

Information Paper

Census of Population and Housing: Data Quality — Undercount

1996


Australian
Bureau of
Statistics

CENSUS
1996 



Information Paper: Census of Population and Housing: Data Quality – Undercount

1996

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AUSTRALIAN BUREAU OF STATISTICS

EMBARGO: 11:30AM (CANBERRA TIME) WED 10 DEC 1997

ABS Catalogue No. 2940.0

ISBN 0 642 23290 3

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ABBREVIATIONS, SYMBOLS AND OTHER USAGES

ABS	Australian Bureau of Statistics
ERP	Estimated Resident Population
PES	Post Enumeration Survey
RSE	Relative Standard Error
SD	Statistical Division
SE	Standard Error
*	Estimate subject to sampling variability too high for most practical purposes. The estimate has a RSE of over 25%
**	Estimate subject to sampling variability too high for most practical purposes. The estimate has a RSE of over 50%
..	not applicable
-	nil or rounded to zero

OVERVIEW

INTRODUCTION

In the Census, some people are missed and some are counted more than once. Usually, more people are missed than over counted. The difference between the census count and the true population is called the net undercount of the Census.

This publication provides estimates of the net undercount for the 1996 Census, as well as information on how the estimates were calculated. Data on net undercount can be used to calculate estimates of the resident population of Australia, to enable users of census data to allow for undercount in their analyses and to identify improvements for the 2001 Census.

MAIN FINDINGS

The 1996 Census missed 1.6% of people who were present in Australia on census night. Net undercount in the 1996 Census was lower than for both the 1991 Census (1.8%) and the 1986 Census (1.9%).

The extent of net undercount varied for different population groups. Some of the most interesting observations included:

- the undercount rate was highest for the Northern Territory and lowest for South Australia, Tasmania and the Australian Capital Territory;
- people not at their usual address on census night, 6 August 1996, were more likely to be missed than those at home;
- young adult males had a high undercount rate while older people had a relatively low undercount rate;
- married and widowed people had higher undercount rates than people who were never married or separated; and
- people born in New Zealand had a higher undercount rate than people born in other countries, including Australia.

The undercount rate of dwellings was 1.3%, the same as for the 1991 Census.

Undercount of dwellings was lower in capital cities than in the rest of the country.

An undercount rate was also calculated for households. The household undercount rate for the 1996 Census was 1.2%.

Tuesday, 6 August 1996 was census night. On census night every person present in Australia, excluding foreign diplomats and their families, should have been included on a census form at the place where they stayed. Inevitably, however, some people would have been missed while others were counted more than once.

'Undercount' refers to the number of people missed in the Census. Some of the reasons why people were missed include:

- they were travelling and were difficult to contact;
- they mistakenly thought they were counted elsewhere;
- there was insufficient space on the census form in the household where they were staying;
- the person completing the form thought that, for example, young babies, the elderly or visitors should not be included;
- they did not wish to be included due to concerns about the confidentiality of information or a more general reluctance to participate; →
- the dwelling they were in was missed because it was difficult to find (for example, in a remote or non-residential area); or
- the dwelling they were in was mistakenly classed as unoccupied.

'Overcount' refers to the number of people counted too many times. This can happen, for example, when people are included on the census form at the dwelling where they usually live, even though they stayed, and were counted, elsewhere on census night or they were overseas on census night and so should not have been counted at all.

Net undercount is the difference between gross undercount and overcount. Net overcount is not likely. In the 1996 Census in Australia, it is estimated that the proportion of people missed was 1.9% while overcount was 0.3%, giving a net undercount rate of 1.6%.

PLACE OF ENUMERATION AND PLACE OF USUAL RESIDENCE

The Australian Census counts people where they actually are on census night rather than where they usually live. There is, however, a need for data based on usual residence and census counts are available on two bases:

- Place of Enumeration: the people counted in the area, and
- Place of Usual Residence: the people who usually live in the area.

Correspondingly, undercount estimates are also calculated on a place of enumeration and place of usual residence basis.

Usual residence is defined as the place at which a person has lived or intends to lived for six months or more. While for many people their usual residence was the same as their actual location, some people spent census night at a place other than where they usually lived. Thus, they had a different place of enumeration and place of usual residence.

PLACE OF ENUMERATION AND PLACE OF USUAL RESIDENCE *continued*

People visiting Australia on census night are included in the counts and estimates for place of enumeration but not those for place of usual residence.

Undercount estimates calculated on a place of usual residence basis have been included in tables 1.1 and 1.2. All other estimates in this publication are on a place of enumeration basis.

Usual residents of Australia who are temporarily overseas on census night are not included in census counts on either a place of usual residence or place of enumeration basis. However, counts of these people are obtained from overseas arrivals and departures data and they are accounted for in the estimates of the resident population of Australia (see below).

IMPUTED RECORDS

Net undercount estimates in this publication are calculated in relation to the final census counts. Census counts already include some records imputed for people for whom no response was obtained and who would otherwise have been missed in the Census. The people imputed for in this way have not been included in net undercount.

Imputation of this kind occurred when:

- the collector was unable to contact the occupants of a dwelling to collect the form but believed that the dwelling was occupied;
- the people in a dwelling said that they would mail back a census form but did not do so; and
- the people in the dwelling refused to complete a census form.

Where possible, collectors tried to obtain information on the number of people present in the dwelling, as well as their age and sex. Where no information could be obtained, the number of males and females was imputed during processing, based on the average number of males and females for dwellings in the area. The ages of these people were imputed on the basis of the age distribution for their sex for the State or Territory where they were located. Their marital status was also imputed taking account of the age and sex imputed.

In the 1996 Census there were 246,200 person records imputed, comprising 1.4% of the final census count.

MISSING OVERSEAS VISITORS?

Overseas visitors in Australia on census night are meant to be counted in the Census. It seems that some overseas visitors, who are not accounted for in the undercount estimates from the PES, were missed in the Census.

Information about the people arriving in and departing Australia indicated that there were about 240,000 overseas visitors in Australia on census night, but the Census only counted 140,000 overseas visitors. While it is likely that some of the difference is caused by overseas visitors being counted as Australian usual residents this is thought to only make a small part of the difference, less than 30,000 people.

Because of the scope and coverage of the PES, it is unlikely that many overseas visitors would be included in the undercount estimates calculated from this survey.

WHY MEASURE UNDERCOUNT?

There are a number of reasons why measuring undercount in the Census is important:

- to enable estimation of the resident population from census counts;
- to provide users with an assessment of the completeness of the census counts, allowing them to take this into account when using census information; and
- to evaluate the effectiveness of census collection procedures so that improvements can be made for future censuses.

Accurate resident population estimates are required for demographic, social and economic studies as well as for the allocation of seats in the Federal House of Representatives and general revenue grants to States and Territories.

Net undercount can bias census counts because the characteristics of people missed might be different from those of the people counted. In Australia, rates of net undercount vary significantly for different population groups. Importantly, they vary according to factors such as age, sex, ethnicity and geographic area. The impact of undercount should be taken into account when using census data.

ESTIMATED RESIDENT POPULATION

Estimates of undercount in the Census are used to adjust the place of usual residence census counts and to estimate the resident population of Australia at 6 August 1996. Further adjustment is made for the number of usual residents of Australia temporarily overseas.

The way in which Estimated Resident Population (ERP) is derived from census counts is set out in table 1.1. Table 1.2 contains data on undercount on a usual residence basis, as used in the derivation of the ERP.

1.1 ESTIMATED RESIDENT POPULATION

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.(a)
	'000	'000	'000	'000	'000	'000	'000	'000	'000
Census Count, Place of Enumeration	6 038.7	4 373.5	3 368.9	1 427.9	1 726.1	459.7	195.1	299.2	17 892.4
Plus Residents absent interstate	64.1	86.2	26.5	25.7	13.7	10.2	4.1	9.7	240.4
Less Interstate visitors	53.5	26.1	98.3	11.0	20.8	4.3	18.2	7.9	240.4
Less Overseas visitors	43.2	19.4	49.7	5.4	13.1	1.1	5.7	2.1	139.6
Census Count, Place of Usual Residence	6 006.2	4 414.2	3 247.4	1 437.2	1 705.9	464.5	175.3	299.0	17 752.8
Plus Adjustment for undercount	91.3	74.0	57.3	19.3	28.1	6.6	5.7	3.4	285.8
Plus Residents Temporarily Overseas	114.4	77.4	41.2	17.9	34.9	3.3	1.7	6.1	300.0
equals ERP as at 6 August 1996	6 211.9	4 565.6	3 345.9	1 474.4	1 769.0	474.5	182.7	308.5	18 335.6

(a) includes 'Other Territories'.

