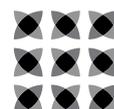




# Measuring Australia's Digital Divide

Australian Digital  
Inclusion Index: 2021



## Acknowledgements

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## Note

This is a summary report. The full details, including methods, definitions of key terms, and Index data, are available at [www.digitalinclusionindex.org.au](http://www.digitalinclusionindex.org.au)

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Report design by Ingrid Schroder, [Be Visual Co.](#)

# Australian Digital Inclusion Index

## What is digital inclusion?

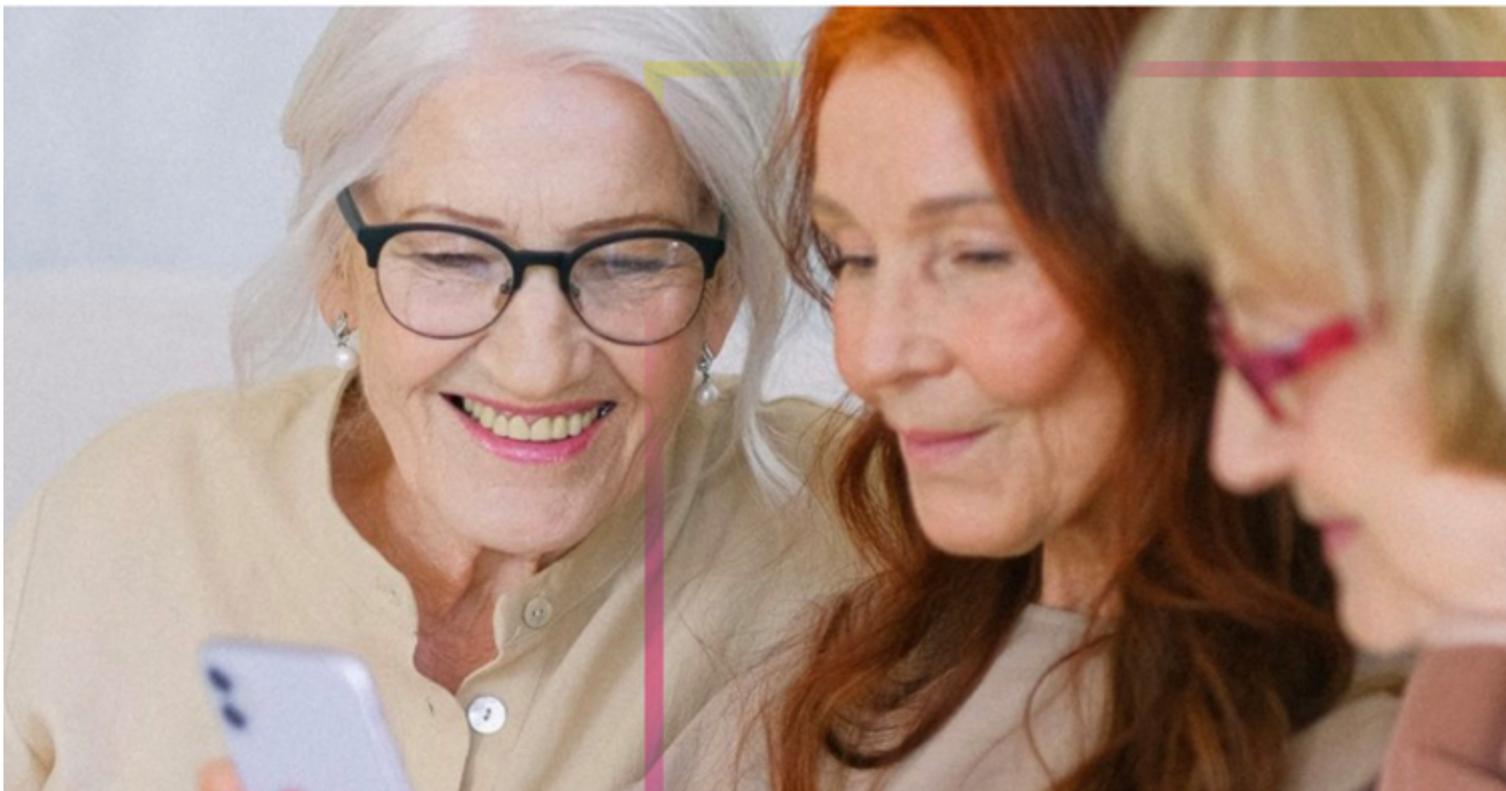
Digital inclusion is about ensuring that all Australians can access and use digital technologies effectively. We are now experiencing an accelerating digital transformation in many aspects of economic and social life. Our premise is that everyone should have the opportunity to benefit from digital technologies: to manage their health, access education and services, participate in cultural activities, organise their finances, follow news and media, and connect with family, friends, and the wider world.

## What is the Australian Digital Inclusion Index?

The Australian Digital Inclusion Index uses survey data to measure digital inclusion across three dimensions of Access, Affordability and Digital Ability. We explore how these dimensions vary across the country and across different social groups.

## Why is the Index important?

A detailed measure of digital inclusion for Australia allows us to identify the critical barriers to inclusion. These may be related to accessing networks, the costs of devices or data, or skills and literacies. The Index can help shape initiatives to increase digital inclusion in Australia.



# Digital inclusion: The Australian context in 2021

## Welcome to the 2021 Australian Digital Inclusion Index.

This year marks our first year of reporting using Australian Internet Usage Survey data.

While the 2021 ADII uses our longstanding measures of Access, Affordability, and Digital Ability, these dimensions have been reconceptualised to reflect the evolution of internet use and the skills required to navigate life online.

These changes extend the valuable contribution the ADII has made in identifying and addressing digital inequality since 2015 and will ensure the Index's relevance into the coming years.

As online access becomes more widespread, access is increasingly shaped by the degree and intensity of people's connectivity and usage. Our approach has been updated and is future focussed, considering a wider variety of devices and connections than earlier ADII reports.

Similarly, as the importance of a good quality internet connection has become increasingly clear, we have revised our measure of Affordability. A rudimentary connection may be relatively inexpensive but is no longer an adequate basis for digital inclusion.

And our approach to Digital Ability has been refreshed and aligned with an internationally validated and recognised approach: the Internet Skills Scale<sup>1</sup>.

We have used Small Area Estimate modelling aligned to ABS areas to provide insights into digital inclusion for most state, territory, and local government areas.

We now measure the extent to which people's opportunities fall below an acceptable standard to better understand the nature of digital exclusion over time. We do this by identifying the number of Australians who fall within four categories along the continuum of digital exclusion to inclusion. The Index threshold scores for the four groups are: Highly excluded (45 or below); Excluded (above 45 and below 61); Included (61 and below 80); Highly included (80 and above). This approach will help support more targeted policies and programs by providing a benchmark we can track against.

We've also collected data on key digital inclusion concerns that extend beyond the Index, providing deeper understanding into what Australians do online, and how they feel about it.

Most excitingly, our new interactive data dashboards put the Index in your hands. With these you can explore the digital inclusion questions that are most important to you and your community.

You can read the full story about the Index revision in our case study, 'Introducing the revised and updated ADII'.

Our 2021 reporting covers two years of data from the Australian Internet Usage Survey. The first is a baseline survey conducted between September and November 2020. The second is the 2021 data, collected between April and June of this year.

We recognise the challenge presented by documenting the impacts and dynamics of digital exclusion on a website. We remain committed to ensuring the Index is accessible to all and will continue to provide summarised annual findings in PDF and Word formats, with printed copies available on demand. We encourage you to contact us should you require alternative modes of access.

Our new ADII results are not directly comparable to measures reported in previous Index reports, but the digital inclusion dynamics documented here follow the well-established contours of digital inclusion and exclusion charted in our earlier reports.

First Nations digital inclusion is a crucial issue but is difficult to accurately capture in national survey approaches, such as the ADII's. Measuring digital inclusion within and across First Nations communities requires deep engagement with the communities themselves, their organisations, and leaders. We note that the data collection required for the Closing the Gap<sup>2</sup> initiative is currently still under development.

The Telstra-funded **Mapping the Digital Gap** project, now being conducted by the ARC Centre of Excellence for Automated Decision-Making and Society at RMIT University, aims to make a significant contribution to the evidence base in this area. The project is working with 8-10 remote communities to generate First Nations Index scores and track changes in digital inclusion over a four-year period (2021-2024). It will also provide insights for local digital inclusion strategies and for measuring digital inclusion more broadly.

