



Measuring Australia's Digital Divide

The Australian Digital Inclusion Index 2017

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Executive Summary

Australians go online to access a growing range of education, information, government, and community services. Increasingly, they also participate in online communities and create digital content. But some people are missing out on the benefits of connection. Digital inclusion is based on the premise that everyone should be able to make full use of digital technologies – to manage their health and wellbeing, access education and services, organise their finances, and connect with friends, family, and the world beyond.

Digital inclusion is based on the premise that everyone should be able to make full use of digital technologies

The Australian Digital Inclusion Index (ADII) was first published in 2016, providing the most comprehensive picture of Australia's online participation to date. The ADII measures three vital dimensions of digital inclusion: Access, Affordability, and Digital Ability. It shows how these dimensions change over time, according to people's social and economic circumstances, as well as across geographic locations. Scores are allocated to particular geographic regions and sociodemographic groups, over a four-year period (2014, 2015, 2016, and 2017). Higher scores mean greater digital inclusion. This new ADII report incorporates data collected up to March 2017 and updates our findings from 2016.

Overall, digital inclusion is growing in Australia

Australians are spending more time – and are doing more – online. Since 2014, when data was first collected, Australia's overall digital inclusion score has improved by 3.8 points, from 52.7 to 56.5. In 2016–2017 alone, Australia's score rose by 2.0 points, from 54.5 to 56.5. Scores for every state and territory also increased over this period. While their individual scores increased by varying amounts, the relative ranking of states and territories remains unchanged since the 2016 report.

Table 1: Ranked scores for states and territories (ADII 2017)

| Rank | State/Territory | ADII Score | Points change since 2016 | Ranking change since 2016 |
|------|---------------------|-------------|--------------------------|---------------------------|
| 1 | ACT | 59.9 | +0.1 | – |
| 2 | Victoria | 57.5 | +1.7 | – |
| 3 | New South Wales | 57.4 | +2.5 | – |
| 4 | Northern Territory* | 56.9 | +2.4 | – |
| 5 | Western Australia | 56.2 | +2.1 | – |
| 6 | Queensland | 55.3 | +1.8 | – |
| 7 | South Australia | 53.9 | +2.4 | – |
| 8 | Tasmania | 49.7 | +1.6 | – |
| | Australia | 56.5 | +2.0 | – |

* Sample <100, treat with caution. **Source:** Roy Morgan Research, April 2016–March 2017

The gaps between digitally included and excluded Australians are substantial and widening

Across the nation, digital inclusion follows some clear economic and social contours. In general, Australians with low levels of income, education, and employment are significantly less digitally included. There is still a 'digital divide' between richer and poorer Australians.

In 2017, people in low income households have a digital inclusion score of 41.1, which is 27 points lower than those in high income households (68.1). Worryingly, the gap between people in low and high income households has widened over the past four years, as has the gap between older and younger Australians. Particular geographic communities are also experiencing digital exclusion. Tasmania remains Australia's least digitally included state on 49.7 (6.8 points below the national average), followed by South Australia on 53.9 (2.6 points below).

Access continues to improve

Nationally, Digital Access has improved steadily over the past four years, from 62.2 in 2014 to 69.6 in 2017. Australians are accessing the internet more often, using an increasingly diverse range of technologies, and with larger data plans than ever before.

Digital Ability remains an area for further improvement

Nationally, all three components of Digital Ability have improved over time: Attitudes (up 4.1 points since 2014), Basic Skills (up 6.1 points), and Activities (up 4.2). However, all three have risen from a low base. Digital Ability remains an important area for attention for policy makers, business, education, and community groups interested in improving digital inclusion.

Affordability remains a challenge for some excluded groups, although value has improved

Affordability is the only sub-index to have declined since 2014, despite a slight recovery in the preceding 12 months. While the value of internet services has improved, households are spending a growing proportion of their income on them (from 1% in 2014 to 1.19% in 2017). Thus, despite increasing value, Australia's overall Affordability score has fallen. This trend is reason for concern, particularly for people on low incomes.

Mobile-only users are less digitally included

More than four million, or one in five, Australians access the internet solely through a mobile device. This means they have a mobile phone or internet dongle with a data allowance, but no fixed connection. Mobile-only use is linked with socioeconomic factors, with people in low income households (29.8%), those who are not employed (24.0%), and those with low levels of education (27.6%) more likely to be mobile-only. Despite the benefits of mobile internet, this group is characterised by a relatively high degree of digital exclusion. In 2017, mobile-only users have an overall ADII score of 42.3, some 14.2 points below the national average (56.5).

Table 2: Ranked scores for groups with low digital inclusion (ADII 2017)

| Rank | Select Demographic | ADII Score | Points change since 2016 | Ranking change since 2016 |
|------------------|-----------------------------------|-------------|--------------------------|---------------------------|
| 1 | Household Income Q5 (Under \$35k) | 41.1 | +1.9 | – |
| 2 | Age 65+ years | 42.9 | +1.4 | – |
| 3 | Disability | 47.0 | +2.2 | ↑1 |
| 4 | Less Than Secondary Education | 47.4 | +2.7 | ↓1 |
| 5 | Household Income Q4 (\$35–60k) | 49.3 | +2.9 | – |
| 6 | Indigenous Australians | 49.5 | +2.8 | – |
| 7 | Unemployed | 50.2 | +2.2 | – |
| 8 | Age 50–64 years | 54.0 | +1.6 | – |
| 9 | Secondary Education | 57.1 | +1.6 | – |
| 10 | Household Income Q3 (\$60–100k) | 57.5 | +1.5 | – |
| Australia | | 56.5 | +2.0 | – |

Source: Roy Morgan Research, April 2016–March 2017

The ‘age gap’ is substantial and widening

People aged 65+ are Australia’s least digitally included age group (42.9, or 13.6 points below the national average). This ‘age gap’ has been steadily widening since 2015 (by approximately 0.5 points each year). As we explain in the section on older Australians (see p. 14), it is important to note the differences that exist amongst the diverse 65+ age group.

Women are less digitally included, particularly those aged 65+

Overall, Australian women have an ADII score 2.0 points below the score for men. While the gap between men and women is small in younger age cohorts (0.8 points for people aged 14–24; 1.0 points for those aged 25–34), the gap widens to 2.9 points in the 35–49 age group, and is largest among those aged 65+ (3.3 points).

For people with disability digital inclusion is low, but improving

Australians with disability have a low level of digital inclusion (47.0, or 9.5 points below the national average). However, nationally, their inclusion has improved steadily since 2014 (up 5.2 points), outpacing the national average increase over that period (3.8 points). It is important to note that the ADII data defines Australians with disability as those who are receiving either the disability support pension (DSP) from Centrelink, or a disability pension from the Department of Veterans’ Affairs. The ADII results therefore represent outcomes for a distinct subset of the wider community of Australians with disability.

Indigenous digital inclusion is low, but improving

Indigenous Australians also have low digital inclusion (49.5, or 7.0 points below the national average). However, their ADII score has improved by 4.5 points over four years (outpacing the national average gain of 3.8). It is important to note that the ADII data collection did not extend to remote Indigenous communities.

Some Australians are particularly digitally excluded

The ADII points to several sociodemographic groups that are Australia’s most digitally excluded in 2017, with scores well below the national average (56.5). In ascending order, these groups are: people in low income households (41.1), people aged 65+ (42.9), people with a disability (47.0), people who did not complete secondary school (47.4), Indigenous Australians (49.5), and people not in paid employment (50.2).

Geography plays a critical role

The ADII reveals substantial differences between rural and urban areas. In 2017 digital inclusion is 7.9 points higher in capital cities (58.6) than in country areas (50.7). The overall ‘Capital–Country gap’ has narrowed slightly since 2015, from 8.5 (2015), to 8.3 (2016), to 7.9 (2017). However, this is not reflected in all states and territories. While South Australia, Western Australia, and Queensland narrowed the gap between capital city and country residents, the gap widened in Victoria, New South Wales, and Tasmania.

Introduction

What is digital inclusion?

As more of our daily interactions and activities move online, digital technologies bring a growing range of important benefits – from the convenience of online banking, to accessing vital services, finding information, and staying in touch with friends and family.

At its heart, digital inclusion is about social and economic participation

However, these benefits are not being shared equally: some groups and individuals still face real barriers to participation. In recent years the digital divide has narrowed, but it has also deepened. The latest ABS data (2016)¹ shows around three million Australians

are not online. These Australians are at risk of missing out on the advantages and assistance digital technology can offer.

As the internet becomes the default medium for everyday exchanges, information-sharing, and access to essential services, the disadvantages of being offline grow greater. Being connected is fast becoming a necessity, rather than a luxury.

Digital inclusion is about bridging this 'digital divide'. It's based on the premise that all Australians should be able to make full use of digital technologies – to manage their health and wellbeing, access education and services, organise their finances, and connect with friends, family, and the world beyond.

