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# Mental health and wellbeing during the COVID-19 period in Australia

## ANU Centre for Social Research and Methods

Professor Nicholas Biddle, Professor Matthew Gray, and Patrick Rehill

ANU Centre for Social Research and Methods

Australian National University

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## Abstract

In April 2020, the Social Research Centre on behalf of the ANU Centre for Social Research and Methods collected the first wave of data as part of the centre's COVID-19 Impact Monitoring Series. Since that first wave of data collection, surveys have been undertaken a further 10 times, with the most recent wave of data collection undertaken in April 2022. Surveys have also been conducted with the same group of respondents just prior to COVID-19 in January and February 2020. This paper uses this data to consider what was the impact of the first two years of COVID-19 on the mental health and wellbeing of Australians, how did these impacts vary across key population sub-groups, and who is still experiencing the costs and consequences of the pandemic and associated policy responses.

A significant proportion of Australians experienced lower levels of wellbeing, higher levels of psychological distress, long periods of loneliness and social isolation, fewer hours worked, and a drop in income during the pandemic. There were, however, large increases in social cohesion early in the pandemic, and values in April 2022 that are still well above those prior to the pandemic. Young Australians, those with low education, low-income Australians, and those who live in Victoria have been impacted the most by the pandemic.

## Executive summary

- More than two years since the first cases in Australia it is an opportune time to assess medium term impacts of the COVID-19 pandemic on mental health and wellbeing. This paper provides data on the mental health and wellbeing of Australians during the first two-years of COVID, how these varied for key population groups and for which group mental health and wellbeing has not recovered to pre-COVID levels.
- Understanding the impacts of COVID-19 on mental health and wellbeing requires longitudinal data that tracks the same group of individuals from prior to COVID-19 and then throughout the pandemic period. This paper uses longitudinal data from the ANUpoll series of surveys which has collected information from the same group of individuals from just prior to COVID-19 and then eleven times since COVID started to impact Australia. The data showed changes in life satisfaction/wellbeing; psychological distress and mental health; loneliness; social cohesion; and financial stress.

## Life satisfaction and wellbeing

- Life satisfaction decreased substantially during the first few months of the pandemic and then fluctuated over the course of the pandemic. There was a large increase in life satisfaction between April and May 2020 as the initial lockdown period ended. It declined again into August and October 2020 as the second wave of the virus spread across Victoria, and then increased to November 2020 as restrictions in most areas of Australia had been eased. Life satisfaction dropped between April 2020 and August 2021 as the so-called Delta wave of the pandemic spread with restrictions again imposed in New South Wales, Victoria and the Australian Capital Territory, with life satisfaction only slowly improving between August 2021 and April 2022.
- In April 2022 life satisfaction was well below what it was in October 2019 and January 2020. Looking over the entire pandemic period, the 'lost life satisfaction' due to COVID-19 has been substantial, with average lost life satisfaction between April 2020 and 2022 equivalent to a roughly halving in income.
- In terms of differences by age, the largest loss in life satisfaction has been experienced by those 18 to 24 years, with those 25 to 54 years experiencing a more moderate, but still statistically significant decrease in life satisfaction. In contrast evidence suggests that life satisfaction did not, on average, fall for those aged 55 to 74 years and those aged 75 years and over had a small increase in life satisfaction during period.
- There are clear differences in the effect of COVID-19 on life satisfaction according to socio-economic status. Those with lower levels of educational attainment (that is, they had not completed Year 12) experienced a greater loss in life satisfaction and those at the higher end of the income distribution experienced a smaller loss of life satisfaction.

## Mental health and psychological distress

- There was a large increase in psychological distress (measured using the Kessler-6) between February 2017 and April 2020, an improvement between April and May 2020, a worsening during the second half of 2020, and then gradual but substantial improvement through to early 2021. After April 2021, psychological distress again increased. From January 2022 levels of psychological distress have stabilised or if anything declined slightly, but levels of distress in April 2022 remain well above what they were in 2017.

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- Psychological distress has several dimensions, with the Kessler-6 asking about six different aspects. Three of the aspects worsened substantially over the COVID-19 period. Compared to pre-COVID, there were
  - 1.42 times as many people who said that they were so sad that nothing could cheer them up (at least some of the time) on average over the period.
  - 1.32 times as many people who said that they were nervous.
  - 1.30 times as many people said that they felt hopeless.
- There are substantial differences between age groups in the impact of COVID-19 on the psychological distress or mental health of adults:
  - There was a large increase in psychological distress for those aged 18 to 44 years, with the pandemic average more than 10 per cent higher than pre-pandemic.
  - For those aged 45 to 64 years, average levels of psychological distress during the pandemic were very similar to pre-pandemic levels.
  - For those aged 65 years and over there was a lower level of average psychological distress during the pandemic compared to pre-pandemic.
- The greatest negative impact of the pandemic on psychological distress appears to have been for women, younger adults, Victorians, and low-income households.

### Loneliness and social isolation

- There was a dramatic decrease in social interaction between February and April 2020, with 2.1 per cent of Australians saying they never meet socially just prior to the pandemic compared to 49.4 per cent in the first month of the pandemic when there was widespread fear of COVID-19 and a national wide lock-down.
- Two years into the pandemic levels of face-to-face social interaction had not returned to pre-pandemic levels. The proportion of adults who met socially with other people less often than once a week was 54.8 per cent in April 2022, much higher the 41.4 per cent in February 2020.
- Controlling for frequency of social interaction pre-COVID:
  - Women are slightly more likely to have experienced loneliness during the COVID-19 period than men.
  - Those aged 45 years and over and particularly those aged 65 years and over had much lower levels of loneliness than those aged under 44.
- Those in the lowest income households had the highest level of loneliness across the COVID-19 period, controlling for social interaction pre-COVID.
- There does not appear to be strong evidence that those who lived in Victoria had higher levels of loneliness than New South Wales, but there are some states and territories (particularly South Australia) that had lower levels of loneliness.

### Social cohesion

- In this paper social cohesion is measured using questions on the extent to which people think others can be trusted, will try to be fair, and will try to be helpful. There was a significant increase in social cohesion during the early stages of the pandemic with it increasing over the period February 2020 to October 2020. Since then social cohesion has started to decline, but has remained well above the pre-COVID levels.

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### Hours worked

- There was a very large decline in the number of hours that people worked in paid employment during the early stages of the pandemic. Using a measure of hours which attributes zeros hours for those who were not employed at the time of the survey, between February 2020 and April 2020 the average hours worked fell from 21.9 hours per adult per week to 18.7 hours, with another slight decline to May 2020. Hours worked then steadily recovered with average hours worked in April 2022 being 21.4 hours per adult week which is very similar to the pre-pandemic levels.
- Averaged across the entire pandemic period, 58.0 per cent of adult Australians are estimated to have worked fewer hours than they did in February 2020. The average 'lost hours' was 1.64 hours per week, or 174 hours over the 106 weeks between April 2020 and April 2022.
- The industries in which workers lost the greatest number of hours over the pandemic period were Wholesale Trade; Accommodation and Food Services; Transport Postal and Warehousing; Information Media and Telecommunication; Education and Training; Arts and Recreation Services; and Other Services.
- Despite there being large gender differences in the distribution of workers across industries, women still lost a significantly and substantially greater number of hours compared to men, over the pandemic period. Younger workers also lost more hours, as did those aged 55 to 64 years.
- High levels of education appear to have provided some cushioning to losing hours over the period and those who have a post-graduate degree lost 1.7 hours less than those with no qualifications. Those who lived in the most disadvantaged areas lost the greatest number of hours, losing 1.8 hours on average more than those who lived in the middle quintile of areas.