## What does digital inclusion look like across Australia in 2021?

The trend is generally positive, with increases in digital inclusion seen for most social groups and regions.

The national Index score in 2021 is 71.1, up 3.6 points from the 2020 score of 67.5\*. This increase occurs across the country's States and Territories, with the Australian Capital Territory rating highest of all, for an Index score of 77 (5.9 points higher than the 2021 national score, and 5 points higher than the 2020 ACT score of 72).

In 2021, the least digitally included states are South Australia (69) and Tasmania (66) – although both registered improvements in the last year (up 6 and 3 points, respectively, since 2020).

The divide between metropolitan and regional areas is marked. In 2021, metropolitan areas recorded an average Index score of 72.9 (1.8 points higher than the national score). Regional areas, however, recorded an Index score of 67.4. This is 3.6 points less than the national score, and 5.5 points less than metropolitan Australia.

There is some indication this metro-regional gap may be narrowing, with Index scores in regional areas increasing at a higher rate (from 62.3 in 2020 to 67.4 in 2021) than those recorded for their metropolitan counterparts (from 70.1 to 72.9).

## The number of highly excluded Australians has declined, but remains substantial

The percentage of highly excluded Australians has decreased between 2020 and 2021. In 2020, 17% of the Australian population were highly excluded (defined as recording an Index score of 45 or below). In 2021, this has dropped to 11% of the population.

In 2021, highly excluded Australians are most likely to have not completed a secondary education (38%); fall in the lowest income quintile (31%); live in a single person household (26%); have a disability (23%); currently be unemployed (21%); or not be in the labour force (22%).

The percentage of excluded Australians (defined as recording an Index score of above 45 and below 61) has not changed since 2020 and remains at 17% of the national population.

Taken together, the number of highly excluded and excluded Australians is substantial, equalling 28% of the national population in 2021.

Especially concerning is that 65% of highly excluded and excluded Australians say they have 'no need to use the internet more often', with 15% saying the internet is 'not a priority' for them. And although the size of this group has decreased since 2020, their reported lack of confidence online increased, from 10% in 2020 to 13% in 2021.

Cyber safety is also a significant concern for highly excluded and excluded Australians, with concern about privacy and scams rising 3% between 2020 and 2021. In 2021, 20% of excluded and highly excluded Australians are so concerned about privacy and scams that it limits their internet use.

While the decline in the number of highly excluded and excluded Australians seen between 2020 and 2021 is positive, these attitudes and concerns about internet use may significantly inhibit the potential to increase the digital inclusion of people who are currently excluded.

At the other end of the scale, the proportion of included (those with an Index score of 61 and below 80) and highly included Australians (those with an Index score of 80 and above) increased from 2020 to 2021. The number of included Australians rose 2%, from 30% to 32%, while the number of highly included Australians rose 5%. From 36% in 2020 to 41% in 2021.



## Sustained improvements?

With the ongoing COVID-19 pandemic requiring greater reliance on online technologies to manage daily life, digital inclusion is more important than ever, and it is pleasing to see these improvements.

It will be important to gauge whether the pace of change we have seen in 2021 is sustained. In the past, comparatively large jumps in digital inclusion have occurred in the wake of major infrastructure rollouts, such as the completion of the NBN in Tasmania<sup>3</sup>. While these increases are evidence of important improvements in inclusion, the rate of improvement was not maintained over time. The 2022 Index results will therefore be important in understanding the medium-term impacts of the past eighteen months and whether the acceleration in online participation during COVID-19 is enduring.

# Key findings



**71.1**  
ADII score

**Digital inclusion at the national level is improving.** From an average Index score of 67.5 in 2020, to 71.1 in 2021.



**70**  
Access score

**Access scores are increasing at the national level, but these improvements are not evenly shared by all Australians.** While the national Access score has increased from 69.4 in 2020 to 70 in 2021, mobile-only users (43.4), people over 75 years of age (53.5), people who did not complete secondary school (57.0), people who rent from a public housing authority (57.2) or fall into the lowest income quintile (57.7) are being left behind.



**11%**  
Highly excluded

**The number of Australians who are highly excluded has declined but remains substantial.** 11% of the Australian population is highly excluded, registering an Index score of 45 or below.



**64.4**  
Digital Ability score

**Digital Ability has slightly improved, with the national average increasing 0.8 points from 2020 to 64.4 in 2021.** But the score for basic operational skills—such as downloading and opening files, connecting to the internet, and setting passwords—has fallen slightly: from 73.5 in 2020 to 73.1 in 2021. This is potentially related to a growth in new users due to the digital uplift of services during COVID-19.



**9.6%**  
Mobile-only users

**The number of mobile only users has slightly declined: from 10.2% in 2020 to 9.6% in 2021.** However, in 2021 some groups, including single persons (22.6%) and public housing renters (25.12%), continue to be overrepresented in their reliance on mobile-only access.



**67.4**  
Regional ADII score

**The divide between metropolitan and regional areas has narrowed but remains marked.** Regional areas record an Index score in 2021 of 67.4. This is 3.6 points less than the national average (71.1), and 5.5 points less than metropolitan Australia (72.9).



**14%**  
Affordability

**Affordability remains central to closing the digital divide. Based on our Affordability measure, 14% of all Australians would need to pay more than 10% of their household income to gain quality, reliable connectivity.** For Australians in the lowest income quintile, most (67%) would have to pay more than 10% of their household income to gain this same connection.

# Key findings

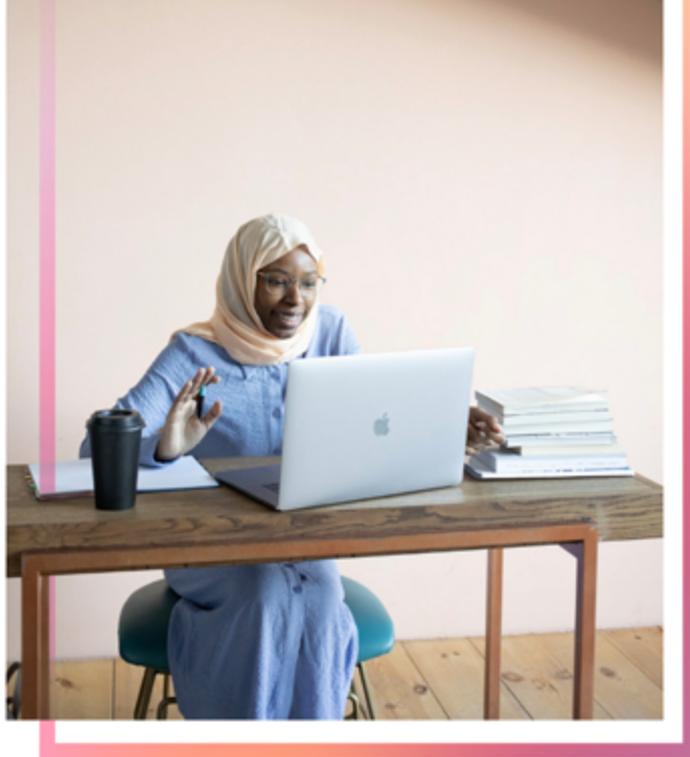
## continued



### 47.4

#### ADII score (Age 75+)

**While digital inclusion remains closely tied to age, there are signs the digital inclusion of mid-life and senior Australians is improving.** Reflecting the increased importance of internet access for social connections and service access during COVID-19 restrictions<sup>4</sup>, older Australians recorded an increase in digital inclusion between 2020 and 2021. The total Index scores of 45-54-year-olds increased by 5.1 points (67.2 to 72.3), 55-64-year-olds increased by 4.9 points (61.9 to 66.8), 65-74-year-olds increased by 3.9 points (53.4 to 57.3), and 75+ year-olds increased by 6.1 points (41.3 to 47.4).



### 78

#### Couples with children

**The composition of the household matters.** Couples with children are the most digitally included Australians, recording an Index score of 78; 6.9 points higher than the national score. Australians who live alone are comparatively much less digitally included, registering an Index score of 61.5, 16.5 points lower than couples with children.



