

## **Information Paper**

# **Improved Methods for Estimating Net Overseas Migration**

**Australia**

**2006**



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## INTRODUCTION .....

### INTRODUCTION

As Australia's national statistical agency, one of the core functions of the Australian Bureau of Statistics (ABS) is to provide regular estimates of the size and structure of the Australian population. These official population estimates, termed the estimated resident population, or ERP, are produced and published on a quarterly basis (as at 31 March, 30 June, 30 September and 31 December each year).

Population estimates are used for a wide variety of purposes, including the distribution of federal government funds to state, territory and local governments, as well as in the determination of the number of seats for each state and territory in the House of Representatives. The accuracy of the ERP is therefore of paramount importance and is closely monitored by a wide variety of stakeholders.

Net overseas migration (NOM) is currently a major driver of quarterly movements in the ERP, accounting for around half of population growth at the national level. NOM is also a volatile phenomenon, with a wide range of demographic, social, economic and political determinants and consequences. In recent years many factors have presented challenges in accurately deriving estimates of NOM, including:

- increasing volumes of international movements across Australia's borders
- changes to the composition of international visitors and their duration of stay behaviour
- international travel patterns of Australian residents (including duration of absence and frequency of travel)
- operational changes to more efficiently process international travellers' information.

Although the conceptual basis for usual residence has not changed, the ABS is currently developing improved methods for estimating NOM, and expects to implement these methods in official population estimates from June 2007. The key change under the improved methods will be the introduction of a '12/16 month rule' for measuring a person's residency in Australia, replacing the current '12/12 month rule'.

This Information Paper describes the improved methods as well as current plans for implementing the methods in ABS statistics.

### *Further information*

For further information relating to the improved methods for estimating net overseas migration, or the implementation of these methods, please contact:

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# CHAPTER 1

## BACKGROUND .....

### INTRODUCTION

Official Australian population estimates (namely the estimated resident population, or ERP) are based on the concept of *usual residence* in Australia.

For ERP purposes, a person is regarded as a usual resident if they have been (or are expected to be) residing in Australia for a period of 12 months or more. As such, the ERP includes all people, regardless of nationality or citizenship, who usually live in Australia, with the exception of foreign diplomatic personnel and their families. It includes usual residents who are overseas for less than 12 months and excludes overseas residents who are in Australia for less than 12 months.

The ERP for Australia at the end of a reference period is generated by adding natural increase (the excess of births over deaths) and net overseas migration (NOM) occurring during the period to the ERP at the beginning of each period. This is known as the cohort component method, and can be represented by the following equation:

$P_{(t+1)} = P_{(t)} + B - D + \text{NOM}$ , where

$P_{(t)}$  = the estimated resident population at time point  $t$

$P_{(t+1)}$  = the estimated resident population at time point  $t+1$

$B$  = the number of births occurring between  $t$  and  $t+1$

$D$  = the number of deaths occurring between  $t$  and  $t+1$

$\text{NOM}$  = net overseas migration occurring between  $t$  and  $t+1$ .

For state and territory ERPs, an additional term is added to the equation representing net interstate migration occurring between  $t$  and  $t+1$ .

## INTRODUCTION

*continued***1.1** COMPONENTS OF POPULATION CHANGE, Australia(a)

| Period    | POPULATION       |                           |                  |           | Proportion of population growth due to NOM |
|-----------|------------------|---------------------------|------------------|-----------|--|
|           | Natural increase | Net overseas migration(b) | At end of period | Growth(c) |  |
|           | '000             | '000                      | '000             | '000      | %  |
| 1998–99   | 121.7            | 96.5                      | 18 925.9         | 214.6     | 45.0                                       |
| 1999–2000 | 120.9            | 107.3                     | 19 153.4         | 227.5     | 47.1                                       |
| 2000–01   | 118.6            | 135.7                     | 19 413.2         | 259.9     | 52.2                                       |
| 2001–02   | 117.2            | 110.6                     | 19 641.0         | 227.7     | 48.5                                       |
| 2002–03   | 115.2            | 116.5                     | 19 872.6         | 231.7     | 50.3                                       |
| 2003–04   | 118.9            | 100.0                     | 20 091.5         | 218.9     | 45.7                                       |
| 2004–05   | 127.0            | 110.1                     | 20 328.6         | 237.1     | 46.4                                       |

- (a) See Explanatory Notes for concepts used and Glossary for definitions of terms used. Includes Other Territories from September 1993 — see paragraph 2 of the Explanatory Notes.
- (b) Due to changes in the methods used to adjust estimates of net overseas migration (NOM), caution should be used when comparing these estimates over time. In the above table, NOM estimates from 1998–99 to 2000–01 do not include migration adjustments (i.e. category jumping was set to zero). NOM estimates for 2001–02 to 2003–04 are revised, while estimates for 2004–05 are preliminary.
- (c) Differences between total growth and the sum of natural increase and net overseas migration during 1996–2001 are due to intercensal discrepancy.

Over recent years, NOM has accounted for close to half of population growth at the national level. At the sub-national level (i.e. states and territories), the impact of NOM on total population change can be measured using net overseas migration rates. These rates vary widely between states and territories; in 2004–05 Western Australia and Victoria had the highest rates of net overseas migration (0.83% and 0.65%, respectively), while Tasmania and the Australian Capital Territory had the lowest (0.14% and -0.08%, respectively).

**1.2** POPULATION CHANGE, Components and growth rates—2004–05

|                               | NSW   | Vic.  | Qld  | SA    | WA   | Tas. | NT   | ACT   | Aust. (a) |
|-------------------------------|-------|-------|------|-------|------|------|------|-------|-----------|
| COMPONENT ('000)              |       |       |      |       |      |      |      |       |           |
| Natural increase              | 42.5  | 29.4  | 27.3 | 6.1   | 14.1 | 2.2  | 2.6  | 2.9   | 127.0     |
| Net overseas migration        | 36.7  | 32.3  | 17.1 | 6.7   | 16.5 | 0.7  | 0.4  | -0.3  | 110.1     |
| Net interstate migration      | -25.7 | -2.4  | 31.5 | -3.5  | 1.5  | 0.2  | —    | -1.6  | . .       |
| Total population growth       | 53.5  | 59.4  | 75.9 | 9.3   | 32.0 | 3.0  | 3.0  | 1.0   | 237.1     |
| GROWTH RATE (b) (%)           |       |       |      |       |      |      |      |       |           |
| Natural increase rate         | 0.63  | 0.59  | 0.70 | 0.40  | 0.71 | 0.45 | 1.28 | 0.90  | 0.63      |
| Net overseas migration rate   | 0.55  | 0.65  | 0.44 | 0.44  | 0.83 | 0.14 | 0.19 | -0.08 | 0.55      |
| Net interstate migration rate | -0.38 | -0.05 | 0.81 | -0.23 | 0.07 | 0.04 | —    | -0.50 | . .       |
| Total population growth rate  | 0.80  | 1.20  | 1.95 | 0.61  | 1.62 | 0.63 | 1.48 | 0.32  | 1.18      |

. . not applicable

— nil or rounded to zero (including null cells)

(a) Includes Other Territories from September 1993 — see paragraph 2 of the Explanatory Notes.

(b) Growth as a proportion of the population at the beginning of the year.



## DATA SOURCES

Australia has a long-standing formal program of immigration. In recent years, temporary migration has become increasingly important with students, business entrants and working holiday makers staying for periods between three months and four years. Australian residents are also departing overseas in greater numbers on a long-term temporary and permanent basis.

Estimates of NOM are calculated using administrative data collected and compiled by the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA) under the authority of the Migration Regulations (*Migration Act, 1958*). At present, the main source of data on overseas migration is the incoming and outgoing passenger cards completed by all persons arriving in or departing from Australia. Data from passports and visa (entry permit) applications and approvals are also provided by DIMIA's Travel and Immigration Processing System (TRIPS). These three data sources are collected, compiled and matched together by DIMIA.

Monthly extracts from files of matched passenger cards and TRIPS records are the source for ABS Overseas Arrivals and Departures (OAD) statistics. OAD statistics are published on a monthly basis in *Overseas Arrivals and Departures, Australia* (cat. no. 3401.0).

## CATEGORIES OF TRAVEL

Currently, there are between 1.2 and 1.7 million arrivals and departures at Australian borders each month. These movements of overseas travellers are classified into three main categories, depending on each traveller's stated or actual duration of stay (in Australia or overseas):

- permanent movement
- long-term (one year or more) movement
- short-term (less than one year) movement.

Overseas movements are also classified according to whether the traveller is arriving in, or departing from Australia, and whether they consider themselves to be an Australian resident or an overseas visitor. Together, this produces the following categories of movement used in ABS statistics:

### 1.3 CATEGORIES OF TRAVELLER

| Main category of movement | Overseas arrivals              | Overseas departures            |
|---------------------------|--------------------------------|--------------------------------|
| .....                     |                                |                                |
| AUSTRALIAN RESIDENTS      |                                |                                |
| Permanent movement        |                                | Permanent departures           |
| Long-term movement        | Long-term residents returning  | Long-term residents departing  |
| Short-term movement       | Short-term residents returning | Short-term residents departing |
| .....                     |                                |                                |
| OVERSEAS VISITORS         |                                |                                |
| Permanent movement        | Permanent (settler) arrivals   |                                |
| Long-term movement        | Long-term visitors arriving    | Long-term visitors departing   |
| Short-term movement       | Short-term visitors arriving   | Short-term visitors departing  |
| .....                     |                                |                                |

## STATED TRAVEL INTENTIONS VS. ACTUAL TRAVEL BEHAVIOUR

Conceptually, NOM is the difference between permanent and long-term arrivals, and permanent and long-term departures. However, at the time a person crosses the Australian border, it is not empirically known how long they will actually spend in Australia or overseas. For example, overseas visitors might change their travel plans and extend their stay in Australia, or depart earlier than they first intended. Similarly, Australian residents travelling overseas might change their plans while abroad.

Some of these differences between stated travel intentions and actual travel behaviour may also reflect short interruptions to longer periods of stay or absence. For example, overseas students arriving in Australia might state that they intend to stay for three years, but return home for brief periods during this time (e.g. for academic holidays). Similarly, Australians working or studying overseas might state that they intend to be away for more than a year but return for brief visits.

## ADJUSTMENTS TO OVERSEAS MOVEMENTS DATA

The ABS currently applies a number of adjustments to overseas arrivals and departures data in order to estimate NOM. These mainly comprise adjustments designed to reflect differences between stated travel intentions and actual travel behaviour, but (in the case of revised estimates calculated under current methods) also include adjustments to transform numbers of overseas movements into numbers of travellers.

### *Category jumping adjustment*

As a result of the differences between stated travel intentions and actual travel behaviour, an adjustment factor known as 'category jumping' was introduced to NOM estimates in the early 1980s. The category jumping adjustment represented a retrospective change in a person's category of travel, and was initially based on the duration of stay stated by overseas visitors departing Australia, and the duration of absence stated by Australian residents returning.

In the late 1990s, problems emerged in the category jumping methodology due to changes in incoming and outgoing passenger cards combined with the gradual change in the characteristics of international travellers to Australia (e.g. increasing numbers of overseas students and temporary long term business migrants). These growing categories of temporary entrants displayed different patterns of movement to those more traditional entrants, including a greater propensity for short term absences from Australia during a period of long-term residency.

The new passenger cards were implemented from 1 July 1998. From this date, information on date of birth, sex and country of birth has been obtained from TRIPS data matched to passenger cards, while information on a traveller's time spent in Australia (for overseas visitors departing) or time spent overseas (for Australian residents arriving) has been calculated by matching incoming and outgoing passenger cards.

Subsequent analyses revealed that these calculated durations of stay, while a very precise application of the 12 month criteria for residency, were often quite different to the data previously reported by travellers. For example, a temporary but long-term migrant who had lived in Australia for several years may have had their duration of stay reduced to the period of time since their most recent international movement. Persons from overseas who were working or studying in Australia produced particular problems as many travel overseas for short periods several times a year (e.g. travelling out of Australia during holiday periods).

*Migration adjustment and methodological review*

To overcome the problems identified in category jumping estimates, an interim 'migration adjustment' was implemented in late 2003, with a detailed methodological review of NOM estimates conducted in 2004 and 2005. Appendix 5 (*Current methods for estimating net overseas migration*) provides further information on methods currently used to estimate NOM, including the interim migration adjustment, while Chapter 2 (*Improved Methods for Estimating Net Overseas Migration*) describes forthcoming improved estimation methods resulting from the review.

