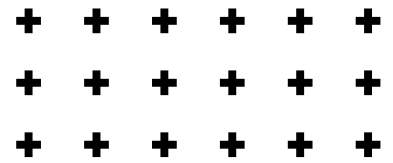


Submission to the Regional Telecommunications Review 2021

Submitted on the behalf of the Australian Digital Inclusion Index research team

Embargoed until October 15, 2021.





Introduction

This submission has been prepared by the Australian Digital Inclusion Index research team, based in the ARC Centre of Excellence for Automated Decision-Making at RMIT and the Centre for Social Impact Swinburne University of Technology.

This submission builds on work cited in the Regional Telecommunications Review 2018 Issues Paper from the Swinburne Institute for Social Research, where the co-authors of this report were based prior to 2017, and the Submission to the Regional Telecommunications Review 2018 made by the Technology, Communication & Policy Lab, where the co-authors of this report were based prior to 2021.

The evidence that this submission presents is drawn from the Australian Digital Inclusion Index (ADII). We present the most current ADII data on the Australian metropolitan-regional digital divide, and provide responses to questions 1, 2, 6, 7, 11.

All tables referred to are listed in Appendix 1.

The Australian Digital Inclusion Index

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.

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.

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.

A note on methods

2021 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 Australian Internet Usage Survey is designed by the ADII research team and administered by the Social Research Centre at the Australian National University. The survey sample is stratified and weighted to reflect the Australian population. A first baseline survey was conducted between September and November 2020, with 2021 data collected between April and June of this year. The 2020 sample comprised 2,798 people. The 2021 sample comprised 2,287 people.

The AIUS uses a sequential mixed-mode data collection design, which allows participants to complete the survey either online or in hardcopy. To ensure the survey includes both people who use the internet and those who do not, invitations to complete the survey are sent via post.

While the AIUS survey enables a national Index score for a range of socio-demographic groupings its sample size does not collect large numbers of responses for every regional area. To provide a regional view, the ADII uses a robust technique called Small Area Estimates (SAE). SAEs combine survey data with additional data from sources with broader coverage, such as the Australian Census. They are a valuable approach for enhancing the value and detail of survey results from a finite sample of participants.

In modelling SAEs for the Index, analysts at the Social Research Centre combine national AIUS survey data with the ABS Census to estimate Index scores at the State and Local Government Areas.

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. Digital inclusion in Australia remains profoundly shaped by geographic and sociodemographic factors such as age, education, income, employment, and location.

A note on reading the data

ADII scores range from 0 to 100. The higher the score, the greater the level of digital inclusion. ADII scores are relative: they allow comparisons across different social groups and geographic areas, and over time.

Each of the Index dimensions – Access, Affordability and Digital Ability – are equally weighted to derive the total Index score.



Total Index scores have been classified into four groups: Highly excluded (45 or below), Excluded (above 45 and below 61), Included (61 and below 80) and Highly included (80 and above). The threshold for inclusion indicates that a person scoring above that level can make accessible, affordable, and effective use of the internet. These thresholds are based on the distribution of 2020 Index scores and have been retained for 2021 to measure change from the initial scores.

All ADII scores and percentages are weighted to the Australian population.



The metropolitan-regional digital divide

In 2021, regional Australia records an Index score of 67.4. This is an increase of 5.1 points from the 2020 score of 62.3. This increase is evident across all Index dimensions (see Table 1), with the Digital Ability score for regional Australia registering the most significant improvement with a rise of 3.2 points since 2020: from 56.5 to 59.7.

Despite these improvements, the metropolitan-regional gap remains significant. The scores received by regional Australians remain lower than both the 2021 national average and that recorded for their metropolitan counterparts across all dimensions (see Table 2).

Access

Access remains a significant concern for regional Australians. Where the national Access score is 70.0 in 2021, regional Australians score 66.3 on this dimension. This is 3.7 points lower than the national average, and 5.6 points lower than the metropolitan score of 71.9.

While regional Australians score below their metropolitan counterparts on all Access components, the metro-regional gap is especially stark in terms of ‘speed and data allowance’. Where the national average score for this component in 2021 is 66.2, and metropolitan Australians record a score of 69.0, this drops to 60.5 for regional Australians. This is 5.7 points lower than the national average, and 8.5 points lower than the metropolitan score.

Affordability

The revised ADII measures Affordability as a ratio of the potential cost for a quality Internet Bundle to the distribution of household income. This idealised bundle enables both quality and uninterrupted connectivity through:

- A fast internet connection (such as that provided through a cable (HFC) service, NBN 50 or above, or 5G wireless service),
- An unlimited monthly data allowance through a fixed broadband service, and,
- A mobile broadband or mobile phone data allowance above 61GB per month.

The Affordability ratio is converted to a score between 0 and 1 and multiplied by 100 to present a metric consistent with all dimensions. A more meaningful way to understand this measure in isolation from the rest of the Index is to convert the score to a percentage of how much people would need to pay as a proportion of their total household income to gain access to the internet bundle.



Having to pay more than 5% of household income on the internet bundle would tip many lower income households into Affordability stress: compromising their capacity to pay for other essential household items. To avoid this, many lower income households buy cheaper and often inferior connections and devices that limit the quality of connections and opportunities of internet use. Households that need to pay more than 5% of their household income to access the internet bundle are considered to have 'low Affordability'. Households that need to pay less than 5% of their household income are considered to have 'high Affordability'.

Where 39% of the Australian national population experience low affordability, this drops to 35% of the metropolitan population, and rises to almost half (47%) of the regional population (see Table 3). This is driven largely by a much higher proportion of the regional Australian population having to pay up to 10% of their household income to gain access to the above-described internet bundle (see Table 4). 33% of regional Australians fall into this category, compared to 21% of Australians who live in metropolitan areas, and 25% of the national population.

Digital Ability

While regional Australia has seen the greatest increase in Digital Ability scores between 2020 and 2021, it is on this dimension that the metropolitan-regional divide is most stark. Where metropolitan Australians register a Digital Ability score of 66.7 in 2021, this drops 7 points in regional Australia, resulting in a score of 59.7 (see Table 2).

Proportion of excluded and highly excluded Australians

The revised ADII measures 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), and
- Highly included (80 or above).

At the national level, digital exclusion shows signs of improving with the proportion of highly excluded Australians decreasing from 17% in 2020 to 11% in 2021.

Reflecting the metro-regional divide, the proportion of excluded and highly excluded Australians is higher in regional areas than it is in metropolitan locations (see Table 5).



In 2021, 14% of the regional Australia population is highly excluded and 20% is excluded, compared to 9% and 15% of the metropolitan population.

The number of highly excluded regional Australians has declined since 2020, from 24% to 14%. The number of excluded regional Australians has slightly risen, from 19% in 2020 to 20% in 2021.

The number of highly included regional Australians has increased over this same period: rising from 26% to 34% in 2021. This is a faster rate of increase than that seen in metropolitan locations, where the highly included population comprised 41% in 2020 and 44% in 2021.

It is encouraging that the regional-city digital divide is narrowing over time, but the disparity remains a critical area for further targeted policy intervention.



The metropolitan-regional digital divide: Key findings

Age

- Digital inclusion remains strongly linked to age, with younger Australians registering higher Index scores than older Australians.
- At a national level, 18–34-year-olds record a total 2021 Index score of 80.6. This is 9.6 points higher than the national average of 71.1, and 33.2 points higher than the Index score of 47.4 registered by Australians over the age of 75.
- Although recording slightly higher Index scores, perhaps reflecting the enhanced reliance of digital connectivity and skills in regional Australia to meet lacking or distant physical services, this same dynamic is reflected in regional Australia, see Table 6.
- Regionally located 18–34-year-olds record a total 2021 Index score of 81.2. This is 10.2 points higher than the national average of 71.1, and 32.7 higher than the Index score of 48.5 registered by Australians over the age of 75 who live in regional areas.
- For younger Australians in regional areas, the metro-regional age gap falls slightly in their favour. 18–34-year-olds living in metropolitan Australia receive a 2021 Index score of 80.4, which increases by 0.8 points for the same age group in regional areas, resulting in a score of 81.2.
 - This gap is especially pronounced in terms of the Digital Ability scores received for younger Australians.
 - Where 18–34-year-olds living in metropolitan Australia receive a score of 78.3 for Information Navigation skills, those living in regional areas receive a score of 84.3 on this same component.
 - Where 18–34-year-olds living in metropolitan Australia receive a score of 77.5 for Social skills, those living in regional areas receive a score of 82.5 on this same component.
- For most other age groups, the metro-regional gap favours metropolitan Australians. The gap is widest for those between 35 and 44. Regional Australians in this age group register a 2021 Index score of 72.2. This is 7.5 points lower than that scored by the same age group in metropolitan areas who record a score of 79.7.