### 25.2

#### Education gap

**Digital inclusion increases with education, employment, and income.** Australians with a bachelor's degree or higher recorded a total Index score of 77.9, 25.2 points higher than those who did not complete secondary school (52.7). Employed Australians registered an Index score of 77.5, 15.9 points higher than those outside of the labour market all together (61.6). And, in 2021, there was a gap of 26.5 points between people in the lowest and highest 20% of household income. This gap has widened slightly from 25.3 points in 2020.



### 74.6

#### Private renters

**The type of housing tenure also matters.** Private renters have the highest Index score of all housing tenure types, increasing from 72.6 in 2020 to 74.6 in 2021. Social housing renters, on the other hand, record an Index score of 61.5 (a small increase of 0.8 points since 2020), 9.6 points lower than the national average. Going some way to explain this gap, more than a quarter (25.12%) of social renters are mobile-only users, compared to just 11.37% of private renters<sup>5</sup>.

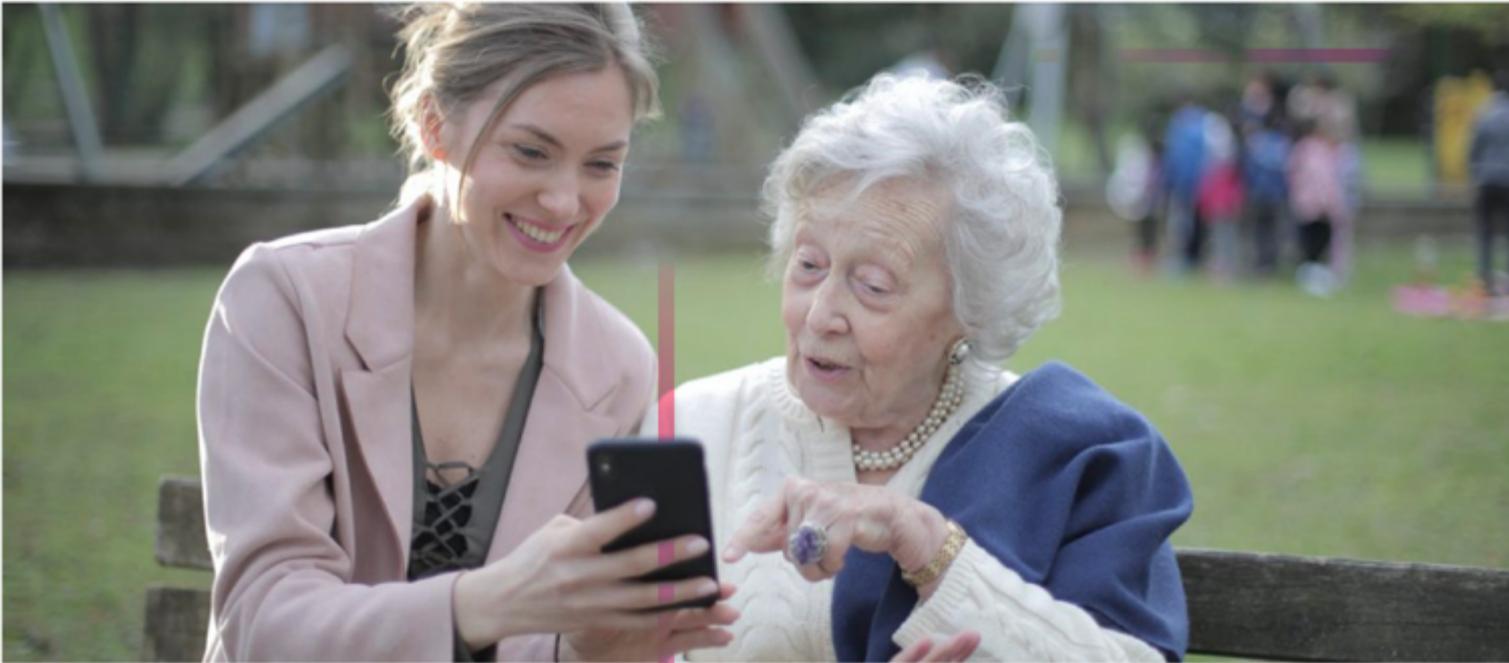


### 73.9

#### LOTE

**Australians who speak a language other than English at home are in general more digitally included than others.** People in this demographic group recorded a 2021 Index score of 73.9 (up 3 on the 2020 score of 70.9). This is 3.5 points higher than Australians who only speak English, and 2.8 points higher than the 2021 national score. People in this demographic group are diverse in their age, education, and employment status, and it follows that a wide range of digital inclusion outcomes are likely.

# Next steps for digital inclusion in Australia



The ADII 2021 findings show that, while Australia's digital transformation continues to accelerate, some Australians are missing out on the benefits, and risk being left behind in the post-COVID economy. It is good news that the number of people who are highly excluded has fallen over time. However, a substantial number are still in this situation.

As services from health to education shift in whole or part to modes of automated, online delivery, the consequences of exclusion for these Australians are likely to translate into lost opportunities and restricted options for work, education, citizenship, and social connection.

Important improvements in network access over recent years have been critical to enabling many Australians, and many organisations, to maintain essential activities and connections through the pandemic. However, the experience of the pandemic also underlines the scale of the challenge, which includes, but is by no means limited to the enhancement of infrastructure.

At the level of government programs, digital skills and abilities initiatives to date have not been co-ordinated. Some useful steps have been taken to alleviate the affordability problem, but to date these have been on a temporary or provisional basis. Many low-income Australian households have spent long

periods in lockdown without a low cost, high quality, fixed broadband product in the marketplace. Access to affordable devices that are appropriate for online work and education has also emerged as a major challenge.

Remote First Nations communities have been required to respond to the pandemic often without adequate communications. Meeting the challenge of Australia's Closing the Gap targets for digital inclusion will require a substantial effort to support the development of effective local strategies, combined with the necessary data collection to track outcomes at a national level.

The provision of affordable broadband across all our cities and regions must therefore remain a high priority for public policy, business, and the community. Targeted initiatives and programs that build digital capabilities are a vital area for investment and development.

Change will require sustained commitment from all levels of government, private industry, the not-for-profit sector, and the broader community. It is pleasing to see many organisations, educational institutions, public sector agencies and communities taking up this challenge. However, the evidence shows that we need to do more. As a community we are now planning the economic and social rebuilding of Australia after the pandemic. Digital inclusion should be an integral part of our planning.

## Case study

# Introducing the revised and updated ADII

This year marks the first release of findings from a revised and updated Australian Digital Inclusion Index. This new version of the Index continues the tradition of the ADII in generating the most nuanced and detailed picture of digital inclusion in Australia. Drawing on the Australian Internet Usage Survey, the ADII retains the original three-dimension framework for measuring personal levels of digital inclusion (Access, Affordability and Digital Ability), but updates the components that underpin these to accommodate changes in digital technologies, digital skills, and the telecommunications marketplace. The revised Index is also interactive, and the data downloadable, allowing you to dig deeper into the digital inclusion questions that matter to you and your community. These changes further enhance the valuable contribution the ADII has made to identifying and addressing digital inequality since 2015.