1.2 NET UNDERCOUNT, Place of Usual Residence Basis

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Number ('000 people)	91.3	74.0	57.3	19.3	28.1	6.6	5.7	3.4	285.8
Rate									
Per cent	1.5	1.6	1.7	1.3	1.6	1.4	3.1	1.1	1.6
Standard Error (SE)	0.2	0.3	0.3	0.3	0.3	0.4	1.6	0.3	0.1

Estimates of the resident population are available for each Statistical Local Area, by age and sex. While they are adjusted for undercount and other factors, they do not provide as much detailed information as the Census. Census counts can be obtained for small areas and small population groups and for a range of characteristics, including education and labour force status.

More information on estimates of the population of Australia is available in *Australian Demographic Statistics* (Cat. no. 3101.0).

CHAPTER 2

MEASURING UNDERCOUNT

THE POST ENUMERATION SURVEY

In Australia, estimates of undercount in the Census are based on the results of the Post Enumeration Survey (PES). This survey is conducted about three weeks after census fieldwork procedures are completed. The purpose of the PES is to determine how many people were missed in the Census and how many were counted more than once.

The PES is a multi-stage area sample survey which was conducted during the period 26 August to 7 September 1996, after census fieldwork was completed on 14 August. In each selected household, a responsible adult member was interviewed and asked about all persons present or usually resident in the household. In addition to obtaining basic demographic information, questions were asked about each person's usual residence, location on census night and any other addresses where they might have been counted in the Census.

Using this address information, the corresponding census forms were examined at the processing centre to confirm how many times each person in the PES was counted in the Census. This is explained in more detail later in this chapter.¹⁷

In the 1996 PES, a sample of about 32,000 private dwellings were enumerated (about half of 1% of all dwellings in Australia). The total number of people included in the PES was about 90,000. The sampling fraction varied between States and Territories, with the smaller States and Territories having higher sampling fractions to ensure the reliability of estimates. More details about the reliability of PES estimates are given in the Technical Note at the end of this publication.

The aim of the PES was to provide an independent check of census coverage. Because of this, it was important to conduct the PES as independently of the Census as possible. Thus, the field operations of the two collections were conducted separately and census staff were not aware which areas would be included in the PES.

SCOPE AND COVERAGE

The scope of the Census included every person present in Australia on census night (with the exception of foreign diplomats and their families). While the PES had a similar scope, for practical reasons there were a number of areas, dwellings and people excluded or not able to be covered by the PES. Not included were:

- people who had gone overseas or had died since census night;
- non-private dwellings such as hotels, motels, hospitals and other institutions;
- homeless people (as the sample selected in the PES was based on the selection of dwellings);
- dwellings in very sparsely settled areas, where the cost of enumeration is very high;
- Indigenous communities where special procedures were used in the Census (this is for conceptual as well as practical reasons).

SCOPE AND COVERAGE *continued*

Census enumeration of Indigenous communities involved close liaison with community organisations and employed members of the communities. The same contracts and employees would have had to be used in order to conduct the PES and, as such, it could not have been an independent check on census coverage.

MATCHING AND SEARCHING

The process of locating the census forms corresponding to the addresses given in the PES involves two stages: matching and searching. Matching involved finding the form corresponding to the dwelling at which the PES interview took place while searching involved locating the forms at other addresses given in the interview.

Once a corresponding census form was located, the next task was to match at the person level. This was done for each PES household member and involved examining the responses common to both the PES and census forms (in particular, name) to determine whether they were counted or missed. While in most cases it was possible to identify a clear match on the basis of name, this was more difficult in some cases where, for example, name was missing in the Census or a different name appeared to have been used. In these cases, a judgement on whether or not a person was matched was made on information such as age, sex, marital status, birthplace and relationship to other members in the census household.

In some cases searching for a dwelling failed because of a lack of adequate address information. Where it was not possible to determine if a person was counted because of insufficient information, the decision to treat a respondent as matched or not matched was determined by imputation. The imputation was based on the results of searches for other people with similar characteristics.

People may have been missed in the Census when the dwelling they were in was missed. It is also possible, however, for people to have been missed even though the dwelling they were in was counted. An examination of the results of matching and searching revealed that around a third of the people who were missed spent the night in a dwelling (or thought they were enumerated in a dwelling) that was counted. This is explained in more detail in the Appendix.

Once processing was completed, all records of names and addresses of people and households in the PES were destroyed. No names or addresses of people or households are stored on computer files.

ESTIMATION OF UNDERCOUNT

Information from the PES was the main, but not the only, component used to estimate census undercount.

The PES was used to produce counts of the number of people in the PES who should have been counted in the Census and the number who were actually counted. The ratio of these two numbers represents the net adjustment factor, the amount by which census counts must be adjusted to allow for undercount.

The PES adjustment factor was weighted to take into account the chance of people being selected in the PES. The weighted adjustment factor was then applied to the census count to produce an initial estimate of the population.

ESTIMATION OF UNDERCOUNT *continued*

This net adjustment factor takes into account both the people missed by the Census and the people counted more than once. It was calculated and applied separately for each part of State and Territory by age and sex group.

The estimation procedure is illustrated in the equations below:

$$\text{adjustment factor} = \frac{\text{no. in PES who should have been counted in the Census}}{\text{no. in PES who were counted in the Census}}$$

$$\text{initial population estimate} = \text{census count} \times \text{weighted adjustment factor}$$

Special procedures were implemented for census forms received after the start of the PES field work. These were needed to preserve the independence of the Census and PES as some people may have been prompted to return their census forms by the arrival of the PES preliminary approach letter or the PES interviewer. Special procedures were also implemented for people in the PES who matched to census dwellings where the people were imputed. For more details, see the Explanatory Notes.

Once initial population estimates had been calculated from the PES, a second stage of estimation took place using demographic methods. The initial population estimates at age by sex level were compared with data on the Australian population derived largely from records of births and deaths and overseas arrivals and departures. Some adjustments were made to PES estimates where there were inconsistencies with the other data. In 1996 the overall effect of these adjustments was the final population estimate for Australia being 1,800 people more than the initial population estimate.

These final population estimates were then used to calculate final estimates of the undercount rate, as shown below:

$$\text{final undercount rate} = \frac{\text{final population estimate} - \text{census count}}{\text{final population estimate}}$$

This publication presents final undercount rates.

RELIABILITY OF UNDERCOUNT ESTIMATES

As the estimates of undercount are based on data from a survey, they are subject to sampling error. Some of the estimates presented in the next chapter have high Standard Errors (SEs) and caution should be adopted when using these estimates. For more information about SEs see the Technical Note at the end of the publication.

The estimates of undercount are also subject to the non-sampling errors which occur in all collections, censuses and surveys. Examples of this kind of error include imperfections in reporting by respondents, errors made in collection of data and errors made in processing the data. Every effort is made in the Census and PES to reduce non-sampling error to a minimum by careful design of forms, training and supervision of collectors and interviewers and by using efficient operating procedures. Types of non-sampling error relating to census counts are shown in the Explanatory Notes. The following paragraphs discuss sources of non-sampling error arising from the way the PES is conducted and the way estimates are derived from the survey.

RELIABILITY OF UNDERCOUNT ESTIMATES *continued*

A potential weakness in the PES method is its dependence on matching as a means of deciding whether or not a given person or dwelling has been counted in the Census. The difficulties associated with the matching process mean that there is a risk of failing to match people who are actually included in the Census. The effect of not matching when there should have been a match would be to overstate net undercount in the Census. To minimise this, a second attempt was made to match all people who failed to match on the first attempt.

While the Census and PES are conducted independently of each other, they are very similar in many respects. Thus, some weaknesses in the Census may also be shared by the PES leading to an understatement of net undercount. For example, dwellings missed by a census collector are often difficult to find and so are more likely to be missed by a PES interviewer as well. Also, people who avoid being included in the Census are just as likely to avoid being included in the PES.

CHAPTER 3

CHARACTERISTICS OF PERSON UNDERCOUNT IN THE 1996 CENSUS

INTRODUCTION

This chapter presents estimates of net undercount of persons in the 1996 Census for key demographic characteristics.

The estimates of net undercount are based on the PES and have been subject to slight demographic adjustments, as detailed in the previous chapter. The SEs presented in this section are calculated directly from the PES.