The goal of digital inclusion is to enable everyone to access and use digital technologies effectively. It goes beyond simply owning a computer or having access to a smartphone. At its heart, digital inclusion is about social and economic participation: using online and mobile technologies to improve skills, enhance quality of life, educate, and promote wellbeing across the whole of society.

The Australian Digital Inclusion Index

The Australian Digital Inclusion Index (ADII) has been created to measure the level of digital inclusion across the Australian population, and to monitor this level over time. Using data collected by Roy Morgan Research, the ADII has been created through a partnership between RMIT University, Swinburne University of Technology, and Telstra. In setting out the 2017 data and findings, this report provides an update on the most detailed snapshot yet of digital inclusion across Australia.

A growing body of Australian and international research has outlined the various barriers to digital inclusion, the benefits of digital technologies, and the role of digital engagement in social inclusion. Single studies have also measured how different social groups access and use the internet. However, the first iteration of the ADII, published in 2016, was the first substantive effort to combine these findings into a detailed measure of digital inclusion across Australia.

In our increasingly digitised world, it is vital that all Australians are able to share the advantages of being connected. By presenting an in-depth and ongoing overview, identifying gaps and barriers, and highlighting the social impact of digital engagement, the ADII aims to inform policy, community programs, and business efforts to boost digital inclusion in this country.

Measuring digital inclusion

Digital inclusion poses both a complex challenge and an important goal – one that calls for a coordinated effort from multiple organisations, across many sectors.

If the benefits of digital technology are to be shared by everyone, barriers to inclusion must first be identified and tackled. Access and Affordability are part of the picture, but a person's Digital Ability (made up of their skills, online activities, and attitudes to digital technology) also plays a key role in helping or hindering participation.

Recent international efforts to measure digital inclusion or engagement include the 2017 Digital Economy and Society Index (DESI)², which summarises digital performance in European Union member states based on five main factors: connectivity, human capital, use of the internet, integration of digital technology, and digital public services. In the UK, the Digital Inclusion Outcomes Framework (DIOF) tracks digital inclusion, with a focus on improving access, internet use, skills and confidence, and motivation.³

In Australia, a broad measure of digital inclusion is captured by the Australian Bureau of Statistics' biennial Household Use of Information Technology (HUIT) survey⁴.

The ADII focuses on household and personal use of digital technologies. Existing research addressing other aspects of connectivity includes the EY Digital Australia State of the Nation report⁵, which explores factors driving digital engagement in a business context, and a joint survey by Infoxchange, Connecting Up, and TechSoup New Zealand⁶, examining digital technology in the not-for-profit sector. The Australian Communications and Media Authority (ACMA) also publishes regular research on the digital economy.⁷

Methodology in brief

Digital inclusion is a complex, multi-faceted issue that includes such elements as access, affordability, usage, skills, and relevance. To inform the design of the ADII, a Discussion Paper was publicly released in September 2015, and responses sought. Wider input was encouraged via a website, Twitter account, and hash tag.

Feedback showed a clear desire for highly detailed geographic and demographic data. In response, we have worked with Roy Morgan Research to obtain a wide range of relevant data from their ongoing, weekly Single Source survey of 50,000 Australians. Calculations for the ADII are based on a sub-sample of approximately 16,000 responses in each 12-month period. In these extensive face-to-face interviews, Roy Morgan collects data on internet and technology products owned, internet services used, personal attitudes, and demographics.

This rich, ongoing data source allows the ADII to report a wide range of relevant social and demographic information, and enables comparisons over time. For more detail on the Single Source survey, please see Appendix 1: Methodology.

Readers should note that the historical ADII results presented in this 2017 report (2014, 2015, and 2016) may differ slightly from those published in the 2016 report. This is the result of small refinements to some of the variables underlying the ADII. The 2017 and revised historical data are available at the ADII website: <https://digitalinclusionindex.org.au/>.

The Digital Inclusion score

The ADII is designed to measure three key aspects, or dimensions, of digital inclusion: Access, Affordability, and Digital Ability. These dimensions form the basis of three sub-indices, each of which is built up from a range of variables (survey questions) relating to internet products, services, and activities. The sub-indices contribute equally and combine to form the overall ADII.

The ADII compiles numerous variables into a score ranging from 0 to 100. The higher the overall score, the higher the level of inclusion. Scores are benchmarked against a 'perfectly digitally included' individual – a hypothetical person who scores in the highest range for every variable. While rare in reality, this hypothetical person offers a useful basis for comparison. This individual:

- accesses the internet daily, both at home and away
- owns multiple internet products, including a PC or tablet
- owns a mobile phone, with data, on the 4G network
- has a fixed broadband connection (cable or NBN)
- has a mobile and fixed internet data allowance greater than our benchmarks
- spends less money on the internet (as a proportion of household income) and receives more value (data allowance per dollar) than our benchmarks, and
- exhibits all the positive Attitudes, Basic Skills, and Activity involvement listed.

ADII scores are relative: they allow comparisons across sociodemographic groups and geographic areas, and over time. Score ranges indicate low, medium, or high levels of digital inclusion, as below:

Table 3: ADII and sub-index score ranges: Low, Medium, High

| | Low | Medium | High |
|--------------------------------|---------------|--------------|----------------|
| ACCESS | < 50 | 55-65 | > 70 |
| AFFORDABILITY | < 40 | 45-55 | > 60 |
| DIGITAL ABILITY | < 40 | 45-55 | > 60 |
| DIGITAL INCLUSION INDEX | <45 | 50-60 | > 65 |

Source: Roy Morgan Research, April 2016–March 2017

The sub-indices

Each of the ADII's three sub-indices is made up of various components, which are in turn built up from underlying variables (survey questions).

The **Access sub-index** has *three components*:

- **Internet Access:** frequency, places, and number of access points
- **Internet Technology:** computers, mobile phones, mobile broadband, and fixed broadband
- **Internet Data Allowance:** mobile and fixed internet.

The **Affordability sub-index** has *two components*:

- **Relative Expenditure:** share of household income spent on internet access
- **Value of Expenditure:** total internet data allowance per dollar of expenditure.

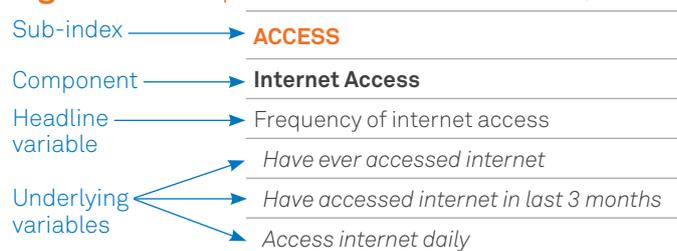
The **Digital Ability sub-index** has *three components*:

- **Attitudes**, including notions of control, enthusiasm, learning, and confidence
- **Basic Skills**, including mobile phone, banking, shopping, community, and information skills
- **Activities**, including accessing content, communication, transactions, commerce, media, and information.

Structure of the ADII

The following diagram illustrates how each sub-index is structured, with the various elements labelled.

Figure 1: Example of sub-index structure, ADII



Source: Roy Morgan Research, April 2016–March 2017

Our full research methodology, including an explanation of the underlying variables, the structure of the sub-indices, and the margins of error, is outlined in the Methodology section of the Appendix. More information about the ADII, along with a full set of data tables, is available at www.digitalinclusionindex.org.au

Reading the data

- **Timeframe:** data has been collected for four years to date: 2013–2014, 2014–2015, 2015–2016, and 2016–2017. For each year, data was collected from April to March.
- **Sample sizes:** small sample sizes can render results less reliable. Where asterisks appear in the tables, these signify small sample sizes for that particular group, as follows: *Sample size <100, treat with caution; **Sample size <50, treat with extreme caution.
- **Regional breakdowns:** to aid comparison, data for each state is displayed alongside scores for Australia as a whole, and for the capital city and sub-regions, regional centres, and rural areas within that state.
- **Sociodemographic groups:** nationally and for each state, data is presented according to income, employment, education, and age. Data is also provided for people with disability, Aboriginal and Torres Strait Islanders (listed as 'Indigenous Australians' in the tables), and people who speak a language other than English at home (LOTE).
- **Income** is presented in five household income 'quintiles' (brackets), from highest (Q1) to lowest (Q5). The ranges are: Q1: \$150,000 or more | Q2: \$100,000 to \$149,999 | Q3: \$60,000 to \$99,999 | Q4: \$35,000 to \$59,999 | Q5: under \$35,000.
- **Employment:** the group 'people not in paid employment' (listed in the tables as 'Employment: None') includes people who are unemployed, retired or engaged in home duties, non-working students, and other non-workers.
- **Age:** scores are captured across five different age brackets, from people aged 14–24 years to people aged 65+.
- **Disability:** in the ADII data, people with disability are defined as those who receive either the disability support pension (DSP) from Centrelink, or a disability pension from the Department of Veterans' Affairs.
- **Education** is divided into three levels: Tertiary (degree or diploma), Secondary (completed secondary school), and Less than Secondary (did not complete secondary school).
- **Relative Expenditure:** this component of the Affordability sub-index is based on the share of household income spent on internet access. Since Affordability improves as this share decreases, counterintuitively, the Relative Expenditure measure will increase when that occurs. And vice versa: an increase in the share of income spent on internet services corresponds to a decrease in the Relative Expenditure measure.