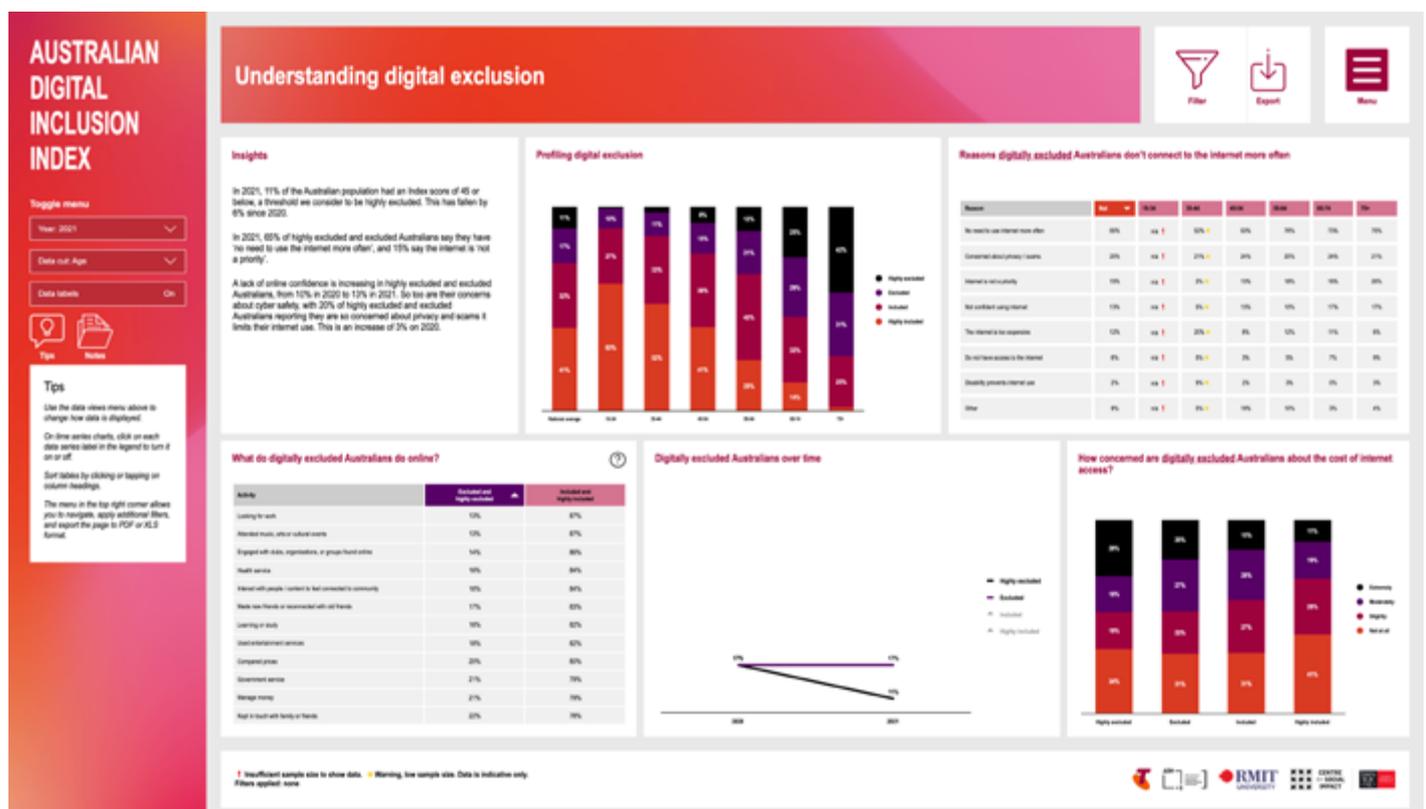
## The ADII: Australia's first composite index of digital inclusion

Access to technology was considered the primary driver of digital inequality in the early days of the internet. However, over time a more holistic understanding of

digital inequality has emerged that recognises the role digital skills and affordability of access play in enabling or inhibiting digital participation. This more nuanced appreciation of digital inclusion has generated demand for refined measurement of the issue.

In 2015, the ADII was created as a tool to measure digital inclusion of people in Australia by combining more than 100 indicators of personal internet and digital technology access, affordability, and use. The ADII was populated with 'best-fit' data drawn from the existing Roy Morgan Single Source Survey dataset. This ongoing commercial survey also captured a range of location and demographic data from respondents, enabling the ADII to track digital inclusion over time and to identify the socio-economic and geographic contours of digital inequality.

Between 2016 and 2020, annual reports presented ADII findings, highlighting changes in the detailed data that underpinned the index scores, and the ADII website made a summary dataset available. The reports and dataset have been widely used by the not-for-profit and business sectors, and all tiers of government to inform policy and practice.



## Making a change

In 2019, the ADII Research Team undertook a comprehensive review of the ADII to ensure it continued to best capture the intricacies of digital inclusion and meet the needs of users of the research.

In particular, the review responded to emerging challenges and opportunities, including:

- rapid and ongoing changes in digital technologies and digital skill demands and the growing significance of the online automation, distribution and consumption of services;
- requests from stakeholders for richer data, including the release of more of the detailed data that populates the Index; and,
- interest from stakeholders in having access to a customised digital inclusion survey and reporting instrument they could use to measure digital inclusion in their own communities.

The review process included a series of roundtable meetings with stakeholders, a call for written submissions and an extensive review of international research focussing on new and innovative methods for measuring digital inclusion.

This process resulted in four major conclusions:

- (1) The three-dimension framework for measuring personal digital inclusion that comprised the ADII (Access, Affordability and Digital Ability) remained relevant, but some of the underlying components used to measure each should be revised or removed and some new components added.
- (2) New arrangements for populating the Index would be required to measure a new set of indicators.
- (3) The public value of the ADII research would be enhanced through the release of the data and the survey instrument.
- (4) Change to the Index and the data source populating the Index would disrupt the numerical time series. Continuity would be retained in relation to the core objectives of the Index and the principal dimensions of analysis. The Index retains its focus on the relative levels of digital inclusion for different socio-economic, demographic and geographically defined population groups and tracking this over time.

To respond to these conclusions the ADII Research Team developed a revised Index.



## What's New?

At the core of the refreshed Index is the Australian Internet Usage Survey (AIUS). This purpose-built survey instrument was developed by the ADII Research Team to generate data for the revised Index. The Social Research Centre has been engaged to administer the survey to a representative sample of the Australian population over four iterations (2020-2023). In 2021, we are presenting data derived from surveys conducted in 2020 and 2021.

Importantly, the survey instrument and the national dataset are owned and controlled by the ADII Research Team. This greatly enhances the public value that can be derived from the updated Index. More detailed data is being publicly released than ever before, providing a richer picture of the factors that underpin Index results.

While the original structure of the ADII has been retained, there have been changes to the components from which the dimension scores are derived. Specific details of each of the ADII Index dimensions can be found on the ADII website.

The major changes are as follows:

- **Access** has been updated to reflect changes in technology, and telecommunication product offerings. The ADII now measures Access via four components: Speed and data allowance, Intensity and frequency of access, Connection type, Device. For the first time our measure of Access includes personal technologies such as voice-controlled smart speakers and smartwatches. We also consider 5G as a superior mobile technology and differentiate fixed broadband based on speed. Location of access is no longer considered within the Access sub-Index given the now near ubiquitous nature of mobile access. Data on where Australians connect, is still collected, however, and can be explored through the interactive data dashboards on the website.
- **Affordability** no longer includes a measure of value for expenditure. This was previously calculated as data volume acquired per dollar of expenditure on internet services. Given the market shift to unlimited data allowance offerings, this was increasingly difficult to calculate. And as the mix of digital products and services that can be packaged together evolves over time, it became clear that a new Affordability measure was needed to capture the increasingly sophisticated data needs of Australian households. This was further emphasised in the wake of the COVID-19 pandemic as people's homes become their workplaces and schools. Rather than differentiating the population based on percentage of household income currently

spent on internet access (the original relative expenditure component), the revised ADII measures the percentage of household income required to purchase an 'internet bundle' that reflects quality and reliable connectivity. The Affordability ratio measure is calculated separately for a family and a single headed household with children under 12 years. This refined measure better reflects the impact of cost-barriers to digital inclusion, revealing stark disparities in terms of equity both across the country and demographics.

- **Digital Ability** has been substantially revised. Measures related to personal attitudes to digital technologies have been removed and indicators of skills are no longer based on the proxy measure of a person undertaking specific online activities in the past 4 weeks, but their perception of their competency in completing selected digital tasks in six realms (Operational: Basic, Operational: Advanced, Social, Creative, Information Navigation, and Smart Devices). This approach, including many of the specific digital tasks assessed, is derived from the Internet Skills Survey developed by researchers at the London School of Economics, University of Twente, and Oxford Internet Institute<sup>6</sup>.

Read more about what Digital Ability looks like in 2021 in our case study, 'Taking a deep dive into Digital Ability', and explore the data on the website.

- The addition of questions that go *beyond* the Index. A key benefit in developing and owning the AIUS is our ability to add and re-shape questions as required. In 2020, we added questions about COVID-19, and the impact the pandemic was having on how Australians were accessing and using the internet.