### Income and financial stress

- There was a large drop in income between February and April 2020, from \$1,761 per week to \$1,655 per week, adjusting for the deflation that occurred over the period but taking into account the increase in some social security benefits, as well as the introduction of JobKeeper. Income continued to decline to January 2021, but then increased steadily from January 2021 through to April 2022, with average income at the end of the period only slightly below that of the pre-COVID data when adjusting for inflation (i.e. \$1,712 in real terms).
- Across the COVID-19 period, household income at the top of the income distribution has pulled away from the middle part of the distribution, with the middle part of the distribution in turn pulling further away from the bottom.
- The effect of the increases in government payments combined with expenditure declining during the early COVID-19 period as a result of the restrictions on leaving home and the closure of many businesses resulted in a steady decline in the per cent of Australians finding it difficult or very difficult on present income during the first eight months of the pandemic, declining from 26.7 per cent finding it difficult pre-pandemic to only 17.3 per cent in November 2020. After this low level, this measure of financial stress began to increase in 2021 and particularly into 2022, reaching 25.0 per cent by April 2022, which was not significantly different from pre-COVID.

### 1 Introduction and overview

At the time of writing Australia was more than two years into the COVID-19 pandemic. As of June 25<sup>th</sup> 2022, 9,682 Australians were confirmed to have died with COVID-19 with the vast majority of death occurring in the previous 7-8 months, with Australia not reaching 1,000 cumulative deaths until late August 2021 (Hale et al. 2021).

Deaths per million Australians in late June 2022 was approximately 375, much lower than in most other comparable countries. Adjusting for population size, Australia has had a little under one-tenth of the deaths compared to the USA, around one-seventh of the deaths compared to the UK, around one-quarter of the deaths of Ireland, and around one-third of the deaths of Canada. Only New Zealand with around 275 deaths per million population has a lower mortality rate in a comparison of these six English-speaking, high-income countries (Ritchie et al. 2020). While deaths from COVID-19 represent a large number of years of life lost in Australia, mortality has been far less than in many other comparable countries.

Using data up until August 2020, Ugarte et al. (2022) estimate that for Australia the average years of life lost due to COVID-19 was 2.7 years (Ugarte et al. 2022). The average years of life lost of those dying with COVID-19 was the lowest in Australia of the 17 countries including in Ugarte et al (2022) study, reflecting the relatively old age of those dying with COVID-19 in Australia compared to many other countries. Australia has continued to have one of the lower case-fatality rates in the world.

While deaths due to COVID-19 have been at the lower end of the distribution, nonetheless it is one of the leading causes of death. As of the most recent data (February 2022), it is the fourth most common cause of death in Australia, up from 38<sup>th</sup> most common in 2020 (Australian Bureau of Statistics 2022).

Although mortality in Australia due to COVID-19 has been low compared to most other countries, the pandemic has had a major impact on the lives of Australians. This included restrictions on travel due to the closing of international borders for nearly two years and the frequent and extended closing of state/territory borders. There have been stay-at-home orders for long periods of time for whole cities or even states/territories, and extensive periods of isolation for many millions of Australians who tested positive for COVID-19 themselves or who have had close contact with those who had. Since early 2022 the restrictions have largely been disbanded with domestic and international travel resuming and requirements for mask wearing being reducing and at the time of writing generally only applying in specific settings such as health services and hospitals, aged cared facilities and in some workplaces were required by employers.

The full impact of the pandemic on mental health and wellbeing is likely to take a number of years to fully emerge. However, more than two years since the first cases in Australia, the first border closures, and the first stay-at-home orders, it is an opportune time to ask the questions – what was the impact of the first two years of COVID-19 on the mental health and wellbeing of Australians, how did these impacts vary across key population sub-groups, and who is still experiencing the costs and consequences of the pandemic and associated policy responses?

The answers to these questions are complex, and depend on the measure used. To answer them, a certain type of data is required. This data must have multiple measures of wellbeing. It must include data from pre-pandemic, as well as at different points across the pandemic period. It must be representative of the Australian population, and include information across

the age, geographic, and socioeconomic distributions. Ideally it should be longitudinal allowing for the measurement in change at the individual-level, and it should be available to the public for validation purposes and to ensure transparency.

After a discussion on some of the existing evidence of the impact of the pandemic (Section 2), Section 3 of this paper outlines such a data source – the ANUpoll series of surveys, collected by the Social Research Centre on behalf of the ANU Centre for Social Research and Methods. With this data source, we consider the changes in outcomes in life satisfaction/wellbeing (Section 4); psychological distress and mental health (Section 5); loneliness (Section 6); social cohesion (Section 7); and financial stress (Section 8). In Section 9 we provide a summary of the main findings and some concluding comments.

## 2 Existing Australian evidence on the mental health and economic impacts of COVID-19

### 2.1 Economic impacts

COVID-19 had substantial economic impacts. Many Australians saw a reduction in their hours worked as many types of economic activity were not able to take place and this was concentrated amongst certain industries and certain types of workers (Gilfillan 2020). The impact on the incomes of Australians in aggregate was substantially, but not entirely, offset by government policies. For many people whose main source of incomes were social security payments their incomes temporarily increased due to temporary increases in social security payments and the relaxation of some eligibility conditions (Biddle 2022). In 2021, financial supports were scaled back and so during this year, lockdowns widened rather than shrank inequality (Davidson 2022).

Notwithstanding the temporary increases in government benefits during the early stages of the pandemic, COVID-19 tended to compound existing vulnerabilities. Examples include those on temporary visas such as international students who were not ineligible for most forms of financial assistance (O’Sullivan et al. 2020). Casual workers were ineligible for JobKeeper payments if they had not been employed in their position on a “regular and systematic basis for at least the previous 12 months” (Australian Government 2020). Women were more likely to take on extra caring work that resulted from lockdowns, were almost twice as likely to lose their jobs, and were less likely to be eligible for support payments than men (Wood et al. 2021).

### 2.2 Evidence on the impact on mental health

There is also evidence that the pandemic had negative impacts on the mental health of many Australians. Using data from the ANU COVID-19 Impact Monitoring Surveys, Biddle and Gray (2022) find that during the initial COVID-19 period psychological distress increased, then decreased before increasing again so that in January 2022 it was at a similar level to what it was during the initial COVID-19 period.

