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PATTERNS OF INTERNET ACCESS IN AUSTRALIA

AUSTRALIA

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INQUIRIES

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www.abs.gov.au

NOTES

ABBREVIATIONS

ABS	Australian Bureau of Statistics
AIGC	Australian Indigenous Geographical Classification
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ANZSIC	Australian and New Zealand Standard Industrial Classification
ASCCEG	Australian Standard Classification of Cultural and Ethnic Groups
ASCL	Australian Standard Classification of Languages
ASGC	Australian Standard Geographical Classification
ATSIC	Aboriginal and Torres Strait Islander Commission
CD	collection district
HUIT	Household Use of Information Technology
ICT	information and communication technology
MPHS	Multi-Purpose Household Survey
NATSEM	National Centre for Social and Economic Modelling, University of Canberra
RA	Remoteness Area
SLA	statistical local area
SOS	Section of State

Brian Pink
Australian Statistician

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PREFACE

PREFACE

Each Census of Population and Housing provides a data-rich snapshot for detailed regional and socio-economic analysis of characteristics of persons and households. The 2001 and 2006 Censuses included some basic questions regarding Australia's use of the Internet.

This paper presents a detailed analysis of the 2006 results based on answers to these questions. It also includes some broad comparisons with 2001 results, noting some important differences in the types of questions asked of households between these years.

This release recognises the growing importance of community debate and policy development on the Internet, and its high speed Broadband component, and its main purpose is to further inform these debates and developments.

The ABS acknowledges the financial support given to this project by the Australian Communications and Media Authority (ACMA).

Brian Pink
Australian Statistician

SECTION **1** **MAIN FEATURES AND INTRODUCTION** ....

CHAPTER 1: MAIN FEATURES

There has been significant growth in Australia's access to/use of the Internet between 2001 and 2006. In 2001, 35% of Australian dwellings had access to the Internet in the week prior to the Census date. In 2006, 63% of Dwellings had access to the Internet.

1.1. Regional differences in access

Both cross-tabular and regression analyses reveal considerably lower access rates for regional and rural areas, in comparison with major cities of Australia, especially for Broadband access.

At the national level 66% of dwellings in major cities have access to the Internet, compared to 42% for very remote Australia. This gap is similar for Broadband access, the corresponding figures being 46% and 24%. Corresponding access rates for Inner Regional, Outer Regional and Remote Australia are 56%, 52% and 53% for Internet access and 32%, 27% and 28% for Broadband access.

Regression analysis results reveal that regional and remote areas are at least 40% less likely to have Broadband access relative to major cities. The likelihood of any Internet access is relatively higher, but still considerably lower than major cities.

In respect of States and territories, considerable differences in access rates were recorded, both for any Internet and Broadband. The Australian Capital Territory has the highest proportion of occupied dwellings connected to the Internet (75%). New South Wales, Victoria, Queensland and Western Australia have similar levels of Internet connection, ranging between 63% and 65%. Likewise, South Australia, Tasmania and the Northern Territory have similar levels of connectivity, ranging between 55% and 58%. Similar patterns were observed for Broadband connectivity as well. The Australian Capital Territory has the highest proportion of occupied dwellings having Broadband connectivity (53%). New South Wales, Victoria, Queensland and Western Australia have very similar levels of Broadband connectivity, ranging between 41% and 42%. South Australia, Tasmania and the Northern Territory have similar levels of connectivity, ranging between 28% and 32%.

1.2. Socio-economic

INCOME

Rates of access continue to vary significantly with income. Based on equivalised household incomes, individuals living in households with equivalised income of $2000 or more per week are three times more likely to have Broadband access compared with persons with less than $600 per week income. The results are in line with recent related ABS surveys such as 2005-06 *Household Use of Information Technology* (HUIT), in which 22% of households in the bottom two equivalised income quintiles stated high cost as the main reason for not having Internet access, and only 34% of people in the bottom income quintile households had home Internet access, compared to 77% in the top income quintile.

1.2. Socio-economic continued

EDUCATIONAL ATTAINMENT

Educational attainment is another factor influencing any Internet access. For example, regression results indicate that, compared to people with no post school qualifications, people with post graduate degrees were 83% more likely to have Broadband access.

FAMILY COMPOSITION

Families (both couple and single parent) with children under 15 and dependent students are most likely to be connected. Regression results indicate that such families have a three to four times higher likelihood of Broadband access in comparison with families without children or dependent students, signifying the importance families with students assign to Broadband connectivity.

LABOUR FORCE STATUS AND OCCUPATION

Unemployed people are 12% less likely, and people not in the labour force are 18% less likely, to have access to Broadband in comparison with employed people in high skill occupations. People employed in low skill occupations are 27% less likely to have Broadband access.

GENDER AND MARITAL STATUS

Both unmarried males and females are less likely (by 25% and 37% respectively) to have Broadband access than married males and married females.

ENGLISH PROFICIENCY

In contrast to previous studies, people with no proficiency in English are slightly more likely (6%) to have Broadband access than people proficient in English. People with poor proficiency in English are 27% less likely. The results are slightly different for any Internet access, with people with no English proficiency being 8% less likely to have access.

AGE

In comparison with people aged between 35 and 44 years, people under 24 years of age have more than 50% likelihood of Broadband access. Older people are less likely to have Broadband access, people in the age group of 65 to 74 being 42% less likely, and those 75 years or more 34% less likely.

INDIGENOUS STATUS

Indigenous people are about half as likely to have Broadband access compared to non-indigenous people.

DISABILITY

Based on the results of cross-tabular analysis, only 28% of people requiring assistance with core activities have Broadband access, in comparison with 48% for people not needing assistance.

A more complete analysis of each of these characteristics is provided in the body of this publication, together with further fine level detail in the attached Appendix maps and tables.

CHAPTER 2: INTRODUCTION

Use of the Internet as a conduit for communicating, accessing information and undertaking commerce has increased significantly in the last decade. World wide, the number of people using the Internet is expanding every year, and Australians are embracing this technology rapidly. Research in Australia based on available data suggests that significant differences exist in Internet access based on income, education and age. Although it is predicted by some experts that the Internet will soon become as ubiquitous as television, there are concerns that in addition to costs relating to purchasing equipment and Internet access, lack of cognitive ability and technical skills to exploit the Internet could lead to a social divide (Curtin, 2001).

There has been a strong policy focus as well as community interest in recent years on access to, and use of, the Internet, especially Broadband. Policy makers are increasingly focussing on the economic and social impacts arising from the adoption and use of Information and Communications Technology (ICT). This study, following on similar studies based on the 2001 Census data, identifies key socio-economic characteristics of households and individuals relating to access to the Internet using results from the Census of Population and Housing (hereafter referred to as "the Census") 2006.

The use of the Internet by individuals depends on many factors including where the Internet is accessed (at work, school, home or in other locations), how affordable access is, and the ability and interest of users. Businesses and government agencies are keen to understand the characteristics of users. This supports targeting of potential customers and facilitating service delivery. Governments, community organisations and social researchers are interested in understanding the barriers to using the Internet, with a view to assessing the degree of exclusion from the information society and its impacts on social and economic outcomes. Policy makers target policies to address inequities in access.

The Census 2006 provides a wealth of information for investigating the socio-economic and regional characteristics relating to Internet access by households. Several research and information papers such as the *Australia on-line: How Australians are using Computers and Internet 2001* (ABS, 2001) and National Centre for Social and Economic modelling (NATSEM) report series based on Census 2001 data have been published on this topic. In this study, the 2006 Census data relating to access to the Internet in Australian cities and regional households is used for a detailed analysis of this issue from a regional as well as socio-economic perspective.

2.1. Structure of Paper

The paper has been structured into 5 broad sections:

- Section 1: Main Features and Introduction
- Section 2: Geographic aspects
- Section 3: Socio-economic aspects
- Section 4: Combined analysis
- Section 5: Conclusions

Within this overall framework, Chapter 1 provides the main features. Chapter 2 provides a review of previous work undertaken based on the 2001 Census, as well as information on data sources and related classifications used in this study. This chapter also discusses underlying assumptions for making temporal comparisons for Internet access and use. Chapter 3 discusses regional aspects of Internet access. Analysis is provided along three

2.1. Structure of Paper continued

geographic classifications - State/territory, remoteness area and section of State structure. Chapter 4 looks at more detailed spatial distribution of Internet connectivity down to the Collection District (CD) level. Chapter 5 provides cross-tabular analysis of Internet access by selected socio-economic variables for dwellings. Chapter 6 does the same for individuals. Chapter 7 analyses Indigenous access by selected socio-economic and regional variables. Chapter 8 provides more complex cross-tabular analysis, by combining geographic and socio-economic variables. Chapter 9 contains a multivariate regression analysis which identifies the separate effects of the regional and socio-economic variables impacting on Internet connectivity. Chapter 10 concludes by discussing some possible opportunities for future studies.

Appendices to this study, available on the ABS web site (www.abs.gov.au) include thematic maps depicting Internet connectivity at various levels of detail to the CD level , as well as tables of data relating to the study.

2.2. An Overview of the Previous Work

The Census of Population and Housing 2001 included two questions about the use of computers and the Internet by individuals in the week prior to the Census night. The Internet question also included the location of use. These questions provided the data for several research studies relating to Internet use in Australia. A selection of these studies are summarised in the following paragraphs.

Using the 2001 Census data, Lloyd and Bill (2004) examined the socio-economic and regional characteristics of users of home computers and the Internet in Australia, and found significant variation in rates of Internet use based on socio-economic characteristics of users. People with higher incomes and better education were found to be more likely to access the Internet. Families with dependent children were more likely to be Internet users compared to those families without children. Labour force status was another major factor influencing the use of Internet by individuals - employed people were more likely to be users compared with the unemployed or people looking for full-time work. By contrast, in 2001 people classified as unemployed and looking for part-time work reported the highest rate of Internet use at home.

Age, English language proficiency, indigenous status and country of birth also had a significant influence on Internet use. Older persons, especially older women, recorded lower rates. People who do not speak English at all, who did not go to school beyond year 8, Indigenous people and those born in Southern and Eastern Europe were found to be the groups recording significantly lower rates of Internet use in 2001.

In another study using the *Census of Population and Housing in 2001*, Daly (2005) highlighted the low levels of Internet usage by Indigenous Australians, and concluded that lower rates of use was influenced mainly by lower levels of income and the education of Indigenous people.

In addition to these studies based on the Census of Population and Housing 2001, there have been studies based on survey data using the ABS HUIT Survey (1998 and 1999) and *KPMG Household Survey* (2000). Hellwig and Lloyd and Hellwig (2000) and Lloyd et. al. (2000) reported that educational qualification was the major driver of the Internet use by individuals, followed by income. They also found that people receiving government benefits were more likely to have Internet access. The study concluded that disadvantages were more likely due to socio-economic influences rather than geographic

2.2. An Overview of the Previous Work continued

barriers. Xavier (2001) noted evidence from other countries that socio-economic factors such as income, level of education attainment, gender, age, and disabilities are major determinants of Internet access and usage patterns.

Based on a literature review Curtin (2001) concluded that digital technology per se has not created a new social divide. Before the Internet could be heralded as an egalitarian medium, a range of social, economic and technological barriers needed to be addressed. According to Curtin, in 2001 many Australians had 'reasonable' access to the Internet. A small percentage living in rural and remote Australia in particular, had very limited access.

McLaren and Zappala (2002) concluded that despite figures suggesting that Australia is a high consumer of ICT goods and services, the consumption was not spread evenly across the population. This study was based on around 3000 households and 6000 children from financially disadvantaged backgrounds. This study also found that there was a strong association between the level of parental education and ICT access and use.

In a study on barriers to e-learning, the Australian Institute for Social Research identified that people with low incomes, people who do not have tertiary level education, people who live in rural and remote areas, people of Aboriginal or Torres Straight Islander heritage, people with disability, people of non-English speaking background, unemployed people, people who are aged over 55 years, and women are groups that are under-represented in terms of Internet connectivity and use of ICT (The University of Adelaide, 2006).

2.3. Data sources

The 2006 Census of Population and Housing is the primary data source for this study. The Census is a valuable data source for identifying the size and geographic distribution of the Australian population, and for analysing the major demographic, social and economic characteristics of the population, particularly for small geographic regions and other small sub-populations. It provides statistics for decision-making by governments, businesses, community organisations and individuals (ABS, 2007).

The Census was designed to measure the number of people in Australia on the Census night (8 August 2006), their key characteristics, and the characteristics of the dwellings in which they live. The count excluded foreign diplomats and their families. Overseas visitors, although enumerated in the Census, have been excluded from this analysis. Australian residents outside the country on the Census night are also excluded.

The analysis of Internet access is based on occupied private dwellings only. It excludes dwellings which have not responded to the Internet access question. There are 7,028,870 such dwellings in scope of this analysis, out of a total 7,596,182 private occupied dwellings. If it is assumed that non-responding dwellings do not have Internet access, there could be a corresponding upward bias in the estimated connectivity levels of about 7% at the national level. However, this study is based on reporting households only and does not make adjustments for potential non-response bias.

As a result, some 2006 Census classifications are different from their 2001 counterparts. Where the changes are significant, such as in the case of adopting new classifications in the Census, the ABS has developed concordances to assist users to compare Census data over time (ABS, 2006b). There are a number of conceptual and classification changes to

2.3. Data sources continued

be applied to the 2006 Census. These changes are provided in full detail in the 2006 Census Dictionary (cat. no. 2901.0).

The *2006 Census Dictionary* is a comprehensive reference guide designed to assist users of 2006 Census data to understand the concepts underlying the data. The Glossary section of the dictionary defines the Census terms used in this publication.

2.4. Comparison with results from 2001 Census

Both the 2001 and 2006 Censuses included questions relating to the Internet. The 2001 Census included two simple questions relating to use of computers and the Internet (along with location of Internet use) by individuals in the week prior to the Census night. The Census 2006 question related to Internet access, as well as type of access, in dwellings. Therefore, information available from the two Censuses is not directly comparable. However, a close match for accessibility was achieved for 2001 Census Internet question by assuming use at home by individuals equating to dwelling Internet access. With technologies such as mobile Broadband not being in existence in 2001, this assumption is considered to be realistic. It should be noted that this assumption will cause some undercount of the number of dwellings with Internet access, for situations where the dwelling had Internet access but use was not made in the week prior to the Census night.

The Census 2006 question was based on Internet access in the dwelling. For the purpose of this study, it had been assumed that if the dwelling had access to the Internet, any person living in that dwelling had access to the Internet. It should be noted that this assumption leads to an overestimation of the number of persons actually accessing the Internet in that dwelling, especially for population groups such as the elderly, the disabled and less educated.

2.5. Comparison with results from related ABS Household Surveys

The analysis also covers comparison with the broad results of the HUIT Survey for 2005-06. HUIT data is collected from the Multi-Purpose Household Survey (MPHS). The MPHS is conducted each year throughout Australia in the twelve months from July to June as a supplement to the Monthly Labour Force Survey, which is designed to collect statistics for a number of small, self-contained topics, such as Internet use. It should be noted that HUIT data is collected over a 12 month reference period while the Census data relates to a specific night. Therefore comparisons should be made with caution.

2.6. Summary of changes to major classifications

Some classifications used for grouping the Census data have undergone major revisions since the last Census. Changes to major classifications are listed below.

The first edition of the *Australian and New Zealand Standard Industrial Classification* (ANZSIC) (cat. no.1292.0) released in 1993 was used to classify responses to Census questions on Industry of Employment for the 1996 and 2001 Censuses. The second edition (2006 revision) of the classification is used to output standard tables for the 2006 Census (2006b).

The *Australian Standard Classification of Languages* (ASCL) (cat.no.1267.0), is used to classify the variable Main Language Other Than English Spoken at Home. The classification has been revised since the 2001 Census (ABS, 2006b).

2.6. Summary of changes to major classifications continued

The *Australian Standard Classification of Occupations, Second Edition* (cat. no. 1220.0), was used to classify responses to Census questions on Occupation for the 2001 Census. The new *Australian and New Zealand Standard Classification of Occupations*(ANZSCO) (cat. no. 1220.0), is used to output standard tables for the 2006 Census (ABS, 2006b).

Ancestry is coded using the *Australian Standard Classification of Cultural and Ethnic Groups* (ASCCEG) (cat.no.1249.0). The ASCCEG has had a minor revision since the 2001 Census (ABS, 2006b).

The geographic classifications are based on the *Australian Standard Geographical Classification* (ASGC) (cat.no.1216.0) 2007. The ASGC provides a common framework of statistical geography. The Main Structure, the Statistical Region Structure, the Section of State Structure, and the Remoteness Structure cover the whole of Australia without gaps or overlaps.

GEOGRAPHIC ASPECTS

CHAPTER 3: REGIONAL ASPECTS OF INTERNET AND BROADBAND ACCESS

Previous Australian studies based on Census 2001, as well as ABS surveys of Household access to Internet, such as the MPHS, have reported significant differences in spatial distribution of Internet use. This chapter uses the detailed regional information in the 2006 Census to analyse variations in Internet access between states and territories of Australia, between remoteness areas, and between urban and rural areas within states.

Chapter 4 provides analysis of access patterns based on more detailed analysis of data at the Statistical Local Area (SLA) and Collection District (CD) levels (including some maps). Detailed maps depicting patterns of access at finer geographic levels are available on the ABS website.

3.1. Internet access by State/Territory

The Australian Capital Territory has the highest proportion of occupied dwellings connected to the Internet (75%). New South Wales, Victoria, Queensland and Western Australia have similar levels of Internet connectivity, ranging between 63% and 65%. South Australia, Tasmania and the Northern Territory have similar levels of connectivity, ranging between 55% and 58%.

Similar patterns were also observed for Broadband connectivity. The Australian Capital Territory has the highest proportion of occupied dwellings having a Broadband connection (53%). New South Wales, Victoria, Queensland and Western Australia have very similar levels of Broadband connectivity, ranging between 41% and 42%. South Australia, Tasmania and the Northern Territory have similar levels of Broadband connectivity, ranging between 28% and 32%.

Since the 2001 Census, Internet connectivity has increased between 50% and 100% in all states and territories. Australian Capital Territory, with 75% (up from 49% in the 2001 Census) overall connectivity, still has the highest rate if Internet connectivity. Tasmania with 55% (up from 27% in the 2001 Census) has lowest connectivity, despite a doubling of estimated connectivity since the 2001 Census.

It should be noted that Census 2006 data are based on occupied private dwellings, which might be occupied by more than one household for a small minority of dwellings. MPHS data are based on a survey of selected households only. Census 2001 data for occupied private dwellings is derived on the basis of use at home. Most states and territories have a higher proportion of dwellings connected to the Internet on Census 2006 night compared to the 2005-06 reference period. The Northern Territory registered a drop in proportion of dwellings with Internet connectivity (57% as against 60%) which can be attributed to possible sampling error in MPHS. As regards Broadband connectivity, all states and territories registered large increases from the figures obtained from the MPHS results. The reverse is true for dial-up connections, which indicates a gradual shift to Broadband for Internet users. The 2005-06 MPHS results are an average over 2005-06, while the Census is at August 2006. 2005-06 being a period of significant Broadband rollout, Census 2006 figures are considerably higher than MPHS 2005-06.

3.1. Internet access by State/Territory continued

FIGURE 1: INTERNET ACCESS BY PRIVATE OCCUPIED DWELLINGS, by State/Territory - August 2006

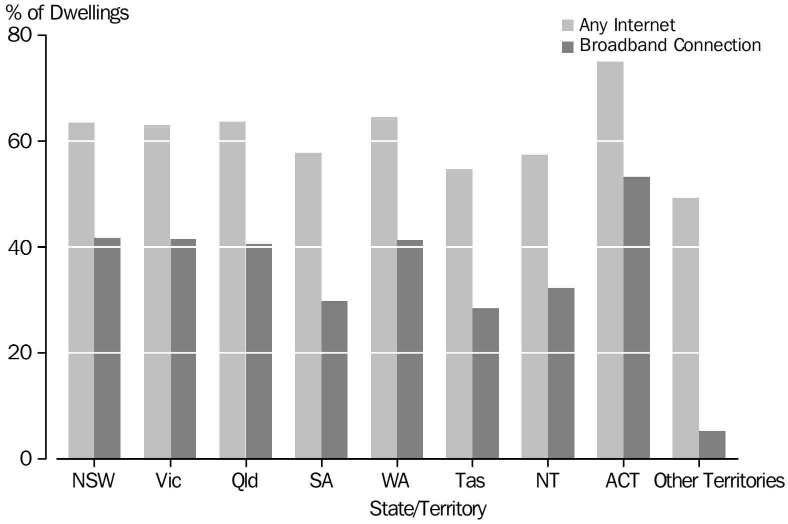

TABLE 1: INTERNET ACCESS BY STATE/TERRITORY , Comparison Between Census 2001, MPHS 05-06 and Census 2006

	INTERNET ACCESS			BROADBAND ACCESS	
	Census 01	*MPHS 05-06*	*Census 06*	*MPHS 05-06*	*Census 06*
	% of Dwellings	% of Households	% of Dwellings	% of Households	% of Dwellings
New South Wales	36	60	63	28	42
Victoria	36	59	63	30	42
Queensland	34	61	64	30	41
South Australia	32	56	58	20	30
West Australia	36	62	65	30	41
Tasmania	27	49	55	17	28
Northern Territory	30	60	57	25	32
Australian Capital Territory	49	72	75	40	53
Total	35	60	63	28	40

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3.2. Remoteness areas

The Remoteness Structure used in the ASGC describes Australia in terms of a measurement of remoteness. The Remoteness Structure includes all Collection Districts (CDs) and therefore in aggregate covers the whole of Australia. The purpose of the structure is to classify CDs which share common characteristics of remoteness into broad geographical areas called Remoteness areas (RAs).