Australia: The National Picture

Findings

The 2017 ADII reveals a wealth of information about digital inclusion in Australia. At a national level, digital inclusion is steadily increasing. Over the four years from 2014 to 2017, we have seen marked improvements in some dimensions of the ADII – for example, a steady rise in overall Access.

In general, wealthier, younger, more educated, and urban Australians enjoy much greater digital inclusion

In other areas, progress has fluctuated or stalled. And in some cases, the ‘digital divide’ has widened. An ADII score of 100 represents a hypothetically perfect level of Access, Affordability, and Digital Ability. Australia’s overall national score has increased from

52.7 in 2014, to 56.5 in 2017 (a 3.8-point increase over four years). Since the release of the 2016 ADII report, the national score has risen by 2.0 points. Australia’s overall performance indicates a moderate level of digital inclusion, with mixed progress across different ADII dimensions, geographic areas, and sociodemographic groups.

The ADII confirms that digital inclusion is unevenly distributed across Australia. In general, wealthier, younger, more educated, and urban Australians enjoy much greater digital inclusion.

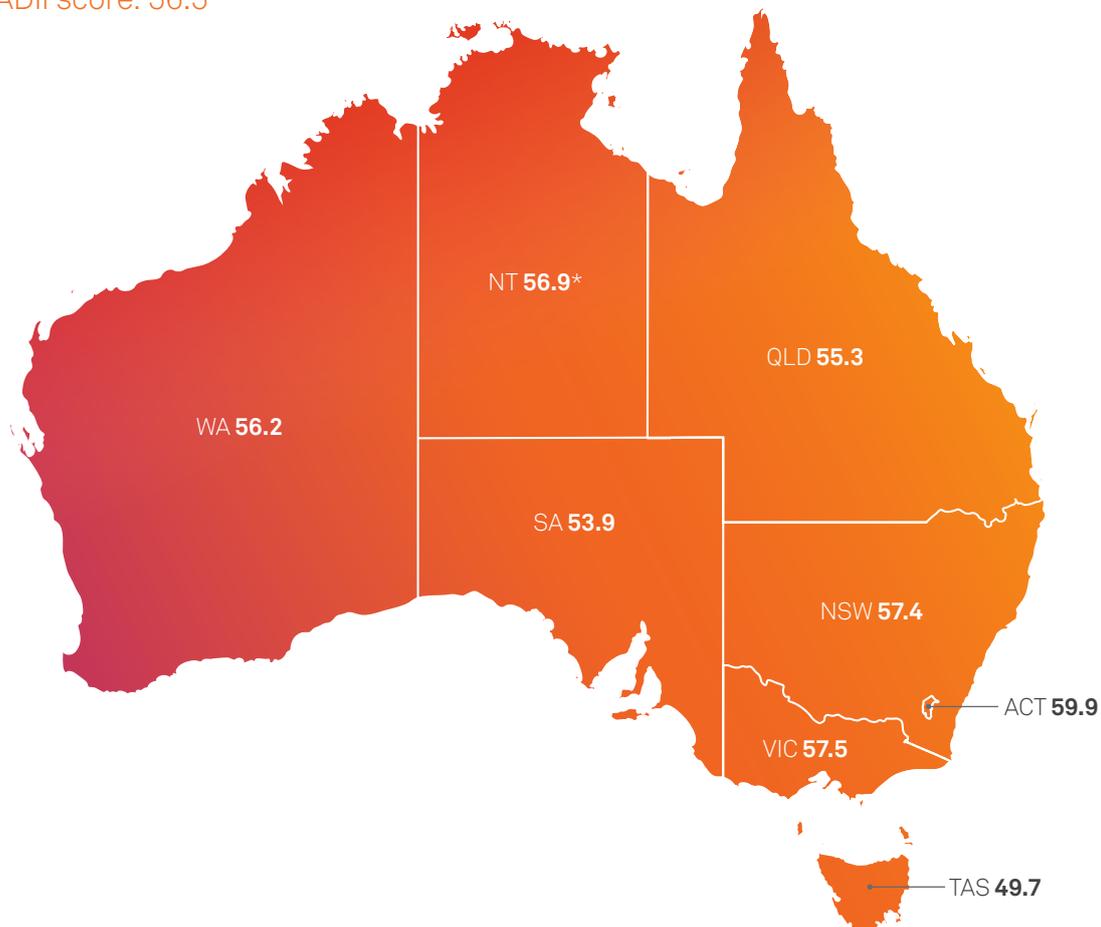
All over the country, digital inclusion is clearly influenced by differences in income, education levels, and the geography of socioeconomic disadvantage. Some Australian communities are falling further behind. For example, the gap between people in low and high income households is growing, as is the gap between older and younger Australians.

We also see some interesting regional variations over the four years to 2017. For example, the Australian Capital Territory (ACT) has the highest level of digital inclusion (59.9), although the gap between the ACT and other states and territories is narrowing. New South Wales (NSW, on 57.4) recorded the largest improvement of all states and territories over the past year (2.5 points) and is now just 0.1 points behind Victoria (57.5). Tasmania’s score recovered in 2016–2017 (rising 1.6 points, from 48.1 to 49.7), following a decline in 2015–2016, but its increase did not keep pace with the national score.

Since 2014, four states or territories have outpaced the Australia-wide increase of 3.8 points over four years: NSW and Victoria (both up 4.2 points), and Northern Territory (NT) and South Australia (SA) (both up 3.9 points). By contrast, Western Australia (WA, up 3.3), Queensland (up 3.2), ACT (up 1.8), and Tasmania (up 0.9) did not keep pace with the national increase.

Australia: The national picture 2017

National ADII score: 56.5



*Sample size <100, exercise caution in interpretation.

Source: Roy Morgan Research

Dimensions of digital inclusion: the sub-indices over time

The ADII is made up of three sub-indices, or dimensions, that track different aspects of digital inclusion: Access, Affordability, and Digital Ability.

Access is about how and where we access the internet, the kinds of devices we have, and how much data we can use. Affordability is about how much data we get for our dollar, and how much we spend on internet services as a proportion of our income. Digital Ability is about our skill levels, what we actually do online, our attitudes towards technology, and our confidence in using it. Taken together, these measures give us a unique, multi-faceted picture of digital inclusion.

The rise in Australia's ADII score has mainly been driven by improvements in Access (from 62.2 in 2014 to 69.6 in 2017) and Digital Ability (from 42.4 in 2014 to 47.3 in 2017). Although there was some improvement in the Affordability score in the year to 2017, from 2014 to 2017 this score has declined from 53.5 to 52.7. Reasons for the decline in Affordability are outlined in greater detail later on in this report.

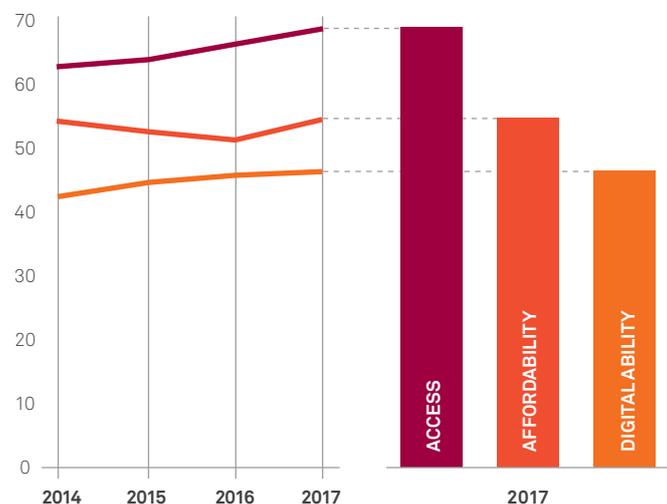
On a national scale, Access is relatively strong while Digital Ability is relatively weak. Affordability may cause particular concern in the case of digitally excluded groups. There is scope for improvement across all three dimensions of the ADII, but Digital Ability appears to present the greatest opportunity for an investment of effort and resources.

