National Travel Survey 1977/78, Description of the NTS Data Base

Information Paper

This Paper presents a description of the data base compiled from the information obtained from the National Travel Survey (NTS). The general aim of the NTS was to determine domestic non-urban travel characteristics on a fully national basis. All modes of travel were encompassed, and the seasonal nature of this travel was also monitored. As well as various travel parameters, some personal and household characteristics were obtained, to allow the influence of personal and household characteristics on long-distance travel behaviour to be assessed.

BUREAU OF TRANSPORT ECONOMICS

INFORMATION PAPER 1

NATIONAL TRAVEL SURVEY 1977-78
DESCRIPTION OF THE NTS DATA BASE

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FOREWORD

From July 1977 to June 1978 the Bureau of Transport Economics (BTE) conducted the National Travel Survey 1977-78 (NTS). This was a major postal survey of non-urban travel in Australia, and there is every indication that the results will be of considerable value to a wide range of transport interests. Several publications describing various aspects of this project have already been published by the BTE.

The NTS was designed to cover travel throughout Australia on all modes and in all seasons of the year. Details of various travel characteristics were requested for each non-urban trip made by members of sampled households. In addition, details of a number of personal and household characteristics were collected, for use in assessing the influence of personal and household characteristics on long-distance travel behaviour.

The results from the NTS represent a substantial and comprehensive addition to the information available on non-urban travel in Australia. These results can be used to carry out a wide range of quantitative investigations, both general and specific.

The information collected in the NTS has been compiled into the form of a machine-readable data base. Since the BTE is not in a position to undertake all of the investigations which may be desired by particular organisations, this data base is available to these organisations for processing according to their own requirements.

This Paper is designed to provide all the details necessary for the NTS data base to be used effectively. In particular, it provides a detailed description of the information contained

within the data base and the methods used to interpret ambiguous responses. It also contains details of the coding schemes used, and the format of the data base in machine-readable form. The Paper is intended to be a guide to potential users as to the usefulness of the NTS information for the particular application they have in mind.

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SUMMARY

This Paper presents a description of the data base compiled from the information obtained from the National Travel Survey (NTS). The general aim of the NTS was to determine domestic non-urban travel characteristics on a fully national basis. All modes of travel were encompassed, and the seasonal nature of this travel was also monitored. As well as various travel parameters, some personal and household characteristics were obtained, to allow the influence of personal and household characteristics on long-distance travel behaviour to be assessed.

The NTS was conducted as a postal survey over a 12-month period between July 1977 and June 1978. In addition, a supplementary call-back interview survey was conducted. The sample used for this supplementary survey was a small sub-set of the samples of respondents and non-respondents to the postal survey. As such, the interview survey returns will be used to estimate response errors and non-response bias in the NTS data. The BTE will publish these correction factors later.

In some cases, the respondents did not follow the directions on the questionnaire, with the result that the replies were rather ambiguous in these cases. Often it was possible, from the context of the overall reply, to interpret the information supplied in an appropriate manner. Some knowledge of the interpretation and coding processes involved in compiling the data base from the postal replies and interview sheets is necessary to understand the NTS data base fully. These processes are outlined in this Paper.

When the NTS data was coded and converted into machine-readable form, it was decided to code all the information as numerical data, for ease of subsequent processing of the data base. The NTS questionnaire was designed to obtain information through both structured (or multiple-choice) questions and unstructured

questions. The structured questions simply required respondents to mark appropriate boxes on the questionnaire to indicate the relevant characteristic. A simple coding scheme was developed to record the information from each of these structured questions.

The information from the unstructured questions falls into two categories. The first category relates to information recorded numerically, and this information was recorded in the data base as it stood. The second category relates to information such as occupations and placenames. For each of these a special coding directory was developed.

Responses from the interview survey have also been included in the NTS data base. The records containing data from households which did not respond to the postal survey (i.e. non-respondents) also include the reason for the non-response. The records containing data from households which did respond to the postal survey replace the original records from the postal survey.

The information comprising the NTS data base is available in machine-readable form on magnetic tape. The detailed record structure and tape format are also given in this Paper.

CHAPTER 1 - INTRODUCTION

From July 1977 to June 1978 the Bureau of Transport Economics (BTE) conducted a survey of non-urban passenger travel in Australia. This survey, known as the National Travel Survey (NTS), had the general aim of providing comprehensive information on non-urban passenger travel in Australia. Most of the information relating to non-urban travel which is currently available to transport planners and analysts is very limited. Previous surveys have generally been designed to provide route-specific and/or mode-specific information, or details of recreational travel. However, the NTS was designed to cover the whole of Australia, all modes of travel, and all seasons of the year. It was also intended to provide guidelines for the planning and effective conduct of more specific transport surveys in the future.

Some knowledge of the form and operation of the NTS is necessary before the NTS data base can be used effectively. Accordingly, the following Section provides a brief overview of the NTS. Further details of the NTS may be found in the references cited in the following Section.

OVERVIEW OF THE NTS

The NTS was designed to obtain details of non-urban travel undertaken by the members of a sample of households throughout Australia (Aplin and Flaherty 1976, Moll 1978). The household was chosen as the basic sampling unit, and the household sample for the survey was selected randomly within each of a number of geographic regions devised specifically for the NTS (Moll and Russell 1978). A brief description of these regions (which are known as NTS regions) is given in Appendix I. Further details of these regions and their relationship to other regional systems are provided by Aplin and Hirsch (1978).

The sample of households was selected from the Federal electoral rolls for the whole of Australia except South Australia. Because the South Australian electoral roll was not available to the BTE in machine-readable form, the South Australian sample was selected from the property file compiled by the South Australian Valuer-General's Office. Since the sample was based on household addresses rather than household members, the South Australian property file was considered to be a satisfactory substitute for the electoral roll. Essentially, it represented a list of the addresses of various types of properties, from which private dwellings[1] could be selected.

The survey was conducted on a monthly basis from July 1977 to June 1978, thus providing coverage of all seasons of the year. The basic time period for the sampling was one month. Thus, twelve monthly samples were derived for the survey. At the end of each month (or more strictly at the beginning of the following month), an NTS questionnaire together with a covering letter and a reply-paid enevelope was sent to every household to be sampled for that month. Appendix II contains a sample questionnaire for the month of June 1978. Approximately 8 000 households were sampled each month during the 12 months in which the NTS operated. An overall response rate of 47 per cent was obtained for the NTS, resulting in approximately 3 600 questionnaires (allowing for undelivered questionnaires) being completed and returned each month.

In addition to the main postal survey, a supplementary call-back interview survey was conducted. The sample used for this call-back interview survey was a small subset of the main survey sample. In particular, the households in this subset comprised both those which responded to the postal questionnaire (respondents) and those which did not (non-respondents). Interviewers visited

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(1) The aim of the NTS was to survey the travel characteristics of the occupants of private dwellings.

a sample of approximately 100 respondent and 160 non-respondent households each month. The results of these monthly interview surveys will be used to estimate non-response bias and response errors occurring in the main postal survey results. Information from the supplementary interviews is included in the NTS data base (replacing the original postal information in cases in which the interviewed household had originally replied to the postal survey).

Some preliminary results obtained from the NTS are presented in Hirsch and Aplin (1978a,b) and Hirsch (1978, 1979). It is intended to produce final adjusted results in subsequent BTE publications.

OUTLINE OF THE PAPER

This Paper presents a description of the content and format of the NTS data base. Its primary aim is to permit users of the machine-readable version of the data base to interpret the data base format and hence to process the data base for their own requirements. The preceding Section presented a very brief overview of the NTS. Chapter 2 describes the NTS questionnaire and the methods used to interpret responses to the questionnaire. Chapter 3 presents the coding schemes used to code the responses to the survey and also provides the detailed format of the NTS data base. Finally, some of the potential applications of the NTS data base are discussed in Chapter 4.

AVAILABILITY OF THE NTS DATA BASE

The BTE will be carrying out detailed analysis of the NTS data in support of its own ongoing work program. However, it is most likely that a number of organisations will have particular analyses and investigations which they would wish to pursue using the data base. In general, the BTE will not be in a position to provide the service associated with analysing the data to meet

individual requirements. Hence, the data will be made available in machine-readable form (on magnetic tape) to approved organisations with appropriate interests in analysing the survey information. Chapter 3 provides the technical details necessary to process this tape.

CHAPTER 2 - INTERPRETATION AND PROCESSING OF SURVEY RESPONSES

In order to understand the data base completely some knowledge is required of the interpretation and coding processes involved in compiling the data base from the postal replies and the interview sheets. In some cases, respondents did not follow the directions on the questionnaire, with the result that the replies were rather confused. In many cases, however, it was possible to interpret the information supplied. This Chapter discusses in some detail the structure of the questionnaire and the methods used to interpret the responses.

DEFINITION OF THE SAMPLING UNIT

As mentioned in the previous Chapter, the basic sampling unit chosen for the survey was the household. With the exception of South Australia, for the purposes of the NTS, a household has been defined as an address for which at least one, and no more than six, electors are enrolled on the Federal electoral rolls(1). The rationale behind this definition represents an attempt to sample households consisting of members who, for all intents and purposes, constitute a single economic unit. By this it is meant that a certain amount of gross household income is shared in some way through various household expenditures such as rent, food, clothing and so on. This is reflected in the disposable income of the household, which in turn affects travel patterns. Additionally, this definition partially conforms with Australian Bureau of Statistics (ABS) definitions used for the Commonwealth Censuses. The ABS defines a household as a place where there are:

'... persons living and eating together as a domestic unit. A person living alone is also a household.' (ABS 1976).

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(1) As mentioned in Chapter 1, the survey sample for South Australia was selected from the SA Valuer-General's property file. For this State, a household was regarded as an address which was identified on the file as a private dwelling. No information was available regarding the number of electors residing in the household.

However, for the purposes of the NTS it was considered that large institutions, (such as military establishments, nurses' homes and the like) which may conform to this definition, could not be regarded as a single economic unit[1]. Thus the upper limit of six electors was adopted as a means by which institutions not identifiable as such from their address could be excluded. Obviously this definition is not entirely satisfactory; it has two main limitations. Firstly, there is some interaction between persons domiciled at institutions, and this can affect their travel behaviour. For example, common destinations and purposes for some travel can involve the sharing of motor vehicles and so on. However, these influences were considered to be second-order effects and hence outside the real meaning of economic inter-dependency contained in the concept of an economic unit. The second shortcoming of the definition is that it may not lead to the elimination of certain households in which there are several separate economic units. For example, an address at which there are several electors may include two separate groups living in one residence. It is obviously difficult to exclude such cases, and the use of the term 'household' must be viewed in this light.

Each household in the sample was sent an NTS questionnaire to complete. The questionnaires returned did not always contain consistent data. The following Section describes the methods by which these inconsistencies were treated, giving the reason for each particular solution. This Section also includes a description of each characteristic (personal, household or trip) about which information was requested. This description does not, however, detail all the categories into which each characteristic is divided. This information is presented in Chapter 3.

INTERPRETATION OF RESPONSES TO THE SURVEY QUESTIONNAIRE

In order to allow travel data to be analysed and interpreted,

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(1) A different questionnaire would be required for institutions, together with a different sampling approach.

certain personal and socio-economic characteristics of the persons undertaking the travel are required. Consequently the survey questionnaire used for the NTS requested certain personal and household data in addition to the details of travel undertaken by the household.

The questionnaire form used for the NTS was divided into four Sections. These Sections are as follows:

- Section I - requesting certain personal characteristics of each member of the household;

- Section II - requesting details of any trips made by a household member which ended during the particular month being sampled;

- Section III - requesting certain household characteristics;

- Section IV - which is set aside for any comments the respondent may wish to make in relation to transport matters in general.

These Sections and the various inconsistencies which arose from incorrect completion of these Sections by respondents are discussed in more detail below.

Section I - Personal Characteristics

The personal characteristics requested for each household member are as follows:

- Sex;
- Marital status;
- Major activity (for example: student, employed full-time, home duties, etc);
- Actual occupation for those in full-time or part-time employment;
- Age;
- Possession of driving licence.

The interpretation of these characteristics is generally self-evident and does not require elaboration. However, some postal responses to the survey yielded certain inconsistencies and ambiguities.

The interpretation of inconsistent responses to each of these characteristics will be discussed in turn.

Sex

A completely ambiguous situation occurred when both categories ('male' and 'female') were completed for the 'sex' characteristic applying to one person. In this case, when it was not clear from other information which category was valid, both of the indicated categories were ignored and the sex of the person was recorded in the data base as unknown(1).

Marital Status

Corresponding to the situation regarding the 'sex' categories, if two or more categories were completed for the 'marital status' characteristic applying to one person, and it could not be determined from other information which category was valid, each of the indicated categories was ignored. The marital status of the person was then recorded in the data base as unknown. The 'other' category for the 'marital status' characteristic was designed for those persons who were divorced or separated. However, a number of respondents thought that this category meant 'not applicable', and consequently recorded children as having a marital status of 'other'. Since it was considered that the 'marital status' characteristic for a child less than 15 years old should be 'never married', the appropriate adjustment was made in coding the responses for the data base.

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(1) Effectively it would appear in the data base as being 'not stated'. The same applies to all further uses of the term 'unknown'.

Major Activity

Some confusion also arose in the use of the 'other' category for a person's major activity. A number of farmers and other self-employed persons indicated 'other' for their major activity, rather than 'employed full-time'. However, from a socio-economic viewpoint, the major activity of such people is 'employed full-time'. In these cases, the category 'other' was changed to 'employed full-time' for the purposes of the NTS data base.

When two 'major activity' categories were indicated for one person, their major activity was not necessarily recorded as unknown. For example, a woman in the labour force often recorded both home duties and full-time or part-time employment as her major activity. In this case, it was decided that the employment, rather than home duties, was the most appropriate major activity to record for such individuals. A similar ambiguity often occurred when a person indicated that he was both retired and employed. His major activity was also recorded as employed (full-time or part-time as appropriate).

In accordance with the ABS definition used for the Census, it was assumed when compiling the NTS data base that 'all persons aged under 15 are not in the labour force.' (ABS 1978). In other words, the major activity of all persons aged under 15 is regarded as either 'student' or 'other' for the purposes of the NTS (since such persons obviously cannot be retired, or fully occupied with home duties). If the major activity of a person under 15 years of age was not recorded as 'student' or 'other' in the questionnaire, this major activity was recorded in the data base as being unknown.

Occupation

Appendix III provides a list of the occupation categories (and their appropriate numerical codes) used for recording the occupation information in the data base.

Age

Most respondents recorded their age in years as of their last birthday. However, occasionally a respondent also included the number of months or the proportion of a year since his last birthday. In this case, the latter piece of information (that is, the fractional part of the age in years) was deleted, leaving the age of the respondent as a whole number of years. A similar situation arose in the case of infants less than one year old, where the age was inevitably given in months. The above interpretation was still applied, so that the age of a baby who was less than 12 months old was recorded as 0 years, not 1 year.

Possession of Driving Licence

Again, when both categories were completed for the 'possession of driving licence' characteristic applying to one person, and it could not be determined from other information whether or not that person actually possessed a driving licence, the response to this item was ignored, and the 'possession of driving licence' characteristic for the person was recorded in the data base as unknown. For a person aged less than 15 years this characteristic should have been indicated as 'no' (that is, does not possess a driving licence). The appropriate correction was made for any incorrect responses in this situation.

Special Cases

The above paragraphs have dealt with the situation in which multiple responses were given for a particular person in cases where only single responses were required. However there were some returns for which the actions described above were not appropriate. These exceptions occurred where the personal characteristics of two or more people were entered into the space provided for those of one person[1]. Examples where the personal

(1) On page one of the questionnaire, each row was designed to allow the characteristics of one person to be recorded; this can be seen in the sample questionnaire shown in Appendix II.

characteristics of two people, and of four people, were entered in the space provided for one are shown in Figures 2.1 and 2.2 respectively. The basic assumption made in interpreting both these cases was that the household is a 'typical family' household. In other words, the household represented in Figure 2.1 contains two members who are married to each other. The male member is retired, 67 years old, and has a driving licence. The female member of the household is 65 years old, attends to the home duties and has no driving licence. The household in Figure 2.2 contains four members - three male and one female. The interpretation here is that the female member and the male member who is employed (and therefore assumed to be the household head) represent a married couple. The household head is employed full-time as a clerk and has a driving licence. It is also assumed that the other two male members of the household have never been married, that they are students, and that they do not possess driving licences. The major activity of the female member is home duties and she has a driving licence. Although misinterpretation of the questionnaire by respondents was comparatively rare, the examples discussed here are typical of the types of misinterpretation which did occur. If there was any difficulty in relating particular categories to the appropriate household members, the data were ignored and recorded as being not stated. Of course, these interpretive procedures involve certain assumptions, but it is believed that these assumptions were in general quite reasonable.