At the time of preparation of this report, correspondence between Census 2006 data and the latest RAs were not available. Therefore the RAs were determined based on the 2001 boundaries. Minor shifts in remoteness boundaries will not have any significant impact on the results of this study.

3.2. Remoteness areas continued

Results from the 2006 Census show that dwellings in Major Cities of Australia continue to have significantly higher Internet access compared to other regions, and this difference is more pronounced for access to Broadband.

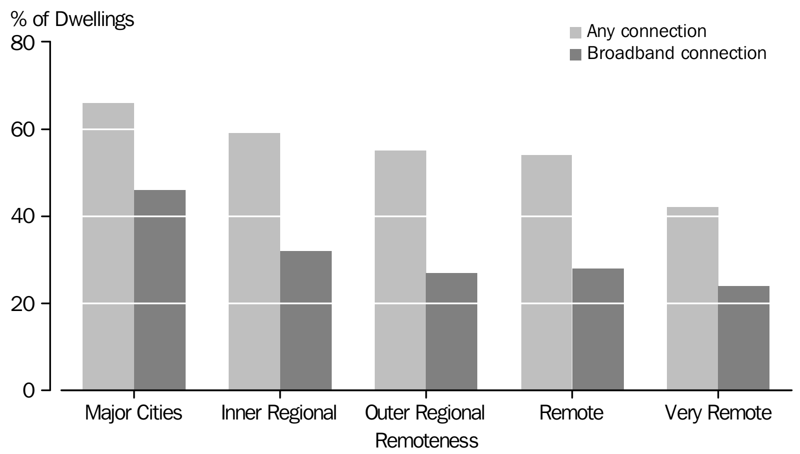
There is considerable difference in dwelling access rates between Major Cities of Australia and regional areas. At the national level, 66% of dwellings in major cities have access to the Internet, compared to 42% for Very Remote Australia. This gap is even more pronounced for Broadband access, the corresponding figures being 46% and 24%, respectively.

There is very little difference in access rates between Outer Regional Australia and Remote Australia at the national level. However, differences in access rates for different remoteness classes by state are greater for Broadband. For example, only 10% of private occupied dwellings in very remote Tasmania have Broadband access in comparison with 28% in very remote NSW. The corresponding figures for Internet are 42% for Very Remote Queensland against 49% for Very Remote areas of Northern Territory and Tasmania. A similar pattern is observed for other remoteness classes as well. South Australia registered the lowest level of Broadband connectivity for major cities (33%), Inner Regional Areas (23%) and Outer Regional Areas (19%).

The MPHS 2005-06 estimated similar patterns for in-scope RAs (very remote areas being out of scope for MPHS). That is, connectivity is still significantly lower than major cities for all other remoteness classifications.

The comparison reveals that in comparison with Major Cities, overall connectivity for all other RAs have increased at greater rates, having at least doubled between the two Censuses. This has resulted in narrowing, in proportion terms, of the connectivity gap. Likewise, estimated increases in Broadband connectivity from MPHS 2005-06 for all remoteness areas (which have been at least 50% higher than the MPHS 05-06 levels) have been higher than that of major cities , which increased from 33% to 46%.

FIGURE 2: INTERNET ACCESS BY PRIVATE OCCUPIED DWELLINGS BY REMOTENESS—August 2006



3.2. Remoteness areas continued

TABLE 2: INTERNET ACCESS BY REMOTENESS AREA, Comparison Between Census 2001, MPHS 05-06 and Census 2006

	INTERNET ACCESS			BROADBAND ACCESS	
	Census 01	*MPHS 05-06*	*Census 06*	*MPHS 05-06*	*Census 06*
	% of Dwellings	% of Households	% of Dwellings	% of Households	% of Dwellings
Major Cities of Australia	39	62	66	33	46
Inner Regional Australia	29	56	59	21	32
Outer Regional Australia	26	52	55	16	27
Remote Australia	25	53	54	19	28
Very Remote Australia	17	—	42	—	24
Total	35	60	63	28	40

— nil or rounded to zero (including null cells)

3.3. Section of State Structure

The Section of State (SOS) Structure is another geographic classification in the ASGC. Defined only in census years, the SOS Structure uses population counts (the Remoteness Area Structure uses a remoteness measure to classify CDs) from the latest Census to classify CDs as urban or rural. The SOS structure includes all CDs and therefore, in aggregate, covers all of Australia. The categories are:

- Major Urban - Population ranges 100,000 or more
- Other Urban - Population ranges from 1,000 to 99,999
- Bounded locality - Population ranges from 200 to 999
- Rural Balance - the remainder of the state/territory
- Migratory - areas composed of off-shore, shipping and migratory CDs

Figures 3, 4 and 5 show the proportions of dwellings with or without Internet access by the SOS Structure. Major Urban and Other Urban areas have been combined into a single "Urban" category. Urban areas registered significantly higher overall connectivity than bounded localities, but overall connectivity in rural balance areas are similar to urban areas. With Broadband connectivity, urban areas registered significantly higher rates in comparison with other areas. However, Broadband connectivity across bounded localities and rural balance areas are similar.

3.3. Section of State Structure continued

FIGURE 3: INTERNET ACCESS BY PRIVATE OCCUPIED DWELLINGS, in Urban Areas in each State/Territory - August 2006

FIGURE4: INTERNET ACCESS BY PRIVATE OCCUPIED DWELLINGS, in Bounded Localities in each State/Territory - August 2006

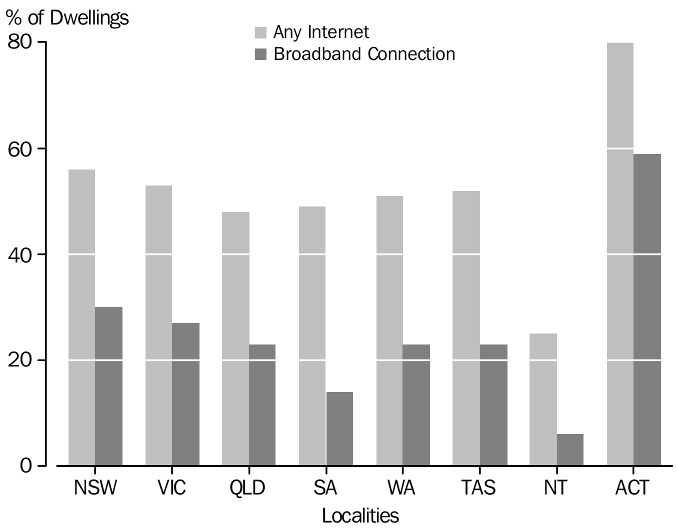
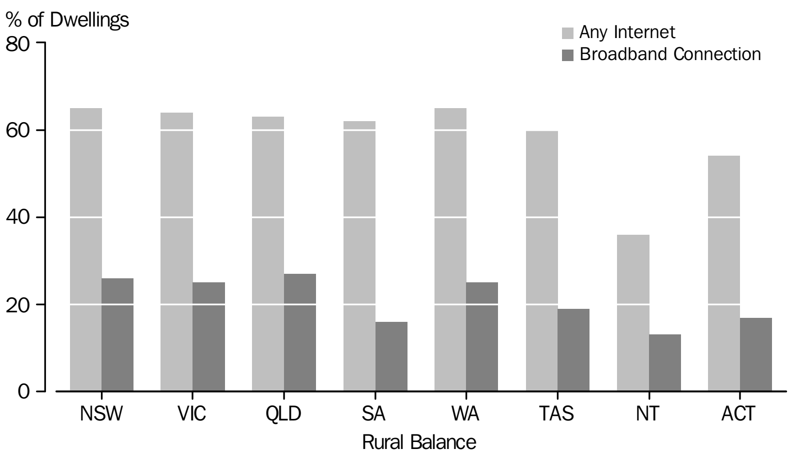


FIGURE 5: INTERNET ACCESS BY PRIVATE DWELLINGS IN RURAL BALANCE—August 2006



CHAPTER 4: SPATIAL DISTRIBUTION OF DWELLING ACCESS TO THE INTERNET

This chapter uses the detailed regional information available from the 2006 Census to look at variation in access to the Internet as well as Broadband between and within states and territories of Australia.

A range of thematic maps have been prepared, in different levels of detail, to facilitate the analysis. These are:

1. Percentage of occupied private dwellings with Internet connection by Statistical Division for Australia.

2. Percentage of occupied private dwellings with Broadband connection by Statistical Division for Australia.

3. Percentage of occupied private dwellings with Internet connection by Collection Districts for states and territories of Australia.

4. Percentage of occupied private dwellings with Broadband connection by Collection Districts for states and territories of Australia.

5. Percentage of occupied private dwellings with Internet connection by Statistical Local Areas for states and territories of Australia.

6. Percentage of occupied private dwellings with Broadband connection by Statistical Local Areas for states and territories of Australia.

7. Percentage of occupied private dwellings with Internet connection by Collection Districts by urban centres for state and territory capital cities of Australia.

8. Percentage of occupied private dwellings with Broadband connection by Collection Districts by urban centres for state and territory capital cities of Australia.

This chapter only includes a few selected maps. The remainder are available electronically on the ABS website.

Reference areas (Statistical Divisions, Statistical Local Areas, or Collection Districts) have been ranked on the basis of access to the Internet (or Broadband) , and divided into five equal groups, or quintiles, with equal numbers of reference areas in each group. Reference areas plotted in red are in the top 20% of the reference areas in the map, while those plotted in pale yellow are in the bottom 20%. The state level maps have remoteness area boundaries superimposed. Similar maps depicting connectivity by selected ranges are available on request.

In addition to presenting thematic maps, summary tables of the ten SLAs with the highest percentages and lowest percentages of Broadband access are presented for capital cities and the rest of the states/territories (Tables 3 and 4). Further to the percentage of the population with Broadband and any Internet access, a number of key demographic variables are presented for each SLA. These demographic variables include age, personal income (per week), family composition, Indigenous status and language spoken at home. These detailed SLA tables for each State/territory are available on the ABS website. Each of these tables presented only includes Census respondents in occupied private dwellings that responded to the question on whether the dwelling has access to the Internet at home.

CHAPTER 4: SPATIAL DISTRIBUTION OF DWELLING ACCESS TO THE INTERNET. *continued*

A small amount of SLAs have been excluded from these tables, where the population of these SLAs is too small to enable comparisons with the majority of SLAs in Australia. SLAs in capital cities have been excluded where the number of persons in the SLA is less than 400, whereas in other sections of the state/territory, SLAs have been excluded where the number of persons in the SLA is less than 200.

TABLE 3: SLA IN THE CAPITAL CITIES AND REST OF THE STATE/TERRITORY OF AUSTRALIA, with the Highest Percentage of Persons with Access to Broadband-Highest 10

	Nominal Population	*% Any Internet*	*% BB connection*
	no.	%	%
Capital Cities			
Fig Tree Pocket QLD	3 079	94	79
Mount Ommaney QLD	1 937	93	79
Ku-ring-gai (A) NSW	94 030	91	78
Forrest ACT	1 138	91	78
O'Malley ACT	641	89	77
Peppermint Grove (S) WA	1 312	89	77
Chapel Hill QLD	9 578	93	77
Kenmore Hills QLD	2 281	90	76
Melbourne (C) - S'bank-D'Lands VIC	10 954	89	76
Brookfield (incl. Brisbane Forest Park) QLD	4 053	93	76
Rest of the State/Territory			
Nhulunbuy NT	3 181	88	68
Roxby Downs (M) SA	3 353	86	67
Murray QLD	8 455	87	60
Douglas QLD	4 568	85	60
Capel (S) - Pt A WA	5 533	85	59
Roebourne (S) WA	14 556	75	58
Pallarenda-Shelley Beach QLD	855	84	57
Belyando (S) QLD	9 434	79	57
Ashburton (S) WA	5 706	73	56
Cairns (C) - Mt Whitfield QLD	10 880	78	55

CHAPTER 4: SPATIAL DISTRIBUTION OF DWELLING ACCESS TO THE INTERNET. *continued*

TABLE 4: SLA IN THE CAPITAL CITIES AND REST OF THE STATE/TERRITORY OF AUSTRALIA, with the Lowest Percentage of Persons with Access to Broadband-Lowest 10

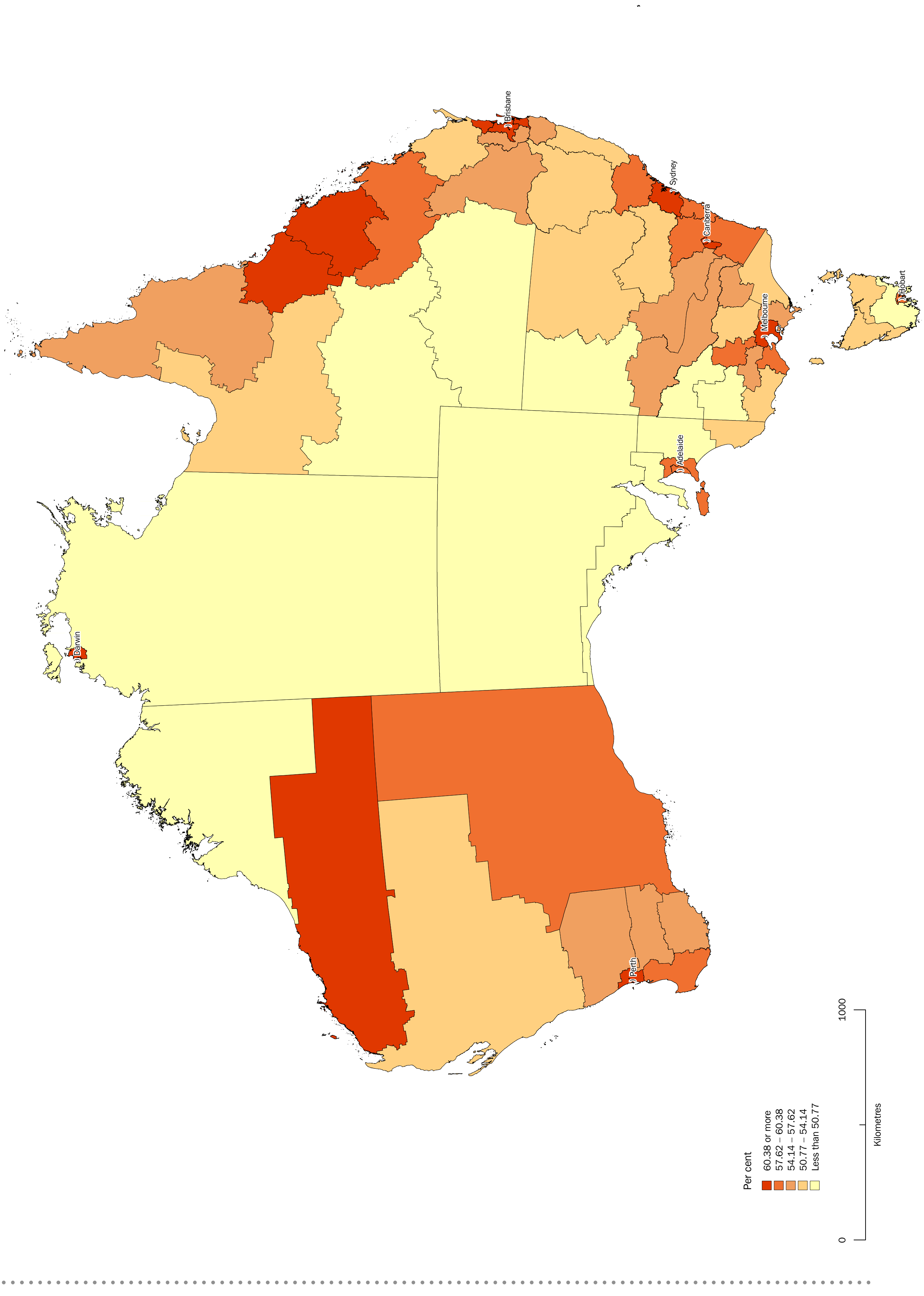
	Nominal Population	Any Internet	BB Connection
	no.	%	%
Capital Cities			
Ipswich (C) - South-West QLD	3 934	64	7
Lee Point-Leanyer Swamp NT	574	25	13
Litchfield (S) - Pt A NT	1 057	47	15
Symonston ACT	400	40	20
Litchfield (S) Pt B NT	13 173	70	22
Winnellie NT	468	37	24
Playford (C) - Elizabeth SA	22 080	47	25
Derwent Valley (M) - Pt A TAS	5 882	52	26
Port Adel. Enfield (C) - Park SA	12 818	49	27
Coolangatta QLD	5 724	43	29
Rest of the State/Territory			
Injinoo (S) QLD	390	2	—
Umagico (S) QLD	202	3	—
Watiyawanu (CGC) NT	245	3	—
Warraber (IC) QLD	221	4	—
Boigu (IC) QLD	301	4	—
Mamgarr (CGC) NT	276	7	—
Hammond (IC) QLD	206	18	—
Angurugu (CGC) NT	715	2	1
Aurukun (S) QLD	1 022	5	1
Kowanyama (S) QLD	983	6	1

— nil or rounded to zero (including null cells)

4.1 Australia

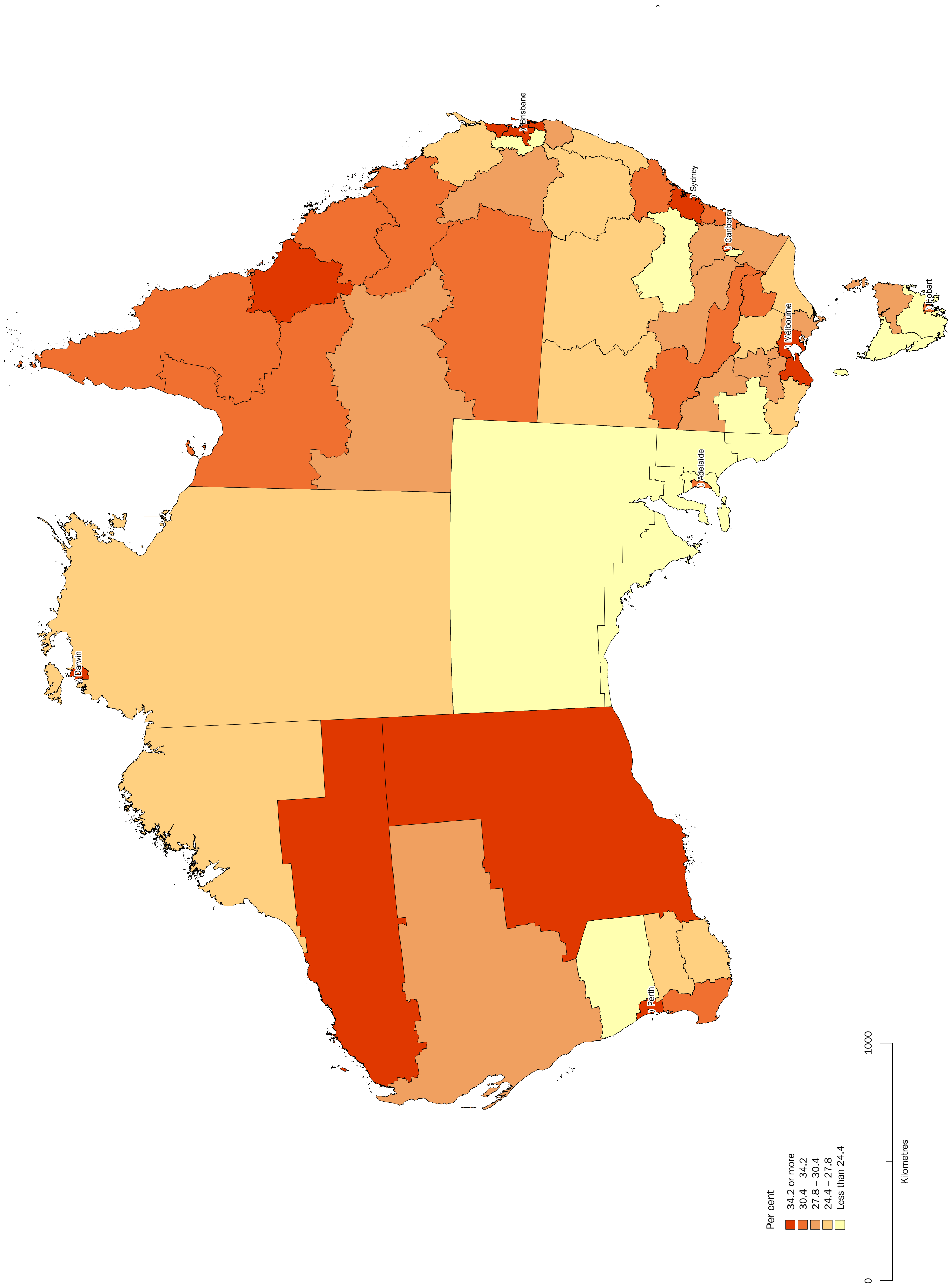
Figures 6 and 7 are thematic maps showing the proportion of occupied private dwellings with access to the Internet and Broadband by Statistical Divisions of Australia.

Figure 6: Percentages of occupied private dwellings with Internet connection by 2006 Statistical Divisions for Australia.


Brisbane
Sydney
Canberra
Melbourne
Hobart
Adelaide
Darwin
Perth
Per cent
60.38 or more
57.62 – 60.38
54.14 – 57.62
50.77 – 54.14
Less than 50.77
0
1000
Kilometres

4.1 Australia continued

Figure 7: Percentages of occupied private dwellings with Broadband connection by 2006 Statistical Divisions for Australia.