Australians who speak a language other than English

- 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. This is 3.5 points higher than Australians who only speak English (70.4), 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.

- Despite this, and reflecting the metro-regional gap, both Australians who do and do not speak a language other than English at home in regional areas lag behind their metropolitan counterparts.
- In 2021, this gap is widest for those who do not speak a language other than English at home, with this regional cohort 5.1 points their metropolitan counterparts.
- See Table 7.

Education

- Digital inclusion increases with education.
- At the national level, Australians who did not complete secondary school record a 2021 Index score of 52.7. This is 18.4 points lower than the national average, and 25.2 points lower than that scored by Australians with a bachelor degree or above (77.9).
- Australians who did not complete secondary school and who live in regional areas registers a total 2021 Index score of 49.8. Reflecting the metro-regional gap, this is 5.1 points lower than Australians who did not complete secondary school and who live in metropolitan areas. This cohort registers a total 2021 Index score of 54.9.
- See Table 8.

Employment

- Digital inclusion increases with employment.
- At a national level, employed Australians register a 2021 Index score of 77.5. This is 13.1 points higher than that registered for unemployed Australians (64.4), and 15.9 higher than for those not in the labour force¹ (61.6).
- Reflecting the metro-regional gap, while this same pattern is evident in regional Australia, the scores themselves are lower. Employed regional Australians register a total Index score of 74.7 (4 points lower than the metropolitan equivalent), and those not in the labour force receive a score of 58.5 (4.9 points lower than in metropolitan areas).
- Please note, the regional sample is insufficient to provide data on unemployed Australians in regional areas.
- See Table 9.

¹ The category 'not in the labour force' includes groups such as retirees, students, carers, and those undertaking home duties/other.



Gender

- With a total Index score of 70.8 in 2021, female Australians fall slightly behind their male counterparts who record a 2021 Index score of 71.8.
- In regional Australia this pattern is reversed. Regional women register an Index score of 69.2, compared to the score of 65.8 received by their male counterparts.
- The metro-regional gender gap is especially pronounced for men, with a difference of 8.7 points between metropolitan and regional men recorded in 2021.
- See Table 10.

Housing tenure

- Private renters are the most digitally included household tenure type in Australia. They record a 2021 Index score of 74.6. This is 13.1 points lower than the 2021 Index score for Australians who rent from a public housing authority (61.5).
- While this pattern remains the same in regional areas, those renting from a public housing authority in regional Australia record a slightly higher total Index score in 2021 than both their metropolitan counterparts, and the national average.
- See Table 11.

Household type

- Couples with children are the most digitally included household type in Australia in 2021. They register a total Index score of 78.0, 6.9 points higher than the national average (71.1) and 16.5 points higher than single person households (61.5), the least digitally included household type in 2021.
- The metro-regional gap is particularly pronounced in terms of single person households. Where single person households in metropolitan Australia record a 2021 Index score of 64.8, those in regional areas score only 55.0, resulting in a metro-regional gap of 9.8.
- See Table 12.

Income

- Digital inclusion increases with income.
- At the national level, Australians in the lowest income quintile (Q1, earning under \$33,800 per annum) record a 2021 Index score of 55.8. This is 15.3 points lower than the national average of 71.1. In comparison, Australians in the highest income quintile (Q5, earning over \$156,000 per annum) record a 2021 Index score of 82.3. This is 11.2 points higher than the national average, and 26.5 points higher than Australians in the lowest income quintile.



- The metro-regional gap is widest for regional Australians in the lowest income quintile (Q1, earning under \$33,800 per annum) where it is 6.3 points, and for those in the second highest income quintile (Q4, earning between \$91,000 and \$155,999) where it is 4 points.
- See Table 13.

Income support or pension

- Due to its close relationship with income levels, Australians who receive income support or a pension are less digitally included than those who do not.
- In 2021, at a national level, Australians who receive income support or pension receive a total Index score of 62.4. This is 8.7 points lower than the national average of 71.1, and 12.2 points lower than Australians who do not receive income support or pension, who receive an Index score of 74.6.
- Reflecting the metro-regional gap, both Australians who do and do not receive income support in regional areas lag behind their metropolitan counterparts.
- See Table 14.

People with disability

- At a national level, Australians with disability record a 2021 Index score of 62.0. This is 9.1 points lower than the national average of 71.1, and 10.8 points lower than Australians without disability.
- This dynamic is emphasised in regional Australia, where people with disability record a total 2021 Index score of 58.2. This contrasts with metropolitan Australians with disability, who receive a score of 64.3.
- The 2021 metro-regional gap for people with a disability is 6.1.
- See Table 15.



Regional Telecommunications Review 2021 – List of questions

Q1. What telecommunications services are required in regional Australia to meet current and future needs? Are there any things regional communities and businesses need to do, but can't, on their existing services?

The ADII 2021 data shows that regional Australians are digitally disadvantaged when compared to both the national average and their metropolitan counterparts. Regional Australians are lagging on all dimensions, with this digital disadvantage likely to ensure this population group is comparatively limited in the things regional communities and business can do online.

The 2021 data draws particular attention to the metro-regional gap in Access, especially in terms of 'speed and data allowance'. Regional Australians record a score of 60.5 for this component: 5.7 points lower than the national average, and 8.5 points lower than the metropolitan score. When seen in relation to the COVID-19 pivot to digital education, work, and socialising (discussed further below) the capacity of network connections to accommodate these vital activities becomes particularly concerning.

Appendix 2 includes the preliminary findings from ongoing work by Dr Indigo Holcombe-James into digital inclusion within the Australian cultural sector. This research shows that digital inclusion is highly varied across the cultural sector, and in the wake of COVID-19, ensured that those institutions who confront digital exclusion were often unable to make the pivot to digital service delivery, whether at all or to the same extent.

Q2. What changes in demand, barriers or challenges need to be addressed when it comes to telecommunications services in regional, rural and remote Australia?

Regional Australians are comparatively digitally disadvantaged when compared to both the national average and those living in metropolitan areas.

The 2021 ADII data shows that while Access scores for regional areas remain lower than those registered at the national level and for metropolitan areas, Affordability and Digital Ability challenges are especially stark for regional Australia.

Almost half (47%) of the regional Australian population experiences low affordability, defined as having to pay more than 5% of household income to access an internet bundle that enables both quality and uninterrupted connectivity². This is in comparison

² The internet bundle is an idealised bundle of goods that facilitates both quality and uninterrupted connectivity through a fast internet connection (such as that provided through a cable (HFC) service, NBN 50 or above, or 5G



to 35% of the metropolitan population, and 39% of the national. As noted above, this is driven primarily by a larger proportion of the regional Australian population having to pay up to 10% of their household income for the same internet bundle. In regional Australia, this accounts for 33% of the population, compared to 21% of those in metropolitan regions.

The Digital Ability score for regional Australia has increased by 3.2 points since 2020, resulting in a 2021 score of 59.7. Despite these improvements, it is on this dimension that the metro-regional divide is widest. The regional Digital Ability score is 7 points lower than the metropolitan score of 66.7.

Of particular interest is the metro-regional age gap in Digital Ability scores. Perhaps reflecting the enhanced reliance of digital connectivity and skills in regional Australia to meet lacking or distant physical services, the metro-regional age gap falls slightly in the favour of 18–34-year-olds in regional areas. Where 18–34-year-olds living in metropolitan Australia receive a score of 78.3 for Information Navigation skills, those living in regional areas receive a score of 84.3 on this same component. Where 18–34-year-olds living in metropolitan Australia receive a score of 77.5 for Social skills, those living in regional areas receive a score of 82.5 on this same component.

