it had been found in previous surveys that many of these “refusals” in fact completed the survey satisfactorily (we probably just caught them at an inconvenient time with the MC). However, this “refusal” was noted on the Control Sheets issued to field staff for the SPP stage.

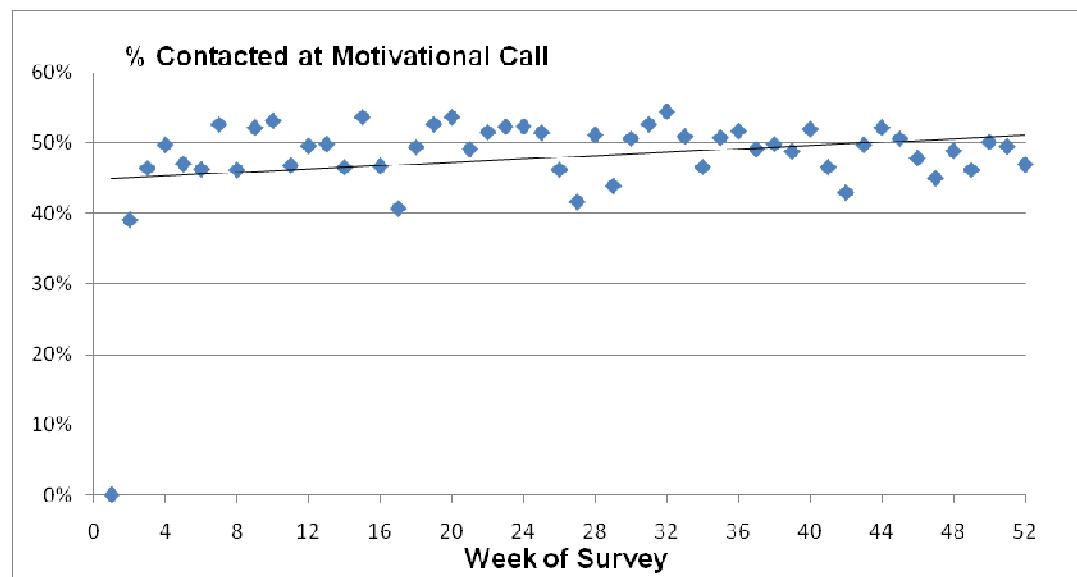


The proportion of households attempted to be contacted for the Motivational Call has varied little across the life of the survey, as shown in Figure 7.18. Apart from the first two weeks when teething problems meant that one day of calls was missed in each week, and in Week 16 where illness of the caller prevented the calls being made on one day, the proportion of households called has stayed consistently at or above 80%.



**Fig 7.18 Proportion of Motivational Calls Attempted by Week of Survey**

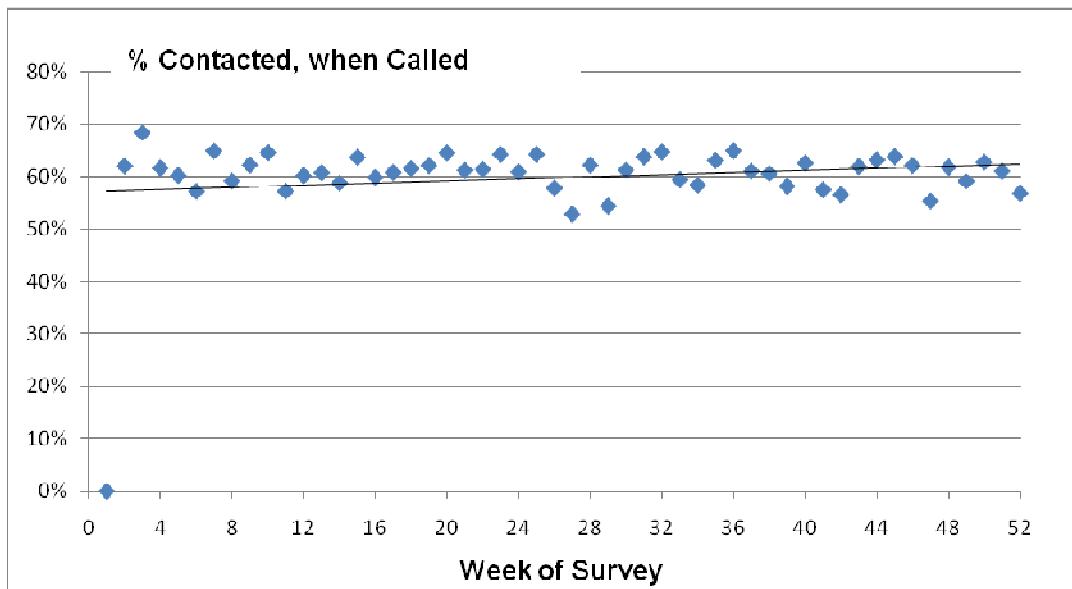
The impact of this was that, as shown in Figure 7.19, the proportion of households actually contacted during the MC has hovered around the 50% mark for most of the survey.



**Fig 7.19 Proportion of Successful Contacts in Motivational Calls by Week of Survey**



The quality of the MC calling did not diminish over the period of the survey. Providing the callers were provided with a phone number for the household which enabled them to make the call, then the proportion of these calls which ended in successful contacts was very stable over the duration of the survey at just above 60%, as shown in Figure 7.20



**Fig 7.20 Proportion Contacted, when Called, in Motivational Calls by Week of Survey**

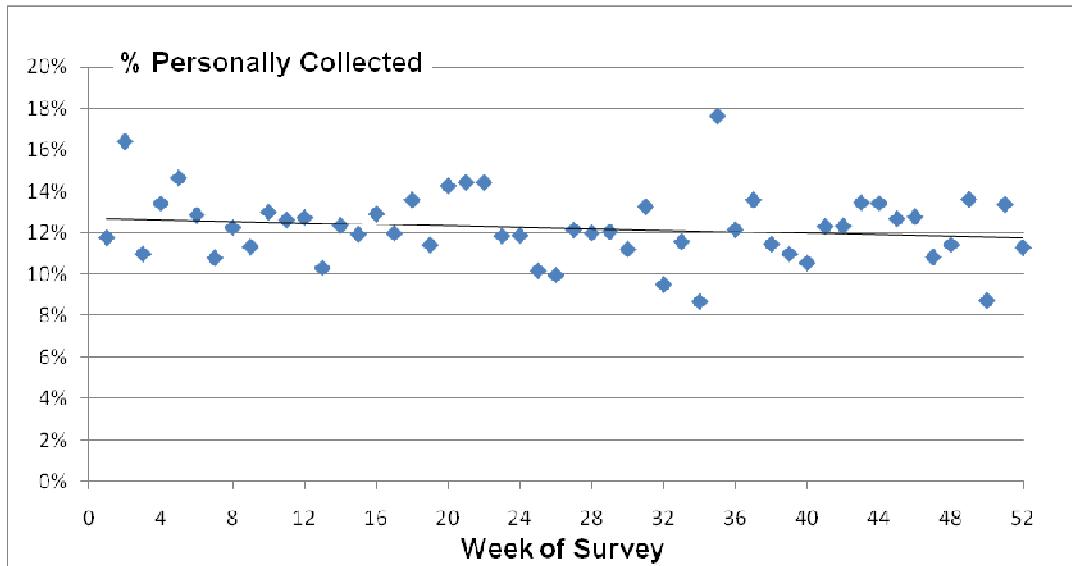
#### 7.2.12.4 Survey Pack Pickups (SPP)

On the Sunday and Monday after the week of Travel Days, the completed questionnaires were collected from the households, either personally from the householder, or from a place where they agreed to leave the questionnaires for collection or via the mail in a reply-Paid Envelope (RPE) left for them during the collection process. The procedural results from the Survey Pack Pickup (SPP) process, based on all households still in the survey at the SPP stage, are shown in Table 7.5.

**Table 7.5 Overall SPP Outcomes**

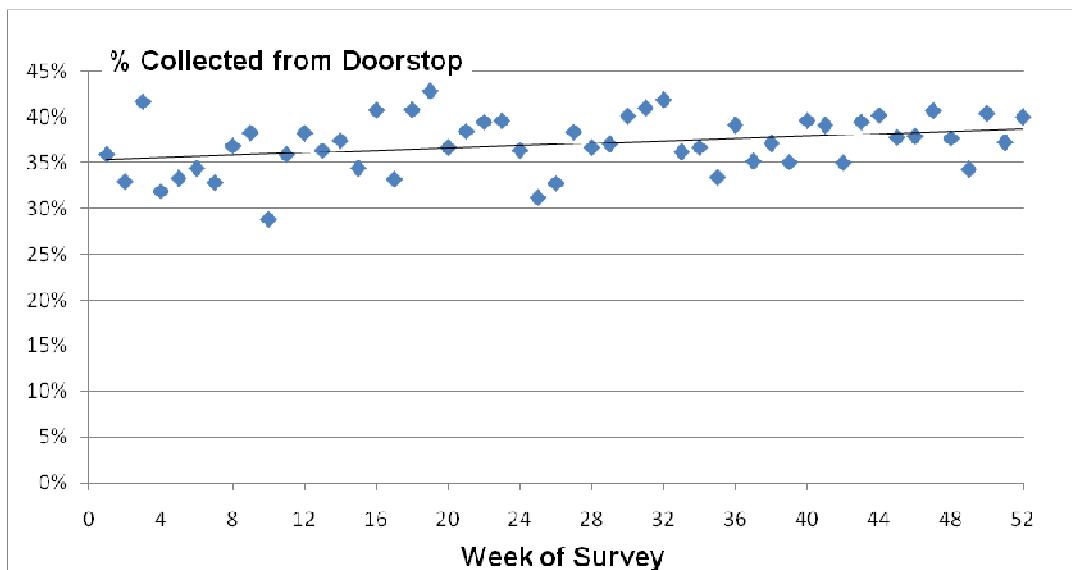
SPP Outcome	% of Households
From householder	12%
From doorstep, meterbox etc	37%
Refusal - personally	8%
Blank forms left on doorstep	9%
R-P envelope left with householder	10%
No contact - left a R-P envelope	21%
Sample Loss	0.9%
Other	1.8%

The variations in the SPP outcomes across the survey are shown in Figures 7.21 through 7.27. The proportion of questionnaires collected personally from householders was observed to drop slightly from about 13% at the start of the survey to about 12% at the end of Week 32, as shown in Figure 7.21.



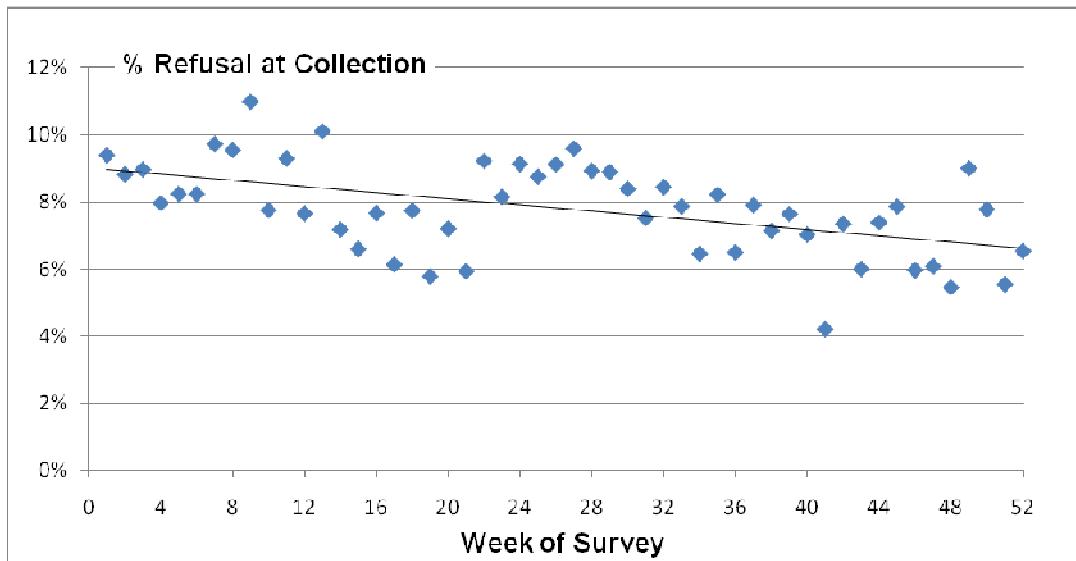
**Fig 7.21 Proportion Personally Collected at SPP by Week of Survey**

On the other hand, the proportion of questionnaires collected from places where the householder agreed to leave the completed questionnaires for collection was observed to increase slightly from about 35% at the start of the survey to about 39% at the end of Week 52, as shown in Figure 7.22.



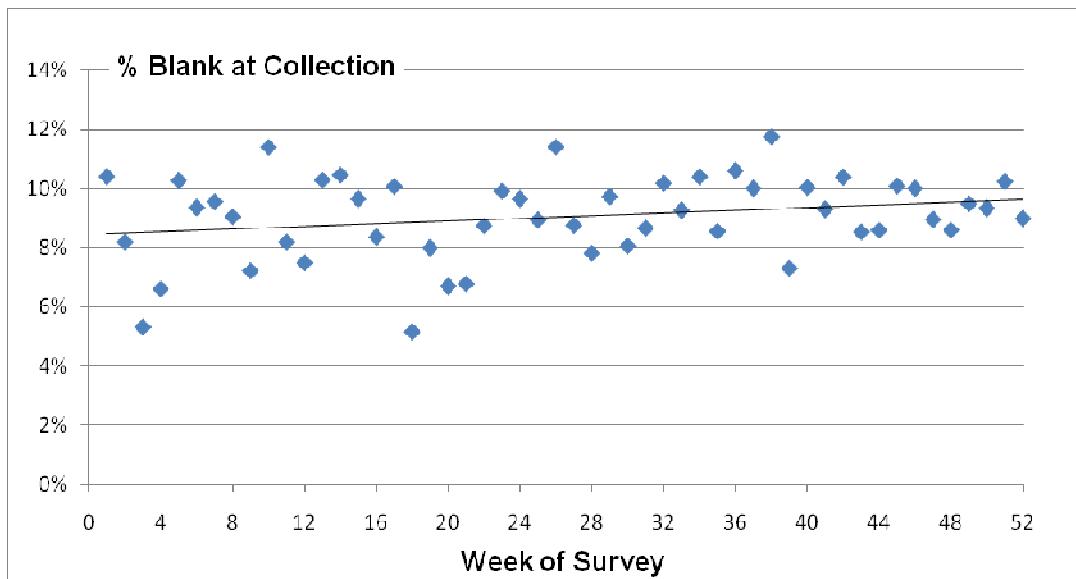
**Fig 7.22 Proportion Collected from Doorstep at SPP by Week of Survey**

The proportion of householders refusing at the SPP stage decreased slightly from about 9% at the start of the survey to about 7% at the end of the 52 weeks, as shown in Figure 7.23.



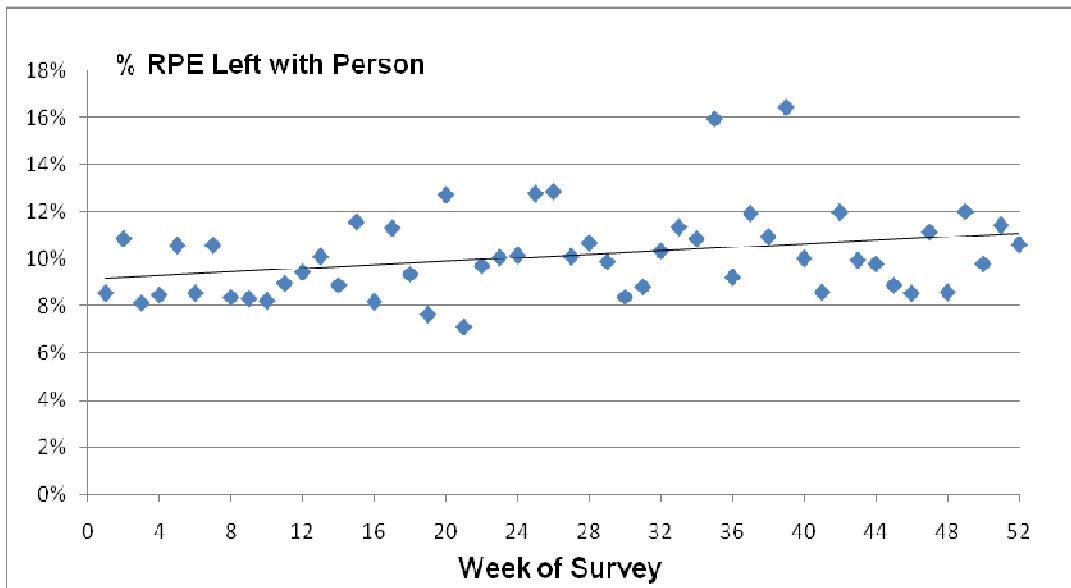
**Fig 7.23 Proportion Refused at SPP Stage by Week of Survey**

In addition to outright refusals at the SPP stage, there are also “soft” refusals from householders who leave the questionnaires out for collection but have failed to complete any of the survey. These blank questionnaires increased slightly from about 8.5% at the start of the survey to 9.5% by the end of Week 52, as shown in Figure 7.24.



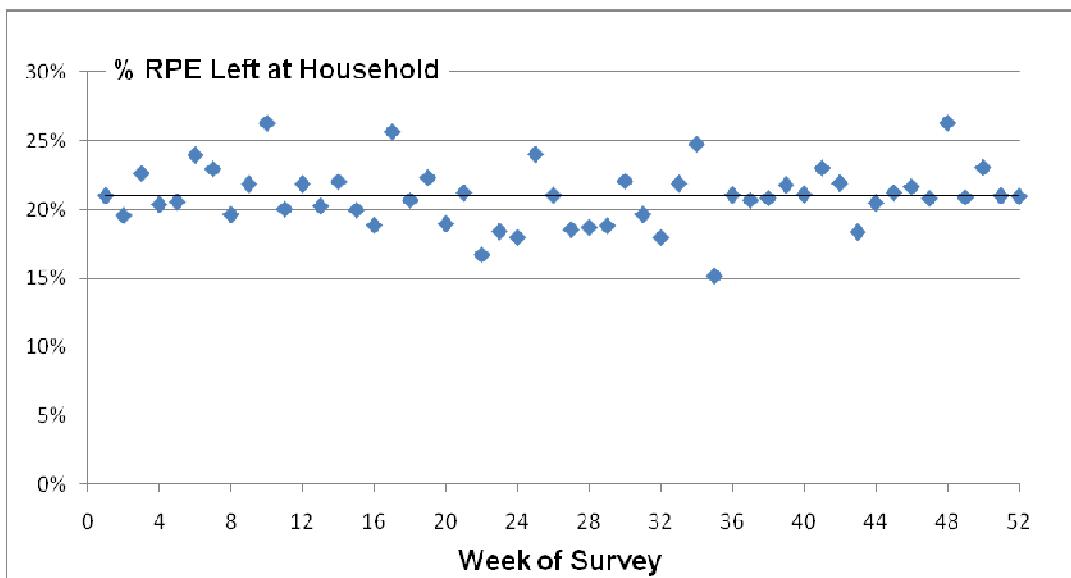
**Fig 7.24 Proportion Left for Collection, but Blank, at SPP Stage by Week of Survey**

If contact was made with a householder during the SPP, but they had not yet completed the questionnaire, then a Reply-Paid Envelope was left with them to return the questionnaire to the survey office when they had completed the survey. The proportion in this group increased slightly from about 9% at the start of the survey to 11% at the end of the 52 weeks, as shown in Figure 7.25.



**Fig 7.25 Proportion with RPE Left with Person at SPP Stage by Week of Survey**

If contact was not made with a householder during the SPP, and they had not left the questionnaires out for collection, then a Reply-Paid Envelope was left at the household to return the questionnaire to the survey office when they had completed the survey. The proportion in this group stayed fairly constant at about 21% over the entire 52 weeks, as shown in Figure 7.26.



**Fig 7.26 Proportion with RPE left at Household at SPP Stage by Week of Survey**

The reduction on the numbers of questionnaires collected personally from householders shown in Figure 7.21 might have indicated that less effort was been made to contact householders as the survey progressed. However, as shown in Figure 7.27, the proportion of households at which some personal contact was made at SPP stage (i.e. personal collection, refusal or RPE left with a person) was relatively constant at about 30% across the course of the survey. This reflects the similar finding observed at the SPD stage in Figure 7.17.

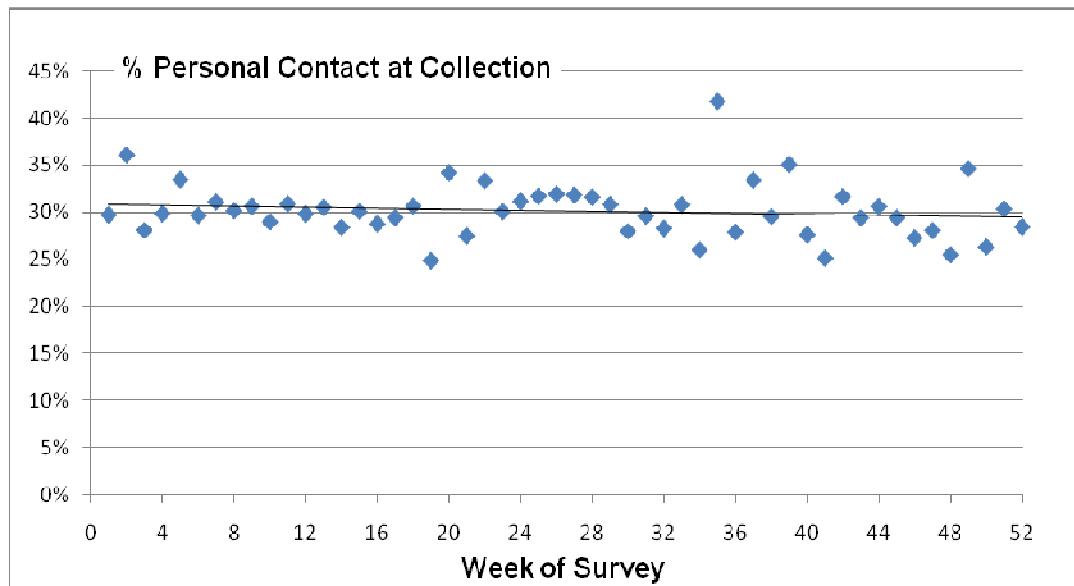


Fig 7.27 Proportion with Some Personal Contact at SPP Stage by Week of Survey

#### 7.2.12.5 Overall Response Rates

The culmination of all the preceding stages was the receipt and successful coding of a complete questionnaire from a sample household. The detailed response status for all sampled households is shown in Table 7.6, while a summary of the response types is shown in Table 7.7.

Table 7.6 Overall Response Outcomes

Detailed Response Code	% of Households
Collected from person	9%
Collected from doorstep	29%
Mailed back	5%
Vacant premises	3%
Other sample loss	1%
Refusal on delivery	9%
Refusal on pickup	7%
Blank forms at collection	8%
Blank forms via mail	1%
Refusal via phone	1%
Motivational Call refusal	1%
Reminder Call refusal	0%
Reminder Call non-completion	4%
Partial response	4%
Non-response	17%

Table 7.7 Overall Response Outcomes

Summary Response Type	% of Households
Response	45%
Sample Loss	3%
Refusal	26%
Partial Response	4%
Non-Response	21%

The final response rate, based on those fully responding from the net sample (i.e. the gross sample minus the sample loss), is 47%.



The response rate, however, varied considerably across the sampling regions, as shown in Table 7.8. Within Metro Melbourne, the response rates were lowest in the Inner and Outer Western Suburbs, and highest in the Maroondah and Outer North-Eastern Suburbs. The response rate in the regional Cities was generally higher than in Metro Melbourne (with the exception of the Shepparton which had a lower response rate due to many low-density rural areas).

**Table 7.8 Response Rates in different Sampling Regions**

Sampling Region	Response Rate
Central Metro	40%
Inner West Metro	39%
Outer West Metro	39%
Inner North Metro	44%
Outer North Metro	43%
Maroondah Highway	54%
Outer North-East Metro	56%
Inner South-East Metro	45%
Middle South-East Metro	48%
Outer South-East Metro	42%
Fringe South-East Metro	47%
DPCD Activity Centres	43%
Geelong	53%
Ballarat	48%
Bendigo	53%
Shepparton	46%
Latrobe Valley	52%
TOTAL	47%



## 8 Data Coding

### 8.1 Initial Office Checking

When the survey returns come back into the Kew Survey Office, either after being collected on the weekend or coming back through the mail, they are unpacked and checked before the questionnaires are sent on to the data entry room for full data processing.

#### 8.1.1 Visual check of returns

The completed returns are first checked for completeness. For each household, there should be as many travel diaries as there are people aged 5 and over in the household (plus extras if some respondents used more than one diary). While this has already been checked in the field by the field staff, it is possible that in the difficulties of field conditions (heat, sun, wind, rain, time pressures), this check might not always have been perfect. Therefore it is checked again in the Survey Office under more controlled conditions. If there are missing diaries, and a phone number is available for the household, then they are phoned from the Kew office in an attempt to retrieve the missing diaries.

In order to be passed on to the data entry room, the survey return must be “complete” in the sense that at least 67% (two out of three) of expected diaries must be completed. If there are less than 67% completed diaries for the household, then the return is placed in a “pending file” awaiting the return of individual diaries in the mail which may convert the household into a completed household.

At this stage, any unused materials (especially travel diaries) are removed from the survey packs and placed back into the stocks of raw materials for use in a subsequent week.

### 8.2 Coding Method

#### 8.2.1 What physical coding method was used?

The coding method chosen for this survey used a custom-written program, designed and produced by TUTI, for data entry and editing. The program (Speedit – Survey Program for Entry and Editing of Data Involving Travel) is described in more detail in Section 8.5. The program uses screens that are visually similar to the pages of the physical questionnaires, is based on a number of separate databases that are easily updated for different surveys and geographic regions, undertakes geocoding “on-the-fly” using lookup tables, and conduct a wide range of editing cross-checks while the data is being entered. The program is also designed to “write itself” using data drawn from a range of tables describing the coding procedures for any particular survey, which accelerates the process of adapting the program for different surveys while minimising the chance of accidental coding errors when reprogramming.

#### 8.2.2 Why was this coding method used?

The Speedit method was selected for three main reasons:

- The Speedit program geocodes as the data is entered, thus enabling a wider range of editing checks at the time of data entry.
- The program is designed for a non-networked environment, providing greater flexibility when working in a temporary field office such as Kew.
- The program outputs data files which are easily input into the analysis process.



## 8.3 Structure of Data Files

### 8.3.1 Administration, Household, Person and Travel files

The various files created by VISTA09 are linked together as shown in Figure 8.1. The linkages are created by means of ID numbers for each record in each file, which identify a unique relationship with the other files.

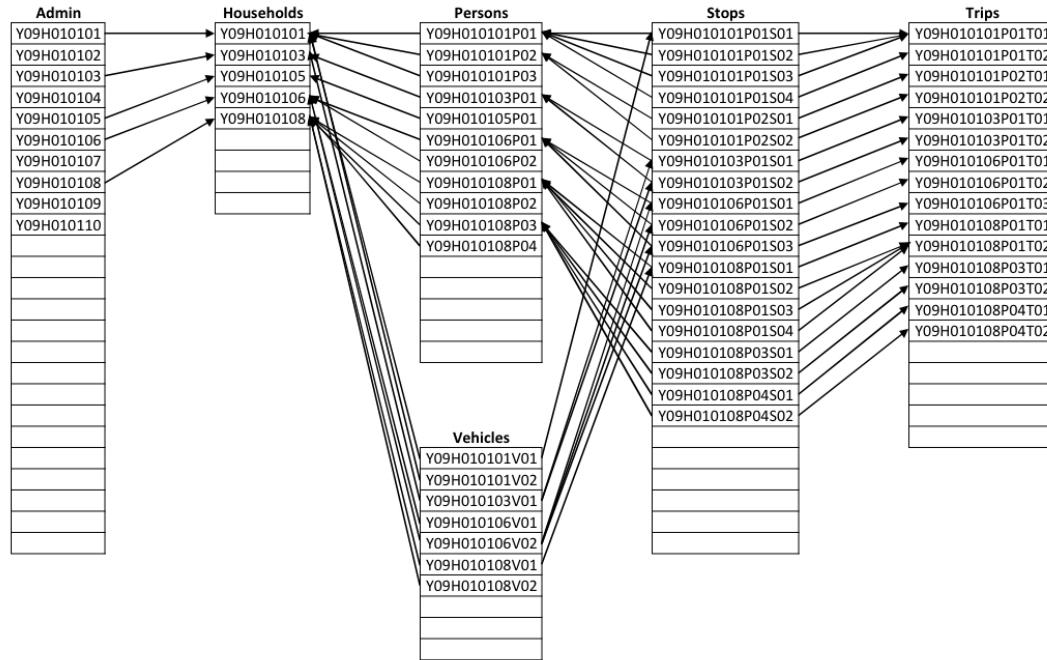


Fig 8.1 Structure of the VISTA09 Data Files Linkages

Thus the responding Households obtain some characteristics, such as address and geocodes, from the Admin file which contains details of the entire sample of households that received survey materials. Each Person belongs to a specific Household, as does each Vehicle. In turn, each Stop record belongs to a specific Person, but each Vehicle belongs to a specific Stop (if the vehicle is used by a household member on the Travel Day). Stop records are combined to create Trip records.

The ID numbers used to link each file have a specific format as follows:

Household Records: YyyHrrwwhh, where yy is the year of the survey (09 for VISTA09), rr is the survey fieldwork region number (from 01 to 18), ww is the survey week (from 01 to 52) and hh is a household number within that region and week (from 01 to 42).

Person Records: YyyHrrwwhhPpp, where pp is the person number within each household.

Vehicle Records: YyyHrrwwhhVvv, where vv is the vehicle number within each household.

Stop Records: YyyHrrwwhhPppSss, where ss is the stop number within each person.

Trip Records: YyyHrrwwhhPppTtt, where tt is the trip number within each person.

## 8.4 Coding Frames

### 8.4.1 Coding frames for each data file

Each data file has a Coding Frame describing the meaning of each variable in the file. The Coding Frames are attached to the data files as a separate worksheet, and are also provided as Appendices to this report, as follows:



Household File - Appendix R

Vehicle File- Appendix S

Person File- Appendix T

Stop File- Appendix U

Trip File- Appendix V

Journey to Work (and Journey from Work) File- Appendix W

Home-Based Chain File- Appendix X

The format of the Coding Frame for each variable is similar, as shown below:

Variable Name	Variable Meaning
DWELLTYPE	Dwelling Type
Min	1
Max	4
-2	N/A
-1	Missing
1	Separate House
2	Terrace/Townhouse
3	Flat/Apartment
4	Other

The name of each variable in the datafile is given (e.g. DWELLTYPE) followed by a brief description of the meaning of the variable. For each variable, the range of the variable (especially for Codes) is given in terms of the minimum and maximum allowable values of the code. The meanings of each of the codes is then provided. As explained in section 9.4.1, missing values were assigned negative numbers as codes (-2 for not applicable and -1 for missing). For some variables, negative values have specific meanings, as defined in the coding frame. The meaning (if any) of the zero code is then given, followed by the meanings of the allowable (non-missing) code values.

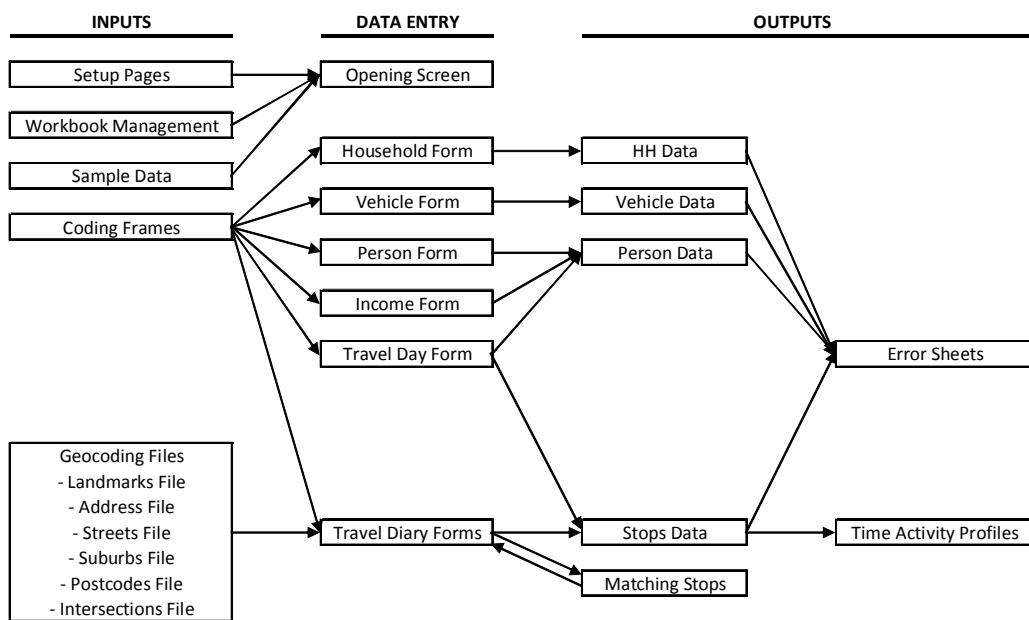
## 8.5 Data Entry Programs

### 8.5.1 What programs were developed for data entry?

For a previous travel survey conducted in Melbourne in 2005 (MATS), a data entry program was developed by TUTI. This program has been used, and further developed, in several subsequent surveys in Queensland and New Zealand, and was adapted for use in VISTA07. It is being used again for VISTA09. The Speedit program (**S**urvey **P**rogram for **E**ntry and **E**diting of **D**ata **I**nvolving **T**ravel) is an Excel-based program, making extensive use of VBA macros. The latest version developed for VISTA09 is designed so that the program writes the required necessary code, after looking up key parameters in various data tables describing the survey.

The details of the program are described in a separate report, and are summarised below.

The Speedit program uses separate data entry screens for the various components of the survey instrument (Household, Person, Vehicle and Stop data), drawing upon a variety of Input files, and producing a range of Output files, as shown in Figure 8.2. The screens are designed to reflect the layout of the paper questionnaire, as much as possible, to facilitate error-free data entry.



**Fig 8.2 Overview of the Speedit Program Structure**

The components of the Speedit program are as follows:

### INPUTS

**Setup Pages** – these pages enable the user to customise aspects of the program for a particular survey, including the name and dates of the survey. It is from these pages that information is obtained by the program which enables it to write the required code for the program.

**Workbook Management** – most of the worksheets in the Speedit workbook are hidden from the data entry operator. The Workbook Management worksheet enables specific worksheets to be shown or hidden, as required.

**Sample Data** – this page contains the address data for all households in the survey sample. The data has previously been exported from the HotSpot Survey Administration program.

**Coding Frames** – several pages in the workbook contain the coding frames for the variables in the data entry worksheets.

**Geocoding Files** – a central component of Speedit is the ability to perform geocoding of locations “on-the-fly” as the data is entered. To facilitate this, a number of large databases had to be pre-assembled to enable geocoding via lookup tables. These databases included:

- Landmarks File - a file of over 71,000 named locations such as shops, schools, and other places in the Study Areas
- Address File - a file of over 1,500,000 street addresses, with latitudes and longitudes in the Study Areas
- Streets File – a file of 70,000 street names in the Study Areas
- Suburbs File – a file of over 15,000 town names and centroids across Australia
- Postcodes file - a file of over 2,400 postcodes and centroids across Australia
- Intersections File - a file of over 200,000 intersections in the Study Areas



Given the increased file sizes allowed in Excel 2007 (up to one million records per sheet), all these databases are held within the Speedit workbook. Some of the files (e.g. the address file) are split over more than one worksheet because of their size).

### DATA ENTRY

**Opening Screen** - Starting the Speedit program presents the start-up screen shown in Figure 8.3. The data entry process is started by first entering a Household ID number (HHID). This ID number is checked against the Sample Data to check for its validity, and a household address and coordinates are then returned to the Opening Screen. The program also checks the output file of Household Data to see if the data for this household has already been entered, and provides options to the user as to how to proceed.



Fig 8.3 The Speedit Start-up Screen

**Household Form** – Assuming that this is the first data entry for this household, clicking on the large green button in Figure 8.3 will take the user to the Household Form, as shown in Figure 8.4.



**VISTA09 - HOUSEHOLD FORM**

**Return To... ▾**

**Now start here:**

How many people **usually** live in the household, including yourself?

How many **Visitors** stayed in this household on the night before the Travel Day?

---

In what **type of dwelling** does this household live?

Is this dwelling **owned or rented** by any member of this household?

How long has this household lived at this address?  Years  Months

---

How many **registered vehicles** at this address?

How many **bicycles** (in working condition) are kept in this household?  Adult  Kid

How many of these bicycles were used in the past 14 days?

---

Contact number (landline)

Contact number (mobile)

Collected at door: #N/A

White Pages: #N/A

**Go to Person Form**

**Fig 8.4 The Speedit Household Form Screen**

The Household Form screen presents the same questions as contained on the Household Form (see Appendix C) and in much the same layout. Data can initially be entered by using the drop-down menus for each answer. However, each drop-down menu also has “type-ahead” intelligence and the menu items have been so named that usually just typing the first character of the answer will provide the correct answer. The user can then enter data very quickly using the keyboard and the Tab key to move from question to question. When data entry is completed and the user clicks on the “Go to Person Form” button, an error-checking routine is run. If any problems are detected, an error message screen appears and allows the user to either correct the errors immediately or to proceed and address the errors later.

**Person Form** – Once the data in the Household Form has been accepted, the user will be taken to the Person Form, as shown in Figure 8.5. This form has space for up to nine persons (not all shown in Figure 8.5), laid out in similar format to the paper version of the Person Form (see Appendix D). The program already knows, however, how many people to expect (from the Household Form) and only that many columns are activated for person data entry. Once again, when data entry is completed and the “Go to Vehicles Form” button (not shown) is clicked, an error-checking routine is run before allowing the user to progress.



## VISTA09 - PERSON FORM

Number of Persons 2	Oldest RESIDENT			
	1	2	3	4
First Name				
Month of Birth				
Year of Birth				
Gender				
Relationship to P01	SELF			
County of Birth				
Car Licence				
Motorcycle Licence	<input type="checkbox"/> Motorcycle Licence	<input type="checkbox"/> Motorcycle Licence	<input type="checkbox"/> Motorcycle Licence	<input type="checkbox"/> Motorcycle Licence
Other Licence	<input type="checkbox"/> Other Licence	<input type="checkbox"/> Other Licence	<input type="checkbox"/> Other Licence	<input type="checkbox"/> Other Licence
No Licence	<input type="checkbox"/> NO Licence	<input type="checkbox"/> NO Licence	<input type="checkbox"/> NO Licence	<input type="checkbox"/> NO Licence
Currently Employed	<input type="checkbox"/> Full-time work			
	<input type="checkbox"/> Part-time work			
	<input type="checkbox"/> Casual work			
Currently Studying				
Other Activities				
Other (specify)				
Work Hours				
Type of Employment				
Occupation				
Industry				

**Fig 8.5      The Speedit Person Form Screen**

**Vehicle Form** – Once the data in the Person Form has been accepted, the user will be taken to the Vehicle Form, as shown in Figure 8.6. This form is similar to the Person Form and has space for up to nine vehicles (not all shown in Figure 8.6), laid out in similar format to the paper version of the Vehicle Form (see Appendix E). Once again, when data entry is completed and the “Go to Travel Form” button (not shown) is clicked, an error-checking routine is run before allowing the user to progress.



Number of Vehicles 3	Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4
Vehicle Type:	<input type="button"/>	<input type="button"/>	<input type="button"/>	<input type="button"/>
Make:	<input type="button"/>	<input type="button"/>	<input type="button"/>	<input type="button"/>
Model:	<input type="button"/>	<input type="button"/>	<input type="button"/>	<input type="button"/>
Year:	<input type="button"/>	<input type="button"/>	<input type="button"/>	<input type="button"/>
Fuel Type:	<input checked="" type="checkbox"/> Petrol <input type="checkbox"/> Diesel <input type="checkbox"/> LPG/CNG <input type="checkbox"/> Electric	<input checked="" type="checkbox"/> Petrol <input type="checkbox"/> Diesel <input type="checkbox"/> LPG/CNG <input type="checkbox"/> Electric	<input checked="" type="checkbox"/> Petrol <input type="checkbox"/> Diesel <input type="checkbox"/> LPG/CNG <input type="checkbox"/> Electric	<input checked="" type="checkbox"/> Petrol <input type="checkbox"/> Diesel <input type="checkbox"/> LPG/CNG <input type="checkbox"/> Electric
Cylinders:	<input type="button"/>	<input type="button"/>	<input type="button"/>	<input type="button"/>
Running Costs:	<input type="button"/>	<input type="button"/>	<input type="button"/>	<input type="button"/>

Fig 8.6 The Speedit Vehicle Form Screen

**Travel Day Form** – Once the data in the Vehicle Form has been accepted, the user will be taken to the Travel Day Form, as shown in Figure 8.7. This form is based on the front page of the Travel Diary booklet (see Appendix F) and accepts information about where each person started their Travel Day, whether they travelled on the day and, if so, when they started travelling on the day. If they did not travel, they are asked why they didn't travel on that day. Depending on whether they travelled or not, a different button appears on the screen to lead the user to the next appropriate page (after error-checking has been performed).

Travel Day		Monday						
Person:	1	First Name						
Date	6	/	Month	7	/	Year	2009	
1. Where were you at 4.00 a.m.?	<input type="text"/>							
Number	Street Name	<input type="button" value="Landmark"/>						
Suburb/Town		Postcode	<input type="text"/>					
Cross-Street:	<input type="button" value="GeoCode"/>						<input type="text"/>	
2. Did you leave this place at all on the Travel Day?	<input type="text"/>							
3. At what time did you leave this place?	Hour	Minutes	AM / PM	<input type="text"/>				
4. If you did not leave this place at all, please give the reason.	<input type="text"/>							
5. If you did not leave this place at all, when did you last travel?	Day of Week	Date	Month	/	Year	<input type="text"/>		

Fig 8.7 The Speedit Travel Day Form Screen

**Travel Diary Forms** – Assuming that the respondent made some trips on the Travel Day, the user will be taken to the Stops Form screen (see Figure 8.8 for the full screen and Figure 8.9 for a close-up on the area used for data entry for each Stop). The layout of this data entry screen is based on the Stops page of the Travel Diary (see Appendix F), but with one major difference. Question C from the paper survey (at the bottom of the first column) is the first entry on the Stops data entry screen (in



addition to what's shown in Figure 8.8 for Question C, there would be other check boxes corresponding to the number of persons in the household). The reason for this re-ordering of the questions is that if the respondent has travelled with another member of the household, and that person has already had their Stop data entered in Speedit, then that data can be copied to the current screen, rather than re-entering all the data from scratch, simply by clicking on the Copy Stop button.

The screenshot shows the 'STOP FORM' section of the Speedit Travel Diary. At the top, there are buttons for 'Insert STOP Before' and 'Delete this STOP'. Below these are dropdown menus for 'PERSON: 1' and 'STOP: 1'. A 'Go To Navigator' button is also present. On the right side, there are buttons for 'Return To...' and 'Next Stop Data'. The main area contains several sections: 'Previous Stop Data' (with fields for 'HOW:' and 'WHAT:'), 'DISTANCE:' (with fields for 'Number', 'Street', 'Suburb', and 'Cross-Street'), 'ARRIVE:' (with a dropdown menu), 'LEAVE:' (with a dropdown menu), and 'Previous Stop Data' again. To the right of these are sections for 'HOW did you get to Stop 1?' (with fields for 'Other Mode (specify)', 'Bus/Tram Route #', and 'Fare Type'), 'Private or Company Vehicle Trip Details' (with fields for 'Vehicle Type', 'As Driver?', 'How Many Pax?', 'Recorded Vehicle?', 'Which Vehicle?', 'Parking Type', 'Parking Fee', and 'Walk Time'), and 'WHEN arrive Stop 1?' (with dropdown menus for date, time, and duration). At the bottom, there are fields for 'WHY did you go to Stop 1?' and 'GeoCode' (with 'geo method', 'longitude', and 'latitude' inputs).

Fig 8.8 The Speedit Travel Diary Form Screen

This is a close-up view of the same 'STOP FORM' section as in Figure 8.8. The layout is identical, showing the 'STOP FORM' header, 'Insert STOP Before' and 'Delete this STOP' buttons, 'PERSON: 1' and 'STOP: 1' dropdowns, and 'Go To Navigator' button. The 'Previous Stop Data' and 'DISTANCE:' sections are visible on the left, while the 'HOW did you get to Stop 1?' and 'Private or Company Vehicle Trip Details' sections are on the right. The 'WHEN arrive Stop 1?' section at the bottom is also present. The overall design is clean and organized, typical of a survey software interface.

Fig 8.9 Close-up of the Speedit Travel Diary Form Screen

If the data is entered from scratch, then it follows the same order as show on the Stops page of the Travel Diary, mainly via the use of drop-down menus corresponding to the answer options shown on the questionnaire page. Once the place type has been specified in Question A, the option is provided in question B for specifying the place as a Landmark which will give its coordinates automatically. If it



cannot be specified as a Landmark, then the address details need to be specified and the coordinates found by clicking on the GeoCode button.

Depending on the answer to the “More Stops?” question in section G, a different exit button appears, either to move to another Stop or to go to the next part of the questionnaire. When leaving each Stop, an error-checking routine is run to detect any errors within that Stop. The Stops form is used repeatedly for each of the stops described by the respondent.

The yellow regions at the left and right of the screen show some summary characteristics of the Previous and Next Stops for the current person to enable the current Stop to be better placed in context. Other features available on the Stops form are the ability to Insert a Stop before the current stop or to Delete the current Stop (both useful when editing data already entered), to skip between Stops and Persons (using the Person and Stop scrollers) and to use the Navigator button to view the entire sequence of Stops for any person.

**Income Form** – Once all Stop data has been entered for one Person (or if that Person made no Stops on the Travel Day), then the user is taken to the Income form screen (which corresponds to page 15 of the Travel Diary booklet – see Appendix F), as shown in Figure 8.10. This form accepts information about the person income of the respondent, who filled out the Travel Diary and when it was filled out. To move on to entering Stops data for the next member of the household, the “Go to Travel Day Form for Next Person” button is clicked, whereupon an error-checking routine is run for all the stops entered for this person. After resolution of any problems identified (or leaving them for later), the program goes to the next person or, if the last person’s travel data has already been entered, it then runs an overall error-checking routine for the entire household’s data.

What is your weekly income?

Who in the household actually filled out this Travel Day form?

Number

(Name)

On which day of the week was the Form filled out?

Date Month Year

Go to Travel Day Form for Next Person

Fig 8.10 The Speedit Income Form Screen

## OUTPUTS

**HH Data** – the data entered for each household is stored in two formats within Speedit. Firstly, the Raw Data, corresponding exactly to the data entered on the Household Form, is recorded so that the Household Form screen can be re-created later by importing the Raw Data from an external file. Secondly, a file of Processed Data is created as an intermediate step in producing the final Household Data file (as described by the Coding Frame in Appendix R). When all data entry and editing has been completed for one data entry session for a household, the data can be exported to an external data file by clicking on the “Export/Clear Data” button shown on the Start-up Screen in Figure 8.3. This appends a time-stamped copy of the current version of that household’s Raw and Processed data onto the end of the external files of Household data. It also clears the internal data worksheets within Speedit, ready for data entry for another household. The most recent version of the Raw Data can later be imported into Speedit to re-commence data entry or editing.



**Vehicle Data** – using the same procedures as described above for Household data, this external file contains the Raw and Processed versions of all the previously entered Vehicle data.

**Person Data** – this external file contains the Raw and Processed versions of all the Person data.

**Stop Data** – this external file contains the Raw and Processed versions of all the Stops data.

**Matching Stops** – as noted earlier, Stops data can be copied from one person to another using the Copy Stops button in section A of the Stops form screen. The Matching Stops file is a temporary file of Stops already entered for a household, ready for copying to another member of the household.

**Error Sheets** – at the end of each data entry screen, and after all data entry has been completed for a household, a comprehensive error check is performed. The Errors found during this check are listed on the Error Sheet. This sheet can then be used by the data enterer to make immediate corrections. Any problems that cannot be resolved are retained on this Error Sheet and exported, and can then be used as a Prompt Sheet during the Clarification Calls with households.

**Travel Activity Profile** – the data obtained during the entry of the Travel Diary forms can be displayed graphically on the Travel Activity Profile sheet (see Figure 8.11). For all persons in the household, the Travel Activity Profile shows the activities and travel being undertaken at each time of the day. At-home activities are shown on the left for each person, travel is in the middle, while out-of-home activities are on the right for each person. The Travel Activity Profile is a very useful means of identifying gaps in the day for each person, and for comparing activity profiles for persons who travel together during the day. They are also useful when re-constructing travel diaries for person aged under five, whose person number is attached to travel in which they are involved.

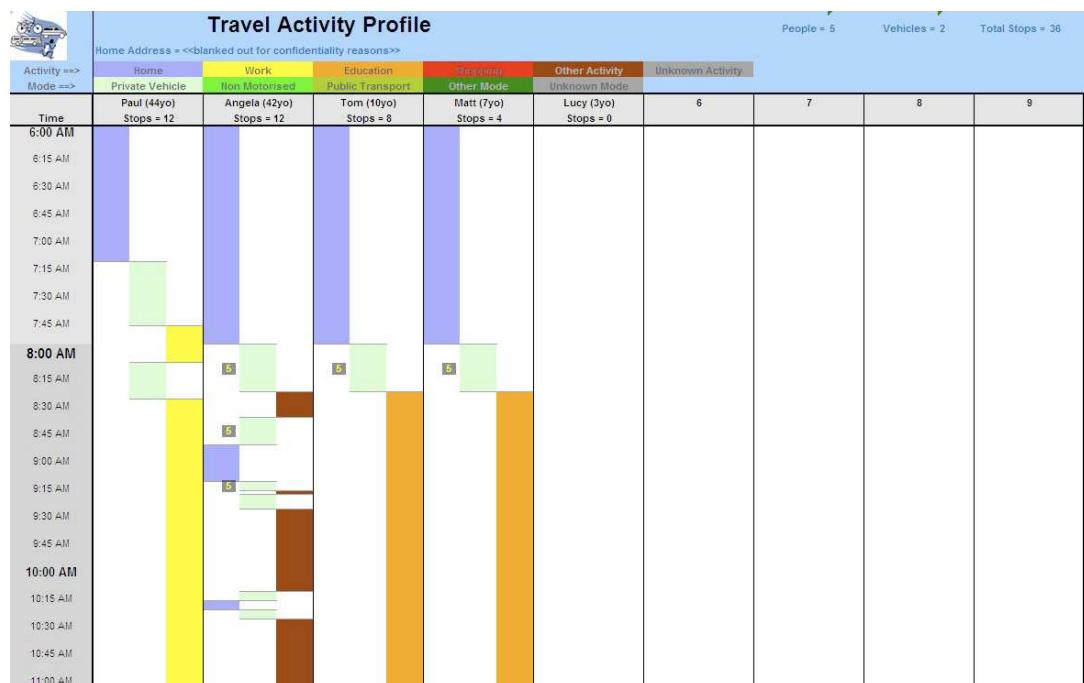


Fig 8.11 Extract from a Speedit Travel Activity Profile (6am through 11am)

## 8.6 Coding Administration

### 8.6.1 How was coding administered?

All coding of data was administered in the Kew/Hawthorn survey office. The Speedit data entry program and all the input and output data files were programmed or held in Excel 2007 workbooks. The data entry was undertaken on non-networked laptop computers, running Excel 2007 within Windows XP. Each data enterer had their own laptop and data entry for any one household was



confined to a single laptop (to avoid having to have the entire database available on each laptop for data editing purposes). Each data enterer was assigned to a limited number of fieldwork regions, to maximise their geographic familiarity with the region. In the data entry room, the Senior Data Supervisor (Amryn Simmons) and the Speedit programmer (David Richardson) were in attendance on most days to provide immediate advice and assistance. At the end of each day, the data from each laptop was copied to a centralised database for backup and increased security. Off-site copies of this database were also made on a weekly basis.

### 8.6.2 Geocoding

As required by the Brief, all destinations and household locations needed to be geocoded to x-y coordinates using the Map Grid of Australia 1994 (MGA 94) Projection Zone 56 (GDA 94 Datum). One of the main features of Speedit, therefore, was the ease and accuracy with which geocoding could be performed. The geocoding was done in several ways, depending on the information provided by the respondent and the corresponding information available in the geocoding databases.

The geocoding module uses several different types of geocoding (depending on the type of locational information available for geocoding), in decreasing order of accuracy and reliability:

- Survey Address Geocodes
- Landmarks
- Full Address & Suburb
- Full Address & Postcode
- Intersection & Suburb
- Intersection & Postcode
- Nearest Address on Street
- Random Address on Street
- Street Name & Suburb
- Street Name & Postcode
- Random Zone in Suburb
- Town Centroid
- Manual Geocoding
- Interstate/Overseas

#### ***Survey Address Geocoding***

When the sample is assembled from the GIS address files and property boundaries, the x-y coordinate of the address is extracted directly from the GIS files. Whenever the respondent goes home during the Travel Day, this x-y coordinate can be used to accurately geocode the trip destination. Considering that about one-third of Stops end at home, this highly accurate geocode is used for many Stop destinations. However, as will be described later in Section 9.6, this home location geocode is randomised to preserve the confidentiality of the respondents, after using the accurate geocode for other calculations (e.g. of distance travelled).

#### ***Landmarks Geocoding***

Landmarks geocoding is used whenever the respondent knows the name of the place they visit (but may not know the full address).



The Landmarks File was assembled from a range of sources including:

- MapInfo Features (supplied with MapInfo StreetPro Australia databases)
- UBD Facilities (supplied with UBD Six Cities CD database)
- Cadastre Centroids (obtained from Property Location Index files)
- Web searches for specific classes of facility (e.g. petrol stations).

The Landmarks database contains over 71,000 entries with different levels of specification. Up to four levels are employed in the specification of landmarks, with Level 4 containing a specific location with an identifiable geocode. The ID numbers used for each level of the landmarks database also serve as the ID numbers for the type of destination visited at each destination. The first three levels of the Landmark database are shown in Appendix Y. The structure of the Landmarks File is based on previous experience of TUTI with the development of similar databases for Brisbane (1992), Melbourne (1994-98) and Perth (2001).

#### ***Full Address & Suburb***

This address matching method uses a lookup-table procedure, wherein a table of all possible street addresses within the Study Area has been created with corresponding latitude and longitude geocodes, and the address of interest is found in the table and the geocodes extracted. The method of creation of this table (of over 1,500,000 addresses) is based on the GIS-based Address File which contains geocodes for most street addresses in the Study Area.

#### ***Full Address & Postcode***

Address matching is done at two levels of boundary definition. For example, the address is first looked for using the suburb name provided by the respondent. If this is not found, then it is looked for in the postcode in which the nominated suburb is located. This is done because respondents often upgrade their suburb to a suburb name which is more socially desirable, but is still in the same postcode.

#### ***Intersection & Suburb***

Many respondents provide the names of intersecting streets as the best description of the location of their destination. To facilitate geocoding from this information, a database of all street intersections has been created using the MapInfo StreetPro street databases. This database of over 200,000 records contains the location of all intersections in the Study Area, specified as "Street1&&Street2" plus the suburb. This database contains intersections identified in both directions, i.e. "Street2&&Street1" as well as "Street1&&Street2".

#### ***Intersection & Postcode***

As with address matching, intersection geocoding is also performed at two levels of boundary definition, i.e. suburb and postcode.

#### ***Nearest Address on Street***

If a full street address is given (with street number) but it is not found in the GIS Address File, then the nearest address on that street is found. Ideally, that address should be on the same side of the street (normally identified as an odd or even number). However, to accommodate situations where there is a large gap in numbers on one side of the street only, the program looks for the nearest number, with numbers on the opposite side of the street given a penalty of plus or minus 6. Once again, the procedure is repeated for suburb and postcode



### **Random Address on Street**

If a partial street address is given (without street number) then a random street number is chosen on that street as a reasonable approximation to the address. Once again, the procedure is repeated for suburb and postcode

### **Street Name & Suburb**

Sometimes the GIS Address File contains no street numbers for a specific street in a suburb, even though there may be multiple properties on that street. In this case, the centroid of properties in that street within that suburb is used as an approximation.

### **Street Name & Postcode**

The same procedure is also applied, using the enclosing postcode.

### **Random Zone in Suburb**

If only a suburb name is given for a location within the Melbourne metropolitan area, then the centroid of a randomly chosen traffic zone within that suburb is chosen as an approximation to the destination location.

### **Town Centroid**

If only a suburb or town name is given for a location outside the Melbourne metropolitan area, then the centroid of that suburb/town is chosen as an approximation to the destination location (because traffic zones have only been defined for the Melbourne metropolitan area).

### **Manual Geocoding**

Some locations cannot be found in any of the predefined geocoding databases. However, a web search (or other manual search procedures) can sometimes find a set of x-y coordinates for that location. In such cases, a set of coordinates is manually specified.