Section II - Trip Characteristics

Section II of the questionnaire requested details of any trips made by household members, concluding in the period stated on the questionnaire. Before examining this Section in more detail, the definition of a trip should be explained. For the purposes of the NTS, the term 'trip' was defined as a journey made by one or more household members satisfying all the following criteria:

PERSON	SEX	MARITAL STATUS	MAJOR ACTIVITY *Tick one box for each person*	OCCUPATION *See notes above*	AGE	DRIVING LICENCE
1	☒ Male ☒ Female	☐ Never married ☒ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☒ Home-duties ☐ Looking for work ☐ Other ☒ Retired, Pensioner		67 65 Years	☒ Yes ☒ No

FIGURE 2.1 – EXAMPLE OF TWO PERSONS ENTERED AS ONE PERSON

PERSON	SEX	MARITAL STATUS	MAJOR ACTIVITY *Tick one box for each person*	OCCUPATION *See notes above*	AGE	DRIVING LICENCE
1	3 Male 1 Female	2 Never married 2 Now married ☐ Widowed ☐ Other	1 Employed Full-time 2 Student ☐ Employed Part-time 1 Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	CLERK	Years	2 Yes 2 No

FIGURE 2.2 – EXAMPLE OF FOUR PERSONS ENTERED AS ONE PERSON

- The trip finished at home during the month nominated on the questionnaire for the particular survey period;

- The trip involved travel to a destination at least 100 km away from home;

- The trip was not a regular journey to work, nor was it made as a crew member of a bus, plane, train or ship;

- The trip involved only travel undertaken entirely within Australia.

The last criterion excluded trips made to an Australian city in order to join an international flight. Furthermore, trips made when moving home were excluded from the NTS data base, since they did not effectively start and finish at the same home.

The term 'person-trip' implies a trip satisfying the above criteria which was made by a person. A household-trip thus consists of at least one, and possibly several person-trips. Future references to 'trips' in this Paper imply household-trips satisfying the above criteria.

If no trips were made by a particular household during the month being sampled, respondents were asked to indicate this by marking the appropriate box in Section II of the questionnaire. However, sometimes a respondent completed all of the questionnaire with the exception of Section II. In such cases, it was assumed that no household members had undertaken any travel satisfying the given criteria and that the respondent completing the questionnaire had ignored or overlooked the box which should have been marked in Section II.

If any trips satisfying the above criteria were made, the following details were requested for each trip; the items shown refer to particular parts of the questionnaire (Appendix II):

- The main destination of the trip (Item A);
- The number of nights spent at the main destination (Item B);
- The type of accommodation used while staying at the main destination (Item C);
- The main reason (and any subsidiary reason) for making the trip (Item D);
- The place visited which was furthest from home (Item E);
- All methods[1] of transport used during the trip (including the main method of transport) (Item F);
- All household members who went on the trip (Item G);
- The total number of nights spent away from home (Item H);
- The date on which the trip ended (Item H);
- The person or organisation who paid for any fares relating to the trip (Item I);
- The number of other trips ending during the month being sampled, which were identical to the recorded trip (except for the dates on which the trips ended) (Item J).

The interpretation of each of these items will be discussed in turn.

Main Destination of the Trip

The main destination of each trip was recorded in the data base as a placename by use of the numerical coding scheme presented by

(1) The term 'method of transport' refers to the type of vehicle used (car, bus, train, aeroplane, ship, etc.), not merely the type of mode.

Aplin *et al.*(1978). Various regional codes corresponding to the main destination were also included in the data base. A description of these codes and their format in the data base is presented in Chapter 3.

Number of Nights spent at the Main Destination

Respondents were asked to indicate the number of nights spent at the main destination nominated in Item A of the questionnaire.

Accommodation

If at least one night was spent at the main destination, an indication of the type of accommodation used was requested. If no overnight stay was involved, no accommodation was to be specified.

Reason for Travel

If there was more than one reason for the trip being undertaken, the respondent was asked to distinguish the main reason by circling the appropriate ticked box. If a number of reasons for travel were indicated but no main reason was distinguished, the first box ticked was recorded as the main reason in the NTS data base.

Place visited furthest from Home

As in the case of the main destination, the place visited furthest from home was recorded in the data base by the use of the numerical coding scheme presented by Aplin *et al.* (1978). Again, the corresponding regional codes were also included in the data base as described in Chapter 3.

Method of Travel

If there was more than one method of travel used, the respondent was asked to distinguish the main method by circling the appropriate ticked box. If a number of methods of travel were indicated, but

no main method was distinguished, the first box ticked was recorded as the main method in the NTS data base.

Household Members who travelled

Respondents were asked to identify those households members who went on the trip. This was done by ticking the numbers in Item G which corresponded to the person-numbers (shown in Section I of the form) of persons who undertook the particular trip. However, some respondents marked the number corresponding to the total number of people who went on the trip, instead of marking the appropriate person-numbers as established in Section I of the questionnaire. This was evident when, for example, a two-year-old child was reported as having undertaken a three day trip by car alone[1]. In such a case, the appropriate correction was made prior to incorporation in the data base. Corrections such as this were made only in those cases where the discrepancies were obvious.

Total Number of Nights spent away from Home

An obvious inconsistency occurred when the number of nights spent at the main destination was recorded as being greater than the total number of nights spent away from home. In these situations, the total number of nights spent away from home was set equal to the number of nights recorded as being spent at the main destination.

Date on which the Trip ended

In order to assess trip generation levels accurately, it was important that only those trips which ended within a specific time

(1) This could be exemplified by a questionnaire which indicated in Section I that person-number 1 was an adult male, person-number 2 was an adult female and person-number 3 was a two-year-old child. If the box containing 3 was ticked in Item G of Section II of the questionnaire it seems clear that the intention was to indicate that three persons undertook the trip. This should have been indicated by ticking the boxes containing the numbers 1, 2 and 3.

period were included in the data base. The time period involved was the calendar month preceding distribution of the questionnaire. The trip was discarded if the date on which the trip ended was not within the month being sampled. However, if the data on which the trip ended was not given at all, the trip was accepted as a bona-fide trip for recording in the data base. These situations can be identified in the data base from the date information.

Method of Fare Payment

A number of respondents appeared to interpret 'payment of fares' to include expenditure on petrol, car maintenance etc, for a car trip, and consequently reported that a household member paid the fares involved in a trip made exclusively by car. In accordance with the normally accepted definition of 'fare', this situation should have been recorded as no fares being involved; however, no corrections were made for this in the data base, since this situation can be identified from the information recorded in the data base.

Number of Identical Trips made

Respondents were also asked to indicate the number of trips made which were identical in all respects[1] to the particular trips recorded on the questionnaire. This obviated the necessity for trip information to be repeated unnecessarily on the form.

Section III - Household Characteristics

The third Section of the questionnaire was designed to elicit information on the characteristics of the household. The information requested in this Section included:

- The number of vehicles available for use by members of the household;

(1) With the exception of the date on which the trip was completed.

. The combined gross income of all members of the household.

Number of Vehicles available to Household

Information was sought on motor vehicles in a number of categories. These categories of 'car', 'utilities and light trucks', 'motor cycles' and 'other' were similar to those used by the ABS for the Motor Vehicle Census conducted in 1976. According to ABS definitions, the 'car' category includes station wagons, combination car-van vehicles, landrovers and landcruisers; panel vans are included in the 'utilities and light trucks' category, and for the NTS, buses, large trucks and other heavy vehicles are included in the category 'other'. If identified explicitly by the respondent, unregistered vehicles and non-motorised vehicles such as trailers and caravans were excluded from the survey data base.

Household Income

The questionnaire requested information on the combined gross income of all the household members. If the householder indicated both gross and net income, the net income was ignored. In certain instances, respondents did not indicate their income, but indicated that they received some form of social welfare (such as the old-age pension and so on). In these cases, the standard rate of the social welfare item received by the respondent was recorded in the data base. Thus, in the case of the single old age pensioner, the household income would have been recorded as $2 000-$4 000 per annum(1).

Section IV - Comments

This Section of the questionnaire provided respondents with the opportunity to explain their travel characteristics in more detail if they felt that Section II did not appropriately reflect these

(1) The old age pension was $42.90 per week in June 1978. This falls into the second income category (over $39 to $77 per week).

characteristics. In particular, respondents were asked to indicate if the type of travel recorded in Section II was unusual in any way. In addition, respondents were invited to comment generally on matters associated with travel in Australia.

Comments on Trips made

Explanations of behaviour were used to check and, if necessary, amend the information recorded in Section II of the questionnaire. Respondents (especially elderly ones) did not always bother to complete Sections I, II and III of the questionnaire if they did not make any trips. However, in many of these cases they indicated in Section IV that they did not travel, and included some personal and household characteristics. This provided information which would probably not have been available if Section IV had not been included in the questionnaire. It is also possible that the response rate was slightly increased by giving respondents this opportunity to register any complaints which they might have had concerning travel in Australia.

General Comments on Travel

General comments on travel which were volunteered by respondents were coded in accordance with the scheme described in Appendix IV, and these codes have been recorded in the NTS data base.

CHAPTER 3 - DESCRIPTION OF THE NTS DATA BASE

The previous Chapter described the data requested on the NTS questionnaire and the procedures which were used to interpret the information supplied by respondents. The next stage in the process was to code this information and convert it to a machine-readable form. For ease of subsequent processing of the data base, it was decided to code all the information as numerical data. This Chapter describes the coding schemes used, and presents a description of the format of the data base. The technical details needed in order to use this data base are also given.

METHOD OF CODING NTS REPLIES

Structured Questions

The NTS questionnaire form was designed primarily as a structured or multiple-choice questionnaire. That is, the majority of the questions simply required the respondent to provide a particular answer by ticking a box. As can be seen from the sample questionnaire in Appendix II, a number of categories were specified for most characteristics about which information was requested. The respondent was asked to indicate which of the specified categories was appropriate for each characteristic, usually by marking an appropriate box. In coding information which was specified by ticked boxes, each of the categories represented by the boxes was numbered and the numbers of the ticked boxes were recorded in the data base. For the personal and household characteristics, only one category could be marked for a particular characteristic. Hence only one numerical code was needed to record the response for that characteristic. More than one category could be indicated

for most of the trip characteristics. In those cases in which multiple boxes could be ticked, up to four fields[1] were provided in the data base to record each characteristic.

For each question, the categories described above were numbered sequentially from the number 1 as they appeared reading down a column. Using this method, the marital status category (in Section I of the questionnaire) described as 'widowed', for example, has a code of '3'. If there were two columns of categories for a particular characteristic, the left-hand column was numbered sequentially down the column, and the sequence continued at the top of the next column. Accordingly, the major activity category described as 'home-duties', for example, has a code of '6'. The code for each category ticked on the questionnaire was recorded in the corresponding field of the appropriate data base record. Tables 3.1 and 3.2 contain a complete list of the codes used for the personal and household characteristics, respectively. Appendix V contains examples to illustrate the application of the codes in recording the survey information in the data base.

Where more than one category was indicated by the respondent for a trip characteristic (for example, under 'reason for travel'), the appropriate codes were usually recorded in increasing numerical order. However, in certain cases the respondent was asked to indicate the main category in a multiple-category response. These cases include responses on reasons for travel and methods of transport used. When more than one reason for travel or method of transport was specified, the main category in each case was indicated by circling the appropriate ticked box on the question-

(1) The detailed formats of the records used in the NTS data base are described later in this Chapter. Basically, each record is composed of a number of fields which in turn are comprised of varying numbers of numerical digits. Each field contains a particular item of information and because the amount of information provided varies among the responses, a certain number of fields have to be reserved in each (fixed length) record to accommodate sufficient information. As a result some of these fields may not be required for recording the information on a particular return. Those fields which are unused for a particular return have all their digits set to '0' or '9' as described in each situation.

TABLE 3.1 - CODES USED FOR PERSONAL CHARACTERISTICS

Characteristic	Category	Code
Sex	Male	1
	Female	2
	Not stated	9
Marital status	Never married	1
	Now married	2
	Widowed	3
	Other	4
	Not stated	9
Major activity	Employed full-time	1
	Employed part-time	2
	Looking for work	3
	Retired, pensioner	4
	Student	5
	Home duties	6
	Other	7
	Not stated	9
Possession of driving licence	Yes	1
	No	2
	Not stated	9

TABLE 3.2 - CODES USED FOR HOUSEHOLD CHARACTERISTICS

Characteristic	Category	Code
Household gross income	Less than $39 per week/ less than $2 000 per year	01
	Over $39 to $77 per week/ over $2 000 to $4 000 per year	02
	Over $77 to $115 per week/ over $4 000 to $6 000 per year	03
	Over $115 to $154 per week/ over $6 000 to $8 000 per year	04
	Over $154 to $192 per week/ over $8 000 to $10 000 per year	05
	Over $192 to $288 per week/ over $10 000 to $15 000 per year	06
	Over $288 to $385 per week/ over $15 000 to $20 000 per year	07
	Over $385 to $481 per week/ over $20 000 to $25 000 per year	08
	Over $481 to $577 per week/ over $25 000 to $30 000 per year	09
	Over $577 per week/ over $30 000 per year	10
	Not stated	99

naire[1]. In this case the code corresponding to the main reason for travel or main method of transport used was recorded first. All the other indicated categories were then recorded in increasing numerical order. If more than four categories were marked on the questionnaire for a particular trip characteristic, only the first four categories were recorded in the data base. However, this situation occurred so rarely that the resulting loss of data would be insignificant. When at least one and less than four categories were marked, the fields that remained unused after the data were recorded were set to '0'[2]. Sometimes there was no category marked for a particular characteristic (i.e. the characteristic was unknown or not stated). In this case, each of the appropriate fields reserved for recording the particular information was set to '9', to indicate that no response was obtained to the question seeking that information. A further point to be noted is that if no nights were spent at the main destination, the accommodation fields were set to '0' rather than '9'. In other words, although the accommodation question may not have been answered (as the respondent did not spend any nights away) it is appropriate to record that no accommodation was used rather than to indicate that the question was unanswered. Table 3.3 contains a complete list of the codes used for these trip characteristics.

Item G in Section II of the questionnaire requested information on which of the individual members of the household undertook the journey. This item was therefore coded in a different way to that described for the other questionnaire items. For this item, eleven fields were reserved in the data base. The first nine fields correspond to the nine people in the household who could be specified in Section I of the questionnaire. Each of these nine fields was coded with '1' if the person it represented undertook the particular trip. Conversely, fields representing persons who did not undertake the trip were coded with '0'. The tenth field

(1) The situation in which a respondent indicated a number of categories but did not indicate the main category by circling a box has been discussed in Chapter 2.

(2) When reference is made to a field being set to '0' or '9', the implication is always that each digit in the field is set to '0' or '9' respectively.

TABLE 3.3 - CODES USED FOR TRIP CHARACTERISTICS

Characteristic	Category	Code
Type of accommodation used	Hotel or motel	1
	Friends' or relatives' home	2
	Caravan, campervan or tent	3
	Other	4
	Not stated	9
Reason for travel	Deliver freight or goods	1
	Other business	2
	Visit friends or relatives	3
	Sightseeing or recreation	4
	Holiday	5
	Personal or family affairs	6
	Other	7
	Not stated	9
Method of travel	Aeroplane	1
	Bus/coach	2
	Car	3
	Truck	4
	Motorcycle	5
	Ship/boat	6
	Train	7
	Other	8
	Not stated	9
Method of fare payment	No fares involved	1
	Household member(s)	2
	Employers' or own business	3
	Other	4
	Not stated	9

contains '1' if any household member other than the first nine specified in Section I of the questionnaire went on the trip[1]. If there were nine or fewer people in the household, or if only people included in the first nine went on the trip, this field was set to '0'. The eleventh field contains '1' if more than nine people went on the trip; if fewer than nine people went on the trip, it contains '0'. If other details of the trip were recorded, but Item G was not completed by the respondent, each of the eleven fields was set to '9'.

Unstructured Questions

A number of the survey questions were inevitably unstructured. In these cases, the likely range of responses could not be prestated in a structured or multiple-choice form. These questions fell into two distinct categories; those requiring numerical answers, and those requiring non-numerical answers.

Numerical Information

Information which was supplied in numerical form included:

- Age;
- Number of nights spent at destination;
- Total number of nights spent away from home;
- Number of identical trips made;
- Motor vehicles available to the household.

These items were recorded as they appeared on the questionnaire. If an item was not completed, the appropriate field was set to '9'. One further adjustment was necessary before the number of motor vehicles available for use by the household could be recorded. On the very rare occasions when the number of motor vehicles in

(1) Section I of the questionnaire only provides space for nine household members. However, respondents were requested to provide details of any additional household members on a separate sheet of paper. This coding scheme was designed to allow for this (rare) contingency.

any one category was greater than or equal to eight, the number was replaced by eight, since only one numerical digit was reserved for each vehicle type. As mentioned earlier, the digit '9' was reserved for the situation in which no response was recorded for a question.

Non-numerical Information

Information which was in non-numerical form included:

- Occupation;
- Destination (both main destination and place visited which was furthest from home);
- Comments.

Coding Systems

For the above items, three special coding directories were developed. The first of these was established to encode the respondents' occupations. This directory is presented in Appendix III. A three-digit code was used to record each occupation classification. These occupation classifications were based on the classification system used by the Australian Bureau of Statistics (ABS 1976). If the major activity of a household member was not recorded as either full-time or part-time employment, the occupation code is '000'. Alternatively, if the major activity was recorded as either full-time or part-time employment, the occupation, if stated, was encoded by using the directory presented in Appendix III. If the occupation was not stated but the major activity was indicated as employed full-time or part-time, the code '999' was used to indicate this.