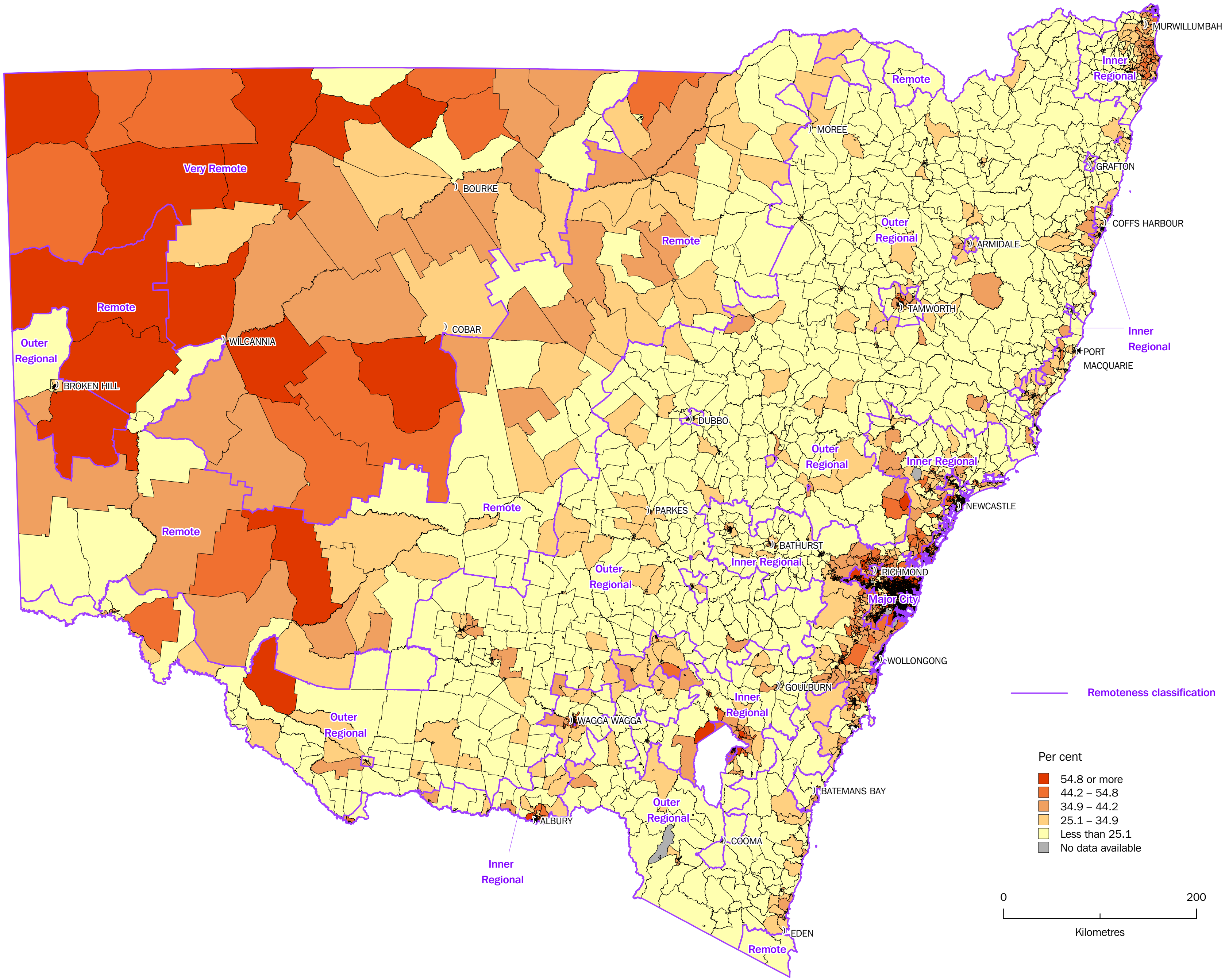

Brisbane
Sydney
Canberra
Melbourne
Hobart
Adelaide
Perth
Darwin
Per cent
34.2 or more
30.4 – 34.2
27.8 – 30.4
24.4 – 27.8
Less than 24.4
0
1000
Kilometres

4.2 State/Territory

Figures 8 to 15 are thematic maps showing the proportion of occupied private dwellings with Broadband connection by state/territory by remoteness area at the Collection District (CD) level. Similar maps for Internet connection are available electronically. More maps at the Statistical Local Areas and major Urban Areas are also available electronically on the ABS website.

4.2.1 NEW SOUTH WALES

Figure 8: Percentages of occupied private dwellings with Broadband connection by Collection Districts for New South Wales 2006.


MURWILLUMBAH
Inner Regional
Remote
MOREE
GRAFTON
COFFS HARBOUR
Outer Regional
ARMIDALE
Remote
Very Remote
BOURKE
TAMWORTH
Inner Regional
PORT MACQUARIE
Remote
COBAR
WILCANNIA
Outer Regional
BROKEN HILL
DUBBO
Outer Regional
Inner Regional
NEWCASTLE
Remote
PARKES
Remote
BATHURST
Inner Regional
Outer Regional
RICHMOND
Major City
WOLLONGONG
GOULBURN
Remoteness classification
Inner Regional
Outer Regional
WAGGA WAGGA
Per cent
54.8 or more
44.2 – 54.8
34.9 – 44.2
25.1 – 34.9
Less than 25.1
No data available
BATEMANS BAY
Outer Regional
ALBURY
COOMA
Inner Regional
0
200
Kilometres
EDEN
Remote

4.2 State/Territory continued

4.2.1.1 Broadband

The top quintile, comprising mostly CDs from the Sydney urban centre, with at least 55% Broadband connectivity, also contains several CDs from the sparsely populated remote and very remote areas of North Western NSW. CDs in and around the regional centres mostly belong to the second and third quintiles, with connectivity ranging from 35% to 55%. The bottom quintile, with less than 25% connectivity, comprises mostly CDs from remote and outer regional areas, but there are some from inner regional areas as well.

4.2.1.2 Any Internet Access (Map available on the ABS website)

For New South Wales, CDs around Sydney, along with some CDs in inner regional centres such as Armidale, Albury, and Bathurst have the highest level of Internet access (75% or more). Some CDs in north-western NSW (in the far-west Subdivision) in remote and very remote areas figured in the top quintile. The majority of CDs in inner regional areas are at least in the second quintile with at least 70% connectivity. The last quintile, with less than 50% connectivity, mostly comprises CDs from remote and very remote areas, with the exception of some outer regional CDs in North Eastern NSW.

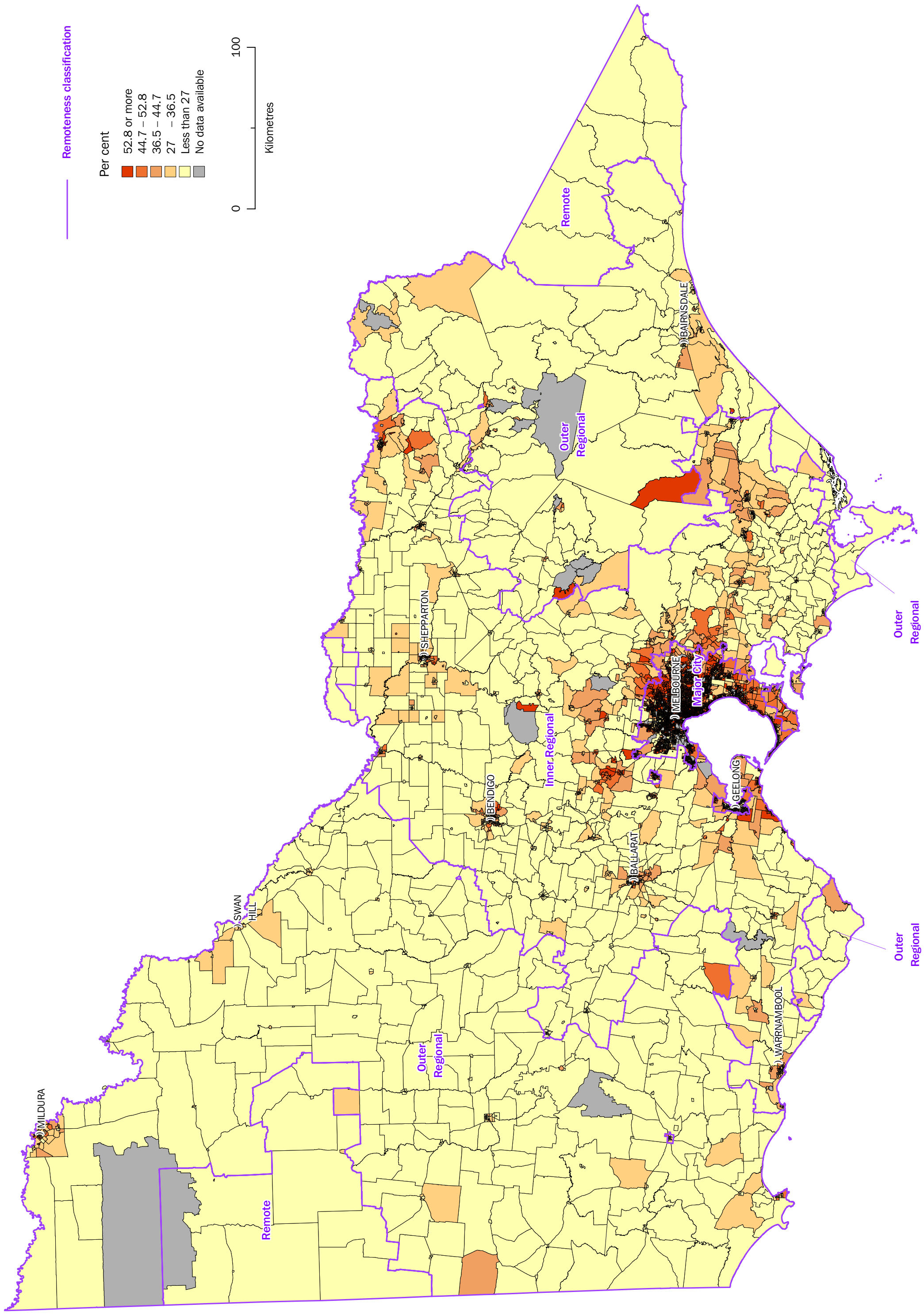
At the SLA level, Ku-ring-gai (A), Baulkham Hills (A) - South, Mosman and Woollahra (A) has the highest rate of Broadband connectivity in Sydney. In the Rest of the State, the SLAs of the Unincorporated Far West and Queanbeyan has the highest rate of Broadband connectivity (55% and 50%) respectively.

In Sydney, the SLA of Fairfield (C), which has 72% of the population speaking a language other than English, has the lowest rate of Broadband connectivity (39%). The SLAs of Sydney with the next lowest rate of Broadband connectivity were Wyong (A) - South and West (40%), Wyong (A) - North-East (40%) and Gosford (C) - West. In all three of these SLAs, there was a relatively high proportion of the population aged 55 years or more (between 27% and 29%).

In the Rest of the State, the SLAs of Dubbo (C) - Part B and Brewarrina (A) has the lowest rate of Broadband connectivity (9% and 11% respectively). In the case of Brewarrina (A), over half of the population's income is lower than $600 per week and nearly two-thirds of the population are Indigenous.

4.2.2 VICTORIA

Figure 9: Percentages of occupied private dwellings with Broadband connection by Collection Districts for Victoria 2006.



4.2 State/Territory continued

4.2.2.1 Broadband

CDs with the highest level of Broadband connectivity are predominantly located in the Melbourne metropolitan region. Major regional centres, with the exception of Geelong, fall in the second or third quintile. The vast majority of CDs in the rest of the state have less than a quarter of the dwellings connected to Broadband, and are in the bottom quintile. Patterns of Broadband access in the Melbourne Metropolitan area are similar to any Internet connectivity.

4.2 State/Territory continued

4.2.2.2 Any Internet Access (Map available on the ABS website)

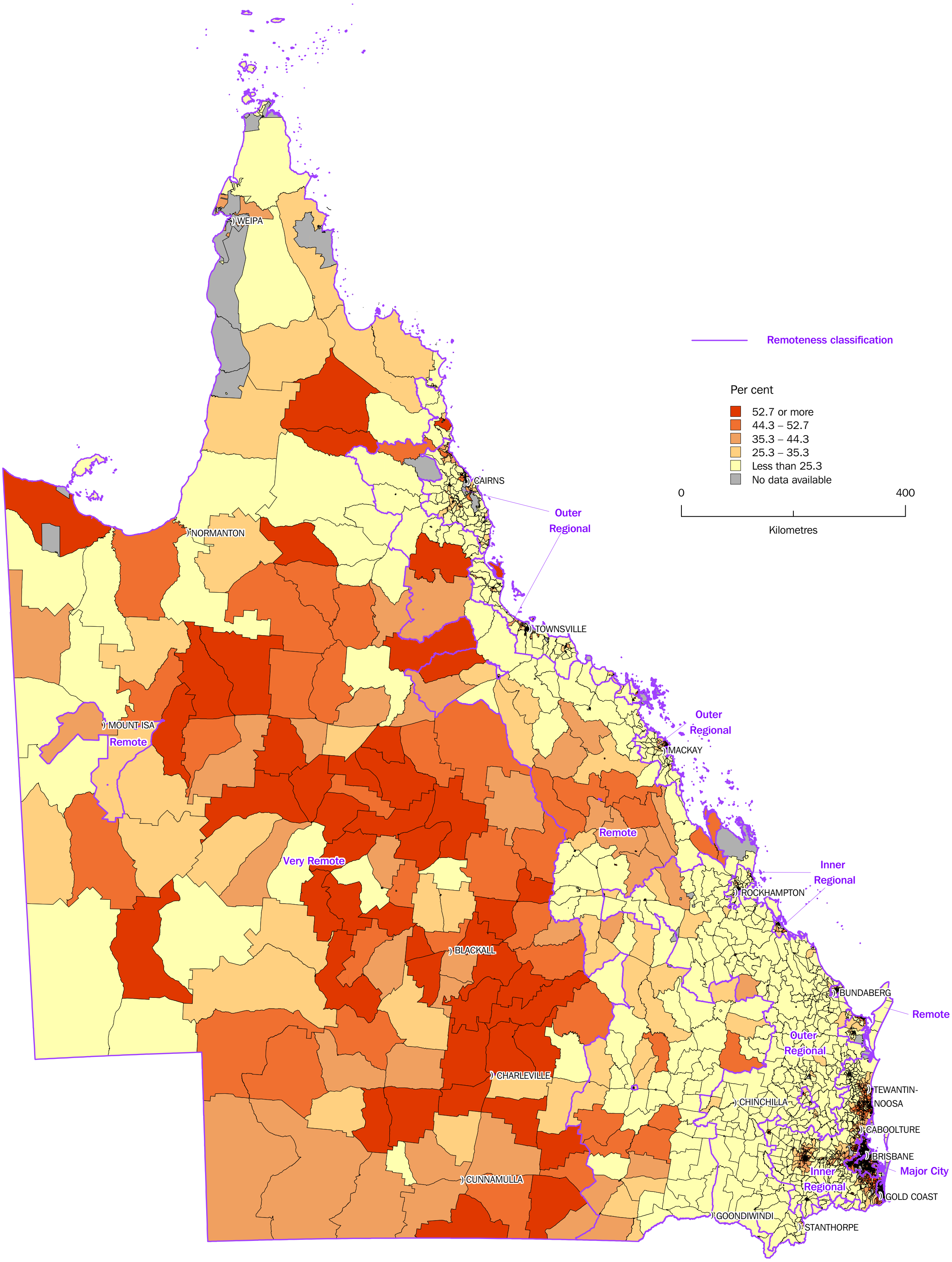
In Victoria, CDs with the highest level of Internet connectivity are predominantly located in the Melbourne metropolitan region. There are pockets of similar levels of connectivity around major regional centres such as Ballarat, Bendigo and Geelong. CDs in the lowest quintile of connectivity (with less than 50% of dwellings connected) are not located in any particular part of the state, but are scattered across remote, outer regional and inner regional areas. Within the Melbourne Metropolitan area, the inner Melbourne suburbs, and those to the north and east of the city tend to have high connectivity. However, suburbs in the outer northern and north-western part of the metropolitan region, as well as in the Mornington peninsula, have significantly lower connectivity, comparable to the lowest quintile for the State.

The Melbourne SLAs of Melbourne (C) - Southlands-Docklands, Bayside (C) - Brighton and Melbourne (C) - Inner have Broadband connectivity rates in excess of 70%. In the Rest of the State, the SLAs of Newtown, Surfcoast (S) - East, Greater Bendigo (C) - S'saye and Macedon Ranges (S) - Bal have Broadband connectivity rates in excess of 50%.

The Melbourne SLAs of Cardina (S) - South, Mornington Peninsula (S) - South, Yarra Ranges (S) - Central and Brimbank (C) - Sunshine Inner have Broadband connectivity rates less than 40%. In the Rest of the State, the SLAs of Loddon (S) - South, Horsham (RC) - Bal and Wangaratta (RC) - South have Broadband connectivity rates less than 15%. In each of these cases, at least half of the population registered a personal income of less than $600 per week.

4.2.3 QUEENSLAND

Figure 10: Percentages of occupied private dwellings with Broadband connection by Collection Districts for Queensland 2006.



Remoteness classification
Per cent
52.7 or more
44.3 – 52.7
35.3 – 44.3
25.3 – 35.3
Less than 25.3
No data available
0
400
Kilometres
WEIPA
CAIRNS
NORMANTON
TOWNSVILLE
MOUNT ISA
MACKAY
ROCKHAMPTON
BLACKALL
BUNDABERG
CHARLEVILLE
TEWANTIN-NOOSA
CHINCHILLA
CABOOLTURE
BRISBANE
CUNNAMULLA
GOLD COAST
GOONDIWINDI
STANTHORPE
Outer Regional
Remote
Very Remote
Inner Regional
Major City

4.2 State/Territory continued

4.2.3.1 Broadband

Looking at the pattern of Broadband access in Queensland, CDs in very remote areas have significantly higher access rates (with only a few CDs in the bottom quintile) in comparison with inner regional, outer regional and remote parts of the state, with a large majority of CDs in the outer regional areas falling in the lowest quintile with less than 25% Broadband connectivity. CDs in the urban centre of Brisbane have higher levels of connectivity, the lower bound of the third quintile being 45%. The bottom quintile in Brisbane has connectivity of 37% or less.

4.2.3.2 Any Internet Access (Map available on the ABS website)

Looking at the distribution of dwelling Internet access across CDs in Queensland, a good spatial distribution is observed. Although CDs around the urban centre of Brisbane have relatively higher levels of connectivity, there is no clear difference in access patterns across remoteness areas, with several CDs around very remote towns such as Blackall and Charleville falling in the top two quintiles, with at least 70% connectivity. The far north and west of the state mostly fall in the lowest quintile (less than 50%), as does scattered areas in remote and outer regional areas and even inner regional areas. CDs in the urban centre of Brisbane have high levels of connectivity, the lower bound of the third quintile being 66%.

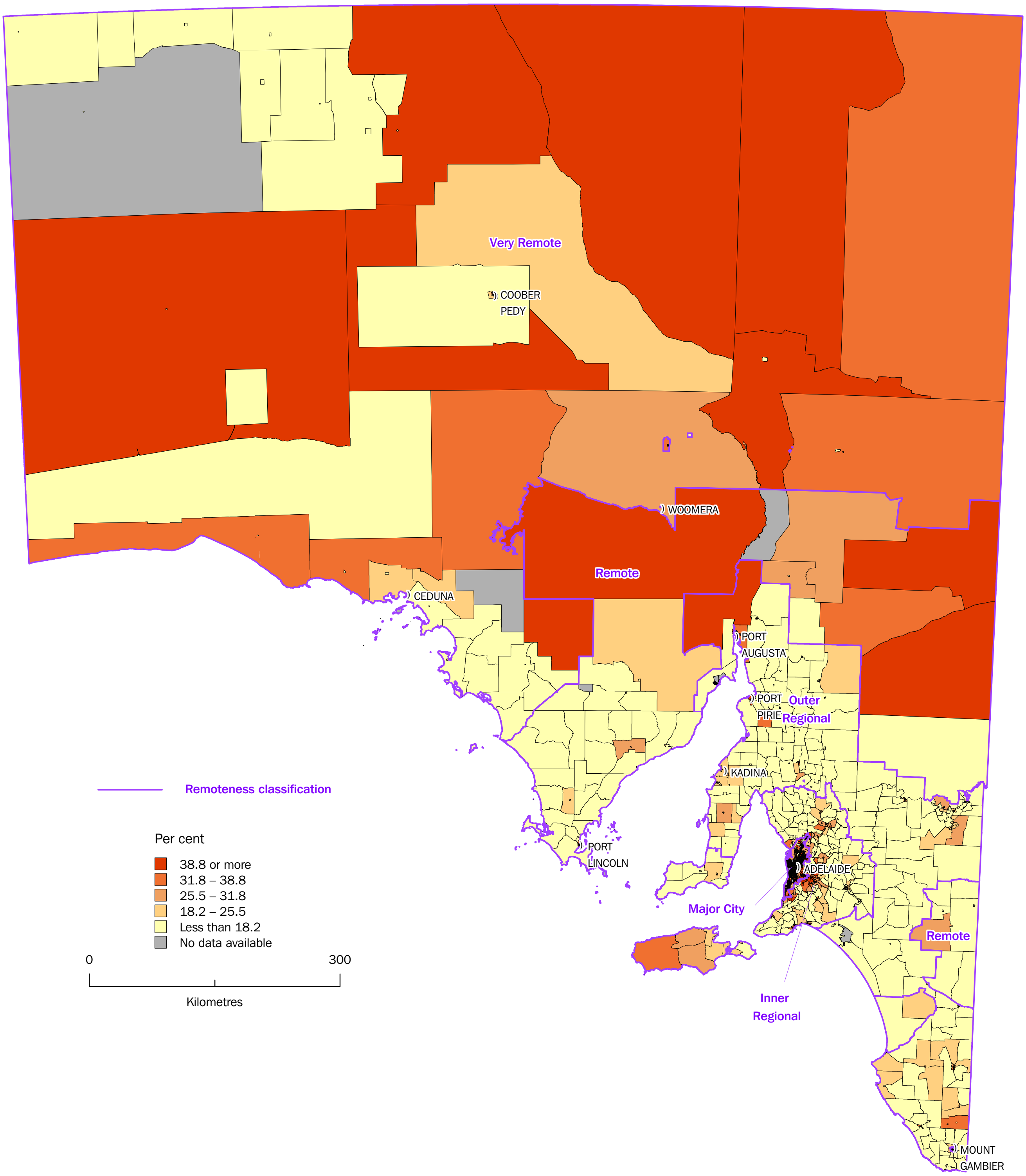
The Brisbane SLAs of Fig Tree Pocket and Mount Ommaney have Broadband connectivity rates of nearly 80%. By contrast, the SLAs in the Rest of the State (Murray and Douglas) with the highest degree of Broadband access have connectivity rates of 60%.