### **Interstate/Overseas**

Some locations are specified only by the fact that they are interstate or overseas (without any specific location being specified). These are normally initial origins for the day or final destinations for the day. In these cases, x-y coordinates are specified for the centroids of Australian towns, while no x-y coordinates are specified for overseas locations (actually coded as (0,0)).

The outcomes of the destination geocoding process for VISTA09 are as shown in Table 8.1.

**Table 8.1    Geocoding Methods used for VISTA09 Destination Geocoding**

<b>Destination Geocoding Method</b>	<b>% of Destinations</b>
Survey Address	33.0%
Landmark	30.9%
Address & Suburb	17.4%
Address & Postcode	0.7%
Intersection & Suburb	5.6%
Intersection & Postcode	1.3%
Nearest Address On Street	4.1%
Random Address On Street	4.6%
Street & Suburb	0.2%
Street & Postcode	0.0%
Random Zone in Suburb	0.7%
Town Centroid	1.6%



It can be seen that the majority of the destinations (92.9%) have been geocoded using the relatively precise methods of “Nearest Address on Street” or better.

### **8.6.3 Clarification Calls**

Any unresolved issues (missing data or inconsistent information which had failed the range and logic editing checks identified in section 9.2) were flagged and the household was scheduled for a Clarification Call (if a phone number was available, which it was for over 90% of cases).

Households were then phoned and clarification interviewers asked questions in a bid to resolve the outstanding issues. They then entered this information using the same Speedit program used for geocoding.

### **8.6.4 Data Validation**

Once the data entry, editing and clarification had been completed by the original data enterer, the questionnaire and the output data for every household was subject to a quality control check by a small team of senior editors. They would check that the data entered was both logically consistent and consistent with that on the physical forms. This quality control check was not as detailed as the validation process done for selected surveys, but would confirm fundamental data such as the number and ages of people and vehicles, and that the times, modes, and purposes for every stop was correctly reflected in the entered data. The Travel Activity Profile graph of movements (see section 8.5.1) and list of errors identified by Speedit (both exported to a log file at the time of the original data entry) were particularly useful at this stage.

Any discrepancies were brought to the attention of the original data enterer, who corrected the data. This had the effect of both cleaning the data and also educating the data enterer, so that less and less needed to be brought to their attention as the survey progressed. Any survey sent back at this stage would pass through the quality control process again afterwards, to ensure that in fixing one error, a new one was not introduced. Only when the data passed the quality control process was it allowed to be extracted from the working data files into the final output data files.

A minimum of 5% of the total surveys entered were subject to a complete validation process. To do this, a senior data enterer would independently complete the entry of the chosen survey, and then compare their entry with the data already entered, in detail. This validation process was primarily used to check the early entries by a new data enterer, to identify and correct systematic entry errors they might be making. A significant goal of the independent entry was to test the quality of the geocoding for each stop (eg. was the data enterer accepting partial address details as provided on the survey form, when they could have identified an exact address via the phone book, internet search, or the like?).

**9**

## **Data Editing**

Data editing took place at two levels. Firstly, when the data was entered into Speedit, automatic error-checking routines were run within Speedit to detect errors and inconsistencies. These were then either resolved immediately before leaving that data entry screen, or resolved later after Clarification Calls were completed. Some of these errors were also resolved at the Data Validation stage.

A second major data editing was performed after the data had been extracted and was being prepared for data release. This higher-level editing usually concentrated on relationships between variables which only became apparent when the data set was considered in aggregate.

The following comments on data editing generally apply to both types of editing, unless specified otherwise.

### **9.1 Data Editing Programs**

#### **9.1.1 What data editing programs were written?**

The Speedit computer program developed by TUTI for data entry for VISTA09 was also used for data editing. In addition, in the final editing, substantial use was made of PivotTables in Excel, within an overall process for data editing.

The data output files extracted from Speedit were used in a data editing process consisting of several steps. Each type of output (viz. Household, Person, Vehicle and Stops data) was contained in a workbook consisting of the following worksheets:

- Raw Data from Speedit
- Processed Data from Speedit
- Linked copy of processed data
- Frequency Tables
- Coding Frame
- Imputation rules

The Raw Data file was used as the ultimate arbiter, since it was the most original and least processed copy of the data as it was input into Speedit. If there were any inconsistencies or errors in the data transformations, then the Raw Data was used as the most accurate copy of the data. Unfortunately, the Raw Data variables were all in Text format and hence unsuitable for data analysis (which is why the Processed Data was more useful).

The Processed Data, as it was output from Speedit, was the main data file used for editing purposes. However, a linked copy of this worksheet was also made on another sheet, because more transformations were usually required in transferring the data between the worksheets to obtain the final version of the processed data. For example, many of the variables in the Processed Data Sheet contained a mixture of numbers and text that looked like numbers. These were all converted to numbers in the linked copy of the Processed Data Sheet. The Frequency Tables worksheet was created from PivotTables based on the data in the Linked Copy of the Processed Data.

The Coding Frame was included in another worksheet, and this was used to create labels for the Frequency Tables. Finally, the rules used for Imputation of missing values were summarised on another worksheet.



## **9.2 Consistency and Range Checks**

Once the survey data had been entered into Speedit, a series of editing checks were undertaken to identify data requiring clarification. In most surveys, two type of editing check are required; Range checks and Logic checks. Range checks are used to identify any values that lie outside the permissible range for variables. The need for range checks is greatly reduced in the VISTA09 survey because of the dropdown menus used for the closed questions, which eliminates typing errors that are the usual cause of range errors. The permissible ranges for all variables are included in the coding frames attached as Appendices R through V.

The second type of editing checks are Logic checks, wherein inconsistencies are detected between the values entered for different variables. Logic checks are cross-tabulation checks, sometimes within one file and sometimes across more than one file. They compare values obtained for one variable with values obtained for other (related) variables, to determine the consistency of the data obtained for each of the variables. These checks can result in two types of outcome: an error, which indicates that one or more of the variables is definitely in error and must be corrected; and a warning, which indicates that one or more of the variables may be in error and may need to be corrected (however, it may also be the case that the situation detected is just unusual, and needs no correction). The scope of Logic checks is virtually unlimited, since “everything relates to everything else”. While many logic check errors were picked up before the Clarification Calls, many more have been discovered since then (and corrected in the final data set). More may be discovered in the future as users of the data perform a wide variety of analyses which highlight inconsistencies previously not seen in the data. The Logic checks performed before Clarification Calls were made are attached as Appendix Z.

## **9.3 Construction of Derived Variables**

Most questions in the self-completion questionnaires were designed such that they could be answered by simply ticking a box, and hence these could be converted simply in the data entry process into drop-down menus.

However, for some questions, there were too many possible answers to cover with pre-defined answer categories. In such cases, they were either asked as totally open questions (e.g. occupation and industry) or else answer categories were provided for the most frequently used answers or to elaborate in cases where it would assist the respondents to understand the type of response required (e.g. by giving the response “bus stop” at the top of question A on the Travel Diary stops page to give an indication of the level of detail required) with an open category at the bottom of the answer categories.

In other situations, a derived variable was constructed on the basis of one or more basic variables in the databases. For example, Household Structure in the Household file was based on the relationships variables in the Person file.

The main questions where unstructured responses had to be converted to categories, or where derived variables were constructed, are described below.

### **9.3.1 Occupation and Industry**

Occupation and industry were asked in open format and then converted to ABS categories of ANZSCO (Australian & New Zealand Standard Classification of Occupations) and ANZSIC (Australian and New Zealand Standard Industry Classification) by data coders with prior experience in the use of the ANZSCO and ANZSIC coding systems (see Appendix T).



### 9.3.2 Reason for Not Travelling

Respondents who did not travel were asked the reason why they did not travel on their Travel Day. While the range of possible answers is potentially very wide, experience in previous surveys had shown that they could be generally classified using a limited number of categories (see Appendix T).

### 9.3.3 Destination Place

Fifteen categories of destination place were provided in question A on the Travel Diary stops page, including "Somewhere else". Using this classification, 10% of responses fell under the "somewhere else" category. To further describe these 10% of responses and to subdivide some of the other categories (e.g. the 10% that were classified as "a shop"), a more precise description of the Destination Place was developed. The more detailed coding frame for this subdivision is shown in the variable DestPlace2 (and summarised in DestPlace1). This coding frame is based primarily on the Level 2 categories from the Landmarks database (and is a de facto classification developed by TUTI from previous surveys in Brisbane, Melbourne and Perth). The DestPlace2 categories are shown in Appendix U.

### 9.3.4 Activity Undertaken at Destination

In addition to the twelve pre-defined categories describing activities undertaken at the destination, there was also an "other reason" category (which gathered about 8% of responses). A more detailed breakdown of destination activities was therefore developed, as shown for the variable DestPurp2 in Appendix U.

### 9.3.5 Household Structure

The Person survey form asks each person to state their relationship to Person 1 (the older resident in the household), according to Table 9.1.

**Table 9.1 Relationships among Household Residents**

Relationship	Definition
1	Spouse
2	Child
3	Sibling
4	Grandchild
5	Other relative
6	Unrelated
7	Oldest Resident

From this information, a 9-character string of information is created for each household, where each character in the string represents the relationship of each resident to Person 1. For example, a string of 712250000, represents Person 1 as themselves (7), followed by the spouse/partner (1), two children (22) plus a non-related friend (5). This string contains information only for residents, and excludes visitors to the household (since they do not affect the ongoing demographic structure of the household). From these strings, the household is then allocated to a Household Structure group, as shown in Table 9.2.

**Table 9.2 Household Structures Definitions**

Household Structure	Definition	Examples
Sole Person	A person living alone	700000000
Couple no Kids	A person and spouse/partner, but with no children living with them	710000000 715000000 713300000
Couple with Kids	A person and spouse/partner, and with at least one child living with them but without grandchildren	712000000 712220000 712350000
One-Parent	A parent without partner, and with at least one child (dependent or independent) living in the household	720000000 722600000
Other HH Structures	Any other household type, such as extended families or unrelated group living	712544000 766000000

### 9.3.6 Household Income

The survey only collects income on a personal basis, since this is more likely to be accurately reported than household income and since the Census also collects income data on a personal income basis. However, for many analyses, an estimate of household income is required. Rather than have users of the data estimate their own values of household income from the personal income data provided, the household file contains an estimate of household income for each household.

Before making this estimate, any missing personal incomes must be imputed, as described in Section 9.4 below. Then, each individual is given a dollar income based on their income group. For most groups, the dollar income assigned is the midpoint of the income range to which they belong, except for the high income group which has no midpoint. Persons in this income group are assigned a weekly income of \$2500. The incomes of each person in the household are then summed to obtain an estimate of the household income. The household incomes are left as dollar values, enabling the user to aggregate them into groups as they see fit for the purpose of their particular analysis.

### 9.3.7 Road Travel Distances

The road travel distances initially used in the VISTA09 Stop File were based on a multiple of the straight-line distance between origin and destination. The straight-line distance was based on the Great Circle distance between the origin and destination latitudes and longitudes. The multiplier was based on research conducted as part of VISTA07, where straight-line distances were compared with actual road distances based on the roads which respondents stated that they actually used. The actual road distances were estimated using the RoadLink program. Based on this analysis, a multiplier of 1.40 was used in VISTA09. This distance was used for all edit checks of average speeds on each Stop.

Subsequently, the road distances were estimated by the Department of Transport using outputs from the Melbourne Integrated Transport Model (MITM). These MITM distances were used for all car driver and passenger trips, and for walking and bicycle trips.

### 9.3.8 Public Transport Network Distances

Public transport distances were also initially based on a multiple of the straight-line distance. Subsequently, train distances were re-estimated based on a train-specific network model, while tram and bus distances were based on the MITM distances (since trams and buses are largely confined to the road network).



## 9.4 Missing Data

### 9.4.1 How was missing data coded?

Despite the best attempts at imputation (see section 9.5), there may still be some missing data in the final data set. It was important, therefore, that missing data be clearly identified. As noted above in section 8.4.1, two types of missing data may appear in the date files:

Code	Type of Missing Data
-2	Not Applicable
-1	Missing Data

The Not Applicable value of -2 is a value that is used when no data exists for that variable, but none is meant to exist. A good example of this situation is where the “Major Streets” questions are not answered because the trip was made on foot or by public transport.

The Missing Data value of -1 is a value that is used when no data exists for that variable, and some data is meant to exist. This is the only true case of “missing data”. For most variables, missing data has been imputed, as described below in Section 9.5.

### 9.4.2 How was missing data reported?

Missing data can be reported in one of two ways. Firstly, the number and percentage of data that is missing can be reported in tables to illustrate the extent of missing data. Secondly, especially when the percentage of missing data is very low, the missing data can be removed and percentages can be calculated from only the “non-missing” data.

## 9.5 Imputation of missing data

### 9.5.1 How were travel diaries constructed for kids under 5?

Travel diaries were only completed by respondents aged 5 and over. However, on each trip record, respondents recorded who else in the household accompanied them on that trip. By finding those trip stage records on which a household member under 5 years of age was an accompanying person (see Figure 8.10 for an example), the travel diary of the person under 5 could be reconstructed (at least for those trip stages made with another member of the household).

This reconstruction of travel diaries for persons under 5 was undertaken to develop a file of trip stages, which were then added to the original file of trip stages (stops). In performing this reconstruction, however, a number of limitations became apparent with this method as a means of generating a full travel diary:

- The method only gives travel made by the person under 5 when they were accompanying another member of the household; travel made only with non-household members (such as grandparents or pre-school teachers) was not recorded
- As a result of the above limitation, several persons under 5 appeared to start or end their day at a place other than home; for example, if their parents drove them to pre-school and someone else (outside the household) brought them home as part of a carpooling arrangement, then the child would appear to remain at pre-school for the rest of the day
- The method relies on others in household accurately recording who accompanied them on their travels
- When two or more household members travelled with the person under 5, there is the possibility of conflicting information about the trip being provided by each of the household members.



As a result of the above limitations, it is inevitable that the trip-rate of persons under 5 will be underestimated to the extent that trips are made entirely with non-household members.

The re-construction of the under-5 travel diaries proceeded in several stages:

- Households containing children under 5 are identified
- All person and stop records for these households are extracted
- These stop records are examined to find stops with a person under 5 as an accompanying person
- Replicates of these stops are made where more than one person under 5 is accompanying
- The Stop ID number is changed to reflect the person number of the person under 5
- For each person under 5, the stop records are sorted in order of increasing arrival time at the destination
- Duplicates of arrival time and destination place with each person under 5 are deleted
- The list of accompanying persons is changed to include the “donor” of the Stop record, and to remove the person under 5
- Modes of transport are changed to reflect the perspective of the person under 5 (especially changing Car Driver to Car Passenger)
- Stop purposes are updated to reflect the perspective of the person under 5
- The sequence of Stops for the person under 5 is reviewed to ensure a logical sequence, with gaps at the start or end of the day imputed where possible.

### 9.5.2 What procedures were used for imputation of missing data?

Where possible, imputation was avoided by actually obtaining missing data from respondents during the Clarification Calls. However, some degree of imputation was still necessary in the final data editing stage in order to maximise the usefulness of the data sets. Apart from the imputation of entire travel diaries for those under 5 years of age, two other types of imputation were undertaken.

Firstly, in the Stops file, missing stops were imputed where the existence of these stops was clear, and where sufficient information was available to reasonably impute the details of the stop. Four examples of imputation of missing stops will suffice to explain the methods used in this process:

- In many cases, respondents failed to tell us the details about their return trip home at night. Where their last recorded activity of the day was unlikely to be their final destination for the day (e.g. they went to work at 9am and never came home, or they went shopping at noon and never came home etc), then the details of their trip home could often be imputed by simply reversing their outbound trip earlier in the day. However, where their last recorded activity of the day was quite possibly their final destination for the day (e.g. they went to work at 11pm, or they went back to a friend’s house at night having started at the same place at the start of the day), no trip home was imputed.
- Some respondents failed to tell us about trips they made home during the day. For example, they told us they dropped their kids at school at 8.30am, then the next thing they tell us is that they went shopping in a nearby shopping centre at 12noon, then the next thing they tell us is that they picked up their spouse from the train station at 6pm. At no time, however, did they tell us that they came home in the meantime. However, the times and distances involved indicate that the person most likely returned home in between each of the out-of-home activities. For example, they left the school at 8.30am and arrived at the shops only 1km away 3.5 hours later – this would have to be an extremely slow trip. The more logical explanation is that they came home after leaving the kids at school, and then left home to go to the shops shortly before noon. These



missing trips home can usually be easily imputed by reversing the trips on each side of the missing trip home.

- For users of public transport, they sometimes forget to tell us about all the details of their access and egress trips to and from the public transport service, especially for bus trips. At the most extreme, they might tell us that they went to work and then came home by bus, telling us nothing about the bus stops they used along the way. In this case, a trip stage from home to a bus stop is imputed and another trip stage from a bus stop to their workplace is imputed on their journey to work, and vice versa for their journey from work. The reason these trip stages are omitted is usually because the bus stops are just near their home and workplace, and so it seems that they are going directly from home to work by bus. Therefore, the location of the bus stop near home is placed at the nearest bus stop to their home, while the bus stop near work is placed at the nearest bus stop to their workplace. In less extreme cases, they may tell us about their walk to the bus stop, but forget to tell us about their walk from the bus stop (because it is so close to their destination). In this case, the imputation is limited to one end of the trip.
- Respondents sometimes make trips that start and end at home (e.g. just going for a walk or walking the dog). Since the start and end locations are used to calculate distances, having the start and end at the same place would lead to a zero distance trip. To avoid this problem, the “round trip” is split into two trips (one out and one back) with the destination of the first trip being imputed based on the total time of the round trip and the mode of transport used on the round trip.

The second type of imputation applied to individual values of variables in the household, person, vehicle and stops files. Such imputation deals with item non-response by estimating values for the missing data based on some other source of information. This method has the advantage that all data in the existing data set is used (i.e. no data is discarded), the imputation is done only once (compared to the multiple re-calculations of weights using the re-weighting method), and a clean data matrix is obtained for future analysis. For these reasons, imputation is the preferred method of dealing with item non-response (INR). There are several methods of INR imputation commonly used in travel surveys:

**Deductive Imputation.** This method allows a missing value to be replaced by a perfect prediction, based on a logical conclusion drawn from other data in the data set. This is often the case when redundant questions are asked in a survey, where missing responses to one question can be replaced by information derived from the other redundant questions.

**Overall Mean Imputation.** In this method, the missing value is replaced by the mean of that variable across all respondents in the sample. For example, a missing income would be replaced by the mean income of the respondents in the sample. This can be a dangerous method, unless the extent of item non-response is very small, because the method leads to reduced estimates of the variance (because all the imputed values are at the mean of the distribution) and hence invalid confidence intervals.

**Class Mean Imputation.** This method overcomes some of the problems of Overall Mean Imputation by first dividing the sample population into strata, based on other variables in the data set, and then calculating the mean of the variable to be imputed within each strata. The observation requiring imputation is then assigned to one of these strata, based on its values of the stratifying variables, and the mean of the variable within the stratum is assigned to the missing value. There will still be some reduction in variance using this method, but far less than would have occurred using Overall Mean Imputation.

**Hot-Deck Imputation.** In hot-deck imputation, missing responses are obtained by finding a record within the data set that is similar in all respects to the record with the missing value. The value of the variable (e.g. income) for this record is then substituted for the missing value. A variety of hot-decking procedures have been proposed including random overall hot-deck imputation (whereby a set of records with similar characteristics are formed, and the value to be imputed is obtained by random sampling from this set), random imputation within classes, sequential hot-deck imputation (where



imputed values are obtained from the set of records by selecting each record in sequence) and hierarchical hot-deck imputation (where a set of records is developed with exact or non-exact matches to the target record, and then the better matches are used preferentially as the source of imputed data).

**Cold-Deck Imputation.** Whereas hot-deck imputation uses information from the data set of the current survey, cold-deck imputation uses data from sources other than the current survey. In most other respects, cold-deck imputation is very similar to hot-deck imputation.

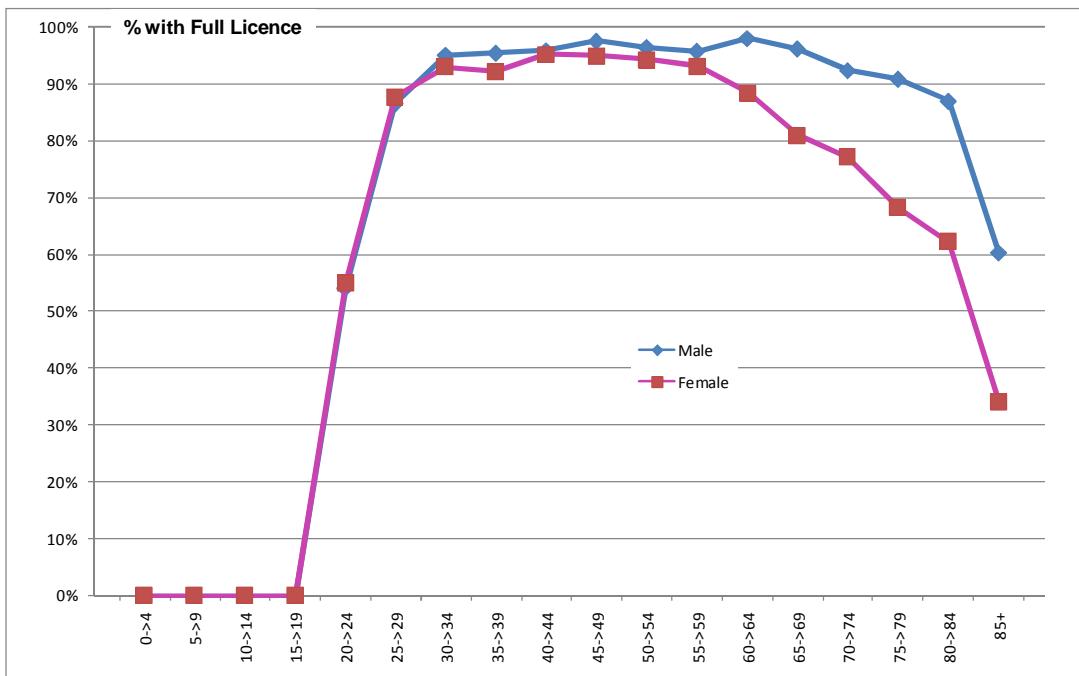
**Regression Imputation.** In this method, a regression equation is estimated from the data set and then used to predict the variable to be imputed from other variables within the data set. This method is useful when the use of Class Mean imputation stratification may result in a large number of empty cells within the stratification. Regression imputation allows these cells to be filled with information from neighbouring cells.

**Stochastic Regression Imputation.** In this method, a regression equation is first estimated from the data set. However, rather than imputing the mean value estimated by this regression equation, a value is probabilistically sampled from a distribution around this mean value. Such a technique preserves the mean and the variance of the original distribution.

**Multiple Imputation.** In all the above methods, a single value of the imputed variable is obtained and substituted into the data matrix. With multiple imputation, a number of different values are imputed to create a number of "clean data matrices", which are then analysed as different representations of the complete data set.

For the VISTA09 survey, the primary means of INR imputation employed are deductive imputation and hot-deck imputation. Appendix AA gives a complete list of the imputation methods used for each variable (where applicable) in the household, vehicle, person and stops files, together with the percentage of records for each variable that required imputation..

The hot-deck imputation method is very suited to spreadsheet analysis, as explained below for hot-deck imputation of licence-holding. An analysis of the data shows that licence-holding of various types (full licence, probationary licence, learners permit, motorcycle licence, other licence, no licence) is related strongly to the age and gender of the respondent, as shown in Figure 9.3 for Full Licence holding. It can be seen that Full Licence holding rises quickly for both genders after the age of 20, until it reaches a maximum of about 95% from ages 30 through 60 (with males having slightly higher proportions). After the age of 60, Full Licence holding falls for both genders, but much more quickly for females (who may have never had a Full Licence). Instead of using the overall average of 66% of people having a Full Licence (which would be inaccurate for all but a very few age and gender groups), it would be much better to impute Full Licence holding as a function of age and gender.



**Fig 9.3 % with Full Licence as a Function of Age and Gender**

The hot-deck imputation method in this case would proceed as follows:

- Each record in the Person data set is first assigned a random number
- All missing records for Full Licence must be assigned a unique value (viz. -1)
- The Person records would be sorted by Age, Gender and the Random Number field
- A new column is created for the imputed value
- If the original value is not missing, then the imputed value is set equal to the original value
- If the original value is missing, then the imputed value for that record is set equal to the original value of Full Licence for the record immediately above (which will have an Age and Gender very similar to that of the record being imputed)

This process is applied to all variables for which imputed values are required. The only difference is in the third step, where the sorting variables are selected for the variable being imputed. These sorting variables should have been shown to be statistically related to the variable being imputed.

## 9.6 Confidentialisation of Data

### 9.6.1 Why confidentialise the data?

To maintain the confidentiality of the respondents, any data released from the survey was required to have the residential addresses of the responding households removed so that they could no longer be uniquely identified with the travel and activity data they provided. In addition, since every destination visited was geocoded to an x-y coordinate, it was important to ensure that the residential address could not be identified by "reverse engineering" from the geocode back to the address. For this reason, it was necessary to not only remove the residential address fields, but also to randomise the household geocodes so that they could not be identified from this information.

It was important, however, to use the actual geocodes of the household to calculate any derived variables before randomising them. For example, the CCD and Traffic Zone of the household should



be based on the real geocodes, not the randomised geocodes, as should any distance calculations based on the location of the household.

### 9.6.2 How were household address geocodes randomised?

A very simple way of randomising the geocodes is to simply change the geocodes by a random amount (up to a specified maximum) in a random direction. This has been operationalised in VISTA09 by adding a random (positive or negative) amount to the longitude and latitude of the household, up to a maximum value of +/- 0.0005.

As can be seen in Figure 9.4, the majority of household locations were shifted between 20 and 60 metres (in a random direction), with a maximum shift of about 70 metres. Even though some of the locations have not been shifted very much (less than 20 metres), it is unknown which of the locations have been shifted by a large amount and which have been shifted by a small amount. Therefore, their confidentiality is preserved.



**Fig 9.4 Distribution of Location Shifts for Residential Addresses**

The same randomised location is used for all members of a household and for all trips back home by members of that household. This prevents it being possible to estimate the location of the household by taking an average of several randomised locations within a household (thereby nullifying the randomisation process).



## 10 Data Weighting and Expansion

### 10.1 *Editing Check Corrections*

#### 10.1.1 **What final editing was performed on the data?**

Once the data had been clarified with respondents and these clarifications had been entered into the data set, they were subjected to a final Data Validation. On passing this test, the records were flagged as ready for extraction. Data was extracted from the master database on a periodic basis, and then transferred to TUTI for final editing and analysis. At this stage, there were still many editing checks that had to be run with the data to supply missing values (imputation) and to rectify inconsistencies in the data. TUTI carried out many of these corrections, and then sent an initial data set to the Department of Transport who performed a further series of editing tests. Notifications of problems identified with the data were then sent to TUTI, who made corrections and supplied a revised data set to the Department. This process continued through several iterations over a period of several months. As various users analyse the data in many different ways in the future, further minor inconsistencies may be identified as users look at the data in ways not previously encountered.

### 10.2 *Secondary Data Comparisons*

#### 10.2.1 **What secondary data was used for sample expansion?**

The main secondary data used for sample expansion purposes was the 2006 ABS Census, as obtained from the ABS website ([www.censusdata.abs.gov.au](http://www.censusdata.abs.gov.au)). Note, however, that the sample data can be reweighted to any other base in the future, as newer secondary data becomes available (e.g. 2008 Inter-Censal estimates, or the 2011 Census). Indeed, the VISTA09 data has been expanded to match the most recently available Estimated Resident Population from the ABS (2008).

#### 10.2.2 **What variables were used for sample expansion?**

Sample expansion was performed at two levels; at the household level and at the person level. In choosing the number and type of variables used for expansion purposes, it is necessary to make some trade-offs. While it would be desirable to expand on as many variables as possible (thus ensuring that the expanded data is representative of the population in many different dimensions), there is a limit as to how many variables (and levels of those variables) can and should be used, based on:

- The availability of these variables in the ABS census data
- While the Census collects data on many different demographic variables, only some of them appear in the readily available results on the current 2006 Census Website, and even fewer of them appear as cross-tabs of one variable against another. While it is possible to request special tables from ABS, this rapidly becomes a relatively expensive process. In choosing variables, attention needs to be paid to ensuring that the same definitions appear in both data sets. Where possible, an unprocessed variable should be used for expansion rather than a variable which has required some assumptions and processing of other variables in order to obtain it, e.g. use a simple variable such as household size, rather than a complex variable such as structure of household which has been derived from other variables such as the relationship between persons in the household.



- The sample size and distributions of variables in the sample
  - With relatively small samples (or even the relatively large samples in VISTA09) it quickly becomes a problem avoiding zero-frequency cells in the data as it is cross-tabulated across several variables with a large number of categories in each variable, especially if the cross-tabs are done for separate geographic regions. Zero-frequency cells are a problem in sample expansion, because a zero-frequency cell remains a zero-frequency cell no matter how much it is expanded. Therefore, a limited number of variables and categories are required in order to minimise the number of zero-frequency cells in the sample data.
- The deviation of the unweighted data from the control data
  - The purpose of sample expansion is twofold. Firstly, it increases the apparent size of the data set so that it matches the population (e.g. a sample of 10000 households in metropolitan Melbourne is expanded to represent the 1,350,000 occupied private dwellings in the metro area). Secondly, it corrects for any biases (intentional or otherwise) in the sample data, e.g. if small households are under-represented in the sample data, they can be over-weighted so that the correct proportion appears in the expanded population data. For the first purpose, expansion factors can be based on virtually any available demographic variables in both data sets. For the second purpose, it makes more sense to use variables which have exhibited differences between the sample data and the control data sets.
- The relative importance of the variables
  - It is more important that some variables are correct in the expanded data set than other variables. This depends on what the final data set will be used for, and what other data sets the expanded data might be compared against. In the context of a travel survey, demographic variables that are more likely to influence the amount or type of travel should be used in preference to those variables that are relatively unrelated to travel patterns.

Bearing in mind the above factors, the variables (and categories) used for sample expansion in VISTA09 were:

- Household expansion
  - Home SLA
  - Dwelling Type (2 types; Separate House and Other Type)
  - Dwelling Ownership (3 types; Owned, Being Purchase, Rented&Other)
- Person expansion
  - Home SLA
  - Gender (2 types; Male and Female)
  - Age Group (18 groups; 5-year groupings from 0-4 up to 85+)

In addition, a Temporal Weight was calculated for each household based on the day-of-week and month-of-day of their Travel Day, to ensure that the expanded data reflected a proper distribution across the days of the week and the months of the year.

Weights were estimated separately for all days of the week, weekdays only and weekend days only. This enables the weighted data to be applied for the entire week, or for subsets of the week, such as weekdays, which might be more relevant when undertaking analyses pertaining to journeys to work. A separate weight was also calculated for school-days only, to enable estimation of expanded travel patterns during school terms only (which are typically busier than during school holidays).



### 10.2.3 How were expansion factors calculated?

Expansion factors were calculated by comparing cross-tabulations of the sample data with the same cross-tabulation of the ABS data to estimate an initial expansion factor. A frequency distribution of the expansion factors was then created, and the 99<sup>th</sup> percentile weight found. This was then used as an extreme weight, and all higher weights were trimmed to this value (to avoid small sample cells with extreme weights having an undue influence on the weighted results). These trimmed weights were then applied to the sample data to estimate an initial expanded population. This was then compared with the ABS population data and any differences, brought about by zero-frequency cells in the sample data and the trimming of the initial weights, were corrected by a uniform proportional increase in all the expansion factors within an SLA. Some example calculations of household and person expansion weights will explain these methods more specifically.

#### 10.2.3.1 Household Expansion Weights to 2006 Census

The process starts with the cross-tabulations of the sample data and the ABS control data, as shown in Tables 10.1 and 10.2 for all days of the week. The ABS data is based on Table B32 from the 2006 Census, relating to occupied private dwellings. Because there are 108 SLAs in the VISTA09 Study Area, it is not possible to show the data for all these SLAs in this report in a legible manner. Therefore, only the first 20 SLAs in the tables are included hereunder.

**Table 10.1 Dwelling Type, Ownership and SLA in VISTA09 Sample Data**

SLA Code	VISTA09 Region	Dwelling Type and Ownership							TOTAL
		Owned House	Owned Other	Mortgaged House	Mortgaged Other	Rented House	Rented Other		
205054601	1	0	1	0	4	0	2	7	
205054605	1	0	7	0	5	0	8	20	
205054608	1	17	40	12	32	7	80	188	
205055901	1	8	27	12	35	4	70	156	
205055902	1	30	43	14	29	10	45	171	
205056351	8	32	26	22	12	9	69	170	
205057351	1	28	29	22	43	20	62	204	
205057352	1	27	13	6	18	13	50	127	
205101181	3	93	3	66	11	12	7	192	
205101182	3	72	4	38	3	30	17	164	
205103111	2	59	8	35	12	18	19	151	
205103112	2	35	5	26	3	8	15	92	
205104330	2	70	14	88	25	41	46	284	
205105063	1	51	19	47	23	23	35	198	
205105065	2	74	7	42	5	17	14	159	
205204651	3	29	0	75	2	11	0	117	
205204654	3	44	5	42	2	15	8	116	
205207261	3	42	4	68	5	13	8	140	
205207264	3	21	1	27	0	13	4	66	
205207267	3	20	0	36	0	9	2	67	

**Table 10.2 Dwelling Type, Ownership and SLA in ABS 2006 Data**

SLA Code	VISTA09 Region	Dwelling Type and Ownership						TOTAL
		Owned House	Owned Other	Mortgaged House	Mortgaged Other	Rented House	Rented Other	
205054601	1	0	576	0	795	3	3619	4993
205054605	1	0	681	3	1020	0	3918	5622
205054608	1	416	2752	380	2791	426	12201	18966
205055901	1	1400	2414	1222	3951	831	12786	22604
205055902	1	855	3146	598	2995	670	6961	15225
205056351	8	2384	2918	1468	2503	1400	9692	20365
205057351	1	1154	2804	859	3457	795	9216	18285
205057352	1	997	1015	846	1621	969	4869	10317
205101181	3	9421	1163	9210	1503	3729	2145	27171
205101182	3	9849	854	7716	1198	5007	2438	27062
205103111	2	6815	728	5446	561	3386	1999	18935
205103112	2	3101	720	2990	908	1513	2019	11251
205104330	2	5601	999	5794	1616	4783	5403	24196
205105063	1	6502	1735	5097	1979	2641	7842	25796
205105065	2	7074	514	3589	564	1972	898	14611
205204651	3	1689	183	7918	289	1382	427	11888
205204654	3	3570	235	6280	221	2344	653	13303
205207261	3	6316	553	11163	672	4113	1708	24525
205207264	3	662	94	3132	159	805	220	5072
205207267	3	1689	73	3829	93	1127	292	7103

An initial set of expansion weights is then calculated by dividing the ABS control data cell values by the VISTA09 sample data cell values, to obtain Table 10.3. Note that this calculation is conditional upon the sample data cell value being non-zero. If the sample data cell value is equal to zero, as is the case for “Owned Other” in SLA 205207267, then the expansion weight is set equal to zero (to avoid a divide by zero error).

**Table 10.3 Initial Household Weights**

SLA Code	VISTA09 Region	Dwelling Type and Ownership					
		Owned House	Owned Other	Mortgaged House	Mortgaged Other	Rented House	Rented Other
205054601	1	0	576	0	199	0	1810
205054605	1	0	97	0	204	0	490
205054608	1	24	69	32	87	61	153
205055901	1	175	89	102	113	208	183
205055902	1	29	73	43	103	67	155
205056351	8	75	112	67	209	156	140
205057351	1	41	97	39	80	40	149
205057352	1	37	78	141	90	75	97
205101181	3	101	388	140	137	311	306
205101182	3	137	214	203	399	167	143
205103111	2	116	91	156	47	188	105
205103112	2	89	144	115	303	189	135
205104330	2	80	71	66	65	117	117
205105063	1	127	91	108	86	115	224
205105065	2	96	73	85	113	116	64
205204651	3	58	0	106	145	126	0
205204654	3	81	47	150	111	156	82
205207261	3	150	138	164	134	316	214
205207264	3	32	94	116	0	62	55
205207267	3	84	0	106	0	125	146



While the average weight for the entire sample is approximately 91 ( $=1499677/16411$ ), it can be seen that some of these weights are much larger, e.g the two “rented other” dwellings in SLA 205054601 in the VISTA09 data are representing a total of 3619 such dwellings in the ABS 2006 Census data. Therefore each of these dwellings carries a weight of 1810. This very large weight gives very high emphasis to whatever the travel patterns of those two households happen to be. To avoid this problem, the weights have therefore been censored and any weights greater than the 99<sup>th</sup> percentile of the distribution of the weights is set equal to the 99<sup>th</sup> percentile value. These trimmed weights are shown in Tble 10.4.

**Table 10.4 Trimmed Household Weights**

SLA Code	VISTA09 Region	Dwelling Type and Ownership					
		Owned House	Owned Other	Mortgaged House	Mortgaged Other	Rented House	Rented Other
205054601	1	0	311	0	199	0	311
205054605	1	0	97	0	204	0	311
205054608	1	24	69	32	87	61	153
205055901	1	175	89	102	113	208	183
205055902	1	29	73	43	103	67	155
205056351	8	75	112	67	209	156	140
205057351	1	41	97	39	80	40	149
205057352	1	37	78	141	90	75	97
205101181	3	101	311	140	137	311	306
205101182	3	137	214	203	311	167	143
205103111	2	116	91	156	47	188	105
205103112	2	89	144	115	303	189	135
205104330	2	80	71	66	65	117	117
205105063	1	127	91	108	86	115	224
205105065	2	96	73	85	113	116	64
205204651	3	58	0	106	145	126	0
205204654	3	81	47	150	111	156	82
205207261	3	150	138	164	134	311	214
205207264	3	32	94	116	0	62	55
205207267	3	84	0	106	0	125	146

An initial estimate of the expanded population values is then obtained by multiplying the sample data values (Table 10.1) by the initial trimmed expansion weights (Table 10.4) to obtain Table 10.5.

It can be seen that the total population in Table 10.5 is less than the total population in the ABS control data (Table 10.2), because of the zero-frequency cells in the sample data, and the trimming of the weights. Examples of these under-expansions are for SLA 205054601, 205054605 and 205207267. No matter what expansion weights are applied to these zero cells, the expanded values will always be zero, and thus the households in these cells in the ABS control data will never appear in the expanded totals.

**Table 10.5 Initial Estimate of Expanded Population of Households**

SLA Code	VISTA09 Region	Dwelling Type and Ownership						TOTAL
		Owned House	Owned Other	Mortgaged House	Mortgaged Other	Rented House	Rented Other	
205054601	1	0	311	0	795	0	622	1727
205054605	1	0	681	0	1020	0	2486	4187
205054608	1	416	2752	380	2791	426	12201	18966
205055901	1	1400	2414	1222	3951	831	12786	22604
205055902	1	855	3146	598	2995	670	6961	15225
205056351	8	2384	2918	1468	2503	1400	9692	20365
205057351	1	1154	2804	859	3457	795	9216	18285
205057352	1	997	1015	846	1621	969	4869	10317
205101181	3	9421	932	9210	1503	3729	2145	26940
205101182	3	9849	854	7716	932	5007	2438	26796
205103111	2	6815	728	5446	561	3386	1999	18935
205103112	2	3101	720	2990	908	1513	2019	11251
205104330	2	5601	999	5794	1616	4783	5403	24196
205105063	1	6502	1735	5097	1979	2641	7842	25796
205105065	2	7074	514	3589	564	1972	898	14611
205204651	3	1689	0	7918	289	1382	0	11278
205204654	3	3570	235	6280	221	2344	653	13303
205207261	3	6316	553	11163	672	4040	1708	24452
205207264	3	662	94	3132	0	805	220	4913
205207267	3	1689	0	3829	0	1127	292	6937

There are several ways to work around this problem, but the simple method adopted for VISTA09 is to increase all expansion weights within an SLA by the ratio of the ABS total for the SLA to the expanded table total for that SLA. This is a relatively minor correction and is appropriate when the effect of zero-frequency cells on the total expanded population is minimal. The final adjusted expansion weights are shown in Table 10.6.

**Table 10.6 Final Household Weights**

SLA Code	VISTA09 Region	Dwelling Type and Ownership					
		Owned House	Owned Other	Mortgaged House	Mortgaged Other	Rented House	Rented Other
205054601	1	0	898	0	575	0	898
205054605	1	0	131	0	274	0	417
205054608	1	24	69	32	87	61	153
205055901	1	175	89	102	113	208	183
205055902	1	29	73	43	103	67	155
205056351	8	75	112	67	209	156	140
205057351	1	41	97	39	80	40	149
205057352	1	37	78	141	90	75	97
205101181	3	102	313	141	138	313	309
205101182	3	138	216	205	314	169	145
205103111	2	116	91	156	47	188	105
205103112	2	89	144	115	303	189	135
205104330	2	80	71	66	65	117	117
205105063	1	127	91	108	86	115	224
205105065	2	96	73	85	113	116	64
205204651	3	61	0	111	152	132	0
205204654	3	81	47	150	111	156	82
205207261	3	151	139	165	135	312	214
205207264	3	33	97	120	0	64	57
205207267	3	86	0	109	0	128	149



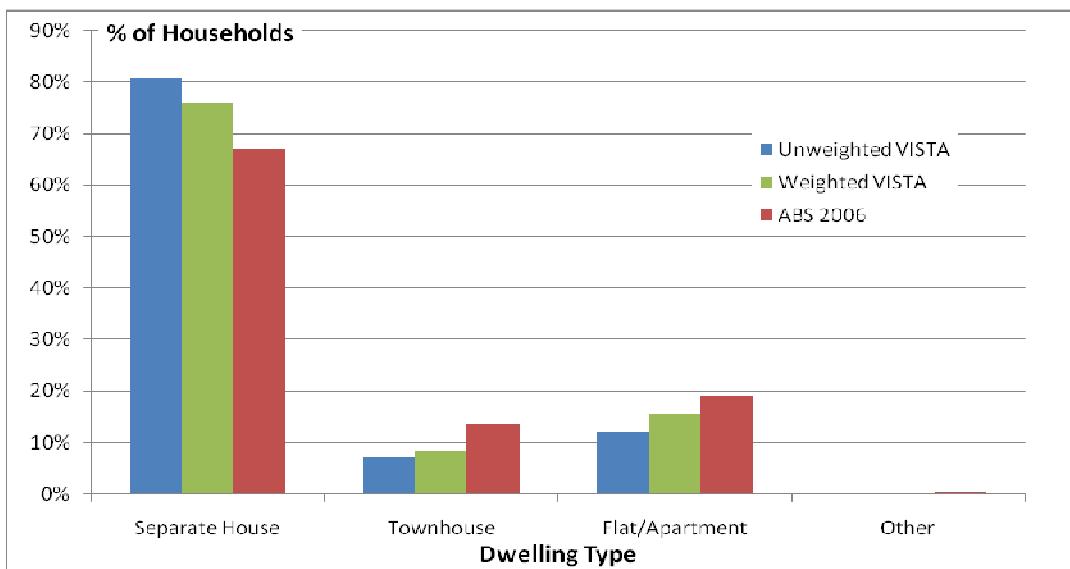
These final household expansion weights are then attached to the VISTA09 sample data, by a lookup procedure, based on the SLA, dwelling type and dwelling ownership for each record.

Another set of household weights were calculated to ensure that the final expanded data had the correct distribution of days of the week and months of the year. The Temporal Weights are shown in Table 10.7, and show, for example, that the sample data had too many responses for Travel Days on Mondays in November, thus resulting in lower Temporal Weights for households surveyed on Mondays in November.

**Table 10.7 Temporal Weights for Households**

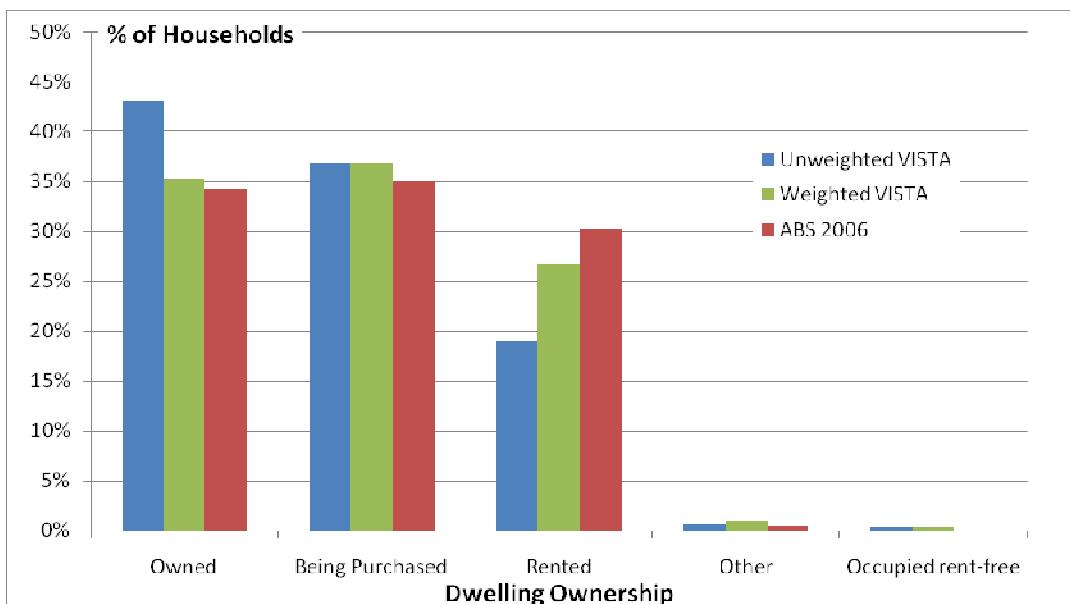
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
January	1.148	0.932	1.091	1.073	0.950	0.955	0.907
February	0.993	1.038	1.068	1.099	1.068	1.080	1.032
March	0.911	0.841	0.849	1.103	1.161	1.182	1.249
April	1.044	0.971	1.017	0.784	0.850	1.264	1.144
May	0.804	1.091	0.973	1.091	0.998	0.983	0.919
June	1.111	0.794	0.745	1.022	1.033	1.056	1.124
July	1.068	1.097	1.018	0.890	0.907	1.196	1.091
August	0.841	1.056	1.175	1.122	1.085	0.946	0.946
September	1.074	0.894	0.828	1.001	1.006	1.216	1.151
October	1.085	1.040	1.013	0.801	0.860	0.919	1.175
November	0.828	0.991	1.033	0.985	0.902	1.044	0.873
December	1.189	0.890	0.946	0.932	1.182	1.249	1.168

As a result of the Household Weighting process, the expanded VISTA09 results should match the ABS 2006 Census data fairly closely. To demonstrate this, several comparisons of household variables are shown in Figure 10.1 through 10.5. Figures 10.1 and 10.2 show a comparison with the variables used for the household weighting (dwelling type and ownership). As expected, the expanded VISTA09 data and the ABS 2006 Census data are fairly close for dwelling type (Fig. 10.1), with the weighting process correcting for the over-representation of separate houses and the under-representation of multiple-dwelling households in the VISTA09 data. The match is not perfect, as illustrated by the difference in results for townhouses. This is because the weighting was done on the basis of total multiple-dwelling households, with no distinction being made between townhouses and flats in the weighting process. In addition, the high number of zero cells when the VISTA09 data is stratified by SLA causes deviations from a perfect weighting and expansion process.



**Fig 10.1 VISTA09 and ABS Distributions of Dwelling Type**

The comparison of results for dwelling ownership in Fig 10.2 shows a similar, but more pronounced, pattern. The under-representation of rented dwellings has largely been corrected in the weighted VISTA09 results.



**Fig 10.2 VISTA09 and ABS Distributions of Dwelling Ownership**

Figures 10.3 through 10.5 show the distributions of household variables which were not directly involved in the weighting process, although there are clear correlations between these variables and those used in the weighting. The number of residents in the household has been shown in Figure 10.3 to be improved after weighting, with the weighted VISTA09 results being generally closer to the ABS results than was the unweighted VISTA09 results. The demographic structure the household has also been improved, especially for One-Parent and Couple without Kids households. Finally, as shown in Figure 10.5, the number of vehicles in the household has also been better estimated by the weighted VISTA09 data.

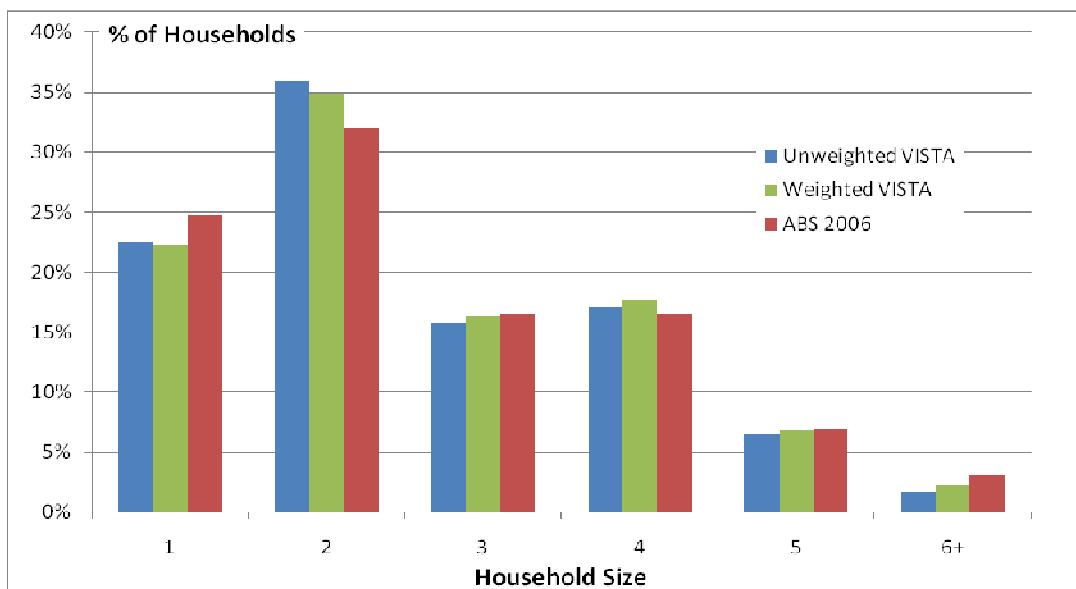


Fig 10.3 VISTA07 and ABS Distributions of Household Size (Number of Residents)

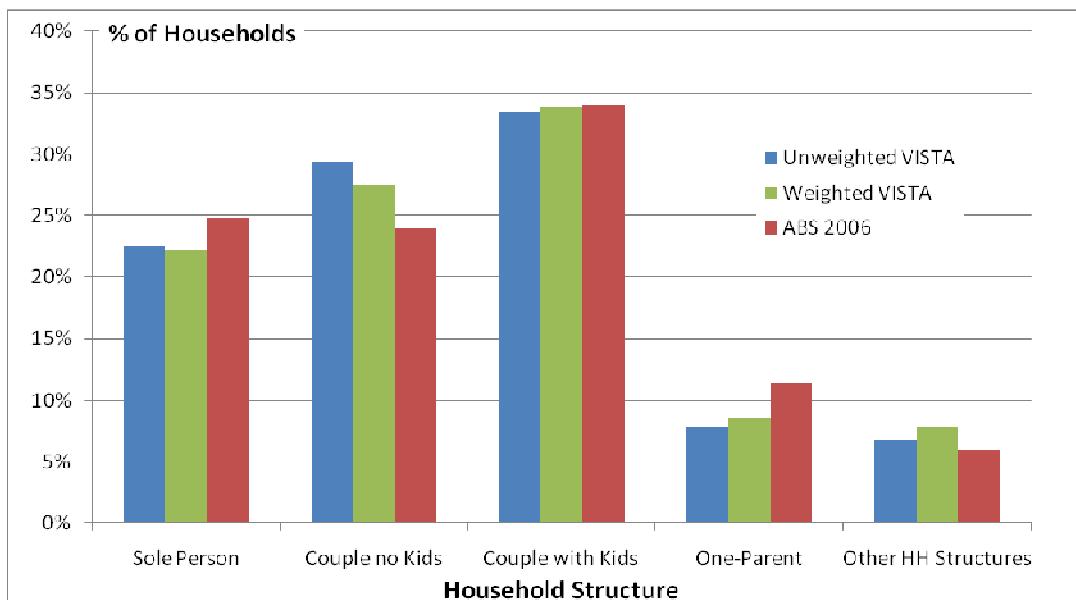


Fig 10.4 VISTA07 and ABS Distributions of Household Structure

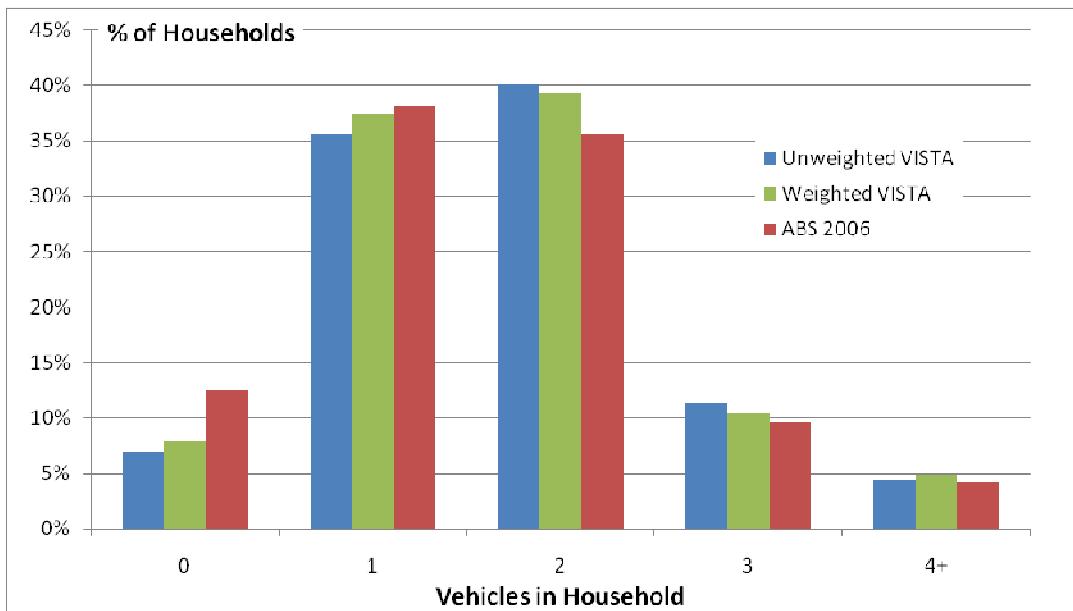


Fig 10.5 VISTA07 and ABS Distributions of Vehicles in Household

#### 10.2.3.2 Household Expansion Weights to 2009 ERP

The above weighting has all been based on expanding the VISTA09 data to the ABS 2006 Census data, since that is the most recent Census data available. However, in between Censuses, the ABS releases annual Estimates of Resident Population, which can be used to scale up the population totals. Therefore, having expanded the household sample data to the 2006 Census totals, the next task was to adjust these expanded totals up to the 2009 Estimated Resident Population (ERP) data obtained from the Australian Bureau of Statistics via the Department of Transport. The ERP data for households was provided in the form of a table of estimated population by SLA of residence for various years including 2006 and 2009. The ratio of population growth from 2006 to 2009 was calculated and, assuming constant household size within SLAs between those two years, one could also assume that this ratio applied to the number of households in each SLA. This ratio was therefore attached to each household record, depending on their SLA of residence, to convert the 2006 expansion weights into 2009 expansion weights.

#### 10.2.3.3 Demographic Expansion Weights to 2006 Census

Having estimated the household weights, the process now continues with estimation of the Demographic Weights with the cross-tabulations of the sample data (expanded by the 2006 household weights) and the ABS 2006 control data, as shown in Tables 10.8 and 10.9. Because the sample data has already been expanded by the 2006 household weights, the total populations in Tables 10.8 and 10.9 are much closer, and the major role of the demographic weights lies in re-weighting the data to give the correct proportions by age and gender. The 2009 ERP weights, which apply to persons as well as households, are re-applied after the calculation of the Demographic weights.

The Demographic Weights are based on age and gender within each SLA. Because of the size of these tables, the process will only be illustrated for one of the SLAs (viz. SLA 205300661, Heidelberg in the LGA of Banyule). The VISTA09 sample data for Heidelberg SLA is shown in Table 10.8.