For each trip, the origin, destination, and furthest place from home (FPH) were all coded with a five-digit code unique to each placename. These five-digit codes were developed specifically for the NTS. The codes are contained in a detailed directory of

approximately 8 500 placenames throughout Australia (Aplin *et al.* 1978). This directory also provides codes for the following geographic descriptions corresponding to each particular placename:

- Local Government Areas (LGAs);
- Australian Government Regions (AGRs);
- Census Statistical Divisions (CSDs);
- NTS regions;
- Postcode.

Only the placename codes were entered initially in the appropriate records. Further processing of the data base at a later stage allowed attachment of all the geographic codes mentioned above (with the exception of the postcode), using a machine-readable version of this directory.

The LGA codes contained in the directory are those used by the Australian Bureau of Statistics (ABS) for the 1976 Census. The system of AGRs was developed by the former Department of Urban and Regional Development (DURD) (DURD 1975). The system of CSDs was developed by the ABS for gathering and preparing statistical data. They may be identified by reference to a series of maps produced by the ABS (1973). The system of NTS regions is described briefly in Appendix I. A much more detailed description which includes the correspondence between LGAs and NTS regions has been developed by Aplin *et al.* (1978). The appropriate State codes from Table 3.4 have been added to every code in all of the above geographic coding systems. This results in each geographic code being unique, and also allows easy identification of the State in which a particular place or area occurs.

TABLE 3.4 - STATE PREFIX CODES

State or Territory		Prefix Code
Australian Capital Territory	ACT	1
New South Wales	NSW	2
Victoria	Vic	3
Queensland	Qld	4
South Australia	SA	5
Western Australia	WA	6
Tasmania	Tas	7
Northern Territory	NT	8
State unknown	-	9

If the respondent did not state either the destination or the FPH, the corresponding placecode was recorded as '99999'. Obviously, this did not apply to the origin code, since this was known at the time of sample selection. However, in certain cases when the destination or FPH was stated, its location could not be determined and hence the corresponding geographic codes could not be assigned. In these cases, the appropriate State code was recorded as the first digit of the placecode, and the remaining four digits were recorded as '9999'. Similarly, for the corresponding geographic codes for these places, the appropriate State code was recorded as the first digit of the geographic code, and the remaining digits were recorded as '99', or '999' (for LGAs).

Table 3.5 presents a list of the ranges of each geographic code, together with the values it can take if a placename was not stated or could not be located geographically.

Any comments made in Section IV of the questionnaire, on travel in Australia, were coded by use of the coding scheme presented in Appendix IV. Each comment is coded using a four-digit field. Up to six comments for each household could be recorded in the data base. If at least one comment was recorded, the remaining unused comment fields were recorded as '0000'. If the householder did not volunteer any comments on travel in Australia, the comment fields were all recorded as '9999'.

TABLE 3.5 - RANGES OF THE GEOGRAPHIC CODES

Regional System	Values of Geographic Code	Value of Code if Place is Not Stated	Value of Code if Place is Not Located
Placename code	10001-10092, 19999-22520, 29999-32068, 39999-41270, 49999-50950, 59999-60928, 69999-70717, 79999-80128, 89999-99999	99999	n9999[a]
LGA[b]	1001-1093, 1999, 2001-2216, 2999, 3001-3213, 3999, 4001-4286, 4999, 5001-5134, 5999, 6001-6139, 6999, 7001-7050, 7999, 8001-8041, 8999, 9999	9999	n999[a]
AGR[c]	100, 201-217, 299, 300-318, 399, 401-410, 499, 500-511, 599, 600-615, 699, 701-704, 799, 800, 999	999	n99[d]
CSD[b]	101, 102, 199, 201-214, 299, 301-313, 399, 401-412, 499, 501-508, 599, 601-611, 699, 701-705, 799, 801-802, 899, 999	999	n99[a]
NTS	101, 199, 201-216, 299, 301-311, 399, 401-412, 499, 501-509, 599, 601-609, 699, 701-704, 799, 801, 802, 899, 999	999	n99[a]

(a) n is an integer which can vary from 1 to 9. It represents the appropriate State code. These codes are defined in Table 3.4. When a placename is given but its State is not indicated and its geographical position has not been located anywhere on a map, its code is given as 'not stated'.

(b) These codes correspond to those used by the ABS for the 1976 Census.

(c) The ACT and NT do not contain any AGRs. Codes '100' and '800' respectively have been used for placenames in the ACT and NT.

(d) Because the ACT and NT do not contain defined AGRs, n can only take values 2 to 7 and 9 in this case. Any place known to be in the ACT or NT but not located is given the AGR code of '100' and '800'. In addition, AGRs are not defined for parts of Vic., SA and WA. For these cases, the AGR code is '300', '500' and '600' respectively.

FORMAT OF THE NTS DATA BASE

The previous Section discussed the approach used to code the information on each returned questionnaire. This Section considers the organisation of the resulting data base. The completed questionnaire from each household was recorded using up to four record types (designated as record types 1, 2, 3 and 4). Each return is separately identifiable[1] in the data base by means of a unique identification number. This six-digit number consists of the four-digit sequence number printed on the front page of the questionnaire, together with a two-digit code representing the survey month. The sequence number increases sequentially from '0001' for each month. The months are also coded sequentially from '01', commencing with January. For example, March is coded as '03'. The sequence number, month and record type form part of a nine-digit leader which appears on every record. A two-digit record type sequence number[2] also appears in this leader. As well, some information that is useful from the point of view of data manipulation has been included in each type 1 record. Each record type is discussed in turn below.

Type 1 Record

A type 1 record is mandatory for each valid household response, since it contains information relating to the location of the household. Only one type 1 record can exist for a household. A type 1 record contains the origin placecode and its corresponding regional codes. It also contains the number of people in the

(1) However, no information is included in the data base which would allow the returns to be identified as coming from particular households. Household addresses are not available under any circumstances, since each return was regarded as being confidential.

(2) Multiple records of a given type can be required in order to record fully the information from a particular questionnaire. This number simply records the number of a particular record of that type. For each questionnaire the first record of a particular type is numbered '01', the second record of that type is numbered '02', and so on.

household. The personal characteristics of up to six household members can be included in the record. If information on more than six household members has to be recorded, this additional information is contained in a type 2 record. Table 3.6 gives details of the format of the type 1 record. If information of fewer than six household members has to be recorded, unused fields in the type 1 record are set to '0'.

As noted in Chapter 1, a supplementary interview survey was also conducted as part of the NTS. In this supplementary survey, samples of both respondents and non-respondents to the postal survey were interviewed. In both cases, the information contained in the data base is derived from the interview survey (replacing information from the postal survey in the case of postal respondents included in the supplementary survey). The source[1] of each return is indicated in the type 1 record. In addition, the type 1 record contains the reason for non-response if the return is for a household which did not respond to the postal survey. The relevant coding schemes for source of return and reason for non-response are given in Tables 3.7 and 3.8 respectively.

Type 2 Record

Type 2 records are continuation records for type 1 records, and appear if the details of all the household members cannot be accommodated on the type 1 record (that is, if there are more than 6 members in a household). There could be any number of type 2 records for a particular return, but in practice there are never more than two. Each type 2 record can contain the personal characteristics of up to nine household members. When the information on all of the household members has been recorded, the remaining fields in the record type 2 are set to '0'. Table 3.9 presents details of the format of this type of record.

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(1) The indication given relates to whether the information for that household is derived from a postal return or from an interview return. In the case of information derived from an interview return, the code used indicates whether or not the household had originally responded to the postal questionnaire.

TABLE 3.6 - NTS DATA BASE - FORMAT FOR TYPE 1 RECORD

Field	Bytes	Details of Contents	Range of Data	Value if Item is Not Stated
01	01-04	Household sequence number	0001-9999	9999
02	05-06	Survey month code	01-12	-
03	07	Record type code[a]	1	-
04	08-09	Record type sequence number[a]	01	-
05	10-11	Number of type 2 records[a]	00-02	-
06	12-13	Number of type 3 records[a]	00-10	-
07	14-15	Number of people in household	01-99	99
08	16-20	Address placename code[b]	(c)	(c)
09	21-24	Address LGA code[b]	(c)	(c)
10	25-27	Address NTS region code[b]	(c)	(c)
11	28-30	Address AGR code[b]	(c)	(c)
12	31-33	Address CSD code[b]	(c)	(c)
13	34	Sex code[d] (person 1)	1, 2, 9	9
14	35	Marital status code[d] (person 1)	1-4, 9	9
15	36	Major activity code[d] (person 1)	1-7, 9	9
16	37-39	Occupation code (person 1)	000-101,999	000,999[e]
17	40-41	Age in years (person 1)	00-99	99
18	42	Driving licence availability[d] (person 1)	1, 2, 9	9
...	...	Similar details for persons 2 to 5	...	...
43	79	Sex code[d] (person 6)	1, 2, 9	9
44	80	Marital status code[d] (person 6)	1-4, 9	9
45	81	Major activity code[d] (person 6)	1-7, 9	9
46	82-84	Occupation code (person 6)	000-101,999	000,999[e]
47	85-86	Age in years (person 6)	00-99	99
48	87	Driving licence availability[d] (person 6)	1, 2, 9	9
49	88	Type of return code[f]	0-2	-
50	89-90	Reason for non-response[g]	00-99	99

(a) These fields are included for data organisation purposes, and do not directly relate to NTS information.
(b) See Aplin *et al.* (1978). This does not include information which would lead to identification of individual households.
(c) These values are given in Table 3.5.
(d) The values of these codes are given in Table 3.1.
(e) If the person is employed full-time or part-time and did not state his occupation, the occupation is coded as '999'. If the person is not employed, the occupation question is not applicable, and his occupation is coded as '000'.
(f) This field is used to indicate the type of return. Further details are given in Table 3.7.
(g) This field is used only for interviewed households which did not respond to the postal survey. For all other households this field contains '00'. For non-respondent households it contains a code describing the reason for non-response.

TABLE 3.7 - CODES DESCRIBING THE TYPE OF RETURN

Type of Household	Code
Household which responded to the postal survey but was not interviewed	0
Household which responded to the postal survey and also was interviewed	1
Household which did not respond to the postal survey but was interviewed	2

TABLE 3.8 - CODES DESCRIBING THE REASONS FOR NON-RESPONSE

No recollection of receiving postal questionnaire	01
Sent the questionnaire back	02
Did not travel[(a)]	03
Information requested is too personal	04
Receive too many forms and surveys	05
Did not understand the form	06
At that time the householder was ill, or did not occupy the house	07
Form was not compulsory or not considered important	08
Householder was too busy; forgot; lost form; not interested	09
No reason given	10
Other reasons	11

(a) Note that the covering letter sent with the postal questionnaire specifically requested that the completed form be returned even if no trips had been made.

TABLE 3.9 - NTS DATA BASE - FORMAT FOR TYPE 2 RECORD

Field	Bytes	Details of Contents	Range of Data	Value if Item is Not Stated
01	01-04	Household sequence number	0001-9999	9999
02	05-06	Survey month code	01-12	-
03	07	Record type code[a]	2	-
04	08-09	Record type sequence number[a]	01-02	-
05	10	Sex code[b] (person 7)[c]	1, 2, 9	9
06	11	Marital status code[b] (person 7)	1-4, 9	9
07	12	Major activity code[b] (person 7)	1-7, 9	9
08	13-15	Occupation code (person 7)	000-101,999	000,999[d]
09	16-17	Age in years (person 7)	00-99	99
10	18	Driving licence availability[b] (person 7)	1, 2, 9	9
...	...	Similar details for person 8 to person 14[c]	...	...
53	82	Sex code[b] (person 15)[c]	1, 2, 9	9
54	83	Marital status code[b] (person 15)	1-4, 9	9
55	84	Major activity code[b] (person 15)	1-7, 9	9
56	85-87	Occupation code (person 15)	000-101,999	000,999[d]
57	88-89	Age in years (person 15)	00-99	99
58	90	Driving licence availability[b] (person 15)	1, 2, 9	9

(a) These fields are included for data organisation purposes, and do not directly relate to NTS information.

(b) The values of these codes are given in Table 3.1.

(c) Occasionally there may be more than 15 people in the household. In these cases, there will be a second record type 2. This second record will contain the personal characteristics of the 15th to the 24th persons in the household. The format of the record is the same as this, except that person 7, ..., person 15 should be replaced by person 16, ..., person 24.

(d) If the person is employed full-time or part-time and did not state his occupation, the occupation is coded as '999'. If the person is not employed, the occupation question is not applicable, and his occupation is coded as '000'.

Type 3 Record

Trip details are recorded in one or more records of type 3. There is one type 3 record for each distinct household-trip made. In practice no household reported making more than ten trips, and hence there are never more than ten type 3 records for any one household. However only one record type 3 is used to record the situation where two or more trips with identical characteristics (apart from the date of completion) were indicated on the questionnaire. The number of multiple trips is indicated in Item J of the questionnaire and the information from this Item is recorded in each record type 3. If no trips were recorded by a particular household, no type 3 records are present for that household. As well as the trip details reported in Section II of the questionnaire, a type 3 record also contains the placecodes and all the corresponding regional codes for the destination and FPH for the trip, the total number of person-trips represented by the household-trip and the origin-destination (O-D) distance. The O-D distance is calculated as the great circle distance between the respective LGA population centroids rather than as a route distance. The details of this calculation are presented in Appendix VI. Further details of the format of a type 3 record are presented in Table 3.10.

Type 4 Record

A type 4 record is mandatory for each household response. Further, there can only be one type 4 record for each household response. This record contains the following information:

- Household characteristics concerning vehicle availability and household income;
- Any comments recorded in Section IV of the questionnaire;
- The total number of person-trips made by the household during the month being sampled (including all identical trips);

TABLE 3.10 - NTS DATA BASE - FORMAT FOR TYPE 3 RECORD

Field	Bytes	Details of Contents	Range of Data	Value if Item is Not Stated
01	01-04	Household sequence number	0001-9999	9999
02	05-06	Survey month code	01-12	-
03	07	Record type code[a]	3	-
04	08-09	Record type sequence number[a]	01-10	-
05	10-14	Main trip destination placename code[b]	(c)	(c)
06	15-18	Main trip destination LGA code[b]	(c)	(c)
07	19-21	Main trip destination NTS region code[b]	(c)	(c)
08	22-24	Main trip destination AGR code[b]	(c)	(c)
09	25-27	Main trip destination CSD code[b]	(c)	(c)
10	28-29	Nights spent at main destination	00-99	99
11	30	Accommodation code[d]	0-4, 9	0,9[e]
12	31	Accommodation code[d]	0, 2-4, 9	0,9[e]
13	32	Accommodation code[d]	0, 3-4, 9	0,9[e]
14	33	Accommodation code[d]	0, 4, 9	0,9[e]
15	34	Main reason for travel code[f]	1-7, 9	9[g]
16	35	Other reason for travel code[f]	1-7, 9	0,9[g]
17	36	Other reason for travel code[f]	0, 1-7, 9	0,9[g]
18	37	Other reason for travel code[f]	0, 2-7, 9	0,9[g]
19	38-42	Furthest place visited from home (FPH) placename code[b]	(c)	(c)
20	43-46	FPH LGA code[b]	(c)	(c)
21	47-49	FPH NTS region code[b]	(c)	(c)
22	50-52	FPH AGR code[b]	(c)	(c)
23	53-55	FPH CSD code[b]	(c)	(c)
24	56	Main travel mode code[h]	1-9	9[i]
25	57	Other travel mode code[h]	0-9	0,9[i]
26	58	Other travel mode code[h]	0, 2-9	0,9[i]
27	59	Other travel mode code[h]	0, 3-9	0,9[i]
28	60	Code indicating if person 1 travelled	0, 1, 9	9
29	61	Code indicating if person 2 travelled	0, 1, 9	9

(Continued over)

TABLE 3.10 (CONT) - NTS DATA BASE - FORMAT FOR TYPE 3 RECORD

Field	Bytes	Details of Contents	Range of Data	Value if Item is Not Stated
30	62	Code indicating if person 3 travelled	0, 1, 9	9
31	63	Code indicating if person 4 travelled	0, 1, 9	9
32	64	Code indicating if person 5 travelled	0, 1, 9	9
33	65	Code indicating if person 6 travelled	0, 1, 9	9
34	66	Code indicating if person 7 travelled	0, 1, 9	9
35	67	Code indicating if person 8 travelled	0, 1, 9	9
36	68	Code indicating if person 9 travelled	0, 1, 9	9
37	69	Code indicating if any other person travelled	0, 1, 9	9
38	70	Code indicating if more than nine people travelled	0, 1, 9	9
39	71-72	Total number of nights spent away from home	00-99	99
40	73-74	Date the trip ended (day of month)	01-31, 99	99
41	75	Fare payment method code(j)	1-4, 9	9(k)
42	76	Fare payment method code(j)	0, 2-4, 9	0,9(k)
43	77	Fare payment method code(j)	0, 3-4, 9	0,9(k)
44	78-79	Number of identical trips made(l)	00-99	99
45	80-82	Number of person-trips involved in all trips with above characteristics in common(m)	001-999	999(n)
46	83-86	Distance between home and main destination (km)(o)	0000-9999	9999(p)
47	87-90	Unused	0000	-

(a) These fields are included for data organisation purposes, and do not directly relate to NTS information.
(b) See Aplin *et al.* (1978).
(c) These values are given in Table 3.5.
(d) Information on all types of accommodation used is requested in the survey. The values of the accommodation codes are given in Table 3.3.
(e) If no nights were spent at the main destination, the accommodation fields all contain '0'. If at least one night was spent at the main destination and the accommodation type was not stated, all four accommodation fields contain '9'. If at least one accommodation type is specified, any unused accommodation fields contain '0'.