## Measuring Australian digital inclusion into the future

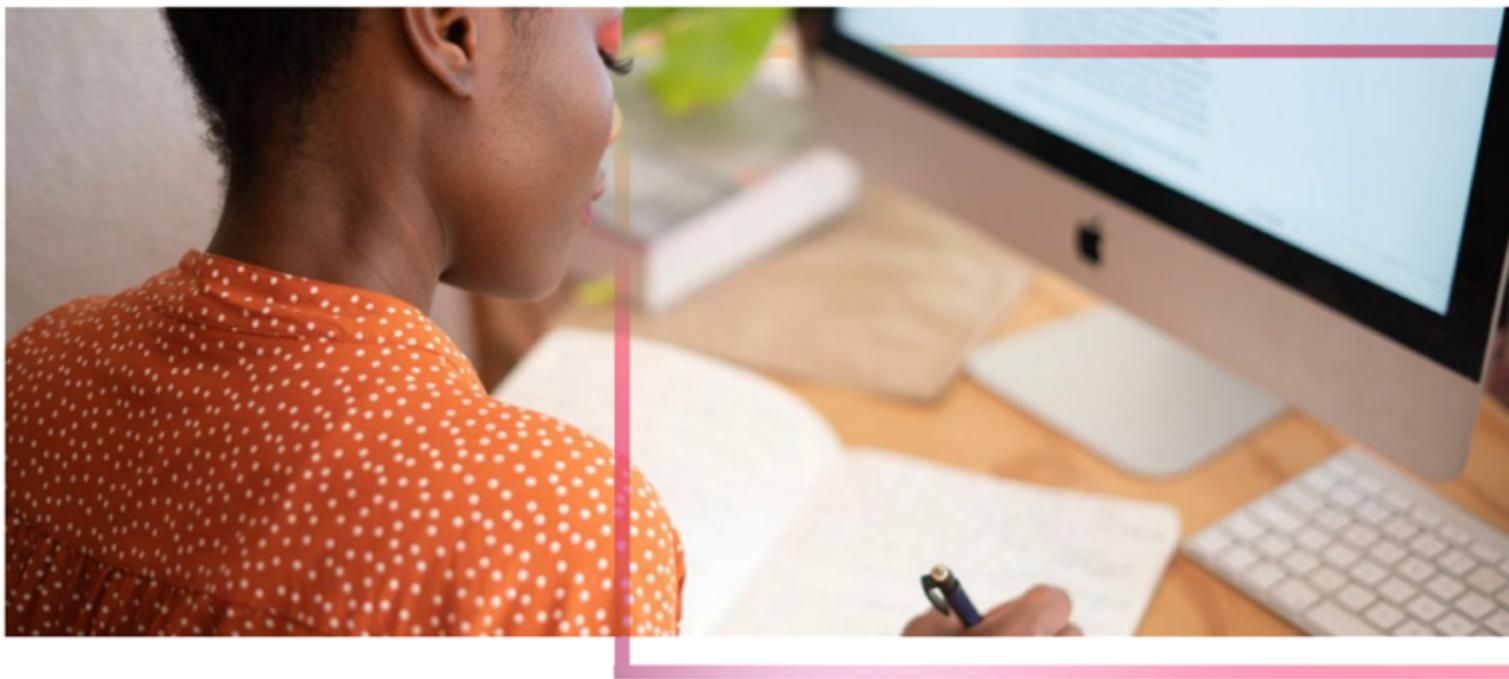
The updated Index builds on and extends the valuable contribution the ADII has made to identifying and addressing digital inequality since 2015.

While the numerical results of refreshed ADII cannot be retrospectively compared with the previous ADII data, the overall picture is largely consistent with past reports. Digital inclusion in Australia remains profoundly shaped by geographic and sociodemographic factors such as age, education, income, employment, and location.

The digital inclusion effects of these factors requires ongoing attention. We look forward to continuing to monitor progress towards digital inclusion, including understanding who is being left behind and why, as we work towards a digitally included future for all Australians.

## Case study

# Taking a deep dive into Digital Ability



As digital devices and services become more embedded in daily routines, the Digital Ability needed to navigate them is crucial to ensuring fair and equitable access to essential services and online opportunities<sup>7</sup>.

Just as digital tools constantly evolve, so too do the skills required to use them effectively. Identifying what online abilities you need to be considered digitally included is a moving target<sup>8</sup>. Without digital skills, a person cannot access and use the internet effectively. And, as new devices are released, maintaining up-to-date digital skills requires ongoing investment. Digital Ability is thus not a static set of skills, but rather an ongoing process of development and maintenance<sup>9</sup>.

Researchers have used a variety of methods to measure and validate the components – including the basic through to advanced ‘skills’, ‘literacies’, and ‘capabilities’ – that underpin the concept of Digital Ability<sup>10</sup>.

To understand the distribution of these skills, and where the gaps are, the ADII measures the level of Digital Ability held by Australians by considering what they do online, and their confidence in undertaking basic tasks through to more advanced activities. We do this by using a tailored version of the Internet Skills Scale (ISS).

## The Internet Skills Scale

Developed in 2014 by leading digital inclusion researchers Van Deursen, Helsper and Eynon, the ISS offers a survey instrument for measuring digital skills that has been successfully used around the world.

Where some approaches to measuring digital skills can be overly simple, the ISS identifies five skills domains, ranging from basic to advanced<sup>11</sup>: operational, informational navigation, social, creative, and mobile. In 2019, a sixth domain, consisting of Internet of Things-specific skills, was added<sup>12</sup>.

Our modification of the ISS involved slightly condensing it and converting some questions from negative to positive statements<sup>13</sup>. Reflecting the increased utility and uptake of mobile devices, we chose not to distinguish between digital skills and mobile-specific skills. And focusing on the growing prevalence of IoT devices and technologies, and their broader consequences, we refer to ‘Internet of Things’ skills as ‘Automation’ skills.

For the ADII, we use the ISS to generate an index dimension, rather than a scale. A person with the highest Digital Ability score can perform the range of tasks across each component while those with the lowest score have basic to no operational skills, reducing their capacity to get online.

**Table 1: Digital Ability components**

Dimension	Digital Ability
Components	<ul style="list-style-type: none"> <li>• <b>Basic operational:</b> Including downloading and opening files, connecting to the internet, and setting passwords.</li> <li>• <b>Advanced operational:</b> Including saving to the cloud, determining what is safe to download, customising devices and connections, and adjusting privacy settings.</li> <li>• <b>Information navigation:</b> Including searching and navigating, verifying trustworthy information, and managing third party data collection.</li> <li>• <b>Social:</b> Including deciding what to share, how, and who with, manage and monitor contacts, and communicate with others.</li> <li>• <b>Creative:</b> Including editing, producing, and posting content, as well as a broad understanding of the rules that may apply to these activities.</li> <li>• <b>Automation:</b> Including connecting, operating, and managing smart devices and IoT technologies.</li> </ul>

In this case study, we look at Digital Ability scores outside of the total Index. When a dimension is added to the overall Index, it is equally weighted to derive the overall Index score. This means a person's Digital Ability score can be higher or lower than their total Index score.

## Digital Ability across Australia

In 2021, the national average score for Digital Ability was 64.4, which is a very slight increase (up 0.8) from the 2020 score of 64.0. Almost all Digital Ability components increased at the national level between 2020 and 2021.

**Table 2: National Digital Ability scores**

	2020	2021	Gap
Digital Ability	63.6	64.4	+0.8
Operational basic	73.5	73.1	-0.4
Operational advanced	64.0	64.4	+0.4
Information navigation	61.8	62.8	+1.0
Social	62.7	63.0	+0.3
Creative	54.1	55.6	+1.5
Automation	65.4	67.4	+2.0

These gains, however, have not been evenly shared by everyone in Australia.

## Digital Ability declines with age...

Digital Ability scores align closely with age, with young adults under 34 receiving a score of 81.6— 17.2 points higher than the national average (64.4), and 54.4 points higher than that of Australians over 75 (27.2). This age-gap is evident across each Digital Ability component and increases as tasks become more complex.

**Table 3: 2021 Digital Ability age-gap**

	National	18–34-year-olds	+75-year-olds	Age-Gap
Digital Ability	64.4	81.6	27.2	-54.4
Operational basic	73.1	86.9	35.7	-51.2
Operational advanced	64.4	83.6	24.8	-58.8
Information navigation	62.8	79.8	27.5	-52.3
Social	63.0	78.8	29.9	-48.9
Creative	55.6	75.0	19.3	-55.7
Automation	67.4	85.4	25.9	-59.5

While by far the most marked, it is not just at the extreme ends of the age range that we see the impact of age on Digital Ability scores. There is a significant drop in Digital Ability after the age of 55. 55–64-year-olds score 56.5 on this dimension (a gap of 7.9 to the national average), and 65–74-year-olds score only 41.8 (22.6 points less than the national). Continued work towards closing the age gap and enhancing the Digital Ability of senior Australians remains critical.