LIMITATIONS OF CURRENT METHODS

*Continuous stay of 12 months required to meet residency requirement*

There are a number of known limitations to the current NOM estimation methods, the most important one being that a person's actual travel behaviour is determined by matching their incoming and outgoing passenger cards over the following 12 month (365 day) period. This method, which measures a '12/12 month rule', is used to satisfy the usual residence criterion in population estimates, i.e. that persons must have been resident in Australia for 12 months or more in order to be included in the ERP.

However, the use of the '12/12 month rule' produces the unintended consequence that persons are only added to the population through NOM if they have been resident in Australia for a *continuous* period of 12 months or more. In other words, many overseas travellers with short interruptions to a longer period of stay/absence (e.g. overseas students in Australia) may be excluded from NOM estimates. Australians living, studying or working abroad are subtracted from the ERP via NOM only if they are overseas for a continuous period of 12 months or more.

For example, there are Australians who live overseas long term who also return to Australia for short holidays over the Christmas/New Year period then depart again overseas. It also applies to Australian and New Zealand citizens who frequently travel between Australian and New Zealand.

*Migration adjustments not applied to all categories of travel*

Migration adjustments applied to current NOM estimates do not include all categories of travel and also differ in the categories of travel adjusted for preliminary and revised estimates.

Under both preliminary and revised NOM estimates, no migration adjustments are applied to either long-term residents returning to Australia or long-term visitors departing Australia. In addition, preliminary estimates do not include adjustments for permanent arrivals or permanent departures. While revised estimates do include adjustments for permanent movements, these only apply to a small subset of such movements, namely:

- permanent (settler) arrivals who arrived in and left Australia in the same quarter, and did not return at any point during the 12 months following this arrival
- permanent departures who left and returned to Australia in the same quarter, and did not depart at any point during the 12 months following this departure.

*Preliminary estimates based on counts of overseas movements*

Conceptually, NOM estimates should be based on counts of travellers, rather than counts of overseas movements (since travellers may have more than one movement in a particular reference period). While revised NOM estimates are adjusted for multiple movements of travellers during a reference quarter, preliminary estimates are not.

*Reliance on information  
reported on passenger  
cards*

Current NOM estimation methods rely on information reported on incoming and outgoing passenger cards to determine whether travellers are Australian residents or overseas visitors, and whether they intend to live in Australia for the next 12 months. These self-reported questions are open to the interpretation of the travellers and therefore are not always filled in correctly.

## CHAPTER 2

## IMPROVED METHODS FOR ESTIMATING NET OVERSEAS MIGRATION .....

### INTRODUCTION

The key methodological change being introduced to NOM estimates is that travellers' durations of stay in Australia or overseas will be measured across a 16 month period. Other significant changes include data quality improvements (such as imputations to repair implausible movement sequences) and the introduction of a six-monthly revision cycle for NOM estimates.

#### *12/16 month rule*

Under the improved methods, overseas travellers (whether Australian residents or overseas visitors) who are in Australia for a total of 12 months (defined as 365 days) or more during the 16 month period (defined as 486 days) following an overseas movement will be added to NOM estimates. Similarly, travellers who are overseas for 12 months or more out of the 16 month follow-up period will be subtracted from NOM estimates. This method of determining residence in Australia is referred to as the '12/16 month rule', as opposed to the '12/12 month rule' applied in current methods.

### EVALUATION OF ALTERNATIVE METHODS

The use of the '12/12 month rule' in current NOM statistics means that many overseas students and business travellers residing long-term in Australia would not be included in the ERP because they do not spend a continuous 365 day period in Australia. Similarly, many Australians residing, working or studying overseas long-term would not be removed from the ERP because they are not absent for a continuous 365 day period.

The ABS considered a range of measurement methods which would relax the continuity of residence/absence requirement associated with the '12/12 month rule'. As well as the '12/16 month rule', these included:

- *10/12 month rule* — overseas travellers are added to (subtracted from) NOM estimates if they have been in Australia (overseas) for 10 months or more during the 12 month period following an overseas movement.
- *12/15 month rule* — overseas travellers are added to (subtracted from) NOM estimates if they have been in Australia (overseas) for 12 months or more during the 15 month period following an overseas movement.
- *12/18 month rule* — overseas travellers are added to (subtracted from) NOM estimates if they have been in Australia (overseas) for 12 months or more during the 18 month period following an overseas movement.

The '10/12 month rule' was rejected because analysis showed it would lead to the inclusion of some persons on short-term visas (primarily backpackers and working holiday-makers) in the ERP.

### 12/16 month rule *continued*

### EVALUATION OF ALTERNATIVE METHODS *continued*

While the '12/18 month rule' would allow for a more detailed analysis of overseas movement histories, the requirement for an 18 month follow-up period would lead to unacceptable delays in the production of statistics. In addition, it was felt that this rule did not provide a sufficiently clear distinction between usual residents of Australia and residents of other countries as travellers could spend up to 6 months overseas yet still be included in the ERP.

The '12/15' and '12/16' month rules produced similar results. However, analysis indicated that the use of a 16 month follow-up period better reflected the 3-4 months of holiday periods which occur during the academic year. For example, of those travellers included in NOM estimates under the '12/16' rule, but who were not included under a '12/15' rule, 90% of long-term visitor arrivals were overseas students.

### Scope changes

The movement of operational aircraft and ship's crew and their positioning movements are excluded from NOM estimates. Unauthorised arrivals who do not have a completed incoming passenger card record but have an arrival record on TRIPS are included, as those who subsequently leave Australia complete an outgoing passenger card.

### State and territory distribution of NOM

The distribution of NOM estimates across states and territories is based on information reported by travellers on incoming and outgoing passenger cards. Incoming passenger cards provide information on the state or territory of a traveller's intended address in Australia while outgoing passenger cards provide information on the state or territory in which a traveller lives or spent most time. These are used to determine a state or territory of residence for each overseas movement.

If data on a traveller's state or territory of residence are missing for a particular overseas movement (e.g. through non-response to the relevant passenger card question), they are imputed in the following order:

- If the traveller has made other overseas movements in the reference quarter or the previous six quarters, then state or territory of residence is imputed to be that of their most recent movement.
- If data on the state of clearance are available for the movement (i.e. the state or territory of the air or sea port through which the traveller arrived or departed Australia), then state or territory of residence is imputed based on the distribution of overseas movements within that state of clearance during the reference quarter (state of clearance by category of travel and state or territory of residence).
- If data on the state of clearance are not available, then state or territory of residence is imputed based on the distribution of all movements for that category of travel during the reference quarter (category of travel by state or territory of residence).

### Revision cycle for NOM estimates

Two types of NOM estimates — namely final and preliminary estimates — will be created, depending on the amount of administrative information available when the estimates are produced. The following sections provide more information on how each of these will be generated. Further information about how and when each type of NOM estimate will be released is provided in Chapter 3 (*Implementation of improved methods*) and Appendix 4 (*Proposed release schedule*).

## FINAL ESTIMATES OF NOM

The 12/16 month rule for determining a traveller's duration of stay can only be fully applied when data on overseas movements are available for the 16 months following a reference quarter. However, preliminary estimates of NOM are required 5 months after the reference quarter for the production of quarterly estimates of the population of Australia, states and territories.

Therefore, the 12/16 month rule is only fully applied to final NOM estimates, with these estimates based around the construction of detailed movement histories for each overseas traveller. The following points summarise key steps in the construction of movement histories and subsequent final NOM estimates.

### *Step 1. Derive person-level data on overseas movements*

Data used for quarterly NOM estimates are sourced from the Overseas Arrivals and Departures Collection (OAD), along with additional data obtained from the Travel and Immigration Processing System (TRIPS).

Each OAD file contains information derived from incoming and outgoing passenger cards, and is matched for each movement to selected TRIPS data items through a personal identifier. OAD files do not include records where a passenger card has not been matched to TRIPS (e.g. if the traveller records incorrect passport details on their passenger card, and the mismatch between this and the TRIPS record has not yet been resolved). Records from TRIPS relating to these unmatched movements are extracted and added to the quarterly input files for NOM estimates.

The quarterly files used for NOM estimates also contain a number of logical edits and imputations, mainly at the movement level. Person-level data are constructed from these movement data by matching movements using personal identifiers.

### *Step 2. Determine the category of travel for each overseas traveller*

Under the improved NOM methods, travellers will be assigned to one, and only one, category of travel during a reference quarter. This represents a change from current methods, where there is a potential for persons to be included more than once through different categories of travel if they have multiple overseas movements during the quarter. However, this change is likely to have little visible impact on the resulting NOM estimates, as in the vast majority (about 95%) of cases travellers make only one or two movements during a quarter.

The algorithm used to assign a category of travel to each traveller will be based on:

- the last movement during the reference quarter where the traveller stated an intention to remain in Australia or overseas for 12 months or more (i.e. permanent arrival, permanent departure, long-term visitor arrival or long-term resident departure movements); or,
- their first movement during the reference quarter where there is no movement with a permanent or long-term (i.e. 12 months or more) stated intention during the reference quarter.

### *Step 3. Derive ERP flag at start of reference quarter*

An 'ERP flag' is used to indicate whether a traveller is 'in' or 'out' of the Estimated Resident Population (ERP) at the start of the reference quarter. During the start-up period for the improved NOM methods, this flag will be determined by looking at the individual's previous travel history.

**Step 3.**      *Derive ERP flag at start of reference quarter continued*

For subsequent periods, a traveller's ERP flag at the start of a reference quarter will be carried forward from their flag at the end of the previous quarter. If no previous flags exist for a traveller, their ERP flag at the start of the reference quarter will be imputed based on the direction of their first movement whether they are arriving in Australia or departing from Australia.

**Step 4.**      *Derive the movement history and required data items for each overseas traveller*

Movement histories will be constructed for each traveller based on their overseas arrivals and departures during the 16 months following an overseas movement that takes place in the reference quarter. In addition, a number of key demographic data items will be derived for each traveller, including their financial year of birth (used to calculate age at 30 June), sex, country of birth and country of citizenship. In most cases, these derived items are available from the source OAD and/or TRIPS datasets. In cases where required demographic data items are missing, logical imputations similar to those in existing OAD and ERP systems will be used.

**Step 5.**      *Identify implausible movements, and impute 'missing' movements*

Implausible sequences in movement histories occur when a traveller has two arrivals from overseas without an overseas departure movement in between, or two overseas departures without an overseas arrival in between. Such implausible movement sequences occur for a number of reasons, but are mainly due to non-matches between travel information (i.e. visa applications or passport information) and existing TRIPS information. Non-matches can occur when a traveller's personal details change (e.g. marital status, family name), or when their travel documentation is updated (e.g. new passport and country of passport, perhaps combined with changes to personal details). When a non-match occurs, the DIMIA processing systems assign a new personal identification number to the movement before referring it to a resolution process. While most non-matches are resolved at a later date, administrative data provided to the ABS for the OAD or from TRIPS may not include all revisions relating to this process.

Some travellers with implausible movement sequences will also have a sequence (before and/or after the implausible sequence) of plausible movements over the 16 month period studied. In these cases, an assumption is made that the proportion of a traveller's time spent in Australia during the implausible movement sequence was consistent with their proportion of time spent in Australia during plausible movement sequences. Using their plausible movement sequences, a ratio of their time spent in Australia to their time spent overseas is calculated and applied to the implausible sequence to impute a 'proxy' arrival or departure movement.

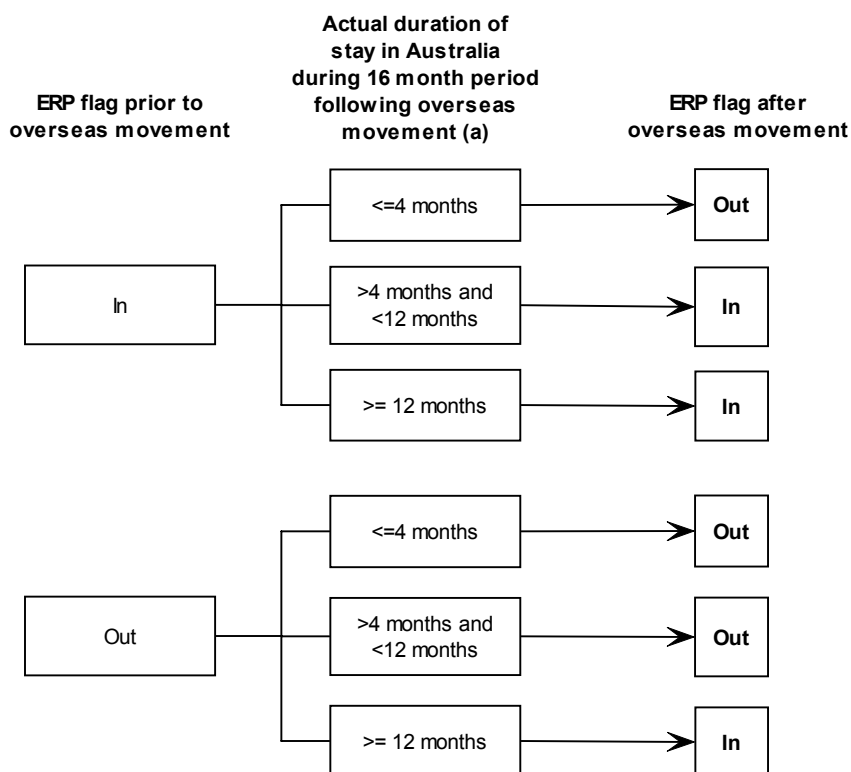
In a very small number of cases there may be no plausible movement sequences during the 16 month period analysed (e.g. a movement history may only show two or more overseas arrivals, or only show two or more overseas departures). It is assumed that these travellers spent 50% of the time between movements in Australia.