(Continued over)

TABLE 3.10 (CONT) - NTS DATA BASE - FORMAT FOR TYPE 3 RECORD

(f) Respondents are requested to indicate all their reasons for undertaking the trip and to separately identify the main reason. The codes used to designate 'reason for travel' are given in Table 3.3.

(g) If no reason for undertaking the trip is specified, all these fields contain '9'. If at least one reason is specified, all unused fields contain '0'.

(h) Respondents are requested to indicate all travel modes used on the trip, and to identify separately the main mode. The codes used to designate the 'method of travel' are given in Table 3.3.

(i) If no travel mode is specified, all the travel mode fields contain '9'. If at least one travel mode is specified, all unused travel mode fields contain '0'.

(j) Respondents are requested to indicate all the sources of any fares paid during the trip. The codes used to designate the fare payment method are given in Table 3.3.

(k) If there is no indication of whether or not fares were paid, all the fare payment fields contain '9'. If at least one method of fare payment is specified, or if it is indicated that no fares were paid, all unused fare payment fields contain '0'.

(l) The information in this field was transcribed from Item J of Section II of the questionnaire. It represents the number of identical trips made additional to the trip described in previous fields of this record.

(m) If the number of identical trips (field 44) is not stated, it was assumed for the purposes of this calculation that no other identical trips were made. Hence in this case the number of person-trips is calculated on the basis of a single household-trip. If more than one household-trip with these particular characteristics was made, the number of person-trips was calculated as the product of the number of people who travelled on each trip and the total number of such household-trips recorded.

(n) The number of person-trips made is 'not stated' when the members of the household who travelled have not been specified.

(o) This distance is calculated (to the nearest integer) as the great-circle distance in km between the population centroids of the origin (household address) LGA and the trip destination LGA. Appendix VI presents a description of the method of the calculation used. If the origin LGA and the destination LGA are the same, this distance is recorded as '0000'.

(p) If either the origin or destination was not stated or not known (i.e. it could not be located on maps), no distance calculation could be performed, and this is indicated by the value of this field being '9999'.

. A code indicating whether or not this is the last record on the file.

Table 3.11 presents further details of the format of this type of record.

Format of Records

In summary, a completed NTS questionnaire generates one type 1 record and one type 4 record. It may also generate one (and usually no more than one) type 2 record, and one or more type 3 records.

Table 3.6 and Tables 3.9 to 3.11 contain details of the format of records of types 1 to 4 respectively. In particular, for each data item the field number, position (in bytes) of the field in the record and the range of the code used for that particular item is specified. As mentioned earlier, some of the codes used may have discontinuities in their allowed numerical ranges. As well, the tables specify the value of the data item if the respondent does not complete the appropriate part of the questionnaire (i.e. if the item is 'not stated').

TECHNICAL INFORMATION

This Section describes how the data files are organised on magnetic tape. All the data, including those from the supplementary interview survey, have been combined and written as one file. This file is sorted in chronological order by month starting with July 1977. The records for each month have been organised in numerically ascending order of origin LGA, and in numerically ascending order of household sequence number within each origin LGA. Where appropriate, the information from the supplementary interview survey replaces the corresponding return from the postal survey. Codes are included in the appropriate records indicating the nature of the entry (postal return, household interview etc).

TABLE 3.11 - NTS DATA BASE - FORMAT FOR TYPE 4 RECORD

Field	Bytes	Details of Contents	Range of Data	Value if Item is Not Stated
01	01-04	Household sequence number	0001-9999	9999
02	05-06	Survey month code	01-12	-
03	07	Record type code[a]	4	-
04	08-09	Record type sequence number[a]	01	-
05	10	Number of cars available to household	0-9	9
06	11	Number of motorcycles available to household	0-9	9
07	12	Number of utilities available to household	0-9	9
08	13	Number of other vehicles available to household	0-9	9
09	14-15	Household income code[b]	01-10, 99	99
10	16-19	Code for first comment[c]	0010-9999	9999[d]
11	20-23	Code for second comment[c]	0000-9999	9999[d]
12	24-27	Code for third comment[c]	0000-9999	0000,9999[d]
13	28-31	Code for fourth comment[c]	0000-9999	0000,9999[d]
14	32-35	Code for fifth comment[c]	0000-9999	0000,9999[d]
15	36-39	Code for sixth comment[c]	0000-9999	0000,9999[d]
16	40-42	Total number of person-trips per household[e]	000-999	999[f]
17	43-89	Unused	(g)	-
18	90	Next record type[h]	0, 1	-

(a) These fields are included for data organisation purposes, and do not directly relate to NTS information.
(b) The values of the 'household income' codes are given in Table 3.2.
(c) Comments volunteered by respondents are encoded by assigning four-digit codes, described in Appendix IV.
(d) If no comments are volunteered by the respondent, all comment fields contain '9999'. If at least one comment suitable for coding is recorded by the respondent, all unused comment fields will contain '0000'.
(e) This field represents the total number of person-trips made by the household during the month surveyed. As such, it is the sum of field 45 values in all the type 3 records for that household. If there were no trips made (i.e. no type 3 records) this field is set to zero.
(f) If the household members who travelled are not specified for any one household-trip, the total number of persons-trips is 'not stated'.
(g) This field contains '0's.
(h) In general, this field will contain '1', indicating the first record type for the next household. However, the last record of the file will contain '0' in this field. This is an aid to processing on computer systems which do not support full end-of-file error handling.

Approximately 3 200 to 3 700 returns were received each month from the postal survey, resulting in approximately 9 000 to 11 000 records in the data base for each month. An additional 400 records for each month (from approximately 160 returns) have been included for those non-respondent households interviewed in the supplementary survey.

The following additional details are presented for users of the data base:

- All tapes are unlabelled;
- The logical record length is 90 characters;
- The block length is 4 500 characters (i.e. there are 50 records in each block).

The data tape can be made available in any of the combinations of densities and codes listed in Table 3.12.

TABLE 3.12 - POSSIBLE COMBINATIONS OF TAPE DENSITIES AND CODES

7 Track Tapes		9 Track Tapes	
Densities (CPI)	Code Options[a]	Densities (CPI)	Code Options[a]
800	BCD	1600	EBCDIC
	CDC display code		ASCII
556	BCD		CDC display code
	CDC display code	800	EBCDIC
200	BCD		ASCII
	CDC display code		CDC display code

(a) These codes have been abbreviated as follows:
- Binary Coded Decimal (BCD)
- Extender Binary Coded Decimal Interchange Code (EBCDIC)
- Control Data Corporation (CDC)
- American Standard Code for Information Interchange (ASCII)

CHAPTER 4 - CONCLUDING REMARKS

The general aim of the NTS was to provide information on non-urban travel in Australia. Since the information was intended to cover travel on a national basis for all modes of travel and all seasons of the year, it was impossible to achieve the same precision in the estimates of particular characteristics that could have been obtained from a more restricted survey. Instead, it was intended that the information from the NTS would provide transport or regional planners, tourist organisations, airlines, coach companies and so on with a comprehensive framework for the development of future transport systems.

Since the data obtained from the NTS are so comprehensive, the BTE is not in a position to provide a substantial service associated with analysing the data to meet individual requirements. Hence the data will be made available in machine-readable form to approved organisations with appropriate interests in analysing the survey information. All the information necessary to process the NTS data tape and to interpret all the data contained on it is discussed in this Paper.

The supplementary interview survey data have been included in the NTS data base. However, the main use for these data is to provide information for estimating non-response bias in the main survey data. Correction factors for non-response bias have been calculated and will be published at a later stage.

The results from the NTS represent a substantial and comprehensive addition to the information available on non-urban travel in Australia. These results can be used to carry out a wide range of quantitative investigations, both general and specific. For instance, it is possible to derive likely trip lengths before an individual may change mode (for example, from travelling by car to travelling by air). Alternatively, the characteristics of, say, tourist travel can be isolated and compared with the characteristics of other types of travel, such as business travel. In

addition, very specific or alternatively quite general origin-destination flows can be obtained, since each place is identified by a number of regional codes, including a placecode unique to any particular origin or destination. This allows calculation of an estimate of the number of trips made, say, to a particular tourist centre. As a further example, information such as the modal split of travel along the Sydney-Canberra corridor can be easily obtained from the data base. It is also possible to relate particular sections of the population to their preferred mode of travel. For instance, investigations into the relationship between household income and travel mode are possible using the NTS data base. Similar investigations can be carried out on the relationships between personal characteristics (age, sex, etc) and the nature of non-urban travel undertaken. A segment of the population can be isolated by means of its household and personal characteristics, and its travel behaviour investigated.

The applications of the NTS data base mentioned above exemplify just a few of the possible investigations which could be carried out. In summary, the NTS data base should enable the non-urban travel pattern in Australia to be investigated and interpreted in greater depth than has been possible to date.

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APPENDIX I - DESCRIPTION OF NTS REGIONS

This Appendix presents a list of the 64 NTS regions which were devised for this study (Aplin *et al.* 1978). The regions are listed by State, and the region name and region code have been included. In addition, an estimate of the population centroid co-ordinates of each NTS region is provided.

The list of NTS regions is presented below in Table I.1. Maps showing the boundaries of the NTS regions are presented in the diagrams following Table I.1.

TABLE I.1 - DETAILS OF NTS REGIONS

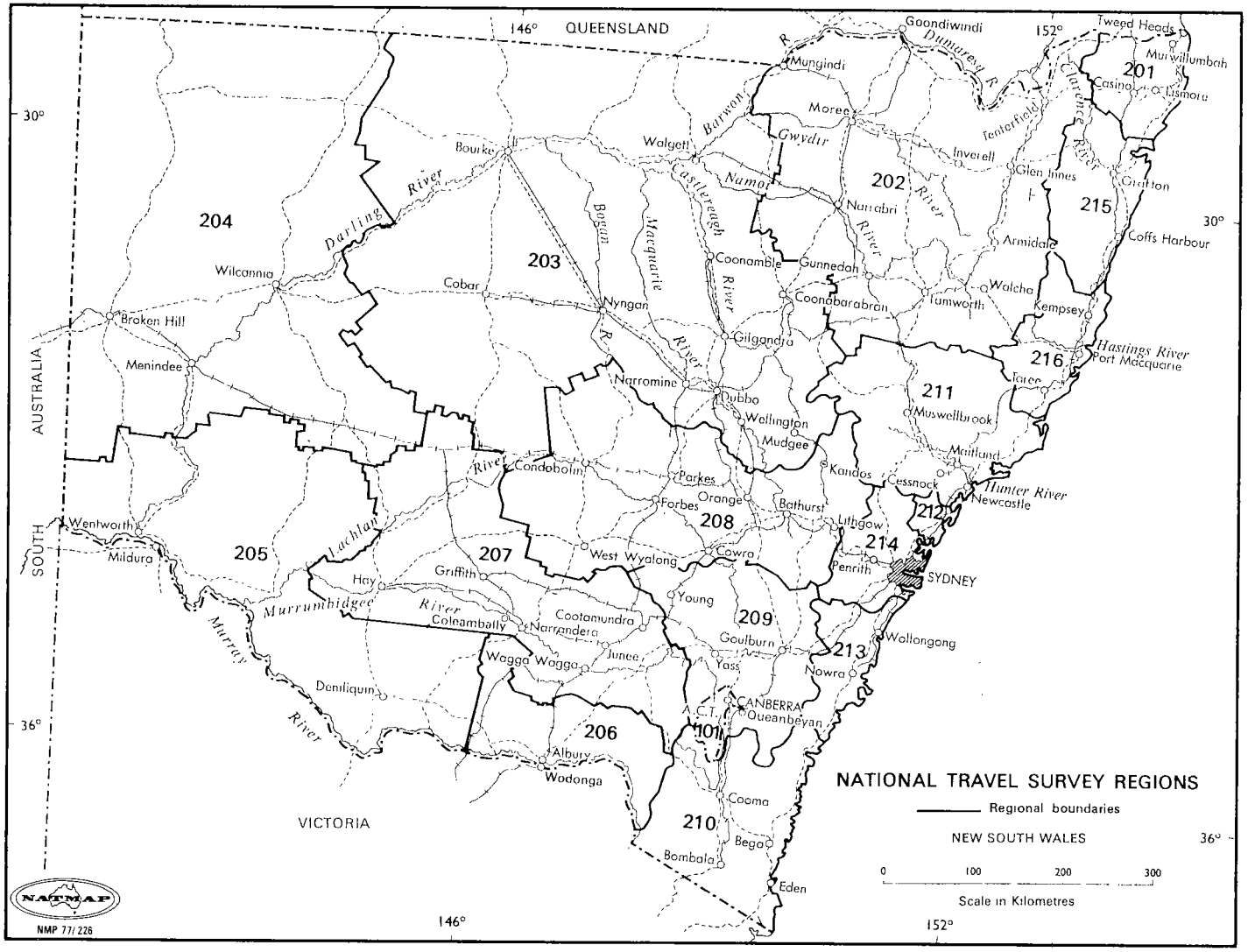
State or Territory	Region Name	Region Number	Population[a]	Co-ordinates of Centroid[b] Latitude (Degrees)	Longitude (Degrees)
ACT	Australian Capital Territory	101	196 935	35.25 S	149.25 E
NSW	Lismore	201	106 180	28.67 S	153.08 E
	Armidale	202	253 728	30.10 S	150.75 E
	Dubbo	203	99 004	30.75 S	148.00 E
	Broken Hill	204	32 386	31.67 S	142.25 E
	Deniliquin	205	36 537	35.50 S	147.33 E
	Albury	206	54 439	35.00 S	144.00 E
	Wagga	207	134 737	34.67 S	147.42 E
	Bathurst	208	155 462	33.50 S	149.33 E
	Goulburn	209	80 741	35.00 S	149.17 E
	Cooma	210	47 210	36.33 S	149.50 E
	Newcastle	211	419 612	32.67 S	150.90 E
	Gosford	212	120 774	33.40 S	151.50 E
	Wollongong	213	270 127	34.75 S	150.80 E
	Sydney	214	2 901 200	33.75 S	151.00 E
	Grafton	215	73 259	31.50 S	153.75 E
	Taree	216	71 662	29.80 S	153.25 E
Victoria	Geelong	301	181 008	38.25 S	144.20 E
	Warrnambool	302	95 779	38.25 S	142.50 E
	Ballarat	303	103 456	37.50 S	143.75 E
	Horsham	304	54 456	36.60 S	142.40 E
	Mildura	305	68 605	34.80 S	143.00 E
	Bendigo	306	130 134	36.60 S	144.50 E
	Shepparton	307	120 720	36.50 S	154.60 E
	Wangaratta	308	72 201	36.40 S	146.70 E
	Sale	309	56 513	37.85 S	147.60 E
	Moe	310	113 270	38.30 S	146.30 E
	Melbourne	311	2 649 134	38.00 S	145.00 E
Queensland	Brisbane	401	696 740	27.50 S	153.20 E
	Gold Coast	402	310 130	27.80 S	153.00 E
	Nambour	403	164 110	26.80 S	152.85 E
	Bundaberg	404	152 095	25.25 S	152.58 E
	Rockhampton	405	126 395	23.75 S	150.92 E
	Mackay	406	77 038	21.34 S	149.00 E
	Townsville	407	145 460	19.50 S	146.80 E
	Cairns	408	124 661	17.32 S	147.75 E
	Mount Isa	409	41 058	20.75 S	140.00 E
	Longreach	410	14 063	23.92 S	145.00 E
	Roma	411	27 876	27.42 S	148.25 E
	Toowoomba	412	155 313	27.50 S	151.65 E

TABLE I.1 (CONT) - DETAILS OF NTS REGIONS

State or Territory	Region Name	Region Number	Population[a]	Co-ordinates of Centroid[b] Latitude (Degrees)	Longitude (Degrees)
South Australia	Adelaide	501	902 003	34.92 S	138.83 E
	Port Lincoln	502	31 425	34.25 S	134.92 E
	Kadina	503	21 579	34.17 S	137.92 E
	Whyalla	504	82 727	32.58 S	137.83 E
	Gawler	505	38 504	34.25 S	138.67 E
	Victor Harbour	506	34 914	35.42 S	138.42 E
	Murray Bridge	507	58 591	35.00 S	139.42 E
	Mount Gambier	508	57 698	35.55 S	139.42 E
	Woomera	509	14 948	29.50 S	135.70 E
Western Australia	Albany	601	63 355	33.42 S	118.17 E
	Bunbury	602	68 335	33.83 S	116.00 E
	Kalgoorlie	603	38 812	30.30 S	122.00 E
	Northam	604	39 569	31.25 S	117.00 E
	Port Hedland	605	38 687	20.50 S	117.00 E
	Derby	606	15 130	15.75 S	125.00 E
	Geraldton	607	45 219	29.50 S	115.50 E
	Perth	608	819 078	32.17 S	115.92 E
	Carnarvon	609	14 007	24.00 S	117.58 E
Tasmania	Hobart	701	191 296	42.75 S	147.25 E
	Burnie	702	88 861	41.17 S	146.00 E
	Launceston	703	109 569	41.42 S	147.00 E
	Queenstown	704	12 565	41.83 S	145.50 E
Northern Territory	Darwin	801	71 737	14.00 S	133.00 E
	Alice Springs	802	24 785	23.40 S	133.50 E

(a) These population figures were obtained from the Census of Population and Housing conducted by the Australian Bureau of Statistics on 30 June 1976.