The demographic characteristics in the tables and graphs are based on the answers provided in the PES. For most households, the PES interviewer obtained responses for all members from one responsible adult. These answers are not always consistent with the answers obtained to the equivalent questions in the Census. There are a number of reasons a response may differ, including:

- a respondent having difficulties answering a question for themselves or another household member, either in the Census or the PES;
- a respondent interpreting the question differently in the Census, which is conducted by self-enumeration, than in the PES, which is administered by an interviewer;
- different respondents providing the PES and Census answers; and
- the correct answer changing between the Census and PES. Changes in age can be taken into account using the actual date of birth, but other changes, for example if the person married or divorced, can not be identified.

Where the inconsistencies are substantial, the people identified as having a particular characteristic in the PES may not be representative of the people with that characteristic in the Census. Thus, for some demographic groups, the undercount estimate based on the PES information may not accurately reflect the undercount rate in the Census. Where appropriate, this is noted in the discussion below.

The estimates of net undercount in this chapter have been calculated on a place of enumeration basis. As explained in chapter 1, this means that the net undercount estimates are based on the proportion of people present (in Australia or in a particular State or Territory) on census night who were not counted in the Census.

AUSTRALIA, STATES AND TERRITORIES

The 1996 Census counted 17,892,400 persons. It is estimated that this count is 288,400 persons fewer than the number of people who were actually present in Australia on census night, a net undercount rate of 1.6%. This rate is lower than the rate for the 1991 Census, which was 1.8%.

Table 3.1 and graph 3.2 set out the 1996 Census rates of net undercount for Australia, States and Territories, along with the rates from the 1991 and 1986 Censuses. The estimates were calculated from samples and are subject to sampling variation, indicated by the SEs provided in the table. Estimates that have high levels of variability relative to their size are indicated in the following tables by '*' and '**' (depending on the amount

AUSTRALIA, STATES AND TERRITORIES *continued*

of variability). The levels of sampling variability are too high for these estimates to be used for most practical purposes. See the Technical Note for more information on interpreting SEs.

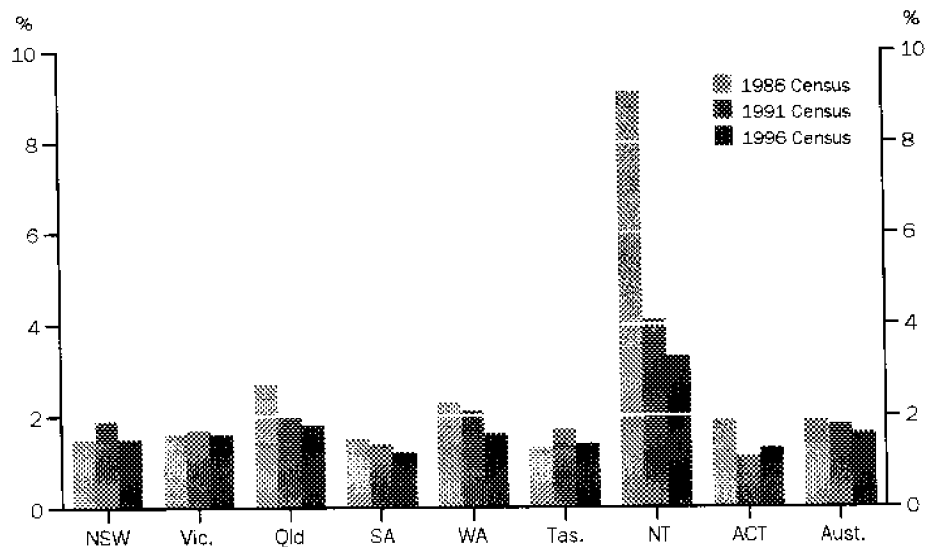
As shown in table 3.1, there are some consistent patterns that emerge in the rates of undercount for the States and Territories. In the past three censuses, the Northern Territory has had the highest undercount rate, although it has been decreasing. South Australia, Tasmania and the Australian Capital Territory have generally been among the States and Territories with the lowest net undercount rates.

All States and Territories, apart from the Australian Capital Territory, had a lower net undercount rate in 1996 than in 1991. The greatest reductions were for the Northern Territory (4.1% in 1991 to 3.3% in 1996) and Western Australia (2.1% in 1991 to 1.6% in 1996).

3.1 NET UNDERCOUNT, Place of Enumeration Basis

State and Territory	1986 CENSUS.....			1991 CENSUS.....			1996 CENSUS.....		
	Number	Rate.....		Number	Rate.....		Number	Rate.....	
		%	SE		%	SE		%	SE
NSW	83 500	1.5	0.1	108 300	1.9	0.1	93 500	1.5	0.2
Vic.	63 700	1.6	0.2	74 500	1.7	0.1	71 800	1.6	0.3
Qld	70 400	2.7	0.4	60 400	2.0	0.1	61 300	1.8	0.3
SA	21 000	1.5	0.2	20 400	1.4	0.1	16 700	1.2	0.3
WA	33 200	2.3	0.2	34 600	2.1	0.2	27 800	1.6	0.3
Tas.	5 700	*1.3	0.4	8 000	1.7	0.1	6 700	*1.4	0.4
NT	15 500	9.1	2.0	7 500	4.1	0.7	6 600	*3.3	1.5
ACT	4 900	*1.9	1.1	3 100	*1.1	0.3	3 900	1.3	0.3
Aust.	297 900	1.9	0.1	316 700	1.8	0.1	288 400	1.6	0.1

3.2 NET UNDERCOUNT, Place of Enumeration Basis



INTERNATIONAL COMPARISON

Below is a table of the recent net undercount rates for Australia and other countries. The results show that the undercount rate in Australia compares favourably with other countries.

3.3 NET UNDERCOUNT, International Comparison

COUNTRY	RATE
	%
Australia	1.6
Canada	2.9
NZ	1.2
UK	2.2
USA	1.6

The figures for Australia and New Zealand are for 1996 Censuses; for Canada, USA and UK the figures are for 1990/91 Censuses.

Source: figures were obtained through correspondence with statistical agencies involved

USUAL RESIDENT OR VISITOR STATUS

On census night people should be enumerated at the place where they spend the night. For most people, this will be the place where they usually live, but some people will spend census night at a location other than their usual residence. This could be in a non-private dwelling such as a motel or hospital, or may be with friends or relatives at another private dwelling. Additional difficulties are encountered in enumerating these people. For example, they may mistakenly believe they were included on the census form at their usual residence, or they may be travelling and thus be difficult to contact and enumerate.

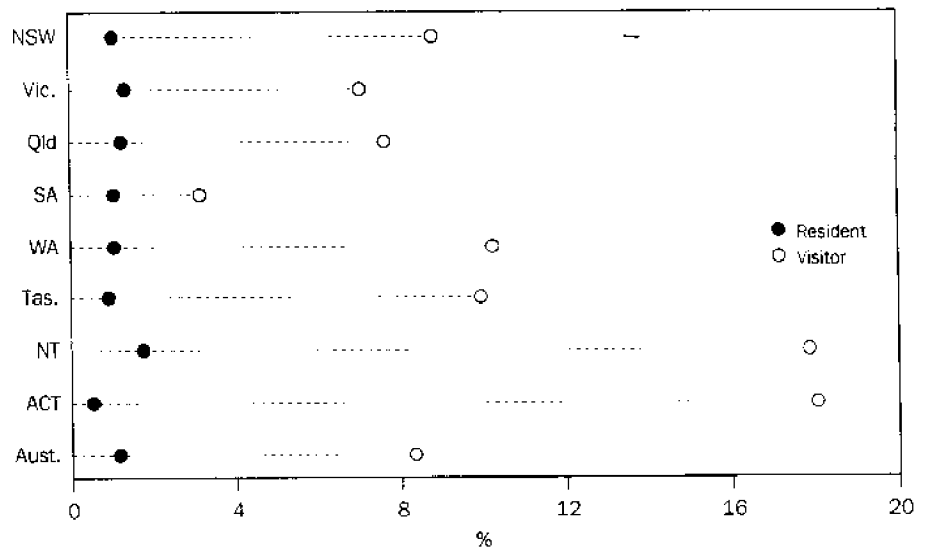
Table 3.4 and graph 3.5 present undercount rates for usual residents (people present at their usual residence on census night) and visitors (people who spent census night away from their usual residence). The net undercount rate for visitors was 8.4%, significantly higher than the rate for usual residents (1.2%). However, the rate for visitors does represent an improvement from 1991 when the net undercount rate for visitors was 14.1%. This could reflect improved procedures for enumerating non-private dwellings which were introduced in the 1996 Census. These improvements focussed on training of the staff responsible for enumerating these institutions.

The rate of net undercount of visitors was high for the Australian Capital Territory and the Northern Territory. South Australia had a much lower level of net visitor undercount than the rest of Australia (3.2% for South Australia, 8.4% for Australia in 1996).