**Table 10.8 Respondent Age and Gender for Heidelberg SLA in VISTA09 Data**

Age Group	Gender		TOTAL
	Male	Female	
0->4	2050	2332	4382
5->9	2092	1212	3304
10->14	2447	1892	4339
15->19	1759	989	2749
20->24	1136	997	2134
25->29	1672	2145	3818
30->34	2938	4022	6960
35->39	2374	1968	4342
40->44	2277	2003	4280
45->49	2068	2016	4084
50->54	2234	2058	4292
55->59	1243	2004	3246
60->64	1472	1225	2697
65->69	1133	1841	2975
70->74	1077	1240	2317
75->79	712	1297	2009
80->84	380	237	617
85+	0	495	495
TOTAL	29066	29974	59040

**Table 10.9 Respondent Age and Gender for Heidelberg SLA in ABS06 Data**

Age Group	Gender		TOTAL
	Male	Female	
0->4	1959	1711	3670
5->9	1856	1782	3638
10->14	1913	1771	3684
15->19	2037	1866	3903
20->24	2115	1944	4059
25->29	1940	1967	3907
30->34	2036	2173	4209
35->39	2239	2353	4592
40->44	2124	2355	4479
45->49	2205	2316	4521
50->54	1944	2052	3996
55->59	1771	1954	3725
60->64	1403	1500	2903
65->69	1098	1223	2321
70->74	1003	1195	2198
75->79	937	1250	2187
80->84	780	1115	1895
85+	506	1166	1672
TOTAL	29866	31693	61559

An initial set of demographic weights is then calculated by dividing the ABS control data cell values by the VISTA07 sample data cell values, and trimming to the 95<sup>th</sup> percentile, to obtain Table 10.10 (again setting the weight for any zero-frequency cell to zero).

**Table 10.10 Initial Trimmed Demographic Weights for Heidelberg SLA**

Age Group	Gender	
	Male	Female
0->4	0.96	0.73
5->9	0.89	1.47
10->14	0.78	0.94
15->19	1.16	1.89
20->24	1.86	1.95
25->29	1.16	0.92
30->34	0.69	0.54
35->39	0.94	1.20
40->44	0.93	1.18
45->49	1.07	1.15
50->54	0.87	1.00
55->59	1.43	0.98
60->64	0.95	1.22
65->69	0.97	0.66
70->74	0.93	0.96
75->79	1.32	0.96
80->84	2.05	2.94
85+	0.00	2.36

An initial estimate of the expanded population values is then obtained by multiplying the sample data values (Table 10.8) by the initial demographic weights (Table 10.10) to obtain Table 10.11.

**Table 10.11 Initial Estimate of Expanded Population for Heidelberg SLA**

Age Group	Gender		TOTAL
	Male	Female	
0->4	1959	1711	3670
5->9	1856	1782	3638
10->14	1913	1771	3684
15->19	2037	1866	3903
20->24	2115	1944	4059
25->29	1940	1967	3907
30->34	2036	2173	4209
35->39	2239	2353	4592
40->44	2124	2355	4479
45->49	2205	2316	4521
50->54	1944	2052	3996
55->59	1771	1954	3725
60->64	1403	1500	2903
65->69	1098	1223	2321
70->74	1003	1195	2198
75->79	937	1250	2187
80->84	780	696	1476
85+	0	1166	1166
TOTAL	29360	31274	60634

Note again the difference in totals due to the zero-frequency cells, which require a re-scaling of all the weights to derive those shown in Table 10.12.

**Table 10.12 Final Demographic Weights for Heidelberg SLA**

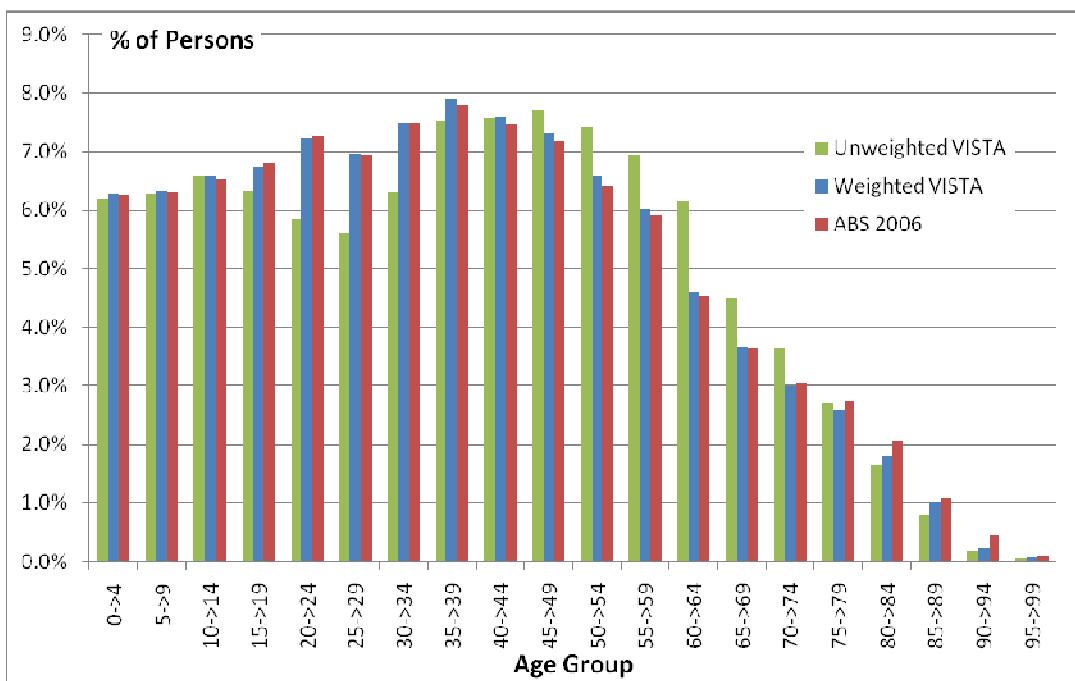
Age Group	Gender	
	Male	Female
0->4	0.97	0.74
5->9	0.90	1.49
10->14	0.79	0.95
15->19	1.18	1.91
20->24	1.89	1.98
25->29	1.18	0.93
30->34	0.70	0.55
35->39	0.96	1.21
40->44	0.95	1.19
45->49	1.08	1.17
50->54	0.88	1.01
55->59	1.45	0.99
60->64	0.97	1.24
65->69	0.98	0.67
70->74	0.95	0.98
75->79	1.34	0.98
80->84	2.08	2.98
85+	0.00	2.39

The final estimate of the expanded population is then calculated as shown in Table 10.13.

**Table 10.13 Final Estimate of Expanded Population for Heidelberg SLA**

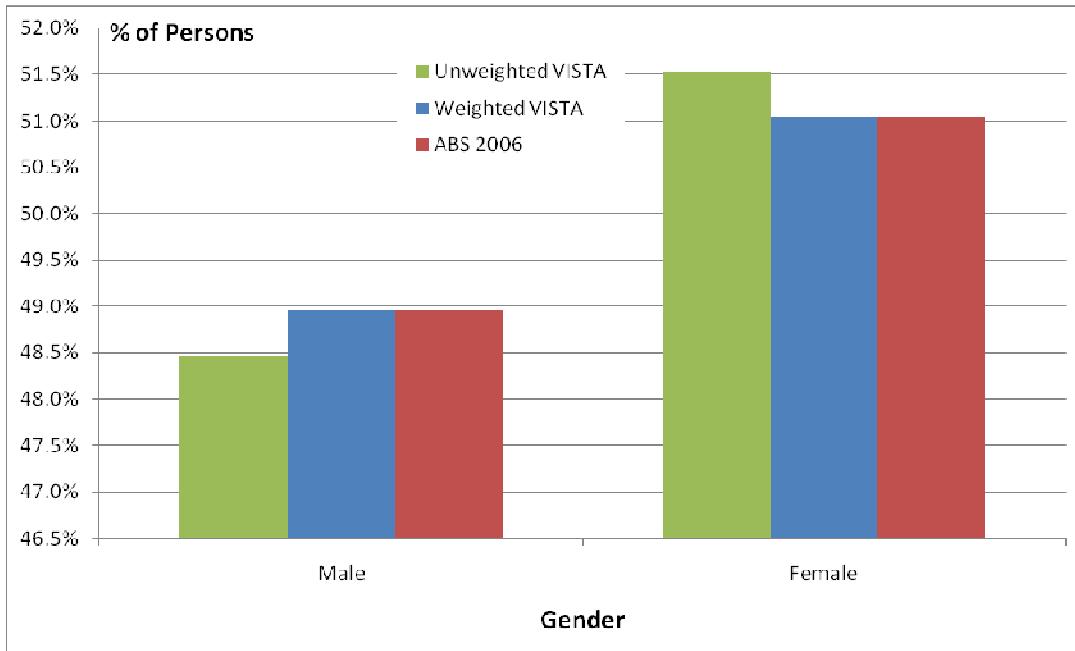
Age Group	Gender		TOTAL
	Male	Female	
0->4	1989	1737	3726
5->9	1884	1809	3693
10->14	1942	1798	3740
15->19	2068	1894	3963
20->24	2147	1974	4121
25->29	1970	1997	3967
30->34	2067	2206	4273
35->39	2273	2389	4662
40->44	2156	2391	4547
45->49	2239	2351	4590
50->54	1974	2083	4057
55->59	1798	1984	3782
60->64	1424	1523	2947
65->69	1115	1242	2356
70->74	1018	1213	2232
75->79	951	1269	2220
80->84	792	707	1499
85+	0	1184	1184
TOTAL	29808	31751	61559

As a result of the Demographic Weighting process, the expanded VISTA09 results for person variables should also match the ABS data fairly closely. To demonstrate this, several comparisons of person variables are shown in Figure 10.6 through 10.8. Figures 10.6 and 10.7 show a comparison with the variables used for the demographic weighting (age and gender). It can be seen that the age distribution has been substantially modified in the weighted VISTA09 results, with the under-representation of 20-35 year-olds and the over-representation of 45-70 year-olds largely corrected.



**Fig 10.6 VISTA09 and ABS Distributions of Age**

The distribution by gender, as shown in Figure 10.7, was fairly reasonable in the unweighted VISTA09 data (48.5% male) compared to the ABS data (49% male), but this has been further improved by the weighting process.



**Fig 10.7 VISTA09 and ABS Distributions of Gender**

The distribution of workforce status by gender, as shown in Figure 10.8, was very reasonable in the unweighted VISTA09 data (70% of male and 60% of females in the workforce) compared to the ABS data (71% of males and 58% of females), but this has been largely unchanged by the weighting process.

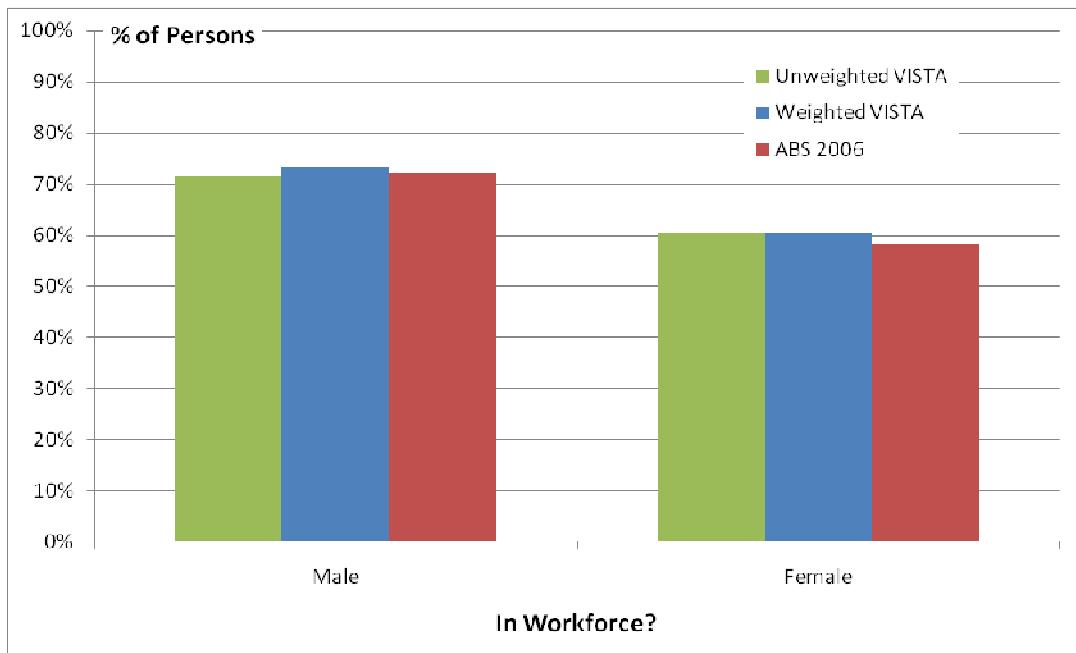


Fig 10.8 VISTA09 and ABS Distributions of Workforce Status by Gender

#### 10.2.4 How were expansion factors applied to the sample data?

All the weights derived above are multiplicative weights. For each record in the Household file, a Household Weight is attached to that record, depending on its home SLA, dwelling type and dwelling ownership. That weight denotes how many times that record must be counted in the final population estimates. Thus, a household weight of 328 means that the household must be counted 328 times in the final expanded total of households in the population. In practice, four different weights are attached; one each for all days of the week, for weekdays only, for weekend days only and for school days only.

In addition to the Expansion Weights described above, which can correct for various types of sample and response bias in the data, recognition was also made of potential bias in the data due to Non-Reporting of Stops, and Non-Response from Households. Non-Reported Stop (NRS) bias accounts for the fact that not all stops are equally likely to be reported by all respondents. Non-Response Bias accounts for the fact that not all households are equally likely to respond to the survey.

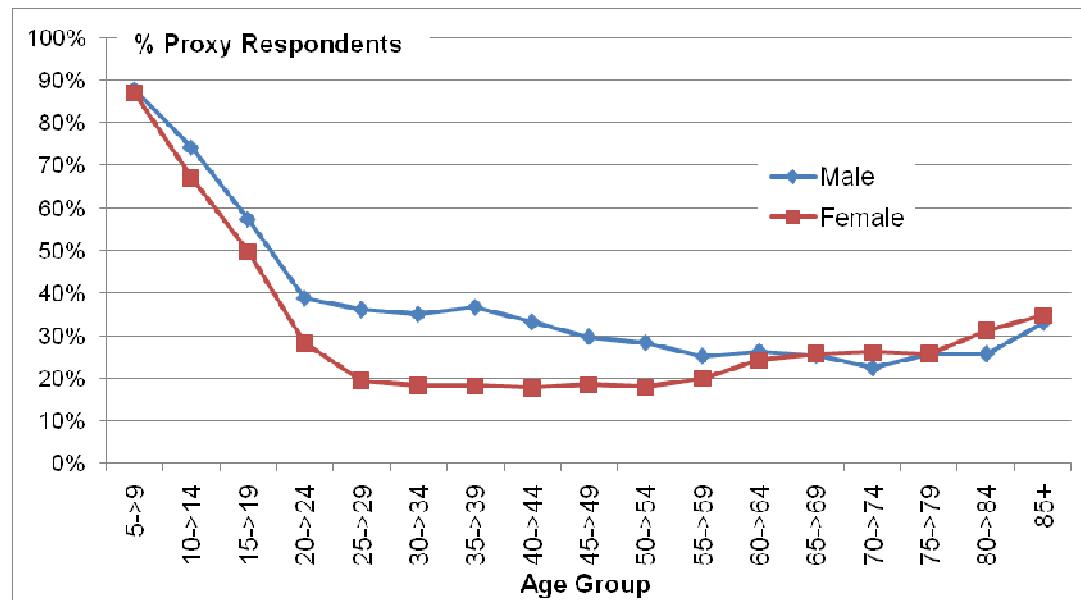
#### 10.2.5 What recognition was made of non-reported stops?

Three different mechanisms could account for non-reported trips. Firstly, respondents may simply fail to report all of their own trips, either because they thought they were unimportant or because they wanted to minimise the effort in completing the travel diary. Secondly, because of the nature of the self-completion travel diary questionnaire, it is not certain exactly who filled out the diary for each person. While the majority of people may self-report, there is a substantial minority who have their diaries filled out by someone else in the household (the so-called “proxy respondents”). Because other members of the household would not know the details of a person’s travel patterns as well (especially for trips not connected with home), it is likely that there would be non-reported stops for proxy respondents. Thirdly, in the VISTA09 survey the questionnaires were delivered to households on the weekend before their Travel Day, and collected on the weekend after their Travel Day. There is therefore considerable leeway in when the householders complete their Travel Diaries. The longer the time period between Travel Day and diary completion, the more scope there is for travel to be forgotten, and hence non-reported.



The non-reporting due to "proxy reporting" can be estimated, since VISTA09 specifically asks who completed the travel diary. The non-reporting due to time lags in completion can also be estimated, since it is known when the diary was completed, in relation to the Travel Day.

Each Travel Diary contained a question asking who actually completed the diary and when it was completed. In VISTA09, a total of 35% of respondents were proxy-reported. However, as shown in Figure 10.9, this percentage is not constant across the population of respondents. The highest proportion of proxy respondents was for children, who had their questionnaires completed for them by their parents (which is one of the reasons why the survey does not ask for completed diaries from children under the age of 5). Below the age of 25, the proportion of proxy respondents is higher than the overall average, while above the age of 25 the proportion is lower than the average. In addition, males were more likely to be proxy respondents than females up to the age of about 70, after which both genders were equally likely to be proxy respondents.



**Fig 10.9 Proxy Reporting as a function of Age and Gender**

The timing of the completion of the Travel Diary, in relation to the Travel Day itself, is shown in Table 10.14. It can be seen that 51% of the diaries were completed on the Travel Day, 22% of the diaries were completed on the day after the Travel Day, and 27% were completed at some other time of the week (mostly close to the time when the questionnaires were being collected).

**Table 10.14 Timing of Completion of Travel Diary**

Time of Completing Diary	Type of Reporting		TOTAL
	Proxy	Self-Reported	
Completed on Travel Day	42%	56%	51%
Completed on day after Travel Day	22%	22%	22%
Completed at some other time	36%	22%	27%
TOTAL	100%	100%	100%

More of the Self-Reported diaries were completed on the Travel Day (56%) compared to those completed by proxy (42%), as shown in Table 10.14 and Figure 10.10.

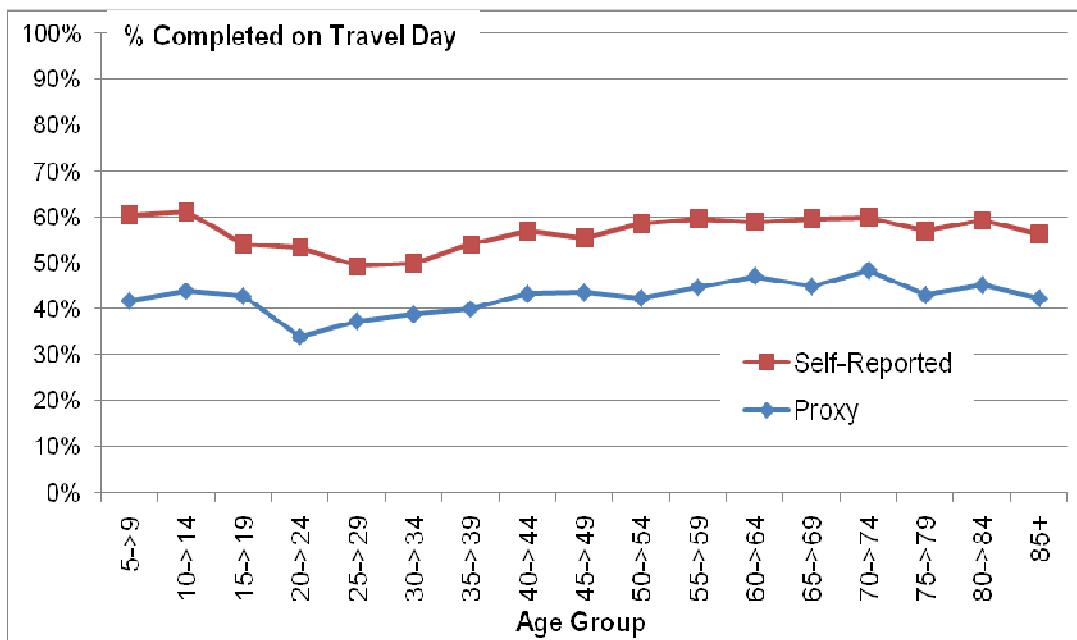


Fig 10.10 Delay in Completing Diary by Type of Reporting as a function of Age

The average days lag in completing the diary was 1.74 days. However, as might be expected, the lag in completing the diary was greatest when the Travel Day was towards the start of the week, when there was plenty of time to complete the diary before it was collected, rather than when the Travel Day was at the end of the week, when the diary was collected soon thereafter, as shown in Figure 10.11.

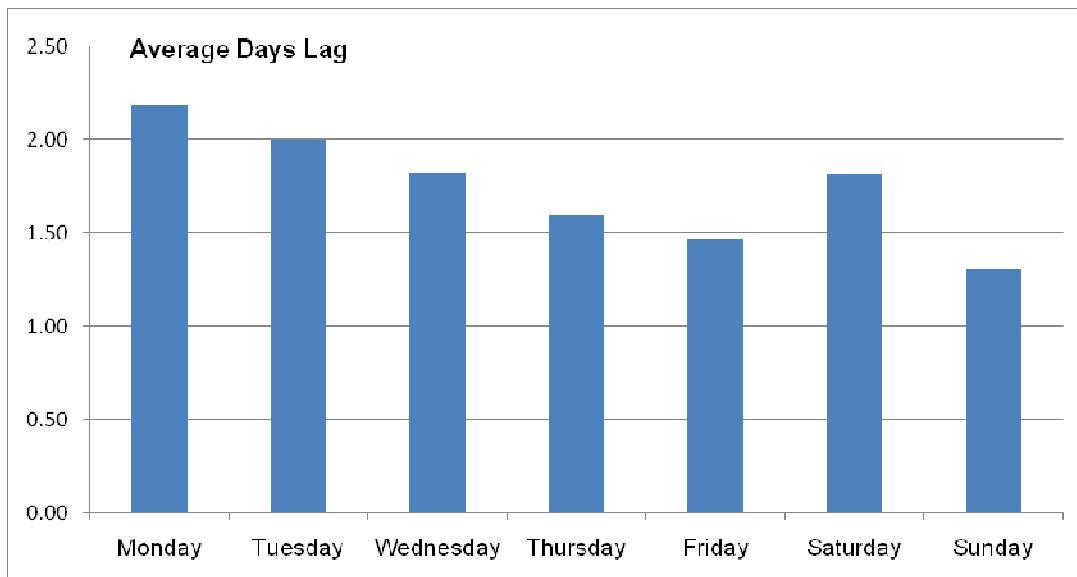


Fig 10.11 Lag in Completing Dairy by Day of Week of Travel Day

While the differences in type of reporting and delay in recording are interesting, they are only of relevance if they have an effect of the variable of interest, i.e. travel patterns. The Stop rates for proxy-reported and self-reported respondents are shown in Figure 10.12. There appears to be a *prima facie* case that the two groups have different levels of stop-making, with self-reported respondents having a higher Stop rate (3.65) than proxy-reported respondents (2.75). However, some of this difference could be accounted for by differences in demographics between proxy-reported and self-reported respondents.

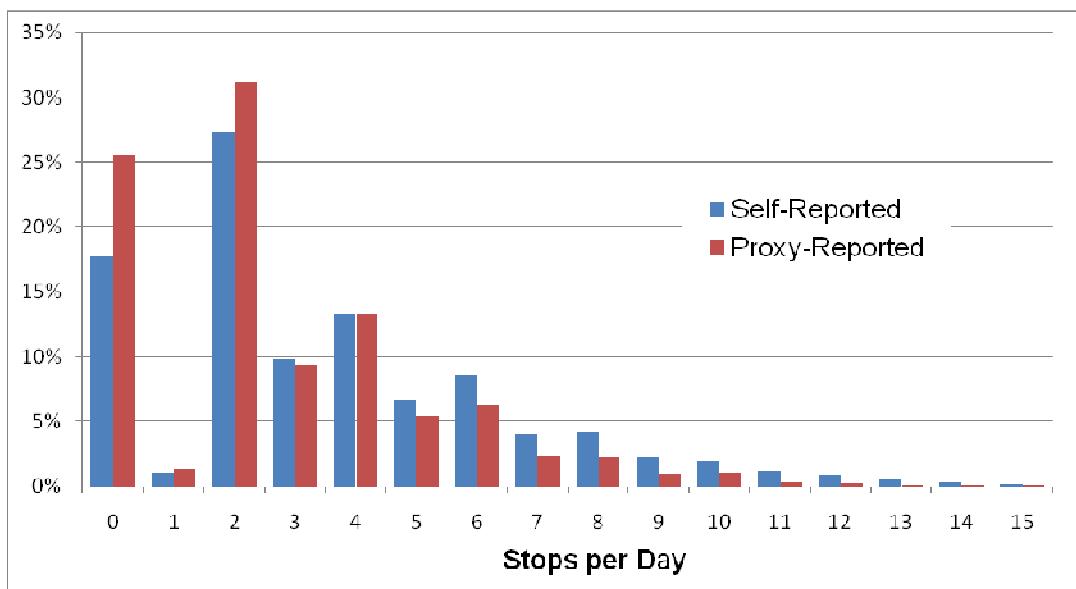


Fig 10.12 Stops per Day as a Function of Type of Reporting

The Stop rates for respondents whose travel diaries were completed at different times are shown in Figure 10.13. Again there appears to be a *prima facie* case that the three groups have different levels of stop-making, with respondents completing their diaries on the Travel Day (3.47) and the day after (3.41) having a higher Stop rate than those completing the diary later in the week (3.02). Again, however, some of this difference could be accounted for by differences in demographics between the different groups of respondents.

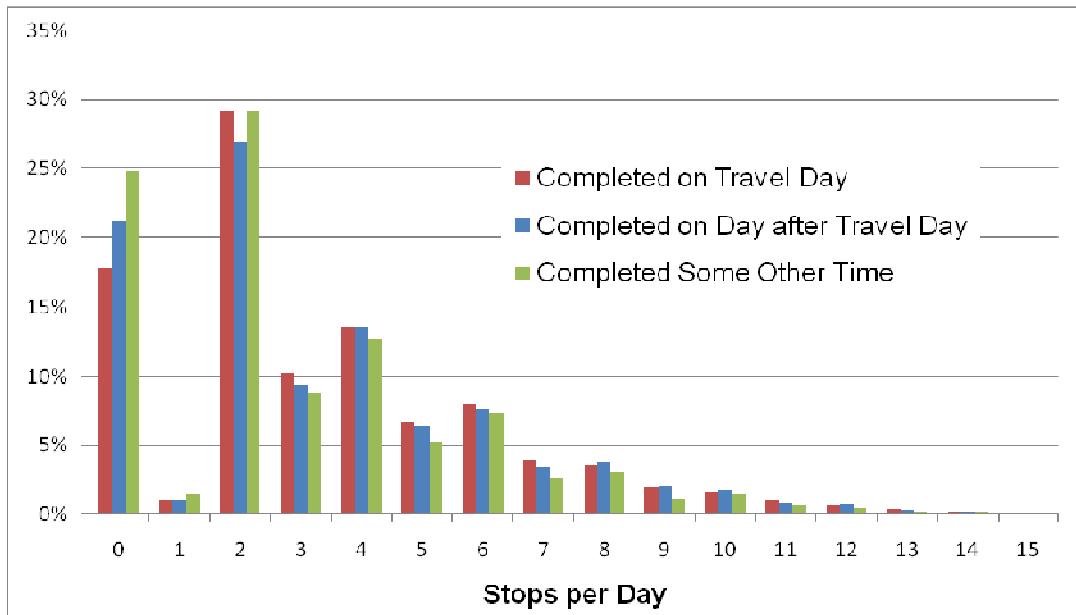


Fig 10.13 Stops per Day as a Function of Time of Completing Diary

Based on the above results, a more complete analysis was undertaken relating Stop rate to the demographics of the respondent, the type of trip, the type of reporting and the delay in reporting.

#### 10.2.6 What non-reporting weights were developed?

On the basis of the analysis of the VISTA09 data on proxy reporting and time of completion, a set of Non-Reported Stop Weights was developed for the VISTA09 data based on age and gender of the respondent, whether the trip stage was home-based or non-home-based and on the modal grouping



of the trip stage (car driver, car passenger, non-motorised, public transport and other). It was assumed that those who self-reported on the Travel Day would provide the best data with the least number of non-reported Stops, and the Stop rates of others within the same category were then related to the Stop rate of this group to derive a factor to be used to account for non-reported Stops. A minimum value of 1.0 was assumed for this factor. Table 10.15 shows the Non-Reported Stop Weights derived in this manner for Home-Based Stops, while Table 10.16 shows the Non-Reported Stop Weights for Non-Home-Based Stops .



Table 10.15 Non-Reported Stop Weights for Home-Based Stops

Home-Based Car Driver		Proxy-Reported			Self-Reported		
Gender	Age Group	Same Day	Next Day	Other Time	Same Day	Next Day	Other Time
Male	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Male	5->14	1.00	1.00	1.00	1.00	1.00	1.00
Male	15->24	1.51	1.26	1.86	1.00	1.00	1.09
Male	35->44	1.03	1.22	1.45	1.00	1.05	1.13
Male	45->54	1.15	1.00	1.31	1.00	1.08	1.17
Male	55->64	1.16	1.03	1.25	1.00	1.00	1.09
Male	65->74	1.11	1.17	1.48	1.00	1.03	1.24
Male	75->84	1.35	1.62	1.47	1.00	1.13	1.47
Male	85+	1.51	1.92	2.98	1.00	1.03	1.26
Female	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Female	5->14	1.00	1.00	1.00	1.00	1.00	1.00
Female	15->24	2.55	1.97	3.28	1.00	1.18	1.45
Female	35->44	1.56	1.71	2.46	1.00	1.22	1.27
Female	45->54	1.71	1.43	1.57	1.00	1.10	1.16
Female	55->64	1.53	1.76	1.78	1.00	1.14	1.13
Female	65->74	1.54	1.84	2.21	1.00	1.13	1.15
Female	75->84	1.73	3.27	2.77	1.00	1.24	1.37
Female	85+	5.77	2.73	4.05	1.00	1.18	1.82

Home-Based Car Passenger		Proxy-Reported			Self-Reported		
Gender	Age Group	Same Day	Next Day	Other Time	Same Day	Next Day	Other Time
Male	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Male	5->14	1.00	1.00	1.00	1.00	1.05	1.00
Male	15->24	1.00	1.00	1.00	1.00	1.00	1.42
Male	35->44	1.00	1.00	1.00	1.00	1.02	1.38
Male	45->54	1.00	1.00	1.00	1.00	1.11	1.46
Male	55->64	1.00	1.00	1.07	1.00	1.00	1.32
Male	65->74	1.00	1.00	1.00	1.00	1.00	1.57
Male	75->84	1.00	1.00	1.00	1.00	1.00	1.00
Male	85+	1.00	1.00	1.00	1.00	1.13	1.59
Female	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Female	5->14	1.00	1.00	1.06	1.00	1.00	1.14
Female	15->24	1.00	1.00	1.00	1.00	1.00	1.04
Female	35->44	1.00	1.00	1.00	1.00	1.00	1.10
Female	45->54	1.00	1.00	1.00	1.00	1.00	1.06
Female	55->64	1.00	1.00	1.00	1.00	1.00	1.05
Female	65->74	1.00	1.00	1.00	1.00	1.00	1.00
Female	75->84	1.00	1.00	1.00	1.00	1.00	1.31
Female	85+	1.00	1.00	1.00	1.00	1.00	1.36

Home-Based Non-Motorised		Proxy-Reported			Self-Reported		
Gender	Age Group	Same Day	Next Day	Other Time	Same Day	Next Day	Other Time
Male	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Male	5->14	1.71	1.89	1.87	1.00	1.36	1.03
Male	15->24	1.39	1.55	1.54	1.00	1.71	1.03
Male	35->44	1.15	1.17	1.55	1.00	1.00	1.00
Male	45->54	1.61	1.50	1.26	1.00	1.05	1.00
Male	55->64	1.67	1.64	1.26	1.00	1.00	1.00
Male	65->74	1.74	1.66	2.00	1.00	1.19	1.34
Male	75->84	1.43	1.25	2.88	1.00	1.00	1.29
Male	85+	1.53	1.01	1.42	1.00	1.00	1.94
Female	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Female	5->14	1.31	2.04	1.41	1.00	2.03	1.00
Female	15->24	1.00	1.19	1.24	1.00	1.09	1.00
Female	35->44	1.49	1.38	1.19	1.00	1.00	1.00
Female	45->54	1.31	1.44	1.53	1.00	1.11	1.05
Female	55->64	1.63	1.96	2.21	1.00	1.03	1.26
Female	65->74	1.68	1.45	1.74	1.00	1.18	1.37
Female	75->84	1.71	1.47	1.86	1.00	1.00	1.68
Female	85+	1.83	1.20	1.34	1.00	1.23	1.35

Home-Based Public Transport		Proxy-Reported			Self-Reported		
Gender	Age Group	Same Day	Next Day	Other Time	Same Day	Next Day	Other Time
Male	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Male	5->14	1.30	1.00	1.32	1.00	1.00	1.36
Male	15->24	1.00	1.00	1.00	1.00	1.00	1.00
Male	35->44	1.89	1.81	1.00	1.00	1.24	1.00
Male	45->54	1.00	1.59	1.00	1.00	1.00	2.91
Male	55->64	1.45	2.40	3.37	1.00	1.00	1.34
Male	65->74	1.00	5.49	7.41	1.00	1.00	1.44
Male	75->84	1.00	1.00	1.00	1.00	1.00	1.00
Male	85+	1.00	1.00	1.00	1.00	1.26	1.00
Female	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Female	5->14	1.00	1.00	1.00	1.00	1.00	1.00
Female	15->24	1.00	1.00	1.00	1.00	1.00	1.00
Female	35->44	1.49	1.00	1.00	1.00	1.00	1.00
Female	45->54	1.00	1.00	1.00	1.00	1.00	1.00
Female	55->64	1.00	1.00	2.70	1.00	1.00	1.00
Female	65->74	1.00	1.00	1.00	1.00	1.00	1.00
Female	75->84	1.00	1.00	1.00	1.00	1.00	1.39
Female	85+	2.42	1.99	1.69	1.00	1.00	1.01



Table 10.16 Non-Reported Stop Weights for Non-Home-Based Stops

Non-Home-Based Car Driver		Proxy-Reported			Self-Reported		
Gender	Age Group	Same Day	Next Day	Other Time	Same Day	Next Day	Other Time
Male	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Male	5->14	1.00	1.00	1.00	1.00	1.00	1.00
Male	15->24	1.71	1.58	1.93	1.00	1.04	1.00
Male	35->44	1.04	1.56	1.90	1.00	1.11	1.14
Male	45->54	1.34	1.27	1.65	1.00	1.11	1.31
Male	55->64	1.33	1.44	1.49	1.00	1.00	1.06
Male	65->74	1.25	1.80	1.91	1.00	1.31	1.18
Male	75->84	2.30	2.83	1.38	1.00	1.14	1.06
Male	85+	2.60	1.91	6.10	1.00	1.16	1.00
Female	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Female	5->14	1.00	1.00	1.00	1.00	1.00	1.00
Female	15->24	3.02	2.96	5.17	1.00	1.00	1.56
Female	35->44	1.73	2.02	4.01	1.00	1.57	1.26
Female	45->54	2.70	2.30	2.64	1.00	1.18	1.30
Female	55->64	2.01	2.29	3.42	1.00	1.28	1.26
Female	65->74	2.50	2.62	3.88	1.00	1.10	1.38
Female	75->84	2.08	8.19	3.71	1.00	1.04	1.64
Female	85+	10.63	4.86	7.46	1.00	1.63	3.28

Non-Home-Based Car Driver		Proxy-Reported			Self-Reported		
Gender	Age Group	Same Day	Next Day	Other Time	Same Day	Next Day	Other Time
Male	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Male	5->14	1.00	1.00	1.06	1.00	1.00	1.00
Male	15->24	1.00	1.00	1.74	1.00	1.00	1.48
Male	35->44	1.25	1.00	1.24	1.00	1.36	2.73
Male	45->54	1.00	1.00	1.00	1.00	1.00	1.00
Male	55->64	1.00	1.00	1.00	1.00	1.00	1.22
Male	65->74	1.00	1.00	1.00	1.00	1.00	1.51
Male	75->84	1.00	1.00	1.00	1.00	1.00	1.66
Male	85+	1.00	1.00	1.00	1.00	1.12	1.00
Female	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Female	5->14	1.00	1.00	1.15	1.00	1.00	1.21
Female	15->24	1.00	1.00	1.39	1.00	1.00	1.00
Female	35->44	1.00	1.00	1.11	1.00	1.00	1.05
Female	45->54	1.00	1.00	1.00	1.00	1.00	1.30
Female	55->64	1.00	1.00	1.04	1.00	1.00	1.09
Female	65->74	1.00	1.00	1.00	1.00	1.00	1.00
Female	75->84	1.00	1.00	2.40	1.00	1.00	1.09
Female	85+	1.00	1.03	1.00	1.00	1.00	1.00

Non-Home-Based Non-Motorised		Proxy-Reported			Self-Reported		
Gender	Age Group	Same Day	Next Day	Other Time	Same Day	Next Day	Other Time
Male	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Male	5->14	1.57	1.36	2.03	1.00	1.00	1.00
Male	15->24	1.88	1.27	1.62	1.00	1.00	1.00
Male	35->44	1.36	1.47	1.68	1.00	1.00	1.00
Male	45->54	1.81	1.53	1.29	1.00	1.00	1.00
Male	55->64	2.05	1.39	1.66	1.00	1.00	1.00
Male	65->74	1.27	2.31	1.00	1.00	1.00	1.00
Male	75->84	1.13	1.01	2.11	1.00	1.00	1.57
Male	85+	1.65	1.00	1.00	1.00	1.00	1.23
Female	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Female	5->14	1.88	2.24	2.35	1.00	1.27	1.43
Female	15->24	1.60	1.08	1.46	1.00	1.00	1.00
Female	35->44	1.90	1.85	1.29	1.00	1.00	1.00
Female	45->54	2.73	1.90	2.15	1.00	1.06	1.00
Female	55->64	1.61	6.87	2.06	1.00	1.04	1.00
Female	65->74	1.57	1.31	1.81	1.00	1.00	1.00
Female	75->84	1.21	1.08	1.62	1.00	1.00	1.00
Female	85+	2.10	4.23	1.00	1.00	1.00	1.00

Non-Home-Based Public Transport		Proxy-Reported			Self-Reported		
Gender	Age Group	Same Day	Next Day	Other Time	Same Day	Next Day	Other Time
Male	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Male	5->14	1.96	1.97	1.98	1.00	1.08	1.00
Male	15->24	1.54	1.42	1.60	1.00	1.08	1.00
Male	35->44	1.56	1.66	1.28	1.00	1.00	1.00
Male	45->54	2.03	2.04	1.00	1.00	1.00	1.00
Male	55->64	1.90	1.35	1.24	1.00	1.00	1.00
Male	65->74	2.16	1.60	1.00	1.00	1.00	1.03
Male	75->84	1.53	1.00	3.15	1.00	1.00	1.29
Male	85+	3.08	1.00	1.00	1.00	1.00	1.00
Female	0->4	1.00	1.00	1.00	1.00	1.00	1.00
Female	5->14	1.90	3.10	1.79	1.00	1.39	1.00
Female	15->24	1.00	1.04	1.12	1.00	1.00	1.00
Female	35->44	2.41	2.24	1.00	1.00	1.00	1.00
Female	45->54	1.87	1.47	1.88	1.00	1.00	1.00
Female	55->64	2.00	4.47	1.55	1.00	1.00	1.00
Female	65->74	1.56	1.00	1.41	1.00	1.00	1.00
Female	75->84	2.53	1.31	1.48	1.00	1.00	1.00
Female	85+	2.47	1.00	1.00	1.00	1.00	1.00



While the NRT Weights shown in Tables 10.15 and 10.16 were the ones actually applied to the Stops in the data files, it is somewhat difficult to detect any patterns in the magnitude of the weights across the major variables. For this reason, Tables 10.17 through 10.22 summarise the average NRT weights for each of the six stratifying variables. Note that these averages are not just the arithmetic averages of the values shown in Tables 10.15 and 10.16. Rather, they are the averages as applied to Stops, and hence they are weighted by the number of Stops to which they are applied. The overall average of the NRT Weights applied to Stops is 1.13. Clearly, there are interactions between the tables, but nonetheless they are useful in obtaining an overall feel for the impacts of the variables on non-reported travel.

**Table 10.17 Average NRT Weight by Reporting Method**

Reporting Method	Average NRT Weight
Proxy	1.34
Self-Reported	1.05

As expected, proxy reporting gives rise to more non-reported trips, as shown in Table 10.16.

**Table 10.18 Average NRT Weight by Time of Reporting**

Time of Reporting	Average NRT Weight
Same Day	1.07
Next Day	1.15
Other Time	1.23

Late reporting also gives rise to more non-reported trips, as shown in Table 10.17.

**Table 10.19 Average NRT Weight by Gender**

Gender	Average NRT Weight
Male	1.12
Female	1.14

Males and females tend to have about the same proportion of non-reported trips, as shown in Table 10.18.

**Table 10.20 Average NRT Weight by Age Group**

Age Group	Average NRT Weight
0->4	1.09
5->14	1.16
15->24	1.17
35->44	1.12
45->54	1.12
55->64	1.10
65->74	1.12
75->84	1.16
85+	1.22

School-age children and those of retirement age tend to have higher than average proportions of non-reported trips, as shown in Table 10.19.

**Table 10.21 Average NRT Weight by Trip Type**

Trip Type	Average NRT Weight
Home-Based	1.12
Non-Home-Based	1.16

Non-home-based trips are more likely to be non-reported than home-based trips, as shown in Table 10.20.

**Table 10.22 Average NRT Weight by Mode of Travel**

Mode of Travel	Average NRT Weight
Car Driver	1.16
Car Passenger	1.04
Non-Motorised	1.17
Public Transport	1.16

Finally, car passenger trips are less likely to be non-reported than other modes, as shown in Table 10.22, mainly because there is usually someone else from the household with the passenger on these trips, and hence better able to report them by proxy.

### 10.2.7 What recognition was made of non-response?

With the 47% response rate achieved in VISTA09, there is a question as to whether the non-responding 53% are systematically different from the responding 47%, either demographically or more importantly in terms of travel patterns. Since 53% are non-respondents, it is difficult to know a great deal about them, particularly in terms of their travel patterns (which they have refused to tell us about!). However, in VISTA09, a special technique was used to learn more about the characteristics of refusals, as one type of non-respondent, than has been the case in many previous surveys.

If a household refused at any stage to participate in the survey, they were immediately asked two questions "for quality control purposes". These questions were:

- The number of people in the household
- The number of vehicles in the household

In addition, on each occasion that a member of the household was spoken to at the doorstep during the delivery or pickup process (whether they agreed to participate or refused), the field staff recorded their gender and an estimate of their age. The purpose of these questions was to get some idea of whether non-respondents were systematically different to respondents to the survey. About 70% of refusals answered these questions, even though they had refused to participate in the main survey.

An analysis of these responses at both the questionnaire delivery and pickup stages reveals some interesting differences between refusals at each stage of the survey. A general picture of refusals at the delivery stage is that they:

- Come from smaller than average households (2.31 cf 2.56)
- Have far fewer than average number of vehicles (1.46 cf 1.80)
- Are equally likely to be male as the average respondent (48% male cf 48%); and
- Are much older than the average respondent (50 cf 38)

On the other hand, refusals at the pickup stage:

- Come from larger than average households (2.80 cf 2.56)
- Have slightly fewer than average number of vehicles (1.71 cf 1.80)
- Are about equally likely to be male as the average respondent (47% male cf 48%); and
- Are slightly older than the average respondent (42 cf 38)

It therefore appears that the characteristics of refusals at the delivery and collection stages are significantly different. Whereas refusals at the delivery stage are more likely to be older, less mobile persons from smaller households, refusals at the collection stage are more likely to be relatively younger, more mobile persons from larger households. Those who refuse at the delivery stage appear to feel that the survey is not relevant to them, while those who refuse at the collection stage may feel that the survey is too much work for them to do.



### **10.2.8 What non-response factors were developed?**

While the above section gives some interesting insights into the characteristics of refusals at the delivery and pickup stages, it does not shed any light on another group of non-respondents who simply fail to respond to the survey (without giving an absolute refusal). Overall, however, the net demographic difference between respondents and non-respondents can be allowed for in the calculation and application of the household and person weights described earlier in section 10.2.3. There it was observed that people in rented, multi-unit dwellings (flats and apartments) were less likely to respond, as were males and people aged 20-40 or over 75. However, the application of the demographic weights automatically corrects for these differences in response rates, ensuring that all demographic groups are correctly represented in the final expanded population.



## 11 Data Analysis and Management

### 11.1 Exploratory Data Analysis

#### 11.1.1 What exploratory data analysis methods were used?

In the data editing and cleaning phase of the project, extensive use was made of Excel spreadsheets, Pivot Tables and Visual Basic macros within Excel. While other statistical or database software (such as SPSS or Microsoft Access) could have been used, it was found that the flexibility offered by Excel was a decided advantage, especially considering the expanded size of the data files that can be handled by Excel 2007(up to 1 million records in a worksheet). In VISTA09, the maximum file size was about 150,000 records in the Stops file.

### 11.2 Modelling

#### 11.2.1 Were any models developed from the data in this project?

No models have been developed so far with the data, with the exception of some simple models developed as part of the imputation process for the purposes of predicting the likely values of missing variables.

### 11.3 Interpretation of Results

#### 11.3.1 What limitations apply to the data?

There are a number of limitations that should be borne in mind when using and interpreting the data for VISTA09, as follows:

- Travel diaries for children under five have been re-constructed from the diaries of other household members, and mainly record travel undertaken with at least one other member of the household; while some return trips with non-household persons have been imputed, travel chains undertaken with no other members of the household are not recorded for children under 5.
- Multi-purpose stops within regional shopping centres (e.g. Chadstone Shopping Centre) have been simplified to a single trip to the shopping centre, irrespective of the number of different activities undertaken while at the shopping centre.
- Only personal travel, including travel to and from work, of “professional drivers” (i.e those employed specifically for the transport of people and goods) was collected. Travel undertaken by professional drivers “on the job” was not recorded.
- Travel patterns are only recorded for residents of the Study Areas; while this will be the majority of travel, there may be some market segments (e.g. non-peak travel in the Melbourne CBD) which contain a significant number of visitor and tourist trips.
- As always, even though the final VISTA09 data is from a substantial sample of about 10000 households in metropolitan Melbourne; care should be taken when reporting analyses undertaken with significant segmentation of the data (either demographically or geographically), since the sample sizes within some strata may be relatively low. This will especially be the case for the regional cities, where a sample of only about 1000 households will be collected in each area.



### 11.3.2 How are sampling errors explained?

As noted in the final limitation noted above, care should be taken when reporting results within strata of the sample. As well as providing the mean result (or any other summary statistic), confidence limits and levels of confidence should also be provided for the summary statistics. As a first approximation, it could be assumed that the sample is a simple random sample from the population, and the Standard Error of the Mean could be calculated as the Standard Deviation of the strata distribution divided by the square root of the sample size for the strata. More precise estimates of the Standard Error of the Mean (or the Standard Error of any other summary statistic) should be obtained using one of the methods of re-sampling described in section 4.7 (given that the sample is actually a clustered, multi-stage sample with differential expansion weights, rather than a simple random sample with uniform expansion weights).

When expressing the amount of sampling error involved in an estimate, preference should be given to a plain-English explanation such as "the mean of this variable is expected to lie between x and y in z% of repeated samples of this size".

## 11.4 Database Management

### 11.4.1 What is the structure of the data files?

The VISTA09 data files, as provided to the Department of Transport, are in the form of a number of Excel files. They have also, however, been imported into SPSS files and could also be saved in other formats. The files received by the Department of Transport exclude the Admin file and have had respondent household address geocodes randomised as described in section 9.6.

### 11.4.2 What are the relationships between data files?

As noted earlier in section 8.3, the various files created by VISTA09 are linked together as shown in Figure 11.1. The linkages are created by means of ID numbers for each record in each file, which identify a unique relationship with the other files.

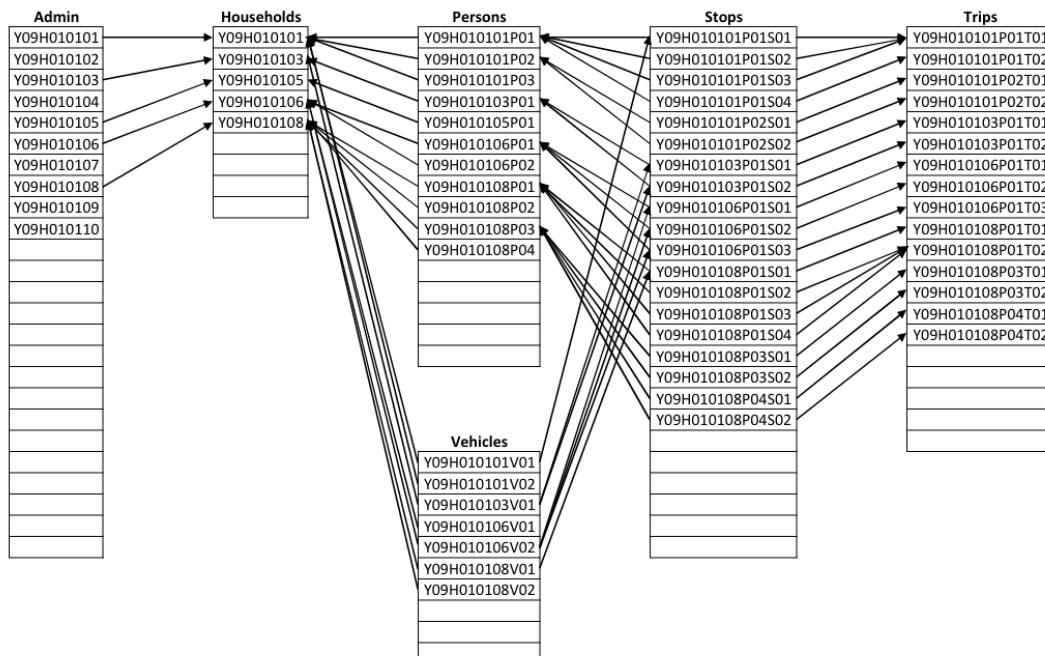


Fig 11.1 Structure of the VISTA09 Data Files Linkages



Thus the responding Households obtain some characteristics, such as address and geocodes, from the Admin file which contains details of the entire sample of households that received survey materials. Each Person belongs to a specific Household, as does each Vehicle. In turn, each Stop record belongs to a specific Person, but each Vehicle belongs to a specific Stop (if the vehicle is used by a household member on the Travel Day). Stop records are combined to create Trip records.

The ID numbers used to link each file have a specific format as follows:

Household Records: YyyHrrwwhh, where yy is the year of the survey (09 for VISTA09), rr is the survey fieldwork region number (from 01 to 18), ww is the survey week (from 01 to 52) and hh is a household number within that region and week (from 01 to 42).

Person Records: YyyHrrwwhhPpp, where pp is the person number within each household.

Vehicle Records: YyyHrrwwhhVvv, where vv is the vehicle number within each household.

Stop Records: YyyHrrwwhhPppSss, where ss is the stop number within each person.

Trip Records: YyyHrrwwhhPppTtt, where tt is the trip number within each person.

#### 11.4.3 Have any new data files been created from the original data files?

The original files obtained from the survey are the Admin, Household, Vehicle, Person and Stops files. In addition, a Trips file, Journey-to-Work (and Journey-from-Work) files, and a Home-Based Chain file have been created from the Stops file.

In order to facilitate use of the data for purposes such as network modelling, it is useful to have travel described in terms of Trips, rather than Trip Stages.

A Trip is defined as a one-way travel movement from an origin to a destination for a single purpose (including picking up and delivering passengers), but perhaps by multiple modes, whereas a Trip Stage is defined as a one-way travel movement from an origin to a destination for a single purpose (including change of mode) and by a single mode. Thus a trip to work which involves a walk to a bus stop, followed by a bus trip to another bus stop at the station, then another walk to the train station, followed by a train trip, and finally a walk from the train station to the workplace would be five Trip Stages (walk-bus-walk-train-walk), but only one Trip (home to work).

The construction of the Trips file has been done by eliminating all trip stage purposes which are "change mode" or "park/unpark a car", and combining the trip stages into one overall Trip for a single purpose (but perhaps by multiple modes). Most Trip Stages (by private vehicle) are also Trips. The biggest changes occur for Trip Stages involved in public transport Trips.

Once Trips have been created, a decision must be made as to what mode to adopt as being the "main mode" on that multi-modal trip. Two different methods have been included in the Trip files; priority mode and longest-time mode.

The Priority mode approach uses a hierarchy of modes, with the highest priority mode used on the Trip Stages being assigned as the main mode for the trip. The ordering of the priority modes is as follows:

- Train is priority 1
- Tram is priority 2
- School bus is priority 3
- Public bus is priority 4
- Taxi is priority 5
- Motorbike is priority 6
- Vehicle driver is priority 7



Vehicle passenger is priority 8

Bicycle is priority 9

Walking is priority 10

Other mode is priority 11

The second approach assigns the mode used for the longest distance (straight-line) of the Trip Stages as the main mode for the Trip.

The weighting assigned to each Trip is based on the Weight associated with the main mode on the Trip Stages.

The Journey-to-Work and Journey-from-Work (JTW and JFW) files have been created specifically to compare with the Journey-to-Work data obtained from the ABS Census in 2006. The JTW file has been constructed by first identifying all persons who made at least one journey from their home to their workplace on their Travel Day. For each of these persons, the first of these Journeys was identified (in case they came home during the day, and then went to work again), and all the Trips made on their way from home to work are recorded (e.g. a JTW might include two Trips, one to school to drop off children, and then one from school to workplace). Only the summary details of the Trips are recorded (travel time, distance of trip, place at end of trip, mode, purpose, duration of stay at intermediate stop). Any further details about the Trip can be obtained from the corresponding Trip and Stop files. The JFW file is constructed in a similar manner, but considers the last journey in the day from workplace to home.

The Home-Based Chain file has been constructed in the recognition that during the day many Trips are combined into an overall Chain, with the start and end of the Chain being at home. Such trip chaining enables many out-of-home activities to be performed without returning home, thus reducing the amount of travel done per activity. The Home-Based Chain file has been constructed, from the Trip file, by looking for the first time that the person leaves the home and then finding when they next return home. All trips in between these two times are then combined into a Home-Based Chain. If the person leaves the home again, then the process is repeated as many times as required until they return home for the last time during the Travel Day. The average person makes 1.41 Home-Based Chains during the day, with a distribution as shown in Table 11.1. Two-thirds of people make only one home-based chain per day.

**Table 11.1 Home-Based Chains per Person per Day**

Chains/Person/Day	% of Persons
1	69%
2	23%
3	6.2%
4	1.4%
5	0.4%
6+	0.1%

The average length of each Home-Based chain, in terms of the number of trips in each chain, is 1.31, with a distribution as shown in Table 11.2. Two-thirds of Chains are Simple Chains (one trip out and one trip back to home), while 18% are three-legged chains. 15% of chains are more complex.

**Table 11.2 Trips per Home-Based Chain**

Trips/Home-Based Chain	% of Persons
1	0.1%
2	66.1%
3	18.4%
4	8.9%
5	3.4%
6+	3.2%

## 11.5 Data Support Services

### 11.5.1 What ongoing support is available to users?

The editing of the data and the development of supplementary data sets based on the original data is an ongoing process. As different users perform various analyses using the data, they may discover inconsistencies in the data that had not previously been recognised. In addition, new uses of the data may require specialised analysis and transformations of the data which require a deep understanding of the nature and structure of the data sets. For this reason, ongoing support is required to ensure consistent development and use of the data.

### 11.5.2 Where is this support available from?

Following completion of the current project, the data sets will reside with the Victorian Department of Transport. The primary contact within the Department is the Manager - Transport Modelling & Analysis ([VISTA09@transport.vic.gov.au](mailto:VISTA09@transport.vic.gov.au)). For access to the data and general questions about the data sets, the Department of Transport should be the first point of contact.

However, The Urban Transport Institute has an ongoing commitment beyond the current contract to the maintenance of quality in the data, and will be available for consultation on various aspects of the data. The primary contact person within TUTI will be Dr. Tony Richardson ([tony.richardson@tuti.com.au](mailto:tony.richardson@tuti.com.au)).



## **12      Presentation of Results**

### **12.1.1    What reports and documentation have been produced?**

During the course of the VISTA09 project, a range of reports have been produced. Several of these have now been incorporated into and updated within the current document. Other reports, however, are stand-alone reports, including:

- *Victorian Integrated Survey of Travel and Activity 2009: Field Procedures Manual*, The Urban Transport Institute and I-view Pty Ltd, June 2009



## 13 Tidying-Up

### 13.1.1 How has the data been stored electronically?

The data sets are stored by TUTI as Excel spreadsheets, with coding frames included. These data sets are backed-up on external hard disks, websites, cloud computing sites, CDs and DVDs.

### 13.1.2 How have the coding frames been stored electronically?

The coding frames are included as an appendix to this report, and are also stored as a worksheet within the Excel data file spreadsheets, and as part of the SPSS files.

### 13.1.3 How has the survey documentation been stored electronically?

This report, along with other survey reports, has been saved on the websites, CDs and DVDs which contain the data sets.

### 13.1.4 Are MetaData files available for this data set?

Metadata files are defined as “data about the data”. Some also refer to metadata as simply survey documentation. To that extent, the current document is a very comprehensive metadata document. A summary of the survey metadata appears below. In addition, Appendix ZZ contains some “plain English” Questions & Answers that were provided to field staff and respondents (as required) and which appeared on the VISTA09 pages of the TUTI website.