Addressing these Affordability and Digital Ability barriers for regional Australia will be critical to ensuring digital inclusion.

Q6. How did the use of digital services change for regional consumers and businesses during the response to the COVID-19 pandemic? What insights for future service delivery does this provide?

While the shift to online work, education, and socialising required by COVID-19 restrictions has widely been lauded as a driver of digital transformation, the impact on digital inclusion levels remains unclear.

Early data, collected in 2020, suggests that while some important gains in internet use are evident, the initial impact seems to have reinforced many of the existing contours of digital inclusion and exclusion, including the metro-regional gap.

At a national level, most Australians spent more time online (68%) and increased the range of activities they did online (59%). But only 32% 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.

wireless service), an unlimited monthly data allowance through a fixed broadband service, and, a mobile broadband or mobile phone data allowance above 61GB per month.



Australians in regional areas, in contrast, were less likely to have spent more time online (61%), increase their range of online activities (48%), improve their digital skills (23%), or improve their internet access (13%) than both the national average and those living in capital cities.

See Table 16.

Q7. What can be done to improve the access and affordability of telecommunications services in regional, rural and remote Indigenous communities?

Resolving First Nations digital disadvantage is critically important. The Australian Government has recently acknowledged this in the creation of a new Closing the Gap Target (Target 17) for digital inclusion and access to relevant media services, championed by First Nations Media Australia and the Coalition of Peaks. At the time of writing, we understand that work is ongoing on developing the data collection necessary for measuring progress towards Target 17.

While the ADII provides valuable insight into the dynamics of digital inclusion experienced across the country, the sample poses some limitations for reporting on First Nations peoples digital inclusion living in urban and regional areas. As noted, the ADII draws on a national sample which does not provide sufficient First Nations respondents to generate reliable data. The Index therefore does not provide a score for First Nations populations.

In 2018 and 2019, ADII case studies were conducted in the remote Aboriginal and Torres Strait Islander communities of Ali Curung in the Northern Territory, and Pormpuraaw in far north Queensland.

These studies showed that digital inclusion for First Nations Australians diminishes with remoteness, particularly in terms of Access and Affordability. In both communities there was a heavy reliance on mobile connectivity and the key barrier to digital inclusion was Affordability, especially in relation to income.

However, the research also showed high levels of Digital Ability, underlining the importance and potential benefits of digital services for remote communities. These factors vary greatly from site to site, so more detailed research is urgently needed.

The Mapping the Digital Gap project is intended to make a valuable contribution to the understanding of digital inclusion in remote communities, and to the development of the strategies which will required to improve outcomes.

Funded by Telstra and based at the ARC Centre of Excellence for Automated Decision-Making and Society, the Mapping the Digital Gap project is working with 8-10 First Nations communities over a four-year period (2021-2024) to:



- Generate a detailed account of the distribution of digital inclusion and the uses of digital services including news and media across 8-10 First Nations communities;
- Use the Australian Internet Usage Survey to generate Index scores and track changes in measures of digital inclusion for these communities over time; and
- Inform the development of appropriate local strategies for improving digital inclusion capabilities and services enabling informed decision-making in First Nations communities.

The research is currently in the first stage of data collection. Data and findings will be shared via the Australian Digital Inclusion Index website.

Q11. How can different levels of Government, the telecommunications industry and regional communities better co-ordinate their efforts to improve telecommunications in regional Australia?

The ADII 2021 findings show that, while Australia’s digital transformation continues to accelerate, some Australians—including those in regional areas—are missing out on the benefits, and risk being left behind in the post-COVID economy. 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.

Digital inclusion is especially critical for regional areas of the country, where ‘double remoteness’ is a significant factor. Double remoteness occurs when people living in regional and remote areas are cut off from services due to geographical distance, but simultaneously face the prospect of being cut off from online opportunities and services due to digital exclusion³.

Addressing regional digital exclusion will require sustained commitment and collaboration from all levels of government, private industry, the not-for-profit sector, and the broader community. Our findings and experience suggest coordinated investment, investigation, and interventions are urgently required in the following areas.

First Nations

Remote First Nations digital inclusion is critical.

³ Thomas, J., & Rennie, E. (2012a). Bridging the bush’s digital divide. The Canberra Times. Retrieved from <http://www.canberratimes.com.au/national/public-service/bridging-the-bushs-digital-divide-20120929-26ryu.html>
Thomas, J., & Rennie, E. (2012b). Nobody uses the internet because the government says they should. Inside Story. Retrieved from <http://insidestory.org.au/nobodyuses-the-internet-because-the-government-says-they-should>



These 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 Mapping the Digital Gap project, funded by Telstra and based at the ARC Centre of Excellence for Automated Decision-Making and Society, is intended to make a valuable contribution to the understanding of digital inclusion in remote communities, and to the development of the strategies which will required to improve outcomes.

Access

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.

The provision of affordable broadband across all our cities and regions must therefore remain a high priority for public policy, business, and the community.

Efforts must also be concentrated on ensuring that Access remains equitable across the country. The 2021 ADII data suggests significant focus should be expended on ensuring regional Australians are provided connectivity that provides the same speeds and data allowances as their metropolitan counterparts.

Affordability

Throughout the COVID-19 pandemic we have seen some useful steps being taken to alleviate affordability concerns. But to date, these have been on temporary or provisional bases.

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.

Appendix 3 includes the second and most recent milestone report from the Connected Students project. Funded by Telstra and led by Dr Jenny Kennedy, the Connected Students program measures the impacts of removing affordability barriers to digital inclusion for low-income households in the Shepparton region. The Connected



Students program provided technology kits to low-income households with at least one youth between 15 and 18 years of age in secondary education. The technology kits consisted of a laptop, a router, and an activated SIM card providing unlimited broadband for the project's two-year duration.

This milestone report details the critical importance of device access for education and recommends the development of programs for device acquisition that meet the needs of senior students in the final years of study.

Digital Ability

At the level of government programs, digital skills and abilities initiatives to date have not been co-ordinated.

Targeted initiatives and programs that build digital capabilities are a vital area for investment and development.

The 2021 Index data, which shows a significant drop in digital inclusion scores for those over the age of 55, suggests these initiatives and programs may need to be targeted at younger age groups than they so far have been.

The 2021 Index data also shows that these initiatives in regional Australia may need to address different dynamics than those seen elsewhere in Australia. The metro-regional age gap is widest for 35–44-year-olds. Likewise, while the digital inclusion scores of women lag men at the national level, this pattern is reversed in regional Australia.



Appendix 1

Australian Digital Inclusion Index 2021: Tables⁴

⁴ Note, numbers may not add up to rounding to one decimal place.



Table 1: 2020 and 2021 Index scores for regional Australia

	2020	2021	Points change
Total Index score	62.3	67.4	+5.1
Access	65.5	66.3	+0.8
Affordability⁵	92.4	92.9	+0.5
Digital Ability	56.5	59.7	+3.2

Table 2: 2021 metro-regional gap

	National average	Metro	Regional	Metro-Regional Gap
Total Index score	71.1	72.9	67.4	5.5
Access	70	71.9	66.3	5.6
Affordability	93.1	93.2	92.9	0.3
Digital Ability	64.4	66.7	59.7	7

Table 3: 2021 Affordability stress scores: Metro vs regional

	National	Metro	Regional
Low affordability	39%	35%	47%
High affordability	60%	65%	53%

⁵ The ADII measures Affordability as a ratio of the potential cost for a quality Internet bundle to the distribution of household income. To present a metric that is consistent with Access and Digital Ability, we convert this ratio to a score between 0 and 1 that is multiplied by 100.