Examples showing how movements would be imputed for two hypothetical travellers with implausible movement sequences are shown in Appendix 2 (*Imputed movement example*).



**Step 6.** Determine the total duration of stay for each traveller and calculate ERP flags

The total duration of stay/absence for each traveller is determined by adding durations of stay/absence as shown by movement histories over the 16 month period following an overseas movement. As shown in the following diagram, these durations of stay are used to calculate whether a traveller who is 'IN' or 'OUT' of the ERP before the movement is 'IN' or 'OUT' of the ERP after the movement, regardless of their category of travel.



(a) For the purposes of duration of stay calculations, 4 months is defined as 121.5 days and 12 months is defined as 365 days.

**Step 7.** Calculate NOM estimates and final impact on the ERP

Each traveller moving into the ERP during a reference quarter (i.e. an ERP flag of 'OUT' at the start of the quarter and a flag of 'IN' at the end of the quarter) is added to the total NOM estimate for the quarter. Similarly, each traveller moving out of the ERP is subtracted from the NOM estimate. As in current publication tables, NOM estimates can be broken down according to category of travel or the demographic characteristics of travellers (e.g. state or territory of usual residence, age or sex).

Appendix 3 (*ERP flag example*) shows how ERP flags would be calculated during and at the end of a reference quarter for a hypothetical traveller.

## PRELIMINARY ESTIMATES OF NOM

Preliminary estimates of the resident population and the various components of population growth (i.e. NOM, natural increase and net interstate migration) are released 5-6 months after the end of each reference quarter in *Australian Demographic Statistics* (cat. no. 3101.0).

PRELIMINARY ESTIMATES  
OF NOM *continued*

Since full movement histories are not available within this timeframe, preliminary NOM estimates must be modelled from final NOM estimates calculated for previous periods. As at February 2006, improved methods for preliminary NOM estimates are still under development, but will be based on previously observed propensities for actual travel behaviour to differ from stated travel intentions, by category of travel, state, age and country of citizenship. As longer time series of estimates are produced, other methods for preliminary NOM estimation may be evaluated (e.g. a time series model).

Two options for propensity models for producing preliminary NOM estimates for a given reference quarter are currently being considered, one based on final NOM estimates for the same quarter one year previously, and the other based on final estimates for the same quarter two years ago.

Since final NOM estimates for a 'one year ago' preliminary model are not available within 6 months of a reference quarter, it is likely that a combination of these two models will be used. As such, the first time a preliminary NOM estimate is released, it would be based on propensities from two years previously. These preliminary estimates would be updated to reflect propensities from one year previously at the next opportunity — in practice, this would occur for the following June or December release of *Australian Demographic Statistics* (cat. no. 3101.0)). Further information on the proposed release schedule for preliminary and final NOM estimates is provided in Appendix 4 (*Proposed release schedule*).

## CHAPTER 3

## IMPLEMENTATION OF IMPROVED METHODS .....

### IMPLEMENTATION DATE

The improved methods for estimating NOM will be implemented in ABS population estimates in June 2007, with the release of the December quarter 2006 issue of *Australian Demographic Statistics* (cat. no. 3101.0). This publication will also represent the first release of population estimates rebased to the 2006 Census of Population and Housing.

The improved NOM methods will be applied to estimates from the September quarter 2006 onwards. This implementation date means that estimates for both the 2001-06 and 2006-11 intercensal periods will be calculated on a consistent basis within each intercensal period. However, no published official estimates of ERP between 2001-2006 will use the new methods.

As part of the process of evaluating the improved NOM methods, experimental estimates of NOM based on the improved methods will be produced for the December quarter 2003 to the June quarter 2006. Experimental estimates for some reference quarters will be published in early or mid-2007 in an Information Paper discussing the statistical impact of the improved NOM methods, and will be made available for analytical purposes.

### CHANGES TO REGULAR REVISION TIMETABLE FOR POPULATION ESTIMATES

The introduction of the '12/16 month rule' for NOM estimates will result in changes to the regular revision timetable for population estimates.

Currently, preliminary population estimates, including preliminary estimates for each component of population growth (i.e. natural increase, net overseas migration and net interstate migration) are published 5-6 months after the end of each reference quarter. Preliminary estimates of natural increase and net overseas migration for all quarters in a financial year are revised 15 months after the end of the financial year. These revised estimates are published in the March quarter issue of *Australian Demographic Statistics* (cat. no. 3101.0) which is released each September.

#### 6-monthly revision cycle

A table showing the expected schedule of releases for NOM estimates for the September quarter 2006 to the December quarter 2009 is shown in Appendix 4 (*Proposed release schedule*).

Since the improved NOM methods require an additional four months of data over current methods, it will no longer be possible to produce final NOM estimates for all quarters in a financial year 15 months after the end of the reference financial year. Instead it is proposed to produce 'initial' preliminary estimates to the current timetable (for example, June release of previous December quarter ERPs), with the preliminary estimates based on propensities calculated from travel patterns two years before the reference quarter (see Appendix 4, column P<sub>A</sub> in Table A4.1).

*6-monthly revision cycle  
continued*

Consideration is being given to applying an additional round of revisions to these estimates, updating propensities using data from one year before the reference period. These revisions would be applied to previous preliminary estimates and released each June and December (see Appendix 4, column P<sub>B</sub> in table A4.1).

*Communication plans*

ABS is preparing detailed plans to communicate the forthcoming changes in NOM methods to stakeholders. These communication plans will include:

- Information Papers, namely this document and a second Information Paper to describe the statistical impact of the improved NOM methods
- Information sessions and/or meetings with key stakeholders
- Fact sheets for users of NOM statistics and the media
- Presentations at various professional fora (e.g. conferences).

**EXPLANATORY NOTES** .....

**INTRODUCTION**

**1** This Information Paper outlines forthcoming new methods for the estimation of net overseas migration (NOM) as well as plans for the implementation of these methods in published estimates of the resident population (ERP) of Australia and the states and territories.

**2** Following the 1992 amendments to the *Acts Interpretation Act* to include the Indian Ocean Territories of Christmas Island and the Cocos (Keeling) Islands as part of geographic Australia, population estimates commencing from September quarter 1993 include estimates for these two territories. To reflect this change, another category of the state and territory level was created, known as Other Territories. Other Territories include Jervis Bay Territory, previously included with the Australian Capital Territory, as well as Christmas Island and the Cocos (Keeling) Islands, previously excluded from population estimates for Australia.

**POPULATION AND  
COMPONENTS OF  
POPULATION CHANGE**

**3** Australia's population estimates for the period since 1971 are compiled according to the place of usual residence of the population. An explanation of the place of usual residence conceptual basis for population estimates is given in *Demographic Estimates and Projections: Concepts, Sources and Methods*, Statistical Concepts Library, ABS web site <<http://www.abs.gov.au>>.

*Method of estimation*

**4** The estimated resident population is an estimate of the Australian population obtained by adding to the estimated population at the beginning of each period the components of natural increase (on a usual residence basis) and net overseas migration. For the states and territories, account is also taken of estimated interstate movements involving a change of usual residence. Estimates of the resident population are based on census counts by place of usual residence, to which are added the estimated net census undercount and Australian residents estimated to have been temporarily overseas at the time of the census. Overseas visitors in Australia are excluded from this calculation.

**5** After each census, estimates for the preceding intercensal period are revised by incorporating an additional adjustment (intercensal discrepancy) to ensure that the total intercensal increase agrees with the difference between the estimated resident populations at the two 30 June dates in the respective census years.

**NET OVERSEAS MIGRATION**

**6** Conceptually, net overseas migration (NOM) is the difference between permanent and long-term arrivals, and permanent and long-term departures. Estimates of NOM are derived from information provided on incoming and outgoing passenger cards, as well as other data supplied by the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA). Data on the intended duration of stay of overseas visitors arriving in Australia and the intended duration of absence of Australian residents travelling overseas are used to determine the numbers of permanent and long-term arrivals, and permanent and long-term departures. Passenger card data are also used to calculate migration adjustments and determine the state and territory distribution of NOM. The processes of adjusting movement data on travellers' stated intentions to reflect their actual behaviour are complex, and depend upon the amount and type of movement data available at a particular point in time. The methods currently used compare data on actual travel movements over a one year period with those first advised by individual travellers, and are explained in more detail in *Demography Working Paper 2003/5 - Net Overseas*

*Method of estimation*  
*continued*

*Migration: Adjusting for Actual Duration of Stay or Absence* (<<http://www.abs.gov.au>>, select Themes> Demography> ABS Demography Working Papers). In order to conduct such a comparison, data for a 15 month period (i.e. one year plus one quarter) are required. The adjustment methods described in the working paper have been applied to NOM data from the September quarter 2001 onwards. For more information see Appendix 5 (*Current Methods for Estimating NOM*).

#### NET INTERSTATE MIGRATION

**7** Estimates of interstate migration since June 1986 have been derived from the latest census data on interstate movement in the preceding one year and unidentified information on interstate changes of address advised to Medicare Australia in the process of administering Medicare.

#### NATURAL INCREASE: BIRTHS AND DEATHS

**8** Birth and death registration data are used to compile ERP. For preliminary estimates, births and deaths by quarter of registration are used as a proxy for quarter of occurrence. For revised estimates, a factor has been applied to the number of occurrences to allow for those occurrences which are yet to be registered. For final estimates after 30 June 1991, year/quarter of occurrence data are used for final estimates to June 30 2001.

#### OVERSEAS ARRIVALS AND DEPARTURES STATISTICS

**9** Persons arriving in, or departing from, Australia provide information in the form of incoming and outgoing passenger cards (see Appendix 1). Incoming persons also provide information in visa applications, apart from people travelling as Australian and New Zealand citizens. These and other information available to the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA) serve as a source for statistics of overseas arrivals and departures (OAD).

**10** In July 1998, DIMIA revised the incoming and outgoing passenger cards and associated procedures as well as computer systems. Some questions which obtained information already stored in the DIMIA Travel and Immigration Processing System (TRIPS) (e.g. sex and marital status) were deleted. Data for the deleted questions and some other missing data (for unanswered questions or missing data) is obtained from the DIMIA TRIPS. The changes also affect the data for 'previous country of residence' which is imputed for Australian and NZ citizens. For more information see the May 1998 issue of *Overseas Arrivals and Departures, Australia* (cat. no. 3401.0). Since July 1998, there have been additional minor changes to both incoming and outgoing passenger cards.

**11** From July 2001, DIMIA adopted a new passenger card processing system which involved electronic imaging of passenger cards and intelligent character recognition of the data stored in the images. This process has yielded several improvements to the processing of passenger card data, most notably the detailed information about missing values. There have also been several changes to data quality. Further information on these changes is provided in *Overseas Arrivals and Departures, Australia* (cat. no. 3401.0).

*Scope*

**12** Overseas arrivals and departures statistics relate to the number of movements of travellers rather than the number of travellers (i.e. multiple movements of individual persons during a given reference period are each counted separately). The statistics exclude the movements of operational air and ships' crew, of transit passengers who pass through Australia but are not cleared for entry, and of passengers on pleasure cruises commencing and finishing in Australia. Similarly, these statistics exclude unauthorised arrivals.

*Estimation method*

**13** Overseas arrivals and departures statistics are derived from a combination of full enumeration and sampling. All permanent movements and all movements with a duration of stay of one year or more are fully enumerated. All movements with a duration of stay of less than one year are sampled. Statistics relating to these movements are therefore estimates which may differ from statistics which would have been obtained if details of all these movements had been processed. Sample standard errors are provided in each issue of *Overseas Arrivals and Departures, Australia* (cat. no. 3401.0).