<b>Survey Name:</b>	Victorian Integrated Survey of Travel and Activity (VISTA09)
<b>Description:</b>	A survey of day-to-day travel behaviour of persons living in a sample of private dwellings in the Melbourne Statistical Division, and in five Regional City LGAs. Also includes some household, person and vehicle characteristics.
<b>Subject:</b>	Passenger; Road; Rail; Bus; Cycling; Tram; Pedestrian; Private vehicle; Public vehicle; Commercial; Recreational; Urban; Vehicle stocks; Vehicle flows; Travel speed; Access; User cost
<b>Coverage:</b>	Melbourne Statistical Division (MSD), Geelong LGA, Ballarat LGA, Bendigo LGA, Shepparton LGA, Latrobe Valley LGA
<b>Client:</b>	Victorian Department of Transport
<b>Client Project Manager:</b>	Manager - Transport Modelling & Analysis ( <a href="mailto:VISTA09@transport.vic.gov.au">VISTA09@transport.vic.gov.au</a> )
<b>Contractor:</b>	The Urban Transport Institute (TUTI)
<b>Contractor Project Manager:</b>	Dr. Tony Richardson ( <a href="mailto:tony.richardson@tuti.com.au">tony.richardson@tuti.com.au</a> )
<b>Sub-contractors:</b>	I-view Pty Ltd (field operations and data entry)
<b>Project Duration:</b>	March 2009 – November 2010
<b>Pilot Survey:</b>	None
<b>Main Survey Duration:</b>	52 weeks (July 2009 through July 2010)



<b>Target Sample Size:</b>	10000 responding households in MSD 1000 responding households in each of the Regional LGAs 500 (estimated) responding households in Activity Centres
<b>Actual Sample Size (for Data Release v1.0):</b>	16,411 responding households, 42,002 persons, 29,500 vehicles, 136,500 stops (trip stages), 120,558 trips, 10,133 journeys to work 10,212 journeys from work 4,018 journeys to education 4,023 journeys from education 39,862 home-based chains
<b>Response Rate:</b>	47%
<b>Sample Frame:</b>	GIS files of property addresses, property boundaries and planning zone overlays
<b>Sampling Method:</b>	Multi-stage, variable-proportion, clustered sampling of household addresses within Census Collection Districts (CCD)
<b>Survey Methodology:</b>	Self-completion questionnaires with stage-based one-day travel diaries; Pre-contact Letter of Introduction from Client; Personal Delivery of Questionnaires; Motivational Phone call on evening before travel day; Personal Collection of Questionnaires, with option of reply-paid mailback for those not contacted; Non-respondent questions for refusals; Reminder Phone Call after one week; Reminder Letter for those not contactable by phone
<b>Data Processing:</b>	Field Office visual check of returns; Data Entry/Editing using Speedit program; Geocoding of all destination locations; Clarification Calls to households to clarify information.



<b>Final Editing and Analysis</b>	<p>Extensive Range and Logic Checks;</p> <p>Imputation of Missing Data;</p> <p>Household Expansion Weights (based on dwelling type and ownership and region of residence) using ABS 2006 Census as control data, plus 2009 Estimated Resident Populations for final expansion;</p> <p>Temporal Weights based on day-of-week and month-of-year of Travel Day;</p> <p>Person Expansion Weights (based on age, gender and region of residence) using ABS 2006 Census as control data;</p> <p>Non-Reported-Stop Weights (based on mode, time of day and stop purpose) using information obtained on proxy reporting and timing of diary completion</p>
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## Appendix A - Field Staff Training Manual Contents

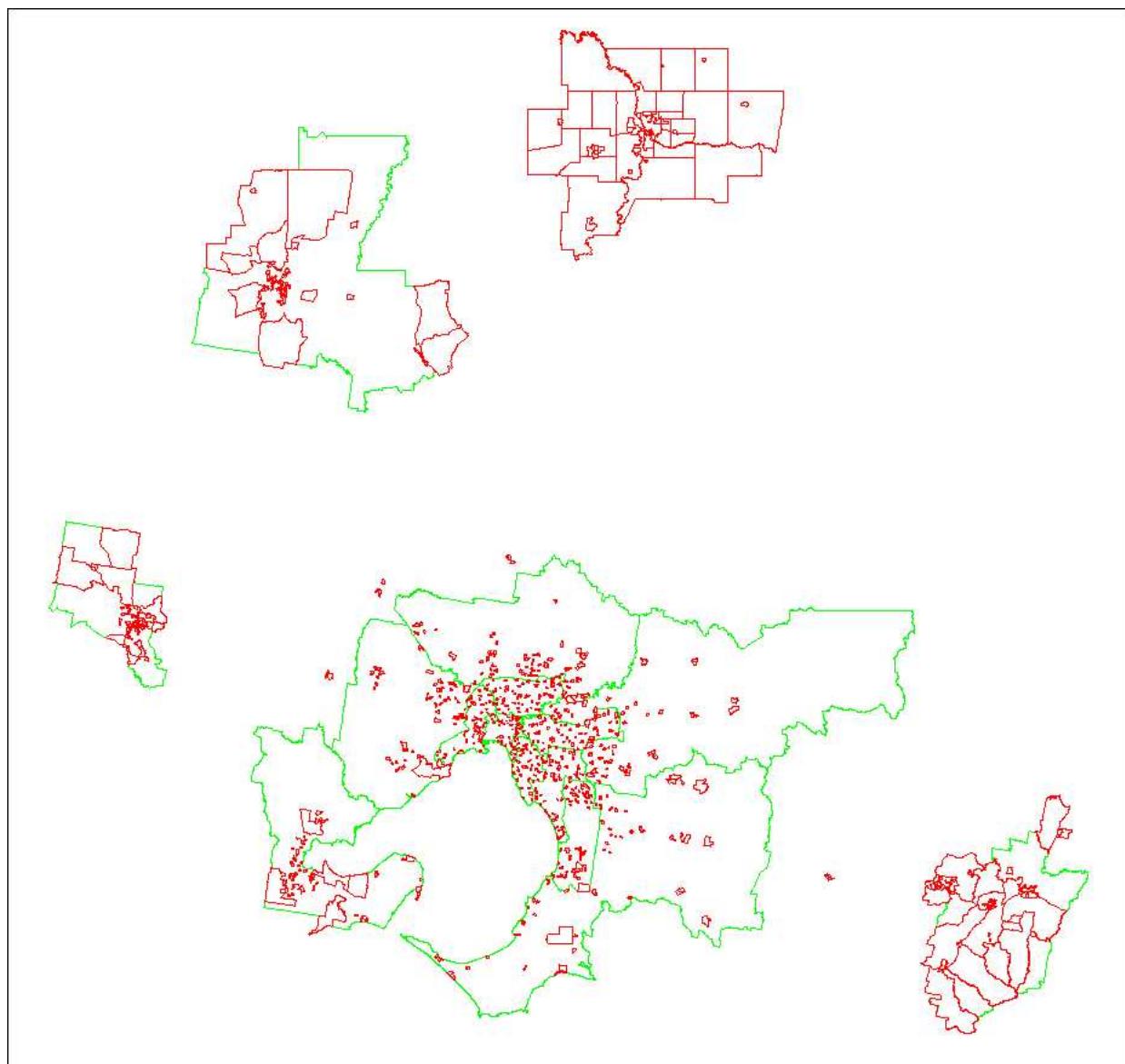
### ***VISTA Main Survey Field Procedures Manual***

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## Appendix B - Distribution of Sampled CCDs within each Region





## Appendix C - Household Form

# A Survey of Day-to-Day Travel

conducted for the Department of Transport by The Urban Transport Institute



### Read this First

### In Confidence

1. Please fill in this Household Page first.
2. Then... fill in the Person Page (on the inside of this form) for everyone who usually lives in this household.
3. Then... fill in details about household vehicles on the Vehicle Page (on the back page of this form).
4. Then... each person aged 5 and above should fill in a blue Travel Day Form booklet for your Travel Day.

## Household Page

### Your Travel Day is:

A household is:

- all people who usually live at this address
- a household can be just one person.

### Now start here:

How many people **usually live** in this household, including yourself?

How many **visitors** stayed overnight in this household on the night before your Travel Day?

In what **type of dwelling** does this household live?

Separate House  Terrace/Townhouse  Flat/Apartment  Something else   
(please write in)

Is the dwelling **owned or rented** by any member of this household?

Fully Owned  Being Purchased (e.g. on a mortgage)  Being Rented   
Occupied Rent-Free  Something else (please write in)

How long has this household **lived at this address?**  years  months

How many **registered vehicles**, owned or used by members of this household (including motorcycles and company cars), were parked at or near this dwelling on the night before your Travel Day?

How many **bicycles** (in working condition) are kept in this household?

adult bikes  
 kids bikes

How many of these bicycles were **used in the past 14 days?**

adult bikes  
 kids bikes

Can you please provide a **contact phone number** for your household, in case we need to contact you to confirm or clarify some of your answers.

landline:  
  
mobile:

Please turn the page - and provide details of the **People** in your household



## Appendix D - Person Form

### Person Page

Please fill in for everyone who usually lives at this address, even if they are away on your Travel Day.

		Oldest Resident	Second Person	Third Person
Person Number Please record the Oldest Resident as Person 1	First Name <b>1</b>	First Name <b>2</b>	First Name <b>3</b>	
Month and Year of Birth	month  <b> </b>	year  <b> </b>	month  <b> </b>	year  <b> </b>
Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>	Male <input type="checkbox"/> Female <input type="checkbox"/>	Male <input type="checkbox"/> Female <input type="checkbox"/>	
Relationship to Person 1	<b>This is Person 1</b> <input type="checkbox"/> Spouse/partner of person 1 <input type="checkbox"/> Child/stepchild of person 1 <input type="checkbox"/> Brother/sister of person 1 <input type="checkbox"/> Grandchild of person 1 <input type="checkbox"/> Other Relative of person 1 <input type="checkbox"/> Unrelated to person 1 <input type="checkbox"/> Something else (please write in)			
Country of Birth	Australia <input type="checkbox"/> Elsewhere (please write in) <b> </b>			
Driver's Licence Does this person have a licence to drive a vehicle or ride a motorcycle? (tick as many as apply)	No Licence <input type="checkbox"/> Car Licence - full licence <input type="checkbox"/> - P1 probationary licence (Red) <input type="checkbox"/> - P2 probationary licence (Green) <input type="checkbox"/> - learner's permit <input type="checkbox"/> Motorcycle Licence <input type="checkbox"/> Other Licence <input type="checkbox"/> No Licence <input type="checkbox"/> Car Licence - full licence <input type="checkbox"/> - P1 probationary licence (Red) <input type="checkbox"/> - P2 probationary licence (Green) <input type="checkbox"/> - learner's permit <input type="checkbox"/> Motorcycle Licence <input type="checkbox"/> Other Licence <input type="checkbox"/> No Licence <input type="checkbox"/> Car Licence - full licence <input type="checkbox"/> - P1 probationary licence (Red) <input type="checkbox"/> - P2 probationary licence (Green) <input type="checkbox"/> - learner's permit <input type="checkbox"/> Motorcycle Licence <input type="checkbox"/> Other Licence <input type="checkbox"/>			
<b>Current Employment, Studying and other Activities</b> (tick as many categories as apply to each person)				
Currently Employed	Full-time work (35 hours or more per week) <input type="checkbox"/> Part-time work (less than 35 hours per week) <input type="checkbox"/> Casual work <input type="checkbox"/> Full-time work (35 hours or more per week) <input type="checkbox"/> Part-time work (less than 35 hours per week) <input type="checkbox"/> Casual work <input type="checkbox"/> Full-time work (35 hours or more per week) <input type="checkbox"/> Part-time work (less than 35 hours per week) <input type="checkbox"/> Casual work <input type="checkbox"/>			
Currently Studying	Primary school <input type="checkbox"/> Secondary school <input type="checkbox"/> Full-time University/TAFE <input type="checkbox"/> Part-time University/TAFE <input type="checkbox"/> Something else (e.g. language school) <input type="checkbox"/> Primary school <input type="checkbox"/> Secondary school <input type="checkbox"/> Full-time University/TAFE <input type="checkbox"/> Part-time University/TAFE <input type="checkbox"/> Something else (e.g. language school) <input type="checkbox"/> Primary school <input type="checkbox"/> Secondary school <input type="checkbox"/> Full-time University/TAFE <input type="checkbox"/> Part-time University/TAFE <input type="checkbox"/> Something else (e.g. language school) <input type="checkbox"/>			
Any other activities	Not yet at primary school <input type="checkbox"/> Keeping House <input type="checkbox"/> Currently Unemployed <input type="checkbox"/> Retired <input type="checkbox"/> Something else (please write in) Not yet at primary school <input type="checkbox"/> Keeping House <input type="checkbox"/> Currently Unemployed <input type="checkbox"/> Retired <input type="checkbox"/> Something else (please write in) Not yet at primary school <input type="checkbox"/> Keeping House <input type="checkbox"/> Currently Unemployed <input type="checkbox"/> Retired <input type="checkbox"/> Something else (please write in)			
<b>Employment Details</b> (to be completed by those currently employed, for the job in which they work the most hours)				
Work Arrangements	Fixed hours <input type="checkbox"/> Flexible hours <input type="checkbox"/> Rostered shifts <input type="checkbox"/> Work from home <input type="checkbox"/> Fixed hours <input type="checkbox"/> Flexible hours <input type="checkbox"/> Rostered shifts <input type="checkbox"/> Work from home <input type="checkbox"/> Fixed hours <input type="checkbox"/> Flexible hours <input type="checkbox"/> Rostered shifts <input type="checkbox"/> Work from home <input type="checkbox"/>			
Type of Employment	Paid employee <input type="checkbox"/> Self-employed (not employing others) <input type="checkbox"/> An employer of other people <input type="checkbox"/> Working in family business without pay <input type="checkbox"/> Volunteer <input type="checkbox"/> Paid employee <input type="checkbox"/> Self-employed (not employing others) <input type="checkbox"/> An employer of other people <input type="checkbox"/> Working in family business without pay <input type="checkbox"/> Volunteer <input type="checkbox"/> Paid employee <input type="checkbox"/> Self-employed (not employing others) <input type="checkbox"/> An employer of other people <input type="checkbox"/> Working in family business without pay <input type="checkbox"/> Volunteer <input type="checkbox"/>			
Occupation What kind of work does this person do?	<b> </b>			
Industry In what type of business does this person work?	<b> </b>			



Person Number	Fourth Person		Fifth Person		Sixth Person	
	First Name	4	First Name	5	First Name	6
Month and Year of Birth	month	year	month	year	month	year
Gender	Male <input type="checkbox"/>	Female <input type="checkbox"/>	Male <input type="checkbox"/>	Female <input type="checkbox"/>	Male <input type="checkbox"/>	Female <input type="checkbox"/>
Relationship to Person 1	<input type="checkbox"/> Spouse/partner of person 1 <input type="checkbox"/> Child/stepchild of person 1 <input type="checkbox"/> Brother/sister of person 1 <input type="checkbox"/> Grandchild of person 1 <input type="checkbox"/> Other Relative of person 1 <input type="checkbox"/> Unrelated to person 1 <input type="checkbox"/> Something else (please write in)		<input type="checkbox"/> Spouse/partner of person 1 <input type="checkbox"/> Child/stepchild of person 1 <input type="checkbox"/> Brother/sister of person 1 <input type="checkbox"/> Grandchild of person 1 <input type="checkbox"/> Other Relative of person 1 <input type="checkbox"/> Unrelated to person 1 <input type="checkbox"/> Something else (please write in)		<input type="checkbox"/> Spouse/partner of person 1 <input type="checkbox"/> Child/stepchild of person 1 <input type="checkbox"/> Brother/sister of person 1 <input type="checkbox"/> Grandchild of person 1 <input type="checkbox"/> Other Relative of person 1 <input type="checkbox"/> Unrelated to person 1 <input type="checkbox"/> Something else (please write in)	
Country of Birth	<input type="checkbox"/> Australia <input type="checkbox"/> Elsewhere (please write in)		<input type="checkbox"/> Australia <input type="checkbox"/> Elsewhere (please write in)		<input type="checkbox"/> Australia <input type="checkbox"/> Elsewhere (please write in)	
Driver's Licence <small>Does this person have a licence to drive a vehicle or ride a motorcycle? (tick as many as apply)</small>	<input type="checkbox"/> No Licence <input type="checkbox"/> Car Licence <input type="checkbox"/> - full licence <input type="checkbox"/> - P1 probationary licence (Red) <input type="checkbox"/> - P2 probationary licence (Green) <input type="checkbox"/> - learner's permit <input type="checkbox"/> Motorcycle Licence <input type="checkbox"/> Other Licence		<input type="checkbox"/> No Licence <input type="checkbox"/> Car Licence <input type="checkbox"/> - full licence <input type="checkbox"/> - P1 probationary licence (Red) <input type="checkbox"/> - P2 probationary licence (Green) <input type="checkbox"/> - learner's permit <input type="checkbox"/> Motorcycle Licence <input type="checkbox"/> Other Licence		<input type="checkbox"/> No Licence <input type="checkbox"/> Car Licence <input type="checkbox"/> - full licence <input type="checkbox"/> - P1 probationary licence (Red) <input type="checkbox"/> - P2 probationary licence (Green) <input type="checkbox"/> - learner's permit <input type="checkbox"/> Motorcycle Licence <input type="checkbox"/> Other Licence	
<b>Current Employment, Studying and other Activities</b> (tick as many categories as apply to each person)						
Currently Employed	<input type="checkbox"/> Full-time work (35 hours or more per week) <input type="checkbox"/> Part-time work (less than 35 hours per week) <input type="checkbox"/> Casual work		<input type="checkbox"/> Full-time work (35 hours or more per week) <input type="checkbox"/> Part-time work (less than 35 hours per week) <input type="checkbox"/> Casual work		<input type="checkbox"/> Full-time work (35 hours or more per week) <input type="checkbox"/> Part-time work (less than 35 hours per week) <input type="checkbox"/> Casual work	
Currently Studying	<input type="checkbox"/> Primary school <input type="checkbox"/> Secondary school <input type="checkbox"/> Full-time University/TAFE <input type="checkbox"/> Part-time University/TAFE <input type="checkbox"/> Something else (e.g. language school)		<input type="checkbox"/> Primary school <input type="checkbox"/> Secondary school <input type="checkbox"/> Full-time University/TAFE <input type="checkbox"/> Part-time University/TAFE <input type="checkbox"/> Something else (e.g. language school)		<input type="checkbox"/> Primary school <input type="checkbox"/> Secondary school <input type="checkbox"/> Full-time University/TAFE <input type="checkbox"/> Part-time University/TAFE <input type="checkbox"/> Something else (e.g. language school)	
Any other activities	<input type="checkbox"/> Not yet at primary school <input type="checkbox"/> Keeping House <input type="checkbox"/> Currently Unemployed <input type="checkbox"/> Retired <input type="checkbox"/> Something else (please write in)		<input type="checkbox"/> Not yet at primary school <input type="checkbox"/> Keeping House <input type="checkbox"/> Currently Unemployed <input type="checkbox"/> Retired <input type="checkbox"/> Something else (please write in)		<input type="checkbox"/> Not yet at primary school <input type="checkbox"/> Keeping House <input type="checkbox"/> Currently Unemployed <input type="checkbox"/> Retired <input type="checkbox"/> Something else (please write in)	
<b>Employment Details</b> (to be completed by those currently employed, for the job in which they work the most hours)						
Work Arrangements	<input type="checkbox"/> Fixed hours <input type="checkbox"/> Flexible hours <input type="checkbox"/> Rostered shifts <input type="checkbox"/> Work from home		<input type="checkbox"/> Fixed hours <input type="checkbox"/> Flexible hours <input type="checkbox"/> Rostered shifts <input type="checkbox"/> Work from home		<input type="checkbox"/> Fixed hours <input type="checkbox"/> Flexible hours <input type="checkbox"/> Rostered shifts <input type="checkbox"/> Work from home	
Type of Employment	<input type="checkbox"/> Paid employee <input type="checkbox"/> Self-employed (not employing others) <input type="checkbox"/> An employer of other people <input type="checkbox"/> Working in family business without pay <input type="checkbox"/> Volunteer		<input type="checkbox"/> Paid employee <input type="checkbox"/> Self-employed (not employing others) <input type="checkbox"/> An employer of other people <input type="checkbox"/> Working in family business without pay <input type="checkbox"/> Volunteer		<input type="checkbox"/> Paid employee <input type="checkbox"/> Self-employed (not employing others) <input type="checkbox"/> An employer of other people <input type="checkbox"/> Working in family business without pay <input type="checkbox"/> Volunteer	
Occupation <small>What kind of work does this person do?</small>						
Industry <small>In what type of business does this person work?</small>						
<b>Please turn the page - and provide details of all Registered Vehicles in your household</b>						



## Appendix E – Vehicle Form

### Vehicle Page

Please provide the following information for **all registered vehicles** owned or used by members of this household (including motorcycles & company cars) which were parked at or near this dwelling on the night before your Travel Day.

Vehicle Number	1	2	3	4	5
Type of Vehicle	<input type="checkbox"/> Passenger car/van <input type="checkbox"/> 4WD/SUV <input type="checkbox"/> Ute <input type="checkbox"/> Goods van <input type="checkbox"/> Truck <input type="checkbox"/> Motorcycle/Scooter <input type="checkbox"/> Other vehicle type <i>please write in</i>	<input type="checkbox"/> Passenger car/van <input type="checkbox"/> 4WD/SUV <input type="checkbox"/> Ute <input type="checkbox"/> Goods van <input type="checkbox"/> Truck <input type="checkbox"/> Motorcycle/Scooter <input type="checkbox"/> Other vehicle type <i>please write in</i>	<input type="checkbox"/> Passenger car/van <input type="checkbox"/> 4WD/SUV <input type="checkbox"/> Ute <input type="checkbox"/> Goods van <input type="checkbox"/> Truck <input type="checkbox"/> Motorcycle/Scooter <input type="checkbox"/> Other vehicle type <i>please write in</i>	<input type="checkbox"/> Passenger car/van <input type="checkbox"/> 4WD/SUV <input type="checkbox"/> Ute <input type="checkbox"/> Goods van <input type="checkbox"/> Truck <input type="checkbox"/> Motorcycle/Scooter <input type="checkbox"/> Other vehicle type <i>please write in</i>	<input type="checkbox"/> Passenger car/van <input type="checkbox"/> 4WD/SUV <input type="checkbox"/> Ute <input type="checkbox"/> Goods van <input type="checkbox"/> Truck <input type="checkbox"/> Motorcycle/Scooter <input type="checkbox"/> Other vehicle type <i>please write in</i>
Make of Vehicle (e.g. Toyota)					
Model of Vehicle (e.g. Corolla)					
Year of Manufacture	<input type="text"/> <input type="text"/> <input type="text"/>				
Fuel Type (tick as many as apply)	<input type="checkbox"/> Petrol <input type="checkbox"/> Diesel <input type="checkbox"/> LPG/CNG <input type="checkbox"/> Electric	<input type="checkbox"/> Petrol <input type="checkbox"/> Diesel <input type="checkbox"/> LPG/CNG <input type="checkbox"/> Electric	<input type="checkbox"/> Petrol <input type="checkbox"/> Diesel <input type="checkbox"/> LPG/CNG <input type="checkbox"/> Electric	<input type="checkbox"/> Petrol <input type="checkbox"/> Diesel <input type="checkbox"/> LPG/CNG <input type="checkbox"/> Electric	<input type="checkbox"/> Petrol <input type="checkbox"/> Diesel <input type="checkbox"/> LPG/CNG <input type="checkbox"/> Electric
Number of Cylinders	<input type="text"/>				
Who pays for the costs of running this vehicle?	<input type="checkbox"/> Privately paid <input type="checkbox"/> Work/employer paid				

### How to fill out the blue Travel Day Forms

#### General Instructions

- Please use a blue Travel Day Form for each resident in the household **aged 5 and above**.
- The person who is numbered 1 on the Red Person Page should enter 1 as the Person Number on the blue Travel Day Form, the person who is numbered 2 on the Red Person Page should enter 2 as the Person Number, and so on.
- If you are a “**professional driver**”, please fill in only your **personal** travel for your Travel Day, including travel to and from work. A “professional driver” is someone *who is employed (self-employed or otherwise) to transport goods or people. This includes courier drivers, taxi drivers and truck drivers*. However, if you are not a “professional driver”, and you sometimes travel as part of your work (e.g. to go to and from meetings), please record any travel you do as part of your work.
- The blue Travel Day Form asks each person in the household to fill in all the travel made by them on your household’s Travel Day, which is:

### Some other things you might need to know

#### If someone makes more than 13 stops on the Travel Day

- Please continue recording these stops on a spare blue Travel Day Form.
- If you need more blue Travel Day Forms, please ring the Travel Survey Office on the free-call number shown below.

#### Confidentiality

- Any information that might identify people or households will be kept **strictly confidential**.
- Your data will be combined with data from many other households in any results that are released.
- No data that identifies individual households or people will be released to any third parties.

#### If you have any questions or require assistance with the survey:

- Please don't hesitate to ring the Travel Survey Office on **1800 034 523** (free-call).



## Appendix F – Travel Diary Form

# Travel Day Form



### How to fill in this form

- This questionnaire is about your travel and activities on one particular Travel Day.

Your Travel Day is

In Confidence

**First**, write in your Person Number (from the Red Person Page), your First Name and the Date of your Travel Day.

Person Number

First Name

Date of Travel Day / /

- Include all travel over the whole day, from 4.00 a.m. on your Travel Day until 4.00 a.m. the next day.
- Even short pieces of travel, like walking to lunch and back, are important, and should be recorded.
- If you go somewhere and then return to where you started, remember to tell us about your travel on the way back.
- Even if you did not go anywhere on your Travel Day,  
please tell us why in the space provided below, because this is important information as well.

### Now continue here:

The Travel Day starts at 4.00 a.m. (because most people are not travelling at 4.00 a.m.)

#### Q1. Where were you at 4.00 a.m. on your Travel Day?

At the address where the survey forms were delivered

Go straight to Question 2

At work

Please write in the address of this location  
in the spaces below, then go to Question 2

Somewhere else

Number

Street Name

Nearest Intersection or Landmark

Suburb/Town

#### Q2. Did you leave this place at all on your Travel Day?

Yes  Go to Question 3

No  Go to Question 4

#### Q3. At what time (after 4.00 a.m.) did you first leave this place on your Travel Day?

:

a.m.   
p.m.

Now turn the page to Stop 1 →

#### Q4. If you did not leave this place at all on this Travel Day, please give the reason.

#### Q5. If you did not leave this place at all on this Travel Day, when did you last leave it before your Travel Day?

Day of Week

Date / /

If you did not go anywhere at all on your Travel Day, please now turn to Page 15 →



## Stop 1

### A WHAT was Stop 1? (please select one only)

- A bus stop  
 A tram stop  
 A railway station

Name of Railway Station

- A restaurant/cafe  
 A petrol station  
 A shop

Name of Shop/Restaurant/Petrol Station

- A pre-school/childcare centre  
 A primary school  
 A secondary school  
 A University/TAFE

Name of School/University etc

- My usual workplace  
 Another place to do work

Name of Workplace

- My home  
 Someone else's home  
 Somewhere else

Please describe

### B WHERE was Stop 1?

Street Number

Street Name

Nearest Intersection/Landmark

Suburb/Town

### C WHO travelled with you to Stop 1?

Which other people from your household (if any) travelled with you? (use Person Numbers from the Red Person Form)

No one from the household 

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| Person 1 <input type="checkbox"/> | Person 4 <input type="checkbox"/> |
| Person 2 <input type="checkbox"/> | Person 5 <input type="checkbox"/> |
| Person 3 <input type="checkbox"/> | Person 6 <input type="checkbox"/> |

Go to Section D

Page 2

### D WHY did you go to Stop 1? (please select one only)

- To get on or off a bus, tram or train   
It's my workplace   
On employer's business   
To pick up or deliver something for work   
To pick up or deliver something else   
To pick up or drop off someone   
To accompany someone   
To eat or drink   
To buy something   
For school/education   
To visit someone (socially)   
To go home   
Other reason

Please describe other reason

### E HOW did you get to Stop 1? (please select one only)

Private or Company Vehicle 

- What type of vehicle was used?  
 Passenger car/van  
 4WD/SUV  
 Ute  
 Goods van  
 Truck  
 Motorcycle/Scooter  
 Other vehicle type

Were you a driver or passenger?  
 Driver  
 Passenger

How many people, including the driver, were in this vehicle?

Go to Section F

Bicycle  → Go to Section GWalking  \_\_\_\_\_Taxi  \_\_\_\_\_School Bus  \_\_\_\_\_Public Bus  \_\_\_\_\_Tram  \_\_\_\_\_Train  \_\_\_\_\_

Did you travel on a:

- Full adult fare  
 Concession fare  
 Other

Other Method  \_\_\_\_\_

Please describe other method

Go to Section H

### F Private or Company Vehicle Trip Details

Was the vehicle used on this trip listed on the Red Vehicle Page?

Yes  No 

If so, what was the number of that vehicle on the Red Vehicle Page?

Where was the vehicle parked at the end of this trip?

- On a residential property  
 On-street parking  
 Off-street carpark  
 Vehicle not parked

Was a parking fee paid?

- Weekly or longer fee paid  
 Daily fee paid  
 Short term fee paid  
 No fee paid

If a parking fee was paid, who paid it?

- Work/Employer  
 Myself  
 Someone else

How long did it take to walk from the vehicle to Stop 1?  minutes

### G What Streets/BikePaths were used to get to Stop 1? (for all vehicle and bicycle trips)

.....  
.....  
.....  
.....  
.....

### H WHEN did you arrive at Stop 1?

: a.m.  p.m. 

Did you make any more Stops (including going home) on your Travel Day?

Yes  No  → Go to Page 15 →

When did you leave Stop 1?

: a.m.  p.m. 

Go to Stop 2 →



To enable us to compare our sample with the population statistics obtained from the recent 2006 Census, we would like you to answer the same income question that was asked in the Census.

**What is the total of all wages/salaries, government benefits, pensions, allowances and other income that you *usually* receive?**

**Do not deduct:** tax, superannuation contributions, health insurance, amounts salary sacrificed, or any other automatic deductions.

**Include the following:**

- **Pensions/Allowances**
  - family tax benefit
  - parenting payment
  - unemployment benefits
  - Newstart allowance
  - rent assistance
  - student allowances
  - maintenance (child support)
  - workers compensation
  - any other pensions/allowances
- **Other Income**
  - interest
  - dividends
  - rents (exclude expenses of operation)
  - business/farm income (exclude expenses of operation)
  - income from superannuation
  - any other income
- **Wages/Salaries**
  - regular overtime
  - commissions and bonuses

- |   |                          |
|---|--------------------------|
| \$2,000 or more per week<br>(\$104,000 or more per year)      | <input type="checkbox"/> |
| \$1,600 - \$1,999 per week<br>(\$83,200 - \$103,999 per year) | <input type="checkbox"/> |
| \$1,300 - \$1,599 per week<br>(\$67,600 - \$83,199 per year)  | <input type="checkbox"/> |
| \$1,000 - \$1,299 per week<br>(\$52,000 - \$67,599 per year)  | <input type="checkbox"/> |
| \$800 - \$999 per week<br>(\$41,600 - \$51,999 per year)      | <input type="checkbox"/> |
| \$600 - \$799 per week<br>(\$31,200 - \$41,599 per year)      | <input type="checkbox"/> |
| \$400 - \$599 per week<br>(\$20,800 - \$31,199 per year)      | <input type="checkbox"/> |
| \$250 - \$399 per week<br>(\$13,000 - \$20,799 per year)      | <input type="checkbox"/> |
| \$150 - \$249 per week<br>(\$7,800 - \$12,999 per year)       | <input type="checkbox"/> |
| \$1 - \$149 per week<br>(\$1 - \$7,799 per year)              | <input type="checkbox"/> |
| Nil Income  | <input type="checkbox"/> |
| Negative Income   | <input type="checkbox"/> |

**Who in the household actually filled out this Travel Day Form?**

Person Number   
(from Red Person Page)

First Name

**On what Day of the Week and Date was this Travel Day Form actually filled out?**

Day of Week

Date  /  /



**Do you have any comments about roads, public transport  
or the general transport system in your area?**

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**Do you have any comments about this survey?**

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**Thank you very much for your time and help with this survey**



## Appendix G – PCL Cover Letter



### Department of Transport

PO Box 2797  
Melbourne, Victoria 3001  
Telephone: (03) 9655 6666  
Facsimile: (03) 9095 4096  
[www.transport.vic.gov.au](http://www.transport.vic.gov.au)  
DX 210410

June 30, 2009

Our Ref:

Dear Resident of Melbourne,

Transport is an important component of a city which lets us go about our daily lives, and we need to ensure that it serves the current and future needs of our community. For this reason, the Victorian Integrated Survey of Travel & Activity - a Survey of Day-to-Day Travel - is being conducted by the Victorian Department of Transport. This survey is being conducted in metropolitan Melbourne and in a number of regional areas of Victoria.

We are writing to let you know that your household has been randomly selected, from a list of household addresses in your area, to participate in the survey. We therefore invite you to take part in this survey, and contribute to planning for the region's future.

Participation in the survey is not compulsory, but we find that most people appreciate the opportunity to contribute. Since your household will be representing many others like yours in the final survey data, your response will help us to get a complete picture of the travel patterns of all residents of your region.

This coming weekend, a representative from the Travel Survey Team will visit your household to deliver the survey forms and to answer any questions you might have about the survey. We would be grateful if you could welcome that person when they visit you.

We assure you that all information collected will be treated as Strictly Confidential and will be used for planning purposes only. No data identifying you or your household can be released to a third party without your consent, unless required by law.

For more information about the survey, you can call the Travel Survey team on 1800 034 523 (free call), or you can visit the survey website at [www.transport.vic.gov.au/vista](http://www.transport.vic.gov.au/vista).

We thank you for your assistance. It is only with the generous help of people like you that the survey can be successful.

Yours sincerely

Fotios Spiridonos  
VISTA Project Manager  
Victorian Department of Transport

PS: We have enclosed a brochure about the survey that might answer some questions you might have.





## Appendix H – SPD Cover Letter



### Victorian Integrated Survey of Travel and Activity A Survey of Day-to-Day Travel

#### Victorian Integrated Survey of Travel and Activity

Collects data on all travel

- by all types of people
- for all types of travel
- for every possible purpose
- the big trips and the small
- even days without any travel at all

To ensure that transport planning decisions are made in line with the travel needs of residents of the area.

4 July 2009

Dear Resident of Melbourne,

You should have recently received a letter from the Department of Transport inviting your household to take part in the Victorian Travel Survey - a Survey of Day-to-Day Travel.

The Urban Transport Institute has been appointed to conduct this survey on their behalf.

The survey forms for your household are enclosed. I would appreciate it if the red Household, Person and Vehicle form could be answered for all residents in your household.

Then the blue Travel Day Forms should be completed by everyone in your household aged 5 and above for your Travel Day. Instructions on how to fill out the forms are provided on each of the forms and in the enclosed Example Travel Day Form Booklet.

A representative of the Travel Survey Team will return to collect your completed forms on Sunday of next weekend between 10 a.m. and 4 p.m.

If you are unable to be at home at that time, could you please leave your completed forms in a place that would be obvious to our representative and protected from the weather (for example, on your doorstep or under your doormat).

I assure you that all information that you provide will be kept **Strictly Confidential**. No names will appear on any permanent records and your answers will simply be added to those of many hundreds of other households. No personal data will be released to any other organization.

If you have any queries about the survey, please don't hesitate to call the Travel Survey Team on 1800 034 523 (free call). For more information on the survey, you can visit the Travel Survey website at <http://www.transport.vic.gov.au/vista>.

We greatly value your contribution. Assistance from all selected households will ensure that the survey results provide up-to-date and accurate information to assist with planning to meet the current and future travel needs of your community.

Many thanks for your time and help.

Dr. Tony Richardson  
Travel Survey Manager  
The Urban Transport Institute





## Appendix I – VISTA09 Brochure

### How was I selected?



No individual person has been selected for the survey – instead, a random sample of household addresses has been selected from up-to-date listings of street addresses in your area.

So, you (personally) were not selected - your address was. We don't know your name, only your address.

### But I don't travel very much!

Many people may feel, for example, that just because all they did on their "Travel Day" was cross the road to visit a friend, this information would not be important. In fact, these people, as well as those who don't travel at all on their Travel Day, are just as important to the survey as someone who travels a lot on their Travel Day.

The survey is interested in all types of transport - cars, buses, trains, trams, planes, trucks, motorbikes, bicycles and walking.

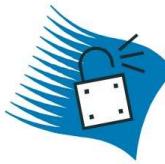


So, on your "Travel Day", it does not matter whether:

- you do not go anywhere at all,
- you only leave the house once or twice, or
- you make lots of trips.

Please record what actually happened that day.

### What about privacy?



The entire Travel Survey Team is totally committed to respecting the privacy of individuals - all information obtained through the survey will be treated in the strictest confidence and will be used for statistical purposes only.

No data identifying households or people will be released to third parties, unless required by law.

### Is the survey compulsory?

The survey is not compulsory, but participation by all selected households is encouraged so that a representative picture of travel by all residents of the selected regions is obtained. In this way, everyone's travel needs are considered when decisions are made about transport investment and operations.

### What if I have other questions?



If you have any questions or problems with the survey, please do not hesitate to contact the Travel Survey Team on 1800 034 523 (free-call).

Or visit the Travel Survey website at: [www.transport.vic.gov.au/vista](http://www.transport.vic.gov.au/vista) for further information.

## Victorian Integrated Survey of Travel and Activity



## A Survey of Day-to-Day Travel

### Answers to some questions you might have



### Who is conducting the survey?

The survey is being conducted for the Victorian Department of Transport by a Travel Survey Team from The Urban Transport Institute.



### What is the survey all about?

The purpose of this survey is to collect essential information on the day-to-day travel and activities of people living in various areas of Victoria (metropolitan Melbourne plus a number of regional areas in Victoria) - how they travel, where they go, when, why and so on.



The survey results will provide a reliable picture of the actual travel patterns of all residents of the selected areas - information that will be used to make planning decisions about roads, public transport and other facilities, both in your local community and at a broader level.

### How do we do the survey?

We ask you to first complete some questions about your household and yourselves. We then ask you to provide information about what you did outside your residence and how you travelled on a specific Travel Day – this day is printed on your survey forms.

### Why do you ask questions about us and our household?

We know that different people travel in different ways. To get a good picture of the travel by people in your area, the survey needs to get answers from all types of people and households.



This is why, in addition to asking about your travel, we also ask questions about your age, gender, occupation and income to make sure we have included all types of people. These answers are then combined with those from all other households in the survey to give a complete picture of the day-to-day travel and activities of all people in the community.

The results from our survey will also be compared with the results from the 2006 Census to ensure that our survey respondents are representative of the entire population in the areas being surveyed.

### What if I drive for a living?

We realise that it would be very difficult for "professional drivers" (that is, those who are employed to move goods or people) to write down all the travel they make over a whole day and we don't expect them to do so.

Instead, we ask that they record only their personal travel - including trips from home to work and back again.



However, if you are not a "professional driver", but sometimes travel as part of your work (e.g. to go to meetings) then we ask that you record all travel you do as part of your work.

### What will happen next?

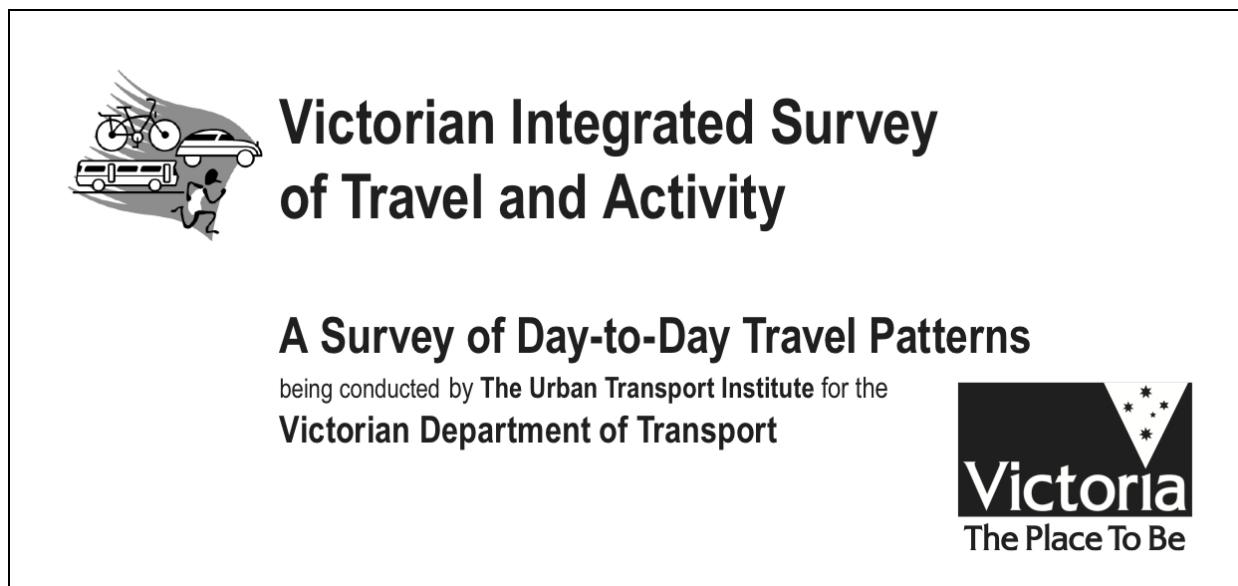
On the coming weekend, a representative of the Travel Survey Team will deliver your survey forms to your door. This will also give you the opportunity to ask any questions you may have about the travel survey.

Then, on the following weekend, we will return to collect your completed forms. Even if you don't travel on your Travel Day or are away for the day, it is still important that you complete the forms because, in this way, all parts of the community are represented.



## Appendix J – We-Missed-You Postcards

Front of All Postcards



Back of We-Missed-You 1 (at delivery, for households with weekday Travel Days)





**Back of We-Missed-You 1 (at delivery, for households with weekend Travel Days)**



**Victorian Integrated Survey of Travel and Activity**

In the past week you should have received a letter from the Department of Transport explaining that your household had been selected to take part in the Victorian Integrated Survey of Travel and Activity.

We attempted to contact you this weekend to deliver the survey materials, but you were not at home.

We have therefore left a package of survey materials for you, and invite you to participate in the survey. Next Monday, we will return to collect the completed forms from you.

If you have any questions about the survey, you can contact the Travel Survey Team on **1800 034 523** (free call).

We thank you for your help with this survey.

Yours sincerely,

Tony Richardson (Travel Survey Manager)  
The Urban Transport Institute

**Back of We-Missed-You 2 (at collection on Sunday)**



**Victorian Integrated Survey of Travel and Activity**

In the past week you would have received a package of survey materials for you to take part in the Victorian Integrated Survey of Travel and Activity.

We attempted to contact you today to collect the completed survey forms, but you were not at home. We also could not find any completed survey forms left out for us to collect.

We will be in this area again tomorrow (Monday), and will come by your house again. If you have completed your survey, it would be really appreciated if you could leave it out for us to collect.

If you have any questions about the survey, you can contact the Travel Survey Team on **1800 034 523** (free call).

We thank you for your help with this survey.

Yours sincerely,

Tony Richardson (Travel Survey Manager)  
The Urban Transport Institute



**Back of We-Missed-You 3 (at collection on Monday)**



**Victorian Integrated Survey of Travel and Activity**

In the past week you would have received a package of survey materials for you to take part in the Victorian Integrated Survey of Travel and Activity.

We attempted to contact you today to collect the completed survey forms, but you were not at home. We also could not find any completed survey forms left out for us to collect.

We have therefore left a reply-paid envelope for you to return the completed survey forms to the Travel Survey Office.

If you have any questions about the survey, you can contact the Travel Survey Team on **1800 034 523** (free call).

We thank you for your help with this survey.

Yours sincerely,

Tony Richardson (Travel Survey Manager)  
The Urban Transport Institute

**Back of We-Picked-Up-from-You (at collection)**



**Victorian Integrated Survey of Travel and Activity**

Thank you for leaving your completed survey forms out for collection today.

Just a quick note to let you know that we have picked them up.

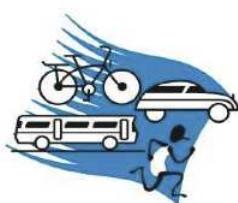
We thank you very much for your help with this survey.

Yours sincerely,

Tony Richardson (Travel Survey Manager)  
The Urban Transport Institute



## Appendix K – Reminder Letter



### Victorian Integrated Survey of Travel and Activity A Survey of Day-to-Day Travel

#### Victorian Integrated Survey of Travel and Activity

Collects data on all travel

- by all types of people
- for all types of travel
- for every possible purpose
- the big trips and the small
- even days without any travel at all

*To ensure that transport planning decisions are made in line with the travel needs of residents of the area.*

9 July 2010

Dear Resident

Some weeks ago, you should have received a letter from the Department of Transport inviting your household to take part in the Victorian Integrated Survey of Travel & Activity - a Survey of Day-to-Day Travel.

Since that time, you should also have had the survey forms delivered to your household. We also called to collect the completed forms, but you were not at home, so we left a reply-paid envelope for you to return the completed forms in the mail. While most households have now responded, we don't appear to have received anything from your household.

If you have completed the survey, but not yet sent it back, could we ask you to do so in the large reply-paid envelope we left at your household.

If you have any queries about the survey, please don't hesitate to call the Travel Survey Team on 1800 034 523 (free call).

Many thanks for your time and help,

Tony Richardson  
Travel Survey Manager  
The Urban Transport Institute



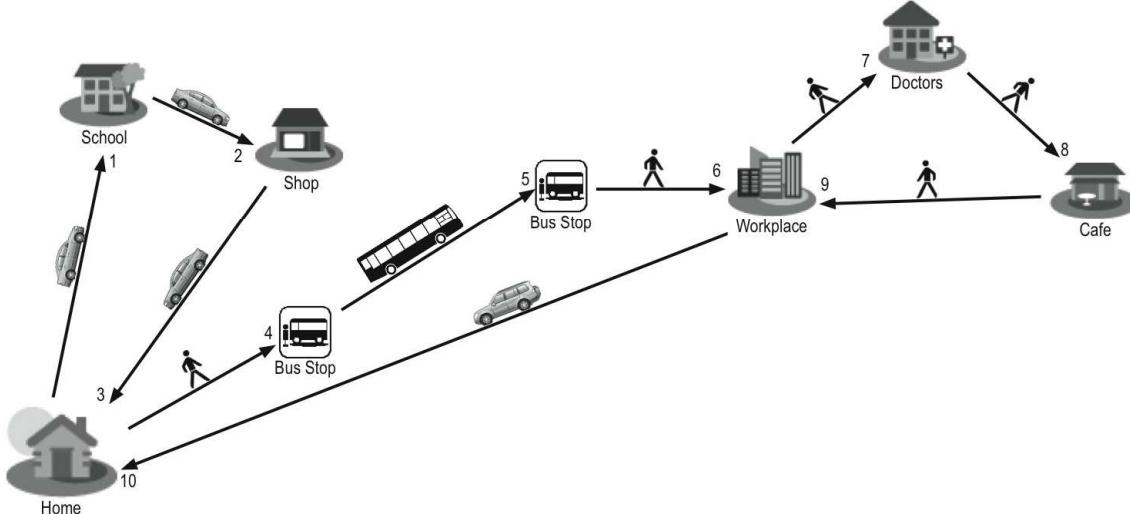


## **Appendix L – Example Booklet**



# Example Travel Day Form

This booklet contains instructions on how to fill out the blue Travel Day Form, including a completed example showing the travel made by Person 2 for an example household. Her example Travel Day is shown below.



While at first glance, the forms for this survey may appear complex, this example shows that for many people filling them out is surprisingly easy. In most cases, simple ticking of boxes is all that is required, and not all questions apply to every person.

Victorian Integrated Survey of Travel and Activity

Page 1

Our example shows the travel for Jane, who was Person 2 on the Red Household Form. The first thing she writes on her Travel Day Form is her person number, first name and the date of her travel day (which was shown on the front and back of the Red Household Form).

Person Number 2 First Name Jane Date of Travel Day 6 / 8 / 09

Jane was at home at 4.00am, so she simply marks that she was at the address where the survey forms had been delivered, and moves on to Question 2. If she had not been at home, she would have written in the address where she was, in the space provided in Question 1.

**Q1. Where were you at 4.00 a.m. on your Travel Day?**

At the address where the survey forms were delivered  **Go straight to Question 2**

At work  **Please write in the address of this location  
in the spaces below, then go to Question 2**

Somewhere else

---

Number

Street Name

Nearest Intersection or Landmark

Suburb/Town

Since Jane did leave her residence during the Travel Day, she ticks the Yes box in Question 2 and then writes in the time when she first left her residence on that day in Question 3 (remembering to tick the am/pm box to show that it was 7.51 in the morning).

Q2. Did you leave this place at all on your Travel Day?

Yes  Go to Question 3  
No  Go to Question 4

Q3. At what time (after 4.00 a.m.) did you first leave this place on your Travel Day?

7 : 51 a.m.  Now turn the page to Stop 1 →

## Stop 1

Jane's first stop of the day was at primary school to drop off her daughter. Jane ticks "A primary school" in Section A and writes in the name of the school. She then writes in the address of the school in section B, giving as many details as she knows. She only knows the street name, not the street number, but she also knows the nearest intersection.

In section C, she ticks that Person 3 (her daughter) travelled with her to this Stop.  
She ticks in Section D that the purpose of going to Stop 1 was to drop off her daughter.

In Section E she ticks that she went to the school by Private Vehicle, and tells us she was the driver of the car, in which there was a total of two people. She then follows the arrow to answer some questions in Section F about this private car trip, where she tells us that the car used was listed as vehicle Number 2 on the Red Vehicle Form. As the school has a set-down/pick-up area, she didn't need to park her car as she only stopped for a couple of minutes. In section G, she writes in the names of some of the streets she used on that trip. She then goes to Section H, where she then writes in the time at which she arrived at the school, indicates that she made more stops on the day and writes in the time she left the school.



**Stop 2**

**A** WHAT was Stop 2? (please select one only)

- A bus stop
- A tram stop
- A railway station
- A restaurant/cafe
- A petrol station
- Name of Railway Station:  Bedrock Milkbar
- A pre-school/childcare centre
- A primary school
- A secondary school
- A University/TEAFE
- Name of School/University etc:  My usual workplace
- Another place to do work:  Name of Workplace:
- My home:  Someone else's home:  Somewhere else:
- Please describe:

**D** WHY did you go to Stop 2? (please select one only)

- To get on or off a bus, train or train
- It's my workplace
- On someone's behalf
- To pick up or deliver something else
- To pick up or drop off someone
- To eat or drink
- To buy something
- To visit someone (socially)
- To go home
- Other reason:

**E** HOW did you get to Stop 2? (please select one only)

Private or Company Vehicle:

What type of vehicle was used?  Passenger carvan  4WD/ SUV  Utility  Goods van  Truck  Motorcycles/Scooter  Other vehicle type:

OR

Were you a driver or passenger?  Driver  Passenger

How many people, including the driver, were in this vehicle?  1

**F** Private or Company Vehicle Trip Details

Was the vehicle used on this trip listed on the Red Vehicle Page?  Yes  No

If so, what was the number of that vehicle on the Red Vehicle Page?  2

Where was the vehicle parked at the end of the trip?

- On a residential property
- On-street parking
- Off-street parking
- Vehicle not parked

Was a parking fee paid?  Weekly or longer fee paid  Daily fee paid  Short term fee paid  No fee paid

How long did it take to walk from the vehicle to Stop 2?  1 minute

**G** What Streets/BikePaths were used to get to Stop 2? (for all vehicles and busses/trains)

Learning Lane   
Jones Street   
Rocky Road   
Pebble Road

**H** WHEN did you arrive at Stop 2?

8 : 10 a.m.

Did you make any more stops (including going home) on your Travel Day?  Yes  No  Go to Page 15

When did you leave Stop 2?  8 : 18 a.m.

**I** Go to Stop 3

**J** Please describe other method

**K** Go to Section H

**L** Go to Section I

**M** Go to Section J

**N** Go to Section K

**O** Go to Section L

**P** Go to Section M

**Q** Go to Section N

**R** Go to Section O

**S** Go to Section P

**T** Go to Section Q

**U** Go to Section R

**V** Go to Section S

**W** Go to Section T

**X** Go to Section U

**Y** Go to Section V

**Z** Go to Section W

Page 3

## Stop 2

On her way home from dropping her daughter off at school, Jane calls in at her local shops to pick up some milk. This is her second Stop for the day. She writes in the name of the shop and the fact that it was in Pebble Road, near the Post Office. Since she had already dropped her daughter at school, there was no one from the household still in the car with her. She parks in the street in a 1-hour carpark spot just near the shop without paying any parking fee, and walks one minute from her car to the shop.

Short Stops like this, in the middle of a trip to or from somewhere else, should be included.

**Stop 4**

**A** WHAT was Stop 4? (please select one only)

- A bus stop
- A tram stop
- A railway station
- A restaurant/cafe
- A petrol station
- Name of Railway Station:  Barney Rd
- A pre-school/childcare centre
- A primary school
- A secondary school
- A University/TEAFE
- Name of School/University etc:  My usual workplace
- Another place to do work:  Name of Workplace:
- My home:  Someone else's home:  Somewhere else:
- Please describe:

**B** WHERE was Stop 4? (please select one only)

Street Number:  Street Name:  Barney Rd  
Nearest Intersection/Crossroads:  Stone St  
Suburb/Town:  Bedrock

**C** WHO travelled with you to Stop 4? (which other people from your household if any travelled with you? (use Person Numbers from the Red Person Form))

No one from the household

Person 1  Person 2  Person 3  Person 4  Person 5  Person 6  Person 7  Person 8

**D** WHY did you go to Stop 4? (please select one only)

- To get on or off a bus, train or train
- It's my workplace
- On someone's behalf
- To pick up or deliver something else
- To pick up or drop off someone
- To eat or drink
- To buy something
- To visit someone (socially)
- To go home
- Other reason:

**E** HOW did you get to Stop 4? (please select one only)

Private or Company Vehicle:

What type of vehicle was used?  Passenger carvan  4WD/ SUV  Utility  Goods van  Truck  Motorcycle/Scooter  Other vehicle type:

OR

Were you a driver or passenger?  Driver  Passenger

How many people, including the driver, were in this vehicle?  1

**F** Private or Company Vehicle Trip Details

Was the vehicle used on this trip listed on the Red Vehicle Page?  Yes  No

If so, what was the number of that vehicle on the Red Vehicle Page?

Where was the vehicle parked at the end of the trip?

- On a residential property
- On-street parking
- Off-street parking
- Vehicle not parked

Was a parking fee paid?  Weekly or longer fee paid  Daily fee paid  Short term fee paid  No fee paid

How long did it take to walk from the vehicle to Stop 4?  1 minute

**G** What Streets/BikePaths were used to get to Stop 4? (for all vehicles and busses/trains)

Main St   
Readers Lane   
Suburb/Town:  Bigge City

**H** WHEN did you arrive at Stop 4?

8 : 36 a.m.

Did you make any more stops (including going home) on your Travel Day?  Yes  No  Go to Page 15

When did you leave Stop 4?  8 : 40 a.m.

**I** Go to Stop 5

**J** Please describe other method

**K** Go to Section H

**L** Go to Section I

**M** Go to Section J

**N** Go to Section K

**O** Go to Section L

**P** Go to Section M

**Q** Go to Section N

**R** Go to Section O

**S** Go to Section P

**T** Go to Section Q

**U** Go to Section R

**V** Go to Section S

**W** Go to Section T

**X** Go to Section U

**Y** Go to Section V

**Z** Go to Section W

Page 5

## Stop 4

At 8.30am, Jane left home and walked to a bus stop in Barney Rd (near the corner of Stone St). She arrived there at 8.36am and caught a bus that arrived at 8.40am.

**Stop 3**

**A** WHAT was Stop 3? (please select one only)

- A bus stop
- A tram stop
- A railway station
- A restaurant/cafe
- A petrol station
- Name of Railway Station:  Pebble Road
- A pre-school/childcare centre
- A primary school
- A secondary school
- A University/TEAFE
- Name of School/University etc:  My usual workplace
- Another place to do work:  Name of Workplace:
- My home:  Someone else's home:  Somewhere else:
- Please describe:

**D** WHY did you go to Stop 3? (please select one only)

- To get on or off a bus, train or train
- It's my workplace
- On someone's behalf
- To pick up or deliver something else
- To pick up or drop off someone
- To eat or drink
- To buy something
- To visit someone (socially)
- To go home
- Other reason:

**E** HOW did you get to Stop 3? (please select one only)

Private or Company Vehicle:

What type of vehicle was used?  Passenger carvan  4WD/ SUV  Utility  Goods van  Truck  Motorcycle/Scooter  Other vehicle type:

OR

Were you a driver or passenger?  Driver  Passenger

How many people, including the driver, were in this vehicle?  1

**F** Private or Company Vehicle Trip Details

Was the vehicle used on this trip listed on the Red Vehicle Page?  Yes  No

If so, what was the number of that vehicle on the Red Vehicle Page?  2

Where was the vehicle parked at the end of the trip?