Butterworth et al. (2022) using longitudinal data (with one wave post COVID-19) found that there was a small but statistically significant decline in mental health for Australia as a whole, but with a greater decline in mental health for people living in Victoria in 2020 who experienced far more severe and long lasting lockdowns than the rest of Australia. Butterworth et al (2022) also find that the Victorian lockdown effect on mental health was larger for women than for men and even larger for women in couples with children younger than 15 years. A review and synthesis of the early evidence on the effects of COVID-19 on mental health in Australia concluded that there has been a worsening of outcomes (Bowman et al 2021) and that the

effects are concentrated in

“young people; females; people living with a disability or existing mental health issue; culturally and linguistically diverse people; Aboriginal and Torres Strait Islander peoples; people on low incomes, people experiencing job loss [and] people living in poor-quality housing conditions” (p. 5).

Several systematic reviews from around the world show this effect was clear elsewhere in the world and a number speculate as to the underlying mechanisms driving this disparity, particularly higher loneliness and a higher caring burden (Vindegard and Benros 2020; Xiong et al. 2020; Hossain et al. 2020).

According to Rahman et al. (2020), the impacts have not been uniform in severity or duration. For some, negative impacts may have been short-lived with a quick return to a pre-COVID baseline. For other Australians, negative impacts may have been long-lasting and mental health or wellbeing is yet to return to pre-COVID levels (as described later in this paper). For other still, impacts may have been negligible, the pandemic may have had positive impacts, or other things may have occurred over the period that mean that mental health and wellbeing is at a higher level than it was pre-pandemic. Biddle et al. (2020) find that psychological distress in 2020 increased for young Australians while at the same time decreasing for older Australians.

### 3 Overview of the COVID-19 Impact Monitoring Survey

In April 2020, the Social Research Centre on behalf of the ANU Centre for Social Research and Methods collected the first wave of data as part of the centre’s COVID-19 Impact Monitoring Series.<sup>1</sup> Since that first wave of data collection, surveys have been undertaken a further 10 times, with the most recent wave of data collection undertaken in April 2022.

Surveys have also been conducted with the same group of respondents in January and February 2020, just before the COVID-19 pandemic started in Australia, as part of the ANUpoll and Australian Social Survey International-ESS (AUSSI-ESS) surveys respectively.<sup>2</sup> This allows us to track outcomes for the same group of individuals from just prior to COVID-19 impacting Australia through to two-and-a-bit years since COVID-19 first reached Australia.

The April 2022 survey collected data from 3,587 Australians aged 18 years and over.<sup>3</sup> Data collection for the April 2022 ANUpoll commenced on the 11<sup>th</sup> of April 2022 with a pilot test of telephone respondents. The main data collection commenced on the 12<sup>th</sup> of April and concluded on the 26<sup>th</sup> of April. 57.1 per cent of the sample had completed the survey by the 14<sup>th</sup> of April and the average interview duration was 20.3 minutes.

The Social Research Centre collected data online and through Computer Assisted Telephone Interviewing (CATI) in order to ensure representation from the offline Australian population. Around 3.4 per cent of interviews were collected via CATI.<sup>4</sup> A total of 4,364 panel members were invited to take part in the April 2022 survey, leading to a wave-specific completion rate of 82.1 per cent.<sup>5</sup>

Unless otherwise stated, data in the paper is weighted to population benchmarks. For Life in Australia™, the approach for deriving weights generally consists of the following steps:

1. Compute a base weight for each respondent as the product of two weights:
  - a. Their enrolment weight, accounting for the initial chances of selection and

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subsequent post-stratification to key demographic benchmarks

- b. Their response propensity weight, estimated from enrolment information available for both respondents and non-respondents to the present wave.
2. Adjust the base weights so that they satisfy the latest population benchmarks for several demographic characteristics.

Across all eleven surveys undertaken during the COVID-19 period, there were 6,474 respondents that completed at least one of the waves of data collection. 25.6 per cent of these completed one wave of data collection only, with a further 14.4 per cent having completed two waves. At the other end of the distribution, 22.0 per cent of the 6,474 cumulative respondents completed all eleven waves of data collection and a further 9.1 per cent completed ten of the eleven waves. This leaves 28.9 per cent of the pool of respondents who completed between three and nine waves.

Table 1 gives the number of respondents for each of the eleven waves of data collection during the COVID-19 period, as well as the two pre-COVID waves. The table also gives the survey window for the data collection, and the per cent of January 2020 respondents who completed that particular wave.

**Table 1** Survey participation – January 2020 to April 2022

Wave	Survey window	Sample size	Per cent of January 2020 survey that completed wave
January 2020	20 <sup>th</sup> January to 3 <sup>rd</sup> February, 2020	3,249	100
February 2020	17 <sup>th</sup> February to 2 <sup>nd</sup> March, 2020	3,228	91.4
1 – April 2020	14 <sup>th</sup> to 27 <sup>th</sup> April, 2020	3,155	88.8
2 – May 2020	11 <sup>th</sup> to 25 <sup>th</sup> May, 2020	3,249	91.0
3 – August 2020	10 <sup>th</sup> to 24 <sup>th</sup> August, 2020	3,061	85.9
4 – October 2020	12 <sup>th</sup> to 26 <sup>th</sup> October, 2020	3,043	85.5
5 – November 2020	9 <sup>th</sup> to 23 <sup>rd</sup> November, 2020	3,029	84.9
6 – January 2021	18 <sup>th</sup> January to 1 <sup>st</sup> February, 2021	3,459	83.8
7 – April 2021	12 <sup>th</sup> to 26 <sup>th</sup> April, 2021	3,286	80.8
8 – August 2021	10 <sup>th</sup> to 23 <sup>rd</sup> August, 2021	3,135	71.1
9 – October 2021	12 <sup>th</sup> to 26 <sup>th</sup> October, 2021	3,474	68.6
10 – January 2022	17 <sup>th</sup> to 30 <sup>th</sup> January, 2022	3,472	63.4
11 – April 2022	11 <sup>th</sup> to the 24 <sup>th</sup> April, 2022	3,587	64.0

### 4 Life satisfaction change

In each of the ANU Centre for Social Research and Methods COVID-19 surveys, respondents have been asked:

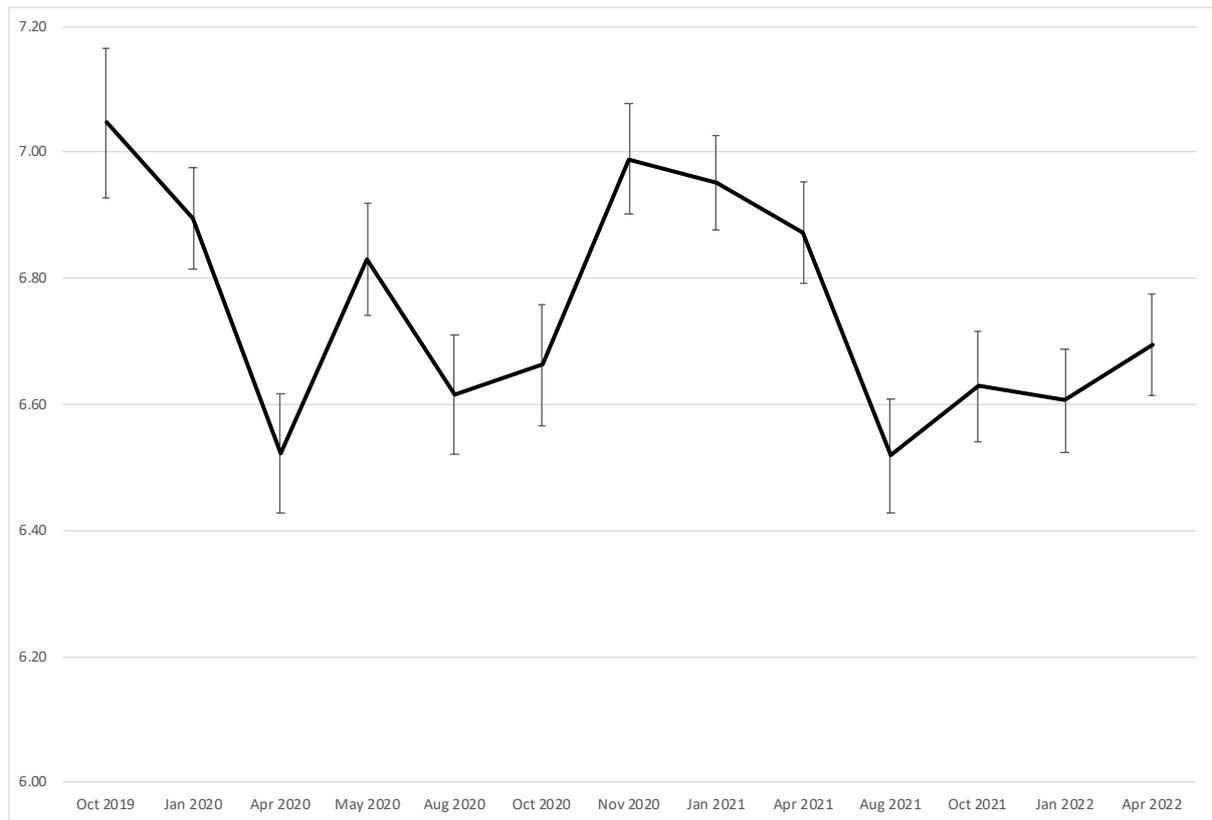
'The following question asks how satisfied you feel about life in general, on a scale from 0 to 10. Zero means you feel 'not at all satisfied' and 10 means 'completely satisfied'. Overall, how satisfied are you with life as a whole these days?'

This question has usually been asked early in the survey, just after a question on satisfaction with the direction of the country and (for some waves) voting intentions.

In January 2020, the average level of life satisfaction in Australia was 6.90 out of a possible 10.0. Keeping in mind that the survey was undertaken around the height of the Black Summer bushfire crisis when many fires were still out of control and many cities on the east and south of the countries had experienced intolerable smoke hazes, this was a slightly lower level of life satisfaction than October 2019 (7.05) (Figure 1).

Life satisfaction decreased substantially during the very early stages of the pandemic, reaching a low of 6.52 in April 2020. Over the course of the pandemic, there was quite substantial fluctuations in life satisfaction, with a large increase between April and May 2020 as the initial lockdown period ended. Life satisfaction declined again into August and October 2020 as the second wave of the virus spread across Victoria, and then increased again to November 2020 as restrictions in most of the country had been eased. Indeed, the level of life satisfaction in November 2020 (6.99) was slightly higher than it was in January 2020. Life satisfaction dropped dramatically again between April 2021 and August 2021 as the so-called Delta wave of the pandemic spread with restrictions again imposed in New South Wales, Victoria and the Australian Capital Territory, with life satisfaction only slowly improving between August 2021 and April 2022. In April 2022 life satisfaction was well below what it was in October 2019 and January 2020, but still above April 2020.

Figure 1 Life satisfaction, Australia, October 2019 to April 2022



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate.

Source: ANUpoll, Oct 2019; January, April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

Over the COVID-19 period average life satisfaction has been lower than it was pre-COVID October 2019 and for most of the period it has been lower than it was in January 2020 during the Black Summer bushfires. Assuming that, if the COVID-19 pandemic had not happened, life satisfaction would have stayed at approximately the January 2020 level (a conservative assumption given the impact of the Black Summer bushfires), the impact of the pandemic on life satisfaction can be quantified by comparing the average level of life satisfaction over the period for an individual with their own value in January 2020.

Specifically, for each wave of data collection, if the person completed that particular survey, then we assign them their observed life satisfaction value. If they did not complete that particular wave, then we assign them a predicted value based on a wave-specific regression using a set of demographic, socioeconomic, and geographic variables available as part of the panel profile.<sup>6</sup> We then average life satisfaction across the eleven waves of data during the COVID-19 period, and minus from life satisfaction/predicted life satisfaction in January 2020.

For those who completed the April 2022 survey, the average level of ‘lost life satisfaction’ due to COVID-19 was 0.216. In the abstract, it is difficult to conceptualise what a drop in life satisfaction of this value means. One way to illustrate the scale is to convert the changes in life satisfaction into income equivalents. This can be done using a simple model of life satisfaction in January 2020 as a function of household income at that point in time.<sup>7</sup> For those who completed the April 2022 survey, the average predicted level of life satisfaction in January 2020 was 6.93. This equates to a household income of \$1,480 per week. The average life satisfaction