(b) The co-ordinates of population centroids of the NTS regions are estimates obtained after detailed examination of the relevant maps, together with a knowledge of the population centres in each region.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Regional boundaries
NEW SOUTH WALES
0 100 200 300
Scale in Kilometres
QUEENSLAND
VICTORIA
SOUTH AUSTRALIA
146°
152°
30°
36°
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
101
Goondiwindi
Tweed Heads
Murwillumbah
Casino
Lismore
Mungindi
Moree
Inverell
Glen Innes
Grafton
Coffs Harbour
Armidale
Walcha
Tamworth
Kempsey
Hastings River
Port Macquarie
Taree
Muswellbrook
Maitland
Hunter River
Newcastle
Cessnock
Kandos
Lithgow
Penrith
SYDNEY
Wollongong
Nowra
Goulburn
Yass
CANBERRA
Queanbeyan
A.C.T.
Cooma
Bega
Bombala
Eden
Albury
Wodonga
Deniliquin
Wagga Wagga
Junee
Coleambally
Narrandera
Cootamundra
Griffith
Hay
Wentworth
Mildura
Broken Hill
Menindee
Wilcannia
Cobar
Nyngan
Bourke
Walgett
Narrabri
Gunnedah
Coonabarabran
Coonamble
Gilgandra
Narromine
Dubbo
Wellington
Mudgee
Condobolin
Parkes
Forbes
Orange
Bathurst
Cowra
West Wyalong
Young
Darling River
Bogan R.
Macquarie River
Castlereagh River
Namoi River
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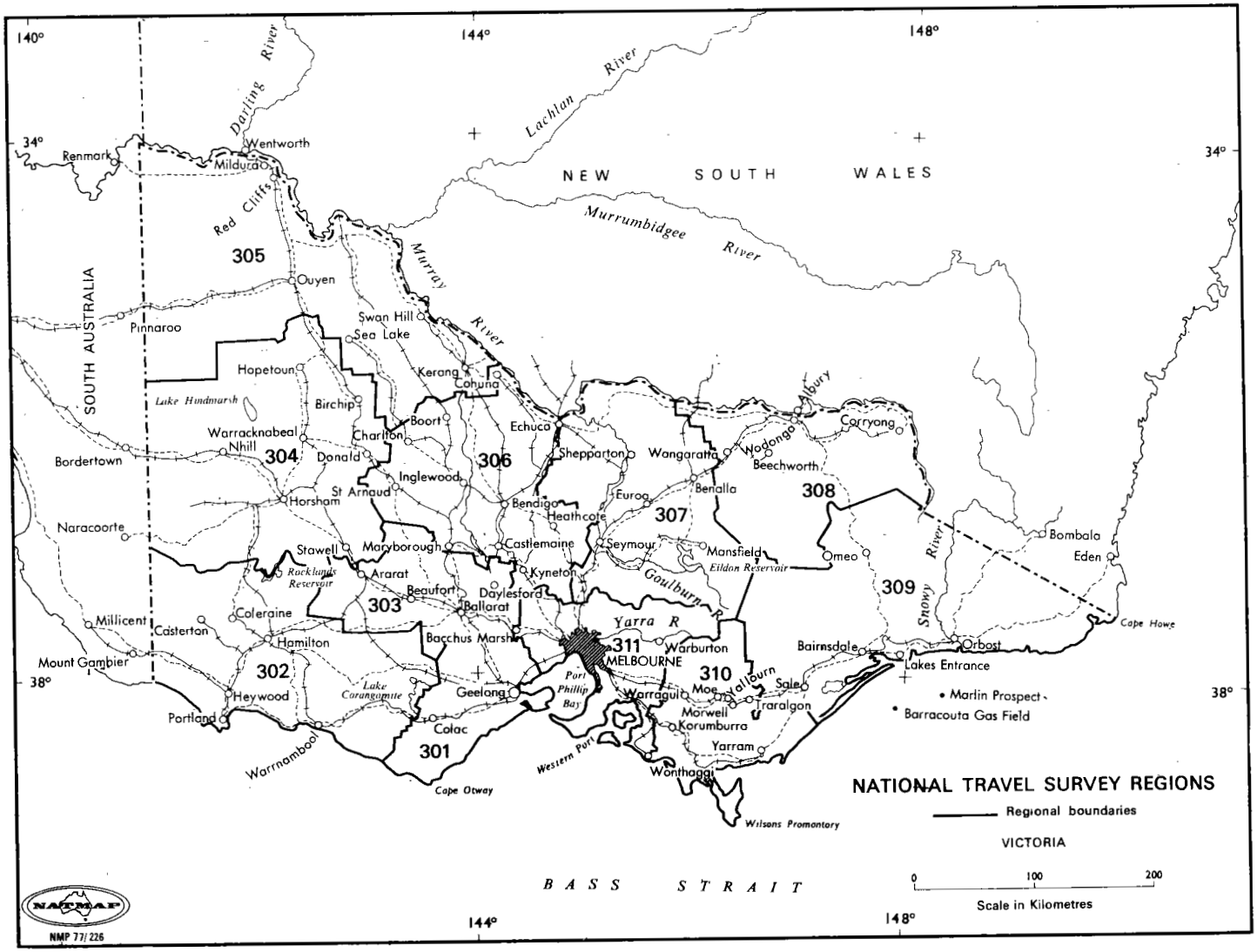
Barwon R.
Dumaresq R.
Clarence River
Tenterfield
Lachlan River
Murrumbidgee River
Murray River
NMP 77/226


140°
144°
148°
34°
38°
NEW SOUTH WALES
SOUTH AUSTRALIA
BASS STRAIT
Darling River
Lachlan River
Murrumbidgee River
Murray River
Red Cliffs
Wentworth
Mildura
Renmark
Ouyen
Pinnaroo
Swan Hill
Sea Lake
Hopetoun
Lake Hindmarsh
Birchip
Kerang
Cohuna
Boort
Echuca
Warracknabeal
Nhill
Charlton
Donald
Bordertown
Inglewood
St Arnaud
Horsham
Bendigo
Heathcote
Shepparton
Wangaratta
Wodonga
Albury
Corryong
Beechworth
Benalla
Euroa
Seymour
Mansfield
Eildon Reservoir
Omeo
Bombala
Eden
Naracoorte
Stawell
Rocklands Reservoir
Ararat
Maryborough
Castlemaine
Kyneton
Beaufort
Daylesford
Ballarat
Goulburn R
Snowy River
Cape Howe
Millicent
Casterton
Coleraine
Hamilton
Bacchus Marsh
Yarra R
MELBOURNE
Warburton
Bairnsdale
Orbost
Lakes Entrance
Mount Gambier
Heywood
Lake Corangamite
Geelong
Port Phillip Bay
Moe
Lalburn
Sale
Traralgon
Warragul
Morwell
Korumburra
Portland
Colac
Warrnambool
Yarram
Western Port
Wonthaggi
Cape Otway
Wilsons Promontory
Marlin Prospect
Barracouta Gas Field
305
304
306
307
308
309
303
302
311
310
301
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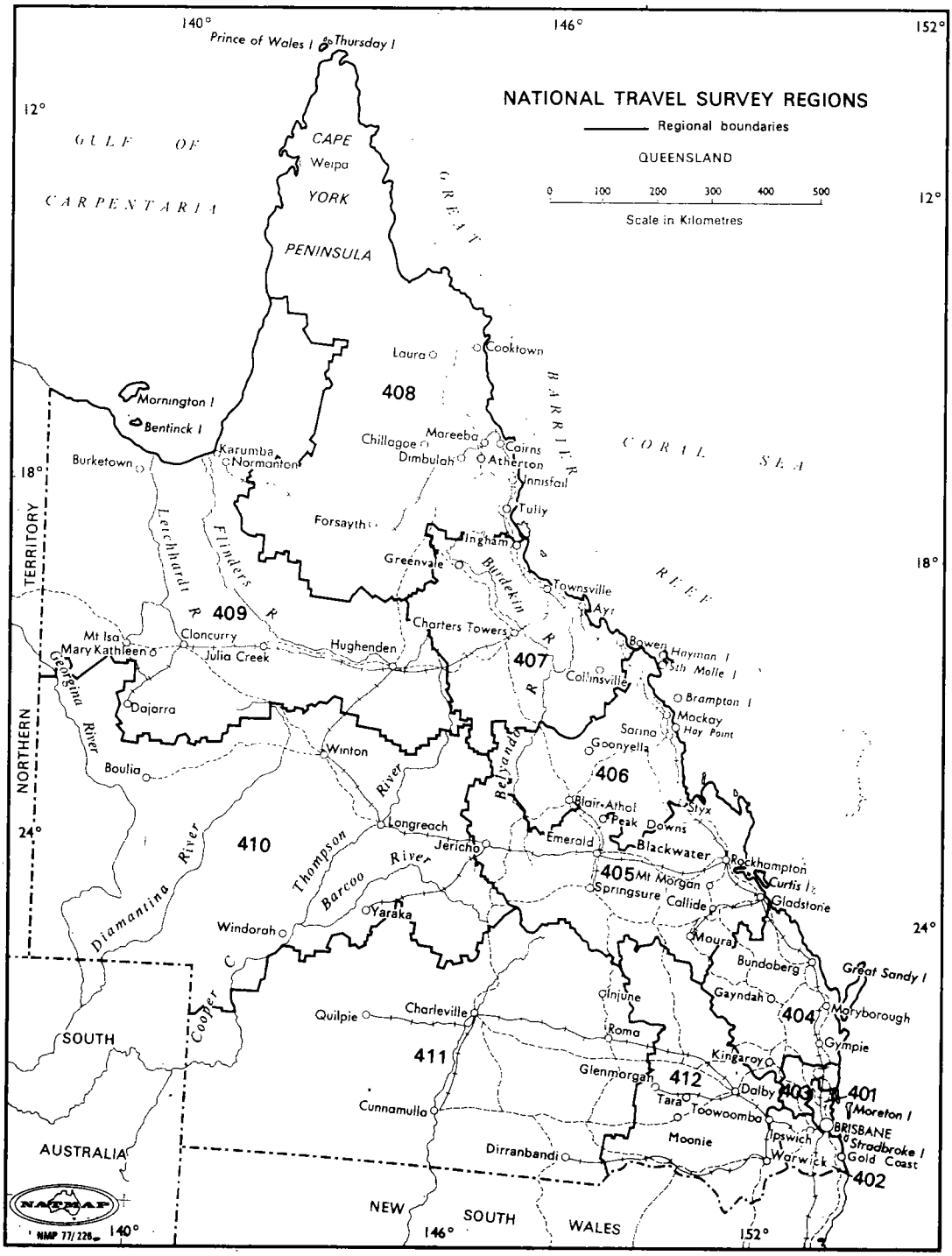
Regional boundaries
VICTORIA
0
100
200
Scale in Kilometres
NATMAP
NMP 77/226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Regional boundaries
QUEENSLAND
0 100 200 300 400 500
Scale in Kilometres
140°
146°
152°
12°
18°
24°
Prince of Wales I
Thursday I
GULF OF CARPENTARIA
CAPE YORK PENINSULA
Weipa
GREAT BARRIER REEF
CORAL SEA
Laura
Cooktown
408
Mornington I
Bentinck I
Chillagoe
Mareeba
Cairns
Dimbulah
Atherton
Innisfail
Karumba
Normanton
Burketown
Tully
Forsayth
Ingham
Greenvale
Burdekin R
Townsville
Ayr
Letchhardt R
Flinders R
409
Charters Towers
Mt Isa
Cloncurry
Mary Kathleen
Julia Creek
Hughenden
407
Bowen
Hayman I
Sth Molle I
Collinsville
Brampton I
Mackay
Hay Point
Georgina River
Dajarra
Sarina
Goonyella
Winton
Boulia
Belyando R
406
Blair Athol
Peak Downs
Styx
Longreach
Jericho
Emerald
Blackwater
Rockhampton
Curtis I
410
Thompson River
Barcoo River
405
Mt Morgan
Springsure
Callide
Gladstone
Diamantina River
Yaraka
Windorah
Moura
Bundaberg
Great Sandy I
Cooper C
Injune
Gayndah
404
Maryborough
Quilpie
Charleville
Roma
Gympie
411
Kingaroy
Glenmorgan
412
Dalby
403
401
Moreton I
Tara
Toowoomba
Cunnamulla
BRISBANE
Ipswich
Stradbroke I
Moonie
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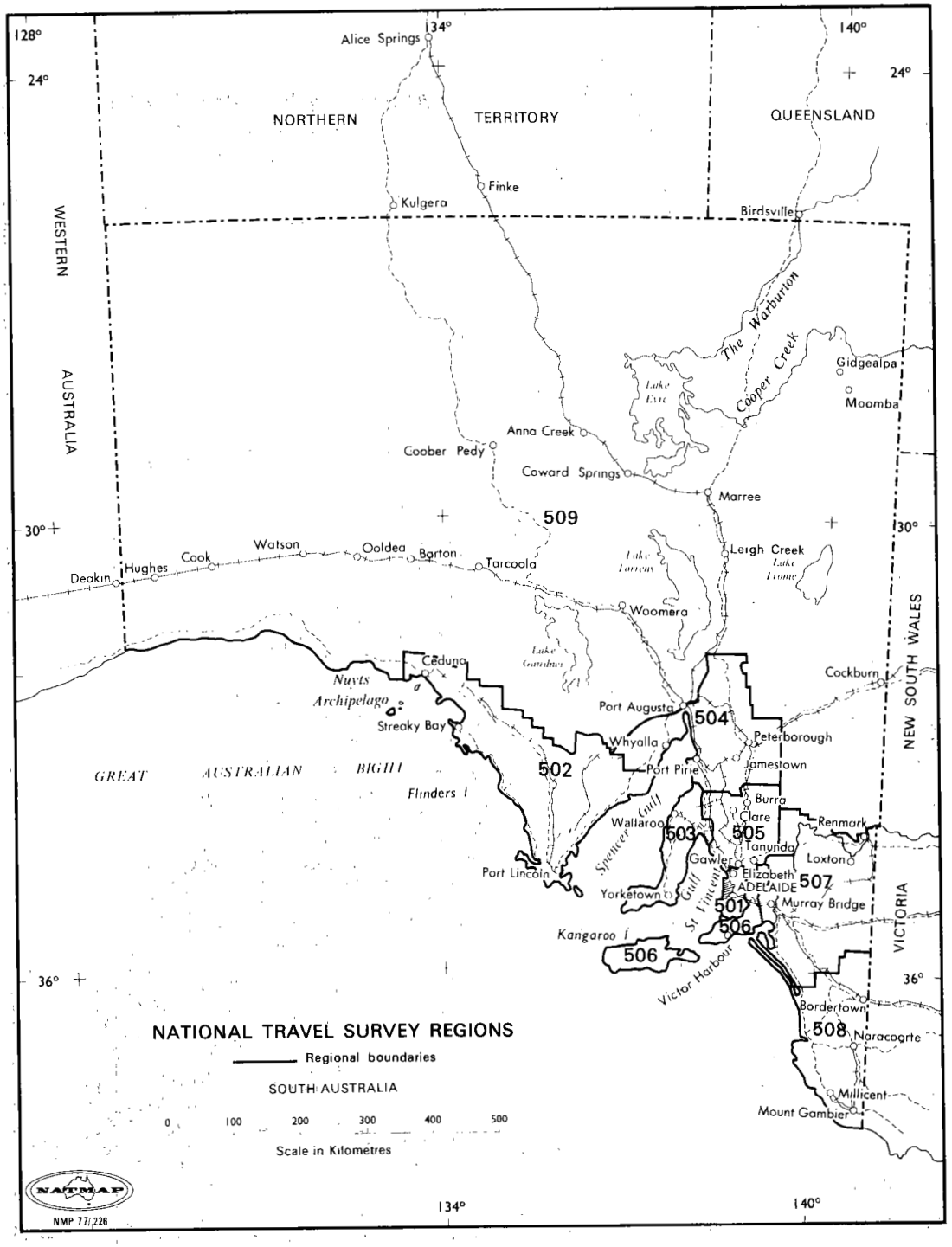
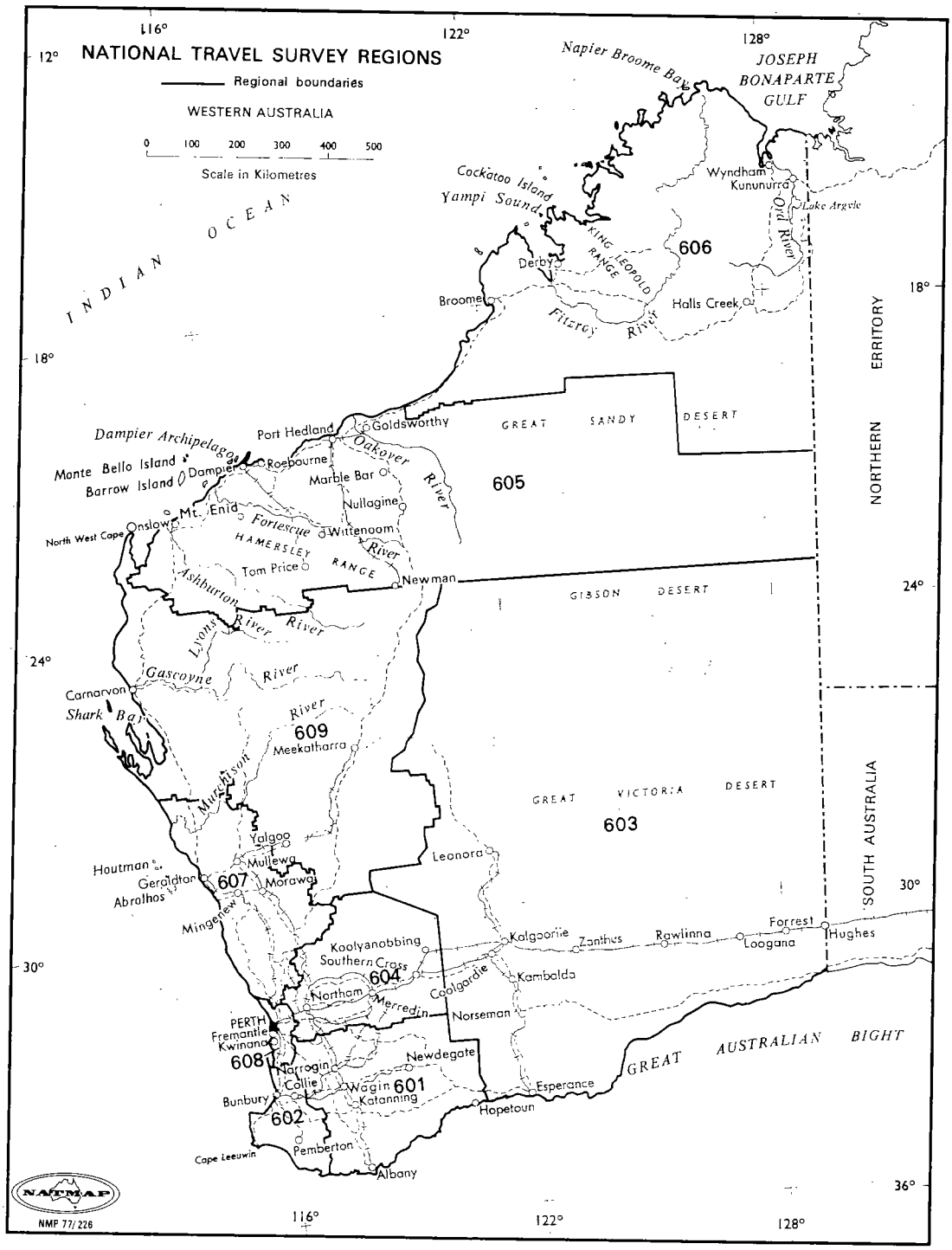
Warwick
Gold Coast
402
NORTHERN TERRITORY
SOUTH AUSTRALIA
NEW SOUTH WALES
NATMAP
NMP 77/226