- On a residential property
- On-street parking
- Off-street parking
- Vehicle not parked

Was a parking fee paid?  Weekly or longer fee paid  Daily fee paid  Short term fee paid  No fee paid

How long did it take to walk from the vehicle to Stop 3?  0 minutes

**G** What Streets/BikePaths were used to get to Stop 3? (for all vehicles and busses/trains)

Rocky Road   
Smith Street

**H** WHEN did you arrive at Stop 3?

8 : 22 a.m.

Did you make any more stops (including going home) on your Travel Day?  Yes  No  Go to Page 15

When did you leave Stop 3?  8 : 30 a.m.

**I** Go to Stop 4

**J** Please describe other method

**K** Go to Section H

**L** Go to Section I

**M** Go to Section J

**N** Go to Section K

**O** Go to Section L

**P** Go to Section M

**Q** Go to Section N

**R** Go to Section O

**S** Go to Section P

**T** Go to Section Q

**U** Go to Section R

**V** Go to Section S

**W** Go to Section T

**X** Go to Section U

**Y** Go to Section V

**Z** Go to Section W

Page 4

## Stop 3

Stop 3 for Jane is back at home again. In Section B, she can just write "Home" since we know the address where we sent the survey forms, and this saves her some writing.

In most cases, when a Stop is "My Home", the reason for going there will simply be "To go home". There may be some situations where this is not true, for example if you return home to drop someone off and then immediately leave again.

Jane stayed at home till 8.30am, when she started her trip to work.

**Stop 5**

**A** WHAT was Stop 5? (please select one only)

- A bus stop
- A tram stop
- A railway station
- A restaurant/cafe
- A petrol station
- Name of Railway Station:  Main St
- A pre-school/childcare centre
- A primary school
- A secondary school
- A University/TEAFE
- Name of School/University etc:  My usual workplace
- Another place to do work:  Name of Workplace:
- My home:  Someone else's home:  Somewhere else:
- Please describe:

**D** WHY did you go to Stop 5? (please select one only)

- To get on or off a bus, train or train
- It's my workplace
- On someone's behalf
- To pick up or deliver something else
- To pick up or drop off someone
- To eat or drink
- To buy something
- To visit someone (socially)
- To go home
- Other reason:

**E** HOW did you get to Stop 5? (please select one only)

Private or Company Vehicle:

What type of vehicle was used?  Passenger carvan  4WD/ SUV  Utility  Goods van  Truck  Motorcycle/Scooter  Other vehicle type:

OR

Were you a driver or passenger?  Driver  Passenger

How many people, including the driver, were in this vehicle?  1

**F** Private or Company Vehicle Trip Details

Was the vehicle used on this trip listed on the Red Vehicle Page?  Yes  No

If so, what was the number of that vehicle on the Red Vehicle Page?

Where was the vehicle parked at the end of the trip?

- On a residential property
- On-street parking
- Off-street parking
- Vehicle not parked

Was a parking fee paid?  Weekly or longer fee paid  Daily fee paid  Short term fee paid  No fee paid

How long did it take to walk from the vehicle to Stop 5?  0 minutes

**G** What Streets/BikePaths were used to get to Stop 5? (for all vehicles and busses/trains)

Readers Lane   
Suburb/Town:  Bigge City

**H** WHEN did you arrive at Stop 5?

9 : 05 a.m.

Did you make any more stops (including going home) on your Travel Day?  Yes  No  Go to Page 15

When did you leave Stop 5?  9 : 05 a.m.

**I** Go to Stop 6

**J** Please describe other method

**K** Go to Section H

**L** Go to Section I

**M** Go to Section J

**N** Go to Section K

**O** Go to Section L

**P** Go to Section M

**Q** Go to Section N

**R** Go to Section O

**S** Go to Section P

**T** Go to Section Q

**U** Go to Section R

**V** Go to Section S

**W** Go to Section T

**X** Go to Section U

**Y** Go to Section V

**Z** Go to Section W

Page 6

## Stop 5

The bus, on route 18, then took Jane to another bus stop on Main Street in Bigge City near the corner of Readers Lane. She used an adult ticket for the bus trip. She arrived there at 9.05am and immediately left the bus stop to go to her final destination.

We ask for the details of all public transport trips like this, so that we can understand the ways in which public transport is being used, including how far people are travelling to and from public transport stops.



## Stop 6

<b>A</b> <b>WHAT was Stop 6?</b> (please select one only)	<b>D</b> <b>WHY did you go to Stop 6?</b> (please select one only)	<b>F</b> <b>Private or Company Vehicle Trip Details</b>
A bus stop A tram stop A railway station  Name of Railway Station  A restaurant/cafe A petrol station A shop  Name of Shop/Restaurant/Petrol Station  A pre-school/childcare centre A primary school A secondary school A University/TAFE  Name of School/University/etc  My usual workplace Another place to do work  Name of Workplace  The Bookworm My home Someone else's home Somewhere else  Please describe	To get on or off a bus, train or train It's my workplace On employer's business To pick up or deliver something else To pick up or drop off someone To accompany someone To eat or drink To buy something For school/education To visit someone (socially) To go home Other reason  Please describe other reason	Was the vehicle used on this trip listed on the Red Vehicle Page?  Yes <input type="checkbox"/> No <input type="checkbox"/>  If so, what was the number of that vehicle on the Red Vehicle Page? _____  Where was the vehicle parked at the end of this trip?  On a residential property On-street parking Off-street carpark Vehicle not parked  Was a parking fee paid?  Weekly or longer fee paid Daily fee paid Short term fee paid No fee paid  If a parking fee was paid, who paid it? Work/Employer Myself Someone else  How long did it take to walk from the vehicle to Stop 6? _____ minutes
<b>E</b> <b>HOW did you get to Stop 6?</b> (please select one only)	<b>G</b> <b>What Streets/BikePaths were used to get to Stop 6?</b> (for all vehicle and bicycle trips)	
Private or Company Vehicle  What type of vehicle was used? Passenger car 4WD/SUV Ute Goods van Truck Motorcycle Other vehicle type  OR  Were you a driver or passenger? Driver Passenger  How many people, including the driver, were in this vehicle?  Please describe other method		
B <b>WHERE was Stop 6?</b>  Street Number 82 Street Name Readers Lane Nearest Intersection/Landmark  Suburb/Town Bigge City		
<b>C</b> <b>WHO travelled with you to Stop 6?</b>  Which other people from your household (if any) travelled with you? (use Person Numbers from the Red Person Form)  No one from the household Person 1 Person 2 Person 3 Person 4 Person 5 Person 6 Person 7 Person 8  Go to Section D		

Page 7

## Stop 7

<b>A</b> <b>WHAT was Stop 7?</b> (please select one only)	<b>D</b> <b>WHY did you go to Stop 7?</b> (please select one only)	<b>F</b> <b>Private or Company Vehicle Trip Details</b>
A bus stop A tram stop A railway station  Name of Railway Station  A restaurant/cafe A petrol station A shop  Name of Shop/Restaurant/Petrol Station  A pre-school/childcare centre A primary school A secondary school A University/TAFE  Name of School/University/etc  My usual workplace Another place to do work  Name of Workplace  Medical Clinic The Bookworm My home Someone else's home Somewhere else  Please describe	To get on or off a bus, train or train It's my workplace On employer's business To pick up or deliver something else To pick up or drop off someone To accompany someone To eat or drink To buy something For school/education To visit someone (socially) To go home Other reason  Please describe other reason	Was the vehicle used on this trip listed on the Red Vehicle Page?  Yes <input type="checkbox"/> No <input type="checkbox"/>  If so, what was the number of that vehicle on the Red Vehicle Page? _____  Where was the vehicle parked at the end of this trip?  On a residential property On-street parking Off-street carpark Vehicle not parked  Was a parking fee paid?  Weekly or longer fee paid Daily fee paid Short term fee paid No fee paid  If a parking fee was paid, who paid it? Work/Employer Myself Someone else  How long did it take to walk from the vehicle to Stop 7? _____ minutes
<b>E</b> <b>HOW did you get to Stop 7?</b> (please select one only)	<b>G</b> <b>What Streets/BikePaths were used to get to Stop 7?</b> (for all vehicle and bicycle trips)	
Private or Company Vehicle  What type of vehicle was used? Passenger car 4WD/SUV Ute Goods van Truck Motorcycle Other vehicle type  OR  Were you a driver or passenger? Driver Passenger  How many people, including the driver, were in this vehicle?  Please describe other method		
B <b>WHERE was Stop 7?</b>  Street Number 45 Street Name Healthy St Nearest Intersection/Landmark  Suburb/Town Bigge City		
<b>C</b> <b>WHO travelled with you to Stop 7?</b>  Which other people from your household (if any) travelled with you? (use Person Numbers from the Red Person Form)  No one from the household Person 1 Person 2 Person 3 Person 4 Person 5 Person 6 Person 7 Person 8  Go to Section D		

Page 8

## Stop 7

The first thing Jane did at lunch time was to walk to a doctor's appointment at a nearby clinic. Since there was no appropriate box to tick in Section A, she marked "Somewhere else" and then wrote in Medical Clinic. She knew the full address of the clinic, so she wrote it in Section B.

In section D, she couldn't find an appropriate box to tick, so she marked "Some other reason" and wrote in "Doctors appointment". She arrived at 12.20pm, and left at 12.50pm.

## Stop 6

After getting off the bus, Jane then walked to her workplace in Readers Lane. She works in a bookshop called "The Bookworm". Even though she works in a shop, Jane marks "My usual workplace" rather than "A shop". She knows the full address of her workplace, so she writes it in.

She arrived there at 9.12am and stayed there until 12.15pm, when she went out to do some things during her lunch break.

## Stop 8

<b>A</b> <b>WHAT was Stop 8?</b> (please select one only)	<b>D</b> <b>WHY did you go to Stop 8?</b> (please select one only)	<b>F</b> <b>Private or Company Vehicle Trip Details</b>
A bus stop A tram stop A railway station  Name of Railway Station  A restaurant/cafe A petrol station A shop  Name of Shop/Restaurant/Petrol Station  Alice's Place A pre-school/childcare centre A primary school A secondary school A University/TAFE  Name of School/University/etc  My usual workplace Another place to do work  Name of Workplace  The Bookworm My home Someone else's home Somewhere else  Please describe	To get on or off a bus, train or train It's my workplace On employer's business To pick up or deliver something for work To pick up or drop off someone To accompany someone To eat or drink To buy something For school/education To visit someone (socially) To go home Other reason  Please describe other reason	Was the vehicle used on this trip listed on the Red Vehicle Page?  Yes <input type="checkbox"/> No <input type="checkbox"/>  If so, what was the number of that vehicle on the Red Vehicle Page? _____  Where was the vehicle parked at the end of this trip?  On a residential property On-street parking Off-street carpark Vehicle not parked  Was a parking fee paid?  Weekly or longer fee paid Daily fee paid Short term fee paid No fee paid  If a parking fee was paid, who paid it? Work/Employer Myself Someone else  How long did it take to walk from the vehicle to Stop 8? _____ minutes
<b>E</b> <b>HOW did you get to Stop 8?</b> (please select one only)	<b>G</b> <b>What Streets/BikePaths were used to get to Stop 8?</b> (for all vehicle and bicycle trips)	
Private or Company Vehicle  What type of vehicle was used? Passenger car 4WD/SUV Ute Goods van Truck Motorcycle Other vehicle type  OR  Were you a driver or passenger? Driver Passenger  How many people, including the driver, were in this vehicle?  Please describe other method		
<b>B</b> <b>WHERE was Stop 8?</b>  Street Number 82 Street Name Readers Lane Nearest Intersection/Landmark  Suburb/Town Bigge City		
<b>C</b> <b>WHO travelled with you to Stop 8?</b>  Which other people from your household (if any) travelled with you? (use Person Numbers from the Red Person Form)  No one from the household Person 1 Person 2 Person 3 Person 4 Person 5 Person 6 Person 7 Person 8  Go to Section D		

Page 9

## Stop 9

<b>A</b> <b>WHAT was Stop 9?</b> (please select one only)	<b>D</b> <b>WHY did you go to Stop 9?</b> (please select one only)	<b>F</b> <b>Private or Company Vehicle Trip Details</b>
A bus stop A tram stop A railway station  Name of Railway Station  A restaurant/cafe A petrol station A shop  Name of Shop/Restaurant/Petrol Station  A pre-school/childcare centre A primary school A secondary school A University/TAFE  Name of School/University/etc  My usual workplace Another place to do work  Name of Workplace  the Bookworm My home Someone else's home Somewhere else  Please describe	To get on or off a bus, train or train It's my workplace On employer's business To pick up or deliver something for work To pick up or drop off someone To accompany someone To eat or drink To buy something For school/education To visit someone (socially) To go home Other reason  Please describe other reason	Was the vehicle used on this trip listed on the Red Vehicle Page?  Yes <input type="checkbox"/> No <input type="checkbox"/>  If so, what was the number of that vehicle on the Red Vehicle Page? _____  Where was the vehicle parked at the end of this trip?  On a residential property On-street parking Off-street carpark Vehicle not parked  Was a parking fee paid?  Weekly or longer fee paid Daily fee paid Short term fee paid No fee paid  If a parking fee was paid, who paid it? Work/Employer Myself Someone else  How long did it take to walk from the vehicle to Stop 9? _____ minutes
<b>E</b> <b>HOW did you get to Stop 9?</b> (please select one only)	<b>G</b> <b>What Streets/BikePaths were used to get to Stop 9?</b> (for all vehicle and bicycle trips)	
Private or Company Vehicle  What type of vehicle was used? Passenger car 4WD/SUV Ute Goods van Truck Motorcycle Other vehicle type  OR  Were you a driver or passenger? Driver Passenger  How many people, including the driver, were in this vehicle?  Please describe other method		
<b>B</b> <b>WHERE was Stop 9?</b>  Street Number 82 Street Name Readers Lane Nearest Intersection/Landmark  Suburb/Town Bigge City		
<b>C</b> <b>WHO travelled with you to Stop 9?</b>  Which other people from your household (if any) travelled with you? (use Person Numbers from the Red Person Form)  No one from the household Person 1 Person 2 Person 3 Person 4 Person 5 Person 6 Person 7 Person 8  Go to Section D		

Page 10

## Stop 9

Jane then walked back to work, where she stayed until 5.15pm.

## Stop 8

On her way back to work, Jane stopped in at a nearby café called "Alice's Place" and bought some sandwiches to take back to work for lunch.



**Stop 10**

**A WHAT was Stop 10? (Please select one only)**

- A bus stop
- A tram stop
- A railway station
- A restaurant/cafe
- A petrol station
- A shop/Post Office
- A pre school/childcare centre
- A primary school
- A secondary school
- A university/college
- My usual workplace
- Another place to work
- Name of Work
- Please describe

**B WHERE was Stop 10?**

Street Number: \_\_\_\_\_ Street Name: \_\_\_\_\_ Home: \_\_\_\_\_ Nearest Intersection/landmark: \_\_\_\_\_ Suburb/Town: \_\_\_\_\_

**C WHO travelled with you to Stop 10?**

(If any travelled with you, just Person Number and First Name) \_\_\_\_\_  
No one from the household

Person 1 \_\_\_\_\_ Person 2 \_\_\_\_\_ Person 3 \_\_\_\_\_ Person 4 \_\_\_\_\_ Person 5 \_\_\_\_\_ Person 6 \_\_\_\_\_

**D WHY did you go to Stop 10? (Please select one only)**

To get on or off a bus, train or boat  
It's my employer's business  
To pick up or drop off someone  
To buy something  
For school/childcare  
To visit someone (socially)  
Other reason

Please describe other reason: \_\_\_\_\_

**E HOW did you get to Stop 10? (Please select one only)**

Private or Company Vehicle   
What type of vehicle was used?  
Passenger caravans   
4WD vehicles   
Dai   
Goods van   
Truck   
Motorcycle/cycles   
Other vehicle type

OR  
Were you a driver or passenger?  
Driver  Passenger

How many people, including yourself, were in the vehicle? **2**

**F Private or Company Vehicle Trip Details**

Was the vehicle used on this trip listed on the Red Vehicle Page?  Yes  No  
If so, what was the number of the vehicle on the Red Vehicle Page? \_\_\_\_\_

Where was the vehicle parked at the end of this trip?  
On a residential property   
On-street parking   
Off-street carpark   
Vehicle not parked

Was a parking fee paid?  
Weekly or longer fee paid   
Daily fee paid   
Short term fee paid   
None

If a parking fee was paid, who paid it?  
Work Employer   
Myself   
Someone else

How long did it take to walk from the vehicle to Stop 10? **5** minutes

**G What Streets/BikePaths were used to get to Stop 10? (for each street or BikePath)**

Readers Lane  
Main Street  
Southern Freeway  
Flint Street  
Rocky Road  
Smith Street

**H WHEN did you arrive at Stop 10?**

5 : 35 a.m.

Did you make any more stops (including going home) on your Travel Day?  
Yes  No  Go to Page 15

When did you leave Stop 10?  
\_\_\_\_\_  
Go to Stop 11

To enable us to compare our sample with the population statistics obtained from the most recent Census (2006), we would like you to answer the same income question that was asked in the Census.

What is the total of all wages/salaries, government benefits, pensions, allowances and other income that you usually receive?

Do not deduct tax, superannuation contributions, health insurance, amounts salary sacrificed, or any other automatic deductions.

Include the following:

- **Pensions/Allowances**
  - family tax benefit
  - unemployment benefit
  - superannuation payment
  - Newstart allowance
  - rent assistance
  - student allowances
  - maintenance (child support)
  - legal expenses compensation
  - any other pensions/allowances
- **Other Income**
  - interest
  - dividends
  - rents (exclude expenses of operation)
  - business/income (exclude expenses of operation)
  - income from superannuation
  - any other income
- **Wages/Salaries**
  - regular overtime
  - commissions and bonuses

\$2,000 or more per week (\$10,000 or more per year) <input type="checkbox"/>
\$1,600 - \$1,999 per week (\$8,200 - \$10,399 per year) <input type="checkbox"/>
\$1,300 - \$1,599 per week (\$6,700 - \$8,319 per year) <input type="checkbox"/>
\$1,000 - \$1,299 per week (\$5,200 - \$6,875 per year) <input type="checkbox"/>
\$800 - \$999 per week (\$4,100 - \$5,000 per year) <input checked="" type="checkbox"/>
\$600 - \$799 per week (\$3,100 - \$4,158 per year) <input type="checkbox"/>
\$400 - \$599 per week (\$2,000 - \$3,119 per year) <input type="checkbox"/>
\$250 - \$399 per week (\$13,000 - \$20,799 per year) <input type="checkbox"/>
\$150 - \$249 per week (\$7,800 - \$12,999 per year) <input type="checkbox"/>
\$1 - \$149 per week (\$1 - \$7,799 per year) <input type="checkbox"/>
Nil Income <input type="checkbox"/>
Negative Income <input type="checkbox"/>

Who in the household actually filled out this Travel Day Form?

Person Number: **2**

First Name: **Jane**

On what Day of the Week and Date was this Travel Day Form actually filled out?

Day of Week: **Thursday**

Date: **6 / 8 / 09**

Page 15

Since Jane made no more trips on her Travel Day, she then turns to Page 15, where she indicates her personal income in one of the categories provided.

Since she filled out her own Travel Day Form, she writes in her Person Number and first name. She also indicates that she actually filled out the Travel Day Form on a Thursday.

On Page 16, Jade has the opportunity to make any comments about the transport system in her area and about the survey she has just completed.

## Stop 10

After work, Jane got a lift home from a friend in her 4WD. Even though Jane was not the driver, she still fills in the private vehicle questions in Sections F & G with the details of the trip home. In this case, the vehicle was not from Jane's household.

Jane's friend dropped her off at a street corner, and it took 5 minutes to walk to her house. She arrived home at 5.35pm and did not go out again on that day.

This Example Booklet has described how one person might fill out the Travel Day Form for her situation.

Clearly, there are many other situations which are not covered in this Booklet.

If you have any questions about filling in any of the forms,  
please contact the Travel Survey Team on

**1800 034 523 (free call)**



or you can visit the Travel Survey website at  
<http://www.transport.vic.gov.au/vista>

where many other Frequently Asked Questions are answered.

**Thank you for your help with this survey.**



## Appendix M – Summaries of PCL, SPD and SPP Procedures



### Victorian Integrated Survey of Travel & Activity

#### *A Summary of Pre-Contact Letter Procedures – Metro Melbourne*

- 1 Come to your Kew Survey Field Office around **9.30am on Tuesday morning**.
- 2 **You must visit the first 42 addresses** on your list. Addresses 43-70 are to be used as replacement addresses if necessary.
- 3 Look at your maps and the addresses on your Delivery Record Sheet and work out the **best route** to take around the first 42 houses. Write your intended order of visiting the houses in the left margin of the Pre-Contact Record Sheet.
- 4 Go to the **first address** on your route. Check the computer-drawn maps to help you to find the address.
- 5 Record the **time of day** that you arrive at the address
- 6 Confirm that a **residence exists at the address**. It may be “sample loss” because of:
  - **No such address**
  - **Vacant block, non-residential property, obviously vacant property, under construction**
- 7 If the address is “sample loss”, **select the nearest address** from the **Replacement Address** list (numbers 43 through 56) and record this on the Pre-Contact Record Sheet.
- 8 If the residence exists, **check whether the address is correct**. The address may be **wrong for many reasons** (see pages 5-8 of Manual for details):
  - **No such street**
  - **Wrong spelling or wrong type of street**
  - **No such street number visible**
  - **Multiple dwelling addressed as a single house**
  - **Multiple dwelling address without identifiable mailboxes**
  - **Unusual street numbering**
  - **Corner addresses**
- 9 **Correct the address**, and record this corrected address on the Pre-Contact Record Sheet.
- 10 If the address exists, but the Pre-Contact Letter is **undeliverable**, note this on the Pre-Contact Record Sheet and bring the letter back to the Survey Office so that we can post the letter to the address.



- 11 Record the **type of dwelling** on the Pre-Contact Record Sheet.
- 12 Record the total **number of dwellings** at each street number (including 1 for a single house).
- 13 If the dwelling at the address is a block of apartments, townhouses or a battle-axe-block house, but you have no unit number attached to the address, you must use the **RUNT tables** to randomly select a unit number to which you will deliver the Pre-Contact Letter. Record the selected unit number as a change of address, and make a note in the Comments that you have used the RUNT tables.
- 14 Record whether the **Pre-Contact Letter** was delivered. If the **letter was not delivered** (to an address which was not Sample Loss), make sure you notify us immediately when you bring the letter back to the Survey Field Office that day.
- 15 Record any **comments or descriptions of the household** that will help the people delivering the Survey Packs to re-find the address.
- 16 If you are **checking a Replacement Address**, do all of the above steps. The only difference is that you should **record which household it is a replacement for**, rather than which household will replace it.
- 17 **Move on** to the next address on your list and repeat the process.
- 18 You should **bring the completed Pre-Contact Record Sheet back to your Survey Field Office on Tuesday afternoon**, so that we can start preparing the materials for the delivery of the Survey Packs on the following weekend.
- 19 **THERE MUST BE NO BLANK CELLS ON THE COMPLETED PCL RECORD SHEETS.**
- 20 Before going into the field, make sure you understand and remember the answers to the FAQ in **Appendix Z** of the Field Procedures Manual.

If you have any **further questions** about procedure, see pages 3-12 of the Field Procedures Manual.

If you need help in the field, please contact the following:

- The VISTA09 Survey Office at Kew (03 9853 2365)
- The VISTA09 Fieldwork Manager, David Morris (0419 260 892)
- In an emergency, you can call the Kew Survey Office on the free-call number (1800 034 523).



## Victorian Integrated Survey of Travel & Activity

### A Summary of **Pre-Contact Letter Procedures - Regionals**

- 1 You can start your work from around **9.00am on Tuesday morning**.
- 2 **You must visit the first 42 addresses** on your list. Addresses 43-70 are to be used as replacement addresses if necessary.
- 3 Look at your maps and the addresses on your Delivery Record Sheet and work out the **best route** to take around the first 42 houses. Write your intended order of visiting the houses in the left margin of the Pre-Contact Record Sheet.
- 4 Go to the **first address** on your route. Check the computer-drawn maps to help you to find the address.
- 5 Record the **time of day** that you arrive at the address
- 6 Confirm that a **residence exists at the address**. It may be "sample loss" because of:
  - **No such address**
  - **Vacant block, non-residential property, obviously vacant property, under construction**
- 7 If the address is "sample loss", **select the nearest address** from the **Replacement Address** list (numbers 43 through 70) and record this on the Pre-Contact Record Sheet.
- 8 If the residence exists, **check whether the address is correct**. The address may be **wrong for many reasons** (see pages 5-8 of Manual for details):
  - **No such street**
  - **Wrong spelling or wrong type of street**
  - **No such street number visible**
  - **Multiple dwelling addressed as a single house**
  - **Multiple dwelling address without identifiable mailboxes**
  - **Unusual street numbering**
  - **Corner addresses**
- 9 **Correct the address**, and record this corrected address on the Pre-Contact Record Sheet.
- 10 If the address exists, but the Pre-Contact Letter is **undeliverable**, note this on the Pre-Contact Record Sheet and post the letter to the address later that day after affixing a 50c stamp.
- 11 Record the **type of dwelling** on the Pre-Contact Record Sheet.



- 12 Record the total **number of dwellings** at each street number (including 1 for a single house).
- 13 If the dwelling at the address is a block of apartments, townhouses or a battle-axe-block house, but you have no unit number attached to the address, you must use the **RUNT tables** to randomly select a unit number to which you will deliver the Pre-Contact Letter. Record the selected unit number as a change of address, and make a note in the Comments that you have used the RUNT tables.
- 14 Record whether the **Pre-Contact Letter** was delivered. If the **letter was not delivered** (to an address which was not Sample Loss), make sure you post it later that day.
- 15 Record any **comments or descriptions of the household** that will help the person delivering the Survey Packs to re-find the address.
- 16 If you are **checking a Replacement Address**, do all of the above steps. The only difference is that you should **record which household it is a replacement for**, rather than which household will replace it.
- 17 **Move on** to the next address on your list and repeat the process.
- 18 You should **enter the details from the PCL Record Sheet into the Input Spreadsheet that night and email the file to us at Kew**, so that we can start preparing the materials for the delivery of the Survey Packs on the following weekend.
- 19 **THERE MUST BE NO BLANK CELLS ON THE COMPLETED PCL RECORD SHEETS.**
- 20 Before going into the field, make sure you understand and remember the answers to the FAQ in **Appendix Z** of the Field Procedures Manual.

If you have any **further questions** about procedure, see pages 3-12 of the Field Procedures Manual.

If you need help in the field, please contact the following:

The VISTA Survey Office (19 Princess St, Kew) (9853 2248)

Aaron Morris (0405 154 500)

The Survey Office on the free-call number (1800 045 047)



## Victorian Integrated Survey of Travel & Activity

### Summary of Survey Pack Delivery Procedures – Metro

- 1 Come to your Survey Field Office around **9.00am on Saturday morning**. You will be advised which of the three Metro Field Offices you will be working from.
- 2 Look at your maps and the addresses on your Delivery Record Sheet and work out the **best route** to take around your 42 houses. Write your intended order of visiting the houses in the left margin of the Delivery Record Sheet.
- 3 Go to the **first address** on your route. Check the delivery map and Record Sheet for any comments that may help you to find the address. Note whether you have been **instructed not to deliver Survey Packs** at this address, perhaps because the household has already refused by making an 1800 call to the Survey Office.
- 4 Confirm that the **address is correct** and find the matching Survey Pack.
- 5 Record the **time** on which you are attempting contact on the Survey Pack Delivery Record Sheet (note that Time 1 and Time 2 should be on Saturday, and Time 3 and Time 4 should be on Sunday)
- 6 **Knock on the front door** and introduce yourself (assuming someone is home and answers the door). Show your identification badge.
- 7 **Explain** your reason for being there, showing the laminated Pre-Contact Letter that they should have received on the previous Tuesday (not everyone will have seen the letter if someone else in the household collected it from their mailbox on the Tuesday). Explain that their household has been randomly selected to take part in the survey and that you are there to deliver their forms. **Do not ask** if they would like to participate or if they would mind filling in the questionnaire – we do not want to give them an opportunity to say no if we don't have to.
- 8 Explain the **items in the Survey Pack** (cover letter, red form, blue forms, example booklet). Examples of these items are contained in appendices F through I of the Manual.
- 9 Find out **how many blue forms** to leave (by asking whether four Travel Day forms would be enough for their household). If they **need more** than four, **add extras** (with the correct Travel Day) to their pack. If they **don't need four, don't take any out** of the pack. Just ask them to return any un-used ones and we will re-use them. Record the number of blue forms left with the household on the Survey Pack Delivery Record Sheet. If there are **more than six people** in the household, leave an extra blank red form as well.
- 10 Say we'll be **back to collect the completed forms on the Sunday** of next weekend (or **Monday** if their Travel Day is on a weekend day). If they will not be home then, they can leave the forms in a convenient place for us to pick up. **Ask where they might leave them** and write this in the Comments section of the Survey Pack Delivery Record Sheet.
- 11 Ask if they have **any questions regarding the survey** – if you can't answer any of their queries, you can call one of the Survey Office staff on your mobile phone on one of the numbers given below. The householder can also call our free-call number shown below. You should be very familiar with the answers to the most **Frequently Asked Questions** (Appendix Z of the Procedures Manual) so that you can answer most questions on the spot.
- 12 Point out the **Check-List on the back of the Survey Pack** to explain what they should do after they complete their surveys.



- 13 Finally, ask if they have a **contact phone number** on which we could reach them if we need to during the survey. Record this on the Survey Pack Delivery Record Sheet.
- 14 As soon as you leave the household, **record the gender and age** (to the **nearest 5 years**) of the person you spoke to at the door.
- 15 If there is **no answer** the first time you call at the household, then **call back** at least an hour later on Saturday. If there is still no answer on your second visit, you need to call back up to two times on Sunday (leaving at least one hour between visits to the same address).
- 16 If there is **still no answer** after your second call on Sunday, **add two extra blue forms** (for the correct Travel Day) to their Survey Pack and leave it in the letterbox or on the doormat in the weatherproof plastic bag, together with a green **We-Missed-You** postcard paper-clipped to the Survey Pack bag.
- 17 If someone **refuses to participate** thank them for their time anyway and record the refusal and reason for refusal on the Survey Pack Delivery Record Sheet. If they give a reason for their refusal, such as "**I don't travel**" explain to them that the fact that they don't travel is just as important as the fact that someone else does travel and that their input is still very important.
- 18 If you cannot convince them that their input is important and they **still refuse**, say that you understand and ask if they would mind instead answering two very short questions for Quality Control purposes. Conduct the non-response interview (unless of course, they refuse to do that either). The "**non-response interview**", which is done only for people who refuse the survey, consists of two questions (the answers to which should be recorded on the Survey Pack Delivery Record Sheet):
  - How many **people** are in the household?
  - How many **registered vehicles** are in the household?If they refuse to answer either or both of these questions, record this as a "99" on the SPD Record Sheet.
- 19 As soon as you leave the household after a refusal, record the **gender and age** (to the nearest 5 years) of the person you spoke to at the door.
- 20 **Move on** to the next address on your list and repeat the process.
- 21 You should **bring the completed Delivery Record Sheet back to your Survey Field Office on Sunday afternoon**, so that we can start preparing the materials for the Motivational Calls and the pickup of the Survey Packs on the following weekend.
- 22 All **undelivered Survey Packs** to valid households should be brought back to your Survey Field Office, so that we can mail them out on Sunday evening.

If you have any **further questions** about procedure, see pages 13-19 of the Field Procedures Manual.

If you need help in the field, please contact the following:

The VISTA Survey Office (19 Princess St, Kew) (9853 2248)

Aaron Morris (0405 154 500)

The Survey Office on the free-call number (1800 045 047)



## Victorian Integrated Survey of Travel & Activity

### Summary of Survey Pack Delivery Procedures – Regionals

- 1 You can start your work from around **10.00am on Saturday morning**.
- 2 Look at your maps and the addresses on your Delivery Record Sheet and work out the **best route** to take around your 42 houses. Write your intended order of visiting the houses in the left margin of the Delivery Record Sheet.
- 3 Go to the **first address** on your route. Check the delivery map and Record Sheet for any comments that may help you to find the address. Note whether you have been **instructed not to deliver Survey Packs** at this address, perhaps because the household has already refused by making an 1800 call to the Survey Office.
- 4 Confirm that the **address is correct** and find the matching Survey Pack.
- 5 Record the **time** on which you are attempting contact on the Survey Pack Delivery Record Sheet (note that Time 1 and Time 2 should be on Saturday, and Time 3 and Time 4 should be on Sunday)
- 6 **Knock on the front door** and introduce yourself (assuming someone is home and answers the door). Show your identification badge.
- 7 **Explain** your reason for being there, showing the laminated Pre-Contact Letter that they should have received on the previous Tuesday (not everyone will have seen the letter if someone else in the household collected it from their mailbox on the Tuesday). Explain that their household has been randomly selected to take part in the survey and that you are there to deliver their forms. **Do not ask** if they would like to participate or if they would mind filling in the questionnaire – we do not want to give them an opportunity to say no if we don't have to.
- 8 Explain the **items in the Survey Pack** (cover letter, red form, blue forms, example booklet). Examples of these items are contained in appendices F through I of the Manual.
- 9 Find out **how many blue forms** to leave (by asking whether four Travel Day forms would be enough for their household). If they **need more** than four, **add extras** (with the correct Travel Day) to their pack. If they **don't need four, don't take any out** of the pack. Just ask them to return any un-used ones and we will re-use them. Record the number of blue forms left with the household on the Survey Pack Delivery Record Sheet. If there are **more than six people** in the household, leave an extra blank red form as well.
- 10 Say we'll be **back to collect the completed forms** on the **Sunday** of next weekend (or **Monday** if their Travel Day is on a weekend day). If they will not be home then, they can leave the forms in a convenient place for us to pick up. **Ask where they might leave them** and write this in the Comments section of the Survey Pack Delivery Record Sheet.
- 11 Ask if they have **any questions regarding the survey** – if you can't answer any of their queries, you can call one of the Survey Office staff on your mobile phone on one of the numbers given below. The householder can also call our free-call number shown below. You should be very familiar with the answers to the most **Frequently Asked Questions** (Appendix Z of the Procedures Manual) so that you can answer most questions on the spot.
- 12 Point out the **Check-List on the back of the Survey Pack** to explain what they should do after they complete their surveys.
- 13 Finally, ask if they have a **contact phone number** on which we could reach them if we need to during the survey. Record this on the Survey Pack Delivery Record Sheet.



- 14 As soon as you leave the household, **record the gender and age** (to the nearest 5 years) of the person you spoke to at the door.
- 15 If there is **no answer** the first time you call at the household, then **call back** at least an hour later on Saturday. If there is still no answer on your second visit, you need to call back up to two times on Sunday (leaving at least one hour between visits to the same address).
- 16 If there is **still no answer** after your second call on Sunday, **add two extra blue forms** (for the correct Travel Day) to their Survey Pack and leave it in the letterbox or on the doormat in the weatherproof plastic bag, together with a green **We-Missed-You** postcard paper-clipped to the Survey Pack bag.
- 17 If someone **refuses to participate** thank them for their time anyway and record the refusal and reason for refusal on the Survey Pack Delivery Record Sheet. If they give a reason for their refusal, such as "**I don't travel**" explain to them that the fact that they don't travel is just as important as the fact that someone else does travel and that their input is still very important.
- 18 If you cannot convince them that their input is important and they **still refuse**, say that you understand and ask if they would mind instead answering two very short questions for Quality Control purposes. Conduct the non-response interview (unless of course, they refuse to do that either). The "**non-response interview**", which is done only for people who refuse the survey, consists of two questions (the answers to which should be recorded on the Survey Pack Delivery Record Sheet):
  - How many **people** are in the household?
  - How many **registered vehicles** are in the household?If they refuse to answer either or both of these questions, record this as a "99" on the SPD Record Sheet.
- 19 As soon as you leave the household after a refusal, record the **gender and age** (to the nearest 5 years) of the person you spoke to at the door.
- 20 **Move on** to the next address on your list and repeat the process.
- 21 On **Sunday evening**, enter the information from your SPD Record Sheet into the SPD Input Sheet spreadsheet. Email this to the Kew Office so that we can start preparing the materials for the Motivational Calls and the pickup of the Survey Packs on the following weekend.
- 22 All **undelivered Survey Packs** to valid households should mailed out on Sunday evening.

If you have any **further questions** about procedure, see pages 13-19 of the Field Procedures Manual.

If you need help in the field, please contact the following:

The VISTA Survey Office (19 Princess St, Kew) (9853 2248)

Aaron Morris (0405 154 500)

The Survey Office on the free-call number (1800 045 047)



## Victorian Integrated Survey of Travel & Activity

### A Summary of Survey Pack Pickup Procedures - Metro

- 1 Come to the Survey Field Office around **9.00am on Sunday morning**.
- 2 Note that the first two pages of addresses are scheduled for pickup on the Sunday, while the third sheet of addresses is scheduled for pickup on the Monday (because their Travel Day is on the weekend).
- 3 Look at your maps and the addresses on your Pickup Record Sheet and work out the **best route** to take around the houses (for each day). Ignore addresses where you have been **instructed not to collect Survey Packs** at this address, either because the household has already refused or because we have already asked them to mail their Survey packs back to us. Write your intended order of visiting the houses in the left margin of the Pickup Record Sheet.
- 4 **On Sunday**, go to the **first address** in your intended order of visiting the households on the first two pages. Check the pickup map and Survey Pack Pickup Record Sheet for any comments from the Pre-Contact or Survey Pack Delivery Record Sheets.
- 5 **Record the time** (to the nearest minute) that you first arrive at each address in Time 1. If you have to return to an address because nobody was home on the first visit, and nothing was left out for collection, record the later arrival time in Time 2.
- 6 Before knocking on the door **look to see if the forms have been left out** for collection. If the Prior Comments on your Survey Pack Pickup Record Sheet indicate a place where the forms will be left, look there first. If it doesn't indicate a place, or if the forms are not there, look on and under the doormat, in the meterbox and in any likely nearby places. Do not go to the mailbox unless the householder has indicated that is where to look, or the forms are clearly visible in the mailbox. If the forms are in the mailbox, do not disturb anything else that may be in there.
- 7 If the forms are not to be found, **knock on the front door**.
- 8 If the **respondents are not there**, make a note to return and move on to the next address. You will have to **return to this address** for another attempted contact on the Sunday.
- 9 If they are still **not home after the second attempt** on Sunday, leave a clear plastic bag containing a **reply-paid envelope** with a blue We-Missed-You card paper-clipped to it.
- 10 If they are at home (and answer the door) **introduce yourself** and show your identification.
- 11 **Explain** your reason for being there – you are there to collect the survey forms that were delivered last weekend (remember you may not be talking to the same person that received the forms last week).
- 12 Ask if the household **has completed their forms**. If they have completed the forms, thank them and **ask for them back**.
- 13 Ask whether there were **any questions they had trouble with**. If they say yes, offer to check these sections with them now and do so. For this, you will need to **understand** the reasons for, and the methods of answering, **each of the questions** in the survey.
- 14 **If the forms have not been completed**, ask whether they would like you to go through the survey with them right now to help them fill it out and do so if they agree. Otherwise say that



you will be in the area for a while and offer to come back later if they think they'll have time to do it today. If they don't wish to do that, leave a reply paid envelope and ask them to return the completed forms as soon as they can. Remind them that their Travel Day is on the front of the Red Form and they should complete the survey for that day.

- 15 If they have **not completed the forms** because they have lost them, never received them or "the dog ate them", say "That's okay, but could you please just answer two questions for me, as part of our **Quality Control Procedures**". Then proceed to ask:
  - How many **people** are in the household?
  - How many **registered vehicles** are in the household?
- 16 The **answers** to these questions should be **recorded** on the Survey Pack Pickup Record Sheet.
- 17 If they have not completed the forms because they were **away or didn't do any travel** on their Travel Day, explain that we would still like them to fill in the Red Form but all they need to put on their Blue Form is that they didn't travel and the reason for not travelling. Offer to go through the red form with them, or come back for it, or leave them a reply-paid envelope (one at a time, if they reject the first suggestion try the next).
- 18 If they **refuse to participate** in the survey, accept their refusal in a polite and cheerful manner. Ask if they would mind instead answering two very short questions, explaining that this is part of our quality control to ensure that the information we do collect is not biased. Conduct the non-response interview (unless of course, they refuse to do that either).
- 19 **Thank them** for doing the survey and reinforce the contribution they are making.
- 20 As soon as you leave the household after speaking to someone, record the **gender and age** (to the nearest 5 years) of the person you spoke to at the door
- 21 **AFTER** leaving the household and returning to your vehicle, check that all blue forms have been included. If any are missing, return immediately to the household to try to locate the missing forms.
- 22 **Move on** to the next address and repeat the process for all addresses on the first two pages.
- 23 You do **NOT** need to come back to the Survey Field Office on Sunday evening.
- 24 **On Monday**, repeat the above process for the addresses on the third page.
- 25 The **collected Survey Packs** and your **completed Survey Pack Pickup Record Sheets** must be returned to the Survey Field Office each **Monday** afternoon after you complete your collections on Monday.

If you have any **further questions** about procedure, see pages 19-23 of the Field Procedures Manual.

If you need help in the field, please contact the following people:

The VISTA Survey Office (19 Princess St, Kew) (9853 2248)

Aaron Morris (0405 154 500)

The Survey Office on the free-call number (1800 045 047)



## Victorian Integrated Survey of Travel & Activity

### A Summary of Survey Pack Pickup Procedures - Regionals

- 1 You can start your work from around **10.00am on Sunday morning**.
- 2 Note that the first two pages of addresses are scheduled for pickup on the Sunday, while the third sheet of addresses is scheduled for pickup on the Monday (because their Travel Day is on the weekend).
- 3 Look at your maps and the addresses on your Pickup Record Sheet and work out the **best route** to take around the houses (for each day). Ignore addresses where you have been **instructed not to collect Survey Packs** at this address, either because the household has already refused or because we have already asked them to mail their Survey packs back to us. Write your intended order of visiting the houses in the left margin of the Pickup Record Sheet.
- 4 **On Sunday**, go to the **first address** in your intended order of visiting the households on the first two pages. Check the pickup map and Survey Pack Pickup Record Sheet for any comments from the Pre-Contact or Survey Pack Delivery Record Sheets.
- 5 **Record the time** (to the nearest minute) that you first arrive at each address in Time 1. If you have to return to an address because nobody was home on the first visit, and nothing was left out for collection, record the later arrival time in Time 2.
- 6 Before knocking on the door **look to see if the forms have been left out** for collection. If the Prior Comments on your Survey Pack Pickup Record Sheet indicate a place where the forms will be left, look there first. If it doesn't indicate a place, or if the forms are not there, look on and under the doormat, in the meterbox and in any likely nearby places. Do not go to the mailbox unless the householder has indicated that is where to look, or the forms are clearly visible in the mailbox. If the forms are in the mailbox, do not disturb anything else that may be in there.
- 7 If the forms are not to be found, **knock on the front door**.
- 8 If the **respondents are not there**, make a note to return and move on to the next address. You will have to **return to this address** for another attempted contact on the Sunday.
- 9 If they are still **not home after the second attempt** on Sunday, leave a clear plastic bag containing a **reply-paid envelope** with a blue We-Missed-You card paper-clipped to it.
- 10 If they are at home (and answer the door) **introduce yourself** and show your identification.
- 11 **Explain** your reason for being there – you are there to collect the survey forms that were delivered last weekend (remember you may not be talking to the same person that received the forms last week).
- 12 Ask if the household **has completed their forms**. If they have completed the forms, thank them and **ask for them back**.
- 13 Ask whether there were **any questions they had trouble with**. If they say yes, offer to check these sections with them now and do so. For this, you will need to **understand** the reasons for, and the methods of answering, **each of the questions** in the survey.
- 14 **If the forms have not been completed**, ask whether they would like you to go through the survey with them right now to help them fill it out and do so if they agree. Otherwise say that you will be in the area for a while and offer to come back later if they think they'll have time to



do it today. If they don't wish to do that, leave a reply paid envelope and ask them to return the completed forms as soon as they can. Remind them that their Travel Day is on the front of the Red Form and they should complete the survey for that day.

- 15 If they have **not completed the forms** because they have lost them, never received them or "the dog ate them", say "That's okay, but could you please just answer two questions for me, as part of our **Quality Control Procedures**". Then proceed to ask:
  - How many **people** are in the household?
  - How many **registered vehicles** are in the household?
- 16 The **answers** to these questions should be **recorded** on the Survey Pack Pickup Record Sheet.
- 17 If they have not completed the forms because they were **away or didn't do any travel** on their Travel Day, explain that we would still like them to fill in the Red Form but all they need to put on their Blue Form is that they didn't travel and the reason for not travelling. Offer to go through the red form with them, or come back for it, or leave them a reply-paid envelope (one at a time, if they reject the first suggestion try the next).
- 18 If they **refuse to participate** in the survey, accept their refusal in a polite and cheerful manner. Ask if they would mind instead answering two very short questions, explaining that this is part of our quality control to ensure that the information we do collect is not biased. Conduct the non-response interview (unless of course, they refuse to do that either).
- 19 **Thank them** for doing the survey and reinforce the contribution they are making.
- 20 As soon as you leave the household after speaking to someone, record the **gender and age** (to the nearest 5 years) of the person you spoke to at the door
- 21 **AFTER** leaving the household and returning to your vehicle, check that all blue forms have been included. If any are missing, return immediately to the household to try to locate the missing forms.
- 22 **Move on** to the next address and repeat the process for all addresses on the first two pages.
- 23 **On Monday**, repeat the above process for the addresses on the third page.
- 24 **On Monday afternoon/evening**, the data from your completed SPP Record Sheets should be entered into the SPP Input Sheets, and emailed back to the Kew Survey Office.
- 25 The **collected Survey Packs** and your **completed Survey Pack Pickup Record Sheets** must be returned to the Survey Field Office each **Monday** afternoon/evening using an Overnight Yellow Australia Post bag. Try to get this package into the mail by the Monday evening deadline for overnight deliveries. Remember to include any PaySheets or other materials you need to send back to us each week.

If you have any **further questions** about procedure, see pages 19-23 of the Field Procedures Manual.

If you need help in the field, please contact the following people:

Rita Seethaler (5774 7617 or 0401 259 892)

The VISTA Survey Office (19 Princess St, Kew) (9853 2248)

Aaron Morris (0405 154 500)

The Survey Office on the free-call number (1800 045 047)



## Appendix N – PCL Control Sheet

Victorian Integrated Survey of Travel & Activity		Pre-Contact Letter Record Sheet	
		Region = 1	
		Week = 0	
		Field Staff Name:	
		Field Staff ID:	
		Arrival Time at Survey Office at Start of Shift:	
		Odometer Reading on Leaving Survey Office:	kms
		Odometer Reading on Returning to Survey Office:	
		Departure Time from Survey Office at End of Shift:	
		Incidental Expenses: \$ :	
		Nature of Expenses:	
		I declare that the information and claims herewith are an honest and accurate account of time and kilometres travelled on this job, and that the work was conducted in accordance with the briefing instructions and the Field Staff Manual. I have read and agree with the employment terms and conditions.	
		Employee's Signature:	Date: / /



**Victorian Integrated Survey of Travel & Activity**



Order of Visit Household Address Suburb

Order of Visit	Household Number	Address	Suburb	Time Arrived Hour	Time Left Hour	Method Actual address delivered to (if different); Record full address; not just street number; (no name)	Method Actual address delivered to (if different); Record full address; not just street number; (no name)	Dwelling Type (see below)	Dwelling Number of Dwellings	Comments (to assist delivery or to note unusual situations)
1	111 Clarks Road	Kelvior East								
2	1 Clarks Road	Kelvior East								
3	15 Clarks Road	Kelvior East								
4	23 Clarks Road	Kelvior East								
5	3 Clarks Road	Kelvior East								
6	31 Clarks Road	Kelvior East								
7	43 Clarks Road	Kelvior East								
8	7 Clarks Road	Kelvior East								
9	9 Clarks Road	Kelvior East								
10	8 Dennis Avenue	Kelvior East								
11	11 Drew Street	Kelvior East								
12	12 Drew Street	Kelvior East								
13	18 Drew Street	Kelvior East								
14	2 Drew Street	Kelvior East								

- Address Correction Method**
- 11 Equivalent Number Letter
  - 12 RUNIT (Random Unit Number Table)
  - 13 Single house, addressed as multiple dwelling
  - 14 Other (write in Comments)
- Dwelling Type**
- 21 Separate house
  - 22 Terrace/ownhouse/semi-detached
  - 23 Flat or apartment
  - 24 Other (write in Comments)
- Sample Loss**
- 0 Not Sample Loss
  - 1 No such address
  - 2 Vacant Land/Under Construction
  - 3 Other Premises
  - 4 Non-residential
  - 5 Other reason (write in Comments)

**Pre-Contact Delivery**

- 31 Delivered to household mailbox
- 32 Not delivered - letter mailed by Australia Post



## Victorian Integrated Survey of Travel & Activity

### REPLACEMENTS

Region = 1 Week = 0

Order of Visit	Household Address	Suburb	Time Arrived Hour Min	Replacement for Household Number	Sample Loss One Survey One Address	Address Correction Method (one survey)	Type (N/N)	Dwelling Type (one survey)	Number of Dwellings (one survey)	Comments (to assist delivery or to note unusual situations)
43	19 Clarks Road	Kelvin East								
44	21 Clarks Road	Kelvin East								
45	33 Clarks Road	Kelvin East								
46	41 Clarks Road	Kelvin East								
47	11 Dennis Avenue	Kelvin East								
48	7 Dennis Avenue	Kelvin East								
49	13 Drew Street	Kelvin East								
50	16 Drew Street	Kelvin East								
51	5 Drew Street	Kelvin East								
52	6 Drew Street	Kelvin East								
53	4 Keith Grove	Kelvin East								
54	5 Keith Grove	Kelvin East								
55	116 Noga Avenue	Kelvin East								
56	122 Noga Avenue	Kelvin East								

#### Address Correction Method

- 11 Equivalent Number/Letter
- 12 RUNIT (Random Unit Number Table)
- 13 Single House, addressed as multiple dwelling
- 14 Other (write in Comments)
- 5 Other reason (write in Comments)

#### Dwelling Type

- 21 Separate house
- 22 Terrace/rowhouse/semi-detached
- 23 Flat or apartment
- 24 Other (write in Comments)

#### Pre-Contact Delivery

- 31 Delivered to household mailbox
- 32 Not delivered - letter mailed by Australia Post



## Appendix O – SPD Control Sheet

Survey Pack Delivery Record Sheet			
Region = 1	Week = 0		
Field Staff Name:			
Field Staff ID:			
Arrival Time at Survey Office at Start of Shift on Saturday:	<table border="1"><tr><td>Hour</td><td>Minutes</td></tr></table>	Hour	Minutes
Hour	Minutes		
Odometer Reading on Leaving Survey Office on Saturday:	kms		
Arrival Time at Home at End of Shift on Saturday:	<table border="1"><tr><td>Hour</td><td>Minutes</td></tr></table>	Hour	Minutes
Hour	Minutes		
Odometer Reading on Arriving Home on Saturday:	kms		
Odometer Reading on Leaving Home at Start of Shift on Sunday:	<table border="1"><tr><td>Hour</td><td>Minutes</td></tr></table>	Hour	Minutes
Hour	Minutes		
Departure Time from Home at Start of Shift on Sunday:			
Odometer Reading on Returning to Survey Office at End of Shift on Sunday:	<table border="1"><tr><td>Hour</td><td>Minutes</td></tr></table>	Hour	Minutes
Hour	Minutes		
Departure Time from Survey Office at End of Shift on Sunday:			
Incidental Expenses: \$ :			
Nature of Expenses:			
I declare that the information and claims herewith are an honest and accurate account of time and kilometres travelled on this job, and that the work was conducted in accordance with the briefing instructions and the Field Staff Manual. I have read and agree with the employment terms and conditions.			
Employee's Signature:			





**Victorian Integrated Survey  
of Travel & Activity**



Region = **1** Week = **0**

**Survey Pack Delivery Record Sheet**

Order of Visit HID	Address	Suburb	Pct. Comments	Trav Day	Time 1		Time 2		Time 3		Time 4		Delivery Method Used before from Respondent	Number of Adults Forms	Crusoe Gender	Crusoe Age	Phone Number from Respondent	Name Vetus	Comments (to assist packups, explain refusals or make unusual situations)
					HH	MM	HH	MM	HH	MM	HH	MM							
10101	Address 1	Suburb 1	Comments 1	Mon:															
10102	Address 2	Suburb 2	Comments 2	Tue:															
10103	Address 3	Suburb 3	Comments 3	Wed:															
10104	Address 4	Suburb 4	Comments 4	Thu:															
10105	Address 5	Suburb 5	Comments 5	Fri:															
10106	Address 6	Suburb 6	Comments 6	Sat:															
10107	Address 7	Suburb 7	Comments 7	Sun:															
10108	Address 8	Suburb 8	Comments 8	Mon:															
10109	Address 9	Suburb 9	Comments 9	Tue:															
10110	Address 10	Suburb 10	Comments 10	Wed:															
10111	Address 11	Suburb 11	Comments 11	Thu:															
10112	Address 12	Suburb 12	Comments 12	Fri:															
10113	Address 13	Suburb 13	Comments 13	Sat:															
10114	Address 14	Suburb 14	Comments 14	Sun:															

**Delivery Method**

- 1 Personally to household
- 2 Left in mailbox/on doorstep
- 3 Refusal
- 4 Not Delivered - Sample Loss
- 5 Not Delivered - Mailed

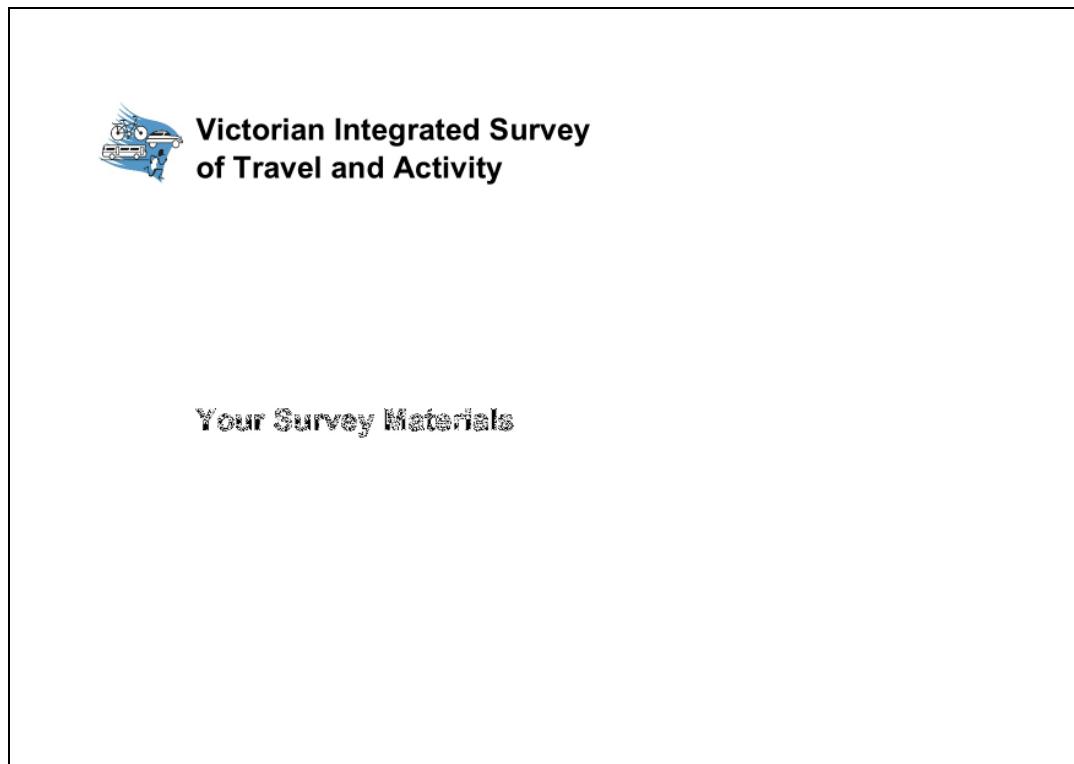
**Phone Codes (if number not obtained)**

- 1 No Phone
- 2 Unlisted
- 3 Reused to Provide
- 4 No Contact with person
- 5 Not Asked