In Brisbane, the SLA of Ipswich (C) - South-West has the lowest rate of Broadband connectivity (9%), which is significantly lower than the next two lowest rates of connectivity which were 29% and 31% in Coolangatta and Jacobs-Well Alberton respectively. Nearly half of the population (46%) in Ipswich (C) - South-West have weekly personal income of less than $600 per week.

For the Rest of Queensland, the lowest 10 SLAs have a negligible rate of Broadband Internet connection (between 0 and 1 percent connectivity). In each SLA, the majority of the population are Indigenous (ranging from 87% to 98% of the population), with a significant share of the population (ranging from 47% to 63%) having a weekly personal income of less than $600 per week.

4.2.4 SOUTH AUSTRALIA

Figure 11: Percentages of occupied private dwellings with Broadband connection by Collection Districts for South Australia 2006.



4.2 State/Territory continued

4.2.4.1 Broadband

CDs with the highest level of Broadband connectivity are predominantly located in the Adelaide metropolitan region, with the exception of some sparsely populated CDs in the very remote and remote areas in the northern part of the state, and the Port Augusta region. The vast majority of CDs in the rest of the state have less than a fifth of the dwellings connected to Broadband, and are in the bottom quintile. Patterns of Broadband access in the Adelaide Metropolitan area are similar to any Internet

4.2 State/Territory continued

4.2.4.1 Broadband continued

connectivity with less than a quarter of dwellings in the north-western part of the city having Broadband connection.

4.2.4.2 Any Internet Access (Map available on the ABS website)

In South Australia, most of the CDs in the top quintile for Internet connectivity are located in the metropolitan region. However, there are pockets of high connectivity throughout the state of 70% or more, even in remote and very remote areas. CDs in the lowest quintile of connectivity (with less than 45% of dwellings connected) are not located in any particular part of the state, but are mostly scattered across very remote, remote, and outer regional areas. Even within the metropolitan region, considerable diversity is observed, with CDs in the south-eastern part of the city having high connectivity (more than 70%) and clusters of CDs in the north-western part of the city in the bottom quintile, with less than 50% connectivity.

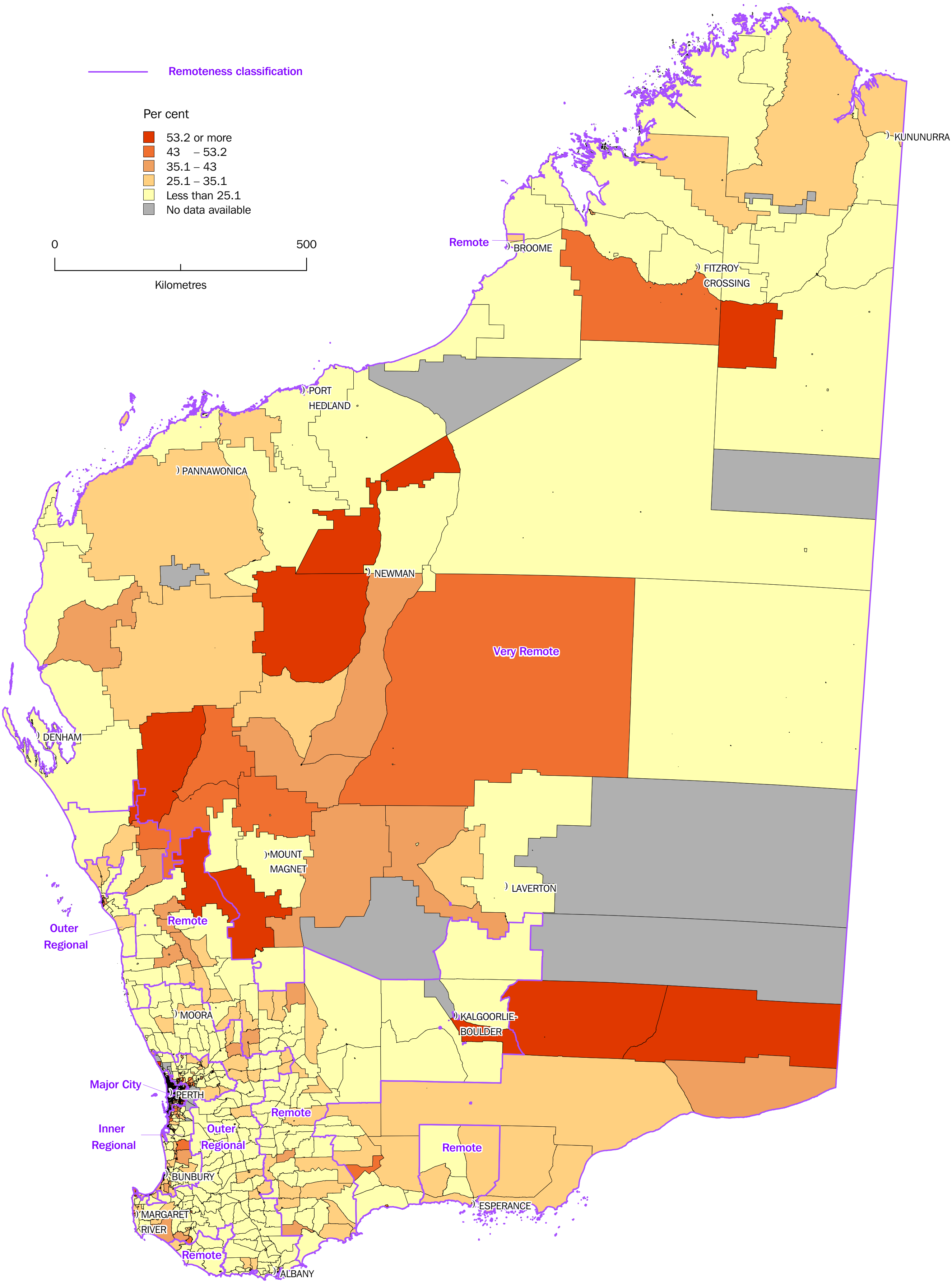
In Adelaide, the SLAs of Burnside (C) - South-West, Adelaide and Burnside (C) - North-East have Broadband connectivity rates in excess of 55 percent. These connectivity rates were lower than the highest connectivity rate of 67 percent for Roxby Downs (M), located in the Rest of the State of South Australia.

In Adelaide, the SLA of Playford (C) - Elizabeth has the lowest Broadband connectivity rate of one-quarter of the population. The next three lowest rates of Broadband connectivity are all SLAs located in Port Adelaide. In each case, at least 55% of the population registered a personal income of less than $600 per week.

In the rest of South Australia, two SLAs (Peterborough (DC) and Anangu Pitantjatjara (AC)) have Broadband connectivity rates of only 2%. In Peterborough (DC) nearly two-thirds of the population registered a personal income of less than $600 per week. In the case of Anangu Pitantjatjara (AC), in addition to low income levels, there are also a high proportion of the population who are Indigenous (84%).

4.2.5 WESTERN AUSTRALIA

Figure 12: Percentages of occupied private dwellings with Broadband connection by Collection Districts for Western Australia 2006.


Remoteness classification
Per cent
53.2 or more
43 – 53.2
35.1 – 43
25.1 – 35.1
Less than 25.1
No data available
0
500
Kilometres
KUNUNURRA
Remote
BROOME
FITZROY CROSSING
PORT HEDLAND
PANNAWONICA
NEWMAN
Very Remote
DENHAM
MOUNT MAGNET
LAVERTON
Outer Regional
Remote
MOORA
KALGOORLIE-BOULDER
Major City
PERTH
Remote
Inner Regional
Outer Regional
Remote
BUNBURY
ESPERANCE
MARGARET RIVER
Remote
ALBANY

4.2 State/Territory continued

4.2.5.1 Broadband

CDs with the highest level of Broadband connectivity are mostly in the Perth metropolitan region, with the exception of a few CDs in mining and agricultural areas such as Kalgoorie and Newman. Less than a quarter of the dwellings in the inner and outer regional, and remote areas, in the south-western part of the state have Broadband connectivity. Patterns of Broadband access in the Perth Metropolitan area are similar to any Internet connectivity with less than a third of dwellings in most CDs in the south-eastern part of the city having Broadband connection.

4.2.5.2 Any Internet Access (Map available on the ABS website)

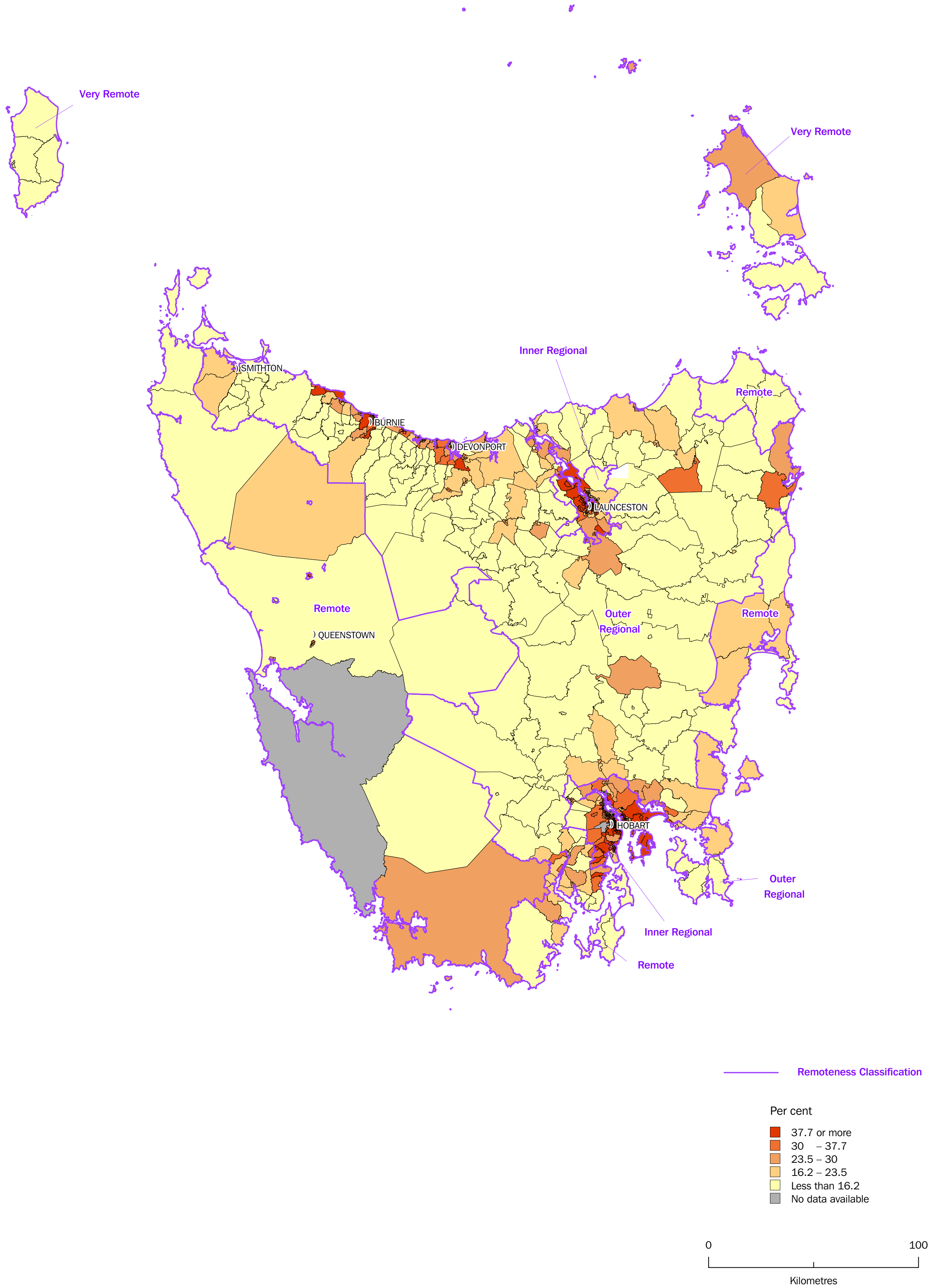
As with other Australian states/territories, most of the CDs in the top quintile for Internet connectivity are located in the metropolitan region. However, there are pockets of high connectivity throughout in the south-western part of the state, and in some mining and agricultural areas such as Kalgoorie and Newman. Rural and very remote areas in the north, east and central parts of the state have the lowest connectivity (less than 50%). There are very few CDs in the two bottom quintiles in the inner and outer regional and even remote areas, in the south-western part of the state, where connectivity is generally above 60%. However, even within the metropolitan region, there are pockets of relatively lower connectivity, markedly in the south-eastern part of the city.

In Perth, the SLA of Peppermint Grove (S) has the highest rate of Broadband connectivity (77%). The next two highest ranking SLAs are Nedlands (C) and Cottesloe (T), which have Broadband connectivity rates of 71% and 70% respectively. In the rest of Western Australia, the SLAs of Capel (S) - Part A and Roebourne (S) has the highest rates of Broadband connectivity (59% and 58% respectively).

In Perth, the SLAs of Belmont (C) and Serpentine-Jarrahdale (S) both have the lowest rate of Broadband connectivity (37%). In the rest of Western Australia, the SLAs of Laverton (S) and Ngaayatarraku (S) both have the lowest rate of Broadband connectivity (5%). Low income levels (below $600 per week of 49% and 54% respectively) and Indigenous profile (58% and 86% Indigenous) are demographic characteristics of these two SLAs.

4.2.6 TASMANIA

Figure 13: Percentages of occupied private dwellings with Broadband connection by Collection Districts for Tasmania 2006.


Very Remote
Very Remote
Inner Regional
SMITHTON
Remote
BURNIE
DEVONPORT
LAUNCESTON
Remote
Outer Regional
Remote
QUEENSTOWN
HOBART
Outer Regional
Inner Regional
Remote
Remoteness Classification
Per cent
37.7 or more
30 – 37.7
23.5 – 30
16.2 – 23.5
Less than 16.2
No data available
0
100
Kilometres

4.2 State/Territory continued

4.2.6.1 Broadband

As in the case with all forms of Internet access, CDs with the highest Broadband connectivity levels (38 % or more) are located near the major town centres, Hobart, Launceston, Burnie and Devonport. However, the vast majority of CDs in remote and outer regional areas are in the lowest quintile (16% or less). A few CDs in Inner regional areas also fall in the lowest quintile. Within Hobart, Broadband connectivity patterns are similar to any Internet connection, with CDs in the lowest quintile (25% or less) being mostly concentrated in the northern and eastern parts of the city.

4.2.6.2 Any Internet Access (Map available on the ABS website)

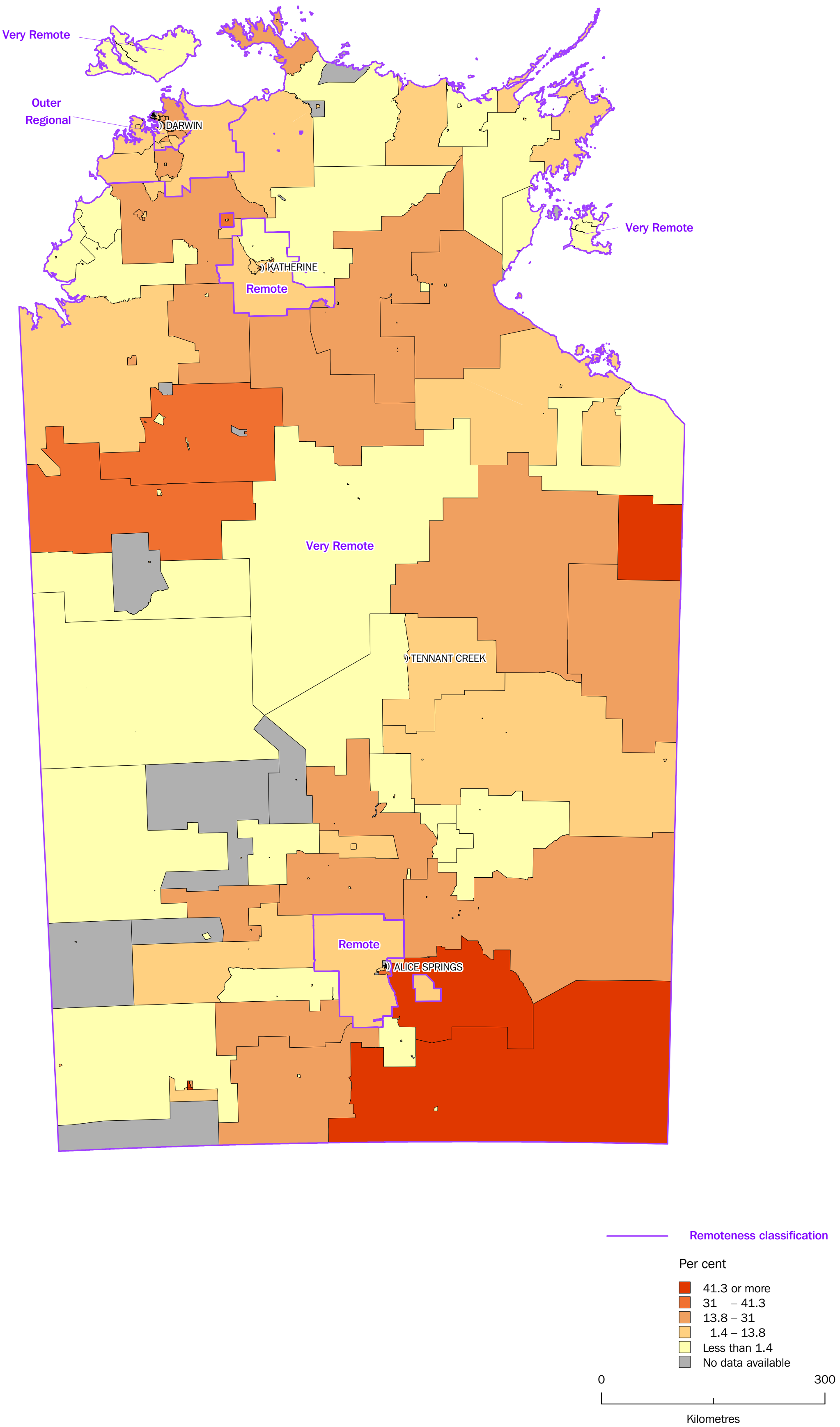
In Tasmania, CDs with the highest Internet connectivity levels (65% or more) are located near the major town centres, Hobart, Launceston, Burnie and Devonport. CDs in inner regional areas are at least in the second quintile with at least 58% connectivity. Areas with lowest connectivity (43% or less) are concentrated in the central and north-western part of the state. Interestingly, distribution in connectivity within Hobart are similar to the rest of the state, with CDs in the lowest quintile (43% or less) being mostly concentrated in the northern and eastern parts of the city.

In Hobart, the SLAs of Hobart (C) - Remainder and Kingborough (M) - Part A have the highest rate of Broadband connectivity (49% and 44% respectively). These connectivity rates are the lowest in comparison to all other states and territories in Australia and are not substantially higher than the highest rates in the rest of Tasmania (West Tamar (M) - Pt A has a Broadband connectivity rate of 44% followed by Meander Valley (M) - Part A, which registered 42% Broadband connectivity).

The SLAs of Hobart with the lowest rate of Broadband connectivity are Derwent Valley (M) - Part A and Brighton (26% and 29% respectively). In the rest of Tasmania, the SLAs of George Town (M) - Pt B, King Island (M) and Central Highlands (M) all have the lowest rate of Broadband connectivity (6%).

4.2.7 NORTHERN TERRITORY

Figure 14: Percentages of occupied private dwellings with Broadband connection by Collection Districts for Northern Territory 2006.


Very Remote
Outer
Regional
DARWIN
Very Remote
KATHERINE
Remote
Very Remote
TENNANT CREEK
Remote
ALICE SPRINGS
Remoteness classification
Per cent
41.3 or more
31 – 41.3
13.8 – 31
1.4 – 13.8
Less than 1.4
No data available
0
300
Kilometres

4.2 State/Territory continued

4.2.7.1 Broadband

Broadband connectivity has a similar pattern, but connectivity levels are considerably lower, with the top two quintiles having only a minimum connectivity level of 30%, and the bottom quintile having almost no connectivity. CDs around Darwin have about 40% Broadband connectivity.

4.2.7.2 Any Internet Access (Map available on the ABS website)

Although the Northern Territory comprises mostly remote and very remote areas, CDs in the first 3 quintiles have a minimum Internet connectivity of about 40%. CDs around Darwin have about 70% any Internet connectivity on average. Less than 15% of dwellings in the bottom quintile have Internet connectivity.