Table 4: 2021 Affordability ratio: Metro vs regional

	National	Metro	Regional
More than 10%	14%	14%	15%
Up to 10%	25%	21%	33%
Up to 5%	39%	40%	37%
Up to 2%	21%	24%	15%

Table 5: Proportion of highly excluded to highly included Australians, 2020-2021: Metro vs regional

	2020		2021	
	Metro	Regional	Metro	Regional
Highly excluded (Index score of 45 or below)	13%	24%	9%	14%
Excluded (over 45 and below 61)	16%	19%	15%	20%
Included (61 to below 80)	30%	31%	32%	32%
Highly included (80 and over)	41%	26%	44%	34%



Table 6: Total 2021 Index scores: Metro-regional age gap

	National average	Metro	Regional	Metro-Regional gap
18-34	80.6	80.4	81.2	-0.8
35-44	77.5	79.7	72.2	7.5
45-54	72.3	74.3	68.8	5.5
55-64	66.8	68.7	63.8	4.9
65-74	57.3	58.5	56.0	2.5
75+	47.4	46.8	48.5	-1.7

Table 7: Total 2021 Index scores: Metro-regional LOTE gap

	National average	Metro	Regional	Metro-Regional gap
Speaks LOTE	73.9	74.7	70.0	4.7
Does not speak LOTE	70.4	72.3	67.2	5.1



Table 8: Total 2021 Index scores: Metro-regional education gap

	National average	Metro	Regional	Metro-Regional gap
Did not complete secondary school	52.7	54.9	49.8	5.1
Completed secondary school	68.4	70.2	64.7	5.5
Certificate/diploma	73.3	73.8	72.6	1.2
Bachelor and above	77.9	78.7	74.8	3.9
Other	62.5	68.3 ⁶	n/a ⁷	n/a

Table 9: Total 2021 Index scores: Metro-regional employment gap

	National average	Metro	Regional	Metro-Regional gap
Employed	77.5	78.7	74.7	4
Unemployed	64.4	65.9 ⁸	n/a ⁹	n/a
Not in labour force	61.6	63.4	58.5	4.9

⁶ Please note, the sample for metropolitan 'other' education status is low. Data is indicative only.

⁷ Please note, the sample of regional 'other' education status is insufficient to show data.

⁸ Please note, the sample for metropolitan 'unemployed' is low. Data is indicative only.

⁹ Please note, the sample of regional 'unemployed' is insufficient to show data.



Table 10: Total 2021 Index scores: Metro-regional gender gap

	National average	Metro	Regional	Metro-Regional gap
Male	71.8	74.5	65.8	8.7
Female	70.8	71.6	69.2	2.4

Table 11: Total 2021 Index scores: Metro-regional housing tenure gap

	National average	Metro	Regional	Metro-Regional gap
Own outright/purchaser	70.0	71.6	67.2	4.4
Rent from private landlord	74.6	77.1	69.4	7.7
Rent from public housing authority	61.5	61.3 ¹⁰	61.7 ¹¹	-0.4
Other (boarding, living at home etc)	76.5	77.3	n/a ¹²	n/a

¹⁰ Please note, the metropolitan sample for 'rent from public housing authority' is low. Data is indicative only.

¹¹ Please note, the regional sample for 'rent from public housing authority' is low. Data is indicative only.

¹² Please note, the regional sample for 'other' is insufficient to show data.



Table 12: Total 2021 Index scores: Metro-regional household type gap

	National average	Metro	Regional	Metro-Regional gap
Single person	61.5	64.8	55.0	9.8
Multi-family / group / other household	71.0	73.3	65.8	7.5
Couple without children	70.2	72.3	66.8	5.5
Couple with children	78.0	78.5	76.8	1.7
One parent family	73.2	73.2	73.2 ¹³	0

¹³ Please note, the regional sample for 'one parent family' is low. Data is indicative only.



Table 13: Total 2021 Index scores: Metro-regional income gap

	National average	Metro	Regional	Metro-Regional gap
Income Q1 (<\$33,800)	55.8	58.2	51.9	6.3
Income Q2 (\$33,800 - \$51,999)	66.9	67.8	65.6	2.2
Income Q3 (\$52,000 - \$90,999)	73.1	73.6	71.9	1.7
Income Q4 (\$91,000- \$155,999)	78.1	79.4	75.4	4
Income Q5 (\$156,000+)	82.3	82.7	81.1	1.6

Table 14: Total 2021 Index scores: Metro-regional income support or pension gap

	National average	Metro	Regional	Metro-Regional gap
Receives income support	62.4	64.2	59.7	4.5
Does not receive income support	74.6	76.0	71.5	4.5



Table 15: Total 2021 Index scores: Metro-regional disability gap

	National average	Metro	Regional	Metro-Regional gap
People with disability	62.0	64.3	58.2	6.1
People without disability	72.8	74.3	69.6	4.7

Table 16: Impact of COVID-19 in 2020: Metro vs regional

	National	Metro	Regional
Spent more time online	68%	72%	61%
Increased 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%



Appendix 2

COVID-19, digital inclusion, and the Australian cultural sector: A research snapshot

COVID-19, digital inclusion, and the Australian cultural sector

A Research Snapshot

January 2021



Indigo Holcombe-James

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Overview and summary of findings

We cannot afford to produce high quality [digital] material without appropriate equipment, without adequate staffing
– Public Gallery C, capital city

As cultural institutions closed their doors in the wake of the COVID-19 pandemic, we saw a massive and rapid shift to digital service delivery (ICOM, 2020; UNESCO, 2020). But making this shift required digital access, abilities, and resourcing; all of which are unevenly distributed. With just under half the world's population (ITU, 2019), and 2.5 million Australians (Thomas et al., 2020) still offline, digital inclusion is an urgent and pressing challenge that, in the context of the cultural sector, creates distinct institutional inequalities (UNESCO, 2020, p. 15).

Following the Australian Digital Inclusion Index (Thomas et al., 2020) framework, we can define a digitally included cultural institution as one that:

- can access the digital connectivity, devices, data, and platforms necessary;
- has the ability or skills to use those devices and platforms; and
- can afford to access and resource this use.

Existing research tells us that the cultural sector's experience of digital inclusion is determined by both the type of institution and its location. National institutions and those based in capital cities, for example, tend to be 'more digitally active, experience fewer barriers, [and] have better access to [digital] skills [...] than the arts and culture sector as a whole' (Nesta & Arts Council England, 2017, p. 7). The type of internet access available to the institution, the devices and technologies required, the existence or lack of digital skills within individual staff members, and the costs associated with resourcing this work are all influential (Holcombe-James, 2019; Kidd, 2014; New Media Consortium 2015; Parry, 2008; Parry et al., 2018; UNESCO, 2019).

The COVID-19 pandemic has highlighted the critical need for digital inclusion within the cultural sector. **Digital service delivery enabled ongoing activities and engagement, but the ability to do so required the existing experience of digital inclusion.** For institutions that had 'invested heavily' (UNESCO, 2020) prior to the pandemic, digital activities provided a vital resource. Those that had not faced significant barriers.

This snapshot reports on the preliminary findings from research that asked how digital inclusion affected the Australian cultural sector in the wake of COVID-19. Drawing on qualitative research with representatives from 73 Australian cultural institutions, ranging from Artist Run Initiatives (ARIs), public, council-run¹, and university galleries, as well as state and national institutions, this report presents four key findings:

- 1. The cultural sector experiences digital exclusion, but not all institutions are excluded in the same way.** State and national institutions had far greater capacity than council-run, public, and university galleries, and ARIs.
- 2. Access to connectivity alone is not enough.** Although most participating institutions reported adequate internet access, accessing appropriate devices and platforms proved difficult.
- 3. Creating and sharing digital cultural content requires specialised abilities** that are not yet evenly distributed within, nor accessible to, all institutions.
- 4. Digital activities are now part of everyday operations** and require funding as such.

¹ Many council-run galleries are also public galleries. I differentiate between the two here as working within the structure of local government influences digital inclusion.