Table 4: Australia: Sub-index scores over time (ADII, 2014–2017)

| Australia | 2014 | 2015 | 2016 | 2017 |
|--------------------------------|-------------|-------------|-------------|-------------|
| ACCESS | 62.2 | 63.5 | 66.2 | 69.6 |
| AFFORDABILITY | 53.5 | 52.0 | 51.2 | 52.7 |
| DIGITAL ABILITY | 42.4 | 44.6 | 46.0 | 47.3 |
| DIGITAL INCLUSION INDEX | 52.7 | 53.4 | 54.5 | 56.5 |

Source: Roy Morgan Research, April 2016–March 2017

Figure 2: Australia: Sub-index trends over time (2014–2017)



Source: Roy Morgan Research, April 2016–March 2017

Access

All three components of the Access sub-index have improved steadily. The Internet Access measure was already relatively high at 82.7 in 2014, and has made marginal annual improvements since then (83.3 in 2015, 84.4 in 2016, and 85.3 in 2017). The Internet Technology and Internet Data Allowance scores both started from lower bases and have steadily improved over the four years. The national Internet Technology score rose from 62.3 in 2014 to 72.1 in 2017 (with scores of 64.7 and 68.6 in the two intervening years), while the Internet Data Allowance score rose from 41.6 in 2014 to 51.2 in 2017 (with scores of 42.4 and 45.5 in the two intervening years).

This reflects several developments over the past four years: improvements to mobile and fixed network infrastructure; the proliferation of connected consumer devices, especially smart phones; and growing demand for data as Australians spend more time, and do more things, online.

Affordability

The Affordability measure is the only dimension of the ADII to have registered a decline nationally since 2014, although it made a slight recovery in 2016–2017, scoring 52.7 (up from 51.2 in 2016, but remaining below 2014's score of 53.5).

This decline in Affordability does not simply reflect rising costs. In fact, internet services are becoming less expensive. The catch is Australians are spending more on them. Nationally, Value of Expenditure – a key component of the Affordability measure – has increased steadily over four years (from 51.0 in 2014, to 58.5 in 2017). The cost per gigabyte of data continues to fall, but we are spending more time online, and more money on internet services. While the value of these services has increased, that's been offset by the growing share of household income devoted to them (up 0.19% since 2014). The result of this complex dynamic is an overall decline in Affordability.

This higher spending likely reflects the growing importance of the internet in everyday life. As noted in the 2016 ADII report, Relative Expenditure on internet access has continued to rise. This translates to a declining score (from 56.0 in 2014 to 46.8 in 2017). If Affordability continues to fall it will have a negative effect on the digital inclusion of Australians on lower incomes because they have less discretionary income to spend. For most of Australia's more digitally excluded groups, the Affordability score gap has widened in 2016–2017.

Digital Ability

All three components of Digital Ability have improved steadily over time. The Attitudes sub-index score now stands at 50.1 (up from 46.0 in 2014), the Basic Skills score is at 53.3 (up from 47.2 in 2014), and the Activities score is 38.4 (up from 34.2 in 2014). Despite the fact that the three components are rising from a low base, the rate of improvement has slowed over the four years.

These results reflect the rapid pace of change in digital technologies, the emergence of new applications, and the proliferation of new devices and online services. The data shows that while Australians report high interest in using the internet, they also find it hard to keep up with new technologies, and relatively few users engage in more advanced activities. This suggests scope to further improve Digital Ability.

Geography: digital inclusion in the states, territories and regions

Our data reveals significant differences between rural and urban areas. This 'spatial digital divide' (referred to as the 'Capital–Country gap') is evident across all three sub-indices – Access, Affordability, and Digital Ability.

The ADII score for rural Australians is 50.7, compared with 58.6 for those residing in Australia's capital cities, a gap of 7.9 points. The overall 'Capital–Country gap' has narrowed slightly over the past three years, from 8.5 (2015), to 8.3 (2016) to 7.9 (2017), but still remains wider than its 2014 level (7.5). This trend is not

Geography plays a critical role in the uneven distribution of digital inclusion in Australia

consistent across the three sub-indices. The Access gap for Capital–Country areas has narrowed each year (from 8.6 in 2014 to 7.4 in 2017). The Affordability gap has widened over that period, with only a slight recovery this past year.

The Digital Ability gap has narrowed since 2015 (from 9.6, to 7.8 in 2017), but still remains higher than its 2014 level (7.5).

In 2017, the ranking of states and territories based on ADII scores remains unchanged from the 2016 report. ACT remains the highest-performing state or territory, with a score of 59.9. But ACT's lead is narrowing, with both Victoria and NSW now within 2.5 points of its score. In 2016 ACT's score of 59.8 was 4.0 points above Victoria and 4.9 points above NSW. Tasmania remains the least digitally included state or territory (on 49.7) and the gap between Tasmania's score and the national average has widened since 2016. SA remains the second least digitally included state or territory (on 53.9), but unlike Tasmania, the gap between SA's score and the national average has narrowed (from 3.0 to 2.6 points).

Australia's least digitally included regions, in ascending order, are: Burnie and Western Tasmania* (44.1), North West Queensland* (45.9), North Victoria (46.5), East Victoria (47.0), Launceston and North-East Tasmania (47.7), and North West Victoria (48.2). These regions have ADII scores at least 15% below the national average of 56.5.

Table 5: Australia: Digital inclusion by geography (ADII 2017)



*Sample size <100, exercise caution in interpretation. **Source:** Roy Morgan Research, April 2016–March 2017

Digital inclusion in regional centres

The ADII provides data for a number of regional centres. Table 6 (right) shows the ADII scores for a number of these communities. With the exception of Geelong, the digital inclusion scores for these regional centres are lower than the Australia-wide average for capital cities. The Sunshine Coast (53.9) has the lowest score of the regional communities profiled here, but has narrowed the gap with the national score slightly since 2016. Wollongong, which had the highest score of the regional centres reported in 2016, did not keep pace with the improvements in other regions and actually experienced a slight decline in its score. By contrast, in 2017 Geelong experienced a substantial improvement in digital inclusion, with increased scores across all three sub-indices.

The variation between regional centres is a significant finding of the ADII. In Case Study 3 (p. 20) we examine digital inclusion in three regional centres – Geelong, Newcastle, and Townsville – in more detail. There is scope for further research into the factors contributing to digitally inclusive regional centres.

Table 6: scores for select regional centres (ADII 2017)

| Regional centre | Digital Inclusion Index |
|----------------------------|-------------------------|
| Geelong | 58.7 |
| Gold Coast | 57.2 |
| Gosford & Wyong | 56.9 |
| Townsville | 56.7 |
| Newcastle | 55.5 |
| Wollongong | 55.3 |
| Cairns* | 54.9 |
| Sunshine Coast | 53.9 |
| Capital Cities | 58.6 |
| Rural | 50.7 |

*Sample size <100, exercise caution in interpretation.

Source: Roy Morgan Research, April 2016–March 2017



Demography: digital inclusion and socioeconomic groups

Income, employment and education

The ADII illuminates the social and economic aspects of digital inclusion in Australia

The ADII illuminates the social and economic aspects of digital inclusion in Australia. There is clearly a digital divide between richer and poorer Australians. In 2017, individuals in households with an annual income of less than \$35,000 recorded an ADII score of

41.1. This is 27 points lower than those living in households with an income over \$150,000 and 15.4 points below the national average score.

Looking at the Affordability measure in the context of household income, people in the lowest income bracket spent a substantial proportion of that income on network access (approximately 3.5%), which translated into a Relative Expenditure score of 25.5. By contrast, those in the highest household income bracket spent less than 1% of their household income on network access, for a Relative Expenditure score of 68.2. There was also a significant gap in Digital Ability between those in low and high income households (33.5 versus 58.4).

Despite a high base, those in the top household income quintile recorded the largest ADII gain of all quintiles over the four-year

period from 2014–2017 (4.5 points). While the digital inclusion of people in Q5 income households increased over that period (up 3.3 points), it did not keep pace with the national average increase (3.8 points), which indicates that the gap is widening for this group.

There is also a clear ‘employment gap’ in digital inclusion. In 2017 the ADII score for people not in paid employment is 50.2 (6.3 points below the national average), while for full-time workers the figure is 62.1 (5.6 above the national average). The gap between the not-employed and full-time employed groups, which had been widening from 2014–2016, narrowed marginally in 2016–2017 (from 12.3 to 11.9).

The ‘education gap’ highlighted in the 2016 report remains significant, despite a slight contraction. People who did not complete secondary school scored 47.4 (9.1 points below the national average). Those with a secondary education scored 57.1 (slightly above the national average), while tertiary-educated people scored 61.6 (5.1 points above the national average).