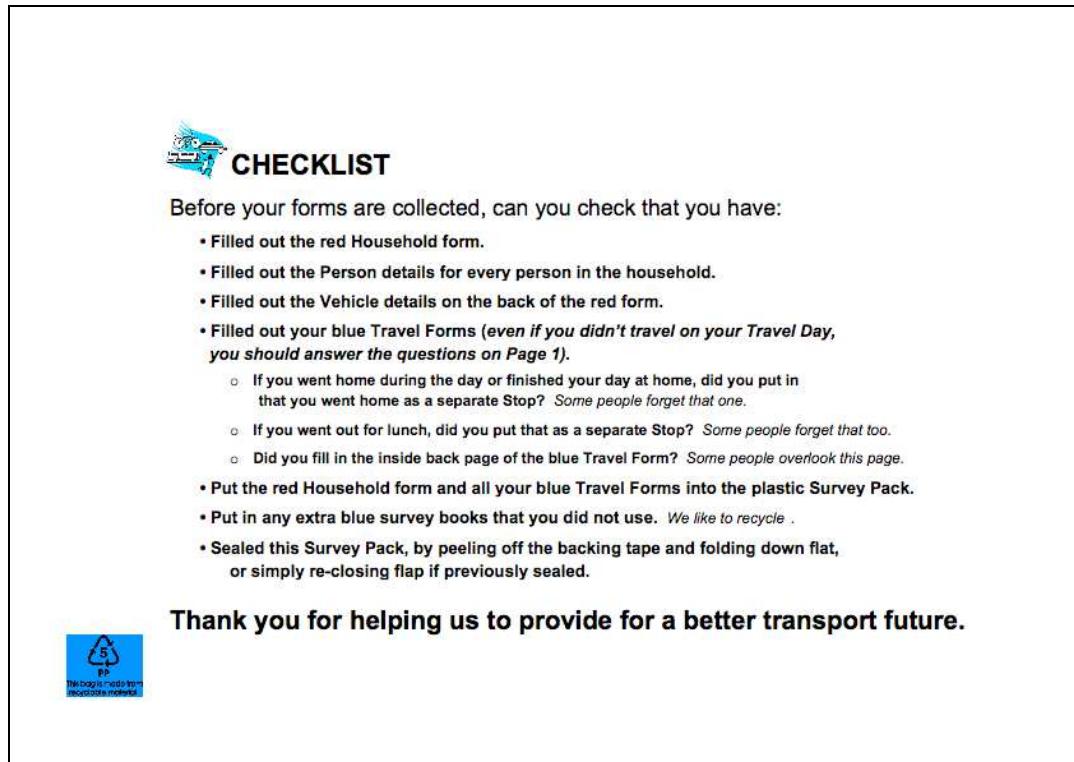


## Appendix P – Survey Pack Plastic Bags

### Front of Survey Pack Bag



### Back of Survey Pack Bag





## Appendix Q – SPP Control Sheet

Survey Pack Pickup Record Sheet	
Region =	1
Week =	3
Field Staff Name:	
Field Staff ID:	
Arrival Time at Survey Office at Start of Shift on Sunday:	Hour: _____ Minutes: _____
Odometer Reading on Leaving Survey Office on Sunday:	kms _____ Mileage _____
Arrival Time at Home at End of Shift on Sunday:	Hour: _____ Minutes: _____
Odometer Reading on Arriving Home on Sunday:	kms _____ Mileage _____
Odometer Reading on Leaving Home at Start of Shift on Monday:	Hour: _____ Minutes: _____
Departure Time from Home at Start of Shift on Monday:	Hour: _____ Minutes: _____
Odometer Reading on Returning to Survey Office at End of Shift on Monday:	kms _____ Mileage _____
Departure Time from Survey Office at End of Shift on Monday:	Hour: _____ Minutes: _____
Incidental Expenses: \$ :	
Nature of Expenses:	
<p>I declare that the information and claims hereon are an honest and accurate account of time and kilometres travelled on this job, and that the work was conducted in accordance with the briefing instructions and the Field Staff Manual. I have read and agree with the employment terms and conditions.</p>	
Employee's Signature:	





**Victorian Integrated Survey  
of Travel & Activity**



Order of Visit	HHID	Address	Suburb	Delivery Day		Delivery Month		Delivery Year		Time 1 Min	Time 2 Min	Picked Month Year	Picked Quarter	Phone Appt.	Comments (any other remarks or notes after survey/distribution)
				Mon	Tue	Wed	Thu	Fri	Sat						
HH10001	0														
HH10002	0														
HH10003	0														
HH10004	0														
HH10005	0														
HH10006	0														
HH10007	0														
HH10008	0														
HH10009	0														
HH10010	0														
HH10011	0														
HH10012	0														
HH10013	0														
HH10014	0														

- Pickup Method**
- 1 Form
  - 2 Form + telephone, interview, etc.
  - 3 Refusal - previously
  - 4 Blank form left at doorstop
  - 5 No contact - R/R or telephone
  - 6 Sampling Loss
  - 7 Other (enter in Comments section)
  - 8



## Appendix R – Household File Coding Frame

Variable Name	Variable Meaning
<b>HHID</b>	Household ID Number
Min	Y09H010101
Max	Y09H185242
Legend:	YyyHrrwwhh
where	yy = year of survey rr = region of fieldwork ww = week hh = household number

Variable Name	Variable Meaning
<b>SAMPLEREGION</b>	Sampling Region
Min	1
Max	18
1	Inner Melbourne
2	Inner West Melbourne
3	Outer West Melbourne
4	Inner North Melbourne
5	Outer North Melbourne
6	Maroondah Highway
7	Outer North-East Melbourne
8	Inner South-East Melbourne
9	Middle South-East Melbourne
10	Outer South-East Melbourne
11	Fringe South-East Melbourne
12	DPCD Activity Centres
13	Melbourne CAD
14	Geelong
15	Ballarat
16	Bendigo
17	Shepparton
18	Latrobe Valley

Variable Name	Variable Meaning
<b>REALREGION</b>	Real Household Region
Min	1
Max	18
1	Inner Melbourne
2	Inner West Melbourne
3	Outer West Melbourne
4	Inner North Melbourne
5	Outer North Melbourne
6	Maroondah Highway
7	Outer North-East Melbourne
8	Inner South-East Melbourne
9	Middle South-East Melbourne
10	Outer South-East Melbourne
11	Fringe South-East Melbourne
12	DPCD Activity Centres
13	Melbourne CAD
14	Geelong
15	Ballarat
16	Bendigo



17	Shepparton
18	Latrobe Valley

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>WEEK</b>	Week of Survey
Min	1
Max	52

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>AREA</b>	Main Area
Min	1
Max	3
1	Metro Melbourne
2	Activity Centres
3	Regional Areas

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HHSIZE</b>	Usual Residents in HH
Min	1
Max	15

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>VISITORS</b>	Visitors in HH
Min	1
Max	15
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HHSTRUCTURE</b>	Demographic Structure of Household
Min	1
Max	5
-2	N/A
-1	Missing
1	Sole Person
2	Couple no Kids
3	Couple with Kids
4	One-Parent
5	Other HH Structures

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DWELLTYPE</b>	Dwelling Type
Min	1
Max	4
-2	N/A
-1	Missing
1	Separate House
2	Terrace/Townhouse
3	Flat or Apartment
4	Other

<b>Variable Name</b>	<b>Variable Meaning</b>



<b>OWNDWELL</b>	Dwelling Ownership
Min	1
Max	5
-2	N/A
-1	Missing
1	Owned
2	Being Purchased
3	Rented
4	Occupied Rent-Free
5	Other

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>YEARSLIVED</b>	Years Lived at Address
Min	0
Max	99
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>MONTHSLIVED</b>	Months Lived at Address
Min	0
Max	11
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ADULTBIKES</b>	Adult Bicycles at Address
Min	0
Max	20
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>KIDSBIKES</b>	Kids Bicycles at Address
Min	0
Max	20
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TOTALBIKES</b>	Total Bicycles at Address
Min	0
Max	20
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ADULTBIKESUSED</b>	Number of Adult Bicycles used in past 14 Days
Min	0
Max	20
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>



<b>KIDSBIKESUSED</b>	Number of Kids Bicycles used in past 14 Days
Min	0
Max	20
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TOTALBIKESUSED</b>	Total Number of Bicycles used in past 14 Days
Min	0
Max	20
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>PHONE</b>	Was phone number provided?
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>CARS</b>	Number of Cars
Min	0
Max	10
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>FOURWDS</b>	Number of 4WDs
Min	0
Max	10
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>MBIKES</b>	Number of Motorbikes
Min	0
Max	10
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>UTES</b>	Number of Utes
Min	0
Max	10
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>VANS</b>	Number of Vans
Min	0
Max	10
-2	N/A
-1	Missing



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRUCKS</b>	Number of Trucks
Min	0
Max	10
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>OTHERVEHS</b>	Number of Other Vehicles
Min	0
Max	10
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TOTALVEHS</b>	Total Number of Vehicles
Min	0
Max	20
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVDATE</b>	HH Travel Day Date
Min	1
Max	31
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVMONTH</b>	HH Travel Day Month
Min	1
Max	12
1	January
2	February
3	March
4	April
5	May
6	June
7	July
8	August
9	September
10	October
11	November
12	December
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVYEAR</b>	HH Travel Day Year
Min	2009
Max	2010



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVDOW</b>	HH Travel Day day-of-week
Min	1
Max	7
-2	N/A
-1	Missing
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday
7	Sunday

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HOMEPC</b>	HH Postcode
Min	3000
Max	3999
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HOMELONG</b>	HH Longitude (randomised)
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HOMELAT</b>	HH Latitude (randomised)
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HOMETAZ</b>	HH Traffic Analysis Zone (actual)
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HOMECCD</b>	HH CCD (actual)
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HOMESLA</b>	HH SLA (actual)
-2	N/A
-1	Missing
205054601	Melbourne (C) - Inner
205054605	Melbourne (C) - S'bank-D'lands
205054608	Melbourne (C) - Remainder
205055901	Port Phillip (C) - St Kilda
205055902	Port Phillip (C) - West
205056351	Stonnington (C) - Prahran
205057351	Yarra (C) - North
205057352	Yarra (C) - Richmond
205101181	Brimbank (C) - Keilor
205101182	Brimbank (C) - Sunshine
205103111	Hobsons Bay (C) - Altona



205103112	Hobsons Bay (C) - Williamstown
205104330	Maribyrnong (C)
205105063	Moonee Valley (C) - Essendon
205105065	Moonee Valley (C) - West
205204651	Melton (S) - East
205204654	Melton (S) Bal
205207261	Wyndham (C) - North
205207264	Wyndham (C) - South
205207267	Wyndham (C) - West
205255251	Moreland (C) - Brunswick
205255252	Moreland (C) - Coburg
205255253	Moreland (C) - North
205300661	Banyule (C) - Heidelberg
205300662	Banyule (C) - North
205301891	Darebin (C) - Northcote
205301892	Darebin (C) - Preston
205353271	Hume (C) - Broadmeadows
205353274	Hume (C) - Craigieburn
205353275	Hume (C) - Sunbury
205405713	Nillumbik (S) - South
205405715	Nillumbik (S) - South-West
205405718	Nillumbik (S) Bal
205407071	Whittlesea (C) - North
205407075	Whittlesea (C) - South-East
205407076	Whittlesea (C) - South-West
205451111	Boroondara (C) - Camberwell N.
205451112	Boroondara (C) - Camberwell S.
205451113	Boroondara (C) - Hawthorn
205451114	Boroondara (C) - Kew
205504211	Manningham (C) - East
205504214	Manningham (C) - West
205504971	Monash (C) - South-West
205504974	Monash (C) - Waverley East
205504975	Monash (C) - Waverley West
205506981	Whitehorse (C) - Box Hill
205506984	Whitehorse (C) - Nunawading E.
205506985	Whitehorse (C) - Nunawading W.
205553672	Knox (C) - North-East
205553673	Knox (C) - North-West
205553674	Knox (C) - South
205554411	Maroondah (C) - Croydon
205554412	Maroondah (C) - Ringwood
205607451	Yarra Ranges (S) - Central
205607452	Yarra Ranges (S) - Dandenongs
205607453	Yarra Ranges (S) - Lilydale
205607454	Yarra Ranges (S) - North
205607456	Yarra Ranges (S) - Seville
205650911	Bayside (C) - Brighton
205650912	Bayside (C) - South
205652311	Glen Eira (C) - Caulfield
205652314	Glen Eira (C) - South
205653431	Kingston (C) - North
205653434	Kingston (C) - South
205656352	Stonnington (C) - Malvern
205752671	Gr. Dandenong (C) - Dandenong
205752674	Gr. Dandenong (C) Bal



205801452	Cardinia (S) - North
205801453	Cardinia (S) - Pakenham
205801454	Cardinia (S) - South
205801612	Casey (C) - Berwick
205801613	Casey (C) - Cranbourne
205801616	Casey (C) - Hallam
205801618	Casey (C) - South
205852171	Frankston (C) - East
205852174	Frankston (C) - West
205905341	Mornington P'sula (S) - East
205905344	Mornington P'sula (S) - South
205905345	Mornington P'sula (S) - West
210052751	Bellarine - Inner
210052752	Corio - Inner
210052753	Geelong
210052754	Geelong West
210052755	Newtown
210052756	South Barwon - Inner
210102757	Greater Geelong (C) - Pt B
210106080	Queenscliff (B)
210106493	Surf Coast (S) - East
210106495	Surf Coast (S) - West
210151751	Colac-Otway (S) - Colac
210151754	Colac-Otway (S) - North
210151755	Colac-Otway (S) - South
210152491	Golden Plains (S) - North-West
210152492	Golden Plains (S) - South-East
210152758	Greater Geelong (C) - Pt C
215016730	Warrnambool (C)
215051831	Corangamite (S) - North
215051832	Corangamite (S) - South
215055491	Moyne (S) - North-East
215055493	Moyne (S) - North-West
215055496	Moyne (S) - South
215058469	Lady Julia Percy Island
215102411	Glenelg (S) - Heywood
215102412	Glenelg (S) - North
215102413	Glenelg (S) - Portland
215106261	S. Grampians (S) - Hamilton
215106264	S. Grampians (S) - Wannon
215106265	S. Grampians (S) Bal
220050571	Ballarat (C) - Central
220050572	Ballarat (C) - Inner North
220050573	Ballarat (C) - North
220050574	Ballarat (C) - South
220102911	Hepburn (S) - East
220102912	Hepburn (S) - West
220105151	Moorabool (S) - Bacchus Marsh
220105154	Moorabool (S) - Ballan
220105155	Moorabool (S) - West
220150260	Ararat (RC)
220155991	Pyrenees (S) - North
220155994	Pyrenees (S) - South
225053191	Horsham (RC) - Central
225053194	Horsham (RC) Bal
225055811	N. Grampians (S) - St Arnaud



225055814	N. Grampians (S) - Stawell
225056890	West Wimmera (S)
225102980	Hindmarsh (S)
225107631	Yarriambiack (S) - North
225107632	Yarriambiack (S) - South
230054781	Mildura (RC) - Pt A
230101271	Buloke (S) - North
230101272	Buloke (S) - South
230104782	Mildura (RC) - Pt B
230152250	Gannawarra (S)
230156611	Swan Hill (RC) - Central
230156614	Swan Hill (RC) - Robinvale
230156616	Swan Hill (RC) Bal
235052621	Gr. Bendigo (C) - Central
235052622	Gr. Bendigo (C) - Eaglehawk
235052623	Gr. Bendigo (C) - Inner East
235052624	Gr. Bendigo (C) - Inner North
235052625	Gr. Bendigo (C) - Inner West
235052626	Gr. Bendigo (C) - S'saye
235101671	C. Goldfields (S) - M'borough
235101674	C. Goldfields (S) Bal
235102628	Gr. Bendigo (C) - Pt B
235103943	Loddon (S) - North
235103945	Loddon (S) - South
235105431	Mount Alexander (S) - C'maine
235105434	Mount Alexander (S) Bal
235204131	Macedon Ranges (S) - Kyneton
235204134	Macedon Ranges (S) - Romsey
235204135	Macedon Ranges (S) Bal
240052831	Gr. Shepparton (C) - Pt A
240101371	Campaspe (S) - Echuca
240101374	Campaspe (S) - Kyabram
240101375	Campaspe (S) - Rochester
240101376	Campaspe (S) - South
240102834	Gr. Shepparton (C) - Pt B East
240102835	Gr. Shepparton (C) - Pt B West
240104901	Moira (S) - East
240104904	Moira (S) - West
240151011	Benalla (RC) - Benalla
240151014	Benalla (RC) Bal
240154250	Mansfield (S)
240156430	Strathbogie (S)
240158249	Mount Buller Alpine Resort
240158349	Mount Stirling Alpine Resort
240204851	Mitchell (S) - North
240204854	Mitchell (S) - South
240205621	Murrindindi (S) - East
240205622	Murrindindi (S) - West
240208149	Lake Mountain Alpine Resort
245053351	Indigo (S) - Pt A
245056671	Towong (S) - Pt A
245057170	Wodonga (RC)
245103352	Indigo (S) - Pt B
245106701	Wangaratta (RC) - Central
245106704	Wangaratta (RC) - North
245106705	Wangaratta (RC) - South



245150111	Alpine (S) - East
245150112	Alpine (S) - West
245156672	Towong (S) - Pt B
245158109	Falls Creek Alpine Resort
245158309	Mount Hotham Alpine Resort
250052111	E. Gippsland (S) - Bairnsdale
250052113	E. Gippsland (S) - Orbost
250052115	E. Gippsland (S) - South-West
250052117	E. Gippsland (S) Bal
250156811	Wellington (S) - Alberton
250156812	Wellington (S) - Avon
250156813	Wellington (S) - Maffra
250156814	Wellington (S) - Rosedale
250156815	Wellington (S) - Sale
255050831	Baw Baw (S) - Pt A
255053811	Latrobe (C) - Moe
255053814	Latrobe (C) - Morwell
255053815	Latrobe (C) - Traralgon
255053818	Latrobe (C) Bal
255100834	Baw Baw (S) - Pt B East
255100835	Baw Baw (S) - Pt B West
255107458	Yarra Ranges (S) - Pt B
255108209	Mount Baw Baw Alpine Resort
255200741	Bass Coast (S) - Phillip Is.
255200744	Bass Coast (S) Bal
255206171	South Gippsland (S) - Central
255206174	South Gippsland (S) - East
255206175	South Gippsland (S) - West
255208529	French Island
255208649	Bass Strait Islands

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HOMELGA</b>	HH LGA (actual)
-2	N/A
-1	Missing
20110	Alpine (S)
20260	Ararat (RC)
20570	Ballarat (C)
20660	Banyule (C)
20740	Bass Coast (S)
20830	Baw Baw (S)
20910	Bayside (C)
21010	Benalla (RC)
21110	Boroondara (C)
21180	Brimbank (C)
21270	Buloke (S)
21370	Campaspe (S)
21450	Cardinia (S)
21610	Casey (C)
21670	Central Goldfields (S)
21750	Colac-Otway (S)
21830	Corangamite (S)
21890	Darebin (C)
22110	East Gippsland (S)
22170	Frankston (C)
22250	Gannawarra (S)



22310	Glen Eira (C)
22410	Glenelg (S)
22490	Golden Plains (S)
22620	Greater Bendigo (C)
22670	Greater Dandenong (C)
22750	Greater Geelong (C)
22830	Greater Shepparton (C)
22910	Hepburn (S)
22980	Hindmarsh (S)
23110	Hobsons Bay (C)
23190	Horsham (RC)
23270	Hume (C)
23350	Indigo (S)
23430	Kingston (C)
23670	Knox (C)
23810	Latrobe (C)
23940	Loddon (S)
24130	Macedon Ranges (S)
24210	Manningham (C)
24250	Mansfield (S)
24330	Maribyrnong (C)
24410	Maroondah (C)
24600	Melbourne (C)
24650	Melton (S)
24780	Mildura (RC)
24850	Mitchell (S)
24900	Moira (S)
24970	Monash (C)
25060	Moonee Valley (C)
25150	Moorabool (S)
25250	Moreland (C)
25340	Mornington Peninsula (S)
25430	Mount Alexander (S)
25490	Moyne (S)
25620	Murrindindi (S)
25710	Nillumbik (S)
25810	Northern Grampians (S)
25900	Port Phillip (C)
25990	Pyrenees (S)
26080	Queenscliff (B)
26170	South Gippsland (S)
26260	Southern Grampians (S)
26350	Stonnington (C)
26430	Strathbogie (S)
26490	Surf Coast (S)
26610	Swan Hill (RC)
26670	Towong (S)
26700	Wangaratta (RC)
26730	Warrnambool (C)
26810	Wellington (S)
26890	West Wimmera (S)
26980	Whitehorse (C)
27070	Whittlesea (C)
27170	Wodonga (RC)
27260	Wyndham (C)
27350	Yarra (C)



27450	Yarra Ranges (S)
27630	Yarriambiack (S)
29399	Unincorporated Vic
99999	Outside Victoria

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>YOUNGEST</b>	Age of Youngest in HH
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>OLDEST</b>	Age of Oldest in HH
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>AVEAGE</b>	Average Age of Persons in HH
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>HHINC</b>	Total Household Income ((\$/week)
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ADHHWGT</b>	All-Days Household Weight
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>WDHHWGT</b>	Weekday Household Weight
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>WEHHWGT</b>	Weekend Household Weight
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>SDHHWGT</b>	School-Day Household Weight
-2	N/A
-1	Missing



## Appendix S – Vehicle File Coding Frame

<b>Variable Name</b>	<b>Variable Meaning</b>
VEHID	Vehicle ID
Min	Y09H010101V01
Max	Y09H185242V20
Legend:	YyyHrrwwhPppSss
where	yy = year of survey rr = region of fieldwork ww = week hh = household number vv = vehicle number

<b>Variable Name</b>	<b>Variable Meaning</b>
HHID	Household ID Number
Min	Y09H010101
Max	Y09H185242
Legend:	YyyHrrwwh
where	yy = year of survey rr = region of fieldwork ww = week hh = household number

<b>Variable Name</b>	<b>Variable Meaning</b>
VehNo	Vehicle Number
Min	1
Max	10

<b>Variable Name</b>	<b>Variable Meaning</b>
VehType	Vehicle Type
Min	1
Max	7
-2	N/A
-1	Missing
1	Car
2	4WD/SUV
3	Ute
4	Van
5	Truck
6	Motorcycle
7	Other

<b>Variable Name</b>	<b>Variable Meaning</b>
VehYear	Year of Manufacture of Vehicle
Min	0
Max	99
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
Petrol	Petrol fueled
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No

**Variable Name      Variable Meaning**

Diesel	Diesel fueled
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No

**Variable Name      Variable Meaning**

Gas	Gas fueled
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No

**Variable Name      Variable Meaning**

Electric	Electric Power
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No

**Variable Name      Variable Meaning**

Cylinders	Number of Cylinders
Min	1
Max	12
-2	N/A
-1	Missing

**Variable Name      Variable Meaning**

RunningCosts	Payment of Running Costs
Min	1
Max	2
-2	N/A
-1	Missing
1	Privately Paid
2	Company Paid

**Variable Name      Variable Meaning**

HHWGT	Household Weight
Min	1
Max	9999
-3	Default
-2	N/A
-1	Missing

**Variable Name      Variable Meaning**

VehMake	Make of Vehicle
Min	1
Max	999
-2	N/A
-1	Missing

(a full list of vehicle makes is included in the electronic data files)



<b>Variable Name</b>	<b>Variable Meaning</b>
VehModel	Model of Vehicle
Min	1
Max	9999
-2	N/A
-1	Missing

(a full list of vehicle models is included in the electronic data files)



## Appendix T – Person File Coding Frame

Variable Name	Variable Meaning
<b>PERSID</b>	Person ID
Min	Y09H010101P01
Max	Y09H185242P20
Legend:	YyyHrrwwhhPpp
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number

Variable Name	Variable Meaning
<b>HHID</b>	Household ID
Min	Y09H010101
Max	Y09H185242
Legend:	YyyHrrwwhh
where	yy = year of survey rr = region of fieldwork ww = week hh = household number

Variable Name	Variable Meaning
<b>PERSNO</b>	Person Number
Min	1
Max	20

Variable Name	Variable Meaning
<b>REALREGION</b>	Real Household Region
Min	1
Max	18
1	Inner Melbourne
2	Inner West Melbourne
3	Outer West Melbourne
4	Inner North Melbourne
5	Outer North Melbourne
6	Maroondah Highway
7	Outer North-East Melbourne
8	Inner South-East Melbourne
9	Middle South-East Melbourne
10	Outer South-East Melbourne
11	Fringe South-East Melbourne
12	Peri-Urban Areas
13	Melbourne CAD
14	Geelong
15	Ballarat
16	Bendigo
17	Shepparton
18	Latrobe Valley



Variable Name	Variable Meaning
WEEK	Week of Survey
Min	1
Max	52

Variable Name	Variable Meaning
AREA	Main Area
Min	1
Max	3
1	Metro Melbourne
2	Activity Centres
3	Regional Areas

Variable Name	Variable Meaning
TRAVDOW	Travel Day Day-of-Week
Min	1
Max	7
-1	Missing
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday
7	Sunday

Variable Name	Variable Meaning
MONTHOFBIRTH	Month of Birth
Min	1
Max	12
-1	Missing
1	January
2	February
3	March
4	April
5	May
6	June
7	July
8	August
9	September
10	October
11	November
12	December

Variable Name	Variable Meaning
YEAROFBIRTH	Year of Birth
Min	1900
Max	2010
-1	Missing



Variable Name	Variable Meaning
<b>AGE</b>	Age of Respondent
Min	0
Max	110
-2	N/A
-1	Missing

Variable Name	Variable Meaning
<b>AGEGROUP</b>	Age Group
Min	1
Max	21
-2	N/A
-1	Missing
1	0->4
2	5->9
3	10->14
4	15->19
5	20->24
6	25->29
7	30->34
8	35->39
9	40->44
10	45->49
11	50->54
12	55->59
13	60->64
14	65->69
15	70->74
16	75->79
17	80->84
18	85->89
19	90->94
20	95->99
21	100+

Variable Name	Variable Meaning
<b>SEX</b>	Gender
Min	1
Max	2
-2	N/A
-1	Missing
1	Male
2	Female

Variable Name	Variable Meaning
<b>RELATIONSHIP</b>	Relationship to Person 1
Min	1
Max	8
-2	N/A
-1	Missing
1	Spouse
2	Child
3	Sibling



4	Grandchild
5	Other relative
6	Unrelated
7	Oldest Person
8	Other

Variable Name	Variable Meaning
<b>COUNTRY</b>	Country of Birth
Min	1
Max	999
-2	N/A
-1	Missing
1	Oceania (NEC)
2	Australia
3	Christmas Island
4	Cocos (Keeling) Islands
5	Cook Islands
6	Fiji
7	French Polynesia
8	Guam
9	Kiribati
10	Marshall Islands
11	Micronesia
12	Nauru
13	New Caledonia
14	New Zealand
15	Niue
16	Norfolk Island
17	Northern Mariana Islands
18	Palau
19	Papua New Guinea
20	Pitcairn Islands
21	Samoa (American)
22	Samoa (Western)
23	Solomon Islands
24	Tokelau
25	Tonga
26	Tuvalu
27	Vanuatu
28	Wallis and Futuna
29	Antarctica (NEC)
30	Europe (NEC)
31	UK - United Kingdom (NEC)
32	England
33	Isle of Man
34	Northern Ireland
35	Scotland
36	Wales
37	Channel Islands
38	Ireland
39	Western Europe (NEC)
40	Austria
41	Belgium



42	France
43	Germany
44	Liechtenstein
45	Luxembourg
46	Monaco
47	Netherlands
48	Switzerland
49	Northern Europe (NEC)
50	Åland Islands
51	Denmark
52	Faroe Islands
53	Finland
54	Greenland
55	Iceland
56	Norway
57	Sweden
58	Southern Europe (NEC)
59	Andorra
60	Gibraltar
61	Holy See
62	Italy
63	Malta
64	Portugal
65	San Marino
66	Spain
67	South Eastern Europe (NEC)
68	Albania
69	Bosnia and Herzegovina
70	Bulgaria
71	Croatia
72	Cyprus
73	Greece
74	Kosovo
75	Macedonia
76	Moldova
77	Montenegro
78	Romania
79	Serbia
80	Slovenia
81	Eastern Europe (NEC)
82	Belarus
83	Czech Republic
84	Estonia
85	Hungary
86	Latvia
87	Lithuania
88	Poland
89	Russia
90	Slovakia
91	Ukraine
92	Middle East (NEC)
93	Bahrain
94	Gaza Strip and West Bank



95	Iran
96	Iraq
97	Israel
98	Jordan
99	Kuwait
100	Lebanon
101	Oman
102	Qatar
103	Saudi Arabia
104	Syria
105	Turkey
106	United Arab Emirates
107	Yemen
108	Asia (NEC)
109	South-Eastern Asia (NEC)
110	Brunei Darussalam
111	Burma (Myanmar)
112	Cambodia
113	East Timor
114	Indonesia
115	Laos
116	Malaysia
117	Philippines
118	Singapore
119	Thailand
120	Vietnam
121	North-Eastern Asia (NEC)
122	China
123	Hong Kong
124	Japan
125	Macau
126	Mongolia
127	Nth Korea
128	Sth Korea
129	Taiwan
130	Southern Asia (NEC)
131	Bangladesh
132	Bhutan
133	India
134	Maldives
135	Nepal
136	Pakistan
137	Sri Lanka
138	Central Asia (NEC)
139	Afghanistan
140	Armenia
141	Azerbaijan
142	Georgia
143	Kazakhstan
144	Kyrgyzstan
145	Tajikistan
146	Turkmenistan
147	Uzbekistan



148	Northern America (NEC)
149	Bermuda
150	Canada
151	St Pierre and Miquelon
152	USA - United States of America
153	Southern America (NEC)
154	Argentina
155	Bolivia
156	Brazil
157	Chile
158	Colombia
159	Ecuador
160	Falkland Islands
161	French Guiana
162	Guyana
163	Paraguay
164	Peru
165	Suriname
166	Uruguay
167	Venezuela
168	Central America (NEC)
169	Belize
170	Costa Rica
171	El Salvador
172	Guatemala
173	Honduras
174	Mexico
175	Nicaragua
176	Panama
177	Caribbean (NEC)
178	Anguilla
179	Antigua and Barbuda
180	Aruba
181	Bahamas
182	Barbados
183	Cayman Islands
184	Cuba
185	Dominica
186	Dominican Republic
187	Grenada
188	Guadeloupe
189	Haiti
190	Jamaica
191	Martinique
192	Montserrat
193	Netherlands Antilles
194	Puerto Rico
195	St Barthélemy
196	St Kitts and Nevis
197	St Lucia
198	St Martin (French)
199	St Vincent and the Grenadines
200	Trinidad and Tobago



201	Turks and Caicos Islands
202	Virgin Islands (British)
203	Virgin Islands (United States)
204	Africa (NEC)
205	Northern Africa (NEC)
206	Algeria
207	Egypt
208	Libya
209	Morocco
210	Spanish North Africa
211	Sudan
212	Tunisia
213	Western Sahara
214	Central and Western Africa (NEC)
215	Benin
216	Burkina Faso
217	Cameroon
218	Cape Verde
219	Central African Republic
220	Chad
221	Congo-Brazzaville (Republic)
222	Congo-Kinshasa (Democratic Republic)
223	Equatorial Guinea
224	Gabon
225	Gambia
226	Ghana
227	Guinea
228	Guinea-Bissau
229	Ivory Coast
230	Liberia
231	Mali
232	Mauritania
233	Niger
234	Nigeria
235	São Tomé and Príncipe
236	Senegal
237	Sierra Leone
238	Togo
239	Southern and Eastern Africa (NEC)
240	Angola
241	Botswana
242	Burundi
243	Comoros
244	Djibouti
245	Eritrea
246	Ethiopia
247	Kenya
248	Lesotho
249	Madagascar
250	Malawi
251	Mauritius
252	Mayotte
253	Mozambique



254	Namibia
255	Réunion
256	Rwanda
257	Seychelles
258	Somalia
259	Sth Africa
260	St Helena
261	Swaziland
262	Tanzania
263	Uganda
264	Zambia
265	Zimbabwe
267	Czechoslovakia (former)
268	Serbia and Montenegro (former)
269	USSR (former)
270	Yugoslavia (former)
999	OTHER

Variable Name	Variable Meaning
<b>CARLICENCE</b>	Car Licence
Min	1
Max	5
-2	N/A
-1	Missing
1	Full Licence
2	Red Probationary Licence
3	Green Probationary Licence
4	Learners Permit
5	No Car Licence

Variable Name	Variable Meaning
<b>MBIKELICENCE</b>	Motorcycle licence
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No

Variable Name	Variable Meaning
<b>OTHERLICENCE</b>	Other type of licence
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>NOLICENCE</b>	No licence
Min	1
Max	2
-2	N/A
-1	Missing
1	No Licence
2	Some Licence
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>FULLTIMEWORK</b>	Full-time employment
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>PARTTIMEWORK</b>	Part-time employment
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>CASUALWORK</b>	Casual employment
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ANYWORK</b>	Any Type of Work
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>STUDYING</b>	Student Status
Min	1
Max	6
-2	N/A
-1	Missing
1	Primary
2	Secondary



3	F/T TAFE/Uni
4	P/T TAFE/Uni
5	Something Else
6	No Study

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ACTIVITIES</b>	Other Activity Status
Min	1
Max	6
-2	N/A
-1	Missing
1	Not Yet at School
2	Keeping House
3	Unemployed
4	Retired
5	Other
6	No Other Activity

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>MAINACT</b>	Main Activity Type
Min	1
Max	13
-2	N/A
-1	Missing
1	Full-time Work
2	Part-time Work
3	Casual Work
4	Primary School
5	Secondary School
6	F/T TAFE/Uni
7	P/T TAFE/Uni
8	Other Education
9	Not Yet at School
10	Keeping House
11	Unemployed
12	Retired
13	Other

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>WORKTYPE</b>	Work Arrangements
Min	1
Max	4
-2	Not in Work Force
-1	Missing
1	Fixed Hours
2	Flexible Hours
3	Rostered Shifts
4	Work from Home



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>EMPTYTYPE</b>	Employment Type
Min	1
Max	5
-2	Not in Work Force
-1	Missing
1	Paid Employee
2	Self-Employed
3	Employer
4	Work in Family Business
5	Volunteer
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ANZSCO1</b>	ANZSCO Level 1 Occupation Code
Min	1
Max	8
-2	Not in Work Force
-1	Missing
1	Managers
2	Professionals
3	Technicians and Trades Workers
4	Community and Personal Service Workers
5	Clerical and Administrative Workers
6	Sales Workers
7	Machinery Operators and Drivers
8	Labourers
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ANZSCO2</b>	ANZSCO Level 2 Occupation Code
Min	1
Max	51
-2	Not in Work Force
-1	Missing
1	<b>MANAGERS (NEC)</b>
2	Chief Executives, General Managers and Legislators
3	Farmers and Farm Managers
4	Specialist Managers
5	Hospitality, Retail and Service Managers
6	<b>PROFESSIONALS (NEC)</b>
7	Arts and Media Professionals
8	Business, Human Resource and Marketing Professionals
9	Design, Engineering, Science and Transport Professionals
10	Education Professionals
11	Health Professionals
12	ICT Professionals
13	Legal, Social and Welfare Professionals
14	<b>TECHNICIANS AND TRADES WORKERS (NEC)</b>
15	Engineering, ICT and Science Technicians
16	Automotive and Engineering Trades Workers
17	Construction Trades Workers
18	Electrotechnology and Telecommunications Trades Workers
19	Food Trades Workers
20	Skilled Animal and Horticultural Workers



21	Other Technicians and Trades Workers	
22	<b>COMMUNITY AND PERSONAL SERVICE WORKERS (NEC)</b>	
23	Health and Welfare Support Workers	
24	Carers and Aides	
25	Hospitality Workers	
26	Protective Service Workers	
27	Sports and Personal Service Workers	
28	<b>CLERICAL AND ADMINISTRATIVE WORKERS (NEC)</b>	
29	Office Managers and Program Administrators	
30	Personal Assistants and Secretaries	
31	General Clerical Workers	
32	Inquiry Clerks and Receptionists	
33	Numerical Clerks	
34	Clerical and Office Support Workers	
35	Other Clerical and Administrative Workers	
36	<b>SALES WORKERS (NEC)</b>	
37	Sales Representatives and Agents	
38	Sales Assistants and Salespersons	
39	Sales Support Workers	
40	<b>MACHINERY OPERATORS AND DRIVERS (NEC)</b>	
41	Machine and Stationary Plant Operators	
42	Mobile Plant Operators	
43	Road and Rail Drivers	
44	Storepersons	
45	<b>LABOURERS (NEC)</b>	
46	Cleaners and Laundry Workers	
47	Construction and Mining Labourers	
48	Factory Process Workers	
49	Farm, Forestry and Garden Workers	
50	Food Preparation Assistants	
51	Other Labourers	

Variable Name	Variable Meaning
<b>ANZSIC1</b>	ANZSIC Level 1 Industry Code
Min	1
Max	19
-2	Not in Work Force
-1	Missing
1	Agriculture, Forestry and Fishing
2	Mining
3	Manufacturing
4	Electricity, Gas, Water and Waste Services
5	Construction
6	Wholesale Trade
7	Retail Trade
8	Accommodation and Food Services
9	Transport, Postal and Warehousing
10	Information Media and Telecommunications
11	Financial and Insurance Services
12	Rental, Hiring and Real Estate Services
13	Professional, Scientific and Technical Services
14	Administrative and Support Services
15	Public Administration and Safety



16	Education and Training
17	Health Care and Social Assistance
18	Arts and Recreation Services
19	Other Services

Variable Name	Variable Meaning
<b>ANZSIC2</b>	ANZSIC Level 2 Industry Code
Min	1
Max	105
-2	Not in Work Force
-1	Missing
1	<b>AGRICULTURE, FORESTRY AND FISHING (NEC)</b>
2	Agriculture
3	Aquaculture
4	Forestry and Logging
5	Fishing, Hunting and Trapping
6	Agriculture, Forestry and Fishing Support Services
7	<b>MINING (NEC)</b>
8	Coal Mining
9	Oil and Gas Extraction
10	Metal Ore Mining
11	Non-Metallic Mineral Mining and Quarrying
12	Exploration and Other Mining Support Services
13	<b>MANUFACTURING (NEC)</b>
14	Food Product Manufacturing
15	Beverage and Tobacco Product Manufacturing
16	Textile, Leather, Clothing and Footwear Manufacturing
17	Wood Product Manufacturing
18	Pulp, Paper and Converted Paper Product Manufacturing
19	Printing (including the Reproduction of Recorded Media)
20	Petroleum and Coal Product Manufacturing
21	Basic Chemical and Chemical Product Manufacturing
22	Polymer Product and Rubber Product Manufacturing
23	Non-Metallic Mineral Product Manufacturing
24	Primary Metal and Metal Product Manufacturing
25	Fabricated Metal Product Manufacturing
26	Transport Equipment Manufacturing
27	Machinery and Equipment Manufacturing
28	Furniture and Other Manufacturing
29	<b>ELECTRICITY, GAS, WATER AND WASTE SERVICES (NEC))</b>
30	Electricity Supply
31	Gas Supply
32	Water Supply, Sewerage and Drainage Services
33	Waste Collection, Treatment and Disposal Services
34	<b>CONSTRUCTION (NEC)</b>
35	Building Construction
36	Heavy and Civil Engineering Construction
37	Construction Services
38	<b>WHOLESALE TRADE (NEC)</b>
39	Basic Material Wholesaling
40	Machinery and Equipment Wholesaling
41	Motor Vehicle and Motor Vehicle Parts Wholesaling
42	Grocery, Liquor and Tobacco Product Wholesaling



- 43 Other Goods Wholesaling
- 44 Commission-Based Wholesaling
- 45 **RETAIL TRADE (NEC)**
  - 46 Motor Vehicle and Motor Vehicle Parts Retailing
  - 47 Fuel Retailing
  - 48 Food Retailing
  - 49 Other Store-Based Retailing
  - 50 Non-Store Retailing
- 51 **ACCOMMODATION AND FOOD SERVICES (NEC)**
  - 52 Accommodation
  - 53 Food and Beverage Services
- 54 **TRANSPORT, POSTAL AND WAREHOUSING (NEC)**
  - 55 Road Transport
  - 56 Rail Transport
  - 57 Water Transport
  - 58 Air and Space Transport
  - 59 Other Transport
  - 60 Postal and Courier Pick-up and Delivery Services
  - 61 Transport Support Services
  - 62 Warehousing and Storage Services
- 63 **INFORMATION MEDIA AND TELECOMMUNICATIONS (NEC)**
  - 64 Publishing (except Internet and Music Publishing)
  - 65 Motion Picture and Sound Recording Activities
  - 66 Broadcasting (except Internet)
  - 67 Internet Publishing and Broadcasting
  - 68 Telecommunications Services
  - 69 Internet Service Providers, and Data Processing Services
  - 70 Library and Other Information Services
- 71 **FINANCIAL AND INSURANCE SERVICES (NEC)**
  - 72 Finance
  - 73 Insurance and Superannuation Funds
  - 74 Auxiliary Finance and Insurance Services
- 75 **RENTAL, HIRING AND REAL ESTATE SERVICES (NEC)**
  - 76 Rental and Hiring Services (except Real Estate)
  - 77 Property Operators and Real Estate Services
- 78 **PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES (NEC)**
  - 79 Professional, Scientific and Technical Services
  - 80 Computer System Design and Related Services
- 81 **ADMINISTRATIVE AND SUPPORT SERVICES (NEC)**
  - 82 Administrative Services
  - 83 Building Cleaning, and Pest Control Services
- 84 **PUBLIC ADMINISTRATION AND SAFETY (NEC)**
  - 85 Public Administration
  - 86 Defence
  - 87 Public Order, Safety and Regulatory Services
- 88 **EDUCATION AND TRAINING (NEC)**
  - 89 Preschool and School Education
  - 90 Tertiary Education
  - 91 Adult, Community and Other Education
- 92 **HEALTH CARE AND SOCIAL ASSISTANCE (NEC)**
  - 93 Hospitals
  - 94 Medical and Other Health Care Services
  - 95 Residential Care Services



96	Social Assistance Services
97	<b>ARTS AND RECREATION SERVICES (NEC)</b>
98	Heritage Activities
99	Creative and Performing Arts Activities
100	Sports and Recreation Activities
101	Gambling Activities
102	<b>OTHER SERVICES (NEC)</b>
103	Repair and Maintenance
104	Personal and Other Services
105	Private Households Employing Staff

Variable Name	Variable Meaning
<b>STARTPLACE</b>	Location at Start of Travel Day
Min	1
Max	3
-2	Under 5 - No Travel Diary
-1	Refused to complete diary
1	Survey Address
2	Work
3	Somewhere Else

Variable Name	Variable Meaning
<b>ANYSTOPS</b>	Any Stops made on Travel Day
Min	1
Max	2
-2	Under 5 - No Travel Diary
-1	Refused to complete diary
1	Yes
2	No

Variable Name	Variable Meaning
<b>NUMSTOPS</b>	Number of Stops on Travel Day
Min	0
Max	99
-2	Under 5 - No Travel Diary
-1	Refused to complete diary

Variable Name	Variable Meaning
<b>NUMTRIPS</b>	Number of Trips on Travel Day
Min	0
Max	99
-2	Under 5 - No Travel Diary
-1	Refused to complete diary

Variable Name	Variable Meaning
<b>NUMWGTSTOPS</b>	Number of Weighted Stops on Travel Day
Min	0
Max	99
-2	Under 5 - No Travel Diary
-1	Refused to complete diary



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>NUMWGTRIPS</b>	Number of Weighted Trips on Travel Day
Min	0
Max	99
-2	Under 5 - No Travel Diary
-1	Refused to complete diary
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>REASONCODE</b>	Reason for no trips
Min	0
Max	14
-2	Under 5 - No Travel Diary
-1	Refused to complete diary
1	Own Illness
2	Family Illness
3	Weather
4	Working at home
5	Studying at home
6	Other things to do at home
7	Visitors
8	Transport Problem
9	No need to go out
10	Outside study area all day
11	Too old
12	Other reason
13	Unknown - Under 5 - No Travel Diary
14	Refused to complete diary
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>MRTDOW</b>	Day-of-Week for Most-Recent-Trip
Min	1
Max	7
-2	N/A
-1	Missing
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday
7	Sunday
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>MRTINT</b>	Days since Most-Recent-Trip
Min	1
Max	365
-2	N/A



Variable Name	Variable Meaning
<b>PERSINC</b>	Personal income (p.w.)
Min	1
Max	12
-2	N/A
-1	Missing
1	\$2000+ p.w.
2	\$1600-1999 p.w.
3	\$1300-1599 p.w.
4	\$1000-1299 p.w.
5	\$800-999 p.w.
6	\$600-799 p.w.
7	\$400-599 p.w.
8	\$250-399 p.w.
9	\$150-249 p.w.
10	\$1-149 p.w.
11	Zero Income
12	Negative Income

Variable Name	Variable Meaning
<b>WHOFILLED</b>	Who filled out the Travel Diary?
Min	1
Max	99
-2	No Diary Completed
-1	Missing
1	Person 1
2	Person 2
3	Person 3
4	Person 4
5	Person 5
6	Person 6
7	Person 7
8	Person 8
98	Someone Else
99	Interviewer

Variable Name	Variable Meaning
<b>PROXY</b>	How was diary completed
Min	1
Max	2
-2	No Diary Completed
-1	Missing
1	Proxy-Reported
2	Self-Reported

Variable Name	Variable Meaning
<b>FILLDOW</b>	Day of Week when Diary was Completed
Min	1
Max	2
-2	No Diary Completed
-1	Missing
1	Monday
2	Tuesday



3	Wednesday
4	Thursday
5	Friday
6	Saturday
7	Sunday

Variable Name	Variable Meaning
<b>FILLLAG</b>	Days Lag in Completing Diary
Min	-8
Max	99
998	No Dairy Completed
999	Missing

Variable Name	Variable Meaning
<b>ADPERSWGT</b>	All-Days Person Weight
Min	0
Max	9999

Variable Name	Variable Meaning
<b>WDPERSWGT</b>	Weekday Person Weight
Min	0
Max	99

Variable Name	Variable Meaning
<b>WEPERSWGT</b>	Weekend Person Weight
Min	0
Max	9999

Variable Name	Variable Meaning
<b>SDPERSWGT</b>	School-Day Person Weight
Min	0
Max	9999



## Appendix U – Stop File Coding Frame

Variable Name	Variable Meaning
<b>STOPID</b>	Stop ID
Min	Y09H010101P01S01
Max	Y09H185242P20S99
Legend:	YyyHrrwwhhPppSss
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number ss = stop number

Variable Name	Variable Meaning
<b>HHID</b>	Household ID Number
Min	Y09H010101
Max	Y09H185242
Legend:	YyyHrrwwhh
where	yy = year of survey rr = region of fieldwork ww = week hh = household number

Variable Name	Variable Meaning
<b>PERSID</b>	Person ID Number
Min	Y09H010101P01
Max	Y09H185242P20
Legend:	YyyHrrwwhhPpp
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number

Variable Name	Variable Meaning
<b>STOPNO</b>	Stop Number
<b>Codes</b>	
Min	1
Max	99

Variable Name	Variable Meaning
<b>Region</b>	Sampling Region
Min	1
Max	18
1	Inner Melbourne
2	Inner West Melbourne
3	Outer West Melbourne
4	Inner North Melbourne
5	Outer North Melbourne
6	Maroondah Highway
7	Outer North-East Melbourne
8	Inner South-East Melbourne
9	Middle South-East Melbourne
10	Outer South-East Melbourne
11	Fringe South-East Melbourne



12	Activity Centres
13	Melbourne CAD
14	Geelong
15	Ballarat
16	Bendigo
17	Shepparton
18	Latrobe Valley

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>RealRegion</b>	Household Residential Region
Min	1
Max	18
1	Inner Melbourne
2	Inner West Melbourne
3	Outer West Melbourne
4	Inner North Melbourne
5	Outer North Melbourne
6	Maroondah Highway
7	Outer North-East Melbourne
8	Inner South-East Melbourne
9	Middle South-East Melbourne
10	Outer South-East Melbourne
11	Fringe South-East Melbourne
12	Peri-Urban Areas
13	Melbourne CAD
14	Geelong
15	Ballarat
16	Bendigo
17	Shepparton
18	Latrobe Valley

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>Week</b>	Week of Survey
Min	1
Max	52

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>Area</b>	Area of Residence
Min	1
Max	3
1	Metropolitan
2	Activity Centres
3	Regional Areas

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TravDate</b>	HH Travel Day Date
Min	1
Max	31



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TravMonth</b>	HH Travel Day Month
Min	1
Max	12
1	January
2	February
3	March
4	April
5	May
6	June
7	July
8	August
9	September
10	October
11	November
12	December

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TravYear</b>	HH Travel Day Year
Min	2009
Max	2010

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TravDOW</b>	Travel Day Day-of-Week
Min	1
Max	7
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday
7	Sunday

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>OrigPlace1</b>	Origin Place Type (Summary)
Min	1
Max	10
-2	N/A
-1	Missing
1	Transport Feature
2	Accommodation
3	Workplace
4	Natural Feature
5	Place of Education
6	Shops
7	Place of Personal Business
8	Social Place
9	Recreational Place
10	Other



Variable Name	Variable Meaning
<b>OrigPlace2</b>	Origin Place Type
Min	101
Max	999
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home
203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station



609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop
628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink



903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown (at start of day)

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>OrigLong</b>	Origin Longitude
<b>OrigLat</b>	Origin Latitude
<b>OrigCCD</b>	Origin CCD
-2	N/A
-1	Missing
<b>OrigTAZ</b>	Origin Traffic Analysis Zone
-2	N/A
-1	Missing
<b>OrigSLA</b>	Origin SLA
-2	N/A
-1	Missing
205054601	Melbourne (C) - Inner
205054605	Melbourne (C) - S'bank-D'lands
205054608	Melbourne (C) - Remainder
205055901	Port Phillip (C) - St Kilda
205055902	Port Phillip (C) - West
205056351	Stonnington (C) - Prahran
205057351	Yarra (C) - North
205057352	Yarra (C) - Richmond
205101181	Brimbank (C) - Keilor
205101182	Brimbank (C) - Sunshine
205103111	Hobsons Bay (C) - Altona
205103112	Hobsons Bay (C) - Williamstown
205104330	Maribyrnong (C)
205105063	Moonee Valley (C) - Essendon
205105065	Moonee Valley (C) - West
205204651	Melton (S) - East
205204654	Melton (S) Bal
205207261	Wyndham (C) - North
205207264	Wyndham (C) - South
205207267	Wyndham (C) - West
205255251	Moreland (C) - Brunswick
205255252	Moreland (C) - Coburg



205255253	Moreland (C) - North
205300661	Banyule (C) - Heidelberg
205300662	Banyule (C) - North
205301891	Darebin (C) - Northcote
205301892	Darebin (C) - Preston
205353271	Hume (C) - Broadmeadows
205353274	Hume (C) - Craigieburn
205353275	Hume (C) - Sunbury
205405713	Nillumbik (S) - South
205405715	Nillumbik (S) - South-West
205405718	Nillumbik (S) Bal
205407071	Whittlesea (C) - North
205407075	Whittlesea (C) - South-East
205407076	Whittlesea (C) - South-West
205451111	Boroondara (C) - Camberwell N.
205451112	Boroondara (C) - Camberwell S.
205451113	Boroondara (C) - Hawthorn
205451114	Boroondara (C) - Kew
205504211	Manningham (C) - East
205504214	Manningham (C) - West
205504971	Monash (C) - South-West
205504974	Monash (C) - Waverley East
205504975	Monash (C) - Waverley West
205506981	Whitehorse (C) - Box Hill
205506984	Whitehorse (C) - Nunawading E.
205506985	Whitehorse (C) - Nunawading W.
205553672	Knox (C) - North-East
205553673	Knox (C) - North-West
205553674	Knox (C) - South
205554411	Maroondah (C) - Croydon
205554412	Maroondah (C) - Ringwood
205607451	Yarra Ranges (S) - Central
205607452	Yarra Ranges (S) - Dandenongs
205607453	Yarra Ranges (S) - Lilydale
205607454	Yarra Ranges (S) - North
205607456	Yarra Ranges (S) - Seville
205650911	Bayside (C) - Brighton
205650912	Bayside (C) - South
205652311	Glen Eira (C) - Caulfield
205652314	Glen Eira (C) - South
205653431	Kingston (C) - North
205653434	Kingston (C) - South
205656352	Stonnington (C) - Malvern
205752671	Gr. Dandenong (C) - Dandenong
205752674	Gr. Dandenong (C) Bal
205801452	Cardinia (S) - North
205801453	Cardinia (S) - Pakenham
205801454	Cardinia (S) - South
205801612	Casey (C) - Berwick
205801613	Casey (C) - Cranbourne
205801616	Casey (C) - Hallam
205801618	Casey (C) - South
205852171	Frankston (C) - East
205852174	Frankston (C) - West
205905341	Mornington P'sula (S) - East
205905344	Mornington P'sula (S) - South



205905345	Mornington P'sula (S) - West
210052751	Bellarine - Inner
210052752	Corio - Inner
210052753	Geelong
210052754	Geelong West
210052755	Newtown
210052756	South Barwon - Inner
210102757	Greater Geelong (C) - Pt B
210106080	Queenscliffe (B)
210106493	Surf Coast (S) - East
210106495	Surf Coast (S) - West
210151751	Colac-Otway (S) - Colac
210151754	Colac-Otway (S) - North
210151755	Colac-Otway (S) - South
210152491	Golden Plains (S) - North-West
210152492	Golden Plains (S) - South-East
210152758	Greater Geelong (C) - Pt C
215016730	Warrnambool (C)
215051831	Corangamite (S) - North
215051832	Corangamite (S) - South
215055491	Moyné (S) - North-East
215055493	Moyné (S) - North-West
215055496	Moyné (S) - South
215058469	Lady Julia Percy Island
215102411	Glenelg (S) - Heywood
215102412	Glenelg (S) - North
215102413	Glenelg (S) - Portland
215106261	S. Grampians (S) - Hamilton
215106264	S. Grampians (S) - Wannon
215106265	S. Grampians (S) Bal
220050571	Ballarat (C) - Central
220050572	Ballarat (C) - Inner North
220050573	Ballarat (C) - North
220050574	Ballarat (C) - South
220102911	Hepburn (S) - East
220102912	Hepburn (S) - West
220105151	Moorabool (S) - Bacchus Marsh
220105154	Moorabool (S) - Ballan
220105155	Moorabool (S) - West
220150260	Ararat (RC)
220155991	Pyrenees (S) - North
220155994	Pyrenees (S) - South
225053191	Horsham (RC) - Central
225053194	Horsham (RC) Bal
225055811	N. Grampians (S) - St Arnaud
225055814	N. Grampians (S) - Stawell
225056890	West Wimmera (S)
225102980	Hindmarsh (S)
225107631	Yarriambiack (S) - North
225107632	Yarriambiack (S) - South
230054781	Mildura (RC) - Pt A
230101271	Buloke (S) - North
230101272	Buloke (S) - South
230104782	Mildura (RC) - Pt B
230152250	Gannawarra (S)
230156611	Swan Hill (RC) - Central



230156614	Swan Hill (RC) - Robinvale
230156616	Swan Hill (RC) Bal
235052621	Gr. Bendigo (C) - Central
235052622	Gr. Bendigo (C) - Eaglehawk
235052623	Gr. Bendigo (C) - Inner East
235052624	Gr. Bendigo (C) - Inner North
235052625	Gr. Bendigo (C) - Inner West
235052626	Gr. Bendigo (C) - S'saye
235101671	C. Goldfields (S) - M'borough
235101674	C. Goldfields (S) Bal
235102628	Gr. Bendigo (C) - Pt B
235103943	Loddon (S) - North
235103945	Loddon (S) - South
235105431	Mount Alexander (S) - C'maine
235105434	Mount Alexander (S) Bal
235204131	Macedon Ranges (S) - Kyneton
235204134	Macedon Ranges (S) - Romsey
235204135	Macedon Ranges (S) Bal
240052831	Gr. Shepparton (C) - Pt A
240101371	Campaspe (S) - Echuca
240101374	Campaspe (S) - Kyabram
240101375	Campaspe (S) - Rochester
240101376	Campaspe (S) - South
240102834	Gr. Shepparton (C) - Pt B East
240102835	Gr. Shepparton (C) - Pt B West
240104901	Moira (S) - East
240104904	Moira (S) - West
240151011	Benalla (RC) - Benalla
240151014	Benalla (RC) Bal
240154250	Mansfield (S)
240156430	Strathbogie (S)
240158249	Mount Buller Alpine Resort
240158349	Mount Stirling Alpine Resort
240204851	Mitchell (S) - North
240204854	Mitchell (S) - South
240205621	Murrindindi (S) - East
240205622	Murrindindi (S) - West
240208149	Lake Mountain Alpine Resort
245053351	Indigo (S) - Pt A
245056671	Towong (S) - Pt A
245057170	Wodonga (RC)
245103352	Indigo (S) - Pt B
245106701	Wangaratta (RC) - Central
245106704	Wangaratta (RC) - North
245106705	Wangaratta (RC) - South
245150111	Alpine (S) - East
245150112	Alpine (S) - West
245156672	Towong (S) - Pt B
245158109	Falls Creek Alpine Resort
245158309	Mount Hotham Alpine Resort
250052111	E. Gippsland (S) - Bairnsdale
250052113	E. Gippsland (S) - Orbost
250052115	E. Gippsland (S) - South-West
250052117	E. Gippsland (S) Bal
250156811	Wellington (S) - Alberton
250156812	Wellington (S) - Avon