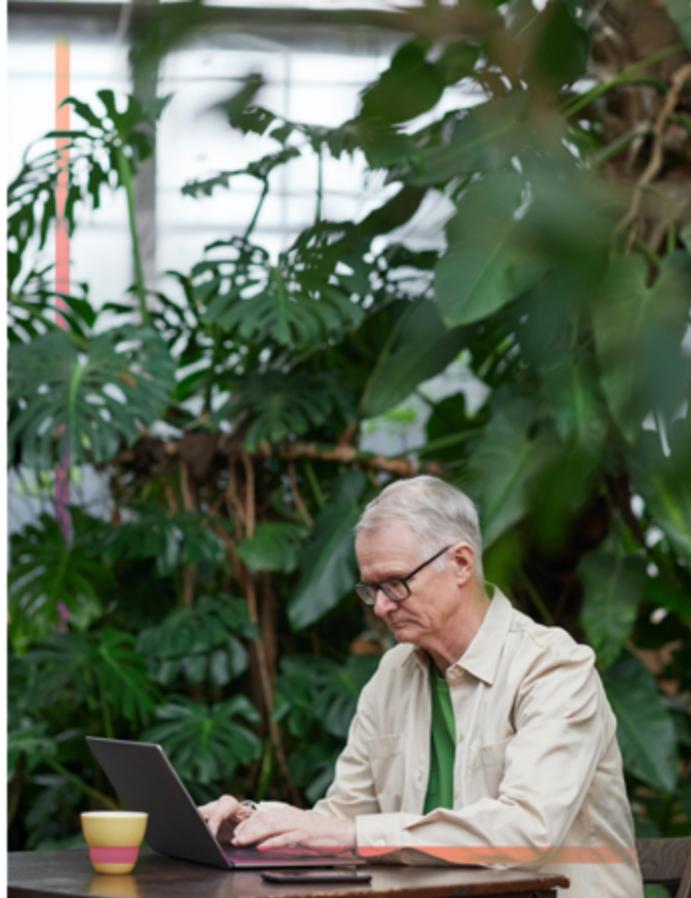
### ...but improves as education and income levels rise

As with the Index as a whole, Digital Ability scores improve as education and income levels rise.

While those with a bachelor’s degree or above have a Digital Ability score of 74.7 (10.3 points higher than the national score), people who did not complete secondary school record a score of 36.3. This is 28.1 points lower than the national score and 38.4 points lower than those with a bachelor’s degree or higher.

Those in the lowest income quintile (earning under \$33,800 per annum) have a Digital Ability score of just 45.8; 18.6 points lower than the national score, and 33.8 points lower than the highest income quintile (79.6).

Australians receiving income support record a Digital Ability score of 52.3 (12.1 points less than the national score, and 17 points less than those who do not receive income support. Australians who are not in the labour force score only 50.6 for Digital Ability – 13.8 points lower than the national score, 6 points less than unemployed Australians (those who had actively looked for work in the past four weeks; 56.6), and 23 points less than those currently employed (73.6).



### At the national level, women have slightly lower Digital Ability scores than men, but this pattern is reversed in regional Australia

Gender has a minimal impact on Digital Ability at the national level<sup>14</sup>. Women registered a Digital Ability score of 64.0 in 2021, which is slightly lower than that recorded for men (65.4). This disparity plays out across each of the Digital Ability components, apart from in their social activities. Here, women receive a score of 64.8, 1.7 points higher than the national average, and 2.9 points higher than the male score of 61.9.

**Table 4: 2021 Digital Ability gender-gap**

	National	Male	Female	Gender-Gap
Digital Ability	64.4	65.4	64.0	-1.4
Operational basic	73.1	74.7	72.1	-2.6
Operational advanced	64.4	66.4	63.2	-3.2
Information navigation	62.8	64.4	62.1	-2.3
Social	63.0	61.9	64.8	+2.9
Creative	55.6	56.8	54.9	-1.9
Automation	67.4	68.3	66.8	-1.5

These dynamics play out differently in regional Australia. Here, women score much higher than their male counterparts across all Digital Ability measures. Women in regional Australia have a Digital Ability score of 62.2, compared to 57.5 recorded for men.

Notably however, and aligned with the metropolitan-regional gap, these scores remain lower than the national average for Digital Ability (2.2 and 6.9 points lower, respectively), and the metropolitan average of 66.7.

## Households with children are more digitally able than households without

All household types with children have higher Digital Ability scores than the national average. Couples with children have a Digital Ability score of 74.0 (9.6 points higher than the national average), one parent families score 69.0 on this dimension (4.6 points higher than the national), and multi-family/group/other households score 65.3 (0.9 points higher than the national).

Digital Ability scores diminish in households without children, with the most significant gap seen for single persons who recorded a Digital Ability score of 52.4 in 2021. This is 12 points lower than the national score, and 21.6 points lower than couple with children households.

This is particularly concerning when considered in the wake of ongoing COVID-19 restrictions. While digital technologies might have provided single householders a critical lifeline to social interaction, their Social skills score of 52.7 – 10.3 points lower than the national average and 19.2 points lower than couple with children households – suggests this might not have been easy or possible for all.

## Mobile only users have a below-average Digital Ability score, but this is improving

Mobile only users, 9.6% of the Australian population in 2021, register Digital Ability scores that are substantially lower than the national average across all components.

However, mobile only users had an increase in Digital Ability from 2020, up 7.7 points from 2020 to 52.9 in 2021.

**Table 5: 2021 Digital Ability: Mobile-only users**

	2020	2021	Gap
<b>Digital Ability</b>	45.2	52.9	+7.7
<b>Operational basic</b>	55.1	64.9	+9.8
<b>Operational advanced</b>	44.0	53.9	+9.9
<b>Information navigation</b>	44.8	50.4	+5.6
<b>Social</b>	48.4	51.3	+2.9
<b>Creative</b>	36.1	45.3	+9.2
<b>Automation</b>	43.1	51.7	+8.6

## What can we say about Digital Ability in Australia in 2021?

Maintaining and improving digital skills takes time<sup>15</sup>. These skills also improve with use, which means people who use the internet regularly and in a variety of ways – for example, for work, education, or recreation – are more likely to score higher on this measure. With these skills come the opportunities to benefit from digital technologies. Australians with high Digital Ability scores are therefore better enabled to manage their health,



access education and services, participate in cultural activities, organise their finances, follow news and media, and connect with family, friends, and the wider world. For those Australians lagging on this dimension – particularly older Australians, those with lower education and income levels, those living in regional areas, single householders, and mobile only users – these opportunities may be out of reach. Significant and coordinated efforts to address these Digital Ability gaps will be critical if we are to ensure a more equitable post-COVID-19 digital economy.

## Case study

# Has COVID-19 been a driver of digital inclusion in Australia?



### Reflecting on early findings

With the introduction of COVID-19 restrictions, much of contemporary life moved online. This case study considers how these restrictions and the associated digital transformation of all facets of life has impacted how Australians use the internet. The data at this stage suggests that, while some important gains in internet use are evident across all groups, the impact of initial COVID-19 restrictions in 2020 seems to have reinforced many of the existing contours of digital inclusion and exclusion.

In 2020, we asked Australians how COVID-19 restrictions had impacted their digital connectivity. Most spent more time online (68%) and increased the range of activities they did online (59%).

While this rise in online activity suggests the potential for positive digital inclusion outcomes, only 32% of Australians reported improving their digital skills to help with their work, study, or home life and less than a fifth (18%) reported upgrading their internet access.

Most importantly, the impact of COVID-19 on how Australians accessed and used the internet, and the impact of this use in terms of skills, was distributed unevenly across the population. Where 80% of highly included Australians increased their time spent online, only 42% of highly excluded Australians did the same. This same pattern is evident across all questions, demonstrating that although COVID-19 might be a driver of digital transformation, it will not necessarily prove to have been a significant driver of digital inclusion<sup>16</sup>.