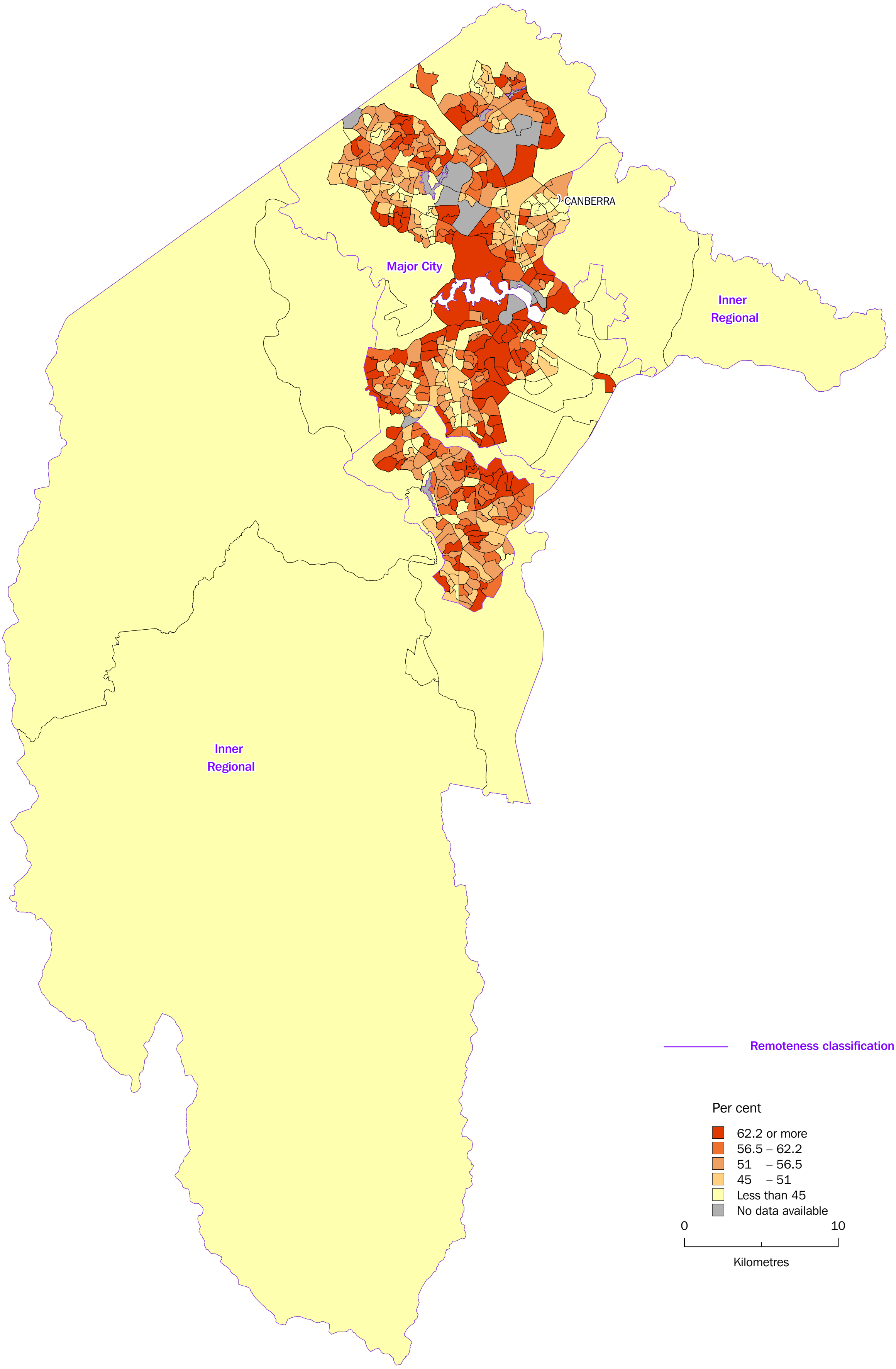
In Darwin, the SLAs of Gunn-Palmerston City, Brinkin and Wanguri have Broadband connectivity rates of 55% or slightly higher. These rates are lower than the highest rate in the rest of the Northern Territory, which was found in Nhulunbuy, which has a Broadband connectivity rate of 68%.

In Darwin, the SLAs of Lee Point-Leanyer Swamp and Litchfield (S) - Part A have the lowest rate of Broadband connectivity (13% and 15% respectively. In the case of Lee Point-Leanyer Swamp, 70% of the population are aged 55 years or over, while 68% of the population have a personal income of less than $600 per week.

In the rest of the Northern Territory, all of the lowest 10 SLAs have a negligible rate of Broadband connectivity. In all these cases, at least 85% of the population were identified as Indigenous. The SLAs of Watiyaawanu (CGC) and Marngarr (CGC) have a zero rate of Broadband connectivity. In both these SLAs, the majority of the population have a personal income of less than $600 per week (70% and 60% respectively).

4.2.8 AUSTRALIAN CAPITAL TERRITORY

Figure 15: Percentages of occupied private dwellings with Broadband connection by Collection Districts for Australian Capital Territory 2006.


CANBERRA
Major City
Inner
Regional
Inner
Regional
Remoteness classification
Per cent
62.2 or more
56.5 – 62.2
51 – 56.5
45 – 51
Less than 45
No data available
0
10
Kilometres

4.2 State/Territory continued

4.2.8.1 Broadband

Patterns of Broadband access are similar to any Internet access. Except for the sparsely populated rural and nature park areas surrounding Canberra, at least 45% of the dwellings in most CDs have Broadband connectivity. At least 62% of dwellings in the top quintile have Broadband connectivity. Within Canberra, CDs in the bottom quintile are scattered throughout the city and not concentrated in any particular region.

4.2.8.2 Any Internet (Map available on the ABS website)

With the highest Internet connectivity in the country, the quintile bands for the ACT are narrower and higher than corresponding quintiles in other states/territories. The upper bound for the lowest quintile is higher than the lower bound of the top quintile for South Australia, Tasmania and the Northern Territory, and the lower bound of the second quintile for other states. Except for the sparsely populated rural and nature park areas surrounding Canberra, at least two thirds of the dwellings in most CDs have Internet connectivity. At least 83% of dwellings in the top quintile have Internet connectivity.

In Canberra, the SLAs of Forrest, O'Malley, Fadden and Chapman have Broadband connectivity rates of 75% or more. By contrast, the SLAs in Canberra with the lowest rate of Broadband connectivity are Symonston (20%), Belconnen Town Centre (47%), Lyneham (48%) and Page (48%).

CHAPTER 5: SOCIO-ECONOMIC FACTORS IN INTERNET AND BROADBAND ACCESS - BY DWELLING AND HOUSEHOLD

In this chapter, socio-economic characteristics of households with Internet access is examined. Variables relating to households examined are:

Income
- Weekly equivalised household income

Dwelling characteristics
- Type of tenure

Household Characteristics
- Family composition
- Family blending
- Household composition

5.1. Income

In this study, weekly equivalised household income is used as a measure of income for examining the association of income on dwelling Internet access rates. Equivalised household income is the total household income adjusted by the application of an equivalence scale to facilitate comparison of income levels between households of differing size and composition. Equivalised household income can be viewed as an indicator of the economic resources available to a standard household. For a lone person household, it is equal to household income. For a household consisting of more than one person, it is an indicator of the household income that would be needed by a lone person household to enjoy the same level of economic wellbeing (see Census Dictionary for further detail).

Proportions of dwellings with Internet and Broadband access are higher for higher income groupings for both Internet connectivity as well as Broadband connection.

The $2,000 or more income group recorded the highest rate of Broadband connection (67%), and the rate of Broadband connection is lowest for the $150- $249 income grouping. Generally, connectivity increases with income.

5.1. Income continued

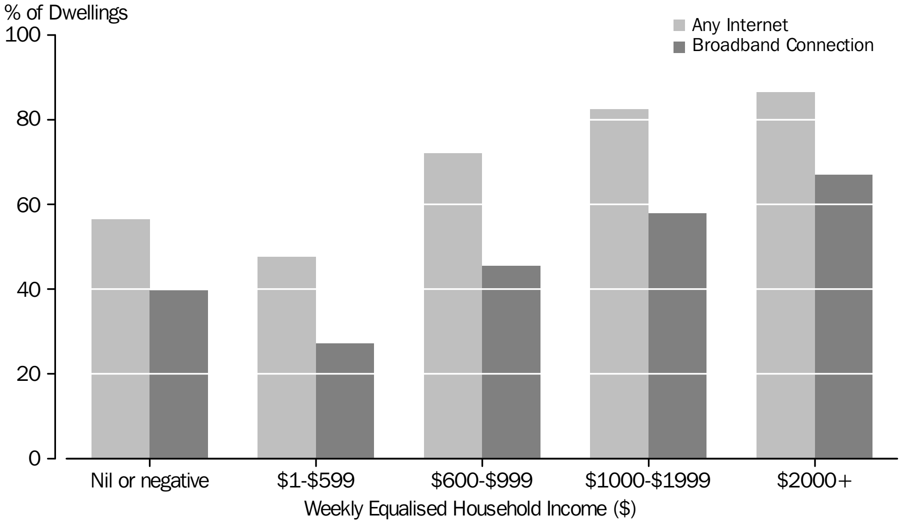
TABLE 5: INTERNET ACCESS BY WEEKLY EQUIVALISED HOUSEHOLD INCOME(a)—August 2006

	ANY INTERNET		BROADBAND CONNECTION		TOTAL
	Dwelling Records	*Dwelling proportions*	*Dwelling Records*	*Dwelling proportions*	*Dwelling Records*
	no.	% of Dwellings	no.	% of Dwellings	no.
Nil or negative income(b)	43 456	57	30 553	40	76 863
$1-$149	65 080	45	40 136	28	144 566
$150-$249	177 092	35	97 293	19	509 077
$250-$399	476 199	41	260 106	22	1 157 919
$400-$599	695 317	60	407 042	35	1 150 684
$600-$799	684 942	70	424 101	43	980 944
$800-$999	504 333	76	327 540	49	666 924
$1000-$1299	554 724	80	377 487	55	690 055
$1300-$1599	320 272	84	227 470	60	381 170
$1600-$1999	199 738	87	148 501	64	230 449
$2000 or more	179 182	86	139 063	67	207 296

(a) Cells in this table have been randomly adjusted to avoid the release of confidential data.

(b) This income group consist of people with income from unincorporated enterprises or rental properties. The income may be reported negative when a loss accrues to a household as an owner or partner in unincorporated enterprise or rental property. Losses occur when operating expenses and depreciation are greater than gross receipts (ABS, 2007c). Thus this group can include people with considerable wealth.

FIGURE 16: INTERNET ACCESS BY WEEKLY EQUIVALISED HOUSEHOLD INCOME, (Broad Income Groups)



5.2. Type of tenure

People with a home with a mortgage have a significantly higher level of connectivity in comparison with Renters, Outright owners and Other tenure types.

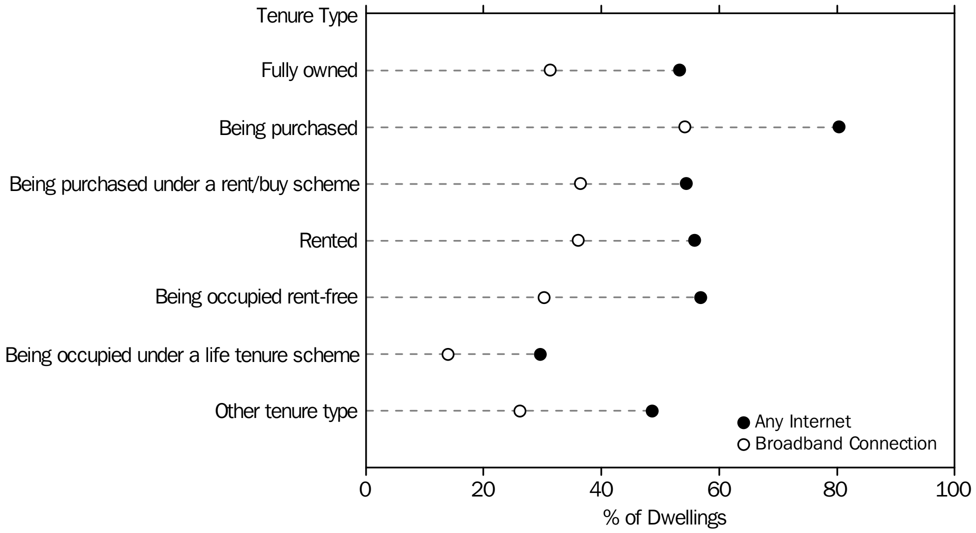
Internet access by type of tenure show a large variation among the different types. The Being purchased mortgage category has the highest proportion of any Internet (80%) and Broadband (54%) connection.

The Being occupied under a life tenure scheme category show the lowest proportions of any Internet and Broadband connection. Dwellings occupied under a life tenure scheme includes arrangements in retirement homes.

5.2. Type of tenure continued

The Fully owned and Being occupied rent-free categories show similar proportions.

FIGURE 17:INTERNET ACCESS BY TENURE TYPE OF THE DWELLINGS—August 2006



5.3. Family and household characteristics

5.3.1 FAMILY COMPOSITION

Family composition classifies families into different types. In doing so, information about temporarily absent family member is also used. No provision has been made to classify family members outside the family nucleus. For example, in a family which contains a couple and their dependent children, plus a parent of one of the couple, the latter is recorded as an Other related individual. For details of the categories of family composition please see the Census Dictionary. Table 6 gives the summary of Internet access by the family composition in private occupied dwellings.

TABLE 6: INTERNET ACCESS BY THE COMPOSITION OF FAMILIES , in Private Occupied Dwellings—August 2006

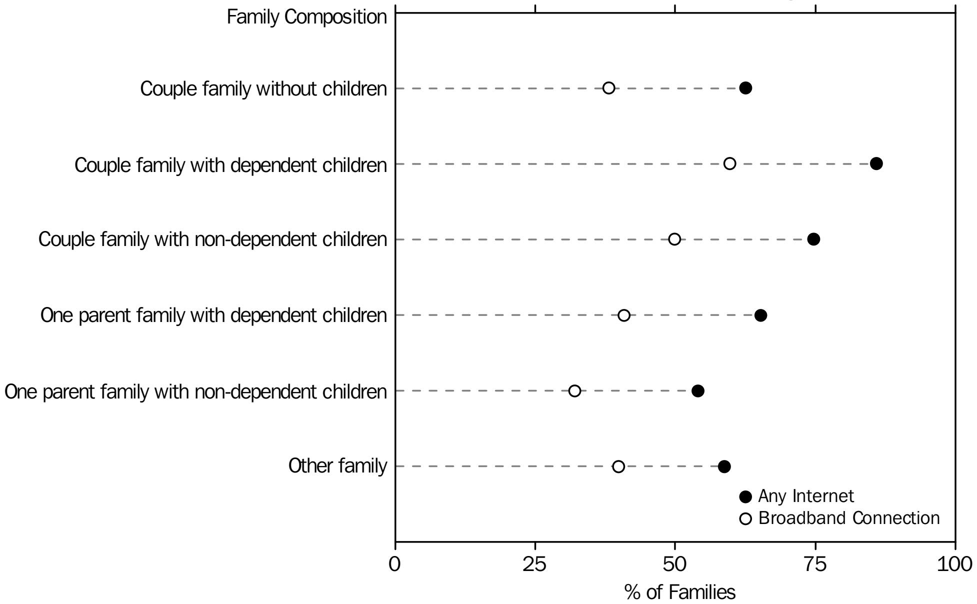
	ANY INTERNET		BROADBAND CONNECTION	
	Family Records	*Proportions of families*	*Family Records*	*Proportions of families*
	no.	%	no.	%
Couple family without children	1 186 865	63	724 407	38
Couple family with children under 15 and dependent students	255 918	92	189 536	68
Couple family with children under 15 and no dependent students	1 093 654	83	730 340	55
Couple family with no children under 15 and with dependent students	282 551	94	215 357	72
Couple family with no children under 15, no dependent students and with non-dependent children	316 262	75	210 926	50
One parent family with children under 15 and dependent students	51 203	77	34 722	52
One parent family with children under 15 and no dependent students	217 531	58	129 619	35
One parent family with no children under 15 and with dependent students	84 143	83	57 046	56
One parent family with no children under 15, no dependent students and with non-dependent children	136 921	54	81 409	32
Other family	50 315	59	34 176	40

5.3. Family and household characteristics continued

5.3.1 FAMILY COMPOSITION *continued*

Couple families with children under 15, with or without dependent students, recorded significantly higher connectivity than similar lone parent families, or couple families without children or students. Figure 18 presents Internet access broad level composition of families in private occupied dwellings. Dependent children includes both children under 15 and dependent students.

FIGURE 18: INTERNET ACCESS BY FAMILY COMPOSITION—August 2006

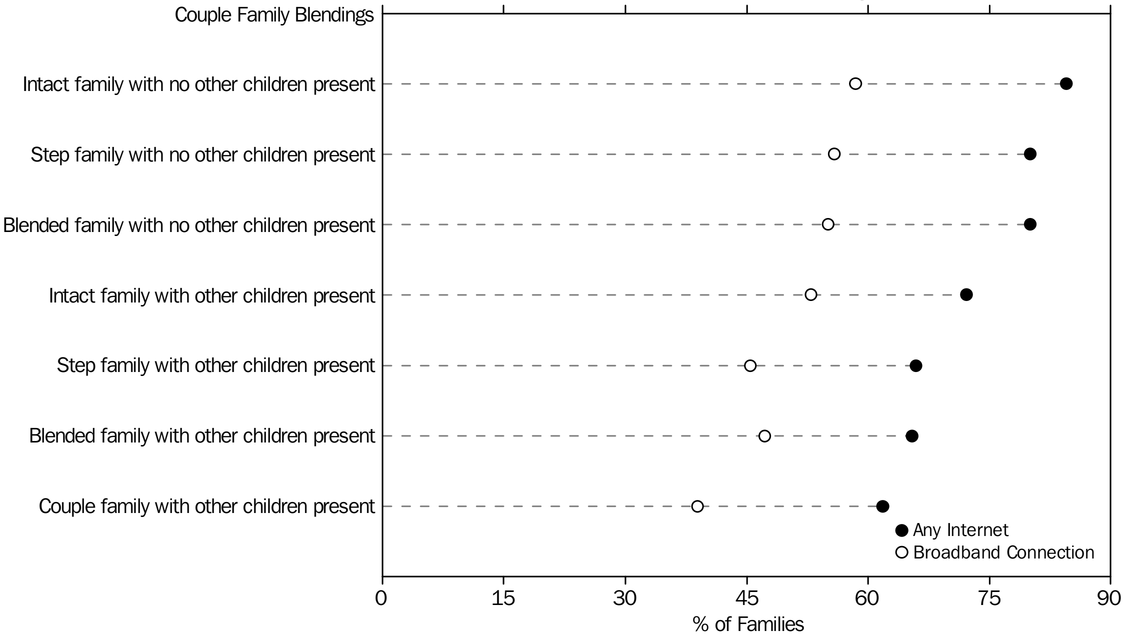


5.3.2 FAMILY BLENDING

Categories considered in this analysis relate to couple families only, based on the parent-child relationships within them.

The results indicate that blending of families have an impact on access to the Internet. Intact couple families with no other children present, recorded the highest proportion of any Internet (85%) and Broadband (58%) access (Figure 19). The lowest proportion of any Internet (62%) and Broadband (39%) access is recorded by the dwellings with Couple family with other children present. This category refers to couple families containing one or more children, all of whom are neither the natural children of either partner in the couple, nor step children of both partners in the couple. The presence of other children (such as foster children, or grandchildren) is associated with lower proportions of Internet access.

FIGURE 19: INTERNET ACCESS BY COUPLE FAMILY BLENDINGS, August 2006



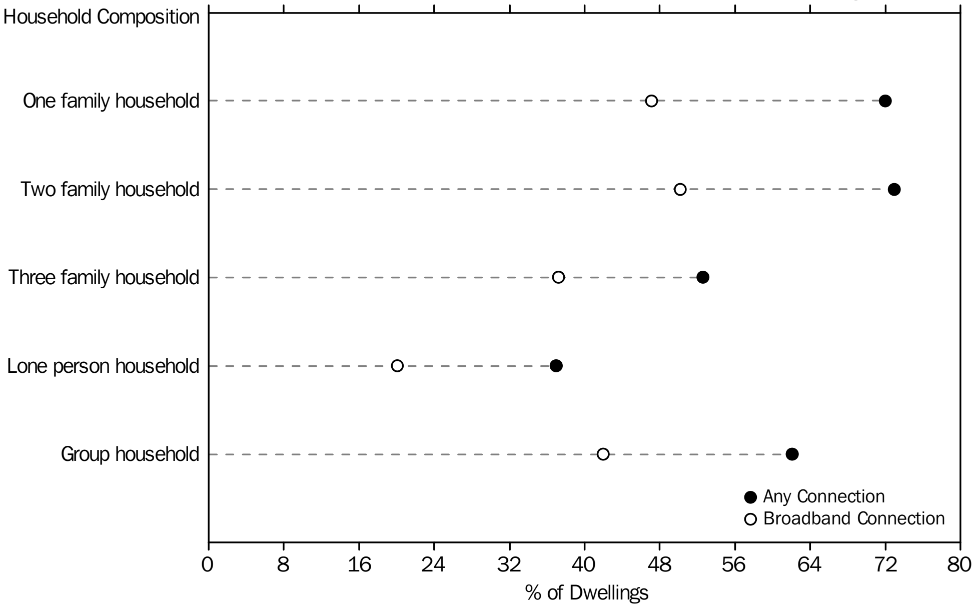
Note: Applies to couple families

5.3. Family and household characteristics continued

5.3.3 HOUSEHOLD COMPOSITION

A dwelling could consist of more than one family. Figure 20 illustrates the variation of proportions of Internet connectivity with respect to household composition. Two family households recorded the highest rate of any Internet (73%) and Broadband (50%) access. One family households recorded similar proportions to the two family household (72% any Internet and 47% Broadband). Lone person households have the lowest proportion of any Internet (37%) and Broadband (20%) access.

FIGURE 20: INTERNET ACCESS BY HOUSEHOLD COMPOSITION—August 2006



CHAPTER 6: SOCIO-ECONOMIC FACTORS IN INTERNET AND BROADBAND ACCESS - FOR INDIVIDUALS

Since the Census 2006 Internet question is based on dwellings, analysis based on personal level characteristics had to be derived. As indicated in Chapter 2, an underlying assumption for this study is that all members of the household (excluding 0-4 age range) have access to the Internet, if the dwelling has Internet access.