**14** Since January 1997 sample skips, which varied across months and country of citizenship, were used in the selection of records. Over a year about 3.5% of all short-term movements were selected for sampling. However, for operational reasons variable skips across months were ceased from August 2000 and were only varied across countries of citizenship. From January 2005, 4.9% of all short-term movements have been selected for sample. The skip values correspond to the lowest skip value (i.e. the highest sample selected) for each country from a sample design including individual month and direction of travel as sub-categories.

*Corrections and imputations*

**15** The imprecision due to sampling errors should not be confused with errors arising from imperfections in reporting, which may occur in any data collection, whether sampled or not. Every effort is made to minimise such errors, both through careful design of the passenger cards and through checks on the information once it is received. During the edit process some items are corrected where they conflict with other known information. Missing replies to certain items such as age, state and country of stay/residence are also imputed by reference to other related items. Information on non-response rates and data imputation is provided in each issue of *Overseas Arrivals and Departures* (cat. no. 3401.0).

**16** Errors of this kind differ from discrepancies arising from the fact that certain information reflects the travellers' intentions at the time the passenger cards were completed. These intentions are, of course, subject to change. Particularly affected is the distinction between permanent and temporary movement and in the latter case, length of intended stay, country in which most time will be spent and main reason for journey.

RATES OF POPULATION  
GROWTH

**17** The average annual growth rate,  $r$ , is calculated as a percentage using the formula

$$\left[ \left( \frac{P_n}{P_0} \right)^{\frac{1}{n}} - 1 \right] \times 100$$

where  $P_0$  is the population at the start of the period,  $P_n$  is the population at the end of the period and  $n$  is the length of the period between  $P_n$  and  $P_0$  in years.

## ROUNDING

**18** In this publication population estimates and their components have sometimes been rounded to the nearest hundred. Neither rounded figures nor unrounded figures should be assumed to be accurate to the last digit shown.

**19** Where figures have been rounded, discrepancies may occur between sums of component items and totals.

## RELATED PRODUCTS

**20** Other ABS products which may be of interest to users include:

- AusStats — electronic data <<http://www.abs.gov.au/ausstats>>
- *Australian Demographic Trends* (cat. no. 3102.0)
- *Australian Historical Population Statistics* (cat. no. 3105.0.65.001). From the navigation bar select Themes; Demography; Australian Historical Population Statistics
- *Births, Australia* (cat. no. 3301.0) — issued annually
- *Deaths, Australia* (cat. no. 3302.0) — issued annually
- Demographic Estimates and Projections: Concepts, Sources and Methods, <<http://www.abs.gov.au>>. From the navigation bar select Themes; Demography; Concepts, Sources and Methods

RELATED PRODUCTS *continued*

- *Demography* (cat. no. 3311.(1-8).55.001) — state and territory specific publications
- *Interstate Arrivals and Departures* — from September quarter 1986, Dataset, <<http://www.abs.gov.au/ausstats>>. From the navigation bar select Statistics; Data Cubes; By Catalogue/Subject
- *Information Paper: Census of Population and Housing, Data Quality — Undercount, Australia, 2001* (cat. no. 2940.0)
- *Information Paper: Determining Seats in the House of Representatives — Legislative Requirements for Provision of ABS Statistics* (cat.no. 3107.0.55.002)
- *Migration, Australia* (cat. no. 3412.0) — includes data on the country of birth of the ERP of Australia
- *Overseas Arrivals and Departures, Australia* (cat. no. 3401.0) — issued monthly
- *Population by Age and Sex: Australian States and Territories* (cat. no. 3201.0)
- *Population Projections, Australia* (cat. no. 3222.0)
- *Short-term Visitor Arrival Estimates, Australia* (cat. no. 3401.0.55.001) — issued monthly

**21** Related statistics are also published by DIMIA, the Department of Industry, Tourism and Resources and Tourism Research Australia.

**22** Current publications and other products produced by the ABS are listed in the *Catalogue of Publications and Products* (cat. no. 1101.0). The Catalogue is available from any ABS office or the ABS web site <<http://www.abs.gov.au>>. The ABS also issues a daily Release Advice on the web site which details the products to be released in the week ahead.

## ABBREVIATIONS

|       |  |
|-------|--|
| ABS   | Australian Bureau of Statistics  |
| ACT   | Australian Capital Territory   |
| Aust. | Australia  |
| DIMIA | Australian Government Department of Immigration and Multicultural and Indigenous Affairs |
| ERP   | estimated resident population  |
| NOM   | net overseas migration   |
| NSW   | New South Wales  |
| NT    | Northern Territory   |
| NZ    | New Zealand  |
| OAD   | Overseas Arrivals and Departures Collection  |
| Qld   | Queensland   |
| SA    | South Australia  |
| Tas.  | Tasmania   |
| TRIPS | Travel and Immigration Processing System   |
| Vic.  | Victoria   |
| WA    | Western Australia  |



## APPENDIX 1

## PASSENGER CARDS .....

## INCOMING CARD — FRONT

| Incoming passenger card • Australia   |  |
|---|--|
| PLEASE COMPLETE IN ENGLISH WITH A BLUE OR BLACK PEN   |  |
| ▶ Family/surname  | <input type="text"/>                                     |
| ▶ Given names   | <input type="text"/>                                     |
| ▶ Passport number   | <input type="text"/>                                     |
| ◆ Flight number or name of ship   | <input type="text"/>                                     |
| ▶ Intended address in Australia   | <input type="text"/>                                     |
|   | State <input type="text"/>                               |
| ▶ Do you intend to live in Australia for the next 12 months?  | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| ▶ If you are <b>NOT</b> an Australian citizen:  |  |
| Do you have tuberculosis?   | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Do you have any criminal conviction/s?  | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| YOU MUST ANSWER EVERY QUESTION — IF UNSURE, <input checked="" type="checkbox"/> Yes   |  |
| ▶ Are you bringing into Australia:  |  |
| 1. Goods that may be prohibited or subject to restrictions, such as medicines, steroids, firearms, weapons of any kind or illicit drugs?                      | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 2. More than 2250mL of alcohol or 250 cigarettes or 250g of tobacco products?   | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 3. Goods obtained overseas or purchased duty and/or tax free in Australia with a combined total price of more than AUD\$900, including gifts?                 | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 4. Goods/samples for business/commercial use?   | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 5. AUD\$10,000 or more in Australian or foreign currency equivalent?  | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 6. Any food - includes dried, fresh, preserved, cooked, uncooked?   | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 7. Wooden articles, plants, parts of plants, traditional medicines or herbs, seeds, bulbs, straw, nuts?   | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 8. Animals, parts of animals and animal products including equipment, eggs, biologicals, specimens, birds, fish, insects, shells, bee products, pet food?     | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 9. Soil, or articles with soil attached, ie. sporting equipment, shoes, etc?  | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| ▶ 10. Have you visited a rural area or been in contact with, or near, farm animals outside Australia in the past 30 days?                                     | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| ▶ 11. Have you been in Africa or South America in the last 6 days?  | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| <b>DECLARATION</b><br>The information I have given is true, correct and complete. I understand failure to answer any questions may have serious consequences. |  |
| YOUR SIGNATURE <input type="text"/>   |  |
| Day <input type="text"/> Month <input type="text"/> Year <input type="text"/>   |  |
| TURN OVER THE CARD<br>English   |  |

## INCOMING CARD — BACK

| YOUR CONTACT DETAILS IN AUSTRALIA   |   | EMERGENCY CONTACT DETAILS (FAMILY OR FRIEND)   |  |
|---|---|--|--|
| Phone   | <input type="text"/>  | Name   | <input type="text"/>   |
| E-mail  | <input type="text"/>  | E-mail   | <input type="text"/>   |
| Address   | <input type="text"/>  | Phone  | <input type="text"/>   |
|   | State <input type="text"/>  | OR   | <input type="text"/>   |
|   |   | Mail address   | <input type="text"/>   |
| PLEASE COMPLETE IN ENGLISH  |   | PLEASE X AND ANSWER A OR B OR C  |  |
| ▶ In which country did you board this flight or ship?   | <input type="text"/>  | <b>A Migrating permanently to Australia</b>  | <input type="checkbox"/>   |
| ◆ What is your usual occupation?  | <input type="text"/>  | <b>B Visitor or temporary entrant</b>  | <input type="checkbox"/>   |
| ▶ Nationality as shown on passport  | <input type="text"/>  | ▶ Your intended length of stay in Australia  | Years <input type="text"/> Months <input type="text"/> Days <input type="text"/> |
| ▶ Date of birth   | Day <input type="text"/> Month <input type="text"/> Year <input type="text"/> | ▶ Your country of residence  | <input type="text"/>   |
|   |   | ▶ Your main reason for coming to Australia (X one only)  |  |
|   |   | Convention/conference <input type="checkbox"/> 1   | Employment <input type="checkbox"/> 4  |
|   |   | Business <input type="checkbox"/> 2  | Education <input type="checkbox"/> 5   |
|   |   | Visiting friends or relatives <input type="checkbox"/> 3   | Exhibition <input type="checkbox"/> 6  |
|   |   | Holiday <input type="checkbox"/> 7   | Other <input type="checkbox"/> 8   |
|   |   | <b>C Resident returning to Australia</b>   |  |
|   |   | ▶ Country where you spent most time abroad   |  |
|   |   | <input type="text"/>   |  |
| Information sought on this form is required to administer immigration, customs, quarantine, statistical, health, wildlife and currency laws of Australia and its collection is authorised by legislation. It will be disclosed only to agencies administering these areas and those entitled to receive it under Australian law. The leaflet <i>Safeguarding your personal information</i> is available at Australian ports and airports. |   | MAKE SURE YOU HAVE COMPLETED BOTH SIDES OF THIS CARD. PRESENT THIS CARD ON ARRIVAL WITH YOUR PASSPORT. |  |
|   |   | 03051504   |  |
|   |   | © Commonwealth of Australia 2005<br>15 (Design date 03/05)   |  |

Incoming passenger card used from March 2005.

OUTGOING CARD — FRONT

| Outgoing passenger card • Australia   |  |
|---|--|
| PLEASE COMPLETE IN ENGLISH WITH A BLUE OR BLACK PEN   |  |
| ▶ Family/surname  |  |
| ▶ Given names   |  |
| ▶ Passport number   |  |
| ▶ Flight number or name of ship   |  |
| ▶ Country where you will get off this flight  |  |
| ▶ What is your usual occupation?  |  |
| ◆ Nationality as shown on passport  |  |
| ▶ Date of birth   |  |
| ▶ PLEASE <input checked="" type="checkbox"/> AND ANSWER D OR E OR F   |  |
| <b>D</b> Visitor or temporary entrant departing   | <b>E</b> Australian resident departing temporarily   |
| ▶ State where you spent most time   | ▶ In which State do you live?  |
| NSW <input type="checkbox"/> Vic <input type="checkbox"/><br>Qld <input type="checkbox"/> SA <input type="checkbox"/><br>WA <input type="checkbox"/> Tas <input type="checkbox"/><br>NT <input type="checkbox"/> ACT <input type="checkbox"/><br>Other <input type="checkbox"/> | NSW <input type="checkbox"/> Vic <input type="checkbox"/><br>SA <input type="checkbox"/> WA <input type="checkbox"/><br>NT <input type="checkbox"/> ACT <input type="checkbox"/><br>Other <input type="checkbox"/> |
| ▶ Country of Residence  | ▶ Intended length of stay overseas   |
|   | Years Months Days  |
|   | ▶ Country where you will spend most time abroad  |
|   | ▶ Main reason for overseas travel (X one only):  |
|   | Convention/conference <input type="checkbox"/> 1 Employment <input type="checkbox"/> 5   |
|   | Business <input type="checkbox"/> 2 Education <input type="checkbox"/> 6   |
|   | Visiting friends or relatives <input type="checkbox"/> 3 Exhibition <input type="checkbox"/> 7   |
|   | Holiday <input type="checkbox"/> 4 Other <input type="checkbox"/> 8  |
| ▶ In which State did you live?  |  |
| NSW <input type="checkbox"/> Vic <input type="checkbox"/><br>Qld <input type="checkbox"/> SA <input type="checkbox"/><br>WA <input type="checkbox"/> Tas <input type="checkbox"/><br>NT <input type="checkbox"/> ACT <input type="checkbox"/><br>Other <input type="checkbox"/> |  |
| ▶ What is your country of future residence?   |  |
| DECLARATION The information I have given is true, correct and complete.   |  |
| YOUR SIGNATURE  |  |
| Day Month Year  |  |
| TURN OVER THE CARD  |  |
| English   |  |

OUTGOING CARD — BACK

|   |  |
|---|--|
| ▶ Are you taking out of Australia AUD\$10,000 or more in Australian or foreign currency equivalent? If answered 'Yes' you must complete an International Currency Transfer Report to present with this card.  |  |
| Yes <input type="checkbox"/> No <input type="checkbox"/>  |  |
| ▶ If you worked in Australia as a temporary resident you may be eligible for a Departing Australia Superannuation Payment (DASP).   |  |
| If you would like to receive further information please provide your e-mail address.  |  |
| For example   |  |
| WILLIAMS_JENNIFER   |  |
| @   |  |
| HOTMAIL.COM   |  |
| Visit <a href="http://www.ato.gov.au/super">www.ato.gov.au/super</a> for more DASP information.   |  |
| Information sought on this form is required to administer immigration, customs, quarantine, statistical, health, wildlife and currency laws of Australia and its collection is authorised by legislation. It will be disclosed only to agencies administering these areas and those entitled to receive it under Australian law. The leaflet <i>Safeguarding your personal information</i> is available at Australian ports and airports. |  |
| 07031607  |  |
| © Commonwealth of Australia 2003<br>16 (Design date 07/03)<br>MCMILLAN PRINT  |  |

Outgoing passenger card used from July 2003.