**Table 6: Impact of COVID-19 in 2020: Highly included Australians vs highly excluded Australians**

	National	Highly included	Highly excluded
Spent more time online	68%	80%	42%
Increased range of activities done online	59%	71%	28%
Upgraded internet access	18%	23%	8%
Improved digital skills to help with work, study, or home life	32%	40%	14%

Increases in online activity were not seen in population groups and locations that were comparatively less impacted by the pandemic (such as those not living in locked down locations), and less likely to be involved in activities that shifted online, like work and education. These are also population groups and locations that typically have lower levels of digital inclusion from the outset.

**For older Australians and those in regional areas, the impact of the COVID-19 move online was comparatively minimal.** Older Australians were much less likely than their younger counterparts to report expanding their online activities. Where 82% of 18–34-year-olds and 71% of 35–45-year-olds spent more time online in the wake of COVID-19, the same was true for only 59% of 55–64-year-olds and 50% of 65–74-year-olds. Similarly, while 45% of 18–34-year-olds improved their digital skills to help with their work, study, or home life, this declined as age increases, with only 14% of 65–75-year-olds improving their skills.

Australians in regional areas were also less likely to have spent more time online, increase their range of online activities, or improve their digital skills than those living in capital cities. For capital cities, 64% of people reported increasing the range of activities they did online compared to 48% in regional areas.

**Table 7: Impact of COVID-19 in 2020: metro vs regional**

	National	Metro	Regional
Spent more time online	68%	72%	61%
Increased the range of activities you do online	59%	64%	48%
Improved your digital skills for work, study, or home life	32%	37%	23%
Upgraded your internet access	18%	21%	13%

These findings reflect the varied impact of COVID-19 restrictions. While the rapid move to online education and work had dramatic consequences for some, the impact was less marked for mid-life to senior Australians that were out of the labour force. Likewise, Australians living in regional areas were – at the time of data collection in 2020 – much less likely to be under stay-at-home restrictions.

**Conversely, groups that were heavily impacted by COVID-19 restrictions demonstrated the greatest increases in online activity.** Households with children, for example, were much more likely to increase their time spent online, increase their range of activities, improve their internet skills, and upgrade their internet connection than households without. Where 74% of couples with children and 78% of one parent families

spent more time online, only 64% of single person households and 59% of couples without children did so. These differences are likely a result of the shift to online learning and a reliance on online entertainment and leisure activities because of lockdown restrictions.

Findings around perceptions of improving digital skills to help with work, study, or home life are particularly interesting in terms of gauging whether COVID-19 had an impact on digital inclusion. At the national level, 32% of Australians reported they were able to improve their digital skills. In households without children, this was significantly lower. Just a quarter of single person householders indicated improving their digital skills (25%), as did 27% of couples without children. In households with children, responses to this question jumped to 37% (couples with children) and 40% (one parent families).

**Further emphasising the pandemic’s geographic dynamics in 2020, the impact of COVID-19 on internet access and use within specific household types varied by location.** Households with children in metropolitan Australia – those most likely to have experienced COVID-19 restrictions – recorded impacts at much higher rates than those households with children living in regional Australia. Particularly striking are the results for upgrading internet access. Where just under a quarter (23%) of couples with children and 36% of one parent families in metropolitan Australia upgraded their internet access, this was true of just 12% of couples with children and 16% of one parent families in regional Australia.

## COVID-19: A driver of digital inclusion?

The rapid shift online of 2020 changed the way many Australians use the internet. Further, these changes appear to have mostly involved those Australians who were already active online.

Population groups that typically register lower digital inclusion scores – such as older Australians, and those living in regional areas – were much less likely to report an impact on their access to and use of the internet than those with higher digital inclusion scores. This can partially be explained by the pandemic’s dynamics. While undoubtedly impacted by COVID-19 these population groups were comparatively less implicated in lockdown restrictions and the ‘pivot’ to online work, schooling, and education.

Although a driver of digital transformation, this early data suggests COVID-19 has not necessarily been a strong driver of digital inclusion. Instead, it appears that in some respects COVID-19 may have reinforced Australia’s uneven distribution of digital participation, by increasing online activity among people who were already more likely to be online, with the most pronounced effect being on those with children, and in metropolitan areas.

## Project partners



### Telstra

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Telstra is Australia's leading telecommunications and technology company, offering a full range of communications services and competing in all telecommunications markets. In Australia, Telstra provides 19.5 million retail mobile services and 3.6 million retail bundle and data services. Telstra's purpose is to build a connected future so everyone can thrive, which recognises the fundamental role the company plays in enabling social and economic inclusion. Telstra has provided products, services, and support to enhance digital inclusion for more than a decade through its Access for Everyone and Everyone Connected programs, reducing the barriers to inclusion such as age, income, skill level and location.



### The ARC Centre of Excellence for Automated Decision-Making and Society

[www.admscentre.org.au](http://www.admscentre.org.au)

The ARC Centre of Excellence for Automated Decision-Making and Society (ADM+S) is a cross-disciplinary, national research centre, which aims to create the knowledge and strategies necessary for responsible, ethical, and inclusive automated decision-making. Funded by the Australian Research Council from 2020 to 2026, ADM+S is hosted at RMIT in Melbourne, Australia, with nodes located at eight other Australian universities, and partners around the world. The Centre brings together leading researchers in the humanities, social and technological sciences in an international industry, research, and civil society network. Its priority domains for public engagement are news and media, transport, social services, and health.



### Centre for Social Impact Swinburne University of Technology

[www.csi.edu.au](http://www.csi.edu.au)



The Centre for Social Impact (CSI) is an independent, not-for-profit research and education collaboration between three of Australia's leading universities: UNSW Sydney, Swinburne University of Technology, and The University of Western Australia. CSI acts as a catalyst for social change through research, education, and leadership development. CSI Swinburne's focus is on developing leaders, organisations, and policy conditions that support progressive social change in the areas of: social innovation; social investment and philanthropy; business and social impact; and measuring and demonstrating social value.

## Project collaborators



### The Social Research Centre

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The Social Research Centre provides government, academia, and the not-for-profit sector with access to world-class research and evaluation services including research design, data collection, statistical consulting, and analysis and reporting. The Social Research Centre is owned by the Australian National University and has a well-earned reputation as one of Australia's pre-eminent social research organisations.



### Dassier

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Dassier provides custom built data visualisations, data dashboards, and online reporting platforms. Established in 2012, the team at Dassier has worked with a variety of Australian organisations across the private, public, government and not for profit sectors to deliver both internal and public facing data dashboards and online reporting tools.