128°
134°
140°
24°
30°
36°
NORTHERN TERRITORY
QUEENSLAND
WESTERN AUSTRALIA
NEW SOUTH WALES
VICTORIA
Alice Springs
Finke
Kulgera
Birdsville
The Warburton
Cooper Creek
Lake Eyre
Gidgealpa
Moomba
Anna Creek
Coober Pedy
Coward Springs
Marree
509
Leigh Creek
Lake Torrens
Lake Frome
Deakin
Hughes
Cook
Watson
Ooldea
Barton
Tarcoola
Woomera
Lake Gairdner
Ceduna
Nuyts Archipelago
Streaky Bay
Cockburn
Port Augusta
504
Whyalla
Peterborough
Port Pirie
Jamestown
502
GREAT AUSTRALIAN BIGHT
Flinders I
Burra
Clare
Wallaroo
503
505
Renmark
Tanunda
Gawler
Loxton
Spencer Gulf
St Vincent Gulf
Elizabeth
ADELAIDE
507
Port Lincoln
Yorketown
501
Murray Bridge
506
Kangaroo I
506
Victor Harbour
Bordertown
508
Naracoorte
Millicent
Mount Gambier
NATIONAL TRAVEL SURVEY REGIONS
Regional boundaries
SOUTH AUSTRALIA
0 100 200 300 400 500
Scale in Kilometres
NATMAP
NMP 77/226


NATIONAL TRAVEL SURVEY REGIONS
Regional boundaries
WESTERN AUSTRALIA
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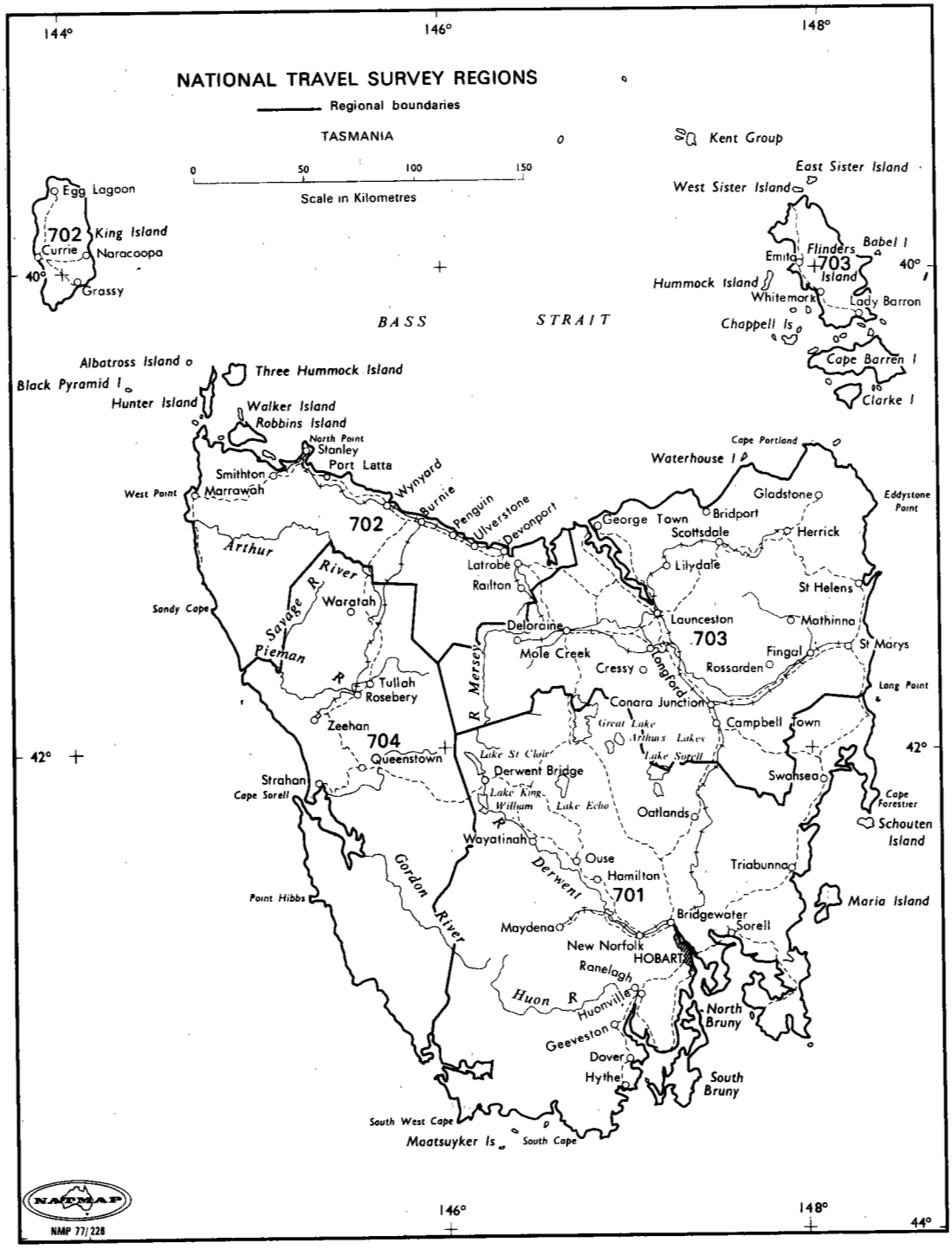
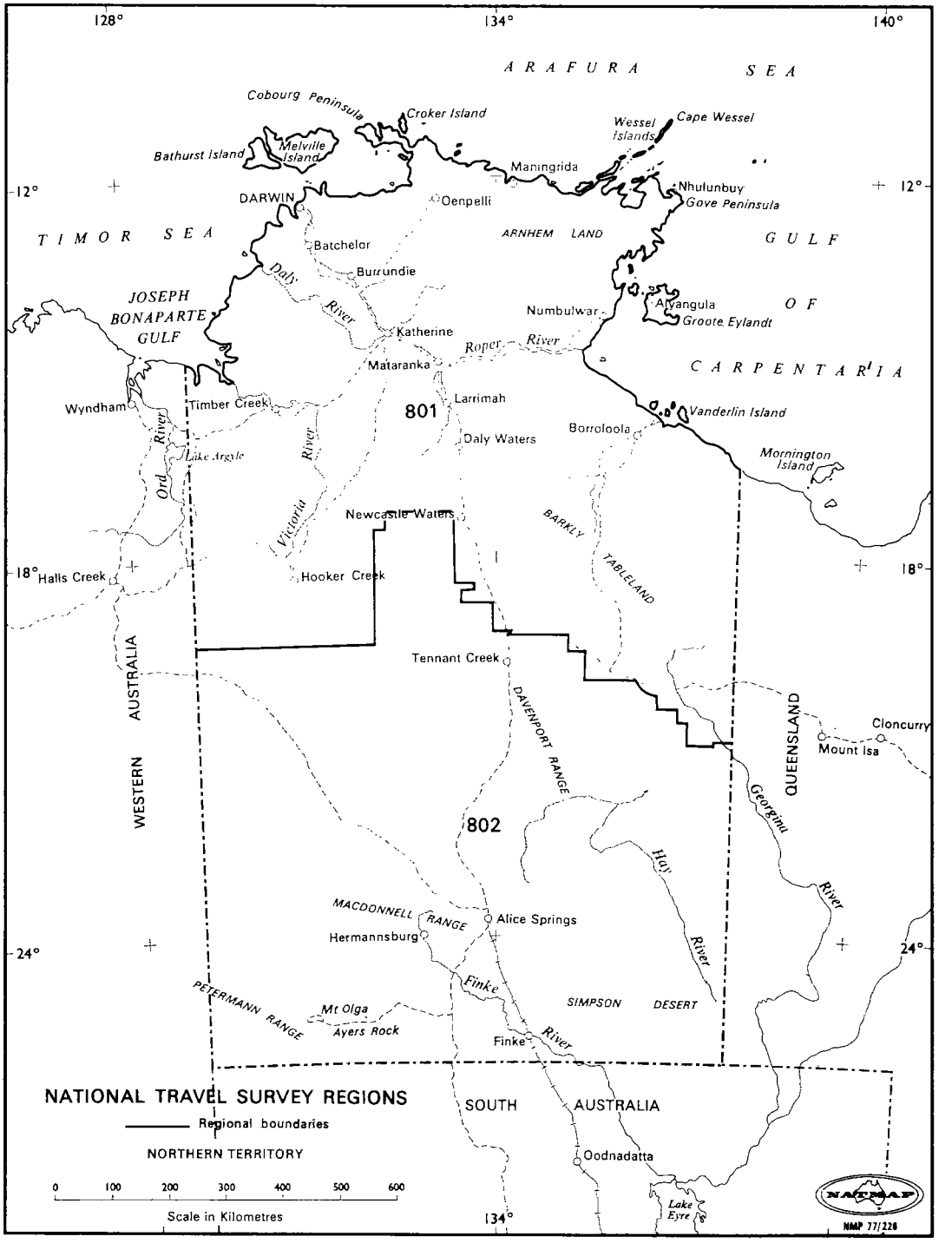
Scale in Kilometres
INDIAN OCEAN
Napier Broome Bay
JOSEPH BONAPARTE GULF
Cockatoo Island
Yampi Sound
Wyndham
Kununurra
Lake Argyle
Ord River
KING LEOPOLD RANGE
606
Derby
Broome
Fitzroy River
Halls Creek
NORTHERN TERRITORY
Dampier Archipelago
Port Hedland
Goldsworthy
Oakover River
GREAT SANDY DESERT
605
Monte Bello Island
Barrow Island
Dampier
Roebourne
Marble Bar
Nullagine
Mt. Enid
Fortescue
Wittenoom
North West Cape
Onslow
HAMERSLEY RANGE
Tom Price
Newman
Ashburton River
Lyons River
GIBSON DESERT
Gascoyne River
Carnarvon
Shark Bay
609
Meekatharra
Murchison River
GREAT VICTORIA DESERT
603
SOUTH AUSTRALIA
Yalgoo
Mullewa
Leonora
Houtman Abrolhos
Geraldton
607
Morawa
Mingenew
Kalgoorlie
Zanthus
Rawlinna
Forrest
Loongana
Hughes
Koolyanobbing
Southern Cross
604
Coolgardie
Kambalda
Northam
Merredin
Norseman
PERTH
Fremantle
Kwinana
608
Narrogin
Newdegate
Collie
Wagin
601
Katanning
Esperance
GREAT AUSTRALIAN BIGHT
Bunbury
602
Hopetoun
Cape Leeuwin
Pemberton
Albany
NATMAP
NMP 77/226
116°
122°
128°
12°
18°
24°
30°
36°


NATIONAL TRAVEL SURVEY REGIONS
Regional boundaries
TASMANIA
Scale in Kilometres
0
50
100
150
144°
146°
148°
40°
42°
44°
Egg Lagoon
King Island
Currie
Naracoopa
Grassy
702
Kent Group
East Sister Island
West Sister Island
Flinders Island
703
Babel I
Emita
Hummock Island
Whitemark
Lady Barron
Chappell Is
Cape Barren I
Clarke I
BASS STRAIT
Albatross Island
Black Pyramid I
Hunter Island
Three Hummock Island
Walker Island
Robbins Island
North Point
Stanley
Port Latta
Smithton
Marrawah
West Point
Wynyard
Burnie
Penguin
Ulverstone
Devonport
Cape Portland
Waterhouse I
Gladstone
Eddystone Point
George Town
Bridport
Scottsdale
Herrick
Arthur River
Latrobe
Railton
Lilydale
St Helens
Sandy Cape
Savage R
Pieman R
Wargata
Deloraine
Launceston
Mathinna
Mole Creek
Cressy
Longford
Rossarden
Fingal
St Marys
Long Point
R Mersey
Tullah
Rosebery
Conara Junction
Great Lake
Arthurs Lakes
Lake Sorell
Campbell Town
Zeehan
704
Queenstown
Lake St Clair
Derwent Bridge
Lake King William
Lake Echo
Swansea
Cape Forestier
Schouten Island
Strahan
Cape Sorell
R Derwent
Oatlands
Wayatinah
Ouse
Hamilton
Triabunna
Gordon River
Point Hibbs
701
Maria Island
Bridgewater
Sorell
Maydena
New Norfolk
HOBART
Ranelagh
Huon R
Huonville
North Bruny
Geeveston
Dover
Hythe
South Bruny
South West Cape
Maatsuyker Is
South Cape
NARMAP
NMP 77/228


128°
134°
140°
ARAFURA SEA
Cobourg Peninsula
Croker Island
Wessel Islands
Cape Wessel
Bathurst Island
Melville Island
Maningrida
12°
DARWIN
Oenpelli
Nhulunbuy
Gove Peninsula
TIMOR SEA
Batchelor
ARNHEM LAND
GULF OF CARPENTARIA
Daly River
Burrundie
JOSEPH BONAPARTE GULF
Numbulwar
Alyangula
Groote Eylandt
Katherine
Roper River
Mataranka
Wyndham
Timber Creek
801
Larrimah
Vanderlin Island
Borroloola
Daly Waters
Ord River
Lake Argyle
Victoria River
Mornington Island
Newcastle Waters
BARKLY TABLELAND
18°
Halls Creek
Hooker Creek
AUSTRALIA
WESTERN
Tennant Creek
DAVENPORT RANGE
QUEENSLAND
Cloncurry
Mount Isa
802
Georgina River
Hay River
MACDONNELL RANGE
Alice Springs
Hermannsburg
24°
Finke
SIMPSON DESERT
PETERMANN RANGE
Mt Olga
Ayers Rock
Finke River
NATIONAL TRAVEL SURVEY REGIONS
Regional boundaries
NORTHERN TERRITORY
SOUTH AUSTRALIA
Oodnadatta
0 100 200 300 400 500 600
Scale in Kilometres
Lake Eyre
NAMPAP
NMP 77/226

APPENDIX II - NTS POSTAL QUESTIONNAIRE

A sample of the questionnaire used in the NTS is contained in this Appendix. The sample shown here is for the month of June 1978. Similar forms were used for the other months of the survey, the month being changed appropriately on the questionnaire. Although a covering letter was sent with each form, all the necessary instructions required to complete the questionnaire were contained within the form itself.

Section III

HOUSEHOLD DETAILS

DIRECTIONS—these details relate to the household as a whole

- When answering the motor vehicles question, **include** company cars and other vehicles which are not owned by members of the household, but which are regularly available to at least one of them
- When answering the income question, give only the **combined** income for the whole household
  - include income from all sources (wages, overtime, child endowment, pensions etc.);
  - **do not deduct** tax, superannuation etc

A. How many motor vehicles are available for use by members of this household?

Refer to the notes at the top of this Section. If no vehicles in a particular class are available, write '0' for that class.