Methods and participants

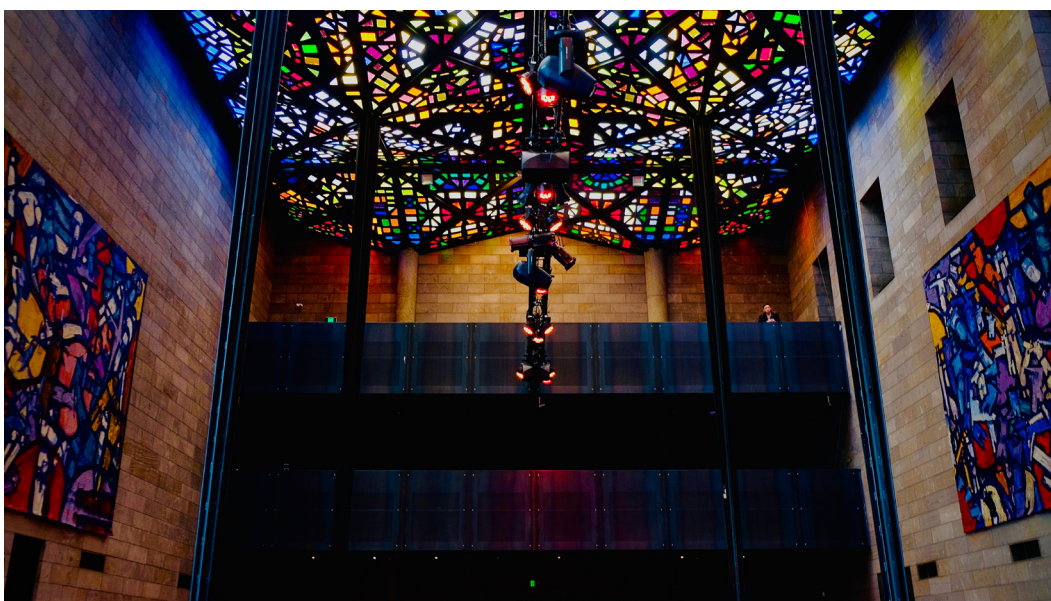
Representatives from Australian cultural institutions were invited to participate in the research by completing a semi-structured interview or brief survey². The invitation was distributed via publicly listed institutional email addresses. In total, the research engaged with 73 institutions. 39 took part in a semi-structured interview, 29 provided a survey response, and 5 completed both. This snapshot presents preliminary findings across the entire cohort. Future outputs will explore the influence of digital exclusion by institutional category and location.

Table 1: Number of participating institutions by category and location

Category	Capital City	Non-capital city	Total
ARIs	9	5	14
Council-run	10	11	21
Public	8	5	13
State/national	10	1	11
University	11	3	14
Total	49	25	73

Table 2: Number of participating institutions by state

State/Territory	Total
ACT	4
NSW	15
NT	2
QLD	11
SA	6
TAS	6
VIC	25
WA	4
Total	73



² This research was approved by the RMIT Human Research Ethics Committee (22893).

Findings

FINDING 1: THE CULTURAL SECTOR EXPERIENCES DIGITAL EXCLUSION, BUT NOT ALL INSTITUTIONS ARE EXCLUDED IN THE SAME WAY.

Not surprisingly, state and national institutions had far greater capacity to make the pivot to digital service delivery than ARIs, council-run, public, and university galleries. State and national institutions described teams comprised of multiple staff members who were not only highly digitally skilled, but who, even preceding the pandemic, were entirely oriented towards digital activities.

[S]o we have a team of graphic designers, there's three of those. We've got a video team with, again, three people at the moment. We have our comms team, so there's three people there. There's a marketing team as well, so there's three people in that component. And we also have a website coordinator and a social media expert

— State or National G, capital city

This level of investment is in stark contrast to that reported by other institutions. ARIs, for example, relied on volunteers to undertake and champion digital activities, ensuring that institutional digital capacity was determined by the volunteer's existing experience and ability.

We're all volunteers [and] nobody is a technical specialist. The [volunteer] who's doing our website content at the moment is a contemporary art photographer. So, it's really whoever we bring in [... and] it depends on the skillset of the volunteers that are there at the time as to how those digital channels are managed

— ARI B, capital city

While council-run, public, and university galleries tended to have at least one employee dedicated to digital activities, the time allocated these roles and the digital abilities held by those employed constrained the institution's capacity to make the pivot to digital service delivery.

I am four days a week and sometimes we have assistance [for digital activities] from a visitor services team member, but that has been the challenge [during COVID-19]. All our communications with our audience right now go through me, and there's only so much I can do, and there are only so many skills I have.

— Public Gallery F, non-capital city

The institutional experience of digital inclusion – and therefore the institutional capacity to pivot to the digital service delivery required by the COVID-19 pandemic – is directly tied to issues of access, ability and affordability. Importantly, these issues are experienced differently by each institutional category, ensuring that although the cultural sector experiences digital exclusion as a whole, not all institutions are excluded in the same way.

FINDING 2: ACCESS TO CONNECTIVITY ALONE IS NOT ENOUGH.

Although most participating institutions reported adequate connectivity, access to suitable devices and platforms (such as websites, social media accounts, or software) remained problematic. Institutions were unable to access specialised devices such as cameras, microphones, and recording equipment which restricted the types of online services they were able to deliver.

[We started] learning how to use SketchUp to potentially present [an upcoming exhibition] as a virtual tour [...A]nd then [we] realised we didn't have a 3D camera, so that's something we couldn't do

— University B, capital city

Lack of device access restricted not only the types of online services institutions were able to deliver, but the quality of those services. For some, the stresses associated with the digital pivot were exacerbated by comparing their services to those distributed by other, better resourced institutions.

We don't have good enough video cameras to be producing good enough content. When you have institutions like [state institution], who have a great little video production team, interview[ing] someone with good lighting [...] That becomes a benchmark or a standard or something and you go, "[ours] looks really bad"

— Council-run D, capital city

While some institutions were able to access personal devices owned by staff members or volunteers – ‘a lot of what we do at the moment, I do on my personal laptop that I bring in’ (Council-run E, non-capital city) – accessing suitable platforms was not so easy to manage. Institutions described websites that were already at breaking point prior to the COVID-19 pandemic. For some, the new requirement to host online (and especially data intensive video) content proved insurmountable.

[T]here are fundamental problems behind the website - it uses WIX, we're not hosting any of the video artworks because we can't work flexibly enough to get it up in the back end

— Council-run E, non-capital city

Even institutions that had invested in website redevelopments in the past year reported barriers stemming from the requirements of digital service delivery.

We didn't anticipate when we redesigned [the website] last year, that we now need it to also be the primary point of engagement as well. All this digital activity, you need to host it somewhere [...] that's the bit we didn't foresee. [...] We can't use our existing site to contain all this activity without working to redevelop the backend

— University D, capital city

Others described 'weird' technicalities that prohibited the efficacy of their digital platforms.

We have this weird problem with our website where it was designed in a way that Google can't properly index, so we're not searchable

— University R, capital city

Barriers to accessing appropriate devices and platforms hindered the pivot to digital service delivery. No matter how much content was created, the institutional inability to host this content and for it to be searchable and therefore accessible, directly impeded the possibilities for audience engagement.



FINDING 3: CREATING AND SHARING DIGITAL CULTURAL CONTENT REQUIRES SPECIALISED ABILITIES THAT ARE NOT YET EVENLY DISTRIBUTED WITHIN, NOR ACCESSIBLE TO, ALL INSTITUTIONS.

While state/national institutions described internal teams formed of highly digitally skilled staff members, these digital abilities were often not distributed throughout the institution itself.

Our registration, curatorial and conservator teams [...] None of them, they won't like hearing this, were particularly digitally literate at all. None of them.

— State or National F, capital city

In contrast, ARIs, council-run, public, and university galleries described an often complete lack of internal staff members with the digital abilities that online service delivery required. As one participant from a university gallery explained:

Internal expertise has been a real challenge [...] Part of it is about existing capacity. And I don't mean in terms of workload, but actually in terms of skills. And our marketing and comms person [... they have] no expertise in social media [...] it's not [their] forte

— University C, capital city

Prior to the COVID-19 pandemic, council-run and university galleries had benefited from their position within larger organisations. Although digital abilities were often lacking within their immediate staff, this was resolved through making use of the broader marketing and communications teams within council or the university. This solution, however, proved difficult during the pandemic. Cultural institutions suddenly found themselves at the end of a very long list of priorities.

From COVID, all of that changed and those resources weren't available anymore because everybody at Council suddenly needed them, and we had to, and we are still having to, do a lot of the online programming and facilitating all of that, creating all of that content and actually posting it or updating websites and so on; we're having to do it ourselves at the moment. It's been a steep learning curve for us

— Council-run D, capital city

In the same way that lack of access was sometimes resolved through the personal devices owned by staff members, institutions relied on their employees' extracurricular experiences and willingness to work outside their position descriptions.