3.4 NET UNDERCOUNT, Place of Enumeration Basis—Resident/Visitor

State and Territory	RESIDENT.....			VISITOR.....			TOTAL.....		
	Number	Rate.....		Number	Rate.....		Number	Rate.....	
		%	SE		%	SE		%	SE
NSW	64 400	1.1	0.2	29 100	8.9	0.7	93 500	1.5	0.2
Vic.	58 600	1.4	0.3	13 200	7.1	0.7	71 800	1.6	0.3
Qld	42 000	1.3	0.3	19 300	7.7	0.8	61 300	1.8	0.3
SA	14 600	*1.1	0.3	2 100	*3.2	1.1	16 700	1.2	0.3
WA	17 600	*1.1	0.3	10 200	10.3	1.5	27 800	1.6	0.3
Tas.	4 300	*1.0	0.4	2 400	10.0	1.2	6 700	*1.4	0.4
NT	3 400	**1.8	1.6	3 200	17.9	1.6	6 600	*3.3	1.5
ACT	1 800	**0.6	0.4	2 100	18.1	2.0	3 900	1.3	0.3
Aust.	206 100	1.2	0.1	82 300	8.4	0.2	288 400	1.6	0.1

3.5 NET UNDERCOUNT, Place of Enumeration Basis—Resident/Visitor



CAPITAL CITY AND BALANCE OF STATE

The regional differences in net undercount rates for capital cities and the balance of each State are given in table 3.6 and graph 3.7. Capital cities are defined as the capital city SD in each State. Balance of State areas comprise all SDs outside the capital city SD boundaries.

Different problems are encountered in enumerating urban and rural areas and these are reflected in the capital city/ balance of State rates. In urban areas, locating dwellings is generally easier but contacting the occupants and getting their co-operation can be more difficult. In rural and remote areas, where dwellings may be scattered over a wider area, locating the dwellings can cause considerable difficulties. In 1996 the total net

CAPITAL CITY AND BALANCE OF STATE *continued*

undercount rates were 1.7% for balance of State compared to 1.5% for capital cities. The difference between the two rates was less than in 1991, when the net undercount rate for balance of State was 2.2% compared to 1.7% for capital cities.

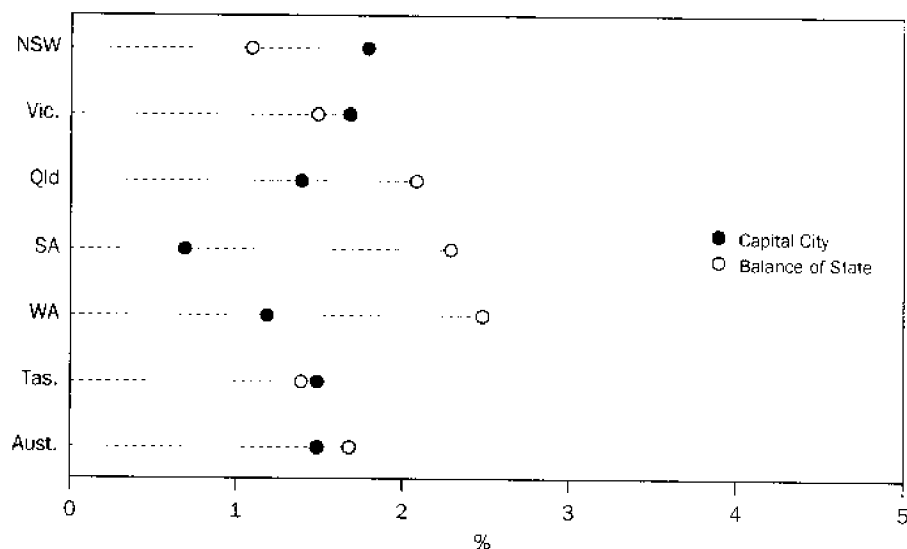
In 1991 Sydney was the only capital city to have higher net undercount rate than the balance of the State. In 1996 three capitals, Sydney, Melbourne and Hobart, had higher net undercount rates than the balance of their State.

3.6 NET UNDERCOUNT, Place of Enumeration Basis—Capital City/Balance

State and Territory	CAPITAL CITY.....			BALANCE OF STATE...			TOTAL.....		
	Number	Rate.....		Number	Rate.....		Number	Rate.....	
		%	SE		%	SE		%	SE
NSW	68 100	1.8	0.2	25 500	*1.1	0.4	93 500	1.5	0.2
Vic.	52 900	1.7	0.3	18 900	*1.5	0.5	71 800	1.6	0.3
Qld	21 100	1.4	0.3	40 300	2.1	0.5	61 300	1.8	0.3
SA	7 600	*0.7	0.3	9 100	*2.3	0.9	16 700	1.2	0.3
WA	15 500	1.2	0.2	12 300	*2.5	1.3	27 800	1.6	0.3
Tas.	2 800	**1.5	0.9	3 800	*1.4	0.5	6 700	*1.4	0.4
NT(a)	..	..	..	..	..	..	6 600	*3.3	1.5
ACT(a)	..	..	..	..	..	..	3 900	1.3	0.3
Aust.	168 000	1.5	0.1	109 900	1.7	0.1	288 400	1.6	0.1

(a) High sampling error precludes reliable estimates of undercount being made for smaller areas.

3.7 NET UNDERCOUNT, Place of Enumeration Basis—Capital City/Balance



AGE AND SEX

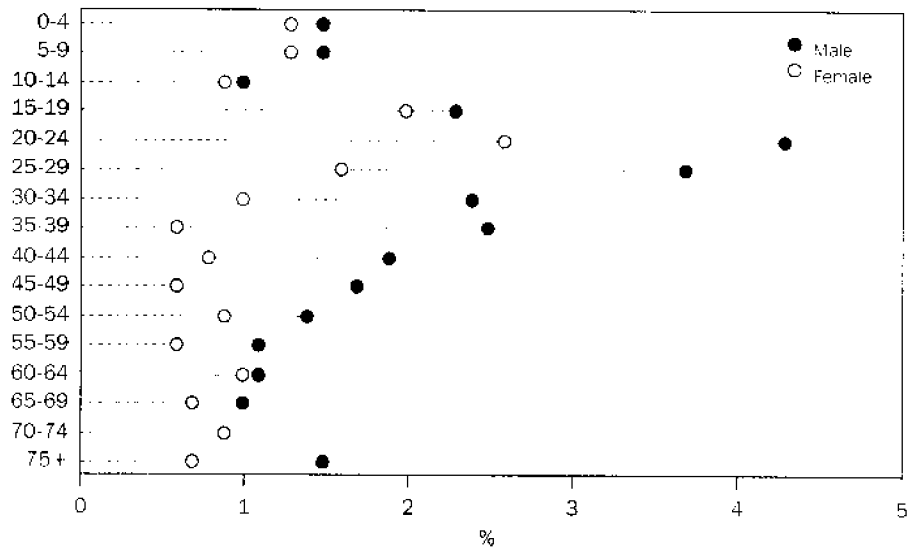
The likelihood of enumerating a person in the Census is closely linked to the age and sex of that person. As has been observed in previous censuses in Australia, as well as in censuses overseas, young adult males are the group least likely to be enumerated in the Census. This trend has been observed in Simpson et al 1997 along with two other common trends: that young children are less likely to be enumerated than children in their teens and older adults are more likely to be enumerated than younger adults.

Table 3.8 and graph 3.9 confirm these trends for the 1996 Australian Census. In particular, young adult males had the highest undercount rates at 4.3% for males aged 20–24 and 3.7% for males aged 25–29. More generally, males had a higher undercount rate than females (2.0% to 1.1%) and children aged 0–9 had higher undercount rates than children aged 10–14. The lowest undercount rates were observed for people aged 55 and over.