# References

- <sup>1</sup> A J A M van Deursen, E J Helsper, and R Eynon, "Development and Validation of the Internet Skills Scale (ISS)," *Information, Communication & Society* 19, no. 6 (2016): 804–823. <https://doi.org/10.1080/1369118X.2015.1078834>
- <sup>2</sup> Australian Government, *National Agreement on Closing the Gap*, 2020. Accessed September 17, 2021. [https://www.closingthegap.gov.au/sites/default/files/2021-05/ctg-national-agreement\\_apr-21.pdf](https://www.closingthegap.gov.au/sites/default/files/2021-05/ctg-national-agreement_apr-21.pdf)
- <sup>3</sup> J Thomas, J Barraket, C K Wilson, K Cook, Y M Louie, I Holcombe-James, S Ewing, T MacDonald, *Measuring Australia's Digital Divide: The Australian Digital Inclusion Index 2018*, 2018. Melbourne: RMIT University, for Telstra. <https://doi.org/10.25916/5b594e4475a00>
- <sup>4</sup> A McCosker, J Tucker, C Critchley, K Hiruy, J Walshe, R Suchowerska, and J Barraket, *Improving the Digital Inclusion of Older Australians: The Social Impact of Be Connected*, 2020. Melbourne: Swinburne University of Technology. <https://doi.org/10.25916/5ed5b6e204a95>
- Australian Communications and Media Authority, *Communications and Media in Australia: How We Use the Internet*, 2021. Accessed September 12, 2021. <https://www.acma.gov.au/publications/2021-05/report/communications-and-media-australia-how-we-use-internet>
- <sup>5</sup> A Goeury, and F McMillan, *Rental Connect Research Study: Issues Faced by Renters in Australia's Phone and Internet Market*, 2018. Accessed September 19, 2021. [https://accan.org.au/ACCAN%20Rental%20Connect%20-%20Report%2004.10.2018\\_FINAL.pdf](https://accan.org.au/ACCAN%20Rental%20Connect%20-%20Report%2004.10.2018_FINAL.pdf)
- <sup>6</sup> A J A M van Deursen, E J Helsper, and R Eynon, "Development and Validation of the Internet Skills Scale (ISS)," *Information, Communication & Society* 19, no. 6 (2016): 804–823. <https://doi.org/10.1080/1369118X.2015.1078834>
- <sup>7</sup> E Hargittai, "Second-Level Digital Divide: Differences in People's Online Skills," *First Monday* 7, no. 4 (2002). <https://doi.org/10.5210/fm.v7i4.942>
- N Selwyn, "Reconsidering Political and Popular Understandings of the Digital Divide," *New Media & Society* 6, no. 3 (2004): 341–62. <https://doi.org/10.1177/1461444804042519>
- L D Stanley, "Beyond Access: Psychosocial Barriers to Computer Literacy Special Issue: ICTs and Community Networking," *The Information Society* 19, no. 5 (2003): 407–16. <https://doi.org/10.1080/715720560>
- J A G M van Dijk, "Digital Divide Research, Achievements and Shortcomings," *Poetics* 34, no. 4–5 (2006): 221–35. <https://doi.org/10.1016/j.poetic.2006.05.004>
- M Warschauer, "Reconceptualising the Digital Divide," *First Monday* 7, no. 7 (2002). <https://doi.org/10.5210/fm.v7i7.967>
- <sup>8</sup> A J A M van Deursen, E J Helsper, and R Eynon, "Development and Validation of the Internet Skills Scale (ISS)," *Information, Communication & Society* 19, no. 6 (2016): 804–823.
- <sup>9</sup> P Walton, T Kop, D Spriggs, and B Fitzgerald, "A Digital Inclusion: Empowering All Australians," *Australian Journal of Telecommunications and the Digital Economy* 1, no. 1, (2013): 1–17. <http://doi.org/10.7790/ajtde.v1n1.9>
- <sup>10</sup> H Bonfadelli, "The Internet and Knowledge Gaps: A Theoretical and Empirical Investigation," *European Journal of Communication* 17, no. 1 (2002): 65–84, <https://doi.org/10.1177/0267323102017001607>
- U Bunz, "The Computer-Email-Web (CEW) Fluency Scale – Development and Validation," *International Journal of Human-Computer Interaction* 17, no. 4 (2004): 479–506. [https://doi.org/10.1207/s15327590ijhc1704\\_3](https://doi.org/10.1207/s15327590ijhc1704_3)
- U Bunz, C Curry, and W Voon, "Perceived Versus Actual Computer-Email-Web Fluency," *Computers in Human Behavior* 23, no. 5 (2007): 2321–2344. <https://doi.org/10.1016/j.chb.2006.03.008>
- A J A M Van Deursen, and J A G M van Dijk, *Digital Skills: Unlocking the Information Society* (New York: Palgrave Macmillan, 2014).
- A J A M van Deursen, J A G M van Dijk, and O Peters, "Proposing a Survey Instrument for Measuring Operational, Formal, Information and Strategic Internet Skills," *International Journal of Human-Computer Interaction* 28, no. 12 (2012): 827–837. <https://doi.org/10.1080/10447318.2012.670086>
- J van Dijk, and K Hacker, "The Digital Divide as a Complex and Dynamic Phenomenon," *The Information Society* 19, no. 4 (2003): 315–326. <https://doi.org/10.1080/01972240309487>
- M S Eastin, and R LaRose, "Internet Self-Efficacy and the Psychology of the Digital Divide," *Journal of Computer-Mediated Communication* 6, no. 1 (2000). <https://doi.org/10.1111/j.1083-6101.2000.tb00110.x>
- P Gilster, *Digital Literacy* (New York: Wiley, 1997).
- E Hargittai, "Survey Measures of Web-Oriented Digital Literacy," *Social Science Computer Review* 23, no. 3 (2005): 371–379. <https://doi.org/10.1177/0894439305275911>
- E Hargittai, and Y P Hsieh, "Succinct Survey Measures of Web-Use Skills," *Social Science Computer Review* 30, no. 1 (2012): 95–107. <https://doi.org/10.1177/0894439310397146>
- E J Helsper, "A Corresponding Fields Model for the Links Between Social and Digital Exclusion," *Communication Theory* 22, no. 4 (2012): 403–426. <https://doi.org/10.1111/j.1468-2885.2012.01416.x>
- E J Helsper, and R Eynon, "Distinct Skill Pathways to Digital Engagement," *European Journal of Communication* 28, no. 6 (2013): 696–713. <https://doi.org/10.1177/0267323113499113>
- E Litt, "Measuring Users' Internet Skills: A Review of Past Assessments and a Look Toward the Future," *New Media & Society* 15, no. 4 (2013): 612–630. <https://doi.org/10.1177%2F1461444813475424>
- D Potosky, "The Internet Knowledge (iKnow) measure," *Computers in Human Behavior* 23, no. 6 (2007): 2760–2777. <https://doi.org/10.1016/j.chb.2006.05.003>
- B H Spitzberg, "Preliminary Development of a Model and Measure of Computer-Mediated Communication (CMC) Competence," *Journal of Computer-Mediated Communication* 11, no. 2 (2006): 629–666. <https://doi.org/10.1111/j.1083-6101.2006.00030.x>
- <sup>11</sup> A J A M van Deursen, E J Helsper, and R Eynon, "Development and Validation of the Internet Skills Scale (ISS)," *Information, Communication & Society* 19, no. 6 (2016): 804–823. <https://doi.org/10.1080/1369118X.2015.1078834>
- <sup>12</sup> A J A M van Deursen, A van der Zeeuw, P de Boer, G Jansen, and T van Rompay, "Digital Inequalities in the Internet of Things: Differences in Attitudes, Material Access, Skills, and Usage," *Information, Communication & Society* 24, no. 2 (2021): 258–276. <https://doi.org/10.1080/1369118X.2019.1646777>
- <sup>13</sup> A J A M van Deursen, E J Helsper, and R Eynon, *Measuring Digital Skills. From Digital Skills to Tangible Outcomes Project Report*, 2014. <https://www.lse.ac.uk/media-and-communications/assets/documents/research/projects/disto/Measuring-Digital-Skills.pdf>
- <sup>14</sup> Please note, the ADII draws on a national sample size ranging from 2,798 to 2,287 which does not provide sufficient non-binary respondents to generate reliable data. The Index therefore does not provide a score for non-binary people.
- <sup>15</sup> A Marshall, A Dale, H Babacan, and M Dezuanni, *Connectivity and Digital Inclusion in Far North Queensland's Agricultural Communities: Policy-Focused Report*, 2019. Accessed January 7, 2020. <https://eprints.qut.edu.au/130869/>
- M Elliott, *Out of the Maze: Building Digitally Inclusive Communities*, 2018. Wellington: Vodafone New Zealand Foundation, Internet NZ, and The Workshop. <https://static1.squarespace.com/static/5bd0d99e16b6404fe9018538/t/5bdf7f9b575d1f0d19337766/1541373904877/OutOfTheMaze.pdf>
- Department of Internal Affairs, *The Digital Inclusion Blueprint, Te Te Mahere m te Whakaurunga Matihiko*, 2019. Wellington: Department of Internal Affairs. Accessed September 17, 2021. <https://www.digital.govt.nz/dmsdocument/113-digital-inclusion-blueprint-te-mahere-mo-te-whakaurunga-matihiko>
- <sup>16</sup> C Wilson & J Barraket, *How COVID-19 is Worsening Digital Inequality*, 2020. Accessed August 24, 2021. <https://www.ceda.com.au/NewsAndResources/Opinion/Technology-Innovation/How-COVID-19-is-worsening-digital-inequality>
- L H Campbell, A C Smith, P Brooks, "The NBN Futures Forum: Social and Economic Benefits of Broadband for Digital Inclusion and Telehealth," *Journal of Telecommunications and the Digital Economy* 8, no. 3 (2020): 18–32. <https://doi.org/10.18080/jtde.v8n3.346>



Full details, including methods, definitions of key terms, and Index data, are available at: [digitalinclusionindex.org.au](https://digitalinclusionindex.org.au)