250156813	Wellington (S) - Maffra
250156814	Wellington (S) - Rosedale
250156815	Wellington (S) - Sale
255050831	Baw Baw (S) - Pt A
255053811	Latrobe (C) - Moe
255053814	Latrobe (C) - Morwell
255053815	Latrobe (C) - Traralgon
255053818	Latrobe (C) Bal
255100834	Baw Baw (S) - Pt B East
255100835	Baw Baw (S) - Pt B West
255107458	Yarra Ranges (S) - Pt B
255108209	Mount Baw Baw Alpine Resort
255200741	Bass Coast (S) - Phillip Is.
255200744	Bass Coast (S) Bal
255206171	South Gippsland (S) - Central
255206174	South Gippsland (S) - East
255206175	South Gippsland (S) - West
255208529	French Island
255208649	Bass Strait Islands
999999999	Outside Victoria

Variable Name	Variable Meaning
<b>OrigLGA</b>	Origin LGA
-2	N/A
-1	Missing
20110	Alpine (S)
20260	Ararat (RC)
20570	Ballarat (C)
20660	Banyule (C)
20740	Bass Coast (S)
20830	Baw Baw (S)
20910	Bayside (C)
21010	Benalla (RC)
21110	Boroondara (C)
21180	Brimbank (C)
21270	Buloke (S)
21370	Campaspe (S)
21450	Cardinia (S)
21610	Casey (C)
21670	Central Goldfields (S)
21750	Colac-Otway (S)
21830	Corangamite (S)
21890	Darebin (C)
22110	East Gippsland (S)
22170	Frankston (C)
22250	Gannawarra (S)
22310	Glen Eira (C)
22410	Glenelg (S)
22490	Golden Plains (S)
22620	Greater Bendigo (C)
22670	Greater Dandenong (C)
22750	Greater Geelong (C)
22830	Greater Shepparton (C)
22910	Hepburn (S)
22980	Hindmarsh (S)
23110	Hobsons Bay (C)



23190	Horsham (RC)
23270	Hume (C)
23350	Indigo (S)
23430	Kingston (C)
23670	Knox (C)
23810	Latrobe (C)
23940	Loddon (S)
24130	Macedon Ranges (S)
24210	Manningham (C)
24250	Mansfield (S)
24330	Maribyrnong (C)
24410	Maroondah (C)
24600	Melbourne (C)
24650	Melton (S)
24780	Mildura (RC)
24850	Mitchell (S)
24900	Moira (S)
24970	Monash (C)
25060	Moonee Valley (C)
25150	Moorabool (S)
25250	Moreland (C)
25340	Mornington Peninsula (S)
25430	Mount Alexander (S)
25490	Moyne (S)
25620	Murrindindi (S)
25710	Nillumbik (S)
25810	Northern Grampians (S)
25900	Port Phillip (C)
25990	Pyrenees (S)
26080	Queenscliffe (B)
26170	South Gippsland (S)
26260	Southern Grampians (S)
26350	Stonnington (C)
26430	Strathbogie (S)
26490	Surf Coast (S)
26610	Swan Hill (RC)
26670	Towong (S)
26700	Wangaratta (RC)
26730	Warrnambool (C)
26810	Wellington (S)
26890	West Wimmera (S)
26980	Whitehorse (C)
27070	Whittlesea (C)
27170	Wodonga (RC)
27260	Wyndham (C)
27350	Yarra (C)
27450	Yarra Ranges (S)
27630	Yarriambiack (S)
29399	Unincorporated Vic
99999	Outside Victoria



Variable Name	Variable Meaning
<b>StartHour</b>	Hour of Starting Trip Stage
Min	4
Max	27
-2	N/A
-1	Missing
Variable Name	Variable Meaning
<b>StartTime</b>	Time of Starting Trip Stage
Min	240
Max	1680
-2	N/A
-1	Missing
Variable Name	Variable Meaning
<b>OrigPurp1</b>	Origin Purpose (Summary)
Min	1
Max	99
-2	N/A
-1	Missing
1	Change Mode
2	Accompany Someone
3	Buy Something
4	Pickup/Deliver Something
5	Pickup/Dropoff Someone
6	Education
7	Work Related
8	At Home
9	Personal Business
10	Social
11	Recreational
12	Other Purpose
99	Unknown Purpose (at start of day)
Variable Name	Variable Meaning
<b>OrigPurp2</b>	Purpose at Start of Trip Stage
Min	10
Max	999
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
20	Accompany Someone (NEC)
21	Accompanied someone
30	Buy Something (NEC)
31	Bought Petrol
32	Bought something else
33	Browsing, window-shopping
40	Pickup/Deliver Something (NEC)
41	Something picked-up or delivered for Home
50	Pickup/Dropoff Someone (NEC)
51	Someone picked-up or delivered
60	Education (NEC)
61	At school



62	At Uni/Tech
63	At other Post-Secondary Study
70	Work purposes (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
80	Go home (NEC)
81	At home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)
999	Unknown (at start of day)

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DestPlace1</b>	Destination Place Type (Summary)
Min	1
Max	10
-2	N/A
-1	Missing
1	Transport Feature
2	Accommodation
3	Workplace
4	Natural Feature
5	Place of Education
6	Shops
7	Place of Personal Business
8	Social Place
9	Recreational Place
10	Other

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DestPlace2</b>	Destination Place Type
Min	101
Max	998
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop



103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home
203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances



617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop
628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court



911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown

<b>Variable Name</b>	<b>Variable Meaning</b>
DESTGEO	Method of Geocoding Destination
Min	986
Max	999
-2	N/A
-1	Missing
986	Landmark
987	Manual
988	Overseas
989	Town Centroid
990	Random Zone in Suburb
991	Random Address On Street
992	Street & Postcode
993	Street & Suburb
994	Nearest Address On Street
995	Intersection & Postcode
996	Intersection & Suburb
997	Address & Postcode
998	Address & Suburb
999	Survey Address

<b>Variable Name</b>	<b>Variable Meaning</b>
DestLong	Destination longitude

<b>Variable Name</b>	<b>Variable Meaning</b>
DestLat	Destination latitude

<b>Variable Name</b>	<b>Variable Meaning</b>
DestCCD	Destination CCD
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
DestTAZ	Destination Traffic Analysis Zone
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
DestSLA	Destination SLA
-2	N/A
-1	Missing (list as per OrigSLA)

<b>Variable Name</b>	<b>Variable Meaning</b>
DestLGA	Destination LGA
-2	N/A
-1	Missing (list as per OrigLGA)



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>NoOne</b>	No-one from Household Accompanying
Min	1
Max	2
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>Person1</b>	Person 1 from Household Accompanying
Min	1
Max	2
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>Person2</b>	Person 2 from Household Accompanying
Min	1
Max	2
-2	No Person 2 in Household
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>Person3</b>	Person 3 from Household Accompanying
Min	1
Max	2
-2	No Person 3 in Household
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>Person4</b>	Person 4 from Household Accompanying
Min	1
Max	2
-2	No Person 4 in Household
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>Person5</b>	Person 5 from Household Accompanying
Min	1
Max	2
-2	No Person 5 in Household
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>Person6</b>	Person 6 from Household Accompanying
Min	1
Max	2
-2	No Person 6 in Household
1	Yes
2	No



Variable Name	Variable Meaning
<b>Person7</b>	Person 7 from Household Accompanying
Min	1
Max	2
-2	No Person 7 in Household
1	Yes
2	No

Variable Name	Variable Meaning
<b>Person8</b>	Person 8 from Household Accompanying
Min	1
Max	2
-2	No Person 8 in Household
1	Yes
2	No

Variable Name	Variable Meaning
<b>Person9</b>	Person 9 from Household Accompanying
Min	1
Max	2
-2	No Person 9 in Household
1	Yes
2	No

Variable Name	Variable Meaning
<b>DestPurp1</b>	Destination Purpose (Summary)
Min	1
Max	12
-2	N/A
-1	Missing
1	Change Mode
2	Accompany Someone
3	Buy Something
4	Pickup/Deliver Something
5	Pickup/Dropoff Someone
6	Education
7	Work Related
8	Go Home
9	Personal Business
10	Social
11	Recreational
12	Other Purpose

Variable Name	Variable Meaning
<b>DestPurp2</b>	Purpose at End of Trip Stage
Min	10
Max	120
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought Petrol
32	Bought something



- 33 Browsing, window-shopping
- 41 Something picked-up or delivered for home
- 51 Someone picked-up or delivered
- 60 Education (NEC)
- 61 At school
- 62 At Uni/Tech
- 63 At other Post-Secondary Study
- 70 Work-Related (NEC)
- 71 Own Workplace
- 72 Employer's Business
- 73 Something picked-up or delivered for Work
- 81 Go home
- 90 Personal Business (NEC)
- 91 At childcare
- 92 Volunteer/Community activity
- 93 Religious activity
- 94 Personal business (eg banking)
- 95 Medical/Dental purposes
- 96 Stayed overnight
- 97 At other house
- 98 Met/waited for someone
- 99 Walked the dog
- 100 Social (NEC)
- 101 Ate or drank
- 102 Visited someone
- 103 Socialised (Pubs, Clubs etc)
- 104 Watched sport
- 105 Watched concert, movies etc
- 110 Recreational (NEC)
- 111 Participated in sport
- 112 Participated in concert,musical,band etc
- 113 Other recreational (eg. exercise)
- 120 Other (NEC)

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>FullMode</b>	Full Details of Mode of Travel
Min	1
Max	22
-2	N/A
-1	Missing
1	Car Driver
2	Car Passenger
3	4WD Driver
4	4WD Passenger
5	Motorcycle Rider
6	Motorcycle Passenger
7	Ute Driver
8	Ute Passenger
9	Van Driver
10	Van Passenger
11	Truck Driver
12	Truck Passenger
13	Other Driver
14	Other Passenger
15	Walking
16	Bicycle



17	Taxi
18	Train
19	Tram
20	School Bus
21	Public Bus
22	Plane
23	Other

Variable Name	Variable Meaning
<b>MainMode</b>	Summary Details of Mode of Travel
Min	1
Max	11
-2	N/A
-1	Missing
1	Vehicle Driver
2	Vehicle Passenger
3	Motorcycle
4	Walking
5	Bicycle
6	Taxi
7	Train
8	Tram
9	School Bus
10	Public Bus
11	Plane
12	Other
Variable Name	Variable Meaning
<b>RouteNumber</b>	Bus or Tram Route Identifier
-2	N/A
-1	Missing
Variable Name	Variable Meaning
<b>FareType</b>	Public Transport Fare Type
Min	1
Max	3
-2	N/A
-1	Missing
1	Full Adult
2	Concession
3	Other
Variable Name	Variable Meaning
<b>MvehType</b>	Vehicle Type
Min	1
Max	7
-2	N/A
-1	Missing
1	Car
2	4WD/SUV
3	Ute
4	Van
5	Truck
6	Motorcycle
7	Other



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DriveorPax</b>	Driver or Passenger?
Min	1
Max	2
-2	N/A
-1	Missing
1	Driver
2	Passenger
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>VehOccup</b>	Vehicle Occupancy
Min	1
Max	20
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>VehonRedForm</b>	Vehicle on Red HH Form?
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>VehNum</b>	Vehicle Number on Red HH Form
Min	1
Max	9
-3	N/A - not a household vehicle
-2	N/A - not a private vehicle trip
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>VehParked</b>	Vehicle Parked?
Min	1
Max	4
-2	N/A
-1	Missing
1	Residential
2	On-street
3	Off-street
4	Vehicle not parked
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>VehParkFee</b>	Vehicle Parking Fee
Min	1
Max	4
-2	N/A
-1	Missing
1	None paid
2	Short-term
3	Daily
4	Weekly



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>WhoPaidParking</b>	Who Paid for Parking
Min	1
Max	3
-2	N/A
-1	Missing
1	Myself
2	Employer
3	Someone Else
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>VehWalkTime</b>	Walking Time from Vehicle to Destination
Min	0
Max	60
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>StreetUsed1</b>	Main Street Used #1
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>StreetUsed2</b>	Main Street Used #2
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>StreetUsed3</b>	Main Street Used #3
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>StreetUsed4</b>	Main Street Used #4
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>StreetUsed5</b>	Main Street Used #5
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>StreetUsed6</b>	Main Street Used #6
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>NumStreetsNamed</b>	Number of Main Streets Named
Min	1
Max	6
-2	N/A
-1	Missing



Variable Name	Variable Meaning
<b>ArrHour</b>	Hour of Ending Trip Stage
Min	4
Max	27
-2	N/A
-1	Missing

Variable Name	Variable Meaning
<b>ArrTime</b>	Time of Ending Trip Stage
Min	240
Max	1680
-2	N/A
-1	Missing

Variable Name	Variable Meaning
<b>MoreStops</b>	Any more stops on Travel Day
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No

Variable Name	Variable Meaning
<b>DepHour</b>	Hour of Departing from Stop Location
Min	4
Max	27
-2	N/A
-1	Missing

Variable Name	Variable Meaning
<b>DepTime</b>	Time of Departing from Stop Location
Min	240
Max	1680
-2	N/A
-1	Missing

Variable Name	Variable Meaning
<b>TravTime</b>	Travel Time for Trip Stage (minutes)
Min	0
Max	720
-2	N/A
-1	Missing

Variable Name	Variable Meaning
<b>TravDist</b>	Travel Distance for Trip Stage (km)
Min	0
Max	9999
-2	N/A
-1	Missing



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>AveSpeed</b>	Average Speed for Trip Stage
Min	0
Max	999
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>Duration</b>	Duration of Stop Activity
Min	0
Max	999
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>PERSWGT</b>	Person Weight
Min	0
Max	9999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>NONREPWGT</b>	Non-reported Trip Weight
Min	0
Max	9999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>NONCONTWGT</b>	Non-Contact Weight
Min	0
Max	9999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>WDSTOPWGT</b>	Weekday Stop Weight
Min	0
Max	9999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>WESTOPWGT</b>	Weekend Stop Weight
Min	0
Max	9999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ADSTOPWGT</b>	All-Day Stop Weight
Min	0
Max	9999



## Appendix V – Trip File Coding Frame

Variable Name	Variable Meaning
TRIPID	TRIP ID
Min	Y09H010101P01T01
Max	Y09H185242P20T99
Legend:	YyyHrrrwwhPppTtt
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number tt = trip number

Variable Name	Variable Meaning
PERSONID	Person ID
Min	Y09H010101P01
Max	Y09H185242P20
-2	N/A
-1	Missing

Variable Name	Variable Meaning
HHID	Household ID
Min	Y09H010101
Max	Y09H185242
-2	N/A
-1	Missing

Variable Name	Variable Meaning
REALREGION	Real Household Region
Min	1
Max	18
1	Inner Melbourne
2	Inner West Melbourne
3	Outer West Melbourne
4	Inner North Melbourne
5	Outer North Melbourne
6	Maroondah Highway
7	Outer North-East Melbourne
8	Inner South-East Melbourne
9	Middle South-East Melbourne
10	Outer South-East Melbourne
11	Fringe South-East Melbourne
12	Activity Centres
13	Melbourne CAD
14	Geelong
15	Ballarat
16	Bendigo
17	Shepparton
18	Latrobe Valley

Variable Name	Variable Meaning
WEEK	Week of Survey
Min	1
Max	52



<b>Variable Name</b>	<b>Variable Meaning</b>
AREA	Area of Residence
Min	1
Max	3
1	Metropolitan Melbourne
2	Activity Centres
3	Regional Areas
<b>Variable Name</b>	<b>Variable Meaning</b>
STARTSTOP	Stop Number at Start of Trip
Min	1
Max	99
<b>Variable Name</b>	<b>Variable Meaning</b>
ENDSTOP	Stop Number at End of Trip
Min	1
Max	99
<b>Variable Name</b>	<b>Variable Meaning</b>
TRIPSTAGES	Number of Stages (stops) in Trip
Min	1
Max	9
<b>Variable Name</b>	<b>Variable Meaning</b>
TRIPNO	Trip Number
Min	1
Max	99
<b>Variable Name</b>	<b>Variable Meaning</b>
STARTHR	Hour of Starting Trip
Min	4
Max	27
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
STARTTIME	Time of Starting Trip
Min	240
Max	1680
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGSTOP	Stop ID at Start of Trip
Min	Y09H010101P01S01
Max	Y09H185242P20S99
Legend:	YyyHrrwwhhPppSss
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number ss = stop number



<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGLONG	Origin longitude
<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGLAT	Origin latitude
<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGCCD	Origin CCD
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGTAZ	Origin Traffic Analysis Zone
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGSLA	Origin SLA
-2	N/A
-1	Missing
205054601	Melbourne (C) - Inner
205054605	Melbourne (C) - S'bank-D'lands
205054608	Melbourne (C) - Remainder
205055901	Port Phillip (C) - St Kilda
205055902	Port Phillip (C) - West
205056351	Stonnington (C) - Prahran
205057351	Yarra (C) - North
205057352	Yarra (C) - Richmond
205101181	Brimbank (C) - Keilor
205101182	Brimbank (C) - Sunshine
205103111	Hobsons Bay (C) - Altona
205103112	Hobsons Bay (C) - Williamstown
205104330	Maribyrnong (C)
205105063	Moonee Valley (C) - Essendon
205105065	Moonee Valley (C) - West
205204651	Melton (S) - East
205204654	Melton (S) Bal
205207261	Wyndham (C) - North
205207264	Wyndham (C) - South
205207267	Wyndham (C) - West
205255251	Moreland (C) - Brunswick
205255252	Moreland (C) - Coburg
205255253	Moreland (C) - North
205300661	Banyule (C) - Heidelberg
205300662	Banyule (C) - North
205301891	Darebin (C) - Northcote
205301892	Darebin (C) - Preston
205353271	Hume (C) - Broadmeadows
205353274	Hume (C) - Craigieburn
205353275	Hume (C) - Sunbury
205405713	Nillumbik (S) - South
205405715	Nillumbik (S) - South-West
205405718	Nillumbik (S) Bal
205407071	Whittlesea (C) - North
205407075	Whittlesea (C) - South-East
205407076	Whittlesea (C) - South-West



205451111	Boroondara (C) - Camberwell N.
205451112	Boroondara (C) - Camberwell S.
205451113	Boroondara (C) - Hawthorn
205451114	Boroondara (C) - Kew
205504211	Manningham (C) - East
205504214	Manningham (C) - West
205504971	Monash (C) - South-West
205504974	Monash (C) - Waverley East
205504975	Monash (C) - Waverley West
205506981	Whitehorse (C) - Box Hill
205506984	Whitehorse (C) - Nunawading E.
205506985	Whitehorse (C) - Nunawading W.
205553672	Knox (C) - North-East
205553673	Knox (C) - North-West
205553674	Knox (C) - South
205554411	Maroondah (C) - Croydon
205554412	Maroondah (C) - Ringwood
205607451	Yarra Ranges (S) - Central
205607452	Yarra Ranges (S) - Dandenongs
205607453	Yarra Ranges (S) - Lilydale
205607454	Yarra Ranges (S) - North
205607456	Yarra Ranges (S) - Seville
205650911	Bayside (C) - Brighton
205650912	Bayside (C) - South
205652311	Glen Eira (C) - Caulfield
205652314	Glen Eira (C) - South
205653431	Kingston (C) - North
205653434	Kingston (C) - South
205656352	Stonnington (C) - Malvern
205752671	Gr. Dandenong (C) - Dandenong
205752674	Gr. Dandenong (C) Bal
205801452	Cardinia (S) - North
205801453	Cardinia (S) - Pakenham
205801454	Cardinia (S) - South
205801612	Casey (C) - Berwick
205801613	Casey (C) - Cranbourne
205801616	Casey (C) - Hallam
205801618	Casey (C) - South
205852171	Frankston (C) - East
205852174	Frankston (C) - West
205905341	Mornington P'sula (S) - East
205905344	Mornington P'sula (S) - South
205905345	Mornington P'sula (S) - West
210052751	Bellarine - Inner
210052752	Corio - Inner
210052753	Geelong
210052754	Geelong West
210052755	Newtown
210052756	South Barwon - Inner
210102757	Greater Geelong (C) - Pt B
210106080	Queenscliffe (B)
210106493	Surf Coast (S) - East
210106495	Surf Coast (S) - West
210151751	Colac-Otway (S) - Colac
210151754	Colac-Otway (S) - North
210151755	Colac-Otway (S) - South



210152491	Golden Plains (S) - North-West
210152492	Golden Plains (S) - South-East
210152758	Greater Geelong (C) - Pt C
215016730	Warrnambool (C)
215051831	Corangamite (S) - North
215051832	Corangamite (S) - South
215055491	Moyne (S) - North-East
215055493	Moyne (S) - North-West
215055496	Moyne (S) - South
215058469	Lady Julia Percy Island
215102411	Glenelg (S) - Heywood
215102412	Glenelg (S) - North
215102413	Glenelg (S) - Portland
215106261	S. Grampians (S) - Hamilton
215106264	S. Grampians (S) - Wannon
215106265	S. Grampians (S) Bal
220050571	Ballarat (C) - Central
220050572	Ballarat (C) - Inner North
220050573	Ballarat (C) - North
220050574	Ballarat (C) - South
220102911	Hepburn (S) - East
220102912	Hepburn (S) - West
220105151	Moorabool (S) - Bacchus Marsh
220105154	Moorabool (S) - Ballan
220105155	Moorabool (S) - West
220150260	Ararat (RC)
220155991	Pyrenees (S) - North
220155994	Pyrenees (S) - South
225053191	Horsham (RC) - Central
225053194	Horsham (RC) Bal
225055811	N. Grampians (S) - St Arnaud
225055814	N. Grampians (S) - Stawell
225056890	West Wimmera (S)
225102980	Hindmarsh (S)
225107631	Yarriambiack (S) - North
225107632	Yarriambiack (S) - South
230054781	Mildura (RC) - Pt A
230101271	Buloke (S) - North
230101272	Buloke (S) - South
230104782	Mildura (RC) - Pt B
230152250	Gannawarra (S)
230156611	Swan Hill (RC) - Central
230156614	Swan Hill (RC) - Robinvale
230156616	Swan Hill (RC) Bal
235052621	Gr. Bendigo (C) - Central
235052622	Gr. Bendigo (C) - Eaglehawk
235052623	Gr. Bendigo (C) - Inner East
235052624	Gr. Bendigo (C) - Inner North
235052625	Gr. Bendigo (C) - Inner West
235052626	Gr. Bendigo (C) - S'saye
235101671	C. Goldfields (S) - M'borough
235101674	C. Goldfields (S) Bal
235102628	Gr. Bendigo (C) - Pt B
235103943	Loddon (S) - North
235103945	Loddon (S) - South
235105431	Mount Alexander (S) - C'maine



235105434	Mount Alexander (S) Bal
235204131	Macedon Ranges (S) - Kyneton
235204134	Macedon Ranges (S) - Romsey
235204135	Macedon Ranges (S) Bal
240052831	Gr. Shepparton (C) - Pt A
240101371	Campaspe (S) - Echuca
240101374	Campaspe (S) - Kyabram
240101375	Campaspe (S) - Rochester
240101376	Campaspe (S) - South
240102834	Gr. Shepparton (C) - Pt B East
240102835	Gr. Shepparton (C) - Pt B West
240104901	Moira (S) - East
240104904	Moira (S) - West
240151011	Benalla (RC) - Benalla
240151014	Benalla (RC) Bal
240154250	Mansfield (S)
240156430	Strathbogie (S)
240158249	Mount Buller Alpine Resort
240158349	Mount Stirling Alpine Resort
240204851	Mitchell (S) - North
240204854	Mitchell (S) - South
240205621	Murrindindi (S) - East
240205622	Murrindindi (S) - West
240208149	Lake Mountain Alpine Resort
245053351	Indigo (S) - Pt A
245056671	Towong (S) - Pt A
245057170	Wodonga (RC)
245103352	Indigo (S) - Pt B
245106701	Wangaratta (RC) - Central
245106704	Wangaratta (RC) - North
245106705	Wangaratta (RC) - South
245150111	Alpine (S) - East
245150112	Alpine (S) - West
245156672	Towong (S) - Pt B
245158109	Falls Creek Alpine Resort
245158309	Mount Hotham Alpine Resort
250052111	E. Gippsland (S) - Bairnsdale
250052113	E. Gippsland (S) - Orbost
250052115	E. Gippsland (S) - South-West
250052117	E. Gippsland (S) Bal
250156811	Wellington (S) - Alberton
250156812	Wellington (S) - Avon
250156813	Wellington (S) - Maffra
250156814	Wellington (S) - Rosedale
250156815	Wellington (S) - Sale
255050831	Baw Baw (S) - Pt A
255053811	Latrobe (C) - Moe
255053814	Latrobe (C) - Morwell
255053815	Latrobe (C) - Traralgon
255053818	Latrobe (C) Bal
255100834	Baw Baw (S) - Pt B East
255100835	Baw Baw (S) - Pt B West
255107458	Yarra Ranges (S) - Pt B
255108209	Mount Baw Baw Alpine Resort
255200741	Bass Coast (S) - Phillip Is.
255200744	Bass Coast (S) Bal



255206171	South Gippsland (S) - Central
255206174	South Gippsland (S) - East
255206175	South Gippsland (S) - West
255208529	French Island
255208649	Bass Strait Islands
999999999	Outside Victoria

<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGLGA	Origin LGA
-2	N/A
-1	Missing
20110	Alpine (S)
20260	Ararat (RC)
20570	Ballarat (C)
20660	Banyule (C)
20740	Bass Coast (S)
20830	Baw Baw (S)
20910	Bayside (C)
21010	Benalla (RC)
21110	Boroondara (C)
21180	Brimbank (C)
21270	Buloke (S)
21370	Campaspe (S)
21450	Cardinia (S)
21610	Casey (C)
21670	Central Goldfields (S)
21750	Colac-Otway (S)
21830	Corangamite (S)
21890	Darebin (C)
22110	East Gippsland (S)
22170	Frankston (C)
22250	Gannawarra (S)
22310	Glen Eira (C)
22410	Glenelg (S)
22490	Golden Plains (S)
22620	Greater Bendigo (C)
22670	Greater Dandenong (C)
22750	Greater Geelong (C)
22830	Greater Shepparton (C)
22910	Hepburn (S)
22980	Hindmarsh (S)
23110	Hobsons Bay (C)
23190	Horsham (RC)
23270	Hume (C)
23350	Indigo (S)
23430	Kingston (C)
23670	Knox (C)
23810	Latrobe (C)
23940	Loddon (S)
24130	Macedon Ranges (S)
24210	Manningham (C)
24250	Mansfield (S)
24330	Maribyrnong (C)
24410	Maroondah (C)
24600	Melbourne (C)
24650	Melton (S)



24780	Mildura (RC)
24850	Mitchell (S)
24900	Moira (S)
24970	Monash (C)
25060	Moonee Valley (C)
25150	Moorabool (S)
25250	Moreland (C)
25340	Mornington Peninsula (S)
25430	Mount Alexander (S)
25490	Moyne (S)
25620	Murrindindi (S)
25710	Nillumbik (S)
25810	Northern Grampians (S)
25900	Port Phillip (C)
25990	Pyrenees (S)
26080	Queenscliffe (B)
26170	South Gippsland (S)
26260	Southern Grampians (S)
26350	Stonnington (C)
26430	Strathbogie (S)
26490	Surf Coast (S)
26610	Swan Hill (RC)
26670	Towong (S)
26700	Wangaratta (RC)
26730	Warrnambool (C)
26810	Wellington (S)
26890	West Wimmera (S)
26980	Whitehorse (C)
27070	Whittlesea (C)
27170	Wodonga (RC)
27260	Wyndham (C)
27350	Yarra (C)
27450	Yarra Ranges (S)
27630	Yarriambiack (S)
29399	Unincorporated Victoria
99999	Outside Victoria

Variable Name	Variable Meaning
ORIGPLACE2	Origin Place Type
Min	101
Max	999
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home



203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop



628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown (at start of day)



<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGPLACE1	Origin Place Type (Summary)
Min	1
Max	10
-2	N/A
-1	Missing
1	Transport Feature
2	Accommodation
3	Workplace
4	Natural Feature
5	Place of Education
6	Shops
7	Place of Personal Business
8	Social Place
9	Recreational Place
10	Other

<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGPURP2	Purpose at Start of Trip
Min	10
Max	999
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something
32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	At home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc



110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)
999	Unknown (at start of day)

<b>Variable Name</b>	<b>Variable Meaning</b>
ORIGPURP1	Origin Purpose (Summary)
Min	1
Max	13
-2	N/A
-1	Missing
1	Change Mode
2	Accompany Someone
3	Buy Something
4	Pickup/Deliver Something
5	Pickup/Dropoff Someone
6	Education
7	Work Related
8	At Home
9	Personal Business
10	Social
11	Recreational
12	Other Purpose
99	Unknown Purpose (at start of day)

<b>Variable Name</b>	<b>Variable Meaning</b>
ARRHR	Hour of End of Trip
Min	4
Max	27
-3	Default
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
ARRTIME	Time of Ending Trip
Min	240
Max	1680
-3	Default
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
DESTSTOP	Stop ID at End of Trip
Min	Y099H010101P01S01
Max	Y09H185242P20S99
Legend:	YyyHrrwwhhPppSss
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number ss = stop number



<b>Variable Name</b>	<b>Variable Meaning</b>
DESTLONG	Destination longitude
<b>Variable Name</b>	<b>Variable Meaning</b>
DESTLAT	Destination latitude
<b>Variable Name</b>	<b>Variable Meaning</b>
DESTCCD	Destination CCD
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
DESTTAZ	Destination Traffic Analysis Zone
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
DESTSLA	Destination SLA
	See ORIGSLA for Codes
<b>Variable Name</b>	<b>Variable Meaning</b>
DESTLGA	Destination LGA
	See ORIGLGA for Codes
<b>Variable Name</b>	<b>Variable Meaning</b>
DESTPLACE2	Destination Place Type
Min	101
Max	998
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home
203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsites
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC



401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsgency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop
628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service



707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown

<b>Variable Name</b>	<b>Variable Meaning</b>
DESTPLACE1	Destination Place Type (Summary)
Min	1
Max	10
-2	N/A
-1	Missing
1	Transport Feature
2	Accommodation
3	Workplace
4	Natural Feature
5	Education
6	Shopping
7	Personal Business
8	Social
9	Recreational
10	Other



Variable Name	Variable Meaning
DESTPURP2	Purpose at End of Trip Stage
Min	10
Max	120
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something
32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	Go home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)



<b>Variable Name</b>	<b>Variable Meaning</b>
DESTPURP1	Destination Purpose (Summary)
Min	1
Max	10
-2	N/A
-1	Missing
1	Change Mode
2	Accompany
3	Buy Something
4	Pickup/Deliver Something
5	Pickup/Dropoff Someone
6	Education
7	Work-related
8	Go Home
9	Personal Business
10	Social
11	Recreational
12	Other

<b>Variable Name</b>	<b>Variable Meaning</b>
CUMDIST	Cumulative Travel Distance for Trip (km)
Min	0
Max	9999
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
MORETRIPS	Any more Trips on Travel Day
Min	1
Max	2
-2	N/A
-1	Missing
1	Yes
2	No

<b>Variable Name</b>	<b>Variable Meaning</b>
DEPHR	Hour of Departing from Stop Location
Min	4
Max	27
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
DEPTIME	Time of Departing from Stop Location
Min	240
Max	1680
-2	N/A
-1	Missing



Variable Name	Variable Meaning
LINKMODE	Priority Mode of Travel
Min	1
Max	11
-2	N/A
-1	Missing
1	Vehicle Driver
2	Vehicle Passenger
3	Motorcycle
4	Walking
5	Bicycle
6	Taxi
7	Train
8	Tram
9	School Bus
10	Public Bus
11	Plane
12	Other

(LINKMODE is the mode used on the component trip stages which has the highest priority in the following list:

- Train is priority 1
- Tram is priority 2
- School bus is priority 3
- Public bus is priority 4
- Taxi is priority 5
- Motorbike is priority 6
- Vehicle driver is priority 7
- Vehicle passenger is priority 8
- Bicycle is priority 9
- Walking is priority 10
- Other mode is priority 11)

Variable Name	Variable Meaning
DISTMODE	Mode with Longest Straight-Line Distance
Min	1
Max	11
-2	N/A
-1	Missing
1	Vehicle Driver
2	Vehicle Passenger
3	Motorcycle
4	Walking
5	Bicycle
6	Taxi
7	Train
8	Tram
9	School Bus
10	Public Bus
11	Plane
12	Other

(DISTMODE is the mode on the component trip stages that is used for the longest distance)

Variable Name	Variable Meaning
TRIPTIME	Elapsed Travel Time for Trip (minutes)
Min	0
Max	720
-2	N/A
-1	Missing

(TRIPTIME is the total elapsed time from leaving the origin to arriving at the destination)



Variable Name	Variable Meaning
TRAVTIME	Time spent Travelling on Trip (minutes)
Min	0
Max	720
-2	N/A
-1	Missing

(TRAVTIME is the time actually spent traveling on the trip, i.e. it excludes waiting and transfer time)

Variable Name	Variable Meaning
WAITTIME	Waiting Time during Trip
Min	0
Max	999
-2	N/A
-1	Missing

(WAITTIME is the difference between TRAVTIME and TRIPTIME)

Variable Name	Variable Meaning
TRIPSPEED	Average Speed for Trip (incl. waiting time)
Min	0
Max	999
-2	N/A
-1	Missing

(TRIPSPEED is the average speed for the entire trip, including waiting and transfer times)

Variable Name	Variable Meaning
DURATION	Duration of Stop Activity
Min	0
Max	999
-2	N/A
-1	Missing

(DURATION of an activity is calculated as the difference between the arrival time at a destination and the departure time from that destination. For the last stop of the day, the DURATION is not calculated and is set equal to -2)

Variable Name	Variable Meaning
MODEn	Mode used on Stage n of Trip
Min	1
Max	11
-2	N/A
-1	Missing
1	Vehicle Driver
2	Vehicle Passenger
3	Motorcycle
4	Walking
5	Bicycle
6	Taxi
7	Train
8	Tram
9	School Bus
10	Public Bus
11	Plane
12	Other



Variable Name	Variable Meaning
TIMEn	Time spent on Stage n of Trip (minutes)
Min	0
Max	720
-2	N/A
-1	Missing

Variable Name	Variable Meaning
TRAVDOW	Travel Day Day-of-Week
Min	1
Max	7
-2	N/A
-1	Missing
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday
7	Sunday

Variable Name	Variable Meaning
TRAVDATE	HH Travel Day Date
<b>Codes</b>	
Min	1
Max	31
-2	N/A
-1	Missing

Variable Name	Variable Meaning
TRAVMONTH	HH Travel Day Month
Min	1
Max	12
-2	N/A
-1	Missing
1	January
2	February
3	March
4	April
5	May
6	June
7	July
8	August
9	September
10	October
11	November
12	December

Variable Name	Variable Meaning
TRAVYEAR	HH Travel Day Year
Min	2007
Max	2008
-2	N/A
-1	Missing



<b>Variable Name</b>	<b>Variable Meaning</b>
PRIORITYSTOP	Priority Stop from which Trip Weights are Obtained
Min	Y09H010101P01S01
Max	Y09H185242P20S99
Legend:	YyyHrrwwhhPppSss
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number ss = stop number

<b>Variable Name</b>	<b>Variable Meaning</b>
NONREPWGT	Non-Reported Stop Weight
Min	0
Max	99

(The NONREPWGT for a trip is the NONREPWGT for the mode chosen as the LINKMODE for the trip)

<b>Variable Name</b>	<b>Variable Meaning</b>
ADTRIPWGT	All-Day Trip Weight
Min	0
Max	9999

<b>Variable Name</b>	<b>Variable Meaning</b>
WDTRIPWGT	Weekday Trip Weight
Min	0
Max	9999

<b>Variable Name</b>	<b>Variable Meaning</b>
WEETRIPWGT	Weekend Trip Weight
Min	0
Max	9999

<b>Variable Name</b>	<b>Variable Meaning</b>
SDTRIPWGT	School-day Trip Weight
Min	0
Max	9999



## Appendix W – Journey to/from Work File Coding Frame

Note: for Journey-from-Work file, simply substitute JFW for JTW

Variable Name	Variable Meaning
<b>JTWID</b>	JTW ID
Min	Y09H010001P01JTW1
Max	Y09H185242P20JTW1
Legend:	YyyHrrwwhhPppJTW1
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number
Variable Name	Variable Meaning
<b>HHID</b>	Household ID Number
Min	Y09H010001
Max	Y09H185242
Legend:	YyyHrrwwhh
where	yy = year of survey rr = region of fieldwork ww = week hh = household number
Variable Name	Variable Meaning
<b>PERSID</b>	Person ID Number
Min	Y09H010001P01
Max	Y09H185242P20
Legend:	YyyHrrwwhhPpp
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number
Variable Name	Variable Meaning
<b>STARTSTOP</b>	Stop ID of Stop at Start of JTW
<b>ENDSTOP</b>	Stop ID of Stop at End of JTW
Min	Y09H010001P01S01
Max	Y09H185242P20S99
Legend:	YyyHrrwwhhPppSss
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number ss = stop number



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>REALREGION</b>	Household Residential Region
Min	1
Max	18
1	Inner Melbourne
2	Inner West Melbourne
3	Outer West Melbourne
4	Inner North Melbourne
5	Outer North Melbourne
6	Maroondah Highway
7	Outer North-East Melbourne
8	Inner South-East Melbourne
9	Middle South-East Melbourne
10	Outer South-East Melbourne
11	Fringe South-East Melbourne
12	Peri-Urban Areas
13	Melbourne CAD
14	Geelong
15	Ballarat
16	Bendigo
17	Shepparton
18	Latrobe Valley

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVDOW</b>	Travel Day Day-of-Week
Min	1
Max	7
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday
7	Sunday

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>STARTHOUR</b>	Hour of Starting JTW
Min	4
Max	27
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>STARTIME</b>	Time of Starting JTW
Min	240
Max	1680
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGLONG</b>	Origin Longitude

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGLAT</b>	Origin Latitude



Variable Name	Variable Meaning
ORIGCCD	Origin CCD
-2	N/A
-1	Missing
Variable Name	Variable Meaning
ORIGTAZ	Origin Traffic Analysis Zone
-2	N/A
-1	Missing
Variable Name	Variable Meaning
ORIGSLA	Origin SLA
-2	N/A
-1	Missing
205054601	Melbourne (C) - Inner
205054605	Melbourne (C) - S'bank-D'lands
205054608	Melbourne (C) - Remainder
205055901	Port Phillip (C) - St Kilda
205055902	Port Phillip (C) - West
205056351	Stonnington (C) - Prahran
205057351	Yarra (C) - North
205057352	Yarra (C) - Richmond
205101181	Brimbank (C) - Keilor
205101182	Brimbank (C) - Sunshine
205103111	Hobsons Bay (C) - Altona
205103112	Hobsons Bay (C) - Williamstown
205104330	Maribyrnong (C)
205105063	Moonee Valley (C) - Essendon
205105065	Moonee Valley (C) - West
205204651	Melton (S) - East
205204654	Melton (S) Bal
205207261	Wyndham (C) - North
205207264	Wyndham (C) - South
205207267	Wyndham (C) - West
205255251	Moreland (C) - Brunswick
205255252	Moreland (C) - Coburg
205255253	Moreland (C) - North
205300661	Banyule (C) - Heidelberg
205300662	Banyule (C) - North
205301891	Darebin (C) - Northcote
205301892	Darebin (C) - Preston
205353271	Hume (C) - Broadmeadows
205353274	Hume (C) - Craigieburn
205353275	Hume (C) - Sunbury
205405713	Nillumbik (S) - South
205405715	Nillumbik (S) - South-West
205405718	Nillumbik (S) Bal
205407071	Whittlesea (C) - North
205407075	Whittlesea (C) - South-East
205407076	Whittlesea (C) - South-West
205451111	Boroondara (C) - Camberwell N.
205451112	Boroondara (C) - Camberwell S.
205451113	Boroondara (C) - Hawthorn
205451114	Boroondara (C) - Kew
205504211	Manningham (C) - East



205504214	Manningham (C) - West
205504971	Monash (C) - South-West
205504974	Monash (C) - Waverley East
205504975	Monash (C) - Waverley West
205506981	Whitehorse (C) - Box Hill
205506984	Whitehorse (C) - Nunawading E.
205506985	Whitehorse (C) - Nunawading W.
205553672	Knox (C) - North-East
205553673	Knox (C) - North-West
205553674	Knox (C) - South
205554411	Maroondah (C) - Croydon
205554412	Maroondah (C) - Ringwood
205607451	Yarra Ranges (S) - Central
205607452	Yarra Ranges (S) - Dandenongs
205607453	Yarra Ranges (S) - Lilydale
205607454	Yarra Ranges (S) - North
205607456	Yarra Ranges (S) - Seville
205650911	Bayside (C) - Brighton
205650912	Bayside (C) - South
205652311	Glen Eira (C) - Caulfield
205652314	Glen Eira (C) - South
205653431	Kingston (C) - North
205653434	Kingston (C) - South
205656352	Stonnington (C) - Malvern
205752671	Gr. Dandenong (C) - Dandenong
205752674	Gr. Dandenong (C) Bal
205801452	Cardinia (S) - North
205801453	Cardinia (S) - Pakenham
205801454	Cardinia (S) - South
205801612	Casey (C) - Berwick
205801613	Casey (C) - Cranbourne
205801616	Casey (C) - Hallam
205801618	Casey (C) - South
205852171	Frankston (C) - East
205852174	Frankston (C) - West
205905341	Mornington P'sula (S) - East
205905344	Mornington P'sula (S) - South
205905345	Mornington P'sula (S) - West
210052751	Bellarine - Inner
210052752	Corio - Inner
210052753	Geelong
210052754	Geelong West
210052755	Newtown
210052756	South Barwon - Inner
210102757	Greater Geelong (C) - Pt B
210106080	Queenscliffe (B)
210106493	Surf Coast (S) - East
210106495	Surf Coast (S) - West
210151751	Colac-Otway (S) - Colac
210151754	Colac-Otway (S) - North
210151755	Colac-Otway (S) - South
210152491	Golden Plains (S) - North-West
210152492	Golden Plains (S) - South-East
210152758	Greater Geelong (C) - Pt C
215016730	Warrnambool (C)



215051831	Corangamite (S) - North
215051832	Corangamite (S) - South
215055491	Moyne (S) - North-East
215055493	Moyne (S) - North-West
215055496	Moyne (S) - South
215058469	Lady Julia Percy Island
215102411	Glenelg (S) - Heywood
215102412	Glenelg (S) - North
215102413	Glenelg (S) - Portland
215106261	S. Grampians (S) - Hamilton
215106264	S. Grampians (S) - Wannon
215106265	S. Grampians (S) Bal
220050571	Ballarat (C) - Central
220050572	Ballarat (C) - Inner North
220050573	Ballarat (C) - North
220050574	Ballarat (C) - South
220102911	Hepburn (S) - East
220102912	Hepburn (S) - West
220105151	Moorabool (S) - Bacchus Marsh
220105154	Moorabool (S) - Ballan
220105155	Moorabool (S) - West
220150260	Ararat (RC)
220155991	Pyrenees (S) - North
220155994	Pyrenees (S) - South
225053191	Horsham (RC) - Central
225053194	Horsham (RC) Bal
225055811	N. Grampians (S) - St Arnaud
225055814	N. Grampians (S) - Stawell
225056890	West Wimmera (S)
225102980	Hindmarsh (S)
225107631	Yarriambiack (S) - North
225107632	Yarriambiack (S) - South
230054781	Mildura (RC) - Pt A
230101271	Buloke (S) - North
230101272	Buloke (S) - South
230104782	Mildura (RC) - Pt B
230152250	Gannawarra (S)
230156611	Swan Hill (RC) - Central
230156614	Swan Hill (RC) - Robinvale
230156616	Swan Hill (RC) Bal
235052621	Gr. Bendigo (C) - Central
235052622	Gr. Bendigo (C) - Eaglehawk
235052623	Gr. Bendigo (C) - Inner East
235052624	Gr. Bendigo (C) - Inner North
235052625	Gr. Bendigo (C) - Inner West
235052626	Gr. Bendigo (C) - S'saye
235101671	C. Goldfields (S) - M'borough
235101674	C. Goldfields (S) Bal
235102628	Gr. Bendigo (C) - Pt B
235103943	Loddon (S) - North
235103945	Loddon (S) - South
235105431	Mount Alexander (S) - C'maine
235105434	Mount Alexander (S) Bal
235204131	Macedon Ranges (S) - Kyneton
235204134	Macedon Ranges (S) - Romsey



235204135	Macedon Ranges (S) Bal
240052831	Gr. Shepparton (C) - Pt A
240101371	Campaspe (S) - Echuca
240101374	Campaspe (S) - Kyabram
240101375	Campaspe (S) - Rochester
240101376	Campaspe (S) - South
240102834	Gr. Shepparton (C) - Pt B East
240102835	Gr. Shepparton (C) - Pt B West
240104901	Moira (S) - East
240104904	Moira (S) - West
240151011	Benalla (RC) - Benalla
240151014	Benalla (RC) Bal
240154250	Mansfield (S)
240156430	Strathbogie (S)
240158249	Mount Buller Alpine Resort
240158349	Mount Stirling Alpine Resort
240204851	Mitchell (S) - North
240204854	Mitchell (S) - South
240205621	Murrindindi (S) - East
240205622	Murrindindi (S) - West
240208149	Lake Mountain Alpine Resort
245053351	Indigo (S) - Pt A
245056671	Towong (S) - Pt A
245057170	Wodonga (RC)
245103352	Indigo (S) - Pt B
245106701	Wangaratta (RC) - Central
245106704	Wangaratta (RC) - North
245106705	Wangaratta (RC) - South
245150111	Alpine (S) - East
245150112	Alpine (S) - West
245156672	Towong (S) - Pt B
245158109	Falls Creek Alpine Resort
245158309	Mount Hotham Alpine Resort
250052111	E. Gippsland (S) - Bairnsdale
250052113	E. Gippsland (S) - Orbost
250052115	E. Gippsland (S) - South-West
250052117	E. Gippsland (S) Bal
250156811	Wellington (S) - Alberton
250156812	Wellington (S) - Avon
250156813	Wellington (S) - Maffra
250156814	Wellington (S) - Rosedale
250156815	Wellington (S) - Sale
255050831	Baw Baw (S) - Pt A
255053811	Latrobe (C) - Moe
255053814	Latrobe (C) - Morwell
255053815	Latrobe (C) - Traralgon
255053818	Latrobe (C) Bal
255100834	Baw Baw (S) - Pt B East
255100835	Baw Baw (S) - Pt B West
255107458	Yarra Ranges (S) - Pt B
255108209	Mount Baw Baw Alpine Resort
255200741	Bass Coast (S) - Phillip Is.
255200744	Bass Coast (S) Bal
255206171	South Gippsland (S) - Central
255206174	South Gippsland (S) - East



255206175	South Gippsland (S) - West
255208529	French Island
255208649	Bass Strait Islands
999999999	Outside Victoria

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGLGA</b>	Destination LGA
-2	N/A
-1	Missing
20110	Alpine (S)
20260	Ararat (RC)
20570	Ballarat (C)
20660	Banyule (C)
20740	Bass Coast (S)
20830	Baw Baw (S)
20910	Bayside (C)
21010	Benalla (RC)
21110	Boroondara (C)
21180	Brimbank (C)
21270	Buloke (S)
21370	Campaspe (S)
21450	Cardinia (S)
21610	Casey (C)
21670	Central Goldfields (S)
21750	Colac-Otway (S)
21830	Corangamite (S)
21890	Darebin (C)
22110	East Gippsland (S)
22170	Frankston (C)
22250	Gannawarra (S)
22310	Glen Eira (C)
22410	Glenelg (S)
22490	Golden Plains (S)
22620	Greater Bendigo (C)
22670	Greater Dandenong (C)
22750	Greater Geelong (C)
22830	Greater Shepparton (C)
22910	Hepburn (S)
22980	Hindmarsh (S)
23110	Hobsons Bay (C)
23190	Horsham (RC)
23270	Hume (C)
23350	Indigo (S)
23430	Kingston (C)
23670	Knox (C)
23810	Latrobe (C)
23940	Loddon (S)
24130	Macedon Ranges (S)
24210	Manningham (C)
24250	Mansfield (S)
24330	Maribyrnong (C)
24410	Maroondah (C)
24600	Melbourne (C)
24650	Melton (S)
24780	Mildura (RC)



24850	Mitchell (S)
24900	Moira (S)
24970	Monash (C)
25060	Moonee Valley (C)
25150	Moorabool (S)
25250	Moreland (C)
25340	Mornington Peninsula (S)
25430	Mount Alexander (S)
25490	Moyne (S)
25620	Murrindindi (S)
25710	Nillumbik (S)
25810	Northern Grampians (S)
25900	Port Phillip (C)
25990	Pyrenees (S)
26080	Queenscliffe (B)
26170	South Gippsland (S)
26260	Southern Grampians (S)
26350	Stonnington (C)
26430	Strathboogie (S)
26490	Surf Coast (S)
26610	Swan Hill (RC)
26670	Towong (S)
26700	Wangaratta (RC)
26730	Warrnambool (C)
26810	Wellington (S)
26890	West Wimmera (S)
26980	Whitehorse (C)
27070	Whittlesea (C)
27170	Wodonga (RC)
27260	Wyndham (C)
27350	Yarra (C)
27450	Yarra Ranges (S)
27630	Yarriambiack (S)
29399	Unincorporated Victoria
99999	Outside Victoria

Variable Name	Variable Meaning
<b>ORIGPLACE2</b>	Origin Place Type
Min	101
Max	999
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home



203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop



628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown (at start of day)



Variable Name	Variable Meaning
<b>ORIGPURP2</b>	Purpose at Start of JTW
Min	10
Max	999
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something
32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	At home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)
999	Unknown (at start of day)

Variable Name	Variable Meaning
<b>ARRHOUR</b>	Hour of Ending JTW
Min	4
Max	27
-2	N/A
-1	Missing



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ARRTIME</b>	Time of Ending JTW
Min	240
Max	1680
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTLONG</b>	Destination longitude
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTLAT</b>	Destination latitude
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTCCD</b>	Destination CCD
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTTAZ</b>	Destination Traffic Analysis Zone
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTSLA</b>	Destination SLA
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTSLA</b>	Destination LGA
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTPLACE2</b>	Destination Place Type
Min	101
Max	998
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home
203	2nd Home
204	Farm
205	Hotel or Motel



206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop
628	Tobacconist
629	Pet Shop
630	Gift Shop



631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown



Variable Name	Variable Meaning
DESTPURP2	Purpose at End of Trip Stage
Min	10
Max	120
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something
32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	Go home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)

Variable Name	Variable Meaning
TTn	Travel Time for nth Trip of JTW (minutes)
Min	0
Max	720
-2	N/A
-1	Missing



Variable Name	Variable Meaning
PLACEn	Destination Place for nth Trip of JTW
Min	10
Max	120
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home
203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store



606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop
628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre



812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
980	City Building
999	Unknown (at start of day)

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>PURPn</b>	Destination Purpose for nth Trip of JTW
Min	10
Max	120
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something
32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	Go home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog



100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DISTn</b>	Distance of nth Trip of JTW (km, based on Stop VISTADIST)
Min	0
Max	9999

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DURn</b>	Duration of Activity at end of nth Stage of JTW (minutes)
Min	0
Max	999

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>MODEn</b>	Mode of Transport used for nth Trip of JTW
Min	1
Max	12
-2	N/A
-1	Missing
1	Vehicle Driver
2	Vehicle Passenger
3	Motorcycle
4	Walking
5	Bicycle
6	Taxi
7	Train
8	Tram
9	School Bus
10	Public Bus
11	Plane
12	Other



Variable Name	Variable Meaning
<b>MAINMODE</b>	Main Mode of Transport used for JTW (priority mode)
Min	1
Max	12
-2	N/A
-1	Missing
1	Vehicle Driver
2	Vehicle Passenger
3	Motorcycle
4	Walking
5	Bicycle
6	Taxi
7	Train
8	Tram
9	School Bus
10	Public Bus
11	Plane
12	Other

Variable Name	Variable Meaning
<b>JTWSTAGES</b>	Number of Trip Stages (Stops) within JTW
Min	1
Max	10

Variable Name	Variable Meaning
<b>JTWRTRIPS</b>	Number of Trips within JTW
Min	1
Max	10

Variable Name	Variable Meaning
<b>JTWE LAPSEDTIME</b>	Elapsed Time from Start to End of JTW (minutes)
Min	1
Max	999

Variable Name	Variable Meaning
<b>JTWTRAVELTIME</b>	Travel Time on JTW (minutes)
Min	1
Max	999

Variable Name	Variable Meaning
<b>JTWDIST</b>	Travel Distance on JTW (minutes)
Min	1
Max	999

Variable Name	Variable Meaning
<b>JTWSPEED</b>	Average Speed on JTW (kph)
Min	1
Max	999

Variable Name	Variable Meaning
<b>NONREPWGT</b>	Non-reported JTW Weight (based on average of JTW Stops)
Min	0
Max	9999



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ADJTWWGT</b>	All-Day JTW Weight (based on average of JTW Stops)
Min	0
Max	9999
<b>WDJTWWGT</b>	Weekday JTW Weight (based on average of JTW Stops)
Min	0
Max	9999
<b>WEJTWWGT</b>	Weekend JTW Weight (based on average of JTW Stops)
Min	0
Max	9999
<b>SDJTWWGT</b>	School-day JTW Weight (based on average of JTW Stops)
Min	0
Max	9999



## Appendix X – Journey to/from Education File Coding Frame

Note: for Journey-from-Education file, simply substitute JFE for JTE

Variable Name	Variable Meaning
<b>JTEID</b>	JTE ID
Min	Y09H010001P01JTE1
Max	Y09H185242P20JTE1
Legend:	YyyHrrwwhhPppJTE1
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number
Variable Name	Variable Meaning
<b>HHID</b>	Household ID Number
Min	Y09H010001
Max	Y09H185242
Legend:	YyyHrrwwhh
where	yy = year of survey rr = region of fieldwork ww = week hh = household number
Variable Name	Variable Meaning
<b>PERSID</b>	Person ID Number
Min	Y09H010001
Max	Y09H185242
Legend:	YyyHrrwwhhPpp
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number
Variable Name	Variable Meaning
<b>STARTSTOP</b>	Stop ID of Stop at Start of JTE
<b>ENDSTOP</b>	Stop ID of Stop at End of JTE
Min	Y09H010001P01JS01
Max	Y09H185242P20JS99
Legend:	YyyHrrwwhhPppSss
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number ss = stop number



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>REALREGION</b>	Household Residential Region
Min	1
Max	18
1	Inner Melbourne
2	Inner West Melbourne
3	Outer West Melbourne
4	Inner North Melbourne
5	Outer North Melbourne
6	Maroondah Highway
7	Outer North-East Melbourne
8	Inner South-East Melbourne
9	Middle South-East Melbourne
10	Outer South-East Melbourne
11	Fringe South-East Melbourne
12	Peri-Urban Areas
13	Melbourne CAD
14	Geelong
15	Ballarat
16	Bendigo
17	Shepparton
18	Latrobe Valley
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVDOW</b>	Travel Day Day-of-Week
Min	1
Max	7
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday
7	Sunday
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>STARTHOUR</b>	Hour of Starting JTE
Min	4
Max	27
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>STARTIME</b>	Time of Starting JTE
Min	240
Max	1680
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGLONG</b>	Origin Longitude
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGLAT</b>	Origin Latitude



Variable Name	Variable Meaning
ORIGCCD	Origin CCD
-2	N/A
-1	Missing
Variable Name	Variable Meaning
ORIGTAZ	Origin Traffic Analysis Zone
-2	N/A
-1	Missing
Variable Name	Variable Meaning
ORIGSLA	Origin SLA
-2	N/A
-1	Missing
205054601	Melbourne (C) - Inner
205054605	Melbourne (C) - S'bank-D'lands
205054608	Melbourne (C) - Remainder
205055901	Port Phillip (C) - St Kilda
205055902	Port Phillip (C) - West
205056351	Stonnington (C) - Prahran
205057351	Yarra (C) - North
205057352	Yarra (C) - Richmond
205101181	Brimbank (C) - Keilor
205101182	Brimbank (C) - Sunshine
205103111	Hobsons Bay (C) - Altona
205103112	Hobsons Bay (C) - Williamstown
205104330	Maribyrnong (C)
205105063	Moonee Valley (C) - Essendon
205105065	Moonee Valley (C) - West
205204651	Melton (S) - East
205204654	Melton (S) Bal
205207261	Wyndham (C) - North
205207264	Wyndham (C) - South
205207267	Wyndham (C) - West
205255251	Moreland (C) - Brunswick
205255252	Moreland (C) - Coburg
205255253	Moreland (C) - North
205300661	Banyule (C) - Heidelberg
205300662	Banyule (C) - North
205301891	Darebin (C) - Northcote
205301892	Darebin (C) - Preston
205353271	Hume (C) - Broadmeadows
205353274	Hume (C) - Craigieburn
205353275	Hume (C) - Sunbury
205405713	Nillumbik (S) - South
205405715	Nillumbik (S) - South-West
205405718	Nillumbik (S) Bal
205407071	Whittlesea (C) - North
205407075	Whittlesea (C) - South-East
205407076	Whittlesea (C) - South-West
205451111	Boroondara (C) - Camberwell N.
205451112	Boroondara (C) - Camberwell S.
205451113	Boroondara (C) - Hawthorn
205451114	Boroondara (C) - Kew
205504211	Manningham (C) - East