3.8 NET UNDERCOUNT, Place of Enumeration Basis—Age by Sex

Agegroup years	MALE.....			FEMALE.....			PERSON.....		
	Number	Rate.....		Number	Rate.....		Number	Rate.....	
		%	SE		%	SE		%	SE
0–4	9 900	1.5	0.3	8 300	1.3	0.3	18 200	1.4	0.2
5–9	9 800	*1.5	0.5	8 300	*1.3	0.4	18 100	1.4	0.3
10–14	6 900	*1.0	0.4	6 000	0.9	0.2	12 900	1.0	0.2
15–19	15 300	2.3	0.3	12 800	2.0	0.3	28 000	2.2	0.2
20–24	30 500	4.3	0.3	18 000	2.6	0.4	48 500	3.5	0.3
25–29	26 000	3.7	0.3	10 900	*1.6	0.5	36 800	2.6	0.4
30–34	17 300	2.4	0.3	7 400	1.0	0.2	24 700	1.7	0.2
35–39	18 000	2.5	0.2	4 500	*0.6	0.2	22 500	1.6	0.2
40–44	12 500	1.9	0.4	5 300	*0.8	0.3	17 800	1.3	0.2
45–49	10 900	1.7	0.3	3 600	*0.6	0.3	14 500	1.1	0.2
50–54	7 300	*1.4	0.4	4 300	*0.9	0.4	11 700	1.2	0.3
55–59	4 500	*1.1	0.4	2 500	**0.6	0.4	7 000	*0.9	0.3
60–64	3 800	*1.1	0.4	3 500	*1.0	0.5	7 200	*1.0	0.3
65–69	3 400	*1.0	0.3	2 400	**0.7	0.4	5 700	*0.8	0.3
70–74	2 300	*0.9	0.5	3 000	**0.9	0.6	5 300	*0.9	0.5
75+	5 200	*1.5	0.4	4 200	*0.7	0.3	9 400	*1.0	0.4
All ages	183 500	2.0	0.1	104 900	1.1	0.1	288 400	1.6	0.1

3.9 NET UNDERCOUNT, Place of Enumeration Basis—Age by Sex



MARITAL STATUS

Table 3.10 sets out the rates of net undercount by marital status and sex. The final ERP estimates will be published in *Marriages and Divorces, Australia* (Cat. no. 3310.0).

The comparison of Census and PES responses revealed considerable discrepancies for the categories of Separated and Divorced. In particular, over 15% of people who had a response of 'Separated' in the PES had a response of 'Divorced' or 'Married' in the Census. Thus, caution should be used in applying the undercount rate for people identified as Separated in the PES to the count of people identified as Separated in the Census.

The net undercount rates were highest for people who were identified as 'Separated' or 'Never Married' in the PES while they were lowest for people who were 'Married' or 'Widowed'. In part this reflects the undercount rates by age presented in the previous table, with young adults more likely to be never married and older persons more likely to be widowed. Again, these results largely reflect the experience in previous censuses in Australia and in censuses overseas (Simpson et al. 1997).

3.10 NET UNDERCOUNT, Place of Enumeration Basis—Marital Status

Marital status	MALE.....			FEMALE.....			PERSON.....		
	Number	Rate..... % SE		Number	Rate..... % SE		Number	Rate..... % SE	
Married	46 800	1.2 0.2		25 900	*0.7 0.2		72 600	0.9 0.2	
Separated	12 400	6.7 0.7		4 300	*1.7 0.6		16 800	3.9 0.5	
Divorced	9 700	2.9 0.5		4 400	1.0 0.2		14 100	1.8 0.3	
Widowed	2 900	2.0 0.4		5 600	*0.8 0.4		8 500	*1.0 0.4	
Never married	84 600	3.7 0.2		41 900	2.2 0.3		126 500	3.0 0.2	
Total	157 000	2.2 0.1		82 300	1.1 0.1		239 300	1.7 0.1	

COUNTRY OF BIRTH

As the Census is conducted by self-enumeration, people who have come to Australia from other countries and whose first language is not English could find completing the Census a more difficult task than other Australians. An Ethnic Enumeration Strategy has been used for several censuses to promote understanding of the Census among migrants to Australia and to provide assistance in a range of languages.

As can be seen in table 3.11, although there was considerable variation in rates of undercount among birthplace groups, the rates for people from non-English speaking countries were not generally higher than those for people born in Australia. There is no evidence that there was any systematic problem in enumerating people from other countries.

As in the 1991 Census, the undercount rate is highest for people born in New Zealand. At 2.8%, the 1996 undercount is a slight reduction from the rate for New Zealanders in the 1991 Census, which was 3.5%.

Another continuing trend observed in previous censuses is the relatively low undercount rate for people from some European countries, such as Italy and Greece. This may in part reflect the older age structure of migrants from these countries, many of whom arrived in Australia after the second world war. As observed earlier, older people tend to have lower undercount rates.

3.11 NET UNDERCOUNT, Place of Enumeration Basis—Birthplace

Birthplace	MALE.....			FEMALE.....			PERSON.....		
	Number	Rate.....		Number	Rate.....		Number	Rate.....	
		%	SE		%	SE		%	SE
Australia	142 700	2.0	0.1	77 400	1.1	0.1	220 200	1.6	0.1
UK & Ireland	13 000	2.3	0.3	5 900	*1.1	0.5	18 800	1.7	0.3
Italy	2 100	**1.5	0.9	900	**0.8	0.8	3 100	**1.2	0.8
Greece	-	**	1.5	400	**0.5	1.0	400	**0.2	1.2
Netherlands	800	**1.7	1.8	700	*1.5	0.7	1 500	**1.6	1.1
Germany	500	**1.0	1.1	1 900	*3.1	1.1	2 400	*2.1	0.8
New Zealand	6 200	3.9	0.7	2 500	**1.7	1.0	8 700	2.8	0.7
Viet Nam	2 800	*3.3	1.2	800	**1.0	1.1	3 600	*2.2	1.0
Former Yugoslav Republics	200	**0.3	0.9	1 100	**1.3	0.7	1 300	**0.8	0.6
Other Europe	1 300	**0.7	0.8	1 600	**0.8	0.9	2 900	**0.8	0.8
Other Asia	8 300	*2.0	0.6	8 200	*1.7	0.6	16 500	*1.8	0.5
Other	5 300	*2.7	0.9	3 100	*1.4	0.4	8 400	2.1	0.5
Total(a)	183 500	2.0	0.1	104 900	1.1	0.1	288 400	1.6	0.1

(a) Includes Not Stated.

The final ERP estimates by birthplace will be published in *Migration, Australia* (Cat. no. 3412.0).

INDIGENOUS ORIGIN

The PES did not cover the whole of Australia. In particular, for practical and conceptual reasons, the PES did not include communities of Indigenous people in remote areas, where special enumeration procedures were used in the Census. As a result, estimates of the Indigenous population are calculated using information in addition to that obtained from the Census and PES. Preliminary estimates of the Indigenous population are available in the publications *Population Distribution, Indigenous Australians* (Cat. no. 4705.0) and *Australian Demographic Statistics* (Cat. no. 3101.0). Final estimates of the Indigenous population will be available in the forthcoming publication *Experimental Estimates of the Aboriginal and Torres Strait Islander Population* (Cat. no. 3230.0) to be published in 1998.

Due to the limited scope of the PES, along with the high level of sampling error for the PES estimates and the high level of inconsistency between census and PES responses, a detailed table of estimates of net undercount by Indigenous origin is not included here.

Analysis of the PES did reveal that the undercount of people who identified as Indigenous in the PES is significantly higher (at just over 7%) than that of non-Indigenous people (less than 2%). While this estimated undercount rate for Indigenous people is higher than that in 1991, both estimates are subject to considerable sampling error and it can not be concluded that a greater proportion of Indigenous people were missed in 1996.

In the 1996 Census, the count of Indigenous people was 33% higher than the count in 1991, increasing from 265,400 to 353,000. There are a number of possible reasons for this increase, including changes in the propensity of people to identify as Indigenous and improvements in the strategy developed to count Indigenous people (for further discussion of these issues see the publication *Population Distribution, Indigenous Australians* (Cat. no. 4705.0)). This census result does not indicate that any substantial or worsening problems were encountered in enumerating Indigenous people.

CHAPTER 4

DWELLING AND HOUSEHOLD UNDERCOUNT IN THE 1996 CENSUS

INTRODUCTION

This chapter presents estimates of undercount of dwellings and households in the 1996 Census.

A dwelling is defined as a building or structure, such as a house, or part of a building, such as a flat, which is habitable. The estimates presented are for both occupied and unoccupied private dwellings. Non-private dwellings, such as hotels and hospitals, are not included. A household is defined as a group of people who live and eat together.

It is possible to have multiple household dwellings, where two or more households share a dwelling. Although the PES distinguishes between dwellings and households, the Census does not. In the Census, each household is required to complete a form and, for the purpose of counts of dwellings, households and dwellings are assumed to be equivalent. As multiple household dwellings will be counted more than once if each household completed a separate form, this would lead to some overcounting of dwellings in the Census. In practice, many multiple household dwellings are thought to be enumerated on a single form, thus reducing the potential overcount of dwellings.

There is no mechanism in the PES to detect overcounting of dwellings and the estimates presented in this chapter are of gross rather than net undercount. However, the difference between gross and net undercount of dwellings can be expected to be minimal as the number of multiple household dwellings is known to be small.