Personal level variables examined are

- Age and gender
- Educational attainment
- Labour force status
- Place of birth
- Proficiency in spoken English
- Disability (People with need for assistance in core activities)

While there are very clear relationships between Internet access and factors such as age, income and education, on the basis of cross-tabular analysis alone made in the chapter, it is difficult to isolate the key characteristics associated with Internet access. This is because cross-tabulations do not control for the impact of other factors. In this study, multivariate analysis using logistic regression techniques have been used for disentangling the different effects of multiple factors. Chapter 9 reports the results of this type of analysis in detail.

Nevertheless, some interesting patterns emerging from the simpler cross-tabular analysis is described below.

6.1. Age and gender of people living in occupied private dwellings

Internet access is analysed for people living in occupied private dwellings. The age group 0-4 is excluded from the analysis. People with ages between 5 and 14 have the highest proportion of access, followed by people in the 15-24 age range. The proportion tapers off sharply for people more than 55, with only a quarter of people 75 years or above having access to the Internet.

Access rates are similar for both sexes in the 5 -14 age group. For every age group selected between 25 and 54, women living in occupied private dwellings enjoyed higher proportions of access for any Internet. However, for people 55 years and above, males have higher access rates.

FIGURE 21: INTERNET ACCESS BY MALES BY AGE GROUP—August 2006

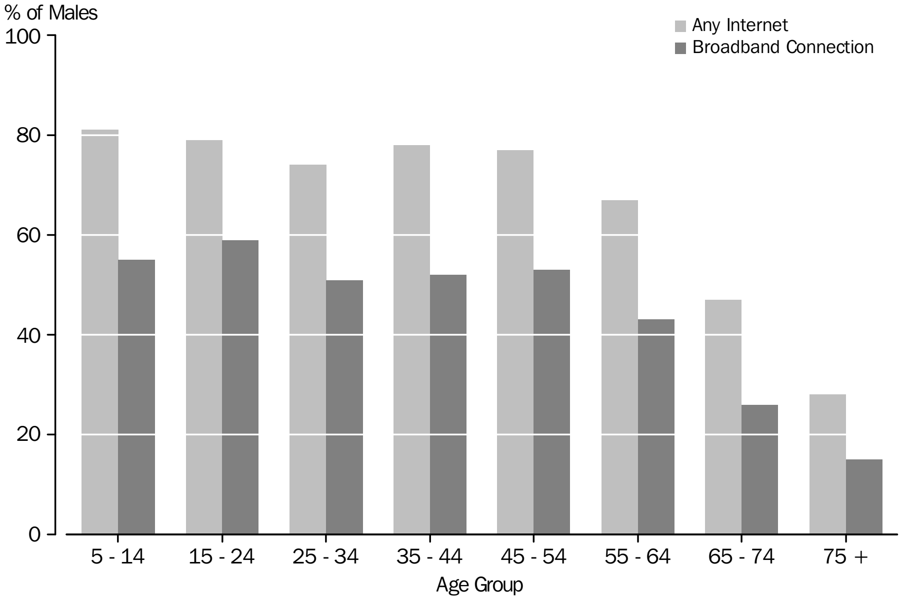
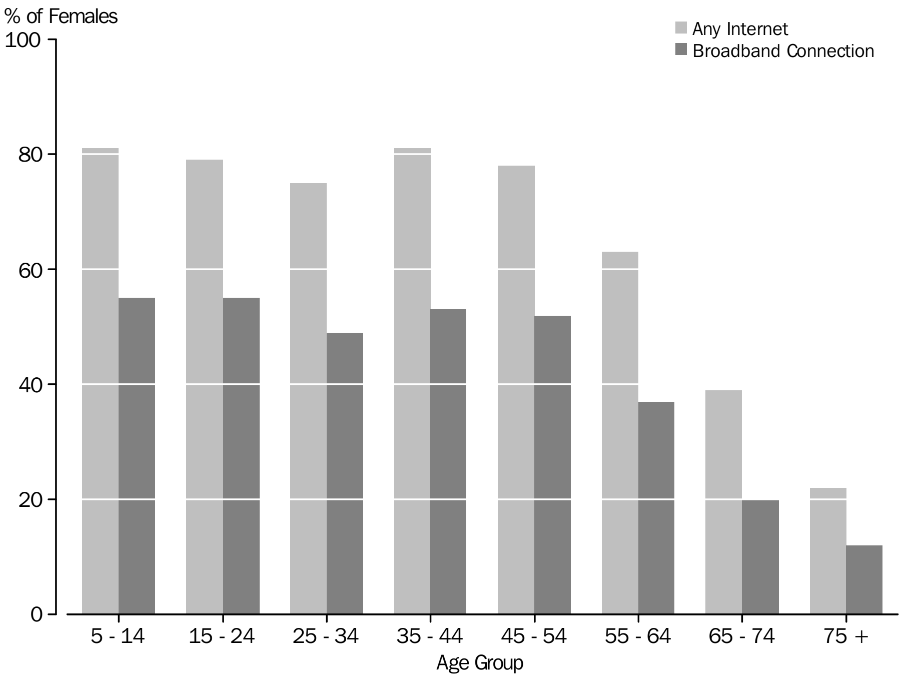


FIGURE 22: INTERNET ACCESS BY FEMALES BY AGE GROUP—August 2006

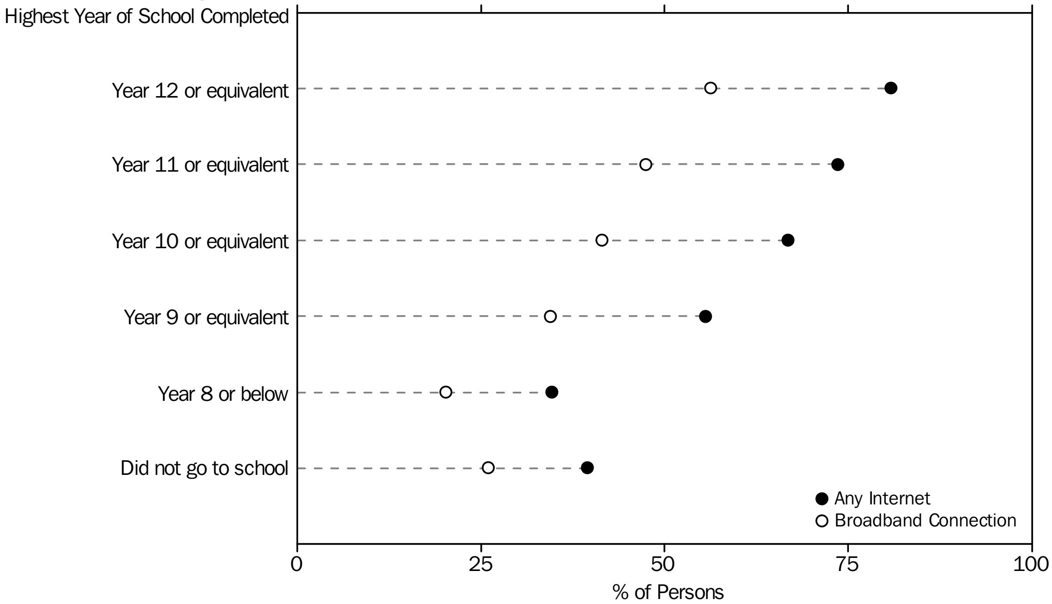


6.2. Education attainment

6.2.1 INTERNET ACCESS BY THE HIGHEST YEAR OF SCHOOL COMPLETED BY INDIVIDUALS

For the purpose of this analysis, people living in private occupied dwellings were categorised on the basis of highest year of school completed. People with year 12 or equivalent as the highest year of school attended recorded significantly higher proportion of any Internet (81%) and Broadband (56%) access in comparison with groups with fewer years of schooling. About two-thirds of people with year 8 or below schooling, or who did not go to school, do not have access to any Internet (Figure 23).

FIGURE 23: INTERNET ACCESS BY THE HIGHEST YEAR OF SCHOOL COMPLETED, by Individuals—August 2006

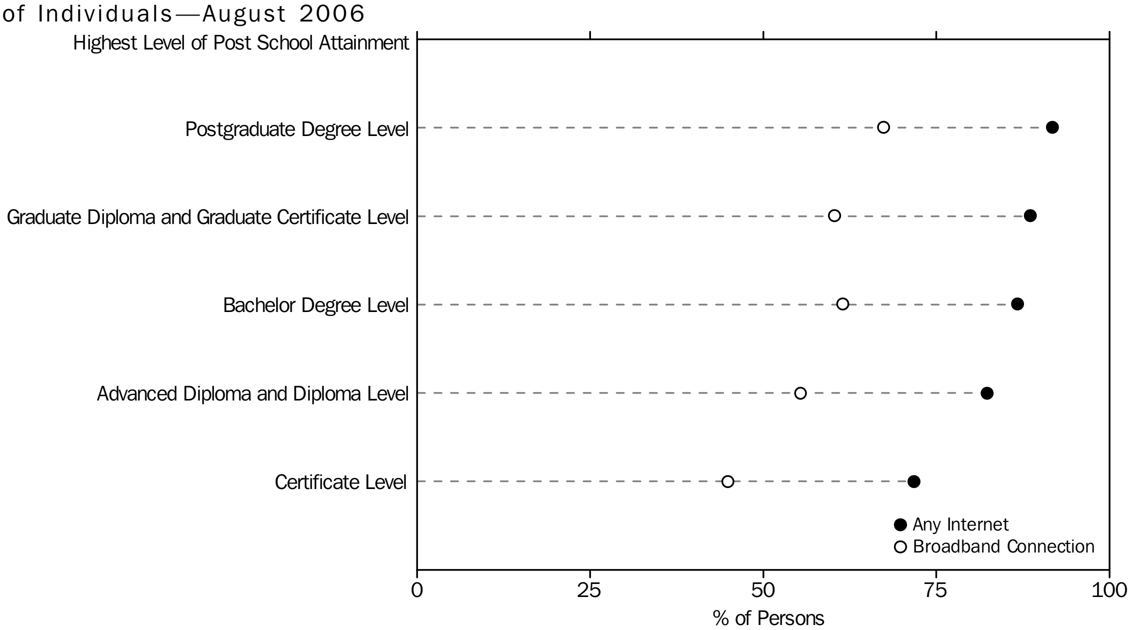


6.2. Education attainment continued

6.2.2 INTERNET ACCESS BY THE HIGHEST LEVEL OF POST SCHOOL EDUCATIONAL ATTAINMENT OF INDIVIDUALS.

This analysis was based on the highest level of post school educational attainment for people living in private dwellings. The proportion of any Internet and Broadband access increased with increasing level of educational qualification. People with postgraduate level degrees have the highest proportion of any Internet (92%) and Broadband (67%) access. Within the selected categories, people with Certificate level education, had significantly lower levels of connectivity (Figure 24).

FIGURE 24: INTERNET ACCESS BY THE HIGHEST LEVEL OF POST SCHOOL, Educational Attainment of Individuals—August 2006



6.3. Labour force status

6.3.1 LABOUR FORCE STATUS OF INDIVIDUALS

The analysis is based on the labour force status of individuals living in private dwellings, excluding about a million individuals who did not respond to the labour force status question.

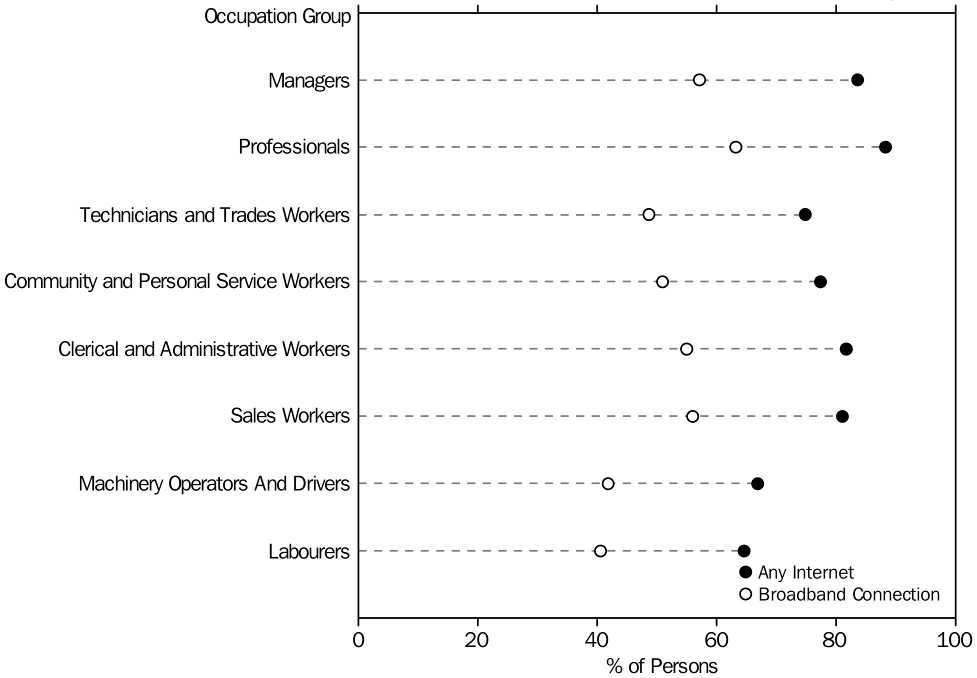
Employed people have higher levels of Internet access than unemployed people (Figure 25). Within the unemployed group, people looking for full time work have significantly lower levels of access than those looking for part time work. People not in the labour force, largely comprising older Australians, have the lowest level of connectivity. Results from HUIT surveys have produced similar findings.

FIGURE 25: INTERNET ACCESS BY THE LABOUR FORCE STATUS OF INDIVIDUALS—August 2006

6.4. Occupation

The analysis is based on stated occupations of people living in private dwellings. Managers, professionals, sales workers, and clerical and administrative workers have significantly higher levels of Internet access in comparison with labourers and machinery operators and drivers.

FIGURE 26: INTERNET ACCESS BY OCCUPATION OF INDIVIDUALS—August 2006

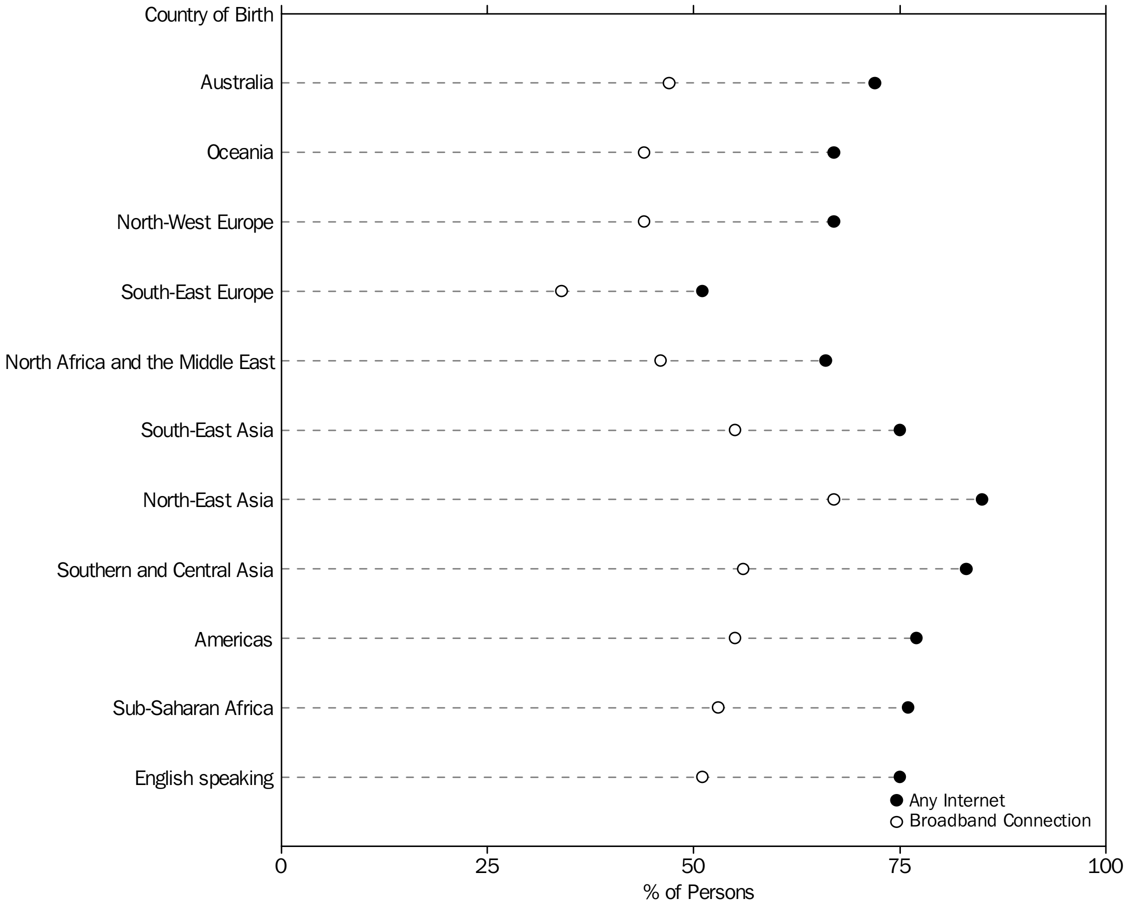


6.5. Place of birth

Internet access by place of birth is reported. Place of birth is separately reported for Australia and other groupings. English speaking is the group of countries, other than Australia, in which the main language is English. They include New Zealand, the United Kingdom, England, Channel Islands, Isle of Man, Northern Ireland, Scotland, Wales, Ireland, South Africa, The United States of America and Canada.

People born in North-East Asia have the highest level of connectivity, followed closely by people born in Southern and Central Asia. These two groups have significantly higher level of connectivity in comparison with other groups, including people born in Australia. People born in Southern and Eastern European countries have the lowest proportions of Internet (51%) and Broadband (34%) access, considerably lower than the national average.

FIGURE 27: INTERNET ACCESS BY PLACE OF BIRTH OF INDIVIDUALS—August 2006



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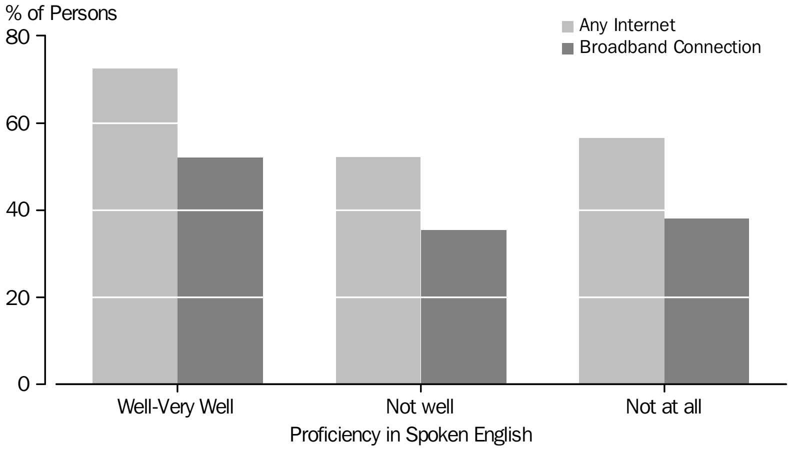
6.6. Proficiency in spoken English

A variable related to country of birth, proficiency in spoken English, has a strong influence on connectivity, with people proficient in English having considerably higher connectivity in comparison with people who do not speak the language at all, or do not speak it well (Figure 28).

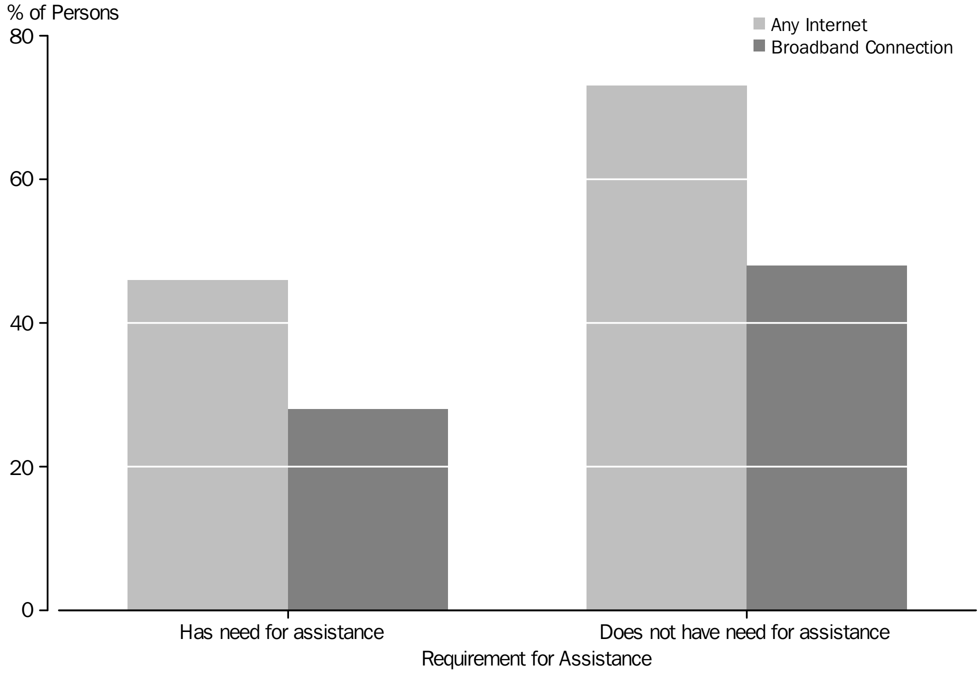
FIGURE 28: INTERNET ACCESS BY PROFICIENCY IN SPOKEN ENGLISH—August 2006



6.7 People with need for assistance in core activities

The 2006 Census included a question to quantify the number of people with a profound or severe disability. People with a profound or severe disability are defined as those people needing help or assistance in one or more of the three core activities of self-care, mobility and communication, because of a disability, long term health condition (lasting six months or more) or old age. Such people have significantly lower access to the Internet in comparison with those who do not have any need for assistance with core activities (Figure 29).