205504214	Manningham (C) - West
205504971	Monash (C) - South-West
205504974	Monash (C) - Waverley East
205504975	Monash (C) - Waverley West
205506981	Whitehorse (C) - Box Hill
205506984	Whitehorse (C) - Nunawading E.
205506985	Whitehorse (C) - Nunawading W.
205553672	Knox (C) - North-East
205553673	Knox (C) - North-West
205553674	Knox (C) - South
205554411	Maroondah (C) - Croydon
205554412	Maroondah (C) - Ringwood
205607451	Yarra Ranges (S) - Central
205607452	Yarra Ranges (S) - Dandenongs
205607453	Yarra Ranges (S) - Lilydale
205607454	Yarra Ranges (S) - North
205607456	Yarra Ranges (S) - Seville
205650911	Bayside (C) - Brighton
205650912	Bayside (C) - South
205652311	Glen Eira (C) - Caulfield
205652314	Glen Eira (C) - South
205653431	Kingston (C) - North
205653434	Kingston (C) - South
205656352	Stonnington (C) - Malvern
205752671	Gr. Dandenong (C) - Dandenong
205752674	Gr. Dandenong (C) Bal
205801452	Cardinia (S) - North
205801453	Cardinia (S) - Pakenham
205801454	Cardinia (S) - South
205801612	Casey (C) - Berwick
205801613	Casey (C) - Cranbourne
205801616	Casey (C) - Hallam
205801618	Casey (C) - South
205852171	Frankston (C) - East
205852174	Frankston (C) - West
205905341	Mornington P'sula (S) - East
205905344	Mornington P'sula (S) - South
205905345	Mornington P'sula (S) - West
210052751	Bellarine - Inner
210052752	Corio - Inner
210052753	Geelong
210052754	Geelong West
210052755	Newtown
210052756	South Barwon - Inner
210102757	Greater Geelong (C) - Pt B
210106080	Queenscliffe (B)
210106493	Surf Coast (S) - East
210106495	Surf Coast (S) - West
210151751	Colac-Otway (S) - Colac
210151754	Colac-Otway (S) - North
210151755	Colac-Otway (S) - South
210152491	Golden Plains (S) - North-West
210152492	Golden Plains (S) - South-East
210152758	Greater Geelong (C) - Pt C
215016730	Warrnambool (C)



215051831	Corangamite (S) - North
215051832	Corangamite (S) - South
215055491	Moyne (S) - North-East
215055493	Moyne (S) - North-West
215055496	Moyne (S) - South
215058469	Lady Julia Percy Island
215102411	Glenelg (S) - Heywood
215102412	Glenelg (S) - North
215102413	Glenelg (S) - Portland
215106261	S. Grampians (S) - Hamilton
215106264	S. Grampians (S) - Wannon
215106265	S. Grampians (S) Bal
220050571	Ballarat (C) - Central
220050572	Ballarat (C) - Inner North
220050573	Ballarat (C) - North
220050574	Ballarat (C) - South
220102911	Hepburn (S) - East
220102912	Hepburn (S) - West
220105151	Moorabool (S) - Bacchus Marsh
220105154	Moorabool (S) - Ballan
220105155	Moorabool (S) - West
220150260	Ararat (RC)
220155991	Pyrenees (S) - North
220155994	Pyrenees (S) - South
225053191	Horsham (RC) - Central
225053194	Horsham (RC) Bal
225055811	N. Grampians (S) - St Arnaud
225055814	N. Grampians (S) - Stawell
225056890	West Wimmera (S)
225102980	Hindmarsh (S)
225107631	Yarriambiack (S) - North
225107632	Yarriambiack (S) - South
230054781	Mildura (RC) - Pt A
230101271	Buloke (S) - North
230101272	Buloke (S) - South
230104782	Mildura (RC) - Pt B
230152250	Gannawarra (S)
230156611	Swan Hill (RC) - Central
230156614	Swan Hill (RC) - Robinvale
230156616	Swan Hill (RC) Bal
235052621	Gr. Bendigo (C) - Central
235052622	Gr. Bendigo (C) - Eaglehawk
235052623	Gr. Bendigo (C) - Inner East
235052624	Gr. Bendigo (C) - Inner North
235052625	Gr. Bendigo (C) - Inner West
235052626	Gr. Bendigo (C) - S'saye
235101671	C. Goldfields (S) - M'borough
235101674	C. Goldfields (S) Bal
235102628	Gr. Bendigo (C) - Pt B
235103943	Loddon (S) - North
235103945	Loddon (S) - South
235105431	Mount Alexander (S) - C'maine
235105434	Mount Alexander (S) Bal
235204131	Macedon Ranges (S) - Kyneton
235204134	Macedon Ranges (S) - Romsey



235204135	Macedon Ranges (S) Bal
240052831	Gr. Shepparton (C) - Pt A
240101371	Campaspe (S) - Echuca
240101374	Campaspe (S) - Kyabram
240101375	Campaspe (S) - Rochester
240101376	Campaspe (S) - South
240102834	Gr. Shepparton (C) - Pt B East
240102835	Gr. Shepparton (C) - Pt B West
240104901	Moira (S) - East
240104904	Moira (S) - West
240151011	Benalla (RC) - Benalla
240151014	Benalla (RC) Bal
240154250	Mansfield (S)
240156430	Strathbogie (S)
240158249	Mount Buller Alpine Resort
240158349	Mount Stirling Alpine Resort
240204851	Mitchell (S) - North
240204854	Mitchell (S) - South
240205621	Murrindindi (S) - East
240205622	Murrindindi (S) - West
240208149	Lake Mountain Alpine Resort
245053351	Indigo (S) - Pt A
245056671	Towong (S) - Pt A
245057170	Wodonga (RC)
245103352	Indigo (S) - Pt B
245106701	Wangaratta (RC) - Central
245106704	Wangaratta (RC) - North
245106705	Wangaratta (RC) - South
245150111	Alpine (S) - East
245150112	Alpine (S) - West
245156672	Towong (S) - Pt B
245158109	Falls Creek Alpine Resort
245158309	Mount Hotham Alpine Resort
250052111	E. Gippsland (S) - Bairnsdale
250052113	E. Gippsland (S) - Orbost
250052115	E. Gippsland (S) - South-West
250052117	E. Gippsland (S) Bal
250156811	Wellington (S) - Alberton
250156812	Wellington (S) - Avon
250156813	Wellington (S) - Maffra
250156814	Wellington (S) - Rosedale
250156815	Wellington (S) - Sale
255050831	Baw Baw (S) - Pt A
255053811	Latrobe (C) - Moe
255053814	Latrobe (C) - Morwell
255053815	Latrobe (C) - Traralgon
255053818	Latrobe (C) Bal
255100834	Baw Baw (S) - Pt B East
255100835	Baw Baw (S) - Pt B West
255107458	Yarra Ranges (S) - Pt B
255108209	Mount Baw Baw Alpine Resort
255200741	Bass Coast (S) - Phillip Is.
255200744	Bass Coast (S) Bal
255206171	South Gippsland (S) - Central
255206174	South Gippsland (S) - East



255206175	South Gippsland (S) - West
255208529	French Island
255208649	Bass Strait Islands
999999999	Outside Victoria

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGLGA</b>	Destination LGA
-2	N/A
-1	Missing
20110	Alpine (S)
20260	Ararat (RC)
20570	Ballarat (C)
20660	Banyule (C)
20740	Bass Coast (S)
20830	Baw Baw (S)
20910	Bayside (C)
21010	Benalla (RC)
21110	Boroondara (C)
21180	Brimbank (C)
21270	Buloke (S)
21370	Campaspe (S)
21450	Cardinia (S)
21610	Casey (C)
21670	Central Goldfields (S)
21750	Colac-Otway (S)
21830	Corangamite (S)
21890	Darebin (C)
22110	East Gippsland (S)
22170	Frankston (C)
22250	Gannawarra (S)
22310	Glen Eira (C)
22410	Glenelg (S)
22490	Golden Plains (S)
22620	Greater Bendigo (C)
22670	Greater Dandenong (C)
22750	Greater Geelong (C)
22830	Greater Shepparton (C)
22910	Hepburn (S)
22980	Hindmarsh (S)
23110	Hobsons Bay (C)
23190	Horsham (RC)
23270	Hume (C)
23350	Indigo (S)
23430	Kingston (C)
23670	Knox (C)
23810	Latrobe (C)
23940	Loddon (S)
24130	Macedon Ranges (S)
24210	Manningham (C)
24250	Mansfield (S)
24330	Maribyrnong (C)
24410	Maroondah (C)
24600	Melbourne (C)
24650	Melton (S)
24780	Mildura (RC)



24850	Mitchell (S)
24900	Moira (S)
24970	Monash (C)
25060	Moonee Valley (C)
25150	Moorabool (S)
25250	Moreland (C)
25340	Mornington Peninsula (S)
25430	Mount Alexander (S)
25490	Moyne (S)
25620	Murrindindi (S)
25710	Nillumbik (S)
25810	Northern Grampians (S)
25900	Port Phillip (C)
25990	Pyrenees (S)
26080	Queenscliffe (B)
26170	South Gippsland (S)
26260	Southern Grampians (S)
26350	Stonnington (C)
26430	Strathbogie (S)
26490	Surf Coast (S)
26610	Swan Hill (RC)
26670	Towong (S)
26700	Wangaratta (RC)
26730	Warrnambool (C)
26810	Wellington (S)
26890	West Wimmera (S)
26980	Whitehorse (C)
27070	Whittlesea (C)
27170	Wodonga (RC)
27260	Wyndham (C)
27350	Yarra (C)
27450	Yarra Ranges (S)
27630	Yarriambiack (S)
29399	Unincorporated Victoria
99999	Outside Victoria

Variable Name	Variable Meaning
ORIGPLACE2	Origin Place Type
Min	101
Max	999
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home



203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop



628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown (at start of day)



Variable Name	Variable Meaning
<b>ORIGPURP2</b>	Purpose at Start of JTE
Min	10
Max	999
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something
32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	At home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)
999	Unknown (at start of day)

Variable Name	Variable Meaning
<b>ARRHOUR</b>	Hour of Ending JTE
Min	4
Max	27
-2	N/A
-1	Missing



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ARRTIME</b>	Time of Ending JTE
Min	240
Max	1680
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTLONG</b>	Destination longitude
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTLAT</b>	Destination latitude
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTCCD</b>	Destination CCD
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTTAZ</b>	Destination Traffic Analysis Zone
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTSLA</b>	Destination SLA
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTSLA</b>	Destination LGA
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTPLACE2</b>	Destination Place Type
Min	101
Max	998
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home
203	2nd Home
204	Farm
205	Hotel or Motel



206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop
628	Tobacconist
629	Pet Shop
630	Gift Shop



631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown



Variable Name	Variable Meaning
<b>DESTPURP2</b>	Purpose at End of Trip Stage
Min	10
Max	120
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something
32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	Go home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)

Variable Name	Variable Meaning
<b>TTn</b>	Travel Time for nth Trip of JTE (minutes)
Min	0
Max	720
-2	N/A
-1	Missing



Variable Name	Variable Meaning
<b>PLACEn</b>	Destination Place for nth Trip of JTE
Min	101
Max	999
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home
203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station



609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop
628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink



903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
980	City Building
999	Unknown (at start of day)

<b>Variable Name</b>	<b>Variable Meaning</b>
PURPn	Destination Purpose for nth Trip of JTE
Min	10
Max	120
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something
32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	Go home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)



111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)

Variable Name	Variable Meaning
<b>DISTn</b>	Distance of nth Trip of JTE (km, based on Stop VISTADIST)
Min	0
Max	9999

Variable Name	Variable Meaning
<b>DURn</b>	Duration of Activity at end of nth Trip of JTE (minutes)
Min	0
Max	999

Variable Name	Variable Meaning
<b>MODEn</b>	Mode of Transport used for nth Trip of JTE
Min	1
Max	12
-2	N/A
-1	Missing
1	Vehicle Driver
2	Vehicle Passenger
3	Motorcycle
4	Walking
5	Bicycle
6	Taxi
7	Train
8	Tram
9	School Bus
10	Public Bus
11	Plane
12	Other

Variable Name	Variable Meaning
<b>MAINMODE</b>	Main Mode of Transport used for JTE (priority mode)
Min	1
Max	12
-2	N/A
-1	Missing
1	Vehicle Driver
2	Vehicle Passenger
3	Motorcycle
4	Walking
5	Bicycle
6	Taxi
7	Train
8	Tram
9	School Bus
10	Public Bus
11	Plane
12	Other



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ACCOMn</b>	Accompanying Household Members on nth Stage of JTE
Min	111111111
Max	222222222
1	Indicates that this person was accompanying
2	Indicates that this person was not accompanying
	e.g. 12122222 means that the person was accompanied by persons 1 and 3 from the household
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>JTETRIPS</b>	Number of Trips within JTE
Min	1
Max	10
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>JTEELAPSEDTIME</b>	Elapsed Time from Start to End of JTE (minutes)
Min	1
Max	999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>JTETRAVELTIME</b>	Travel Time on JTE (minutes)
Min	1
Max	999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>JTEDIST</b>	Travel Distance on JTE (minutes)
Min	1
Max	999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>JTESPEED</b>	Average Speed on JTE (kph)
Min	1
Max	999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>NONREPWGT</b>	Non-reported JTE Weight (based on average of JTE Stops)
Min	0
Max	9999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ADJTEWGT</b>	All-Day JTE Weight (based on average of JTE Stops)
Min	0
Max	9999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>WDJTEWGT</b>	Weekday JTE Weight (based on average of JTE Stops)
Min	0
Max	9999
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>WEJTEWGT</b>	Weekend JTE Weight (based on average of JTE Stops)
Min	0
Max	9999



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>SDJTEWGT</b>	School-day JTE Weight (based on average of JTE Stops)
Min	0
Max	9999



## Appendix Y – Home-Based Chain File Coding Frame

Variable Name	Variable Meaning
<b>CHAINID</b>	HomeChain ID
Min	Y09H010001P01C01
Max	Y09H185242P20C25
Legend:	YyyHrrwwhhPppCcc
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number cc = chain number

Variable Name	Variable Meaning
<b>PERSID</b>	Person ID Number
Min	Y09H010001P01
Max	Y09H185242P20
Legend:	YyyHrrwwhhPpp
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number

Variable Name	Variable Meaning
<b>HHID</b>	Household ID Number
Min	Y09H010001
Max	Y09H185242
Legend:	YyyHrrwwhh
where	yy = year of survey rr = region of fieldwork ww = week hh = household number

Variable Name	Variable Meaning
<b>STRTRIP</b>	Trip ID of Trip at Start of HomeChain
<b>ENDTRIP</b>	Trip ID of Trip at End of HomeChain
Min	Y09H010001P01T01
Max	Y09H185242P20T99
Legend:	YyyHrrwwhhPppTtt
where	yy = year of survey rr = region of fieldwork ww = week hh = household number pp = person number tt = trip number



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>REALREGION</b>	Household Residential Region
Min	1
Max	18
1	Inner Melbourne
2	Inner West Melbourne
3	Outer West Melbourne
4	Inner North Melbourne
5	Outer North Melbourne
6	Maroondah Highway
7	Outer North-East Melbourne
8	Inner South-East Melbourne
9	Middle South-East Melbourne
10	Outer South-East Melbourne
11	Fringe South-East Melbourne
12	Peri-Urban Areas
13	Melbourne CAD
14	Geelong
15	Ballarat
16	Bendigo
17	Shepparton
18	Latrobe Valley

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVDOW</b>	Travel Day Day-of-Week
Min	1
Max	7
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday
7	Sunday

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVDATE</b>	HH Travel Day Date
Min	1
Max	31



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVMONTH</b>	HH Travel Day Month
Min	1
Max	12
1	January
2	February
3	March
4	April
5	May
6	June
7	July
8	August
9	September
10	October
11	November
12	December
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVYEAR</b>	HH Travel Day Year
Min	2009
Max	2010
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>STARTHOUR</b>	Hour of Starting HomeChain
Min	4
Max	27
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>STARTTIME</b>	Time of Starting HomeChain
Min	240
Max	1680
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ENDHOUR</b>	Hour of Ending HomeChain
Min	4
Max	27
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ENDTIME</b>	Time of Ending HomeChain
Min	240
Max	1680
-2	N/A
-1	Missing



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DURATION</b>	Duration of HomeChain
Min	0
Max	1440
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVTIME</b>	Travel Time during HomeChain
Min	0
Max	1440
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ACTTIME</b>	Activity Time during HomeChain
Min	0
Max	1440
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRAVDIST</b>	Travel Distance covered in HomeChain
Min	0
Max	9999
-2	N/A
-1	Missing
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGLONG</b>	Longitude of Origin of HomeChain (Home)
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGLAT</b>	Latitude of Origin of HomeChain (Home)
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGCCD</b>	CCD of Origin of HomeChain (Home)
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGTAZ</b>	Traffic Zone of Origin of HomeChain (Home)
<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGSLA</b>	SLA of Origin of HomeChain (Home)
-2	N/A
-1	Missing
205054601	Melbourne (C) - Inner
205054605	Melbourne (C) - S'bank-D'lands
205054608	Melbourne (C) - Remainder
205055901	Port Phillip (C) - St Kilda
205055902	Port Phillip (C) - West
205056351	Stonnington (C) - Prahran
205057351	Yarra (C) - North
205057352	Yarra (C) - Richmond
205101181	Brimbank (C) - Keilor
205101182	Brimbank (C) - Sunshine
205103111	Hobsons Bay (C) - Altona



205103112	Hobsons Bay (C) - Williamstown
205104330	Maribyrnong (C)
205105063	Moonee Valley (C) - Essendon
205105065	Moonee Valley (C) - West
205204651	Melton (S) - East
205204654	Melton (S) Bal
205207261	Wyndham (C) - North
205207264	Wyndham (C) - South
205207267	Wyndham (C) - West
205255251	Moreland (C) - Brunswick
205255252	Moreland (C) - Coburg
205255253	Moreland (C) - North
205300661	Banyule (C) - Heidelberg
205300662	Banyule (C) - North
205301891	Darebin (C) - Northcote
205301892	Darebin (C) - Preston
205353271	Hume (C) - Broadmeadows
205353274	Hume (C) - Craigieburn
205353275	Hume (C) - Sunbury
205405713	Nillumbik (S) - South
205405715	Nillumbik (S) - South-West
205405718	Nillumbik (S) Bal
205407071	Whittlesea (C) - North
205407075	Whittlesea (C) - South-East
205407076	Whittlesea (C) - South-West
205451111	Boroondara (C) - Camberwell N.
205451112	Boroondara (C) - Camberwell S.
205451113	Boroondara (C) - Hawthorn
205451114	Boroondara (C) - Kew
205504211	Manningham (C) - East
205504214	Manningham (C) - West
205504971	Monash (C) - South-West
205504974	Monash (C) - Waverley East
205504975	Monash (C) - Waverley West
205506981	Whitehorse (C) - Box Hill
205506984	Whitehorse (C) - Nunawading E.
205506985	Whitehorse (C) - Nunawading W.
205553672	Knox (C) - North-East
205553673	Knox (C) - North-West
205553674	Knox (C) - South
205554411	Maroondah (C) - Croydon
205554412	Maroondah (C) - Ringwood
205607451	Yarra Ranges (S) - Central
205607452	Yarra Ranges (S) - Dandenongs
205607453	Yarra Ranges (S) - Lilydale
205607454	Yarra Ranges (S) - North
205607456	Yarra Ranges (S) - Seville
205650911	Bayside (C) - Brighton
205650912	Bayside (C) - South
205652311	Glen Eira (C) - Caulfield
205652314	Glen Eira (C) - South
205653431	Kingston (C) - North
205653434	Kingston (C) - South
205656352	Stonnington (C) - Malvern
205752671	Gr. Dandenong (C) - Dandenong



205752674	Gr. Dandenong (C) Bal
205801452	Cardinia (S) - North
205801453	Cardinia (S) - Pakenham
205801454	Cardinia (S) - South
205801612	Casey (C) - Berwick
205801613	Casey (C) - Cranbourne
205801616	Casey (C) - Hallam
205801618	Casey (C) - South
205852171	Frankston (C) - East
205852174	Frankston (C) - West
205905341	Mornington P'sula (S) - East
205905344	Mornington P'sula (S) - South
205905345	Mornington P'sula (S) - West
210052751	Bellarine - Inner
210052752	Corio - Inner
210052753	Geelong
210052754	Geelong West
210052755	Newtown
210052756	South Barwon - Inner
210102757	Greater Geelong (C) - Pt B
210106080	Queenscliffe (B)
210106493	Surf Coast (S) - East
210106495	Surf Coast (S) - West
210151751	Colac-Otway (S) - Colac
210151754	Colac-Otway (S) - North
210151755	Colac-Otway (S) - South
210152491	Golden Plains (S) - North-West
210152492	Golden Plains (S) - South-East
210152758	Greater Geelong (C) - Pt C
215016730	Warrnambool (C)
215051831	Corangamite (S) - North
215051832	Corangamite (S) - South
215055491	Moyne (S) - North-East
215055493	Moyne (S) - North-West
215055496	Moyne (S) - South
215058469	Lady Julia Percy Island
215102411	Glenelg (S) - Heywood
215102412	Glenelg (S) - North
215102413	Glenelg (S) - Portland
215106261	S. Grampians (S) - Hamilton
215106264	S. Grampians (S) - Wannon
215106265	S. Grampians (S) Bal
220050571	Ballarat (C) - Central
220050572	Ballarat (C) - Inner North
220050573	Ballarat (C) - North
220050574	Ballarat (C) - South
220102911	Hepburn (S) - East
220102912	Hepburn (S) - West
220105151	Moorabool (S) - Bacchus Marsh
220105154	Moorabool (S) - Ballan
220105155	Moorabool (S) - West
220150260	Ararat (RC)
220155991	Pyrenees (S) - North
220155994	Pyrenees (S) - South
225053191	Horsham (RC) - Central



225053194	Horsham (RC) Bal
225055811	N. Grampians (S) - St Arnaud
225055814	N. Grampians (S) - Stawell
225056890	West Wimmera (S)
225102980	Hindmarsh (S)
225107631	Yarriambiack (S) - North
225107632	Yarriambiack (S) - South
230054781	Mildura (RC) - Pt A
230101271	Buloke (S) - North
230101272	Buloke (S) - South
230104782	Mildura (RC) - Pt B
230152250	Gannawarra (S)
230156611	Swan Hill (RC) - Central
230156614	Swan Hill (RC) - Robinvale
230156616	Swan Hill (RC) Bal
235052621	Gr. Bendigo (C) - Central
235052622	Gr. Bendigo (C) - Eaglehawk
235052623	Gr. Bendigo (C) - Inner East
235052624	Gr. Bendigo (C) - Inner North
235052625	Gr. Bendigo (C) - Inner West
235052626	Gr. Bendigo (C) - S'saye
235101671	C. Goldfields (S) - M'borough
235101674	C. Goldfields (S) Bal
235102628	Gr. Bendigo (C) - Pt B
235103943	Loddon (S) - North
235103945	Loddon (S) - South
235105431	Mount Alexander (S) - C'maine
235105434	Mount Alexander (S) Bal
235204131	Macedon Ranges (S) - Kyneton
235204134	Macedon Ranges (S) - Romsey
235204135	Macedon Ranges (S) Bal
240052831	Gr. Shepparton (C) - Pt A
240101371	Campaspe (S) - Echuca
240101374	Campaspe (S) - Kyabram
240101375	Campaspe (S) - Rochester
240101376	Campaspe (S) - South
240102834	Gr. Shepparton (C) - Pt B East
240102835	Gr. Shepparton (C) - Pt B West
240104901	Moira (S) - East
240104904	Moira (S) - West
240151011	Benalla (RC) - Benalla
240151014	Benalla (RC) Bal
240154250	Mansfield (S)
240156430	Strathbogie (S)
240158249	Mount Buller Alpine Resort
240158349	Mount Stirling Alpine Resort
240204851	Mitchell (S) - North
240204854	Mitchell (S) - South
240205621	Murrindindi (S) - East
240205622	Murrindindi (S) - West
240208149	Lake Mountain Alpine Resort
245053351	Indigo (S) - Pt A
245056671	Towong (S) - Pt A
245057170	Wodonga (RC)
245103352	Indigo (S) - Pt B



245106701	Wangaratta (RC) - Central
245106704	Wangaratta (RC) - North
245106705	Wangaratta (RC) - South
245150111	Alpine (S) - East
245150112	Alpine (S) - West
245156672	Towong (S) - Pt B
245158109	Falls Creek Alpine Resort
245158309	Mount Hotham Alpine Resort
250052111	E. Gippsland (S) - Bairnsdale
250052113	E. Gippsland (S) - Orbost
250052115	E. Gippsland (S) - South-West
250052117	E. Gippsland (S) Bal
250156811	Wellington (S) - Alberton
250156812	Wellington (S) - Avon
250156813	Wellington (S) - Maffra
250156814	Wellington (S) - Rosedale
250156815	Wellington (S) - Sale
255050831	Baw Baw (S) - Pt A
255053811	Latrobe (C) - Moe
255053814	Latrobe (C) - Morwell
255053815	Latrobe (C) - Traralgon
255053818	Latrobe (C) Bal
255100834	Baw Baw (S) - Pt B East
255100835	Baw Baw (S) - Pt B West
255107458	Yarra Ranges (S) - Pt B
255108209	Mount Baw Baw Alpine Resort
255200741	Bass Coast (S) - Phillip Is.
255200744	Bass Coast (S) Bal
255206171	South Gippsland (S) - Central
255206174	South Gippsland (S) - East
255206175	South Gippsland (S) - West
255208529	French Island
255208649	Bass Strait Islands
999999999	Outside Victoria

Variable Name	Variable Meaning
<b>ORIGLGA</b>	LGA of Origin of HomeChain (Home)
-2	N/A
-1	Missing
20110	Alpine (S)
20260	Ararat (RC)
20570	Ballarat (C)
20660	Banyule (C)
20740	Bass Coast (S)
20830	Baw Baw (S)
20910	Bayside (C)
21010	Benalla (RC)
21110	Boroondara (C)
21180	Brimbank (C)
21270	Buloke (S)
21370	Campaspe (S)
21450	Cardinia (S)
21610	Casey (C)
21670	Central Goldfields (S)
21750	Colac-Otway (S)



21830	Corangamite (S)
21890	Darebin (C)
22110	East Gippsland (S)
22170	Frankston (C)
22250	Gannawarra (S)
22310	Glen Eira (C)
22410	Glenelg (S)
22490	Golden Plains (S)
22620	Greater Bendigo (C)
22670	Greater Dandenong (C)
22750	Greater Geelong (C)
22830	Greater Shepparton (C)
22910	Hepburn (S)
22980	Hindmarsh (S)
23110	Hobsons Bay (C)
23190	Horsham (RC)
23270	Hume (C)
23350	Indigo (S)
23430	Kingston (C)
23670	Knox (C)
23810	Latrobe (C)
23940	Loddon (S)
24130	Macedon Ranges (S)
24210	Manningham (C)
24250	Mansfield (S)
24330	Maribyrnong (C)
24410	Maroondah (C)
24600	Melbourne (C)
24650	Melton (S)
24780	Mildura (RC)
24850	Mitchell (S)
24900	Moira (S)
24970	Monash (C)
25060	Moonee Valley (C)
25150	Moorabool (S)
25250	Moreland (C)
25340	Mornington Peninsula (S)
25430	Mount Alexander (S)
25490	Moyne (S)
25620	Murrindindi (S)
25710	Nillumbik (S)
25810	Northern Grampians (S)
25900	Port Phillip (C)
25990	Pyrenees (S)
26080	Queenscliffe (B)
26170	South Gippsland (S)
26260	Southern Grampians (S)
26350	Stonnington (C)
26430	Strathbogie (S)
26490	Surf Coast (S)
26610	Swan Hill (RC)
26670	Towong (S)
26700	Wangaratta (RC)
26730	Warrnambool (C)
26810	Wellington (S)



26890	West Wimmera (S)
26980	Whitehorse (C)
27070	Whittlesea (C)
27170	Wodonga (RC)
27260	Wyndham (C)
27350	Yarra (C)
27450	Yarra Ranges (S)
27630	Yarriambiack (S)
29399	Unincorporated Victoria
99999	Outside Victoria

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>ORIGPLACE2</b>	Place of Origin of HomeChain (Home)
Min	101
Max	999
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home
203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsite
208	Nursing Home
209	Retirement Village
298	Accommodation NEC
301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School



506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop
628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service
702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar



805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown (at start of day)

Variable Name	Variable Meaning
ORIGPURP2	Activity at Origin of HomeChain (Home)
Min	10
Max	999
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something
32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	At home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)



95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)
999	Unknown (at start of day)

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>NUMTRIPS</b>	Number of Trips within HomeChain
Min	1
Max	25
-2	N/A
-1	Missing

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>TRIPIDn</b>	Trip ID on nth Leg of HomeChain

<b>Variable Name</b>	<b>Variable Meaning</b>
<b>DESTPLACEn</b>	Place Type at end of nth Leg of HomeChain
Min	101
Max	999
-2	N/A
-1	Missing
101	Bus Stop
102	Tram Stop
103	Train Station
104	Car Park
105	On-Street Feature
106	Airport
107	Waterside Structure
108	Bike Rack
109	Taxi Stand
110	Depot
198	Transport NEC
201	Survey Home
202	Someone Else's Home
203	2nd Home
204	Farm
205	Hotel or Motel
206	Caravan Park
207	Campsites
208	Nursing Home
209	Retirement Village
298	Accommodation NEC



301	My Workplace
302	Another Workplace
309	Conference Centre
398	Workplace NEC
401	Park
402	Forest
403	Lake or Reservoir
404	Bay or Beach
405	River or Creek
406	Lookout
407	Geographical Feature
498	Physical Features NEC
501	Childcare
502	Kinder or Preschool
503	Primary School
504	Secondary School
505	Technical School
506	Special School
507	School NEC
508	Tertiary
598	Education NEC
601	Shopping Centre
602	Supermarket
603	Food Store
604	Fast Food
605	Liquor Store
606	Milk Bar
607	Convenience Store
608	Petrol Station
609	Car Accessories
610	Vehicle Sales
611	Newsagency & Bookstore
612	Department or Discount Store
613	Chemist
614	Clothes & Shoes
615	Hardware
616	Domestic Appliances
617	Homeware
618	Furniture
619	Antiques & Secondhand
620	Garden Centre
621	Florist
622	Video
623	Computer or Music
624	Photo or Camera
625	Sport or Outdoor
626	Craft or Hobby
627	Toy Shop
628	Tobacconist
629	Pet Shop
630	Gift Shop
631	Jewellery
632	Market
698	Retail NEC
701	Health Service



702	Bank or Financial Institution
703	Car Service
704	Government Office
705	Emergency Service
706	Other Service
707	Places of Worship
708	Death Service
709	Waste Disposal Service
710	Postal Facility
712	Hairdresser & Beauty Salon
713	Laundrette & Dry Cleaner
714	Vets & Kennels
798	Personal Service NEC
801	Theatre
802	Cinema
803	Nightclub
804	Pub or Bar
805	Restaurant or Cafe
806	Club
807	Gambling
808	Amusement or Bingo Centre
809	Hall
810	Community Centre
811	Reception Centre
812	Gallery or Museum
813	Library
814	Tourist Place
898	Social NEC
901	Gym
902	Skating Rink
903	Squash Court
904	Tenpin Bowling
905	Other Indoor Sport
906	Lawn Bowls
907	Sport Ground or Oval
908	Golf
909	Racecourse
910	Tennis Court
911	Swimming Pool
912	Other Water Sport
913	Other Outdoor Sport
998	Recreational NEC
999	Unknown

Variable Name	Variable Meaning
DESTPURPn	Activity Type at end of nth Leg of HomeChain
Min	10
Max	120
-2	N/A
-1	Missing
10	Change Mode (NEC)
11	Got on or off PT
12	Parked or unparked a vehicle
21	Accompanied someone
31	Bought something



32	Browsing, window-shopping
41	Something picked-up or delivered for home
51	Someone picked-up or delivered
60	Education (NEC)
61	At school
62	At Uni/Tech
63	At other Post-Secondary Study
70	Work-Related (NEC)
71	Own Workplace
72	Employer's Business
73	Something picked-up or delivered for Work
81	Go home
90	Personal Business (NEC)
91	At childcare
92	Volunteer/Community activity
93	Religious activity
94	Personal business (eg banking)
95	Medical/Dental purposes
96	Stayed overnight
97	At other house
98	Met/waited for someone
99	Walked the dog
100	Social (NEC)
101	Ate or drank
102	Visited someone
103	Socialised (Pubs, Clubs etc)
104	Watched sport
105	Watched concert, movies etc
110	Recreational (NEC)
111	Participated in sport
112	Participated in concert,musical,band etc
113	Other recreational (eg. exercise)
120	Other (NEC)

Variable Name	Variable Meaning
<b>ARRTIMEn</b>	Arrival Time at end of nth Leg of HomeChain
Min	240
Max	1680
-2	N/A
-1	Missing

Variable Name	Variable Meaning
<b>TTn</b>	Travel Time on nth Leg of HomeChain
Min	1
Max	720
-2	N/A
-1	Missing

Variable Name	Variable Meaning
<b>DISTn</b>	Travel Distance on nth Leg of HomeChain
Min	0
Max	9999
-2	N/A
-1	Missing



Variable Name	Variable Meaning
DURn	Duration of Activity at end of nth Leg of HomeChain
Min	0
Max	1440
-2	N/A
-1	Missing

Variable Name	Variable Meaning
MODEn	Main Mode used on nth Leg of HomeChain
Min	1
Max	12
-2	N/A
-1	Missing
1	Vehicle Driver
2	Vehicle Passenger
3	Motorcycle
4	Walking
5	Bicycle
6	Taxi
7	Train
8	Tram
9	School Bus
10	Public Bus
11	Plane
12	Other

Variable Name	Variable Meaning
LONGn	Longitude at end of nth Leg of HomeChain

Variable Name	Variable Meaning
LATn	Latitude at end of nth Leg of HomeChain

Variable Name	Variable Meaning
NONREPWT	Non-reported HomeChain Weight (based on average of HomeChain Trips)
Min	0
Max	9999

Variable Name	Variable Meaning
ALLCHNWGT	All-Days HomeChain Weight (based on average of HomeChain Trips)
Min	0
Max	9999

Variable Name	Variable Meaning
WDCHNWGT	WeekDays HomeChain Weight (based on average of HomeChain Trips)
Min	0
Max	9999

Variable Name	Variable Meaning
WECHNWGT	Weekend HomeChain Weight (based on average of HomeChain Trips)
Min	0
Max	9999



<b>Variable Name</b>	<b>Variable Meaning</b>
<b>SDCHNWGT</b>	School-Days HomeChain Weight (based on average of HomeChain Trips)
Min	0
Max	9999



## Appendix Z – Landmarks File Structure

<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>
<b>Transport Feature</b>	Bus Stop Tram Stop Train Station Car Park On-Street Feature Airport Waterside Structure Bike Rack Taxi Stand Depot Transport NEC	
<b>Accommodation</b>	Survey Home Someone Else's Home 2nd Home Farm Hotel or Motel Caravan Park Campsite Nursing Home Retirement Village Accommodation NEC	
<b>Workplace</b>	My Workplace Another Workplace Conference Centre Workplace NEC	
<b>Physical Feature</b>	Park Lake or Reservoir Bay or Beach River or Creek Lookout Forest Geographical Feature Physical Features NEC	
<b>Education</b>	Childcare Kinder or Preschool Primary School Secondary School Technical School Special School School NEC Tertiary Education NEC	
<b>Retail</b>	Shopping Centre Supermarket Food Store Fast Food Liquor Store Milk Bar Convenience Store Petrol Station Car Accessories Vehicle Sales Newsagency & Bookstore Department or Discount Store Chemist Clothes & Shoes Hardware Domestic Appliances Homeware Furniture Antiques & Secondhand	



	Garden Centre	
	Florist	
	Video	
	Computer or Music	
	Photo or Camera	
	Sport or Outdoor	
	Craft or Hobby	
	Toy Shop	
	Tobacconist	
	Pet Shop	
	Gift Shop	
	Jewellery	
	Market	
	Retail NEC	
<b>Personal Services</b>	Health Services	<i>Hospital Doctor Optometrist Veterinarian Dentist Physiotherapist Chiropractor Acupuncturist Other Alternative Health Maternal Health Centre Other Health Centre Psychologist/Psychiatrist Bank Other Financial Institution Car Service and Repair Car Wash Car Hire Federal Government State Government Municipal Office/Town Hall VicRoads Court Prison Consulate Police Station Fire Station Ambulance Station Health Insurance Other Insurance Lawyer Accountant RACV Office Real Estate Agent Travel Agent Printing &amp; Copying Radio Station TV Studio</i>
	Banks	
	Car Services	
	Government Offices	
	Emergency Services	
	Other Services	
	Places of Worship	
	Death Services	<i>Cemetery Funeral Parlour</i>
	Waste Disposal	
	Postal Facilities	
	Beauty Services	<i>Hairdresser Beauty Salon Laundrette Dry Cleaner</i>
	Cleaning Services	
	Personal Services NEC	
<b>Social</b>	Theatre	
	Cinema	
	Nightclub	
	Pubs	



<b>Recreational</b>	Restaurant or Cafe Clubs	<i>RSL Sports Clubs Social Clubs Boy Scouts Girl Guides Senior Citizens Other Clubs</i>
	Gambling	<i>TAB Lotto Agency Casino</i>
	Amusement Halls	
	Community Centre	
	Reception Centre	
	Gallery	
	Museum	
	Library	
	Places of Interest	
	Tourist Place	
	Social NEC	
	Gym	
	Skating Rink	
	Squash Court	
	Tenpin Bowling	
	Other Indoor Sports	<i>Basketball Netball Martial Arts Indoor Sports NEC</i>
	Lawn Bowls	
	Ovals	
	Golf	<i>Golf Course Driving Range Horse Track Trotting Dog Track Motor Circuit</i>
	Racecourse	
	Tennis Court	
	Swimming Pool	
	Water Sports	<i>Yacht Club Life Saving Club Rowing Other Water Sports</i>
	Other Outdoor Sports	
	Recreational NEC	



## Appendix AA – Logic Checks

### HOUSEHOLD FILE

- People, Visitors, Registered Vehicles: must be a number
- Type of Dwelling, Type of Ownership, Years Lived, Months Lived, Number of Adult Bicycles Kept, Number of Adult Bicycles Used, Number of Child Bicycles Kept, Number of Child Bicycles Used: must be answered
- Phone Number: must be not empty. If a number, must have at least 9 characters (e.g. "xxxx xxxx"). Is checked against numbers collected at door, or otherwise.
- Number of Adult Bicycles Kept  $\geq$  Number of Adult Bicycles Used
- Number of Child Bicycles Kept  $\geq$  Number of Child Bicycles Used
- Number of Bicycles Kept  $< 2^* \text{People} + 1$

### PERSON FILE

- Name: must be answered. A minimum of a generic name (eg. "P1") is always kept, even if the data-enterer deletes the name and leaves the field.
- Month of Birth, Year of Birth, Gender, Relationship to Person 1: must be answered
- People must be entered such that ages descend from Person 1
- Spouse must be at least 16 years old
- Spouse must be no more than twenty years younger than Person 1 (their spouse)
- Child must be at least 16 years younger than Person 1 (their parent)
- Child must be at least 16 years younger than any person listed as "Spouse" (likely to be their parent)
- Siblings must be within 10 years of Person 1 (their sibling)
- Grandchild must be at least 32 years younger than Person 1 (their grandparent)
- Grandchild must be at least 32 years younger than any person listed as "Spouse" (likely to be their grandparent)
- Fully licensed drivers must be at least 17 years old
- Restricted licensed drivers must be at least 15 years old
- Learner licensed drivers must be at least 15 years old
- Motorcycle licensed drivers must be at least 15 years old
- Other licensed drivers must be at least 17 years old
- If "No licence" is chosen, person must not have a full, restricted, learner, motorcycle or other license (and vice versa)
- Probationary licence holders must specify how many months they have held said licence
- Based on that answer, probationary licences (presumably Victorian) must have been earned after person was 17 years old
- Length probationary licence has been held must not be entered if person does not have a probationary licence
- If employed full-time, must be at least 15 years old
- If employed full-time, must be no more than 75 years old



- If employed full-time, part-time, or casually, must not be retired
- If employed full-time, part-time, or casually, must not be unemployed/looking for work
- Person must not be a full-time worker as well as a full-time student
- If employed, the Work Hours, Employe(e/r) Type, Occupation, and Industry questions must all be answered (and vice versa)
- If at primary school, must be between 4 and 14 years old
- If at secondary school, must be between 11 and 20 years old
- If at a tertiary or other educational institution, must be at least 16 years old
- If not yet at school, must be at no more than 6 years old
- If keeping house, must be at least 15 years old
- If unemployed, must be at least 15 years old
- If retired, must be at least 60 years old
- If "other activity" is specified in the Activity question, then the other activity must be entered (and vice versa)

#### **VEHICLE FILE**

- If the household has no vehicles, a warning to check this is presented.
- Type, Make, Model, Year, Fuel Type, Cylinders, Running Costs: must be answered
- Some non-standard combinations of engine type (Petrol, Diesel, Gas, Electric) must not be used (diesel with either petrol or electric, and electric with gas).
- The Make and Model must come from the lists provided, and correspond with each other.
- If the vehicle is a Passenger car/van, 4WD/SUV, Ute, Goods Van, or Truck, it must have at least 3 cylinders. A warning is also given for 3 cylinder vehicles of any other type, given their relative rarity. A list of the most common vehicles with less than four cylinders was shown on the vehicle form to aid checking of this.
- Motorcycles must have 1, 2, or 4 cylinders.

#### **TRAVEL DAY FORM**

- Day and date of travel, start place, did you travel?: must be answered
- Date of travel: must be the date that was assigned to that household, and must not be outside the first and last days of the survey
- (Note it is possible that the day of travel may change from that we originally assigned: in most cases, this is due to us delivering the wrong forms to the household. Some households also enter the survey exactly one week early, as they receive the survey on a Saturday or Sunday, and do not realise their travel day is the following Saturday or Sunday. We allow exactly one week early errors only for these two days. Any other un-prompted changes to the travel day by the household result in that survey not being entered. If the members of the household complete the survey for different days from each other, the surveys from incorrect days are listed as refusals -- often, this reduces the proportion of surveys entered for the household below two-thirds, and therefore the survey as a whole is not entered.)
- First trip of the survey day must not start before 4am (as it would then be a trip of the previous day). If travelling, a complete start time is required -- not just the hour, for example.
- Day and date of survey day correspond to each other.



- Day and date of last-travelled day correspond to each other.
- Date of last-travelled day is before date of survey day.
- The start location must be able to be geocoded, even if only in a generic fashion (e.g. by state, or using the solitary overseas location).
- (For the travel day, stop, and income answers, children under 5 years old are exempted from many of the checks, as they do not need to complete the blue survey form.)

## STOPS FORM

- What was stop, what was stop (other), geocode type, latitude/longitude, why go to stop, why go to stop (other reason), how did you get to stop, vehicle type, as driver or passenger, private vehicle occupancy, whether the private vehicle used was a household vehicle, parking type, parking fee, walking time from parked vehicle, bus route, public transport ticket type, public transport fare type, time of arrival at stop, whether more stops were made, time of departure from stop: must be answered (some of these questions only arise if another is answered in a particular way, and if not relevant will be automatically bypassed by the data-enterer]
- Check boxes may not be answered "Null" -- that is, neither true nor false.
- If the person travelled with no one else from their household to a given stop, the "No One Else" option must be explicitly chosen.
- A person must not travel "with" themselves.
- Reason for going "home" must be "home".
- Consecutive stops may not be "Usual Workplace" -- e.g. the other location should be "Another Place To Do Work".
- Each stop location must be able to be geocoded, even if only in a generic fashion (e.g. by state, or using the solitary overseas location), and be different to the previous or next stop (no zero-length trips).
- If a household vehicle is used, its type on the Stops page must be the same as that on the Vehicles page.
- If public transport is used, the origin and destination purposes must be "to get on or off public transport".
- If travelling with other people from the household in a private vehicle, the occupancy of the vehicle must not be less than the original person plus the people travelling with them.
- If the person travelled in a private vehicle as a passenger, the occupancy of vehicle must be at least 2.
- The occupancy of a vehicle must not be excessive: car < 8, passenger van < 13, SUV < 9, motorcycle < 3, ute < 7, goods van < 4, truck < 4
- If the person travelled in a private vehicle as a driver, they must have a licence. If the vehicle is a motorcycle, it must be a motorcycle licence.
- Progressively stronger walk time warnings are given once walk time reaches 6 and 10 minutes. If the walk time is not seen as reasonable, more information will be sought on the actual parking location, and a walk trip between that and the actual destination may be substituted.
- If the mode was cycling, then roads/path used must be entered. On initial entry of a survey with no such information, the error will state a clarification call MUST be made. If the entry follows a clarification call, the error will note the call was made but the route used was not obtained.
- The street/path used must be from the provided list.
- The final stop for the travel day must be at home.
- All trips must take at least one minute, and the departure time from a stop must not be before the arrival time.



## **INCOME FORM**

- Income, who completed the survey form, day and date of travel: must be answered
- Day and date of survey-completed day must correspond to each other.
- A warning is provided if the survey-completed date is prior to the travel date.

## **OTHER CHECKS**

- All travel dates within a given household must be the same, and equal to that assigned to that household.
- A full-time worker must go to "Usual workplace" or "Another place to do work", unless the person form indicated they usually work from home, or the travel day form said they stayed home all day because they were either working from home or subject to family or own illness. As this survey includes weekends, this creates numerous "false negative" errors, but is still useful.
- The number of trips made by Person x with Person y must be the same as those of Person y with Person x.
- If two or more people travel together at the same time, their origins and destinations must be the same.
- A person must not spend more than six hours at any one stop if it is not at "home", or for education. This produces some false negatives for workers eating lunch entirely within their workplace, but remains a valuable check to ensure minor trips are not forgotten.
- Stop data must not be recorded after a negative answer to "More Stops?" is provided.
- There must be a negative answer to "More Stops?" provided for the final trip.
- Excessive trip speeds, distances and travel times (according to the mode chosen) are not allowed.
- Slow speeds are also detected, based on the mode chosen and the length of the trip (eg. private vehicle trips up to 5 minutes are ignored; for trips of 6 to 14 minutes, a minimum speed of 5kph is required; for 15 to 29 minutes, a minimum speed of 7.5kph is required; for 30 to 44 minutes, a minimum speed of 10kph is required; for 45 to 59 minutes, a minimum speed of 12.5kph is required; and for travel times of over one hour, a minimum speed of 15kph is required. These values were calibrated using actual data to highlight outliers.)
- Travel speed/distance/time must be able to be calculated (most often this is a problem when geocoding of a particular stop has not been done, or the times are inconsistent).
- Duration at stop must be able to be calculated (it can be zero minutes, such as walking away after alighting from a bus).



## Appendix AB – INR Imputation Methods

### Household File Imputation

Variable	Method	Independent Variables (in order)	n	N	%
DwellType	Deductive	Address	43	16411	0.3%
OwnDwell	Hot-Deck	DwellType, YearsLived	145	16411	0.9%
MonthsLived	Random	None	310	16411	1.9%
YearsLived	Hot-Deck	DwellType, OwnDwell, Oldest	471	16411	2.9%
AdultBikes	Deductive	Set to zero	646	16411	3.9%
KidsBikes	Deductive	Set to zero	648	16411	3.9%
AdultBikesUsed	Deductive	Set to zero	652	16411	4.0%
KidsBikesUsed	Deductive	Set to zero	652	16411	4.0%

n = number of records requiring imputation

N = total number of valid records

% = percent of valid records requiring imputation

### Vehicle File Imputation

Variable	Method	Independent Variables (in order)	n	N	%
VehType	Deductive	From Stop File			
VehType	Deductive	VehMake, VehModel	265	10119	2.6%
VehType	Hot-Deck	RealRegion			
VehMake	Hot-Deck	RealRegion, VehType	375	10119	3.7%
VehModel	Hot-Deck	RealRegion, VehType, VehMake	842	10119	8.3%
VehYear	Hot-Deck	RealRegion, VehType, VehMake, VehModel	814	10119	8.0%
Petrol	Hot-Deck	RealRegion, VehType, VehMake, VehModel, VehYear	400	10119	4.0%
Diesel	Hot-Deck	RealRegion, VehType, VehMake, VehModel, VehYear	400	10119	4.0%
Gas	Hot-Deck	RealRegion, VehType, VehMake, VehModel, VehYear	400	10119	4.0%
Electric	Hot-Deck	RealRegion, VehType, VehMake, VehModel, VehYear	400	10119	4.0%
Cylinders	Hot-Deck	RealRegion, VehType, VehMake, VehModel, VehYear	853	10119	8.4%
RunningCosts	Hot-Deck	RealRegion, VehType, VehMake, VehModel, VehYear	452	10119	4.5%

### Person File Imputation

Variable	Method	Independent Variables (in order)	n	N	%
Sex	Deductive	First Name, Relationship to other household members, then Random	334	42003	0.8%
MonthofBirth	Hot-Deck	Random	1445	42003	3.4%
YearofBirth	Deductive	Relationship to other household members, work/study/activity	1077	42003	2.6%
Relationship	Deductive	Relationship to other household members, Age, Gender	759	42003	1.8%
CarLicence	Hot-Deck	Gender, Age	392	42003	0.9%
MotorBikeLic	Hot-Deck	Gender, Age	297	42003	0.7%
OtherLic	Hot-Deck	Gender, Age	297	42003	0.7%
County of Birth	Hot-Deck	First Name, Relationship to other household members, then Random	344	42003	0.8%
WorkStatus	Hot-Deck	Gender, Age	1229	42003	2.9%



Studying	Hot-Deck	Gender, Age	1229	42003	2.9%
Activity	Hot-Deck	Gender, Age	1229	42003	2.9%
WorkType	Hot-Deck	F/T Work, P/T Work, Casual Work, Gender, Age	1313	22349	5.9%
EmpType	Hot-Deck	F/T Work, P/T Work, Casual Work, Gender, Age	2065	22349	9.2%
ANZSCO2	Hot-Deck	F/T Work, P/T Work, Casual Work, WorkType, EmpType, Gender, Age	1635	22349	7.3%
ANZSIC2	Hot-Deck	F/T Work, P/T Work, Casual Work, ANZSCO2, WorkType, EmpType, Gender, Age	1975	22349	8.8%
ReasonCode	Hot-Deck	Gender, Age	257	7951	3.2%
MRTint	Hot-Deck	ReasonCode, Gender, Age	1168	7951	14.7%
PersInc	Hot-Deck	F/T Work, P/T Work, Casual Work, ANZSCO2, ANZSIC2, WorkType, EmpType, Mainact, Gender, Age	8704	42003	20.7%
WhoFilled	Deductive	Who filled out the forms for rest of household	303	42003	0.7%
FillLag	Hot-Deck	Proxy, TRAVDOW	1270	42003	3.0%

### Stops File Imputation

Because of the interactive nature of most of the Stops file variables, and the in-built editing routines within Speedit, there were very few missing values that slipped through to final editing stage. Those few cases of missing values that did occur (less than 0.1% of records) were imputed by deductive imputation from information supplied on other trip stages.



## **Appendix ZZ – Frequently Asked Questions (and answers)**

### ***What is the Victorian Integrated Survey of Travel & Activity?***

The Victorian Integrated Survey of Travel & Activity is a Survey of Day-to-Day Travel being conducted in Victoria in 2009 and 2010. The surveys are being conducted in the Melbourne Metropolitan Area and in a number of regional areas in the state. "Day-to-Day" travel includes all the everyday travel that people do as they go about their lives, such as going to and from work, going shopping, visiting friends, going to sporting events, and even just walking the dog!

### ***How often is the survey conducted?***

The last survey of this type in Melbourne was conducted in 2007-08. Since that survey, demographics and travel patterns have continued to change, requiring an update of the data.

### ***Who is conducting the survey?***

The survey is being designed and conducted by The Urban Transport Institute and I-view Pty Ltd, two companies with extensive experience in such surveys throughout Australia and overseas.

### ***Who is the survey being conducted for?***

The survey is being conducted for the Victorian Department of Transport.

### ***Why is the survey being conducted?***

The survey is being conducted to obtain up-to-date information on travel and activity patterns of residents of Victoria. This information is required to ensure that decisions about investments in transport infrastructure and transport services are based on current travel and activity patterns.

### ***What will be done with the data that is collected?***

The data that is collected from households will be summarised statistically to describe a variety of travel patterns. For example, how many trips are made on average by people of different types, where do these trips come from and go to, what methods of transport are used on these trips, at what time of day are the trips made etc etc.

### ***Where is the survey being conducted?***

The survey is being conducted in the Melbourne Metropolitan Area and in a number of regional areas in the state, namely Geelong, Ballarat, Bendigo, Shepparton and the Latrobe Valley.

### ***When is the survey being conducted?***

The survey is being conducted over a 12-month period from July 2009 through July 2010.

### ***How is the survey being conducted?***

The survey is being conducted by delivering questionnaires to selected households and having them fill in these questionnaires describing the travel they do on a specific Travel Day. Each household will also be asked to provide some limited information about the people who live in that household. The completed questionnaires will then be picked up from each household after their Travel Day.

### ***Who is being surveyed?***

All residents of the Melbourne Metropolitan Area and the 5 regional areas are eligible for inclusion in the survey.

**How are households selected for the survey?**

Households are selected for the survey by a random selection from a listing of all residential addresses in the Study Areas.

**Is the survey compulsory?**

The survey is not compulsory, but participation by all selected households is encouraged so that a representative picture of travel by all residents of the Study Areas is obtained. In this way, everyone's voice is heard when decisions are made about transport investment.

**What about privacy and confidentiality of the data?**

The data collected from households will be treated with absolute confidentiality. All data collected will be merged with data from other households. No information will be released which could possibly identify any individual person or household.

**What is meant by "travel"?**

For this survey, "travel" means any time you leave your residence. This could be to go to work or the shops, to walk across the road to visit a neighbour or even just to go for a walk or to ride your bike. At the other end of the scale, it could also mean a longer trip out of Victoria (e.g. flying to Sydney).

**What is the Travel Day?**

Each household is assigned a specific Travel Day, or days, by the survey team. The household is asked to report what they do on this specific day(s), even if they feel that this day is not "normal" for them (for example, they travelled much more than normal on this particular day or they didn't travel at all). The Travel Days will be spread across 12 months in 2009-10 to ensure that we get a good coverage of many different days. By having every household report about the specific Travel Day(s) assigned to their household, we will obtain a good average of all the travel days.

**For how many days do I need to complete the survey?**

While the survey itself will run for 12 months, households need record their travel for only one day.

**Why does the Travel Day start at 4.00am, and not midnight?**

The Travel Day is defined to start at 4.00am on the Travel Day, and to run till 4.00am on the next day. It is defined to start at 4.00am because this is the time of day when the fewest number of people are actually travelling. This way, there will be least opportunity for confusion about what happens if people are already travelling when the Travel Day starts, or are still travelling when the Travel Day ends.

**What if I don't do any travel on the Travel Day?**

There are some people who won't do any travel on their specific Travel Day. For example, some people simply won't need to travel on that day, or they may be home sick. They should still complete the survey and simply report why they didn't travel. It is important to know about these people as much as about anyone else, if we are to get a complete picture of everyone's travel and activity patterns.

**What if we are away from home on the Travel Day?**

If you are away from home for the whole of the Travel Day, you should still tell us about the travel you do on that day and where you did it.

***Why do you want to know about the characteristics of people in the household?***

We ask a number of questions about your household and the people in your household because we are trying not just to describe the travel patterns in Victoria, but also to understand why they occur. We know from previous studies that some things about people and households explain why they travel in certain ways. By collecting this information along with their travel patterns, we are able to better understand why people travel the way they do, and this also enables us to estimate future travel patterns as the population grows and changes in nature.

***Why do you ask about my income?***

As explained above, some characteristics explain a lot about travel patterns. Income has been found to be one of the best predictors of travel patterns. It is also useful when trying to explain the social implications of various transport investments, and in comparing our sample with that of the population as measured in the Census. Be assured that the information about income is kept strictly confidential and will not be used for any purpose other than in connection with explaining travel patterns, or comparing our sample with the Census population.

***What if I travel out of Victoria on the Travel Day?***

If you travel out of Victoria on the Travel Day, please tell us the details of all the travel you do within Victoria and where you first went when you left Victoria (e.g. tell us about your trip to the airport, and the fact that you then flew to Sydney). If you return to Victoria on the Travel Day, tell us about your travel after you returned to Victoria.

***Why do you ask so many questions about the vehicles in my household?***

We ask a number of questions about the vehicles in your household (including any company or government cars that are garaged at your household on the night before your Travel Day) so that we can get an idea of how these vehicles are used. It is important to know what type of vehicles you are using so that we can then estimate things like the fuel consumption and Greenhouse Gas emissions caused by daily travel patterns.