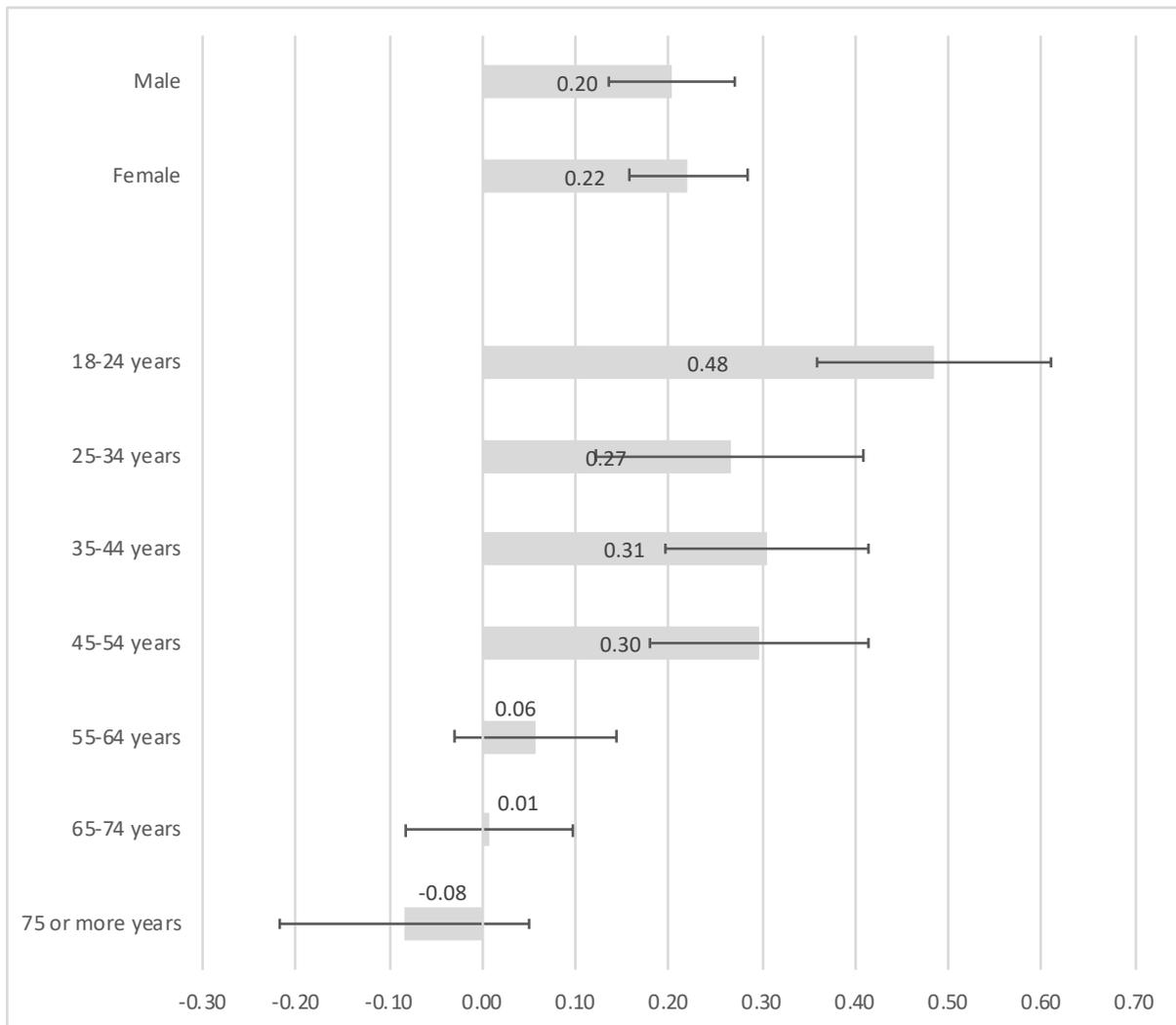
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during the COVID-19 period was 6.71, which if experienced in January 2020 would be equivalent to a household income of \$773 per week. The average lost life satisfaction over the period is therefore equivalent to a roughly halving in income. This is based on the relationship between income and life satisfaction prior to the pandemic and it should be noted that this relationship does vary across individuals and across time. Nonetheless, the results do suggest a very large impact of the pandemic on life satisfaction in Australia.

Not everyone lost the same amount of life satisfaction over the period, with a range of impacts across the distribution. There were 37.6 per cent of Australians who were estimated to not have suffered a decline in life satisfaction over the COVID-19 period relative to January 2020. This may be because their life satisfaction in January 2020 was particularly low, because the COVID-19 pandemic had no impact or a positive impact on them, or there were experiences over the period that boosted their life satisfaction. The median individual did, however, lose life satisfaction over the period, with 25 per cent of Australians having a drop in life satisfaction of 0.64 or more and 10 per cent of Australians having a drop in life satisfaction of 1.29 or more.

The impact of COVID-19 on life satisfaction differed between population groups. The effects on the life satisfaction of women and men was very similar (Figure 2). There are however large differences in lost life satisfaction between age groups. The biggest loss is for those aged 18 to 24 years, with an average drop of 0.50 compared to January 2020 wellbeing. Those aged 25 to 54 years had more moderate, but still statistically significant drops in life satisfaction over the period, whereas there were no significant declines for those aged 55 years and over. Indeed, there is some evidence that those aged 75 years and over had a small increase in life satisfaction over the period.

Figure 2 Average ‘lost life satisfaction,’ by age, January 2020 to April 2022



Note: The “whiskers” on the bars indicate the 95 per cent confidence intervals for the estimate.

Source: ANUpoll, January, April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

Table 2 reports the results of regression modelling of the factors associated with loss in life satisfaction. Specifically, the estimated loss of in life satisfaction is the dependent variable, with explanatory variables included for age, sex, other demographic characteristics, socioeconomic status (including household income) and geography. As the dependent variable is continuous (albeit ranging from -10 to +10), ordinary least squares analysis is used with results presented as the difference in ‘lost life satisfaction’ for someone with that particular characteristic compared to the base case (as described in the table note) holding constant all other characteristics included in the regression model.

Reading down the table and keeping in mind that the dependent variable is the **\*loss\*** in life satisfaction, rather than the change in life satisfaction, there is a clear age pattern with the losses of life satisfaction being largest for younger age groups (particularly those aged 18-24 years), no statistically significant differences for those aged 25 to 34 years or those aged 45 to 54 years compared to those aged 35 to 44 years. Life satisfaction “losses” are smaller for older age groups and in fact life satisfaction is estimated to be higher over the COVID-19 period for those aged 65 to 74 years and those aged 75 years plus.

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The lack of difference in the lost life satisfaction between men and women reported in Figure 2 is confirmed by the regression analysis. Those who were born overseas in a non-English speaking country (compared to those born in Australia) experienced less of a loss in life satisfaction. Respondents who identified as being Aboriginal or Torres Strait Islander also were estimated to experience less of a loss in life. However, there are only 39 Aboriginal and Torres Strait Islander Australians in our sample that had information for April 2022 and February 2020 meaning that definitive conclusions should not be drawn for the entire Aboriginal and Torres Strait Islander population. Holding constant broad region of birth, those who spoke a language other than English at home had a greater loss in life satisfaction.

Those Australians who had not completed Year 12 had a greater loss in life satisfaction than those who had completed Year 12, as did those with a Certificate III/IV or Diploma compared to those with no post-school qualifications. There does not appear to be a significant difference between those with a degree and those with no qualification.

Interestingly, it would appear that those who lived in the most disadvantaged areas had the lowest loss in life satisfaction compared to those living in the 3<sup>rd</sup> quintile of area advantage/disadvantage. However, this is partly because we are controlling for household income, which was significant and showed that those in the two highest income groups had the smallest loss in life satisfaction. This may also be in part due to the effect that the pandemic had (at least in 2020) in equalising incomes and reducing poverty as discussed in Section 8. Looking more broadly at geography, the major difference is between Victoria and the rest of the country, with the former having a loss in life satisfaction that was 0.37 greater than for New South Wales (the base case).