The results presented in this chapter are calculated directly from the PES and have not been subject to demographic or other adjustments.

In compiling estimates of the percentage of households missed, a household was considered to be missed if all members of the PES household were missed in the Census. Thus, the definition of a household reflects the living arrangements and perceptions at the time of the PES, which may differ from the composition of the household in the Census.

DWELLING UNDERCOUNT

The undercount of dwellings in the 1996 Census was 1.3%. This is the same rate as for the 1991 Census. The highest rate of undercount of dwellings was observed for Tasmania, at 2.5%. This is in contrast to the undercount of persons, for which Tasmania had a low rate.

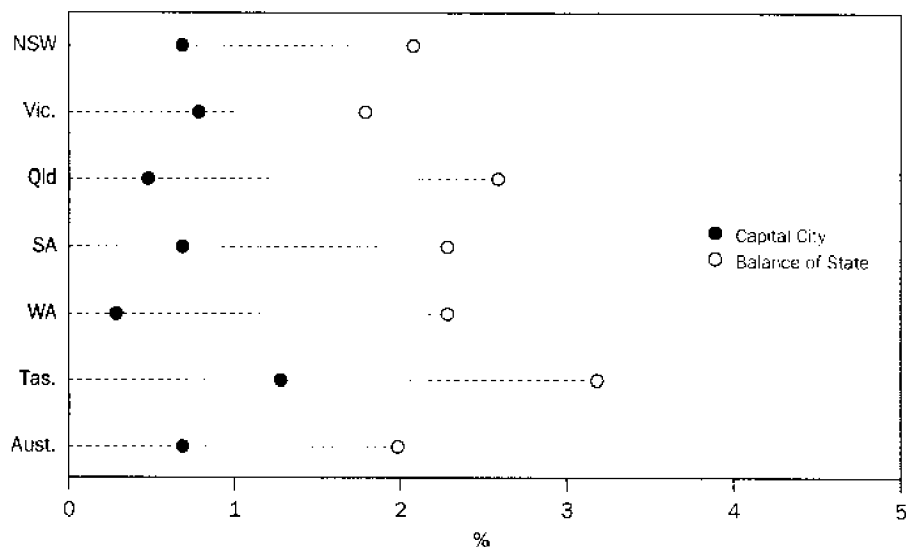
Table 4.1 and graph 4.2 present the undercount rates for dwellings by capital city and balance of State. Throughout Australia, the undercount rate for the balance of State was higher than that for the corresponding capital city, reflecting the difficulty of locating dwellings in more sparsely settled areas.

4.1 DWELLING UNDERCOUNT, Capital City/Balance of State

State and Territory	CAPITAL CITY		BALANCE OF STATE.....		TOTAL.....	
	%	SE	%	SE	%	SE
NSW	0.7	0.1	2.1	0.2	1.3	0.1
Vic.	0.8	0.2	1.8	0.3	1.1	0.2
Qld	*0.5	0.2	2.6	0.6	1.7	0.3
SA	*0.7	0.2	*2.3	0.6	1.2	0.2
WA	*0.3	0.1	*2.3	0.6	0.9	0.2
Tas.	*1.3	0.6	3.2	0.7	2.5	0.6
NT(a)	..	..	..	..	*0.9	0.4
ACT(a)	..	..	..	..	*0.6	0.2
Aust.	*0.7	0.3	2.4	0.5	1.3	0.1

(a) High sampling error precludes reliable estimates of undercount being made for smaller areas.

4.2 DWELLING UNDERCOUNT, Capital City/Balance of State



HOUSEHOLD UNDERCOUNT

The PES results show that 1.2% of PES households had no members enumerated in the 1996 Census. This is slightly higher than the rate for the 1991 Census of 0.7%.

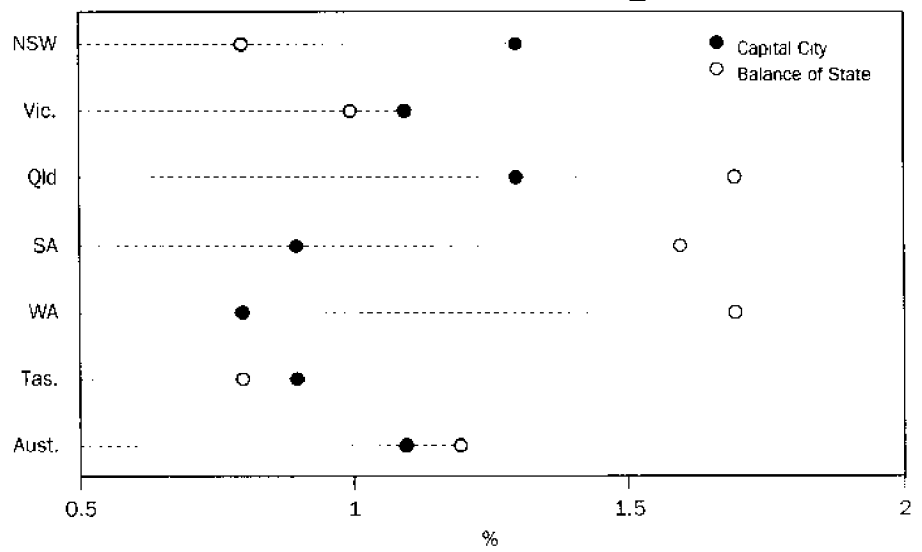
The pattern of undercount of households is similar to the pattern for persons, reflecting the method used to derive the rates. The household undercount rate was highest for the Northern Territory at 1.6%. While the overall household undercount for capital cities was slightly lower than that for the balances of the States, it was higher for Sydney, Melbourne and Hobart than for the corresponding balance of each State.

4.3 HOUSEHOLD UNDERCOUNT, Capital City/Balance of State

State and Territory	CAPITAL CITY		BALANCE OF STATE		TOTAL	
	%	SE	%	SE	%	SE
NSW	1.3	0.3	*0.8	*0.4	*1.1	0.3
Vic.	1.1	0.2	*1.0	0.4	1.1	0.2
Qld	1.3	0.2	1.7	0.4	1.5	0.2
SA	0.9	0.2	*1.6	0.7	1.1	0.2
WA	0.8	0.2	**1.7	1.2	*1.1	0.3
Tas.	**0.9	0.5	**0.8	0.5	*0.8	0.3
NT(a)	..	..	..	..	*1.6	1.4
ACT(a)	..	..	..	..	*0.5	0.3
Aust.	1.1	0.1	1.2	0.2	1.2	0.1

(a) High sampling error precludes reliable estimates of undercount being made for smaller areas.

4.4 HOUSEHOLD UNDERCOUNT, Capital City/Balance of State



EXPLANATORY NOTES

SCOPE AND COVERAGE OF THE 1996 CENSUS

1 The 1996 Census of Population and Housing was held on 6 August 1996. The first census was held in 1911 and since 1961 a census has been taken every five years, a frequency which is specified in the *Census and Statistics Act 1905*. The objective of the Census is to measure accurately the number and key characteristics of people in Australia on census night, and the dwellings in which they live.

2 The Census aims to count every person who spent census night in Australia. This includes Australian residents in Antarctica and people in the territories of Jervis Bay, Cocos (Keeling) Islands and Christmas Island. The other Australian External Territories, Norfolk Island and minor islands such as Heard and McDonald Islands, are outside the scope of the Australian Census. The only group of people who spend census night in Australia but are excluded from the Census are foreign diplomats and their families.

3 The Census includes people on vessels in or between Australian ports, on board long-distance trains, buses or aircraft and on oil rigs off the Australian coast. People entering Australia before midnight on census night are counted while people leaving an Australian port for an overseas destination before midnight on census night are not. Visitors to Australia are included regardless of how long they have been in the country or how long they plan to stay. However, for people who intend to be in Australia for less than six months only basic demographic data are available. The Census includes people camping out and the homeless.

4 All private dwellings, except diplomatic dwellings, are included in the Census, whether occupied or unoccupied. Caravans in caravan parks, manufactured homes in manufactured home estates and self-care units in accommodation for the retired or the aged are counted only if occupied. Occupied non-private dwellings, such as hospitals, prisons, hotels, etc., were also included.

5 Details about the 1996 Census content, collection operations, confidentiality and privacy protection, processing and evaluation activities are contained in *1996 Census - Nature and Content* (Cat. no. 2008.0).

SPECIAL PROCEDURES FOR LATE RETURNS AND IMPUTED RECORDS

6 As was mentioned in the estimation section of chapter 2, two groups were treated differently in the estimation procedures. These were:

- people whose census form was received after the start of PES field work (late returns), and
- people imputed where completed census forms could not be obtained (imputed records, see chapter 1 for details).