FIGURE 29: INTERNET ACCESS BY PEOPLE WITH NEED FOR ASSISTANCE, in Core Activities—August 2006



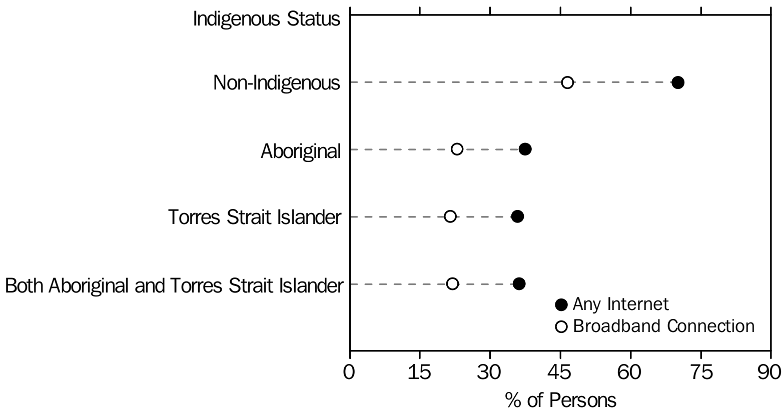
CHAPTER 7: INTERNET ACCESS BY INDIGENOUS PEOPLE

In 2006, 455,028 Aboriginal and Torres Strait Islander (indigenous) people were counted in the Census, representing an increase of 11% between the 2001 and 2006 Censuses. The census count for the total population has increased by 6% over the same period. Over the past 20 years, the census count of Indigenous people has doubled from 227,593 in 1986. This high level of growth is a result of natural increase (the excess of births over deaths) and non-demographic factors such as people identifying their Indigenous origin for the first time in the Census.

In this chapter Internet and Broadband connectivity for Indigenous people is examined. In a previous study based on 2001 Census, Daly (2005) revealed a relationship between the low levels of Internet usage by Indigenous Australians and the lower levels of income and education of the Australian Indigenous people. In this chapter, the relationship between Internet connectivity for Indigenous people and some selected socio-economic factors is examined.

Figure 30 presents the variation in Internet connectivity among non-Indigenous and Indigenous people. Internet connectivity for non-Indigenous people was almost double compared with their Indigenous counterparts. Aboriginal, Torres Straight Islanders and Both Aboriginal and Torres Straight Islanders had similar proportions of Internet and Broadband connectivity.

FIGURE 30: INTERNET ACCESS BY INDIGENOUS STATUS (a)—August 2006



(a) Includes persons of age 15 years or more

7.1. Place of enumeration

7.1.1. INDIGENOUS REGIONS

Indigenous Regions comprise the highest level of the Australian Indigenous Geographic Classification (AIGC) and are largely based on the former Aboriginal and Torres Strait Islander Commission (ATSIC) Region boundaries. In 2006, nine out of the 37 Indigenous Regions contain half of the Indigenous population of Australia. These are Sydney, Brisbane, Coffs Harbour, Perth, Townsville, Cairns, Adelaide, Tasmania and Wagga Wagga (ABS, 2007b).

The Indigenous Regions with the highest usual residence census counts of indigenous people are Sydney (41,804), Brisbane (41,369) and Coffs Harbour (40,041) all located along the eastern seaboard of Australia. This is consistent with the 2001 Census results. The Indigenous Regions with the highest proportion of Indigenous residents are outside major population centres and include the Torres Strait Indigenous Region in

7.1. Place of enumeration continued

7.1.1. INDIGENOUS REGIONS *continued*

Queensland(83%), and the Apatula and Jabiru Indigenous Regions in Northern Territory(79% and 77% respectively) (ABS, 2007b).

Apatula recorded the lowest Internet (2%) and Broadband (1%) connectivity. Jabiru, Nhulunbuy, Katherine, Kurunnurra, Cape York and Tennant Creek all recorded any Internet connectivity less than 10%. Indigenous people in the ACT had the highest Internet (64%) and Broadband (45%) connectivity.

TABLE 7: INTERNET ACCESS BY INDIGENOUS PERSONS BY PLACE OF ENUMERATION, INDIGENOUS REGION, August 2006

	ANY INTERNET		BROADBAND CONNECTION	
	Person Records	*Proportion of persons*	*Person Records*	*Proportion of persons*
	no.	%	no.	%
Indigenous				
Sydney	12 221	55	8 607	38
Queanbeyan	1 894	43	1 043	23
Bourke	899	23	539	14
Coffs Harbour	9 895	47	5 643	27
Tamworth	2 338	32	1 291	18
Wagga Wagga	3 109	39	1 718	21
Dubbo	1 632	36	841	19
Melbourne	4 595	58	3 229	41
Non-Metropolitan Victoria	3 245	41	1 825	23
Brisbane	12 259	56	8 299	38
Cairns	2 530	28	1 488	17
Mount Isa	658	20	407	13
Cape York	272	7	139	3
Rockhampton	3 020	41	1 773	24
Roma	2 129	36	1 223	21
Torres Strait Indigenous Region	515	14	244	6
Townsville	3 196	35	1 908	21
Adelaide	3 620	41	1 980	23
Ceduna	189	19	104	10
Port Augusta	560	17	312	9
Perth	4 262	41	2 675	26
Broome	361	21	214	12
Kununurra	142	7	85	4
Narrogin	1 236	31	671	17
South Hedland	686	24	513	18
Derby	421	18	194	8
Kalgoorlie	425	17	274	11
Geraldton	554	23	315	13
Tasmania	5 128	53	2 614	27
Darwin	1 933	39	1 079	22
Alice Springs	519	24	301	14
Jabiru	184	4	91	2
Katherine	290	7	113	3
Apatula	111	2	71	1
Nhulunbuy	210	4	117	2
Tennant Creek	160	9	114	6
ACT	1 403	66	994	47
Other Territories - Indigenous Region not stated	5	39	2	15

7.1. Place of enumeration continued

7.1.2. REMOTENESS AREAS

In 2006, the largest proportion of Indigenous people in Australia live in Major Cities (31%). The remaining Indigenous population is evenly distributed across Inner Regional (22%), Outer Regional (23%) and Remote/Very Remote Australia combined (24%). States with a relatively high proportion of Indigenous people living in major cities include South Australia (48% of the total state Indigenous usual residence count), Victoria (48%) and New South Wales (42%). In contrast, 81% of the Indigenous population counted in the Northern Territory live in Remote/Very Remote areas. Likewise in Western Australia, 41% of the Indigenous population live in Remote/Very Remote areas (ABS, 2007b).

Table 8 summarises the connectivity of Indigenous people according to the remoteness classification of their place of enumeration. Indigenous people living in the major cities have 54% Internet and 37% Broadband access from home. This proportion decreases with increasing remoteness. The Indigenous persons living in very remote areas recorded only 8% of any Internet and 4% of Broadband access from home.

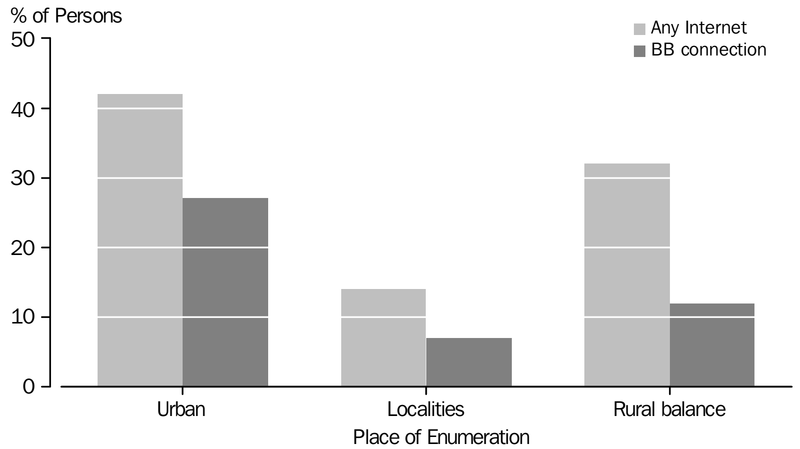
TABLE 8: INTERNET ACCESS BY INDIGENOUS PEOPLE BY PLACE OF ENUMERATION - REMOTENESS—August 2006

	Any Internet	*% Any Internet*	*Broadband*	*% BB connection*
	psns	%	psns	%
Major Cities	36 672	54	24 812	37
Inner Regional	21 051	48	11 996	27
Outer Regional	16 176	36	8 746	19
Remote	3 778	25	2 187	15
Very Remote	2 795	8	1 453	4

7.1.3. SECTION OF STATE STRUCTURE

Figure 31 summarises the proportions of Internet and Broadband access by Indigenous people in urban, bounded localities and rural balance areas. Rate of connectivity is highest in the Indigenous people living in urban areas and lowest in the bounded localities.

FIGURE 31: INTERNET ACCESS BY INDIGENOUS PERSONS, by Section of State Structure, August 2006



7.1. Place of enumeration continued

7.1.3. SECTION OF STATE STRUCTURE *continued*

Table 9 gives a spread of connectivity in urban and localities in each state and territory for Indigenous people. Bounded localities and rural balance in the Northern Territory recorded the lowest connectivity.

TABLE 9: INTERNET ACCESS BY INDIGENOUS PEOPLE(a)(b), by Place of Enumeration - Section of State Structure—August 2006(c)

	ANY INTERNET		BROADBAND CONNECTION	
	Person Records	*Proportions of persons*	*Person Records*	*Proportions of persons*
	no.	%	no.	%
Indigenous				
NSW Rural	3 313	47	1 270	18
NSW Localities	1 268	34	737	20
NSW Urban	27 378	45	17 662	29
VIC Rural	693	50	272	20
VIC Localities	184	48	92	24
VIC Urban	6 964	50	4 689	33
QLD Rural	2 369	44	883	17
QLD Localities	1 111	14	544	7
QLD Urban	21 100	41	14 055	28
SA Rural	438	24	119	6
SA Localities	152	16	21	2
SA Urban	3 776	37	2 255	22
WA Rural	715	17	294	7
WA Localities	462	11	207	5
WA Urban	6 911	34	4 443	22
TAS Rural	1 159	55	337	16
TAS Localities	388	51	187	24
TAS Urban	3 578	53	2 087	31
NT Rural	386	6	174	3
NT Localities	249	3	124	1
NT Urban	2 774	24	1 588	14
ACT Rural	3	30	—	—
ACT Urban	1 400	66	994	47
Other Rural	26	20	14	11
Other Localities	4	33	4	33
Other Urban	3	100	—	—

— nil or rounded to zero (including null cells)

(a) Includes Aboriginal, Torres Straight Island and both Aboriginal and Torres Staright Island People

(b) Includes persons of age 15 years or more

(c) Cells in this table have been randomly adjusted to avoid the release of confidential data.

7.2. Income

Table 10 compares the connectivity of Indigenous and non-Indigenous people according to their weekly equivalised household income. The results show that the Indigenous people in each income group had much lower connectivity compared to those non-Indigenous people in the same income categories. Even the Indigenous people in the highest weekly income range ($2000 or more) have about 20 percentage points lower connectivity compared to their non-Indigenous counterparts in the same income range. Thus income may not be the only factor driving the lower connectivity rate for Indigenous people.

7.2. Income continued

TABLE 10: INTERNET ACCESS BY WEEKLY EQUIVALISED HOUSEHOLD INCOME , by Indigenous Status—August 2006(a)

	ANY INTERNET		BROADBAND CONNECTION	
	Person Records	*Proportions of persons*	*Person Records*	*Proportions of persons*
	no.	%	no.	%
Non-Indigenous				
Nil or Negative income	86 572	63	62 905	46
$1-$599	3 733 641	59	2 240 453	35
$600-$999	3 210 953	79	2 118 836	52
$1000-$1999	2 667 082	87	1 953 255	64
$2000+	369 325	89	293 365	71
Indigenous				
Nil or Negative income	646	29	384	17
$1-$599	64 568	31	37 921	18
$600-$999	30 841	63	19 362	40
$1000-$1999	15 420	75	10 340	50
$2000+	1 168	67	879	51

(a) Cells in this table have been randomly adjusted to avoid the release of confidential data.

7.3. Labour force status

Table 11 compares the rate of connectivity for Indigenous people and non-indigenous people by their labour force status. Among the non-Indigenous people, people not in the labour force have the lowest connectivity (54% any Internet and 34% Broadband). The full-time working Indigenous people (the group with the highest connectivity for Indigenous people), have only 56% any Internet and 35% Broadband.

TABLE 11: INTERNET ACCESS BY LABOUR FORCE STATUS BY INDIGENOUS STATUS—August 2006(a)

	ANY INTERNET		BROADBAND CONNECTION	
	Person Records	*Proportions of persons*	*Person Records*	*Proportions of persons*
	no.	%	no.	%
Non-Indigenous				
Employed, worked full-time	4 232 084	79	2 858 790	53
Employed, worked part-time	2 016 167	81	1 368 968	55
Employed, away from work	373 289	76	247 542	50
Unemployed, looking for full-time work	166 587	63	107 536	41
Unemployed, looking for part-time work	126 472	75	87 247	51
Not in the labour force	2 426 102	54	1 528 799	34
Indigenous				
Employed, worked full-time	32 451	56	20 156	35
Employed, worked part-time	17 164	42	10 475	25
Employed, away from work	4 082	41	2 496	25
Unemployed, looking for full-time work	4 097	30	2 484	18
Unemployed, looking for part-time work	1 870	33	1 119	20
Not in the labour force	26 048	27	15 597	16

(a) Cells in this table have been randomly adjusted to avoid the release of confidential data.

7.4. Education

Table 12 gives a comparison of the connectivity for Indigenous and non-Indigenous people by their highest year of school completed. Both Indigenous and non-Indigenous people recorded the highest rate of connectivity in the category Year 12 or equivalent. However, the rate was about 25% lower for the Indigenous people in the same category.

TABLE 12: INTERNET ACCESS BY THE HIGHEST YEAR OF SCHOOL COMPLETED BY INDIGENOUS STATUS—August 2006(a)

	ANY INTERNET		BROADBAND CONNECTION	
	Person Records	*Proportions of persons*	*Person Records*	*Proportions of persons*
	no.	%	no.	%
Non-Indigenous				
Year 12 or equivalent	4 964 919	81	3 463 140	57
Year 11 or equivalent	1 064 360	74	686 119	48
Year 10 or equivalent	2 193 070	68	1 363 285	42
Year 9 or equivalent	543 925	57	337 173	35
Year 8 or below	340 289	36	197 804	21
Did not go to school	45 836	41	30 219	27
Indigenous				
Year 12 or equivalent	27 055	56	17 133	35
Year 11 or equivalent	11 453	43	7 047	27
Year 10 or equivalent	28 141	41	16 943	25
Year 9 or equivalent	9 874	31	5 939	19
Year 8 or below	5 880	17	3 343	10
Did not go to school	512	11	272	6

(a) Cells in this table have been randomly adjusted to avoid the release of confidential data.

Further to the examination of the highest year of school completed, in Table 13 the difference of the connectivity between Indigenous and non-Indigenous people according to their highest level of post school education attainment is examined. As seen before in income, labour force status and the highest year of school completed, the highest level of post school education attainment also showed that rate of connectivity for Indigenous people in the same categories are lower compared to the rate of connectivity of their non-indigenous counterparts.

7.4. Education continued

TABLE 13: INTERNET ACCESS BY THE HIGHEST LEVEL OF EDUCATIONAL ATTAINMENT, by Indigenous Status—August 2006

	ANY INTERNET		BROADBAND CONNECTION	
	Person Records	*Proportions of persons*	*Person Records*	*Proportions of persons*
	no.	%	no.	%
Non-Indigenous				
Postgraduate Degree Level	351 051	92	258 436	68
Graduate Diploma and Graduate Certificate Level	188 671	89	128 543	60
Bachelor Degree Level	1 476 720	87	1 048 213	62
Advanced Diploma and Diploma Level	854 500	83	575 390	56
Certificate Level	1 731 724	72	1 086 423	45
Indigenous				
Postgraduate Degree Level	873	84	562	54
Graduate Diploma and Graduate Certificate Level	732	71	474	46
Bachelor Degree Level	5 391	73	3 402	46
Advanced Diploma and Diploma Level	4 767	62	2 921	38
Certificate Level	16 790	51	10 118	31

7.5 Summary of Analysis

Results of the tables 7 to 13 indicate that Internet connectivity for Indigenous people is considerably lower compared to their non-Indigenous counterparts for most categories. The lower rate of connectivity for Indigenous people might be attributed to a range of several socio-economic factors such as income, education and labour force status. The results of regression modelling, discussed in Chapter 8, reinforce these findings.

CHAPTER 8: INTERNET CONNECTIVITY BY COMBINED GEOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS

In chapters 3 through 6 of this paper, Internet connectivity has been analysed from regional and socio-economic perspectives. In chapter 7, Internet connectivity for Indigenous people has been investigated. Higher income, presence of school going children in families and geographic location (with regard to remoteness) emerged as factors having relatively strong take-up of the Internet in cross-tabular outputs and Chapter 8 combines key outputs of this analysis. This chapter analyses Internet connectivity, disaggregated by remoteness area, by selected income ranges and household characteristics. The analysis by income is extended further to indigenous and non-indigenous people.

TABLE 14: ACCESS TO ANY INTERNET AND BROADBAND CONNECTION , by Remoteness and Weekly Equivalised Household Income

	NIL, NEGATIVE OR BETWEEN $1 AND $399		BETWEEN $400 AND $1,299		$1,300 OR MORE	
	Any Internet	*BB connection*	*Any Internet*	*BB connection*	*Any Internet*	*BB connection*
	%	%	%	%	%	%
Major Cities	42	26	72	48	87	66
Inner Regional	39	19	67	37	82	52
Outer Regional	37	15	64	32	79	46
Remote	35	14	63	33	79	50
Very Remote	19	10	59	33	79	50

CHAPTER 8: INTERNET CONNECTIVITY BY COMBINED GEOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS. *continued*

TABLE 15: ACCESS TO INTERNET BY INDIGENOUS STATUS , by Remoteness by Weekly Equivalised Household Income

	NIL, NEGATIVE OR BETWEEN $1 AND $399		BETWEEN $400 AND $1,299		$1,300 OR MORE	
	Any internet	*BB Connection*	*Any internet*	*BB Connection*	*Any internet*	*BB Connection*
	%	%	%	%	%	%
Non-Indigenous						
Major Cities	42	26	72	49	87	66
Inner Regional	40	20	68	37	82	52
Outer Regional	38	16	65	32	79	46
Remote	38	15	65	33	79	50
Very Remote	37	21	65	37	80	50
Indigenous						
Major Cities	36	22	64	43	80	59
Inner Regional	34	19	60	33	74	46
Outer Regional	26	13	50	27	69	42
Remote	15	8	44	25	65	42
Very Remote	6	3	29	16	62	39

The results suggest that for the overall population income has a strong relationship with Internet connectivity which is more sensitive to income than geographic spread. For a selected income range (such as equivalised household income of between $400 and $ 1,299 per week) there is a difference of 16 percentage points in Broadband connectivity rates for outer regional (even lower than very remote) Australia and major cities. However, the difference in Broadband connectivity rates between the lower income range (between $1 and $399 as well as nil or negative income) and the higher income range ($1,300 or more) is 40 percentage points in both major cities and very remote Australia.

In relation to the Indigenous population, the analysis reveals that in addition to income, remoteness has a strong influence on connectivity. For example, the lowest income group has only 3% Broadband connectivity in very remote Australia compared with 22% in major cities.

Analysed with regard to family composition (see Table 16), couple families with children under 15 have the highest Broadband connectivity in all areas, ranging from 34% in very remote Australia, and 64% in major cities. There is also considerable difference within remoteness areas between couple families with and without children under 15. Compared across regions, connectivity rates for one parent families, with or without children under 15, are similar to couple families without children under 15, and are considerably lower than couple families with children (differences ranging from 15 percentage points for Outer Regional Australia to 24 points for very remote Australia. Connectivity for one parent families with or without children under 15 is particularly low (10% and 15% respectively) in very remote Australia, perhaps reflecting a combination of low income and regional disadvantage for these families.

CHAPTER 8: INTERNET CONNECTIVITY BY COMBINED GEOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS. *continued*

The above analysis brings out the complex relationship between Internet connectivity and relevant regional and socio-economic variables. Readers may have obtained enough information from this analysis, however those who wish to consider analysis undertaken in even greater details (and complexity) can consider Chapter 9 which tests relationships between such variables using regression analysis.

With the likelihood of collinearity between explanatory variables such as remoteness and income, cross-tabular analysis has its limitations. Multivariate regression analysis becomes a useful analytical tool for examining more complex situations.

TABLE 16: ACCESS TO THE INTERNET AND BROADBAND CONNECTION, by Remoteness and Family Composition

	COUPLE FAMILY WITH NO CHILDREN UNDER 15		COUPLE FAMILY WITH CHILDREN UNDER 15		ONE PARENT FAMILY WITH NO CHILDREN UNDER 15		ONE PARENT FAMILY WITH CHILDREN UNDER 15		OTHER FAMILY	
	Any Internet	*BB connection*	*Any Internet*	*BB connection*	*Any Internet*	*BB connection*	*Any Internet*	*BB connection*	*Any Internet*	*BB connection*
	%	%	%	%	%	%	%	%	%	%
Major Cities	65	43	86	64	65	43	65	42	64	45
Inner Regional	59	30	82	49	57	30	59	32	44	24
Outer Regional	56	26	78	41	50	26	52	26	39	21
Remote	59	29	78	43	44	24	44	23	33	17
Very Remote	55	31	54	34	25	15	18	10	17	8

CHAPTER 9: REGRESSION ANALYSIS TO STUDY THE INFLUENCE OF SOCIO-ECONOMIC AND REGIONAL CHARACTERISTICS ON THE INTERNET AND BROADBAND ACCESS

In Chapters 3 to 8 of this paper, a range of regional and socio-economic variables were analysed to understand the patterns of Internet and Broadband access in Australia in 2006. Although some clear patterns were observed, it is difficult to isolate, from the many socio-economic and regional variables examined, the key drivers for connectivity. Cross-tabular analyses do not control for the examined influence of other factors.