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**Table 2** Factors associated with 'lost life satisfaction', October 2019 to April 2022

Explanatory variables	Coeff.	Signif.
Female	-0.028	
Aged 18 to 24 years	0.222	***
Aged 25 to 34 years	0.017	
Aged 45 to 54 years	0.043	
Aged 55 to 64 years	-0.240	***
Aged 65 to 74 years	-0.360	***
Aged 75 years plus	-0.499	***
Indigenous	-0.545	**
Born overseas in a main English-speaking country	0.087	
Born overseas in a non-English speaking country	-0.217	**
Speaks a language other than English at home	0.136	*
Has not completed Year 12 or post-school qualification	0.158	*
Has a post graduate degree	0.106	
Has an undergraduate degree	-0.073	
Has a Certificate III/IV, Diploma or Associate Degree	0.150	**
Lives in the most disadvantaged areas (1st quintile)	-0.154	*
Lives in next most disadvantaged areas (2nd quintile)	-0.065	
Lives in next most advantaged areas (4th quintile)	0.120	*
Lives in the most advantaged areas (5th quintile)	0.000	
Lives outside of a capital city	-0.068	
Lives in Victoria	0.348	***
Lives in Queensland	0.014	
Lives in South Australia	0.060	
Lives in Western Australia	-0.081	
Lives in Tasmania	-0.032	
Lives in the Northern Territory	-0.058	
Lives in the Australian Capital Territory	0.134	
Lives in lowest income household (1st quintile)	0.047	
Lives in next lowest income household (2nd quintile)	-0.006	
Lives in next highest income household (4th quintile)	-0.154	**
Lives in highest income household (5th quintile)	-0.176	**
Constant	0.259	**
Sample size	2,851	

Notes: Linear Regression Model. The base case individual is male; aged 35 to 44 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); lives in a capital city; lives in New South Wales, lives in neither a high-income or low-income household (third quintile).

Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*

Source: ANUpoll, Oct 2019; January, April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

While there are relatively few studies with good longitudinal data collected pre- and post COVID-19 which collected information on life satisfaction, there are a number of other studies of the impacts of COVID-19 on life satisfaction that are based on longitudinal data with the first wave after the start of COVID or repeated cross-sectional surveys. These studies have found generally similar effects in Western Europe (Clark and Lepinteur 2021; Zoch et al. 2021; Sabater-Grande et al. 2021; Milicev et al. 2022), Singapore (among middle-aged and older Singaporeans) (Xiong et al. 2020), Canada (Helliwell et al. 2020) and the United States (VanderWeele et al. 2021). These studies all show an overall dip in life satisfaction during the early stages of the pandemic followed a (generally) more gradual recovery. They either show women losing more life satisfaction than men or no statistically measurable difference (as we

found here). Younger people also generally showed a greater drop in satisfaction than older people (Helliwell et al. 2020; Milicev et al. 2022).

## 5 Mental health and psychological distress

### 5.1 Trends in psychological distress

A strength of the life satisfaction measure is that it is broad and can be used to identify those individuals or groups of individuals who have either above or below average wellbeing, as well as those whose wellbeing has improved or worsened over a given time period. The pandemic, however, has had more direct impacts on mental health, with many Australians experiencing quite significant negative mental health outcomes over the period.

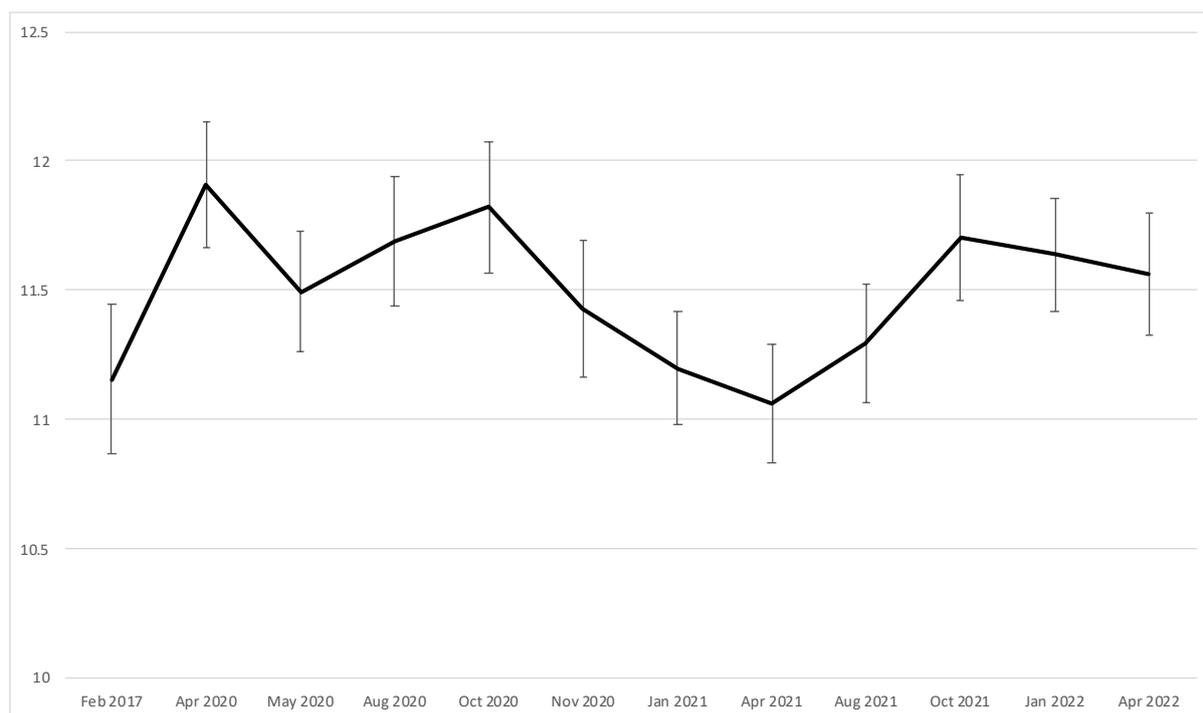
From the April 2020 ANUpoll and across the subsequent ten COVID-19 Impact Monitoring surveys, we measured mental health using the Kessler (K6) module which comprises six items and has been widely used and validated in many epidemiological studies (Kessler et al. 2002). Although the K6 module was not asked just prior to the pandemic in the January and February surveys, we do have comparable data from the Life in Australia™ panel from February 2017.

The K6 questions ask the respondent how often in the last four weeks they felt: ‘nervous’; ‘hopeless’; ‘restless or fidgety’; ‘so depressed that nothing could cheer you up’; ‘that everything was an effort’; and ‘worthless’. There were five response categories, from “none of the time” to “all the time”, with values ranging from 1 through 5. Respondents who score highly on this measure are considered to be at risk of a serious mental illness (other than a substance use disorder). It is important to recognise that the K6 screens for the risk of serious mental illness, but is not a clinical diagnostic measure.

The K6 items can be summed to produce an index, with potential values ranging from 6 to 30. People with a sum of 11 to 18 out of a possible maximum of 30 are categorized as experiencing *moderate* psychological distress. This group can be considered to be struggling with mental distress worthy of mental health support but are not at risk of clinical levels of mental health problems like those in the serious category (Prochaska et al. 2012). Those with a K6 sum of 19 or higher out of a possible maximum of 30 are categorised as experiencing *severe* psychological distress consistent with having a ‘probable serious mental illness’.