[I] had a background of doing things like [videography at] \$20,000-60,000 budgets [...], and so I knew what I wanted, but had to try and learn how to do it without any of those resources at all. [...] So in a way, I had a lot of the skills to do it [from my old job], but completely at the wrong level

— Council-run T, non-capital city

Crucially, the existing abilities of staff members were often in tension with the expectations of institutional leadership.

There's a non-understanding at this point of how difficult it is to make a professional online product. It's not as simple as flipping the phone around. [...] [I]t's a whole new skillset and it must be treated as such

— Council-run F, non-capital city

The ability to create and share digital cultural content was not available to all institutions. In addition, these abilities remain misunderstood and under supported, particularly financially.



FINDING 4: DIGITAL ACTIVITIES ARE NOW PART OF EVERYDAY OPERATIONS AND REQUIRE FUNDING AS SUCH.

Prior to the COVID-19 closures, digital activities had been considered by some institutions as 'add ons' or 'nice to haves' that were focussed on marketing channels such as social media platforms and websites.

We are a small team so we engaged with the digital platforms less before COVID than we do now because staff capacity and resourcing was directed to physical exhibition programming and events

— University I, capital city

The pandemic has repositioned digital activities. They are now crucial to the daily operation of cultural institutions. During the lockdowns this work was typically funded through repurposed budgets. Expenditure on cancelled exhibitions, for example, was reoriented to support digital outcomes.

During and post-COVID we have had to reallocate resources to make best use of digital platforms and technologies

— Public Gallery G, capital city

Institutions with access to greater budgets turned to external consultants to fill the gaps within their own teams, but this came at a price.

[W]e went with the external consultant [...] But I would be the first to say, it's not ideal in terms of cost. And that has been something that we've just had to bear

— University C, capital city

While most participants valued their new digital offerings – particularly from an accessibility perspective – this was always followed by concerns. Participants worried they would be expected to maintain this digital work alongside their physical services under the same, already strained, funding structures.

One of the things that is of great concern to us now [...] is the expectation from funding bodies that we will continue to be able to deliver both in physical and digital form. Although we are obviously getting better and more capable of delivering [digitally], our resources were stretched before we even added that digital layer

— Public Gallery C, capital city

The affordability of digital activities – and, in turn, how they are funded – has critical implications for how the cultural sector operates into the future.

Conclusion and recommendations

This research snapshot provides a preliminary insight into the impact digital exclusion has had on the Australian cultural sector in the wake of COVID-19. Institutions struggled to access the digital devices, data, and platforms needed to successfully negotiate the pivot to digital service delivery. The abilities to use these devices and platforms were not evenly distributed within, nor accessible to all, institutions. And the costs associated with resourcing this use, while generally affordable due to the cessation of physical activities, threaten to cause future stress.

Digital exclusion determined which institutions were able to make the pivot to online service delivery, and how that delivery occurred. The sector's rapid digital transformation has thus been unevenly felt. If we do not address this unevenness, we run the risk of further disadvantaging underfunded and under-resourced institutions, and neglecting diverse perspectives and practices.

Addressing the impact of digital exclusion on the cultural sector will require engagement and investment from government, researchers, and the sector itself.

RECOMMENDATION 1:

Digitally upskilling the cultural sector must be made a policy priority. Updating the Commonwealth Government's *Digital Transformation Strategy* (2018) to include the sector provides one avenue for doing so.

RECOMMENDATION 2:

Digitally upskilling the sector requires infrastructural investment. As argued by the Australian Museums and Galleries Association (2020), digital activities do 'not come cheap' (p. np). Enabling access to the digital devices, data, and platforms required must be made a policy priority.

RECOMMENDATION 3:

Expenditure data on digital activities and resourcing must be collected and made publicly accessible. Understanding how cultural institutions fund and resource digital activities is vital if we are to identify best practice and set benchmarks.

RECOMMENDATION 4:

Further research into how digital exclusion operates within and around cultural institutions is urgently needed. Digital inclusion literature and museum studies are 'two bodies of research that are rarely brought together' (Mihelj et al., 2019, p. 1466). If we are to understand and address the impact of digital exclusion on the sector, significant research efforts must focus at this intersection (Holcombe-James, 2020).

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Appendix 3

Connected Students Milestone report 2: Findings from first round of interviews

Connected Students

Milestone report 2:

Findings from first round of interviews

Jenny Kennedy, Indigo Holcombe-James & Kate Mannell
May 2021: V1

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INTRODUCTION

This project is an academic-industry partnership between Telstra and RMIT University to contribute evidence of the significance of affordability barriers for digital inclusion, and provide insight into the lived experiences of digital exclusion through an evaluation of the Connected Students program.

Telstra's Connected Students program aims to measure the impacts of removing affordability barriers to digital participation for low-income households in the Shepparton region. Working in partnership with Greater Shepparton Secondary College (GSSC), the program provided technology kits to low-income households with at least one youth between the ages of 15-18 in secondary education. The kits consisted of a laptop, a router, and an activated SIM providing unlimited broadband for the duration of the project (two years).

The project objectives are to:

- Identify impacts of the Connected Students program for those living in participating households.
- Measure the changes in digital inclusion of participating households through surveys modelled on the Australian Digital Inclusion Index.
- Collect qualitative data through surveys, technology tours and household interviews on how the affordability of digital connection is experienced by those in low-income households.
- Prepare and communicate qualitative insights from this data to Telstra on how removing the affordability barrier to accessing connectivity for households impacts digital inclusion.

The project aims to:

- Evidence the value of connectivity and individual device access for students and education; and
- Evidence the impact of unaffordable connectivity (i.e., access that creates and/or requires financial strain) on digital inclusion.

PRELIMINARY FINDINGS FROM FIRST ROUND OF HOUSEHOLD INTERVIEWS

In this report we set out the findings from our first round of interviews with households.

We interviewed households on their experience of digital exclusion. We asked participants to describe: the rhythms, routines and dynamics of their household; the barriers they experienced accessing connectivity; how they worked around these barriers; the impact of these barriers on their lived experience; and, the impact of the Connected Students kit for them and their household.

We conducted a total of 35 interviews involving 73 participants. Interviews were conducted over video due to COVID travel restrictions. Videos were transcribed and the transcripts analysed using the initial categories of questions noted above. Similar responses were grouped and sub-categorised when necessary. Further details on the methodology, sample and demographics are included as an appendix to this report.

In this report we detail our findings from this analysis and provide a selection of quotes that best illustrate themes that emerged in participant responses. To protect the privacy of our participants, we identify households by using a pseudonym given to the student participant from that household. Following our outline of findings, we make recommendations for policy interventions to address affordability barriers to digital inclusion.

Value of the Connected Students internet connection

Households understand the need for an internet connection, particularly for children's schooling.

Jade's Household

- *Household type: couple with 2 children and foster children with special needs*
- *Aboriginal and/or Torres Strait Islander*
- *Rents from private landlord*
- *Household income is undisclosed. Receives family tax benefits, disability support pension and carer payments.*
- *Did have home internet at time of Connected Students program commencing*

Jade's Mum: "You think 'Oh my god, you know, why is this [internet] so expensive?' But it's just a necessity these days isn't it? You have to have it. The kids have to have it for school so obviously you pay your rent and your heat, but internet access is factored in those living expenses [...] all the kids need Wi-Fi these days. I don't think it's something that you can say "Oh I'm sorry, you're not having it." In this day and age I don't think you can really get away with that because the whole world is run on technology so you have to have it. So you're obligated to pay it."

For many households, the Connected Students internet connection was of considerable financial value as it reduced pressure on their household budget.

Noel's Household

- Household type: couple with 2 children, including 16 year old Noel
- Household income is between \$65-78k per annum
- Own house - paying off mortgage
- Did not have home internet at time of Connected Students program commencing because of cost
- Agrees that the Connected Students kit has reduced pressure on household budget

Noel's Mum: "[T]he Connected Students set up has been absolutely brilliant for us because Noel now has internet, he has the laptop, he has all of that. It's been such an advantage towards him because I actually lost my job in October last year so we didn't have the finances to have internet and that sort of stuff on top of everything else [...] We made do, whereas now with all the remote learning and everything, it would have been a problem, I suppose is the best way to put it. Yeah I'm not sure what we actually would have done without the Connected Students program."