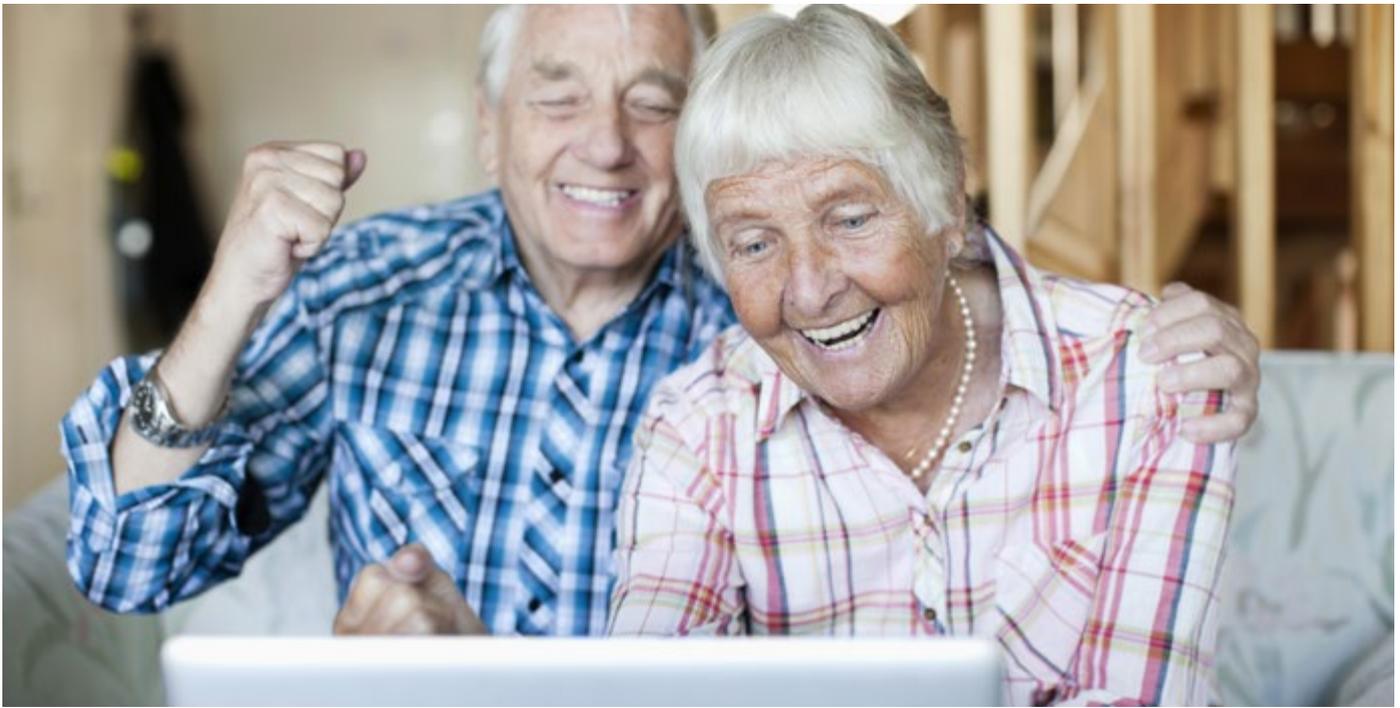
Gender

Women have an ADII score 2.0 points below that of men in Australia, with the greatest difference visible in Access and Affordability. The gender data also reveals a definite age dimension. While the gap between men and women is marginal in younger age cohorts (0.8 points for people aged 14–24 years and 1.0 points for those aged 25–34), it expands to 2.9 points in the 35–49 year cohort, and is greatest amongst those aged 65+. It is in the 50–64 year age groups that the gender gap is at its narrowest (0.2 points).

Table 7: Gender and age: scores for women and men (ADII 2017)

| | Gender and Age: Years | | | | | | | | | | | | |
|--------------------------------|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--|
| | Men | Women | Men 14-24 | Women 14-24 | Men 25-34 | Women 25-34 | Men 35-49 | Women 35-49 | Men 50-64 | Women 50-64 | Men 65+ | Women 65+ | |
| 2017 | | | | | | | | | | | | | |
| ACCESS | | | | | | | | | | | | | |
| Internet Access | 85.9 | 84.9 | 90.2 | 90.4 | 91.1 | 91.2 | 92.2 | 91.5 | 83.8 | 84.6 | 70.1 | 66.6 | |
| Internet Technology | 73.1 | 71.2 | 75.6 | 74.5 | 77.8 | 76.8 | 78.0 | 76.9 | 71.4 | 70.3 | 61.1 | 57.4 | |
| Internet Data Allowance | 53.5 | 49.1 | 56.3 | 54.2 | 63.0 | 60.0 | 62.4 | 56.8 | 49.0 | 45.9 | 34.4 | 29.0 | |
| | 70.8 | 68.4 | 74.0 | 73.0 | 77.3 | 76.0 | 77.6 | 75.1 | 68.1 | 66.9 | 55.2 | 51.0 | |
| AFFORDABILITY | | | | | | | | | | | | | |
| Relative Expenditure | 47.7 | 46.0 | 52.5 | 49.8 | 42.9 | 41.8 | 47.1 | 44.6 | 47.7 | 46.3 | 48.2 | 48.2 | |
| Value of Expenditure | 59.7 | 57.4 | 61.3 | 60.7 | 64.5 | 60.8 | 66.8 | 64.0 | 56.8 | 57.8 | 47.2 | 42.9 | |
| | 53.7 | 51.7 | 56.9 | 55.3 | 53.7 | 51.3 | 57.0 | 54.3 | 52.3 | 52.1 | 47.7 | 45.5 | |
| DIGITAL ABILITY | | | | | | | | | | | | | |
| Attitudes | 54.1 | 46.2 | 68.4 | 57.3 | 63.7 | 55.4 | 58.4 | 49.2 | 44.9 | 40.7 | 35.6 | 31.3 | |
| Basic Skills | 52.0 | 54.5 | 46.8 | 55.2 | 62.8 | 69.6 | 64.1 | 64.6 | 48.6 | 52.3 | 34.0 | 30.5 | |
| Activities | 38.2 | 38.6 | 39.2 | 42.5 | 47.6 | 51.1 | 46.9 | 45.0 | 32.3 | 35.0 | 23.2 | 20.4 | |
| | 48.1 | 46.5 | 51.5 | 51.7 | 58.0 | 58.7 | 56.5 | 52.9 | 42.0 | 42.7 | 30.9 | 27.4 | |
| DIGITAL INCLUSION INDEX | 57.5 | 55.5 | 60.8 | 60.0 | 63.0 | 62.0 | 63.7 | 60.8 | 54.1 | 53.9 | 44.6 | 41.3 | |

Source: Roy Morgan Research, April 2016–March 2017



Older Australians

Digital inclusion tends to decline as age increases, particularly for older Australians

Digital inclusion tends to decline as age increases, particularly for older Australians (those aged 65+). People aged 14–49 years all have similar ADII scores, ranging from 60.4 to 62.5 (roughly 5 points above the national average). Those aged

65+ are the least digitally included age group in Australia, with a score of 42.9 (13.6 points below the national average), and the gap between this group and younger Australians is widening.

A closer look at the 65+ category reveals a pattern of declining digital inclusion with increasing age. While scores for both Access and Digital Ability have increased across all age brackets in the 65+ category over the past four years, the cohort aged 75–79 years has made the largest proportional progress. One issue faced by those 65+, as with other groups on relatively low incomes, is the rising proportion of income spent on network access.

Gender also impacts inclusion for this group. Older Australian women have lower levels of overall digital inclusion than their male counterparts, and record lower scores on all three sub-indices. The digital inclusion gap between older women and men is widest for the group aged 70–74.

Table 8: Older Australians: women compared to men, age breakdowns (ADII 2017)

| | Gender and Age: Years | | | | | | | | | |
|--------------------------------|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Men 65+ | Women 65+ | Men 65-69 | Women 65-69 | Men 70-74 | Women 70-74 | Men 75-79 | Women 75-79 | Men 80+ | Women 80+ |
| 2017 | | | | | | | | | | |
| ACCESS | | | | | | | | | | |
| Internet Access | 70.1 | 66.6 | 79.2 | 77.0 | 73.0 | 66.5 | 64.3 | 60.9 | 50.4 | 44.9 |
| Internet Technology | 61.1 | 57.4 | 68.5 | 65.5 | 63.8 | 58.1 | 56.1 | 52.7 | 44.4 | 38.9 |
| Internet Data Allowance | 34.4 | 29.0 | 42.8 | 37.1 | 35.8 | 29.2 | 28.7 | 23.1 | 19.5 | 13.4 |
| | 55.2 | 51.0 | 63.5 | 59.9 | 57.5 | 51.3 | 49.7 | 45.6 | 38.1 | 32.4 |
| AFFORDABILITY | | | | | | | | | | |
| Relative Expenditure | 48.2 | 48.2 | 43.5 | 41.0 | 44.6 | 45.5 | 49.6 | 51.9 | 65.3 | 69.2 |
| Value of Expenditure | 47.2 | 42.9 | 53.0 | 49.9 | 49.2 | 43.9 | 44.8 | 38.6 | 32.7 | 26.8 |
| | 47.7 | 45.5 | 48.2 | 45.4 | 46.9 | 44.7 | 47.2 | 45.2 | 49.0 | 48.0 |
| DIGITAL ABILITY | | | | | | | | | | |
| Attitudes | 35.6 | 31.3 | 41.3 | 38.1 | 37.5 | 31.0 | 30.6 | 26.2 | 24.4 | 19.1 |
| Basic Skills | 34.0 | 30.5 | 42.8 | 40.2 | 35.0 | 29.6 | 28.3 | 23.8 | 18.7 | 12.9 |
| Activities | 23.2 | 20.4 | 29.1 | 26.3 | 23.4 | 20.5 | 20.1 | 16.0 | 13.1 | 8.8 |
| | 30.9 | 27.4 | 37.7 | 34.9 | 32.0 | 27.0 | 26.3 | 22.0 | 18.7 | 13.6 |
| DIGITAL INCLUSION INDEX | 44.6 | 41.3 | 49.8 | 46.7 | 45.5 | 41.0 | 41.1 | 37.6 | 35.3 | 31.3 |