Figure 3 plots the continuous K6 measure across the pandemic period (including a pre-COVID baseline from February 2017), whereas Figure 4 gives the per cent of Australians who were above the threshold of a K6 score of 19 or higher (severe psychological distress). Based on the continuous measure, there was a large increase in psychological distress between February 2017 and April 2020, improvements in May 2020, a worsening during the second half of 2020, and then gradual but substantial improvement to early 2021. After April 2021, there was a worsening in mental health outcomes again, with psychological distress starting to decline again in January 2022, but only slightly and with little change between January 2022 and April 2022. Psychological distress was still well above the February 2017 baseline as of April 2022.

Figure 3 Psychological distress (K6), Australia, February 2017 to April 2022

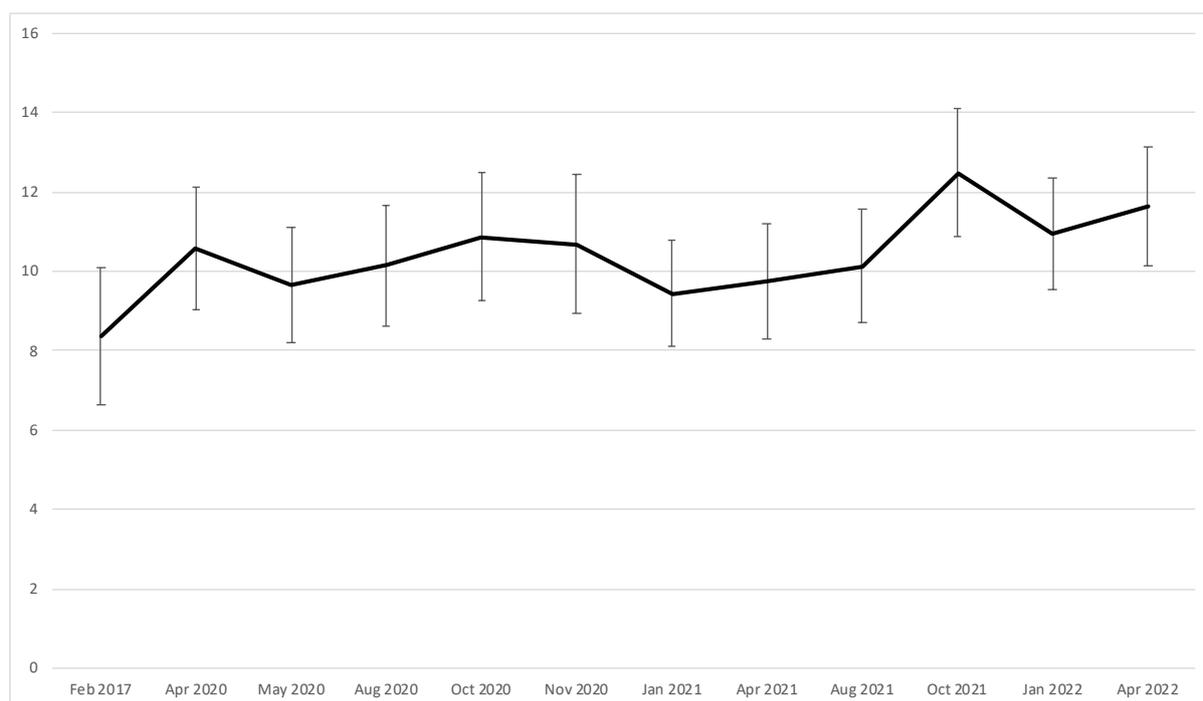


Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate.

Source: Life in Australia, February 2017; ANUpoll: April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

Figure 4 shows the percentage of adult Australians who are estimated to be experiencing severe psychological distress consistent with having a probable serious mental illness (Figure 4). The patterns are quite different to those for the continuous measure. There was an increase in the rates of severe psychological distress between February 2017 and April 2020, and then some fluctuations over the remainder of 2020 and into early 2021. However, since April 2021 rates of severe psychological distress have increased and remained elevated. While this is not a diagnostic tool, the results are a strong indication that the mental health impacts of the pandemic have not receded. The size of the increase in the rates of severe psychological distress are relatively large (around 3 percentage points higher in April 2022 than in February 2017) and in population terms are large. Furthermore, the national average hides the quite different the effects of the COVID-19 on psychological distress for different population groups (see analysis below).

Figure 4 Per cent of Australians with severe psychological distress, February 2017 to April 2022



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate. People who had a K6 score of 19 or above are classified as experiencing severe psychological distress.

Source: Life in Australia, February 2017; ANUpoll: April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

None of the individual components of the K6 index improved over the COVID-19 period. However, there were differences between them. Figures 5a to 5f show the per cent of Australians who reported that they were experiencing that particular negative aspect of mental health some of the time, most of the time or all of the time in the previous 4 weeks. Positive mental health is captured by those who experienced that outcome none of the time or a little of the time.

Three of the mental health outcome measures substantially worsened over the COVID-19 period. Taking the average percentage over the eleven waves of data collection from April 2020 to April 2022 and dividing by the value for February 2017, there were about 1.42 times as many people who said that they were ‘so sad that nothing could cheer them up’ (at least some of the time), about 1.32 times as many people who said that they were nervous, and 1.30 times as many people said that they felt hopeless.

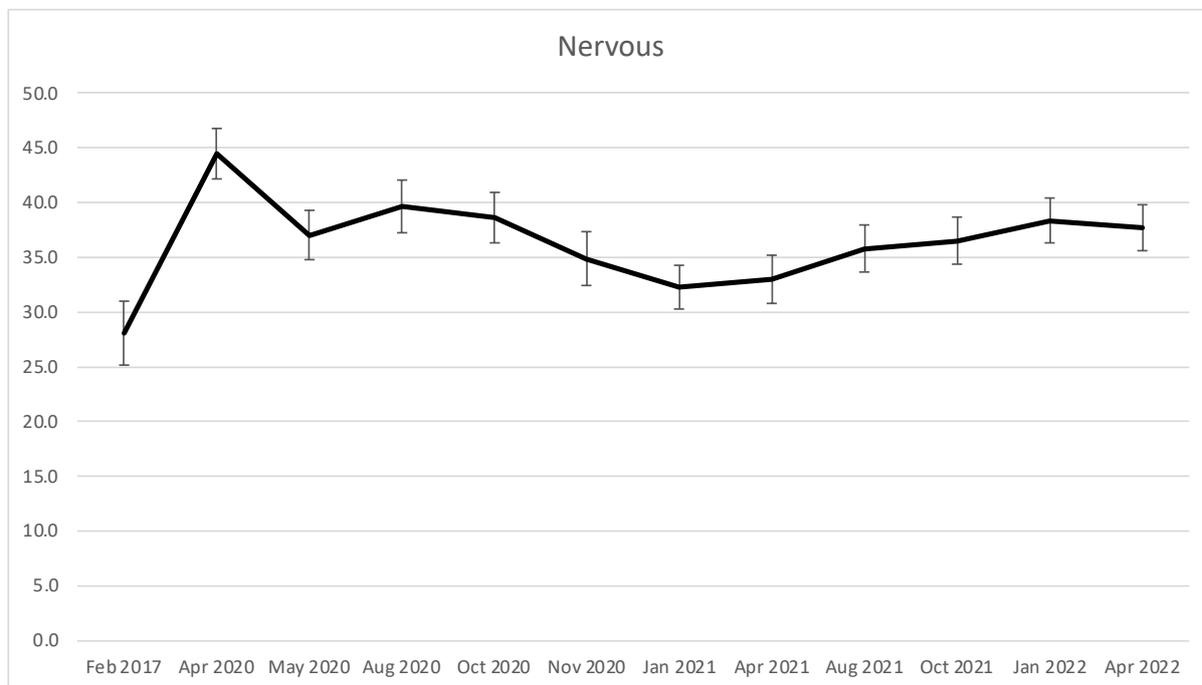
Of the other three measures of psychological distress as part of the K-6 index, there was a significant increase in the per cent of Australians who felt restless or fidgety between February 2017 and April 2020, although during the pandemic there were periods of time when the per cent of people feeling restless or fidgety was lower than pre-pandemic. This meant that there were only 1.03 times as many people who experienced this negative measure of wellbeing (feeling restless or fidgety) on average over the eleven post COVID-19-waves compared to February 2017. The largest per cent of people who felt they were worthless at least some of the time occurred during October 2021 (1.22 times the February 2017 baseline) rather than at the start of the COVID-period, and there was very little change in the per cent of Australians