Tahlia's Household

- Household type: couple with 2 children in high school
- Household income is between \$78-90k per annum.
- Own house - paying off mortgage
- Did have home internet at time of Connected Students program commencing
- Strongly agrees the Connected Students kit has reduced pressure on household budget

Tahlia's Mum: "We did have internet but we were looking at disconnecting it and just trying to manage off our phone plans because it was getting a bit unrealistic cost wise. [...] At the start of the year I was caring for my mum who had cancer, so I was only working two days a week. That changed a lot our ability to have access to NBN that we'd previously had and disconnected. We changed all of our phone plans and everything around because, with the cut of income with me in the caring role, we changed to have a shared family data plan to our phones and we stopped having the NBN."

Beyond schooling, households found that the Connected Students internet connection enabled them to do a range of other valued activities online.

Ellie's Household

- Household type: sole parent with one child in high school (Ellie) and an older sibling at TAFE
- Household income is undisclosed. Only income is a disability pension and carer payments.
- Rents from public housing authority
- Culturally and linguistically diverse household: four languages spoken
- Did have home internet at time of Connected Students program commencing but only to an old poorly-functioning desktop computer so relied heavily on public library for internet and computer use
- Strongly agrees the Connected Students kit has reduced pressure on household budget

Ellie: "Having the laptop has helped me actually have more time for myself, so things like watching Netflix. I know it sounds really small, but it actually does help. It makes me feel a bit like, not as overloaded. Do you know what I mean?"

Ellie's Mum: "I have to jump in because it's not only the movies that you use the laptop for. Ellie has a new passion in sewing, so the whole research of sewing things and making - she made masks, she made clothes. She has an award at school for arts because she made a really beautiful skirt at home, and it's very very handy to have the laptop as well because it helps with all the research and how to videos. So, very helpful."

Noel's Household

See demographic details above

Noel's Mum lost her job last year and recently signed up for an online university course to improve her employment prospects. She talks here about how the Connected Student's kit has given her confidence studying online:

“[Studying online] would have been a lot harder [without the kit] because I would have been using the hotspot off my phone. Whereas having the Connected Students' kit...I'm not going to have to worry about the internet connection. Not that it really was an issue going over the [phone] internet. But it's a more solid connection I suppose than over the phones and that. I would have a world of trouble getting a laptop to connect to my phone sometimes. So having the Connected Students' kit, it's given me some comfort in knowing I'm going to have a good internet connection to use to do these studies.”

Gaining the Connected Students internet connection had a range of flow on impacts for households, including less conflict and reduced pressure on weekly schedules

Ellie's Household

See demographic details above.

Prior to receiving the kit, the family would go to the library every weekend to use the computers and internet so that the children could complete homework:

Ellie's Mum: “So, that was our weekends in the library until [student, female] finishes her homework [...] I'm not complaining. Public libraries are great and we had a good time, but I mean, it was one extra chore that you have to do and now she can do it in her room and we don't have to worry about her homework [...] It reduces the pressure a lot, because going to the public library is a completely different level of pressure. You have to find the time of the day. If I feel sick, I can't go; [student, female] is behind with her homework. Strongly agree that this is very helpful.”

Nathan's Household

- *Household type: couple with 3 children in high school and 1 older sibling (receiving jobseeker allowance)*
- *Household income is between \$65-77k per annum. Receives family tax benefits and carer payments.*
- *Own house - paying off mortgage*
- *Did have home internet at time of Connected Students program commencing*
- *COVID-19 has place household budget under extra pressure, income has significantly decreased*
- *Strongly agrees the Connected Students kit has reduced pressure on household budget*

Nathan's Mum: “It's made it a lot easier...you know how slow it [the internet] gets when it gets down to the last couple of percent [of data allowance]? That just used to do my head in. And the tension over the phones, the arguments over data usage, who's doing what, nobody did anything, the same in every house. It's just stopped one level of stress, which has been really good.”

Value of the Connected Students device

Households highly valued the Connected Students laptop. In particular, households emphasised the educational benefits for students.

Yamina's Household

- Household type: couple with four children, two of which are at high school
- Household income undisclosed. Receives family tax benefits, disability pension, and carer payments.
- Own house - paying off mortgage
- Culturally and linguistically diverse household
- Did have home internet at time of Connected Students program commencing but very limited data
- Agrees the Connected Students kit has reduced pressure on household budget

Yamina: "If I need to reference something I can easily type it up on the internet rather than having to look through my textbook. That's a pro, yeah, and it's just easier access to knowledge and information."

Abigail's Household

- Household type: sole parent with two children (one in high school and one in primary school)
- Household income is between \$41,600 - \$51,999 per year. Receives family tax benefits and parenting payments.
- Rents from a private landlord
- Did have home internet at time of Connected Students program commencing
- Agrees the Connected Students kit has reduced pressure on household budget

Abigail explaining frustrations with doing schooling on an unsuitable computer prior to receiving the Connected Students laptop:

"We didn't have a working computer, so I had to borrow one from the school at the very start [of COVID-19 lockdowns], and it was not very good. So, it was a bit frustrating and I didn't enjoy doing the work because it was hard and I had to wait for the computer to load and stuff."

Blake's Household

- Household type: sole parent with one child in high school
- Household income is between \$41,600 - \$51,999 per year. Receives family tax benefits
- Own house, paying off mortgage
- Did not have home internet prior to Connected Students program
- Agrees the Connected Students kit has reduced pressure on household budget

Blake on the continuing value of his Connected Student's laptop after COVID-19 lockdowns:

"Well, I bring the laptop, this new one, into school so I don't have to worry about lending a school laptop because sometimes they won't be available. So I've just easily got the advantage of just using my own."

Piper's household

- Household type: couple with 4 children, 2 in high school and 2 under 12 years of age
- Household income is between \$156-181k per annum
- Own house - paying off mortgage
- Did have home internet at time of Connected Students program commencing
- COVID-19 has place household budget under extra pressure, though income has not decreased
- Strongly agree the Connected Students kit has reduced pressure on household budget

Piper and her Mum on the impact of the laptop (without which Piper would have had to share with a sibling):

Parent: "The laptop was very, very, very helpful."

Piper: "I passed year 11."

Parent: "It did actually help her pass year 11."

Receiving laptops significantly reduced budget pressure for some families, especially when existing devices had become insufficient to meet the schooling needs of older children in the household. This also reduced conflict in some households.

Valerie's household

· Household type: couple with three children (one in high school and two older siblings).

· Household income is between \$41,600 - \$51,999 per year. Receives family tax benefits and carer payment.

· Rents from a private landlord

· Did have home internet at time of Connected Students program commencing

· Older siblings had been living elsewhere but returned home due to COVID-19. One sibling's fiancé is also currently part of the household.

Parent discussing infeasibility of purchasing a laptop for distance learning during the lockdown:

"We just could not possibly do it... There was no way feasible that I could pay the bills, get her a laptop and get going within the five days [before online learning]. Like, it just wasn't going to happen."

Ellie's Household

See demographic details above.

Parent on laptop reducing arguments:

"It's strongly reduced the push in the household of buying new laptops and computers. It's strongly reduced that. Because when you struggle, you don't have enough money, you can't just go and buy a new laptop or new computer. But having that computer, it stopped every argument we had with that."

Providing the laptop reduced the pressure around shared devices. Household members were able to have their own personal devices or were required to share with fewer people. This was particularly helpful for older students with greater schooling commitments.

Noel's Household

See demographic details above.

Parent on reduced pressure around sharing devices:

"Yeah, until we got the Connected [Student's] device, we had one laptop between the four of us that are here. And [student] had the majority use of that because that was his school work took priority... Yeah that's where the connected students set up has been absolutely brilliant for us."

Clara's Household

· Household type: couple with children (four in high school). Eleven people in household.

· Household income is between \$52-\$65k per year. Receives family tax benefits.