To deal with this shortcoming of cross-tabular analyses, multiple regression analysis was carried out. Multiple regression techniques, by disentangling the effects of multiple factors, estimate the separate effect of each individual independent variable (such as age) on the dependent variable (which is connection to Internet or Broadband), holding other variables (income, education etc) constant. It therefore helps identify the key factors influencing the Internet and Broadband access. The methodology underlying the regression analysis in this study broadly replicates the methodology adopted in the *Australia Online* study (Lloyd and Bill, 2004).

A binomial logistic regression model was used. A binomial logistic regression is a form of regression which is used when the dependent variable is dichotomous (value set to one or zero) and the independent variables are either dichotomous or continuous. A logistic regression can be used to predict the probability of an event occurring on the basis of continuous and /or categorical independent variables.

The odds associated with a particular event (e.g. have Broadband access) are simply an indicator of the probability in favour of that event taking place. The odds ratio is the ratio of probability of an event occurring versus the probability of it not occurring. The odds of an event relative to a non-event (e.g. having an Internet access versus not having Internet access) can be expressed as follows:

$$Ln\{P_i/(1-P_i)\} = a_1 + b_1X_{i1} + \ldots + b_kX_{ik}$$

Where Ln is the natural log, Pi is the probability of an event for a person i, a1 is the intercept parameter, b s are regression parameters, and X s are a set of k explanatory variables representing individual i's observed characteristics. The parameters of the b vector can be estimated using standard maximum likelihood techniques.

The odds ratio can range from zero to infinity. If the odds ratio is greater than one, then that particular category is more likely than the reference category to have the Internet/Broadband access (within each variable one category is chosen to be the reference category). If the odds ratio is less than one, then that particular category is less likely than the reference category to have the Internet/Broadband access. The most common way of interpreting a logit is to convert it to an odds ratio using the exponential function.

Logistic regression models log-odds as a linear model, therefore predicted odds ratios are often a useful tool for displaying results. In this chapter we present the odds as an indicator for probability of an individual to have access to Internet/Broadband with respect to each socio-economic and regional variable when other independent variables are constant.

CHAPTER 9: REGRESSION ANALYSIS TO STUDY THE INFLUENCE OF SOCIO-ECONOMIC AND REGIONAL CHARACTERISTICS ON THE INTERNET AND BROADBAND ACCESS *continued*

The sign of the regression coefficient indicates positive or negative impacts of the selected independent variables on home Internet or Broadband connection. A positive coefficient for a particular variable and a category suggests that an individual with that particular characteristic is more likely to have access to Internet/Broadband when holding every other variables constant, compared to the reference category. The negative coefficient suggests that an individual is less likely to have access to Internet/Broadband when holding every other variables constant, compared to the reference category.

9.1. The data set

In creating the data set for the regression analysis the following data were excluded from the data set in line with the Australia online study based on the 2001 Census data:

- persons under 15 years of age
- people in migratory areas and off-shores
- overseas visitors
- non-private dwellings, unoccupied private dwellings and migratory and off-shore dwellings
- people who did not respond to the Internet question
- people who did not state their labour force status
- people who did not state their indigenous status
- people who did not state their level of non-school highest education attainment
- people in households where weekly equivalised household income was "not stated" or was only partially stated.
- After the omissions of these, the total number of observations used in the regression analyses is 12,691,410 out of a total of 20,061,646 persons counted on the Census night.

9.2. Regression modelling

Stepwise multiple regression analysis was carried out separately for Broadband access and Any Internet access. Table 17 gives a summary of the explanatory variables used and the categories included for each variable with the reference category. The explanatory variables (independent variables) were chosen based on the Australia online (Lloyd and Bill, 2004) study. The results of the regression analyses for each variable are expressed with respect to the reference category. Strong correlations between states/territories and remoteness areas in some states/territories yielded unrealistic results, and thus the former variable was excluded. Analyses with respect to remoteness were considered of more interest than states/territories variables from equity of access perspective. Therefore in this analysis states/territories were excluded. For convenience in this analysis, broad income groups were considered for the weekly equivalised household income.

The results of the multiple regression analyses are given in tables 18 and 19. Examination of likelihood of Chi-square ratio showed that the final models for both Broadband and Internet are highly significant at the 5% significance level. The maximum rescaled R-square values greater than 0.2 and percent concordant greater than 70% also indicated the two models can be considered as having a reasonable goodness of fit.

9.2. Regression modelling continued

TABLE 17:EXPLANATORY VARIABLES USED IN THE MULTIPLE REGRESSION ANALYSIS(a)

	Categories
Remoteness	Major cities (Reference)
	Inner regional
	Outer regional
	Remote
	Very remote
Weekly equivalised household income	Nil or negative income
	$1-$599 (Reference)
	$600-$999
	$1000-$1999
	$2,000 or more
Family composition	Couple family without any children (Reference)
	Couple family with dependent children
	Couple family without dependent children
	Single parent with dependent children
	Single parent without dependent children
	Other family
Age	Age 15 to 17
	Age 18 to 24
	Age 25 to 34
	Age 35 to 44 (Reference)
	Age 45 to 54
	Age 55 to 64
	Age 65 to 74
	Age 75+
Marital status	Male not married
	Female not married
	Male married
	Female married
Occupation and labour force status	Not in the labour force
	Unemployed
	Employed and low skilled worker *
	Employed and high skilled worker ** (Reference)
Highest post school education qualification	Post graduate qualifications
	Graduate diploma or certificate
	Bachelor degree
	Advance diploma and diploma
	Certificate level
	No post school qualifications (Reference)
Proficiency in spoken English	Very well and well (Reference)
	Not well
	Not at all
Indigenous status	Non-Indigenous (Reference)
	Indigenous

(a) Includes Aboriginal, Torres Straight Islanders and both Aboriginal and Torres Straight Islanders

** Low skill - broad category of machinery operators, drivers and labourers*

** * High skill - remainder of occupation categories. Please see the explanatory notes for details of these categories*

9.3. Results of the regression analysis of Internet access

Nearly all the explanatory variables were highly significant at the 5% significance level. Table 18 gives a summary of the stepwise regression modelling output.

TABLE 18: REGRESSION ANALYSIS RESULTS FOR INDIVIDUALS , with Home Access to any Internet Connection in 2006(a)

	Coefficient estimate	*P value*	*Odds ratio*
Intercept	0.4865	<0.0001	
Major cities (reference)			1.000
Inner Regional	–0.1814	<0.0001	0.834
Outer Regional	–0.3460	<0.0001	0.708
Remote	–0.4299	<0.0001	0.651
Very Remote	–0.9514	<0.0001	0.386
Nil or negative income	0.3850	<0.0001	1.470
$1-$599 (reference)			1.000
$600-$999	0.5216	<0.0001	1.685
$1000-$1999	0.9990	<0.0001	2.715
$2000 or more	1.3596	<0.0001	3.895
Couple family without any children (reference)			1.000
Couple family with dependent children	1.2916	<0.0001	3.639
Couple family without dependent children	0.6425	<0.0001	1.901
Single parent with dependent children	0.8290	<0.0001	2.291
Single parent without dependent children	0.2582	<0.0001	1.295
Other family	0.1698	<0.0001	1.185
Age15 to 17	1.1478	<0.0001	3.151
Age18 to 24	0.4812	<0.0001	1.618
Age25 to 34	–0.0933	<0.0001	0.911
Age35 to 44 (reference)			1.000
Age45 to 54	0.1280	<0.0001	1.137
Aage55 to 64	–0.0387	<0.0001	0.962
Age65 to 74	–0.4950	<0.0001	0.610
Age75 to plus	–1.1296	<0.0001	0.323
Female not married	–0.5868	<0.0001	0.556
Male not married	–0.5627	<0.0001	0.570
Male married (reference)			1.000
Female married *			
Post graduate qualifications	1.3615	<0.0001	3.902
Graduate diploma or certificate	1.0384	<0.0001	2.825
Bachelor degree	0.9051	<0.0001	2.472
Advance diploma and diploma	0.7695	<0.0001	2.159
Certificate level	0.2004	<0.0001	1.222
No post school qualification (reference)			1.000
Not in the labour force	–0.4165	<0.0001	0.659
Unemployed	–0.3020	<0.0001	0.739
Employed in low skill occupations	–0.4632	<0.0001	0.629
Employed in high skill occupations (reference)			1.000
English proficiency /very well (reference)			1.000
English proficiency not well	–0.4866	<0.0001	0.615
English proficiency not at all	–0.0444	<0.0001	0.957
Non-Indigenous (reference)			1.000
Indigenous	–1.1761	<0.0001	0.308

(a) N=12,691,410; Max-rescale R-Square=0.31; Percent concordant=80%

** Not significant at 5% level*

9.3. Results of the regression analysis of Internet access continued

9.3.1. REMOTENESS

Similar to Broadband, any Internet connections showed a large deviation between the major cities and regional areas. When other variables were held constant, it was found that people living in the inner Regional areas are about 17% less likely to have any Internet access. People living in very remote areas are about 61% less likely to have any Internet connection.

9.3.2. WEEKLY EQUIVALISED HOUSEHOLD INCOME

Weekly equivalised household income showed a strong positive relationship with having access to any Internet. Results show that higher the income, greater the likelihood of a person having any Internet connection. When all other variables are held constant, the likelihood of having any Internet access for persons with the equivalised household income of $1000 to $1999 are about 2.7 times more than people in the reference income group $1-$599. Odds of having any Internet access are about 3.9 times higher for those in the $2000 or more income group compared to those in the reference group.

9.3.3. FAMILY COMPOSITION

The likelihood of having any Internet access for people in families with dependent children is much higher (3.6 times) compared to those couple families without any children (reference group).

9.3.4. AGE

People in the 15 to 17 years age group are about 3.2 times more likely, and people in the 18 to 24 years group are about 1.6 times more likely, to have any Internet connectivity at home compared to those in the reference age group (35 to 44 years). The odds of having access to any Internet connection decrease with increasing age.

9.3.5. GENDER AND MARITAL STATUS

Compared to the reference group (married males), the likelihood of having any Internet connectivity at home for unmarried males is about 43% less likely, and for females about 44% less likely. Results for married females were found to be not significant in this analysis at the 5% significant level.

9.3.6. HIGHEST LEVEL OF POST-SCHOOL QUALIFICATIONS

The likelihood of having any Internet access by persons with post graduate qualifications are about 3.9 times the likelihood of those in the reference group (no post school qualifications). The probability of having any Internet access by persons with graduate certificate or diploma, bachelor degree or diploma are more than twice the probability of those in the reference group. People with certificate level qualifications are about 1.2 times more likely to have access to any Internet. The results show that the level of post school qualifications has a strong impact on an individual's likelihood of having access to any Internet.

9.3. Results of the regression analysis of Internet access continued

9.3.7. LABOUR FORCE STATUS AND OCCUPATION

The probability of having any Internet connection for people not in the labour force is 34% less compared to those people in the reference group (occupied in high skill jobs). The likelihood of having any Internet connection for unemployed persons is 26% less compared to those in the reference group. Although this is an i2% increase from the 2001 Census results (Lloyd 2004), it is interesting to note that likelihood of having any Internet connection for those people occupied in the low skill jobs is 37% less compared to those in the reference group.

9.3.8. PROFICIENCY IN SPOKEN ENGLISH

People with good spoken English proficiency are the reference group. The likelihood of having any Internet connection for those in the English proficiency not well are 38% less than those in the reference group. The probability of those people with very poor spoken English proficiency (English proficiency not at all) are about 4% less than the probability of those in the reference group.

9.3.9. INDIGENOUS STATUS

The likelihood of having any Internet connection for the indigenous people are about 69% less than non-Indigenous people (reference group). These are similar to those produced on the 2001 Census data (Lloyd 2004).

9.4. Results of the regression analysis of Broadband access

Nearly all the explanatory variables were highly significant at the 5% significance level. Therefore all variables are included in the final output. Table 19 gives a summary of the regression modelling output.

9.4. Results of the regression analysis of Broadband access continued

TABLE 19: REGRESSION ANALYSIS RESULTS FOR INDIVIDUALS, with Home Access to Broadband Connection in 2006(a)

	Coefficient estimate	*P value*	*Odds ratio*
Intercept	–0.5201	<0.0001	
Major cities (reference)			1.000
Inner Regional	–0.5107	<0.0001	0.600
Outer Regional	–0.7730	<0.0001	0.464
Remote	–0.7590	<0.0001	0.468
Very Remote	–0.8877	<0.0001	0.412
Nil or negative income	0.4964	<0.0001	1.643
$1-$599 (reference)			1.000
$600-$999	0.3416	<0.0001	1.407
$1000-$1999	0.7485	<0.0001	2.114
$2000 or more	1.2223	<0.0001	3.395
Couple family without any children (reference)			1.000
Couple family with dependent children	0.8677	<0.0001	2.381
Couple family without dependent children	0.4638	<0.0001	1.590
Single parent with dependent children	0.6086	<0.0001	1.838
Single parent without dependent children	0.0845	<0.0001	1.088
Other family	0.1657	<0.0001	1.180
Age15 to 17	0.8474	<0.0001	2.334
Age18 to 24	0.5519	<0.0001	1.737
Age25 to 34	0.0299	<0.0001	1.030
Age 35 to 44 (reference)			1.000
Age45 to 54	0.1538	<0.0001	1.166
Aage55 to 64 *			
Age65 to 74	–0.4337	<0.0001	0.648
Age75 to plus	–0.9700	<0.0001	0.379
Female not married	–0.4202	<0.0001	0.657
Male not married	–0.2269	<0.0001	0.797
Male married (reference)			1.000
Female married	–0.0178	<0.0001	0.982
Post graduate qualifications	0.5955	<0.0001	1.814
Graduate diploma or certificate	0.3845	<0.0001	1.469
Bachelor degree	0.4298	<0.0001	1.537
Advance diploma and diploma	0.3594	<0.0001	1.432
Certificate level	0.0317	<0.0001	1.032
No post school qualification (reference)			1.000
Not in the labour force	–0.2157	<0.0001	0.806
Unemployed	–0.1459	<0.0001	0.864
Employed in low skill ocupations	–0.3101	<0.0001	0.733
Employed in high skill occupations (reference)			1.000
English proficiency well/very well (reference)			1.000
English proficiency not well	–0.2445	<0.0001	0.783
English proficiency not at all	0.0824	<0.0001	1.086
Non-Indigenous (reference)			1.000
Indigenous	–0.7376	<0.0001	0.478

(a) N=12,691,410; Max-rescale R-square=0.22; Percent concordant=73%

** Not significant at 5% level*

9.4.1. REMOTENESS

Major cities and rest of the remoteness areas show a significant difference in Broadband access, when other variables are held constant. With respect to major cities, people living in the Inner Regions are about 40% less likely to have Broadband access. People living in Very Remote areas are about 59% less likely to have Broadband access. Those living in

9.4. Results of the regression analysis of Broadband access continued

9.4.1. REMOTENESS *continued*

Remote areas are about 53% less likely while those living in Outer Regional areas are about 54% less likely to have Broadband access.

9.4.2. WEEKLY EQUIVALISED HOUSEHOLD INCOME

The reference group is those with the weekly equivalised household income of $1 to $599. As seen in the tabular presentations in Chapter 4, even with other variables held constant, persons with nil or negative income show higher odds of having Broadband access compared to this lowest income group. People in other higher income groups are more likely to have Broadband access compared to people in the reference group. The odds of having access to Broadband increased with increasing income indicating that income is a significant determinant of Broadband connectivity of a person.

9.4.3. FAMILY COMPOSITION

Families with dependent students are more likely to have access to Broadband. The reference category for this variable is couple families without any children. Odds of a person in a couple family with dependent children (children under 15 and/or dependent students) are around 2.4 times the odds of the reference category. Odds of a person in a single parent family with dependent children are around 1.8 times the odds of the reference category. Thus the results indicate dependent students in a family increase the likelihood of home Broadband access

9.4.4. AGE

In comparison with the reference category (35 to 44 years) persons in the 15 to 34 age group are more likely to have Broadband access while those in the 45 years or more age group are less likely. A person in the age between 15 and 17 is about 2.3 times more likely to have Broadband access compared to a person in the reference group. A person in the age between 18 and 24 is about 1.7 times more likely to have Broadband access with respect to a person in the reference age group. The likelihood of Broadband connectivity decreased after 55 years.

9.4.5. GENDER AND MARITAL STATUS

Compared to married males, married females are as likely to have Broadband access. Unmarried females are about 34% and unmarried males are about 20% less likely to have Broadband access compared to married males.

9.4.6. HIGHEST LEVEL OF POST-SCHOOL QUALIFICATIONS

The results indicate that higher the level of post-school qualifications of an individual, the higher the likelihood of having Broadband access. Compared to the people with no post school qualifications, people with post graduate degrees are about 1.8 times more likely to have Broadband access. An individual with a bachelor degree is about 1.5 times more likely to have Broadband access compared to people in the reference category.

9.4. Results of the regression analysis of Broadband access continued

9.4.7. LABOUR FORCE STATUS AND OCCUPATION

People in high skill occupations are more likely to have Broadband access compared to those in low skill occupations, unemployed and not in the labour force. Unemployed people are about 14% less likely to have Broadband access while people not in the labour force are about 19% less likely to have Broadband access compared to those occupied in the high skill jobs. People occupied in the low skilled occupations such as labourers, machine operators and drivers are about 27% less likely to have Broadband access.

9.4.8. PROFICIENCY IN SPOKEN ENGLISH

People with less spoken English proficiency are about 22% less likely to have Broadband access with respect to people with good proficiency in English. Surprisingly, people with no spoken English proficiency at all were found to be about 9% more likely to be having Broadband access compared to those with good spoken English proficiency, when other variables are held constant. This could be due to the importance of the Internet to international communication and research.

9.4.9. INDIGENOUS STATUS

Compared to non-Indigenous people, Indigenous people (Aboriginal, Torres Straight Island or both Aboriginal and Torres Straight Island communities) are about 52% less likely to have Broadband access.

9.5. Key conclusions from results of regression analysis

The results of regression analysis of both any Internet and Broadband connection suggest that level of income, having dependent children in the family, attainment of post school qualifications and age of a person have significant influence on an individual's likelihood of having any Internet or Broadband connection at home. There was a clear difference in the likelihood of having any Internet or Broadband connection between those living in the major cities and other geographic areas. Compared with the 2004 study based on Census 2001 data results of the analysis reveal similar relationships between Internet access and explanatory variables such as income, education and age, although there are differences in the magnitudes of the odds ratios.

SECTION **5**

CONCLUSION

CHAPTER 10: CONCLUSION

With a few exceptions, the results of this study are broadly in line with the Lloyd and Bill (2004) analysis based on Census 2001 results. In broad terms, the study shows that differences in connectivity persist across regional, as well as socio-economic characteristics such as income and educational attainment.

Relevance to policy formulation

There is growing interest in the Internet and Broadband as general purpose technologies that are significantly influencing the way Australian society interacts in commercial, social, entertainment and educational dimensions. Equity of access, speed and cost of these technologies and skills required to maximise their effective use, are important matters for policy and more general concern.

The 2006 Census data provides considerable opportunities for better understanding Internet access across Australia. In particular, it provides the most detailed information available on the profile of access in Australia by geographic spread. While, download speed is only addressed in broad terms, with Broadband and (by deduction) non - Broadband (largely Dial-up) measures, this information, in conjunction with geographic and socio-economic profiles, provides a useful data source to infer policy matters.

Care should be exercised in some other aspects in drawing conclusions from the Census data alone. For example, the 2006 Census did not directly measure cost and skills as barriers to connectivity, but it does provide data on income and education attainment. However these are at best only proxy indicators for such barriers and care should be exercised in drawing any specific conclusions from these data alone. Any analysis of these factors should also consider a range of other data sources (such as HUIT, which specifically identifies such barriers).

It is hoped that taken together, the information provided in this paper, in conjunction with other source of data, will help in addressing policy issues relating to infrastructure, awareness and targeted assistance to identified population groups.

Potential future work emerging from this study

SYNTHETIC ESTIMATES FROM SURVEYS

The Census provides aggregate as well as fine-level benchmarks for regional and socio-economic data. These benchmarks will be useful for validating results of both supply and use of information technology surveys in future years. In addition, the results can be used for model-based fine level estimates from broader survey data.

CASE STUDIES

The details of the study reveal some interesting pictures. Pockets of high level connectivity exist in Remote and Very Remote areas. Conversely, there are areas of poor connectivity in areas adjacent to well connected locations. Similarly, it emerged from the study that people with poor English language skills have higher rates of access in comparison with those who speak the language well. Delving into the underlying

Potential future work emerging from this study continued

CASE STUDIES *continued*

reasons - which might be related to geography, technology, awareness, cultural or simply lifestyle - is beyond the scope of this study, but could form the basis of future study or research for policy departments, social researchers as well as producers of ICT goods and services.

Census 2011

At the time of preparation of this report, the ABS is seeking submissions from stakeholders for topics for the 2011 Census. Given the ever changing technological environment, it is difficult to predict with absolute confidence the direction technology will take in the coming four years. It appears probable, however, that Broadband connectivity will still remain an important issue. Even if Broadband penetration approaches saturation levels by then, the focus might shift to type of Broadband technology, the speed of connections, and purposes of use. It is hoped that this study will provide data users with some insight, within the constraints of the Census guidelines, about the type of information relating to technology which might be effectively gathered from the next Census.

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