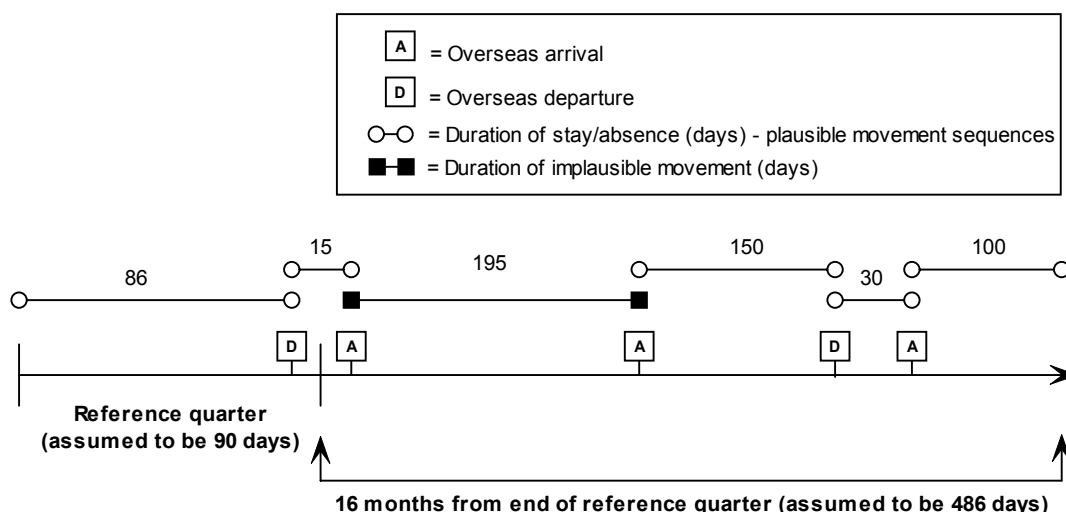
## INTRODUCTION

A person's movement history is said to contain an implausible movement sequence if there are two or more consecutive overseas arrivals, or two or more consecutive overseas departures. This may arise for a variety of reasons, such as a missing incoming or outgoing passenger card.

Two types of imputation methods will be used to create 'proxy' arrival or departure movements to repair these implausible sequences, depending on whether or not a plausible movement sequence exists for the traveller.

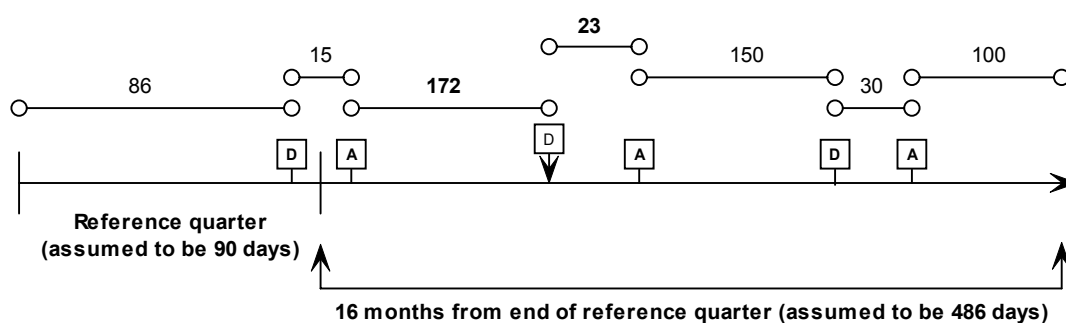
## RATIO IMPUTATION

If a plausible movement history exists in addition to the implausible sequence, a ratio will be applied to create a proxy movement between each implausible arrival or departure pair, based on the proportion of time spent in Australia during plausible movement sequences over the 19 month period formed from the reference quarter and the following 16 month period. This can be illustrated with the following hypothetical example.



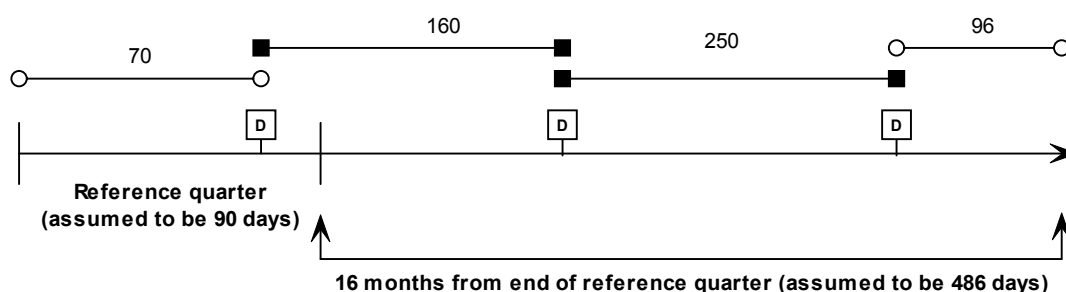
Under this scenario, the traveller would have spent a total of 336 days (86+150+100) in Australia and 45 (15+30) days overseas during plausible sequences in the reference quarter and the following 16 month (486 day) follow-up period. The 'missing' duration of stay in Australia during the 195 day implausible sequence is therefore calculated as  $195 \times \frac{336}{(45+336)} \div 172$  days.

The following diagram illustrates how this imputed movement would be inserted into the hypothetical movement history.

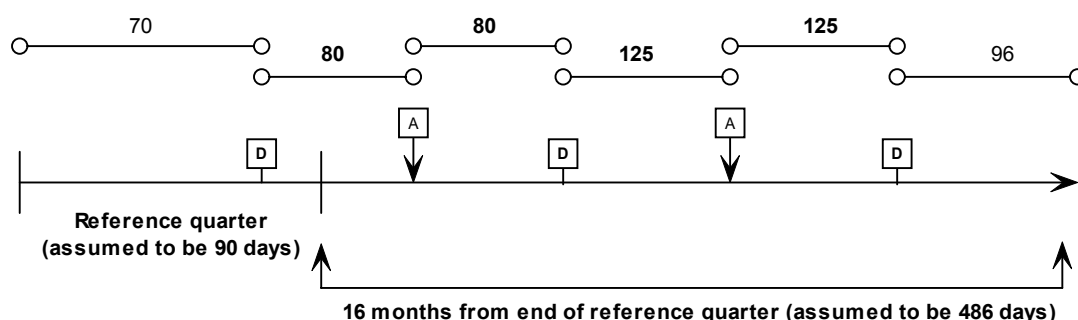


# MIDPOINT IMPUTATION

The ratio imputation method can only be applied to movement histories with some plausible movement sequences. However, in a small number of cases, the entire movement history for an overseas traveller may consist of implausible movement sequences — a hypothetical example of such a case is shown below.



In these cases, an assumption is made that the traveller spent half of their time during the reference quarter and subsequent 16 month follow-up period in Australia, and half their time overseas. As such, 'missing' movements are imputed as the midpoints between existing implausible movements. The following diagram shows how such a midpoint imputation would be applied in the hypothetical example.



Movements imputed for overseas travellers will, where relevant, be used in NOM calculations for later quarters.

INTRODUCTION

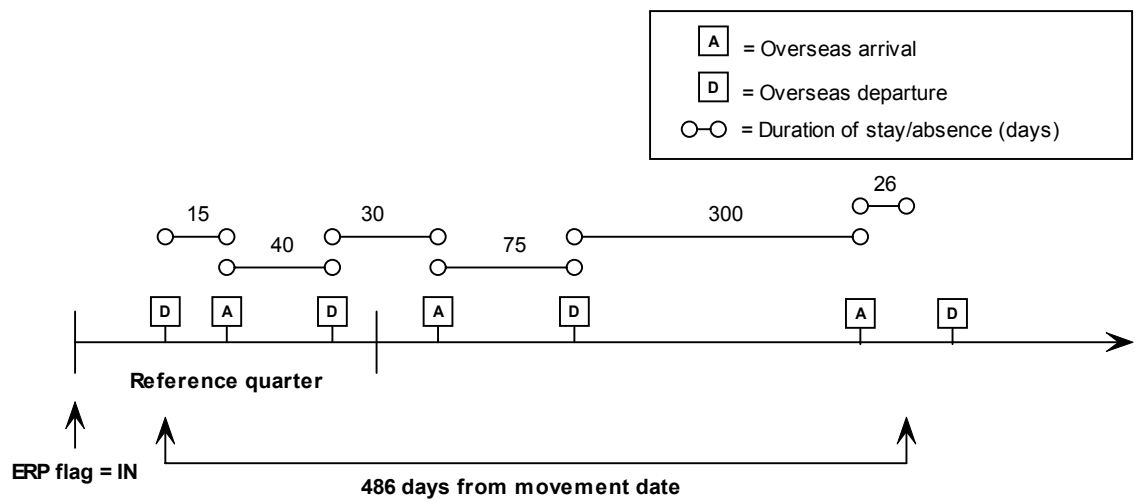
This appendix uses a hypothetical example to illustrate how a movement history for a traveller would be used to determine their ERP flag at the end of a reference quarter.

In this example, the traveller is assumed to have three overseas movements within the reference quarter, as well as four additional overseas movements during the following 16 months. An ERP flag is calculated at the end of each of these movements, based on the number of days the traveller has spent in Australia and overseas during the following 16 months (i.e. 486 days). If the traveller has spent 365 days or more of this period in Australia, they are given an ERP flag of 'IN'. Similarly, if they have spent 365 days or more overseas, they are given an ERP flag of 'OUT'.

The last ERP flag for the traveller during the reference quarter is used to calculate their contribution to NOM for the reference quarter, and would be carried forward as their ERP flag at the start of the following quarter.

FIRST OVERSEAS MOVEMENT  
DURING REFERENCE  
QUARTER

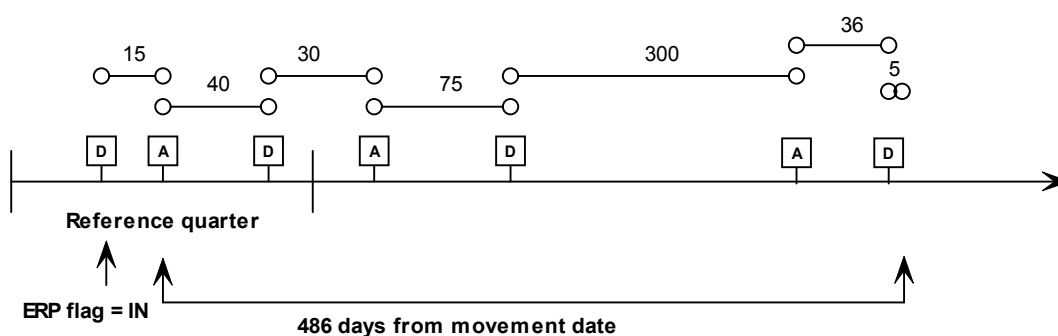
The first diagram shows how an ERP flag would be calculated for the traveller's first overseas movement during the reference quarter. For the purposes of this example, it has been assumed that the traveller is an Australian resident who did not travel overseas during the previous 16 months. As such, their ERP flag at the start of the reference quarter would be 'IN'.