_____ Cars (including station wagons)

_____ Motor cycles

_____ Utilities and light trucks

_____ Other vehicles

B. What is the combined income of members of the household?

Refer to the notes at the top of this Section, and tick **one box only**

Both weekly and equivalent yearly incomes are shown to assist you in choosing the correct box

- ☐ Less than $39 per week / Less than $2000 per year
- ☐ Over $39 to $77 per week / Over $2000 to $4000 per year
- ☐ Over $77 to $115 per week / Over $4000 to $6000 per year
- ☐ Over $115 to $154 per week / Over $6000 to $8000 per year
- ☐ Over $154 to $192 per week / Over $8000 to $10000 per year
- ☐ Over $192 to $288 per week / Over $10000 to $15000 per year
- ☐ Over $288 to $385 per week / Over $15000 to $20000 per year
- ☐ Over $385 to $481 per week / Over $20000 to $25000 per year
- ☐ Over $481 to $577 per week / Over $25000 to $30000 per year
- ☐ Over $577 per week / Over $30000 per year

Section IV

COMMENTS

INSTRUCTIONS

- Please write down any additional information you consider useful for adequately describing recent long-distance travel by members of the household. In particular, indicate if the type of travel you recorded in Section II is unusual in any way (e.g. travel on a working holiday)
- Please write any general comments you have on travel in Australia
- If space is insufficient, enclose a separate sheet of paper.

THANK YOU FOR YOUR CO-OPERATION

R76/1240

Cat No 77 2412 7

BUREAU OF TRANSPORT ECONOMICS

NATIONAL TRAVEL SURVEY 1977/78

CONFIDENTIAL
REPLY WILL ONLY BE SEEN BY AUTHORISED BTE REPRESENTATIVES

Section I

PERSONAL DETAILS

DIRECTIONS

- The members of this household are regarded as those persons usually living and eating together here as a domestic unit. A person living alone is also a household
- Please complete the following details for **each person** who is a member of this household. **Include** children
- Answer the 'Occupation' question only for those people employed full or part time

PERSON	SEX	MARITAL STATUS	MAJOR ACTIVITY *Tick one box for each person*	OCCUPATION *See notes above*	AGE	DRIVING LICENCE
1	☐ Male ☐ Female	☐ Never married ☐ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☐ Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	_____ _____	_____ Years	☐ Yes ☐ No
2	☐ Male ☐ Female	☐ Never married ☐ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☐ Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	_____ _____	_____ Years	☐ Yes ☐ No
3	☐ Male ☐ Female	☐ Never married ☐ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☐ Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	_____ _____	_____ Years	☐ Yes ☐ No
4	☐ Male ☐ Female	☐ Never married ☐ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☐ Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	_____ _____	_____ Years	☐ Yes ☐ No
5	☐ Male ☐ Female	☐ Never married ☐ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☐ Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	_____ _____	_____ Years	☐ Yes ☐ No
6	☐ Male ☐ Female	☐ Never married ☐ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☐ Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	_____ _____	_____ Years	☐ Yes ☐ No
7	☐ Male ☐ Female	☐ Never married ☐ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☐ Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	_____ _____	_____ Years	☐ Yes ☐ No
8	☐ Male ☐ Female	☐ Never married ☐ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☐ Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	_____ _____	_____ Years	☐ Yes ☐ No
9	☐ Male ☐ Female	☐ Never married ☐ Now married ☐ Widowed ☐ Other	☐ Employed Full-time ☐ Student ☐ Employed Part-time ☐ Home-duties ☐ Looking for work ☐ Other ☐ Retired, Pensioner	_____ _____	_____ Years	☐ Yes ☐ No

THE HOUSEHOLDER,
FLAT 1
2 SMITH ST
JONESTOWN 2372.

A	272	Office Use Only
N	272	
L	2157	
C	[illegible]	

JUNE 1978

PLEASE RETURN THIS FORM WITHIN SEVEN DAYS.

Section II

DETAILS OF TRIPS ENDING IN JUNE 1978 ONLY

DIRECTIONS—please read carefully before filling in trip details

- A 'trip' is defined as a journey **wholly within Australia** by one or more members of this household. A trip starts and finishes at home.
- Do **not** include trips made as a crew-member on a bus, train, aircraft or ship. However, trips made as the driver of a commercial motor vehicle (except a bus) **should** be included.
- Do **not** include trips involving travel to or from work.
- Include **only** trips which involved travel to at least one place 100km (60 miles) or more from home.
- Include **only** trips which ended (at home) during JUNE 1978 **regardless of when they started.**
- Complete a trip column for each trip (by one or more members of this household) which follows the rules given above. In some cases several members of this household may have travelled together for part of the trip, but some of them may have separated from the party (for example, to visit another city). In such cases regard each group as having made a **separate** trip. This should only be done in the case of a substantial separation (**not** for instance if one group only visits a local beach, etc.)
- When recording details of transport methods and payment of fares, do **not** include the following
  - —Local transport such as city trains, buses or taxis,
  - —Transport to and from airports, railway stations and so on;
  - —River crossings by car ferries.

IF NO ONE IN THIS HOUSEHOLD MADE ANY TRIPS SATISFYING THESE CONDITIONS PLEASE TICK THIS BOX AND GO TO SECTION III ☐

	TRIP 1	TRIP 2	TRIP 3	TRIP 4	TRIP 5
A. What was the destination of the trip? If more than one place was visited, record the name of the place regarded as the **main** destination.	City/Town ____ State ____	City/Town ____ State ____	City/Town ____ State ____	City/Town ____ State ____	City/Town ____ State ____
B. How many nights were spent there?	Nights ____ If no nights were spent there, write '0' and go to item D.	Nights ____ If no nights were spent there, write '0' and go to item D	Nights ____ If no nights were spent there, write '0' and go to item D	Nights ____ If no nights were spent there, write '0' and go to item D	Nights ____ If no nights were spent there, write '0' and go to item D
C. What types of accommodation were used during the time spent there? Tick one box for **each** type of accommodation used.	☐ Hotel or motel ☐ Friends' or relatives' home ☐ Caravan, campervan or tent ☐ Other	☐ Hotel or motel ☐ Friends' or relatives' home ☐ Caravan, campervan or tent ☐ Other	☐ Hotel or motel ☐ Friends' or relatives' home ☐ Caravan, campervan or tent ☐ Other	☐ Hotel or motel ☐ Friends' or relatives' home ☐ Caravan, campervan or tent ☐ Other	☐ Hotel or motel ☐ Friends' or relatives' home ☐ Caravan, campervan or tent ☐ Other
D. What were the reasons for making the trip as a whole? Tick one box for each reason. If you have ticked **more** than one box, **circle** the box you ticked which gives the **main** reason for going to the place you wrote in item A, above.	☐ Deliver freight or goods ☐ Other business ☐ Visit friends or relatives ☐ Sightseeing or recreation ☐ Holiday ☐ Personal or family affairs ☐ Other	☐ Deliver freight or goods ☐ Other business ☐ Visit friends or relatives ☐ Sightseeing or recreation ☐ Holiday ☐ Personal or family affairs ☐ Other	☐ Deliver freight or goods ☐ Other business ☐ Visit friends or relatives ☐ Sightseeing or recreation ☐ Holiday ☐ Personal or family affairs ☐ Other	☐ Deliver freight or goods ☐ Other business ☐ Visit friends or relatives ☐ Sightseeing or recreation ☐ Holiday ☐ Personal or family affairs ☐ Other	☐ Deliver freight or goods ☐ Other business ☐ Visit friends or relatives ☐ Sightseeing or recreation ☐ Holiday ☐ Personal or family affairs ☐ Other
E. During the trip, which place visited was furthest from home?	City/Town ____ State ____	City/Town ____ State ____	City/Town ____ State ____	City/Town ____ State ____	City/Town ____ State ____
F. What were the main methods of transport used during the trip? Please refer to the notes at the top of this section, and tick one box for each method of transport used. If you have ticked **more** than one box, **circle** the box you ticked which gives the method of transport used to travel the greatest distance.	☐ Aeroplane ☐ Motorcycle ☐ Bus/Coach ☐ Ship/Boat ☐ Car ☐ Train ☐ Truck ☐ Other	☐ Aeroplane ☐ Motorcycle ☐ Bus/Coach ☐ Ship/Boat ☐ Car ☐ Train ☐ Truck ☐ Other	☐ Aeroplane ☐ Motorcycle ☐ Bus/Coach ☐ Ship/Boat ☐ Car ☐ Train ☐ Truck ☐ Other	☐ Aeroplane ☐ Motorcycle ☐ Bus/Coach ☐ Ship/Boat ☐ Car ☐ Train ☐ Truck ☐ Other	☐ Aeroplane ☐ Motorcycle ☐ Bus/Coach ☐ Ship/Boat ☐ Car ☐ Train ☐ Truck ☐ Other
G. Which members of this household went on this trip? Please tick numbers corresponding to those used to identify individual household members in Section I	☐1 ☐4 ☐7 ☐2 ☐5 ☐8 ☐3 ☐6 ☐9	☐1 ☐4 ☐7 ☐2 ☐5 ☐8 ☐3 ☐6 ☐9	☐1 ☐4 ☐7 ☐2 ☐5 ☐8 ☐3 ☐6 ☐9	☐1 ☐4 ☐7 ☐2 ☐5 ☐8 ☐3 ☐6 ☐9	☐1 ☐4 ☐7 ☐2 ☐5 ☐8 ☐3 ☐6 ☐9
H. When did the trip end, and how many nights were spent away from home?	Nights ____ Date ended ____/6/78	Nights ____ Date ended ____/6/78	Nights ____ Date ended ____/6/78	Nights ____ Date ended ____/6/78	Nights ____ Date ended ____/6/78
I. Who paid for any fares related to the trip? Please refer to the notes at the top of this section and tick the appropriate box or boxes.	☐ No fares involved ☐ Household member(s) ☐ Employer's or own business ☐ Other	☐ No fares involved ☐ Household member(s) ☐ Employer's or own business ☐ Other	☐ No fares involved ☐ Household member(s) ☐ Employer's or own business ☐ Other	☐ No fares involved ☐ Household member(s) ☐ Employer's or own business ☐ Other	☐ No fares involved ☐ Household member(s) ☐ Employer's or own business ☐ Other
J. How many OTHER trips identical to this one (except for the date) ended during the month? You need not fill in a trip column for these other identical trips.	____ If no other identical trips were made, write '0'.	____ If no other identical trips were made, write '0'	____ If no other identical trips were made, write '0'	____ If no other identical trips were made, write '0'.	____ If no other identical trips were made, write '0'.

Please use the space provided in Section IV to record any further important or unusual details of these trips.

PLEASE TURN OVER

APPENDIX III - CODING SCHEME FOR OCCUPATIONS

All those householder members whose major activity indicated that they were in full-time or part-time employment were asked to specify their occupation. These occupations were coded by use of a coding scheme based on the scheme developed by the ABS (ABS 1976). However, numerical codes were used for the NTS instead of alpha-numerical codes, since all NTS data were to be coded numerically for ease of subsequent processing. The coding scheme used is presented in Table III.1. If further details of the occupations included in each category are required, the appropriate reference (ABS 1976) should be consulted. For ease of reference, the categories in Table III.1 have been grouped into similar occupation types to produce major groupings. These major groupings correspond to the ABS groupings.

TABLE III.1 - NTS OCCUPATION CODE DIRECTORY

Major Occupation Grouping	Sub Grouping	NTS Code
NOT SPECIFIED	Not specified	999
	Public Servant[a]	001
PROFESSIONAL, TECHNICAL AND RELATED WORKERS	Not specified or inadequately described	010
	Architects, Engineers and Surveyors	011
	Chemists, Physicists, Geologists, Biologists, Veterinarians, Agronomists	012
	Medical Practitioners, Dentists and Professional Medical Workers	013
	Nurses, including Probationers	014
	Teachers	015
	Clergy and related members of Religious Orders	016
	Law Professionals	017
	Artists, Entertainers and related workers	018
	Draftsmen, Technicians and other professional or related workers	019
ADMINISTRATIVE, EXECUTIVE AND MANAGERIAL WORKERS	Not specified or inadequately described	020
	Administrative and Executive Officials, Government, n.e.s.[b]	021
	Employers, Workers on Own Account, Directors, Managers, etc.	022
CLERICAL WORKERS	Not specified or inadequately described	030
	Book-keepers and Cashiers	031
	Stenographers and Typists	032
	Other Clerical Workers, Receptionists, Clerks	033

TABLE III.1 (CONT)- NTS OCCUPATION CODE DIRECTORY

Major Occupation Grouping	Sub Grouping	NTS Code
SALES WORKERS	Not specified or inadequately described	040
	Insurance, Real Estate, Salesmen, Auctioneers and Valuers	041
	Commercial Travellers and Manufacturing Agents	042
	Proprietors and Shopkeepers, Workers on own Account n.e.s. (b), Retail and Wholesale Trade, Salesmen, Shop Assistants and related workers	043
FARMERS, FISHERMEN HUNTERS, TIMBER GETTERS AND RELATED WORKERS	Not specified or inadequately described	050
	Farmers and Farm Managers	051
	Farm Workers, including Farm Foremen	052
	Wool Classers	053
	Hunters and Trappers	054
	Fishermen and Related Workers	055
	Timber Getters and Other Forestry Workers	056
MINERS, QUARRYMEN AND RELATED WORKERS	Not specified or inadequately described	060
	Miners, Mineral Prospectors and Quarrymen	061
	Well Drillers, Oil, Water and Related Workers	062
	Mineral Treaters	063

TABLE III.1 (CONT) - NTS OCCUPATION CODE DIRECTORY

Major Occupation Grouping	Sub Grouping	NTS Code
WORKERS IN TRANSPORT AND COMMUNICATION	Not specified or inadequately described	070
	Deck and Engineer Officers, Ship Deck and Ship Hands, Ship and Boatmen (not services)	071
	Aircraft Pilots, Navigators and Flight Engineers (not services)	072
	Drivers and Firemen, Rail Transport	073
	Drivers, Road Transport	074
	Guards and Conductors, Railway	075
	Inspectors, Supervisors, Traffic Controllers and Despatchers (Transport)	076
	Telephone, Telegraph and related Telecommunication Operators	077
	Postmasters, Postmen and Messengers	078
	Workers in Transport and Communications n.e.s. (b)	079
TRADESMEN, PRODUCTION PROCESS WORKERS AND LABOURERS	Not specified or inadequately described	080
	Spinners, Weavers, Knitters, Dyers, Tailors, Cutters, Furriers, Leather Cutters, Lasters, Sewers and related workers	081
	Furnacemen, Rollers, Drawers, Moulders, Related Metal Making, Processing Workers, Toolmakers, Metal Machinists, Mechanics, Plumbers and related Metal Workers	082
	Precision Instrument Makers, Watchmakers, Jewellery and related workers	083
	Electricians and related Electrical and Electronic Workers	084
	Metal Workers, Metal and Electrical Production Process Workers	085

TABLE III.1 (CONT)- NTS OCCUPATION CODE DIRECTORY

Major Occupation Grouping	Sub Grouping	NTS Code
TRADESMEN, PRODUCTION PROCESS WORKERS AND LABOURERS (continued)	Carpenters, Woodworking Machinists, Cabinet Makers, Painters, Decorators, Bricklayers, Plasterers, Construction Workers, Stationary Engine, Excavating and Lifting Equipment Operators and Labourers, Storemen, Packers and Fettlers	086
	Compositors, Printers, Engravers, Bookbinders, Potters, Kilnmen, Glass and Clayformers and related workers	087
	Millers, Bakers, Butchers, Brewers, Food and Drink Workers, Chemical, Sugar and Paper Production Workers, Tobacco Preparers and Tobacco Product Makers, Paper Products, Rubber, Plastic and Production Process Workers	088
SERVICE, SPORT AND RECREATION WORKERS	Not specified or inadequately described	089
	Fire Brigade, Police and other Protective Service Workers	091
	Housekeepers, Cooks, Maids and related workers	092
	Waiters and Bartenders	093
	Caretakers and Cleaners, Buildings	094
	Barbers, Hairdressers and Beauticians	095
	Launderers, Drycleaners and Pressers	096
	Athletes, Sportsmen and related workers	097
	Photographers, Camera Operators, Undertakers and Crematorium Workers	098
	Service Sport Recreation Workers n.e.s.(b)	099
MEMBERS OF ARMED SERVICES	Not specified or inadequately described	100
	Members of Armed Services	101

(a) Used where occupation is described as 'public servant' without further details.
(b) Not elsewhere specified.

APPENDIX IV - CODING SCHEME FOR COMMENTS

Comments recorded in Section IV of the postal questionnaire were coded only if they related to travel in Australia, or to the survey itself. Otherwise, the comments were used only to check the information recorded on the questionnaire. This question was invitational and most respondents did not volunteer any comments. For this reason, it is suggested that any analysis of these comments should not be considered to have any statistical reliability. However, it was considered that the comments volunteered by respondents represented additional useful information on general attitudes and opinions related to travel in Australia. This was regarded as sufficient reason for the incorporation of these comments in coded form in the NTS data base.