SPECIAL PROCEDURES FOR LATE RETURNS AND IMPUTED RECORDS *continued*

7 In effect, these special procedures are based on the assumption that these people have been counted the correct number of times in the Census. The actual method for estimating the population, taking into account the special procedures, is illustrated below:

$$\text{adjustment factor}^{\#} = \frac{\text{no. in PES who should have been counted in the Census}^{\#}}{\text{no. in PES who were counted in the Census}^{\#}}$$

$$\text{initial population estimate} = \text{census cnt}^{\#} \times \text{weighted adjustment factor}^{\#} + \text{census cnt (late returns, imputed records)}$$

indicates that the estimate excludes people matched to census dwellings for which the form was received after the start of PES field work or dwellings where the people were imputed

8 As a result of this assumption, the overall estimate of net undercount would be expected to be a slight underestimate. However, the assumption is necessary because:

- late returns may have been prompted by the PES field work and including them would bias the estimates, and
- it is not possible to match to persons in imputed dwellings so undercount for imputed records cannot be accurately measured by the PES.

DATA QUALITY

9 Census data are subject to a number of inaccuracies resulting from errors by respondents or mistakes in collection or processing. Whilst many of these are corrected by careful processing procedures, some still remain. The effect of the remaining errors is generally slight, although it may be more important for smaller groups in the population. The main kinds of errors to keep in mind are:

- *Partial non-response*: In some cases where an answer is not provided to a question an answer is imputed (often from other information on the form). In other cases a 'not stated' code is allocated.
- *Processing error*: While such errors can occur in any processing system, quality management is used continuously to improve the quality of processed data, and to identify and correct data of unacceptable quality.
- *Random adjustment*: Table cells containing small values are randomly adjusted or suppressed to avoid releasing information about particular individuals, families, or households. The effects of these changes is statistically insignificant.
- *Respondent error*: Because processing procedures cannot detect or repair all errors made by people in completing their forms, some remain in final data.
- *Undercount*: Although the Census aims to count each person, there are some people who are missed and others are counted more than once.

10 For further information on sources of error in the Census, refer to the appropriate entries in the *1996 Census Dictionary* (Cat. no. 2901.0).

EFFECTS OF ROUNDING

11 In this publication figures have been rounded to the nearest hundred. Where figures have been rounded, discrepancies may occur between totals and the sums of the component items.

RELATED PAPERS

12 These are some related papers:

Australian Bureau of Statistics 1990, *Census 86: Data Quality – Undercount*,
Cat. no. 2607.0, ABS, Canberra.

Australian Bureau of Statistics 1995, *1991 Census Of Population and Housing:
Data Quality – Undercount*, Cat. no. 2940.0, ABS, Canberra.

Australian Bureau of Statistics 1995, *Information Paper: Population Estimates –
Concepts, Sources and Methods*, Cat. no. 3228.0, ABS, Canberra.

Australian Bureau of Statistics 1996, *1996 Census – Nature and Content*,
Cat. no. 2008.0, ABS, Canberra.

Australian Bureau of Statistics 1997, *Australian Demographic Statistics,
March 1997*, Cat. no. 3101.0, ABS, Canberra.

Australian Bureau of Statistics 1997, *Population Distribution, Indigenous
Australians*, Cat. no. 4705.0, ABS, Canberra.

Simpson, S. and Middleton, E. 1997, *Who is missed by a national census?*
A review of empirical results from Australia, Britain, Canada and the USA,
CCSR Working Paper No. 2 – June 1997, Manchester.

APPENDIX

PEOPLE MISSED IN ENUMERATED DWELLINGS

As mentioned in chapter 2, some people missed in the Census spent census night in dwellings that were enumerated, while others were in dwellings that were missed. This section presents a more detailed analysis of the data available.

In the PES people are asked a number of questions about where they live and addresses where they might have been counted in the Census, including:

- if they thought they were counted on a census form (and if so where)
- where they were on census night.

The census form corresponding to the PES address is checked to determine if the person was counted. A search was then conducted for all other addresses provided to determine if the person was counted anywhere else. The people included in the tables below are those for whom no match was found.

Sometimes not enough address information was supplied to try to find a dwelling. In these cases, the result of the search was imputed based on the success of searches for other similar people. Tables A.1 and A.2 include those people for whom a status of missed was imputed, with the search result categorised as 'Search Not Possible'.

The tables present unweighted data and so represent the actual number of people in the PES who were missed in the Census. The counts do not correspond to other counts included in this publication but do still give an indication of the trends.

A.1 ENUMERATION STATUS OF DWELLINGS, Undercounted People

SEARCH RESULT FOR CENSUS NIGHT DWELLING.....

COUNTED IN CENSUS?	Search Not Possible	Dwelling missed	Dwelling enumerated	Total
No, not counted	101	220	134	455
Yes, at census night dwelling	17	781	245	1 043
Yes, at another dwelling				
Search not possible	0	1	0	1
Dwelling missed	45	12	51	108
Dwelling enumerated	8	13	6	27
Subtotal	53	26	57	136
Total undercounted	171	1 027	436	1 634

A.2 ENUMERATION STATUS OF DWELLINGS, Undercounted People

SEARCH RESULT FOR CENSUS NIGHT
DWELLING.....

	Search Not Possible	Dwelling missed	Dwelling enumerated	Total
COUNTED IN CENSUS?	%	%	%	%
No, not counted	6.1	13.5	8.2	27.8
Yes, at census night dwelling	1.0	47.8	15.0	63.8
Yes, at another dwelling				
Search not possible	0.0	0.1	0.0	0.1
Dwelling missed	2.8	0.7	3.1	6.6
Dwelling enumerated	0.5	0.8	0.4	1.7
Subtotal	3.3	1.6	3.5	8.3
Total undercounted	10.4	62.9	26.7	100.0

People are meant to be counted at the dwelling where they are on census night. Of the 1,634 people who were missed, searching for the dwelling was not possible for 10.4% people. Of the remaining 1,463 people, 70.2% were staying at a dwelling that was not enumerated and 29.8% were at a dwelling that was enumerated.

Although they are meant to be counted at their census dwelling some people will be counted at a dwelling other than where they were on census night. Of the 1,634 people missed, 27.8% thought that they weren't counted on a census form and 63.8% thought that they were counted at the same address as where they were on census night.

This means that 136 people (8.3%) thought that they were included on a census form other than where they were on census night. Of these people the search was not possible for 1 person, the dwelling was not enumerated for 79.4% and the dwelling was enumerated for 19.9%.

Overall, for around a third of the people who were undercounted, the dwelling where they spent census night or the dwelling where they thought they were counted was enumerated.

Interestingly, some 72.2% of people who were missed thought that they were counted in the Census. There could be various reasons for this:

- some people might have mistakenly believed they had been included on a census form;
- some people might have completed a form which wasn't collected or returned; and
- some people might not have wanted to admit to the PES interviewer that they were not included on a census form.

TECHNICAL NOTES

SAMPLING ERRORS ASSOCIATED WITH STATISTICS PRODUCED FROM THE PES

Statistics produced from the PES are subject to sampling error. Since only a sample of dwellings is included in the PES, estimates derived from the survey may differ from figures which would have been obtained if all dwellings had been included. One measure of the likely difference is given by the SE which indicates the extent to which an estimate might have varied by chance because only a sample was included.

The particular sample selected for the PES was only one of a number of possible samples. Each possible sample would yield different estimates. The SE measures the variation of all the possible sample estimates around the figures which would have been obtained if all dwellings had been included.

Given an estimate and the SE on that estimate, there are about two chances in three that the sample estimate will differ by less than one SE from the figure that would have been obtained if all dwellings had been included, and about nineteen chances in twenty that the difference will be less than two SEs.

The following example illustrates the use of the concept of SE:-

If an estimate of 1.3% has a SE of 0.1 percentage points there are two chances in three that the figure that would have been obtained if all dwellings had been included in the sample is in the range 1.3 per cent \pm (1 x 0.1%) or 1.2 per cent to 1.4 per cent and nineteen chances in twenty that the figure is in the range 1.3 per cent \pm (2 x 0.1%) or 1.1 per cent to 1.5 per cent.

For ease of use, the SEs corresponding to the net undercount rates are given next to the rates in the tables throughout this publication.