Source: Roy Morgan Research, April 2016–March 2017

Australians with Disability

For this group, the gap relative to the national average is narrowing, with gains evident in Access and Digital Ability. However, the gap in Affordability is widening

In 2017, Australians with disability have relatively low digital inclusion, registering an ADII score of 47.0 (9.5 points below the national score). For this group, the gap relative to the national average is narrowing, with gains in Access and Digital Ability. However, the gap in Affordability is widening, based on an increase in the portion of household income

spent on network access. Case Study 2 (p. 18) explores this area more fully. It is important to note that the survey used for the ADII defines Australians with disability as those who receive either the disability support pension (DSP) or the disability pension. The ADII results therefore represent outcomes for a distinct subset of the wider community of Australians with disability.

Indigenous Australians

Indigenous Australians have a similarly low level of digital inclusion, with an ADII score of 49.5 (7.0 points below the national score). While the gap between Indigenous Australians and the overall national population has narrowed over the past four years, it is important to note the data collection does not extend to remote Indigenous communities, where high levels of geographic isolation and socioeconomic disadvantage pose distinct challenges for digital inclusion. Case Study 1 (p. 16) looks in more detail at the results for Indigenous Australians.

Australians who speak a Language Other Than English (LOTE) at home

LOTE Australians have a relatively high level of digital inclusion, with an ADII score of 59.3 (2.8 points above the national average). The LOTE community is a highly diverse group and care should be taken in interpreting findings.

Table 9: Australia: Digital inclusion by demography (ADII 2017)



Source: Roy Morgan Research, April 2016–March 2017

Further information

More information about the ADII, along with a full set of data tables, is available at www.digitalinclusionindex.org.au

Conclusion

The ADII shows digital inclusion is improving in Australia at the national level. Since 2014, the national ADII score has risen from 52.7 to 56.5, and every state and territory has recorded improved scores over the past four years. Nevertheless, many Australians are missing out. Digital inclusion remains linked to income, age, education, and other socioeconomic factors.

Digital inclusion across the three dimensions

The ADII illuminates three key dimensions of digital inclusion: Access, Affordability, and Digital Ability. It reveals how these factors change over time, according to social and economic circumstances, and across geographic locations.

Access has improved by 7.4 points since 2014, from 62.2 to 69.6 in 2017. Australians are accessing the internet more often, using an increasingly diverse range of technologies, and they have more data than ever before. In part, this reflects improvements to network infrastructure, but it is largely due to greater data allowances and the growing range of devices people own. We note that our aggregate measures do not capture outcomes for some specific populations, including remote Indigenous communities.

Affordability, on the other hand, has declined since 2014. While the value of internet services has improved, households are spending a growing proportion of their income on them (up from 1.0% in 2014, to 1.19% in 2017). Therefore, despite this improvement in value, the overall Affordability score has fallen.

Digital Ability has improved considerably since 2014, with Attitudes improving by 4.1 points, Basic Skills by 6.1, and Activities by 4.2. However, all three components have increased from a low base, and Digital Ability remains low for many groups. Digital Ability therefore remains a critical area for attention for policy makers, business, education, and community groups.

Regional variations

The ADII illuminates the link between geography and digital inclusion. In 2017, the highest-scoring state or territory is the ACT (59.9, or 3.4 points above the national average), followed by Victoria (57.5). Victoria and NSW have experienced particularly strong growth. Australia's least digitally included state or territory is Tasmania (49.7, or 6.8 points below the national average), followed by SA (53.9).

Australia's big cities have high levels of digital inclusion. Some rural and regional areas are well behind, including Burnie and Western Tasmania (44.1), North West Queensland (45.9), North Victoria (46.5), East Victoria (47.0), Launceston and North-East Tasmania (47.7), and North West Victoria (48.2). These regions have ADII scores at least 15% below the national average score of 56.5. Regional cities have higher digital inclusion than country areas, but don't score as well as capital cities.

The overall 'Capital-Country gap' has narrowed slightly since 2015, from 8.5 (2015), to 8.3 (2016), to 7.9 (2017), but remains higher than the 2014 level (7.5). This is not consistent across all states: over this period SA, WA, and Queensland narrowed the gap between capital city and country residents, while the gap widened in Victoria, NSW, and Tasmania.

Addressing the needs of particular communities

The ADII also helps us gauge the digital inclusion of particular sociodemographic groups in Australia. People aged 65+ are Australia's least digitally included demographic group (42.9, or 13.6 points below the national average). We note the differences within this broad cohort of people, but the overall 'age gap' has been steadily widening since 2015.

People receiving a disability pension²⁸ have a low level of digital inclusion (47.0, or 9.5 points below the national average). However, nationally, the digital inclusion of this group has improved steadily (up by 5.2 points since 2014), outpacing the national average increase over the four years studied (3.8 points).

Indigenous Australians also have a low level of digital inclusion (49.5, or 7.0 points below the national average). Their inclusion has improved by 4.5 points Australia-wide over 2014–2017 (also outpacing the Australia-wide gain of 3.8). It is important to note that our data collection did not extend to remote Indigenous communities.

The ADII shows which groups are the most digitally excluded, with scores registering substantially below the national average (56.5). In ascending order, these groups are: people in low income households (41.1), older Australians (42.9), people with a disability (47.0), people who did not complete secondary school (47.4), Indigenous Australians (49.5), and people not in paid employment (50.2).

Mobile-only users experience a relatively high degree of digital exclusion. In 2017, mobile-only users have an overall ADII score of 42.3, some 14.2 points below the national average (56.5). Mobile-only use is linked to socioeconomic factors, with people living in low income households (29.8%), not employed (24.0%), and with low levels of education (27.6%) all more likely to be mobile-only.

Areas for further action

- *Improving Digital Ability should be an important focus area for policy makers, business, the education sector, and community groups.*
- *Regional and local initiatives will be central in tackling the geographic and social challenges of digital inclusion.*
- *Our aggregated data does not reflect the diversity of experiences for particular populations, such as Indigenous communities, people with a disability, and LOTE communities. Further research and community-specific initiatives are needed here.*
- *We need to closely monitor Affordability and its effects, especially in relation to digitally excluded Australians on low or fixed incomes.*
- *The websites of essential service providers and government agencies need to be made accessible and easy to navigate for mobile-only internet users.*
- *The ADII reveals some unexpected examples of high digital inclusion within specific groups and regions. More could be learned from in-depth studies of this diversity of experiences.*

The ADII is a flexible tool, which we hope will be valuable to governments, businesses, community organisations, researchers, and service providers.

Appendix 1

Methodology

Data collection

The data used to compile the ADII originates from Roy Morgan Research’s ongoing Single Source survey of 50,000 Australians annually.²⁹ ADII calculations are based on a sub-sample of approximately 16,000 responses in each 12-month period. In these extensive face-to-face interviews, Roy Morgan Research collects data on internet and technology products owned, internet services used, attitudes relating to technology and the internet, and demographics.

To conduct the Single Source survey, an Australia-wide sample is selected from 550 sampling areas of approximately equal population size. Using strict sampling protocol, each weekend Roy Morgan’s trained interviewers interview people in their homes, and directly enter the resultant data into tablet computers, using computer assisted personal interviewing (CAPI).³⁰

All ADII scores are subject to ‘margins of error’, depending mainly on the sample sizes on which they are based. A full set of data tables for the ADII can be viewed at www.digitalinclusionindex.org.au

Structure of the ADII and sub-indices

To determine the degree of overall digital inclusion in Australia, we measured the level of access to the internet and related products, services, and activities. To help clarify the many factors in play, the ADII is made up of three sub-indices, or dimensions:

Access

Affordability

Digital Ability

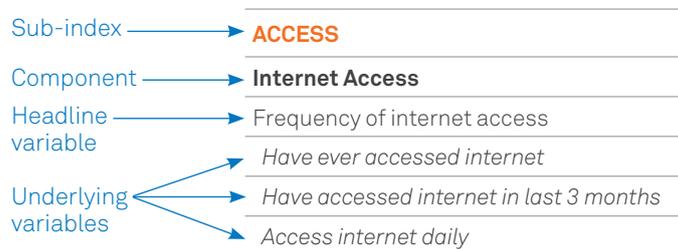
Each of these three sub-indices is made up of a number of *components*, which have themselves been calculated from numerous *variables*. These variables are either sourced directly from the Roy Morgan Single Source database, or derived from the data according to the formulas outlined below.