The traveller has spent less than 12 months ( $40+75+26=141$  days) in Australia during the 16 month period following this movement and less than 12 months ( $15+30+300=345$  days) overseas. As a result, the ERP flag for this traveller as at their first overseas movement during the reference quarter will remain unchanged (i.e. they will still have a flag of 'IN').

## SECOND OVERSEAS MOVEMENT DURING REFERENCE QUARTER

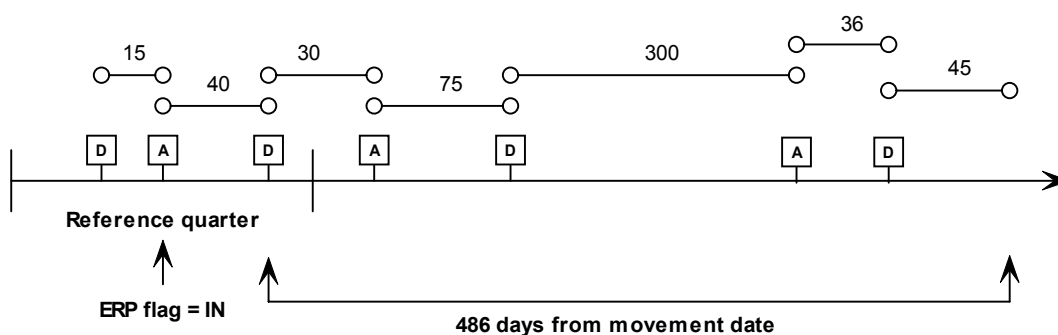
The next diagram shows how the ERP flag would be calculated for the traveller's second overseas movement during the reference quarter.



Once again, the traveller would have an ERP flag prior to the movement of 'IN', and have spent less than 12 months in Australia ( $40 + 75 + 36 = 151$  days) and less than 12 months overseas ( $30 + 300 + 5 = 335$  days) during the 16 months following the movement. The ERP flag for this traveller as at their second overseas movement during the reference quarter will therefore also remain unchanged (i.e. still 'IN').

## THIRD OVERSEAS MOVEMENT DURING REFERENCE QUARTER

The next diagram shows how the ERP flag would be calculated for the traveller's third overseas movement during the reference quarter.



This shows that the traveller would have spent less than 12 months in Australia ( $75 + 36 = 111$  days) but more than 12 months overseas ( $30 + 300 + 45 = 375$  days) during the 16 months following the movement. As such, the traveller would be assigned an ERP flag of 'OUT' at this movement.

Since this also represents the last overseas movement undertaken by the traveller during the reference quarter, their ERP flag at the end of the reference quarter for NOM estimation purposes would be 'OUT'. In other words, this traveller would be subtracted in compiling the total NOM estimate and thereby removed from the ERP.

## INTRODUCTION

The following table shows the proposed release schedule for NOM estimates calculated using improved methods and incorporating a six-monthly revision cycle.

**A4.1** PROPOSED RELEASE SCHEDULE(a), Net overseas migration estimates under improved methods

| PRELIMINARY<br>ESTIMATES<br>..... |   |  |                            |
|-----------------------------------|---|--|----------------------------|
| <i>Reference<br/>quarter</i>      | <i>P<sub>A</sub> (2 years<br/>ago)(b)</i> | <i>P<sub>B</sub> (1 year<br/>ago)(c)</i> | <i>Final<br/>estimates</i> |
| <b>2006</b>                       |   |  |                            |
| September                         | ..  | Jun 2007                                 | Jun 2008                   |
| December                          | Jun 2007                                  | Dec 2007                                 | Dec 2008                   |
| <b>2007</b>                       |   |  |                            |
| March                             | Sept 2007                                 | Dec 2007                                 | Dec 2008                   |
| June                              | Dec 2007                                  | Jun 2008                                 | Jun 2009                   |
| September                         | Mar 2008                                  | Jun 2008                                 | Jun 2009                   |
| December                          | Jun 2008                                  | Dec 2008                                 | Dec 2009                   |
| <b>2008</b>                       |   |  |                            |
| March                             | Sept 2008                                 | Dec 2008                                 | Dec 2009                   |
| June                              | Dec 2008                                  | Jun 2009                                 | Jun 2010                   |
| September                         | Mar 2009                                  | Jun 2009                                 | Jun 2010                   |
| December                          | Jun 2009                                  | Dec 2009                                 | Dec 2010                   |
| <b>2009</b>                       |   |  |                            |
| March                             | Sept 2009                                 | Dec 2009                                 | Dec 2010                   |
| June                              | Dec 2009                                  | Jun 2010                                 | Jun 2011                   |
| September                         | Mar 2010                                  | Jun 2010                                 | Jun 2011                   |
| December                          | Jun 2010                                  | Dec 2010                                 | Dec 2011                   |

.....  
.. not applicable

(a) Month of release in *Australian Demographic Statistics* (cat.no. 3101.0).

(b) Prepared using model based on final NOM estimates from two years prior to reference quarter.

(c) Prepared using model based on final NOM estimates from one year prior to reference quarter.

**BACKGROUND**

The ABS currently estimates the level of net overseas migration (NOM) occurring during each quarter using data on incoming (i.e. arriving) and outgoing (i.e. departing) passenger movements at Australian air and sea ports, as well as other data supplied by DIMIA. Overseas movements are classified into three main categories depending on the stated duration of stay in Australia or overseas:

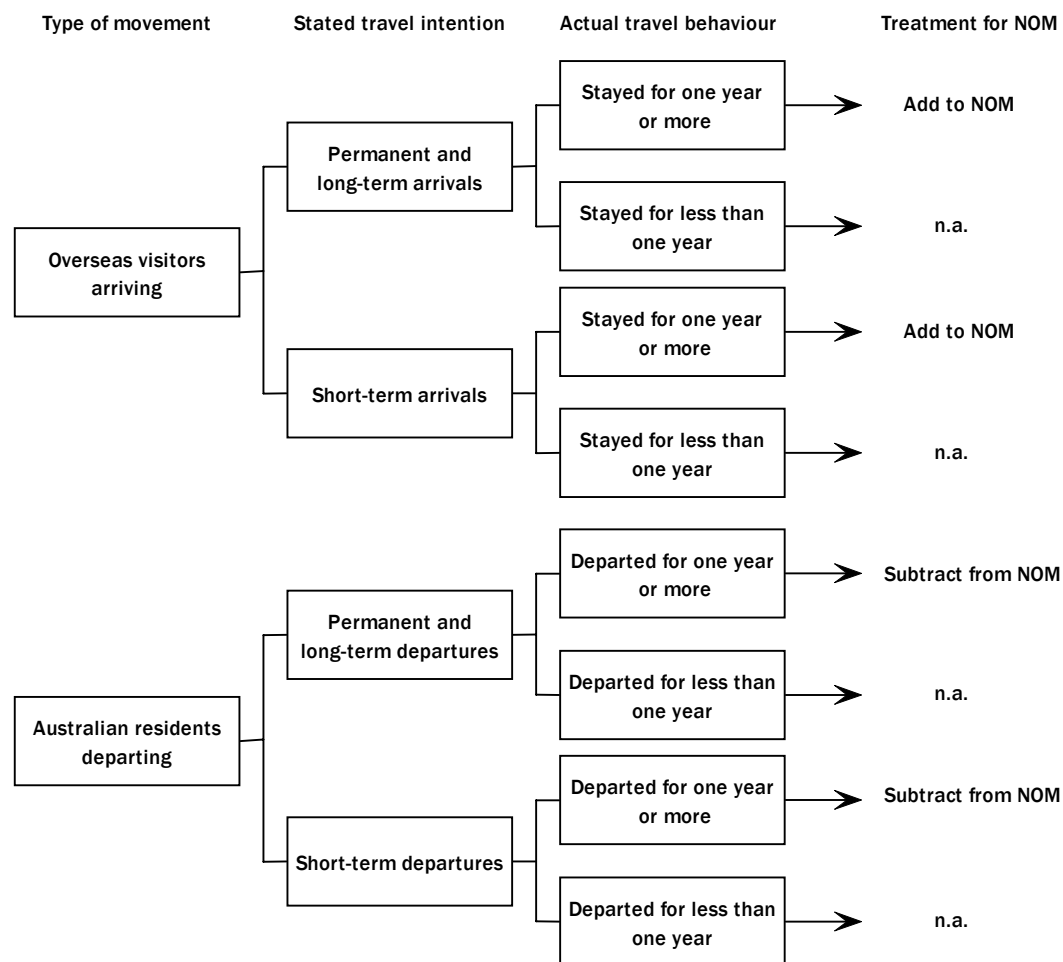
- permanent movement
- long-term (one year or more) movement
- short-term (less than one year) movement

Conceptually, NOM is the difference between permanent and long-term arrivals, and permanent and long-term departures. However, at the time a person crosses the Australian border, it is not empirically known how long they will actually spend in Australia or overseas. For example, overseas travellers might change their travel plans and extend their stay in Australia (perhaps utilising on-shore visa grants), or depart earlier than they first intended. Similarly, Australian residents travelling overseas might change their plans while abroad, for example some might state that they are departing the country permanently, but return less than a year later, while others might stay overseas longer than they initially intended.

Some of the differences between stated intentions and actual travel behaviour may also reflect short interruptions to longer periods of stay or absence. For example, overseas students arriving in Australia might state that they intend to stay for three years, but return home for brief periods during this time. Similarly, Australians working or studying overseas might state that they intend to be away for more than a year but return for brief holidays.

The following diagram summarises the contributions of different types of overseas movements to current estimates of NOM.



**A5.1** TREATMENT OF OVERSEAS MOVEMENTS IN NOM ESTIMATES*Migration adjustments*

The ABS currently applies a number of adjustments to overseas arrivals and departures data in order to produce estimates of NOM. These mainly comprise adjustments designed to reflect differences between stated travel intentions and actual travel behaviour, but (in the case of revised NOM estimates) also include adjustments to transform numbers of overseas movements into numbers of travellers. These adjustments are collectively referred to as 'migration adjustments', but have previously been termed 'category jumping adjustments'.

The processes of adjusting movement data on travellers' stated intentions to reflect their actual behaviour are complex, and depend upon the amount and type of movement data available at a particular point in time. The methods currently used compare data on actual travel movements over a one year period with those first advised by individual travellers, and are explained in more detail in *Demography Working Paper 2003/5 — Net Overseas Migration: Adjusting for Actual Duration of Stay or Absence* (cat. no. 3137.0), available from the ABS web site <<http://www.abs.gov.au>> (from the navigation bar select Themes; Demography; ABS Demography Working Papers).

In order to conduct such a comparison, data for a 15 month period (i.e. one year plus one quarter) are required. The adjustment methods described in the working paper have been applied to NOM estimates from the September quarter 2001 onwards.

*Preliminary NOM estimates*

The ABS produces quarterly estimates of Australia's resident population (known as the ERP) five to six months after the end of the reference quarter, and is required under legislation to provide population estimates as at 31 December by early June of the following year. Since estimates of NOM (adjusted for actual travel behaviour) require 15

*Preliminary NOM estimates  
continued*

months of data, preliminary NOM estimates are calculated to meet more immediate ERP requirements.

There are four main groups of travellers who provide an intended duration of stay on their passenger cards who have the potential to change their duration of stay or absence:

- long-term overseas visitors who stayed in Australia for less than 12 months (i.e. long-term visitor arrivals who stayed in Australia short-term)
- short-term overseas visitors who stayed in Australia for 12 months or more (i.e. short-term visitor arrivals who stayed in Australia long-term)
- Australian residents departing long-term who stayed overseas for less than 12 months (i.e. long-term resident departures who stayed overseas short-term)
- Australian residents departing short-term who stayed overseas for 12 months or more (i.e. short-term resident departures who stayed overseas long-term)

Table A5.2 below describes the impact that various types of migration adjustments have on the NOM calculation process. The adjustments applied to preliminary and revised NOM estimates are described in more detail elsewhere in this document.