SAMPLING ERRORS ON ESTIMATES OF DIFFERENCES

The sampling error on the difference between two estimates can be derived from their SEs. For the difference between two estimates x and y produced from the PES the SE of the difference may be approximated by the following formula:

$$\text{Standard Error (x-y)} = \sqrt{[\text{Standard Error(x)}]^2 + [\text{Standard Error(y)}]^2}$$

This approximation will be exact for differences between estimates in different States, for Capital City versus Balance of State, or for differences between estimates from different censuses. However, for estimates within the same region there will tend to be a negative correlation between the rates so that the approximation will tend to underestimate the true SE.

For example, if the estimates of the rate of undercount for residents at home on census night for two States are 1.3 per cent and 2.2 per cent, with SEs of 0.1 and 0.2 percentage points respectively, using the formula above the SE on the difference 0.9 per cent is

$$\sqrt{(0.1\%)^2 + (0.2\%)^2} = 0.22\%$$

Therefore there are nineteen chances in twenty that the difference between the rates of undercount for usual residents at home on census night between these two States is within the range 0.9 \pm (2 * 0.22) or 0.46 to 1.34 percentage points.

GLOSSARY

Capital city or balance of state Capital cities are defined as areas covered by the capital city SD in each State and Territory. The balance of state comprises all SDs in the State or Territory other than the capital city SD.

Dwelling A dwelling is a building or structure in which people live. This can be a building, such as a house; part of a building, such as a flat; or it can be a caravan or tent, humpy or a park bench. Houses under construction, derelict houses, vacant tents, or converted garages, are not counted as dwellings in the Census.

There are private and non-private dwellings.

A *private dwelling* is normally a house, flat, part of a house, or even a room. Private dwellings can be either occupied or unoccupied, although in some situations only occupied dwellings are counted. The following accommodation types are also classed as private dwellings: a house attached to, or room above, shops or offices; an occupied caravan or unit in a caravan park or on a residential allotment; an occupied boat in a marina; an occupied dwelling in a manufactured home estate; an occupied self-care unit in a retirement village; a houseboat; or a tent if it is standing on its own block of land.

Non-private dwellings are those dwellings not included above which provide a communal or transitory type of accommodation. These dwellings include hotels, motels, guest houses, prisons, religious and charitable institutions, defence establishments, hospitals and other communal dwellings. Only occupied non-private dwellings are included in the Census.

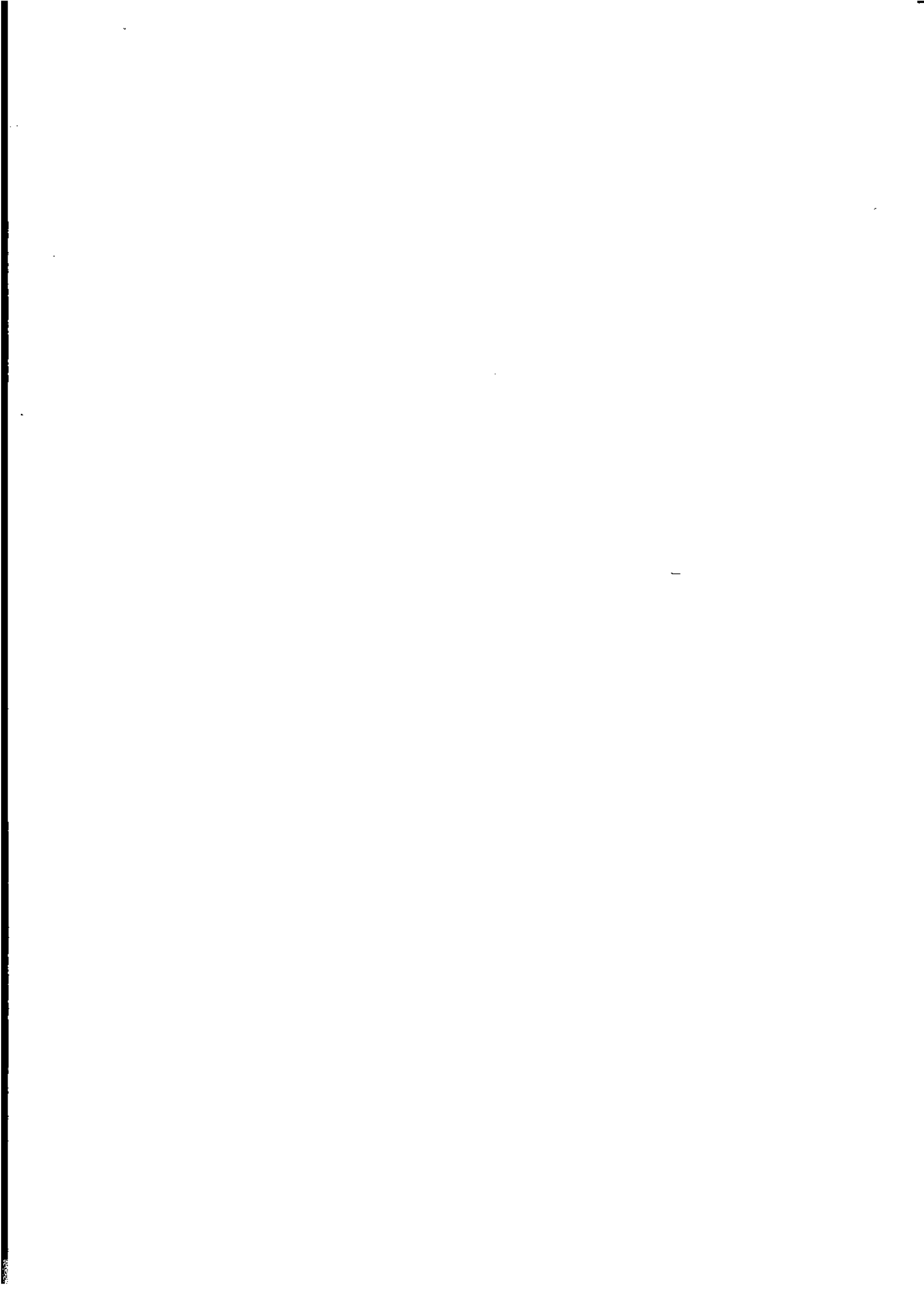
Estimated Resident Population (ERP) The ERP at census date is formed by adding estimates of Australians overseas and the census undercount to the census count at place of usual residence. ERP estimates are also available quarterly for each post-censal year.

Gross overcount The number of people in the Census who should not have been counted, either because they had already been counted or because they were overseas and should not have been counted at all. If a person was counted in the Census three times, they would contribute two counts to the gross overcount.

Gross undercount The number of people who should have been counted in the Census but were not.

Households	In the Census a household is defined as a group of two or more related or unrelated people who usually reside in the same dwelling, who regard themselves as a household, and who make common provision for food or other essentials for living; or a person living in a dwelling who makes provision for his/her own food and other essentials for living, without combining with any other person. Under this definition, in a group house where occupants share the dwelling, each occupant who usually supplies his/her own food should be counted as a separate household and issued with a separate Household Form. In practice, however, most such households usually only complete one form. For census purposes, the total number of households is equal to the total number of occupied private dwellings as a census form is completed for each household from which dwelling information for the household is obtained. Analysis of Labour Force Survey data for August 1991 showed that the incidence of multiple household dwellings was only 0.65%.
Net undercount	The difference between the gross undercount and the gross overcount. This is the total effect of missing some people and counting others more than once.
Other Territories	The Other Territories comprise Jervis Bay Territory and the external Territories of Christmas Island and Cocos (Keeling) Islands.
Part of State	Parts of state are the capital city and balance of state in each State and Territory. In a number of processes, such as estimation, the different parts of state are dealt with separately.
Place of enumeration census count	People are counted according to where they were on census night. Overseas visitors are included and Australians overseas are excluded from the counts. No adjustment is made for census undercount.
Place of enumeration net undercount	This is the net undercount of the place of enumeration census counts. It is the net percentage of people present (in Australia, or a particular State or Territory) on census night who were not counted.
Place of usual residence census count	People are counted according to their stated place of usual residence. Overseas visitors are included and Australians overseas are excluded from the counts. No adjustment is made for census undercount.
Place of usual residence net undercount	This is the net undercount of the usual residence census counts. It is the net percentage of usual residents (of Australia, or a particular State or Territory) present in Australia on census night who were not counted.
Relative standard error	The SE expressed as a percentage of the estimate. For more details see the technical note.
Standard error	A measure of the likely difference between the true value and the estimate. For more details see the technical note.
Usual residence	A person's usual residence is defined as being the place where they have lived or where they intend to live for six months or more.
Usual resident or visitor status	A person was a usual resident for the Census if they were at their usual residence on census night. Visitors were people who were not at their usual residence on census night.





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ISBN 0 642 23290 3

RRP \$10.00