Variables come in two levels: ‘headline variables’ are thematic composites of ‘underlying variables’ (individual survey questions), and are generally calculated as simple averages.

For example, the underlying variable ‘Have ever accessed internet’ (see Figure 3) feeds into the headline variable ‘Frequency of internet access’, which then feeds into the ‘Internet access’ component, and so on. Conversely, the ‘Frequency of internet access’ headline variable is the average of its three underlying variables (see Figure 3).

Similarly, *components* are simple averages of headline variables. For example, the ‘Internet access’ component is the average of the ‘Frequency of internet access’, ‘Places of internet access’, and ‘Number of internet products’ headline variables. Moving upwards through the hierarchy of the ADII’s structure, the sub-indices and the overall ADII itself are also calculated as simple averages. The structure of the ADII, with a full list of variables, is detailed in Tables 29, 30, and 31. The following diagram is an example of how the sub-indices are structured, with the various elements labelled.

Figure 3: Example of sub-index structure, ADII



Source: Roy Morgan Research, April 2016–March 2017

First sub-index: Access

The Access sub-index consists of three components:

Internet Access, measured by frequency of access, places of access, and the number of access points.

Internet Technology, including variables related to computers, mobile phones, mobile broadband, and fixed broadband.

Internet Data Allowance, which measures mobile and fixed internet data in terms of whether there is any access at all, relative to a minimum threshold of useful data allowance,³² and benchmarks set proportional to national averages.³³

Table 29: Access sub-index: structure and variables

| Internet Access | Internet Technology | Internet Data Allowance |
|---|--|--|
| <ul style="list-style-type: none"> Frequency of internet access: <ul style="list-style-type: none"> - Have ever accessed internet - Have accessed internet in last 3 months - Access internet daily Places of internet access: <ul style="list-style-type: none"> - Have accessed internet from home - Have accessed internet away from home Number of internet products: <ul style="list-style-type: none"> - One or more internet products - Two or more internet products | <ul style="list-style-type: none"> Computer technology: <ul style="list-style-type: none"> - Have personal computer or tablet computer in household Mobile internet technology: <ul style="list-style-type: none"> - Own or use mobile phone - Have mobile phone on the 4G network (until December 2016) - Have mobile internet Fixed internet technology: <ul style="list-style-type: none"> - Have fixed broadband - Have cable or NBN fixed broadband | <ul style="list-style-type: none"> Mobile internet data: <ul style="list-style-type: none"> - Have mobile internet - Have mobile internet data allowance over 1GB - Mobile internet data allowance relative to benchmark Fixed internet data: <ul style="list-style-type: none"> - Have fixed broadband - Have Fixed Broadband data allowance over 10GB - Fixed Broadband data allowance relative to benchmark |

Source: Roy Morgan Research, April 2016–March 2017

Second sub-index: Affordability

Affordability is a key aspect of digital inclusion, and is made up of two components:

Relative Expenditure, measured as the share of household income spent on internet access (mobile phone, mobile broadband, and fixed broadband), and then related to benchmarks set to national Relative Expenditure quintiles.³⁴

Value of Expenditure, calculated as total internet data allowance (mobile phone, mobile broadband, and fixed broadband) per dollar of expenditure on internet access, and then related to benchmarks set to national Value of Expenditure quintiles.³⁵

Table 30: Affordability sub-index: structure and variables

| | |
|--|---|
| Relative Expenditure <ul style="list-style-type: none"> Share of household income spent on internet products relative to benchmark | Value of Expenditure <ul style="list-style-type: none"> Internet data allowance per dollar of expenditure relative to benchmark |
|--|---|

Source: Roy Morgan Research, April 2016–March 2017

Third sub-index: Digital Ability

Digital Ability captures both the confidence with which we use the internet and associated technologies, and the extent to which they are integrated into our lives. As such, the Digital Ability sub-index consists of three components:

Attitudes, measured by responses to five survey questions related to notions of control, enthusiasm, learning, and confidence.³⁶

Basic Skills, consisting of six categories: basic,³⁷ mobile phone,³⁸ banking,³⁹ shopping,⁴⁰ community,⁴¹ and information skills.⁴²

Activities, which mirror the six categories of basic skills, but are more advanced: accessing content,⁴³ communication,⁴⁴ transactions,⁴⁵ commerce,⁴⁶ media,⁴⁷ and information.⁴⁸

Table 31: Digital Ability sub-index: structure and variables

| | | |
|---|---|--|
| Attitudes <ul style="list-style-type: none"> Computers and technology give me more control over my life I am interested in being able to access the internet wherever I am I go out of my way to learn everything I can about new technology I find technology is changing so fast, it's difficult to keep up with it (negative) I keep my computer up to date with security software | Basic Skills <ul style="list-style-type: none"> General internet skills Mobile phone skills Internet banking skills Internet shopping skills Internet community skills Internet information skills | Activities <ul style="list-style-type: none"> Streamed, played, or downloaded content online AV communication via the internet Internet transaction or payment Purchased or sold a product online Created or managed a site or blog Searched for advanced information |
|---|---|--|

Source: Roy Morgan Research, April 2016–March 2017

¹ Australian Bureau of Statistics (2016). *Household Use of Information Technology 2014–2015*. Catalogue number 8146.0, Canberra; Australian Bureau of Statistics (2016). *Census of Population and Housing*, QuickStats Australia (estimate of 3.05 million Australians based on 1.172 million households x 2.6 person average household size).

² European Commission (2017). 'The Digital Economy and Society Index (DESI)'. Europa.eu.

³ Go On UK (n.d.). 'The Digital Inclusion Outcomes Framework'. Go-on.co.uk.

⁴ Australian Bureau of Statistics (2016). *Household Use of Information Technology 2014–2015*. Catalogue number 8146.0, Canberra.

⁵ EY Sweeney (n.d.). 'Digital Australia: State of the Nation (2015–16)'. Digitalaustralia.ey.com.

⁶ Infexchange, Connecting Up and TechSoup New Zealand (2016). *Digital technology in the not-for-profit sector*.

⁷ Australian Communications and Media Authority (2017). 'Research Index'. Acma.gov.au.

⁸ Swinburne Institute for Social Research, Centre for Social Impact, Telstra Corporation Ltd (2015). *Australian Digital Inclusion Index: Discussion Paper*.

⁹ 'Australian Digital Inclusion Index' (n.d.). Digitalinclusionindex.org.au.

¹⁰ Roy Morgan Research (n.d.). 'Single Source: the pinnacle of market research'. Roymorgan.com.

¹¹ For example, the ADII and the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) have produced similar results on the question of daily internet use for Indigenous Australians in non-remote areas. There is a 3.5 percentage-point difference in daily internet use for Indigenous Australians (Aboriginal and Torres Strait Islander people) in the 2015 ADII data and the non-remote sample in the NATSISS (2014–2015). This is the only question contained in both datasets. While the 2016 Census contains questions on internet use, remoteness areas were not available at the time of writing. Australian Bureau of Statistics (2017). *National Aboriginal and Torres Strait Islander Social Survey, Australia (2014–15)*. Catalogue number 4714.0, Canberra.

¹² A 9.2 rise since 2015 for Access among Indigenous Australians, compared with 6.1 for all Australians; and a 5.7 rise since 2015 among Indigenous Australians for Digital Ability compared with 2.7 for all Australians.

¹³ A rise of 1.2 since 2015 for Indigenous Australians, compared with 0.7 for all Australians.

¹⁴ Research on Aboriginal people living in remote communities shows they overwhelmingly prefer pre-paid to post-paid billing – both for convenience, and because it fits better with cultural and social systems of exchange. However, the reasons for mobile-only use may be different for those living in urban and regional areas and more research is needed to better understand these differences. See Rennie E., Hogan, E., Gregory, R., Crouch, A., Wright, A. and Thomas, J. (2016). *Internet on the Outstation: The digital divide and remote Aboriginal communities*. Institute for Network Cultures: Amsterdam.

¹⁵ For instance, the ABS' National Aboriginal and Torres Strait Islander Social Survey (NATSISS) shows that while 85.7% of Aboriginal people living in urban and regional areas have accessed the internet in the last 12 months, only 53.1% of those living in remote and very remote areas have done so. For daily use, this drops to 64.1% and 25.2% respectively. However, the NATSISS does not tell us which devices people are using to access the internet. These data gaps make it difficult to provide a full picture of digital inclusion for this group. Australian Bureau of Statistics (2017). *National Aboriginal and Torres Strait Islander Social Survey, Australia (2014–15)*. Catalogue number 4714.0, Canberra.