## **A5.2** MIGRATION ADJUSTMENTS APPLIED IN THE CALCULATION OF NOM ESTIMATES

| <i>Migration adjustment</i> | <i>Treatment in<br/>adjusted estimates</i> |
|-----------------------------|--|
|-----------------------------|--|

### ADJUSTMENTS MADE IN THE CALCULATION OF PRELIMINARY NOM ESTIMATES (a)

Persons whose stated travel intentions differed from actual travel behaviour

|  |                   |
|--|-------------------|
| Long-term visitor arrivals assumed to be staying in Australia short-term | Subtract from NOM |
| Long-term resident departures assumed to be staying overseas short-term  | Add to NOM        |
| Short-term visitor arrivals assumed to be staying in Australia long-term | Add to NOM        |
| Short-term resident departures assumed to be staying overseas long-term  | Subtract from NOM |

### ADJUSTMENTS MADE IN THE CALCULATION OF REVISED NOM ESTIMATES (b)

Persons whose stated travel intentions differed from actual travel behaviour

|  |                   |
|--|-------------------|
| Permanent arrivals who actually stayed in Australia short-term         | Subtract from NOM |
| Permanent departures who actually stayed overseas short-term           | Add to NOM        |
| Long-term visitor arrivals who actually stayed in Australia short-term | Subtract from NOM |
| Long-term resident departures who actually stayed overseas short-term  | Add to NOM        |
| Short-term visitor arrivals who actually stayed in Australia long-term | Add to NOM        |
| Short-term resident departures who actually stayed overseas long-term  | Subtract from NOM |

Multiple movements of travellers Subtract from NOM(c)

- (a) Based on trends observed for the proportions of long-term and short-term arrivals and departures who change their travel behaviour.
- (b) Based on matched passenger records comparing stated travel intentions with actual behaviour.
- (c) Numbers of movements are converted into numbers of persons by matching passport numbers and other identifying personal details.

*State and territory distribution  
of NOM*

The distribution of NOM estimates across states and territories is based on information reported by travellers on arrival in or on departure from Australia. Incoming passenger cards provide information on the state or territory of a traveller's intended address within Australia, while outgoing passenger cards provide information on the state or territory in which a traveller lives or has spent most time. However, the way in which this distribution is calculated differs between preliminary and revised estimates of NOM due to the amount of data available.

*State and territory distribution  
of NOM continued*

The following sections of this document describe how preliminary and revised estimates of NOM are created and distributed between states and territories. Under current methods, NOM estimates are finalised after the five-yearly Census of Population and Housing (i.e. during rebasing procedures).

*Migration adjustments*

Migration adjustments currently applied in the calculation of preliminary NOM estimates are based on the trends observed for the proportion of long-term and short-term arrivals and departures who had changed their stated travel intentions. Table A5.3 shows the proportion of long-term and short-term travellers in 2003-04 who had changed their stated travel intentions. Preliminary migration adjustments are only applied to the four major movement categories (i.e. long-term visitor arrivals, short-term visitor arrivals, long-term resident departures and short-term resident departures)

**A5.3** CHANGES IN TRAVEL BEHAVIOUR(a), Selected categories of movement(b)—September Quarter 2003 to June Quarter 2004

|                | LONG-TERM           |                        | SHORT-TERM          |                        |
|----------------|---------------------|------------------------|---------------------|------------------------|
|                | Visitor<br>arrivals | Resident<br>departures | Visitor<br>arrivals | Resident<br>departures |
|                | %                   | %                      | %                   | %                      |
| 2003           |                     |                        |                     |                        |
| September      | 69.9                | 49.3                   | 2.8                 | 2.8                    |
| December       | 65.8                | 48.9                   | 2.3                 | 2.6                    |
| 2004           |                     |                        |                     |                        |
| March          | 70.3                | 51.7                   | 3.3                 | 3.3                    |
| June           | 68.6                | 49.1                   | 2.4                 | 2.3                    |
| <b>Average</b> | <b>68.7</b>         | <b>49.8</b>            | <b>2.7</b>          | <b>2.7</b>             |

(a) Proportion of travellers whose actual duration of stay or absence differed from their stated intentions.

(b) Based on stated intentions.

An average adjustment, based on the most recent complete financial year for which 15 months of data after the period exist, is applied to each new quarter of movement data. For example, preliminary NOM estimates for the June quarter 2005 assumed that, based on the 2003-04 evidence, 68.7% of long-term visitor arrivals during the quarter would in fact stay in Australia for less than 12 months, while 49.8% of long-term resident departures would return to Australia within 12 months.

Table A5.4 shows how the preliminary NOM estimate for the June quarter 2005 was calculated.

Migration adjustments  
continued

**A5.4** COMPONENTS OF NET OVERSEAS MIGRATION, Original and adjusted estimates—June Quarter 2005

| Initial category of movement  | Original estimate | Migration adjustment(a)..... |           | Adjusted estimate for preliminary NOM |
|-------------------------------|-------------------|------------------------------|-----------|---------------------------------------|
|                               | no.               | no.                          | %         | no.                                   |
| Permanent movement            |                   |                              |           |                                       |
| Permanent (settler) arrivals  | 30 577            | ..                           | ..        | 30 577                                |
| Permanent departures          | -14 558           | ..                           | ..        | -14 558                               |
| Long-term movement            |                   |                              |           |                                       |
| Visitor arrivals              | 34 099            | -23 422                      | 68.7      | 10 677                                |
| Resident arrivals             | 19 917            | ..                           | ..        | 19 917                                |
| Visitor departures            | -20 850           | ..                           | ..        | -20 850                               |
| Resident departures           | -22 117           | 11 005                       | 49.8      | -11 112                               |
| Short-term movement           |                   |                              |           |                                       |
| Visitor arrivals              | 1 143 210         | 30 932                       | 2.7       | 30 932                                |
| Resident arrivals             | 1 053 877         | ..                           | ..        | ..                                    |
| Visitor departures            | 1 248 877         | ..                           | ..        | ..                                    |
| Resident departures           | 1 216 945         | -33 396                      | 2.7       | -33 396                               |
| <b>Net overseas migration</b> | <b>27 068</b>     | <b>-14 881</b>               | <b>..</b> | <b>12 187</b>                         |

.. not applicable

(a) Refer to table A5.1 for further information on the migration adjustments applied to preliminary NOM estimates.

As noted previously, the current state and territory distribution of NOM is based on information reported by travellers on arrival in or departure from Australia. However, at the time preliminary NOM estimates are calculated, information on the state or territory in which long-term arrivals will actually spend most time is not available because outgoing passenger cards for these persons have not yet been completed. State and territory distributions of long-term arrivals therefore refer to the state or territory of their intended addresses, as advised on incoming passenger cards. Similarly, state and territory distributions of permanent arrivals refer to their intended addresses as advised on incoming passenger cards, which may differ from the state or territory where they settle in the long-term.

The state and territory distribution of preliminary migration adjustments for a particular quarter is assumed to be the same as that of permanent and long-term arrivals in the same quarter. In practice, a national total is calculated for the migration adjustment. This is then distributed across the states and territories, by age and sex, using the distribution of permanent and long-term arrivals by state or territory of intended address. For example, since 22.9% of all permanent and long-term arrivals in the June quarter 2005 intended to live in Victoria, 22.9% of the total migration adjustment (-3,414) is also applied to this state. Table A5.5 shows components of net overseas migration for the June quarter 2005 by state and territory.

**A5.5** COMPONENTS OF NET OVERSEAS MIGRATION, States and territories—June Quarter 2005

|                                    | NSW          | Vic.         | Qld          | SA         | WA           | Tas.       | NT        | ACT(a)      | Aust.         |
|------------------------------------|--------------|--------------|--------------|------------|--------------|------------|-----------|-------------|---------------|
| <i>Category of movement</i>        | no.          | no.          | no.          | no.        | no.          | no.        | no.       | no.         | no.           |
| Permanent and long-term arrivals   | 33 716       | 19 403       | 14 832       | 4 080      | 9 813        | 627        | 610       | 1 509       | 84 593        |
| Permanent and long-term departures | 23 485       | 12 912       | 10 030       | 2 476      | 5 976        | 564        | 406       | 1 674       | 57 525        |
| Migration adjustment               | -5 931       | -3 414       | -2 609       | -718       | -1 726       | -110       | -107      | -266        | -14 881       |
| <b>Net overseas migration</b>      | <b>4 300</b> | <b>3 077</b> | <b>2 193</b> | <b>886</b> | <b>2 111</b> | <b>-47</b> | <b>97</b> | <b>-431</b> | <b>12 187</b> |

(a) Includes Other Territories — see paragraph 2 of the Explanatory Notes.

*Migration adjustments**continued*

The current method for distributing the preliminary migration adjustment across states and territories is the same as that which has been previously used for preliminary category jumping estimates (see paragraph A3.24 of *Demographic Estimates and Projections: Concepts, Sources and Methods* (cat. no. 3228.0), available from the ABS web site <<http://www.abs.gov.au>> (from the navigation bar select Themes; Demography; Concepts, Sources and Methods).

## REVISED NOM ESTIMATES

Preliminary estimates of NOM for a financial year are currently revised in the following March quarter issue of *Australian Demographic Statistics* (cat. no. 3101.0). These revised NOM estimates use matched passenger records to calculate the actual duration of stay relating to overseas movements. Migration adjustments applied to calculate revised NOM estimates are based on these matched data and include, in addition to the four major movement categories previously identified, a subset of movements relating to permanent arrivals and permanent departures:

- permanent (settler) arrivals who arrived in and left Australia in the same quarter, and did not return at any point during the 12 months following this arrival
- permanent departures who left and returned to Australia in the same quarter, and did not depart at any point during the 12 months following this departure

Migration adjustments applied to revised NOM estimates also adjust for multiple movements of travellers (i.e. converting numbers of movements into numbers of persons). Table A5.6 shows how revised NOM estimates were calculated for 2003-04.

## REVISED NOM ESTIMATES

*continued***A5.6** MIGRATION ADJUSTMENT COMPONENTS BY CATEGORY OF TRAVELLER—2003–04

| <i>Initial category of movement</i> | <i>Original estimate</i><br>no. | <i>Migration adjustment(a)</i><br>no. | <i>Adjusted estimate for revised NOM</i><br>no. |
|-------------------------------------|---------------------------------|---------------------------------------|---|
| Permanent movement                  |                                 |                                       |   |
| Permanent (settler) arrivals        | 111 589                         | –7 152                                | 104 437   |
| Permanent departures                | –59 078                         | 3 139                                 | –55 939   |
| Long-term movement                  |                                 |                                       |   |
| Visitor arrivals                    | 191 327                         | –132 384                              | 58 943  |
| Resident arrivals                   | 98 400                          | . .                                   | 98 400  |
| Visitors departures                 | –93 282                         | . .                                   | –93 282   |
| Residents departures                | –84 336                         | 42 118                                | –42 218   |
| Short-term movement                 |                                 |                                       |   |
| Visitor arrivals                    | 5 057 162                       | 136 710                               | 136 710   |
| Resident arrivals                   | 3 813 289                       | . .                                   | 3 813 289                                       |
| Visitor departures                  | 5 109 267                       | . .                                   | 5 109 267                                       |
| Resident departures                 | 3 936 823                       | –107 085                              | –107 085  |
| <b>Net overseas migration</b>       | <b>164 620</b>                  | <b>–64 654</b>                        | <b>99 966</b>                                   |

. . not applicable

(a) Refer to table 1 in this document for further information on the migration adjustments applied to revised NOM estimates.

*State and territory distribution*

As is the case for preliminary NOM estimates, the state and territory distribution of revised NOM estimates is determined based on information reported on incoming and outgoing passenger cards (i.e. state or territory of intended address for arrivals and state or territory of residence/spent most time for departures).

The state and territory distribution of the migration adjustment are calculated based on the initial passenger card that identifies the movement of the traveller. For example, a long-term resident departure who returned to Australia within twelve months is added back to the state or territory of residence they reported on departure (as identified on their outgoing passenger card). A long-term visitor arrival who actually stayed in Australia for less than twelve months is subtracted from the state or territory they intended to live in (as identified on their incoming passenger card).

This method may be considered to be reasonable for people who, on arrival, intend to settle or stay in Australia for more than twelve months. However, there is less certainty about the reliability of state or territory of intended stay for those persons who originally stated that they intended to stay for less than twelve months, but actually stayed longer, and this component of the migration adjustment is treated differently.

In the absence of direct information from outgoing passenger cards for this group, the ABS has applied the state or territory distribution for short-term visitors departing Australia who were in Australia for between six and twelve months.