- Rents from a private landlord
- Culturally and linguistically diverse household
- Did have home internet at time of Connected Students program commencing
- Strongly agrees that Connected Students kit had allowed more people than before to connect to the internet

Parent on benefit of children not sharing devices:

“Clara’s laptop is really helpful for her homework, because... she’s doing Year 12 next year. Because it was only my laptop they were using, and there’s too many of them. It’s really helpful for her, to just give her space to do her own thing on her own laptop. So I’m really happy about that.”

Individual device use also allowed students to do schooling activities in more private areas of the home, reducing distractions.

Anna’s Household

- Household type: Couple two with children at high school
- Household income is between \$78,000 - \$90,999 per year. Receives family tax benefit.
- Rents from a private landlord
- Did have home internet at time of Connected Students program commencing

On the desktop computer their child would have had to use without the Connected Students kit:

Parent: “The desktop is not ideal. She could have done it, but it's not ideal...[its] between the kitchen and the lounge room and everyone is just walking past there all the time and there’s noise and, you know, you’ve got cooking on one side, and TV on the other side, then another TV, the door.”

For students planning on university study or other training, the laptop’s utility as a resource is expected to continue. For those anticipating entering into work or tool-based vocational training, the laptop’s purpose beyond secondary education is more vague.

There are a number of possible factors at play here which we are currently exploring in the second round of interviews:

- We will be able to see whether and how student participants continue to value the laptop beyond schooling as they graduate from high school.
- Project design and timing — i.e. because the laptops were distributed just as schools closed due to the pandemic, many people see the laptop as being for school work and are less inclined to use it for other purposes. (We have also seen this in other research on practices during lockdown, which indicates that people associate work with specific devices and distance themselves from these in private hours.)
- Broader household attitudes toward technology and the availability of other devices within the home.
- Decision-making around device purchases, where people are more inclined to buy a smartphone - including on afterpay or credit - but not a laptop.

Further Observations

In the process of analysing interview data, a number of observations regarding the broader dynamics of digital inclusion were noted. Further data on these dynamics is being gathered in the second round of household interviews.

- Parental technology attitudes impact adolescent digital inclusion.
- Participants living in low-income houses are also consumers of smart technologies.
- Students are not learning the value nor skills of digital inclusion through school, but from their home and social environments.
- Individual device AND mobile connection are vital for students in disruptive household situations.
- Households opt for internet product bundles out of convenience and overwhelming choice.

INTERIM RECOMMENDATIONS

Senior students need access to personal laptops at school and home.

Current programs for device acquisition are not meeting needs of senior students. Devices are critical to digital inclusion. However, among participating households, current school-based programs for student device acquisition tended to occur either in primary school or early in secondary education but not later years. This is potentially impacting post-secondary pathways, and perspectives on educational pathways and on the broader social value of devices.

Senior students need access to reliable internet connections.

Students in low-income housing do not have adequate internet access to meet their educational needs. Mobile phone data is limited, though they rely on this for most of their schooling. They may have a connection in the household but there is competition for the service between household members, or the serviceable areas of the house do not map onto suitable areas for study. Household internet connections are interrupted when financial pressures mean the bill doesn't get paid, or credit cannot be purchased for a period or time. Some students described disrupted living arrangements, including moving house, living between homes and becoming estranged from parents. Having a mobile connection that moved with them helps minimise disruption to their education and connections to essential social networks.

Low-income households need lower-priced internet plans (including mobile) with greater internet data allowance per dollar of expenditure.

Households make choices between home internet plan or mobile plan spending. Mobile plans typically selected have limited data of a few GB per month. Participants pay a premium for that data. While data overall is getting cheaper, those on contracts, with high data allowances benefit the most while low income households pay the highest premiums. Households are also making choices between internet access and household needs – prioritising internet access costs over groceries, heating, and clothing – because they are aware of the implications and necessity of internet access for their children's education and social development.

Appendixes

Appendix A: Methodology

- COVID-19 has posed considerable challenges. Project recruitment and rollout was planned to commence in April 2020 via face-to-face information sessions with eligible households prior to the program roll out. Kits had been delivered to the school in anticipation of this process. Due to the Victorian COVID-19 outbreak, project recruitment and roll out was urgently brought forward to distribute kits in the few remaining days of school access.
- Based on their knowledge of the school community, GSSC selected, approached, and distributed kits to 100 households considered to be digitally excluded. The research team were then provided their contact details, using these to contact and recruit households to the research.
- The Department of Education introduced restrictions prohibiting researcher contact with schools due to COVID-19. This prevented the research team from working with the school to follow up contact with families in receipt of kits when contact through the provided details was unsuccessful.
- Despite these challenges, following all efforts we have successfully recruited 45 households to the research.
- Initial survey and interview research was conducted online due to COVID-19 restrictions. Surveys have been used to generate high level data about household demographics and internet use and an initial round of interviews have been conducted to develop detailed insights into the impact of the Connected Student Kits on digital inclusion across the household.

Appendix B: Sample

At this time, 45 households continue to be engaged in the Connected Students (CS) evaluation. To date:

- 183 participants have consented;
- 153 individual surveys were completed in round one of surveys; and,
- 35 interviews were conducted in round one of household interviews.

Appendix C: Demographics

Of the 45 households:

- 4 identify as Aboriginal and/or Torres Strait Islander;
- 13 identify as culturally and linguistically diverse; and,
- 14 report at least one resident has a long-term disability or health concern.

The sample includes a diverse range of household types:

- 27 are nuclear;
- 13 are one-parent families;
- Largest household has 11 residents;
- Smallest households have 2 residents;
- Average number of household residents is 4.73

Housing status varies across the sample:

- 4 own the home outright;
- 19 are paying off a mortgage;
- 14 rent from a private landlord; and,
- 4 rent from a public housing authority.

Equivalised household income provides an indication of the financial resources available to a household based on the number of residents. Equivalised household incomes for our sample range from \$1,182 to \$54,516 p/a.

- 22 fall into the lowest quartile;
- 12 are in the medium lowest; and,
- 3 are in the medium highest.

COVID-19 has caused household incomes to:

- Decrease for 9 households; and,
- Significantly decrease for 5 households.

COVID-19 has put extra pressure on some household budgets:

- 11 households strongly agree; and,
- 20 households agree.

36 households receive one or more government pensions or benefits:

- 27 receive the Family Tax Benefit Part A/B;
- 15 hold a healthcare card;
- 8 are paid the Parenting Payment (single or partnered);
- 4 receive the Job Seeker Allowance;
- 7 receive a Carer Payment; and,
- 4 are paid the Disability Support Pension or Disability Pension.

*One household has discontinued their participation since Household Surveys and Interview 1 but their interview and survey data remains part of the project.

Appendix D: Progress

Household and Individual Surveys 1	Completed
Household Interview 1	35 interviews completed, involving 73 participants
Household Interview 2 <ul style="list-style-type: none"> - Where possible these are being conducted in person at the participants' home - In addition to tracking the ongoing influence of the Connected Students Kit, we are using the second household interview to unpack key ideas and findings from the first round of data collection. For example: <ul style="list-style-type: none"> - How do low-income households define concepts such as 'tech savvy'? - How does parental digital inclusion impact adolescent experiences and opportunities? - What value does individualised device access have for generating digital inclusion outcomes? - What value does digital inclusion have for low-income households? 	In Progress: 5 household interviews completed, involving 10 participants. A further 17 interviews are scheduled and recruitment is ongoing.
Video recorded 'technology tours' of households, to understand: <ul style="list-style-type: none"> - How digital technologies fit within the home; and, - How the home and digital literacies can intersect and disrupt digital inclusion. 	In Progress: 5 technology tours completed. A further 15 scheduled.

Indexing of initial survey data onto ADII matrix	Scheduled for May/June 2021
Semi-structured interviews with key stakeholders at GSSC, to understand: <ul style="list-style-type: none"> - How digital inclusion is understood by the school, and what expectations this places on low-income households; and, - How digital inclusion impacted the school during COVID-19 	Scheduled for September/October 2021
Household and Individual Surveys 2	Scheduled for January/February 2022
Household Interview 3	Scheduled for January/February 2022
Exit Interviews <ul style="list-style-type: none"> - for households withdrawing partway through data collection 	Ethics approval received. Scheduled to commence in late May 2021



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