- ¹⁶ Morsillo, R. (2011). One down, two to go: public policy in service of an available, affordable and accessible National Broadband Network for people with disability. *Telecommunications Journal of Australia*, 61(2), pp. 28.1-28.13; Goggin, G., Hollier, S. and Hawkins, W. (2017). Internet accessibility and disability policy: lessons for digital inclusion and equality from Australia. *Internet Policy Review*, 6(1).
- ¹⁷ The sample size for persons with disability aged 14–24 and 24–34 is too small to enable analysis of changes in the ADII.
- ¹⁸ Ellis, K. and Kent, M. (2003). Digital disability: the social construction of disability in new media. *Choice Reviews Online*, 41(01), pp. 41-0382-41-0382; Ellis, K. and Kent, M. (2011). *Disability and New Media*. 1st ed. New York: Routledge.
- ¹⁹ Morsillo, R. (2011). One down, two to go: public policy in service of an available, affordable and accessible National Broadband Network for people with disability. *Telecommunications Journal of Australia*, 61(2), 28.1–28.13; Australian Communications Consumer Action Network (2015). *Access to the internet for persons with disabilities and specific needs. Submission by the Australian Communications Consumer Action Network to the ITU CWG – Internet*. ACCAN; Australian Communications Consumer Action Network (2016). *Affordability Map*. ACCAN; and Goggin, G. & Hollier, S. and Hawkins, W. (2017). Internet accessibility and disability policy: lessons for digital inclusion and equality from Australia. *Internet Policy Review*, 6(1).
- ²⁰ Garrett, R. and Nguyen, T. (2012). Together we can find telecommunication solutions for people with complex communication needs. *Telecommunications Journal of Australia*, 62(2), 26.1–26.13.
- ²¹ Dobson, P., Jackson, P. and Gengatharen, D. (2013). Explaining broadband adoption in rural Australia: modes of reflexivity and the morphogenetic approach. *MIS Quarterly*, 37(3), 965–991; Freeman, J. and Park, S. (2015). Rural realities: digital communication challenges for Australian local governments. *Transforming Government: People, Process and Policy*, 9(4), 465–479; Goggin, G. (2003). Wiring the Country: Local Telecommunications and Australian Rural Communities. *Southern Review: Communications, Politics and Culture*, 36(1), 36–47; Leung, L. (2014). Availability, access and affordability across 'digital divides': Common experiences amongst minority groups. *Australian Journal of Telecommunications and The Digital Economy*, 2(2), Article 38; Park, S. (2016). Digital inequalities in rural Australia: A double jeopardy of remoteness and social exclusion. *Journal of Rural Studies*.
- ²² Atkinson, J., Black, R. and Curtis, A. (2008). Exploring the digital divide in an Australian regional city: a case study of Albury. *Australian Geographer*, 39(4), 479–493; Alam, K. and Imran, S. (2015). The digital divide and social inclusion among refugee migrants. *Information Technology & People*, 28(2), 344–365.
- ²³ Park, S. (2016). Digital inequalities in rural Australia: A double jeopardy of remoteness and social exclusion. *Journal of Rural Studies*.
- ²⁴ Pew Research Center (2016). 'Smartphone Ownership and Internet Usage Continues to Climb in Emerging Economies'. Pewglobal.org
- ²⁵ Australian Communications and Media Authority (2015). 'ACMA Research Snapshot: Australians get mobile'. Acma.gov.au; Humphrey, J. (2014). Homeless and Connected: Mobile phones and the Internet in the lives of homeless Australians, Australian Communications Consumer Action Network, Sydney; Ogle, G. and Musolino, V. (2016). *Connectivity Costs: Telecommunications Affordability for Low Income Australians*, Australian Communications Consumer Action Network, Sydney; The Salvation Army (2017). *Economic and social impact survey 2017: The hard road*. Blackburn, Victoria.
- ²⁶ The Hunter region was discussed in some detail in the 2016 ADII report, as survey data collected in the year to March 2016 suggested a very low score. An analysis of the Hunter survey sample (which, at less than one hundred respondents, carries significant margins of error), and an analysis of trends in the detailed ADII variables over the period April 2014 to March 2017, suggest that the very low 2016 result was anomalous. The Hunter region's ADII score of 52.5 in 2017 better reflects the trajectory established in 2014 and 2015, although the small sample size signals that the data should still be interpreted with caution.
- ²⁷ The sample size for Eyre is modest, but as with all longitudinal sample survey results, significant variations are best verified through triangulation with other data sources.
- ²⁸ The ADII data defines 'disability' as people who receive a disability support pension (DSP) from Centrelink, or a disability pension from the Department of Veterans' Affairs. It is important to note that this category does not include all Australians with disability.
- ²⁹ Roy Morgan Research (n.d.). 'Single Source: the pinnacle of market research'. Roymorgan.com.
- ³⁰ Roy Morgan Research adheres to the Code of professional behaviour of ESOMAR and the Australian Market and Social Research Society, the *Federal Privacy Act* and all other relevant legislation. Roy Morgan Research is certified to the AS/NZS ISO9001 Quality Management Systems standard and the AS ISO 20252 Market, Opinion and Social Research standard.
- ³¹ As the ADII scores originate from survey data, and are estimates, in each case there will be a margin of error that is dependent on the size of the sample. See Roy Morgan's Margin of Error Reference Table for a general explanation of how margins of error typically relate to survey estimates, based on sample sizes. Roy Morgan Research (n.d.). 'Margin of Error Table'. Roymorgan.com.
- ³² 1GB was chosen for mobile phone and mobile broadband, and 10GB was chosen for fixed broadband, as these were the lowest quanta in the survey data.
- ³³ The benchmark was set at 20% above the nationwide average data allowances, and respondents with data allowances greater than the benchmark scored 100. For mobile internet data allowance the 2017 benchmark was 6.5GB, while for fixed internet data allowance it was 439GB.
- ³⁴ Since Affordability improves as this metric decreases, respondents in the lowest quintile of household expenditure on network access receive the highest score (100), and those with progressively higher expenditure occupy are placed in lower quintiles (i.e., 80, 60, etc.). Because a fully excluded person does not have any data allowance, and thus has no expenditure, those respondents with 0% Relative Expenditure receive a score of 0. Relative Expenditure quintiles (and scores) are: <0.73% (100); 0.74–1.13% (80); 1.14–1.65% (60); 1.66–2.75% (40); 2.75% or more (20); 0% (0).
- ³⁵ Since Affordability improves as this metric increases, respondents in the highest quintile receive the highest score (100), and receive progressively lower scores as they occupy lower Value of Expenditure quintiles (i.e., 80, 60, etc.). Also, because a fully excluded person does not have any data allowance, and is thus assigned a zero score, those respondents with 0% Value of Expenditure receive a score of 0. Value of Expenditure quintiles (and scores) are: 0 GB/\$ (0); 0.01–0.1 GB/\$ (20); 0.11–0.7 GB/\$ (40); 0.71–2.6 GB/\$ (60); 2.61–6.8 GB/\$ (80); 6.81 GB/\$ or more (100).
- ³⁶ Respondents should agree with these statements to score 100, except for the statement 'I find technology is changing so fast, it's difficult to keep up with it', which should be disagreed with in order to score 100.
- ³⁷ General browsing and email; scores for each of these activities are averaged to arrive at the basic internet skills score.
- ³⁸ Using a mobile phone to access the internet and download an app; scores for each of these activities are averaged to arrive at the mobile phone skills score.
- ³⁹ Checking bank account balance, or viewing online bank statements (either/or).
- ⁴⁰ Researching a product or services to buy, reading ratings/reviews of products or services, using price comparison websites, or reading online catalogues/classified ads (either/or).
- ⁴¹ Social networking (e.g. Facebook, Twitter), business networking (e.g. LinkedIn), online dating (e.g. RSVP), chat rooms, online forums, or reading/commenting on online newspaper articles or blogs (either/or).
- ⁴² Accessing news/weather/sport, reading newspapers/magazines/celebrity news, searching for maps or directions, traffic or public transport information, travel information and services, or entertainment/restaurants/what's-on information (either/or).
- ⁴³ Streaming, playing, or downloading games, music, radio, video, TV, movies, podcasts, or software/programs.
- ⁴⁴ Instant messaging (e.g. Google Hangouts), making telephone calls via internet (e.g. Skype, VoIP), or business video conferencing (either/or).
- ⁴⁵ Conducting banking transactions online, paying bills online, using online payment/money transfer system (e.g. PayPal, BPAY), paying for purchases using a credit card (either/or).
- ⁴⁶ Purchasing or selling a product online.
- ⁴⁷ Creating or managing an online journal or blog, registering a website, or creating/managing own website (either/or).
- ⁴⁸ Searching online for jobs/employment, government information and services, health or medical information, or IT information, or participating in online education (either/or).

Appendix 2

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