Comments were coded with a four-digit code. This code was constructed as follows:

- The first digit specifies a major classification as defined in Table IV.1;

- The second digit specifies secondary classifications within each major classification (see Table IV.1);

- The third digit specifies the nature of the comment - for example, whether the comment was expressing a favourable or unfavourable opinion;

- The fourth digit specifies either a location parameter or, in the case where two modes are being compared, the particular modes under consideration.

Table IV.1 presents all possible values for the first two digits, and the interpretation of each value. Table IV.2 does the same for the third and fourth digits. Obviously it is not possible to define each comment in detail in a four-digit code. The intention has been to code the general nature and thrust of the

TABLE IV.1 - NTS COMMENT CODES - CLASSIFICATIONS (DIGITS ONE AND TWO)

Major Classification (Digit 1)	Secondary Classification (Digit 2)	
0 Transport in general	0	General
	1	Cost
	2	Comfort
	3	Comfort relative to cost
	4	Customer relations
	5	Availability of and access to transport services
	6	Reliability of services
	7	Rate of travel (speed)
	8	Standard of facilities provided
1 Roads	0	General condition
	1	Cost
	2	Surface
	3	Width and shoulders
	4	Bridges
	5	Standard of major highways
	6	State of roads during flooding
	7	Informative signs
	8	Availability of public conveniences
	9	Availability of roadside stops, rubbish bins, etc.
2 Traffic	0	Passing slow vehicles
	1	Attitude of other drivers
	2	Regulatory signs
	3	Regulation and congestion problems
	4	Licencing of drivers
	5	Safety
	6	Facilities for cyclists
	7	Customer relations in service stations, restaurants, etc.
	8	Availability of petrol and other services
	9	Other

TABLE IV.1 (CONT) - NTS COMMENT CODES - CLASSIFICATIONS (DIGITS ONE AND TWO)

Major Classification (Digit 1)	Secondary Classification (Digit 2)	
3 Coach	0	General
	1	Cost
	2	Comfort
	3	Comfort relative to cost
	4	Customer relations
	5	Access to coach services
	6	Reliability of services
	7	Frequency of services
	8	Standard of terminals
	9	Rate of travel (speed)
4 Rail	0	General
	1	Cost
	2	Comfort
	3	Comfort relative to cost
	4	Customer relations
	5	Access to rail services
	6	Reliability of services
	7	Frequency of services
	8	Standard of railway stations
	9	Rate of travel (speed)
5 Air	0	General
	1	Cost
	2	Comfort
	3	Comfort relative to cost
	4	Customer relations
	5	Access to air services
	6	Reliability of services
	7	Frequency of services
	8	Standard of air terminals and aerodromes

TABLE IV.1 (CONT) - NTS COMMENT CODES - CLASSIFICATIONS (DIGITS ONE AND TWO)

Major Classification (Digit 1)	Secondary Classification (Digit 2)	
6 Ship	0	General
	1	Cost
	2	Comfort
	3	Comfort relative to cost
	4	Customer relations
	5	Access to shipping services
	6	Reliability of services
	7	Frequency of services
	8	Ease in transporting vehicles by ship
7 Accommodation	0	General
	1	Cost in general
	2	Comfort in motels
	3	Comfort relative to cost
	4	Customer relations
	5	Access to and availability of accommodation
	6	Cost of motel rooms
	7	Excess of facilities in motels
	8	Cost of accommodation in cabins, caravan parks and camping areas
	9	Standard of facilities in cabins, caravan parks and camping areas
8 Miscellaneous	0	Staggered school holidays
	1	Integration of the Commonwealth and State railways into one system
	2	Financial aspects (including 'user pays' principles)
	3	Availability of tourist information
	4	Comments on the NTS itself

TABLE IV.1 (CONT) - NTS COMMENT CODES - CLASSIFICATIONS (DIGITS ONE AND TWO)

Major Classification (Digit 1)		Secondary Classification (Digit 2)	
8	Miscellaneous (continued)	5	Comments on the income question in the NTS (Question B, Section III of the questionnaire)
		6	Access to opportunities to travel
		7	Scenery
		8	Pollution
9	Comparison between modes within Australia and comparison of domestic and international travel	0	General
		1	Cost
		2	Comfort
		3	Comfort relative to cost
		4	Customer relations
		5	Access to services
		6	Reliability of services
		7	Frequency of services
		8	Standard of terminals, stations, etc.
		9	Rate of travel (speed)

TABLE IV.2 - NTS COMMENT CODES - LOCATION, MODE AND OPINIONS EXPRESSED (DIGITS THREE AND FOUR)

Code	Interpretation of code for digit 3	Interpretation of code for digit 4	
		Value of Digit 1	
		0-8	9[a]
0	Favourable; inexpensive; yes[b]	Not applicable	Car - all other modes
1	Unfavourable; expensive; no[b]	ACT	Car - bus
2	Acceptable, but improvements possible	NSW	Car - rail
3	[c]	VIC	Car - air
4	Not used	QLD	Bus - rail
5	Not used	SA	Bus - air
6	Not used	WA	Rail - air
7	Not used	Tas	Rail - bus and air
8	Not used	NT	Air - all other modes
9	Not used	All Australia[d]	Travel overseas - travel in Australia

(a) In this case, the parameter gives two modes being compared. The opinions expressed by the comment apply to the first mode relative to the second. For example, the comment 'Air is expensive compared with travel by car' would actually be interpreted as: 'car travel is cheaper than travelling by air' and be coded as '9103'. This is because the actual mode comparison code (fourth digit) as shown in the above table refers to 'car-air' rather than 'air-car' comparisons.

(b) Whichever option is applicable.

(c) Certain comments contrasted two different geographical areas by indicating that one area was favourable in terms of some transport characteristic but the other area was unfavourable. A typical comment of this nature made the point that road quality is high in a particular area but poor in another area, usually within the same State. Rather than record two separate but effectively conflicting opinions, such comments contrasting two transport situations were coded with the third digit as 3.

(d) Except for any States mentioned specifically in another comment code.

comment in each case. By way of further indicating the approach adopted, the use of some of the terms contained in Tables IV.1 and IV.2 is enlarged upon as follows:

- The term 'cost' refers to any cost incurred while using a particular mode. For travel by car this includes the cost of petrol, the car, registration, etc;

- The term 'comfort' includes whether or not seats or beds are comfortable and the facilities provided are adequate. It has also been used to encompass comments on the relative boredom encountered while travelling;

- Whether or not the standard of the 'comfort' provided is considered adequate for the cost of that service is referred to as 'comfort relative to cost';

- The phrase 'customer relations' is used to cover the service provided by the relevant staff, and their attitude to customers;

- 'Access' includes the concepts of both transport to, and distance from terminals, stations, etc;

- 'Frequency of services provided' relates to the provision of sufficient services, and other timetabling problems such as (in the case of air transport) parallel scheduling;

- Both late arrivals and delays due to strikes are included in 'reliability of the services provided'.

APPENDIX V - EXAMPLES OF USE OF NTS CODING SCHEMES

As mentioned in Chapter 3, the majority of the questions on the NTS questionnaire were multiple choice questions and as such required only simple coding schemes to record the information in the data base. Tables 3.1 to 3.3 present the coding schemes used. This Appendix contains some examples of the use of these coding schemes.

Figure V.1 presents an example of the personal characteristics of a two-person household. Table V.1 illustrates how these data would be coded. For completeness, the occupation and age codes have also been included.

TABLE V.1 - EXAMPLE OF CODED PERSONAL CHARACTERISTICS USING SAMPLE QUESTIONNAIRE AS SHOWN IN FIGURE V.1

Personal Characteristic	Person 1		Person 2	
	Field[(a)]	Code	Field[(a)]	Code
Sex	13	1	19	2
Marital status	14	2	20	2
Major activity	15	1	21	6
Occupation	16	033	22	000
Age	17	32	23	99
Driving licence	18	1	24	2

(a) The information is contained in these fields in record type 1 (see Table 3.6).

Figure V.2 presents an example of the characteristics of a particular household. Fields 5, 6, 7 and 8 in the corresponding type 4 record for this household would be coded as '1', '0', '0' and '1' respectively (see Table 3.11). The income would be coded as '06' in field 9.

Figure V.3 presents an example of a completed questionnaire showing two trips made by a household. Table V.2 shows how these data would be coded. Again, all characteristics have been included in the table, for completeness.

PERSON	SEX	MARITAL STATUS	MAJOR ACTIVITY *Tick one box for each person*	OCCUPATION *See notes above*	AGE	DRIVING LICENCE
1	[X] Male [ ] Female	[ ] Never married [X] Now married [ ] Widowed [ ] Other	[X] Employed Full-time [ ] Student [ ] Employed Part-time [ ] Home-duties [ ] Looking for work [ ] Other [ ] Retired, Pensioner	CLERK	32 Years	[X] Yes [ ] No
2	[ ] Male [X] Female	[ ] Never married [X] Now married [ ] Widowed [ ] Other	[ ] Employed Full-time [ ] Student [ ] Employed Part-time [X] Home-duties [ ] Looking for work [ ] Other [ ] Retired, Pensioner		Years	[ ] Yes [X] No

FIGURE V.1 – EXAMPLE SHOWING THE PERSONAL CHARACTERISTICS OF TWO PERSONS

A. **How many motor vehicles are available for use by members of this household?** Refer to the notes at the top of this Section. If no vehicles in a particular class are available, write '0' for that class.	1 Cars (including station wagons) Utilities and light trucks Motor cycles 1 Other vehicles
B. **What is the combined income of members of the household?** Refer to the notes at the top of this Section, and tick **one box only** Both weekly and equivalent yearly incomes are shown to assist you in choosing the correct box.	[ ] Less than $39 per week / Less than $2000 per year [ ] Over $39 to $77 per week / Over $2000 to $4000 per year [ ] Over $77 to $115 per week / Over $4000 to $6000 per year [ ] Over $115 to $154 per week / Over $6000 to $8000 per year [ ] Over $154 to $192 per week / Over $8000 to $10000 per year [X] Over $192 to $288 per week / Over $10000 to $15000 per year [ ] Over $288 to $385 per week / Over $15000 to $20000 per year [ ] Over $385 to $481 per week / Over $20000 to $25000 per year [ ] Over $481 to $577 per week / Over $25000 to $30000 per year [ ] Over $577 per week / Over $30000 per year

FIGURE V.2 – EXAMPLE SHOWING THE HOUSEHOLD CHARACTERISTICS OF A HOUSEHOLD

	TRIP 1	TRIP 2
A. What was the destination of the trip? If more than one place was visited, record the name of the place regarded as the **main** destination.	SYDNEY (City/Town) N.S.W (State)	SURFERS PARADISE (City/Town) QLD (State)
B. How many nights were spent there?	0 Nights. If no nights were spent there, write '0' and go to item D.	8 Nights. If no nights were spent there, write '0' and go to item D.
C. What types of accommodation were used during the time spent there? Tick one box for **each** type of accommodation used	☐ Hotel or motel ☐ Friends' or relatives' home ☐ Caravan, campervan or tent ☐ Other	☐ Hotel or motel ☒ Friends' or relatives' home ☐ Caravan, campervan or tent ☐ Other
D. What were the reasons for making the trip as a whole? Tick one box for each reason. If you have ticked **more** than one box, **circle** the box you ticked which gives the **main** reason for going to the place you wrote in item A, above.	☐ Deliver freight or goods ☐ Other business ☒ Visit friends or relatives ☒ Sightseeing or recreation ☐ Holiday ☐ Personal or family affairs ☐ Other	☐ Deliver freight or goods ☐ Other business ☒ Visit friends or relatives ☐ Sightseeing or recreation ☒ Holiday ☒ Personal or family affairs ☐ Other
E. During the trip, which place visited was furthest from home?	AS ABOVE (City/Town) (State)	BRISBANE (City/Town) QLD (State)
F. What were the main methods of transport used during the trip? Please refer to the notes at the top of this section, and tick one box for each method of transport used. If you have ticked **more** than one box, **circle** the box you ticked which gives the method of transport used to travel the greatest distance	☐ Aeroplane ☐ Motorcycle ☐ Bus/Coach ☐ Ship/Boat ☒ Car ☐ Train ☐ Truck ☐ Other	☐ Aeroplane ☐ Motorcycle ☒ Bus/Coach ☐ Ship/Boat ☐ Car ☒ Train ☐ Truck ☐ Other
G. Which members of this household went on this trip? Please tick numbers corresponding to those used to identify individual household members in Section I	☒ 1 ☐ 4 ☐ 7 ☒ 2 ☐ 5 ☐ 8 ☐ 3 ☐ 6 ☐ 9	☒ 1 ☐ 4 ☐ 7 ☐ 2 ☐ 5 ☐ 8 ☐ 3 ☐ 6 ☐ 9
H. When did the trip end, and how many nights were spent away from home?	0 Nights. ____/6/78 Date ended	9 Nights. 30/6/78 Date ended
I. Who paid for any fares related to the trip? Please refer to the notes at the top of this section and tick the appropriate box or boxes.	☒ No fares involved ☐ Household member(s) ☐ Employer's or own business ☐ Other	☐ No fares involved ☐ Household member(s) ☐ Employer's or own business ☐ Other
J. How many OTHER trips identical to this one (except for the date) ended during the month? You need not fill in a trip column for these other identical trips.	1. If no other identical trips were made, write '0'	____. If no other identical trips were made, write '0'.
	Please use the space provided in Section IV to record any fur	

FIGURE V.3 – EXAMPLE SHOWING THE TRIP CHARACTERISTICS OF TWO TRIPS

TABLE V.2 - EXAMPLE OF CODED TRIP CHARACTERISTICS USING SAMPLE QUESTIONNAIRE AS SHOWN IN FIGURE V.3

Trip Characteristics	Field[a]	Code for Trip 1	Code for Trip 2
Destination[b]	05	21906	40928
Nights at destination	10	00	08
Accommodation	11-14	0000	2000
Reason for trip	15-18	3400	5360
Furthest place from home[b]	19	21906	40141
Mode used	24-27	3000	7200
People who travelled	28-38	11000000000	10000000000
Nights spent away from home	39	00	09
Date the trip ended	40	99[c]	30
Who paid fares	41-43	100	999[c]
Identical trips	44	01	99[c]

(a) The information is contained in these fields in type 3 records (see Table 3.10).
(b) Codes as defined by Aplin *et al.* 1978.
(c) Information not stated by respondent.

APPENDIX VI - METHOD USED TO CALCULATE ORIGIN-DESTINATION DISTANCES

Origin-destination distances were originally calculated in producing preliminary statistics for the NTS. However, it was felt that users of the data base might also find this information useful. These distances have therefore been included in the data base itself. Since the BTE does not have the resources available to determine the latitude and longitude of every individual place included in the data base, the latitude and longitude of the population centroid[1] of the LGA containing each placename was used for this distance calculation. The populations used are those obtained from the 1976 Census.

The distances are calculated as great circle distances between the population centroids. The actual calculation is as follows.

Let α_1 and β_1 be the latitude and longitude (in degrees) of the LGA[2] corresponding to the trip origin[3], and α_2 and β_2 be the latitude and longitude (in degrees) of the LGA[2] corresponding to the trip destination. Define θ_1 and θ_2 as the complements (in radians) of the latitudes of the origin and destination LGAs respectively.

Then $$\theta_1 = \frac{\pi}{180}(90 - \alpha_1) \qquad \text{(VI.1)}$$

and $$\theta_2 = \frac{\pi}{180}(90 - \alpha_2) \qquad \text{(VI.2)}$$

ϕ is the angle (in radians) subtended by the longitudes of the origin and destination LGA:

$$\phi = \frac{\pi}{180}(\beta_1 - \beta_2) \qquad \text{(VI.3)}$$

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(1) The co-ordinates of LGA centroids are estimates obtained after detailed examination of the relevant maps, together with a knowledge of the population centres in each region.
(2) That is, the population centroid of the LGA.
(3) That is, the home address.

If $\gamma = \frac{1}{2}(1 - \cos(\theta_1 - \theta_2))$ (VI.4)

and $\delta = \frac{1}{2}(1 - \cos \phi)$ (VI.5)

define $\varepsilon = 1 - 2\ (\gamma + \sin \theta_1 \sin \theta_2)$ (VI.6)

Then the origin-destination distance e is given in kilometres by

$$e = 6371 \cos^{-1} \varepsilon \quad \text{(VI.7)}$$

where 6371 is the radius of the earth in kilometres.

NOTATION

MATHEMATICAL SYMBOLS

α_1	Latitude of trip origin LGA population centroid
α_2	Longitude of trip origin LGA population centroid
β_1	Latitude of trip destination LGA population centroid
β_2	Longitude of trip destination LGA population centroid
ε	Angle subtended at earth's centre by origin and destination centroids
θ_1, θ_2, ϕ, γ, δ	Intermediate variables used in the calculation of the great circle distance
e	Great circle distance between origin and destination.

ABBREVIATIONS

ABS	Australian Bureau of Statistics
AGPS	Australian Government Publishing Service
AGR	Australian Government Region
ASCII	American Standard Code for Information Interchange
BCD	Binary Coded Decimal
BTE	Bureau of Transport Economics
CDC	Control Data Corporation
CPI	Characters per inch
CSD	Census Statistical Division
DURD	Department of Urban and Regional Development
EBCDIC	Extended Binary Coded Decimal Interchange Code
FPH	Furthest Place visited from Home
LGA	Local Government Area
NTS	National Travel Survey
O-D	Origin-Destination
km	Kilometre
nes	Not elsewhere specified

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