**A5.7** COMPONENTS OF NET OVERSEAS MIGRATION, States and territories—2004–05

| <i>Category of movement</i>        | <i>NSW</i><br>no. | <i>Vic.</i><br>no. | <i>Qld</i><br>no. | <i>SA</i><br>no. | <i>WA</i><br>no. | <i>Tas.</i><br>no. | <i>NT</i><br>no. | <i>ACT</i><br>no. | <i>Aust. (a)</i><br>no. |
|------------------------------------|-------------------|--------------------|-------------------|------------------|------------------|--------------------|------------------|-------------------|-------------------------|
| Permanent and long-term arrivals   | 165 216           | 106 093            | 71 501            | 20 876           | 48 592           | 3 707              | 2 661            | 8 265             | 426 920                 |
| Permanent and long-term departures | 102 567           | 56 546             | 43 131            | 10 757           | 24 440           | 2 457              | 1 847            | 7 190             | 248 947                 |
| Migration adjustment               | –25 961           | –17 210            | –11 299           | –3 405           | –7 667           | –579               | –427             | –1 330            | –67 878                 |
| <b>Net overseas migration</b>      | <b>36 688</b>     | <b>32 337</b>      | <b>17 071</b>     | <b>6 714</b>     | <b>16 485</b>    | <b>671</b>         | <b>387</b>       | <b>–255</b>       | <b>110 095</b>          |

(a) Includes Other Territories — see paragraph 2 of the Explanatory Notes.

*State and territory distribution*  
*continued*

Due to changes in the methods used to adjust NOM estimates, caution should be used when comparing estimates over time. Table A5.8 describes the adjustment methods that have been applied to NOM estimates since the September quarter 1996 (i.e. since the last intercensal period). Adjustments applied to overseas migration estimates have also been discussed in a special article in *Migration, Australia, 2003-04* (cat. no. 3412.0).

**A5.8** MIGRATION ADJUSTMENT METHODS—September quarter 1996 to March quarter 2005

| <i>Period</i>               | <i>Adjustment method</i>   |
|-----------------------------|--|
| September 1996 – June 1997  | 'Category jumping' adjustments applied using previous methodology (a)  |
| September 1997 – June 2001  | No adjustments applied (i.e. 'category jumping' set to zero)           |
| September 2001 – June 2004  | Current migration adjustments used (revised NOM estimates)             |
| September 2004 – March 2005 | Current migration adjustments methods used (preliminary NOM estimates) |

- (a) For further information, refer to Appendix 3 in *Demographic Estimates and Projections: Concepts, Sources and Methods* (cat. no. 3228.0).

## GLOSSARY .....

|   |   |
|---|---|
| <b>Australian resident (for Overseas Arrivals and Departures)</b> | Australian resident is self-defined as reported by travellers when completing an incoming or outgoing passenger card.   |
| <b>Birth</b>  | The delivery of a child, irrespective of the duration of pregnancy, who, after being born, breathes or shows any evidence of life such as heartbeat.  |
| <b>Category jumping</b>   | <p>Category jumping was the name given to the adjustment made to the components of net overseas migration, when these were applied, up until the year ending 30 June 1996. Category jumping was set to zero for the years ending 30 June 1997 to 2001. With the new method of adjusting these components, this adjustment is now known as overseas migration adjustment.</p> <p>Category jumping was the term used to describe changes between intended and actual duration of stay of travellers to/from Australia, such that their classification as short-term or as long-term/permanent movers is different at arrival/departure from that after twelve months. For more information, see <i>Migration, Australia 2002</i> (cat. no. 3412.0), chapter 6, 'Special article: Adjustments to overseas migration estimates'.</p>  |
| <b>Category of movement</b>                                       | <p>Overseas arrivals and departures are classified according to length of stay (in Australia or overseas), recorded in months and days by travellers on passenger cards. There are three main categories of movement:</p> <ul style="list-style-type: none"> <li>■ permanent movements;</li> <li>■ long-term movements (one year or more); and</li> <li>■ short-term movements (less than one year).</li> </ul> <p>A significant number of travellers (i.e. overseas visitors to Australia on arrival and Australian residents going abroad) state exactly 12 months or one year as their intended period of stay. Many of them stay for less than that period and on their departure from, or return to, Australia are therefore classified as short-term. Accordingly, in an attempt to maintain consistency between arrivals and departures, movements of travellers who report their actual or intended period of stay as being one year exactly are randomly allocated to long-term or short-term in proportion to the number of movements of travellers who report their actual length of stay as up to one month more, or one month less, than one year.</p> |
| <b>Death</b>  | For the purposes of the Vitals and Causes of Death collections of the ABS, a death refers to any death which occurs in, or en route to Australia and is registered with a state or territory Registry of Births, Deaths and Marriages.  |
| <b>Estimated resident population (ERP)</b>                        | The official measure of the population of Australia is based on the concept of residence. It refers to all people, regardless of nationality or citizenship, who usually live in Australia, with the exception of foreign diplomatic personnel and their families. It includes usual residents who are overseas for less than 12 months. It excludes overseas visitors who are in Australia for less than 12 months.  |
| <b>Intercensal discrepancy</b>                                    | Intercensal discrepancy is the difference between two estimates at 30 June of a census year population, the first based on the latest census and the second arrived at by updating the 30 June estimate of the previous census year with intercensal components of population change which take account of information available from the latest census. It is caused by errors in the start and/or finish population estimates and/or in estimates of births, deaths or migration in the intervening period which cannot be attributed to a particular source.   |



|   |   |
|---|---|
| <b>Internal migration</b>                     | The difference between the number of persons who have changed their place of usual residence by moving into a defined geographical area and the number who have changed their place of usual residence by moving out of that defined geographical area during a specified time period. This difference may be either positive or negative.  |
| <b>Long-term arrivals</b>                     | Long-term arrivals comprise: <ul style="list-style-type: none"> <li>■ overseas visitors who intend to stay in Australia for 12 months or more (but not permanently); and</li> <li>■ Australian residents returning after an absence of 12 months or more overseas.</li> </ul>   |
| <b>Long-term departures</b>                   | Long-term departures comprise: <ul style="list-style-type: none"> <li>■ Australian residents who intend to stay abroad for 12 months or more (but not permanently); and</li> <li>■ overseas visitors departing who stayed 12 months or more in Australia.</li> </ul>  |
| <b>Main destination</b>                       | Australian residents travelling overseas are asked on departure for the name of the country in which they intend to spend most time.  |
| <b>Main reason for journey</b>                | On arrival in, or departure from, Australia all overseas visitors and Australian residents are asked to state their purpose of journey. From September 1994, all statistics relating to main reason for journey have been published using the following categories: <ul style="list-style-type: none"> <li>■ convention/conference</li> <li>■ business</li> <li>■ visiting friends/relatives</li> <li>■ holiday</li> <li>■ employment</li> <li>■ education</li> <li>■ other</li> </ul> <p>In tabulations of data collected before September 1994, the 'Other' category includes 'In transit' and the 'Holiday' category includes both 'Student vacation' and 'Accompanying business visitor'.</p> |
| <b>Main state/territory of stay</b>           | Overseas visitors are asked on departure for the name of the state or territory in which they spent the most time.  |
| <b>Migration adjustment</b>                   | The ABS applies a number of adjustments to overseas arrivals and departures data in order to produce estimates of net overseas migration (NOM). These mainly comprise adjustments designed to reflect differences between stated travel intentions and actual travel behaviour, but (in the case of revised NOM estimates) also include adjustments to transform numbers of overseas movements into numbers of travellers. Until recently, adjustments used by ABS to produce NOM estimates were collectively referred to as 'category jumping adjustments'. They are now referred to more simply as 'migration adjustments'.   |
| <b>Net interstate migration</b>               | The difference between the number of persons who have changed their place of usual residence by moving into a given state or territory and the number who have changed their place of usual residence by moving out of that state or territory during a specified time period. This difference can be either positive or negative.  |
| <b>Net overseas migration (NOM)</b>           | Net overseas migration (NOM) is net permanent and long-term overseas migration, adjusted for change in traveller duration, intention and multiple movement error.   |
| <b>Net permanent and long-term movement</b>   | The difference between the number of permanent (settler) and long-term arrivals and the number of permanent and long-term departures. Short-term movements are excluded.  |
| <b>Overseas arrivals and departures (OAD)</b> | Overseas arrivals and departures (OAD) refer to the arrival or departure of persons, through Australian airports (or sea ports), which have been recorded. Statistics on OAD relate to the number of movements of travellers rather than the number of travellers (i.e. the multiple movements of individual persons during a given reference period are all counted).  |

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| <b>Overseas migration adjustment</b>            | See <i>Migration adjustment</i> .  |
| <b>Permanent arrivals (settlers)</b>            | <p>Permanent arrivals (settlers) comprise:</p> <ul style="list-style-type: none"> <li>■ travellers who hold migrant visas (regardless of stated intended period of stay);</li> <li>■ New Zealand citizens who indicate an intention to settle; and</li> <li>■ those who are otherwise eligible to settle (e.g. overseas-born children of Australian citizens).</li> </ul> <p>This definition of settlers is used by the Department of Immigration and Multicultural and Indigenous Affairs (DIMIA). Prior to 1988 the definition of settlers used by the Australian Bureau of Statistics (ABS) was the stated intention of the traveller only. Numerically the effect of the change in definition is insignificant. The change was made to avoid the confusion caused by minor differences between data on settlers published separately by the ABS and the DIMIA.</p> |
| <b>Permanent departures</b>                     | Permanent departures are Australian residents (including former settlers) who on departure state that they are departing permanently.  |
| <b>Population growth</b>                        | For Australia, population growth is the sum of natural increase and net overseas migration. For states and territories, population growth also includes net interstate migration. After the Census, intercensal population growth also includes an allowance for intercensal discrepancy.  |
| <b>Purpose of journey</b>                       | <p>On arrival in, or departure from, Australia all overseas visitors and Australian residents are asked to state their main purpose of journey. From September 1994, all statistics relating to purpose of journey have been published using the following categories:</p> <ul style="list-style-type: none"> <li>■ convention/conference</li> <li>■ business</li> <li>■ visiting friends/relatives</li> <li>■ holiday</li> <li>■ employment</li> <li>■ education</li> <li>■ other</li> </ul> <p>In tabulations of data collected before September 1994, the 'Other' category includes 'In transit'. The 'Holiday' category includes both 'Student vacation' and 'Accompanying business visitor'.</p>  |
| <b>Rate of population growth</b>                | Population change over a period as a proportion (percentage) of the population at the beginning of the period.   |
| <b>Residents temporarily overseas</b>           | Residents temporarily overseas are Australian residents who are overseas for a period less than 12 months.   |
| <b>Return migration</b>                         | Return migration is the emigration of former settlers to their country of birth.   |
| <b>Short-term arrivals</b>                      | <p>Short-term arrivals comprise:</p> <ul style="list-style-type: none"> <li>■ overseas visitors who intend to stay in Australia for less than 12 months; and</li> <li>■ Australian residents returning after a stay of less than 12 months overseas.</li> </ul>  |
| <b>Short-term departures</b>                    | <p>Short-term departures comprise:</p> <ul style="list-style-type: none"> <li>■ Australian residents who intend to stay abroad for less than 12 months; and</li> <li>■ overseas visitors departing after a stay of less than 12 months in Australia.</li> </ul>  |
| <b>State or territory of clearance</b>          | State or territory of clearance refers to the state or territory in which a passenger is cleared by Customs and Immigration authorities. Embarkation or disembarkation and clearance are usually, but not necessarily, in the same state or territory.   |
| <b>State or territory of intended residence</b> | State or territory of intended residence is derived from the intended address given by permanent arrivals (settlers), and by Australian residents returning after a journey abroad. Particularly in the case of the former, this information does not necessarily relate to the state or territory in which a traveller will eventually establish a permanent residence.   |

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| <b>State or territory of intended address/where lived</b> | <p>Overseas visitors are asked on arrival in Australia for their state or territory of intended address. On departure from Australia overseas visitors are asked the state or territory where they spent most time.</p> <p>Australian residents are asked on departure for the state or territory in which they live/lived. Residents returning to Australia are asked for their state or territory of intended address.</p>  |
| <b>State or territory of intended stay</b>                | See <i>State or territory of intended address/where lived</i> .   |
| <b>12/12 month rule</b>                                   | A method for measuring an overseas traveller's duration of stay or absence in which the 12 month usual residence criterion in population estimates is measured across a 12 month period. Under a 12/12 month rule, overseas travellers must be resident in Australia for a <i>continuous</i> 12 month period to be included in the ERP.   |
| <b>12/16 month rule</b>                                   | <p>A method for measuring an overseas traveller's duration of stay or absence which takes a <i>non-continuous</i> approach to measure usual residence, as opposed to the continuous approach used under a 12/12 month rule. Under a 12/16 month rule, overseas travellers must have been resident in Australia for a total period of 12 months during the 16 month follow-up period to be included in ERP.</p> <p>The 12/16 month rule therefore takes account of those persons who may have left Australia briefly and returned, while still being resident for 12 months out of 16. Similarly, it takes account of Australians who live most of the time overseas but periodically return to Australia for short periods.</p> |

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