## Mental health and wellbeing during the COVID-19 period in Australia

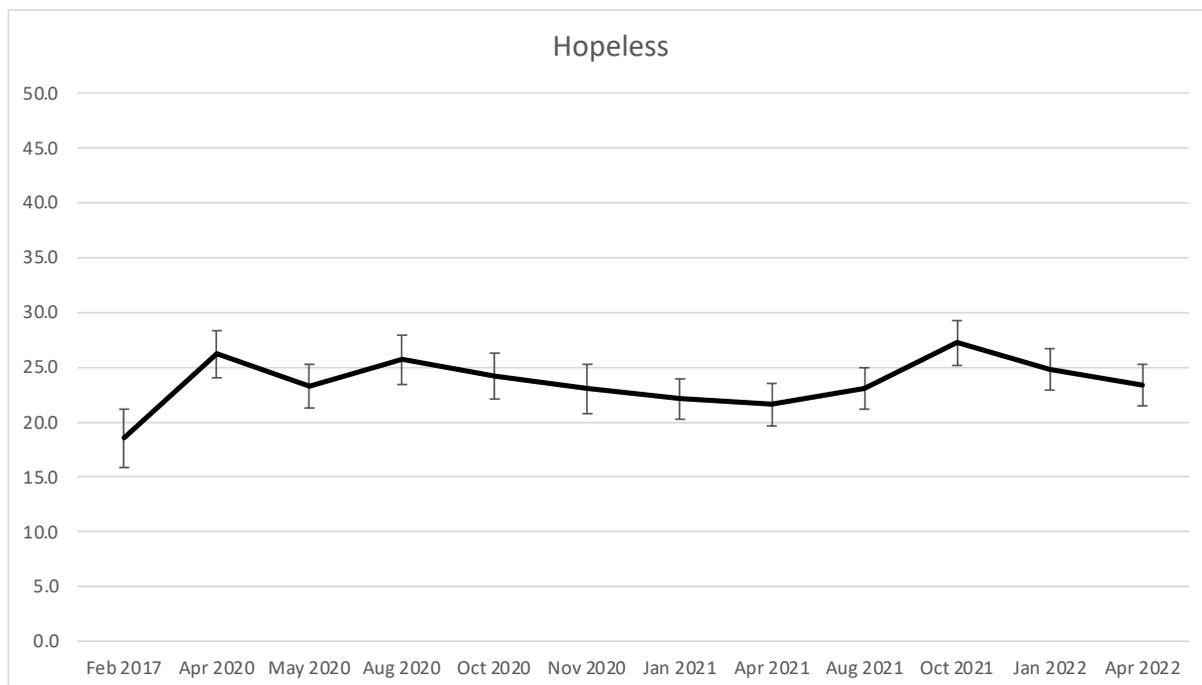
who felt everything was an effort over the entire period.

**Figure 5** Per cent of Australians who experienced negative mental health outcomes at least some of the time, February 2017 to April 2022

**Figure 5a** Nervous



**Figure 5b** Hopeless



# Mental health and wellbeing during the COVID-19 period in Australia

Figure 5c Restless or fidgety

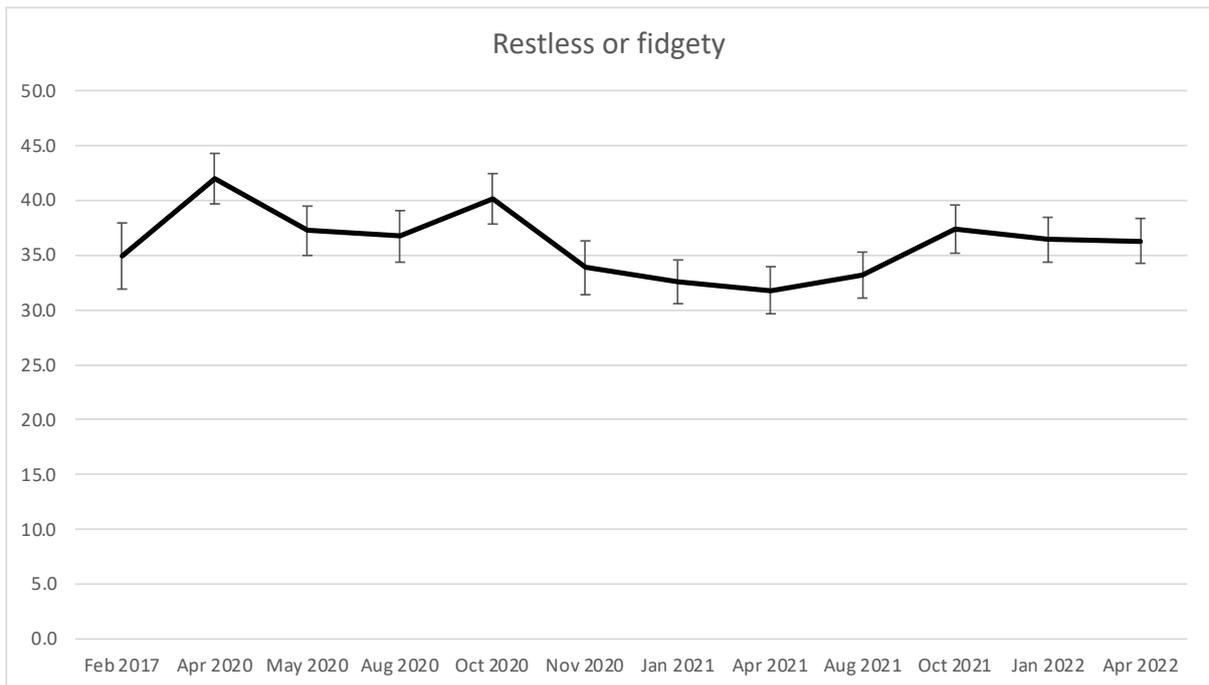


Figure 5d Everything was an effort

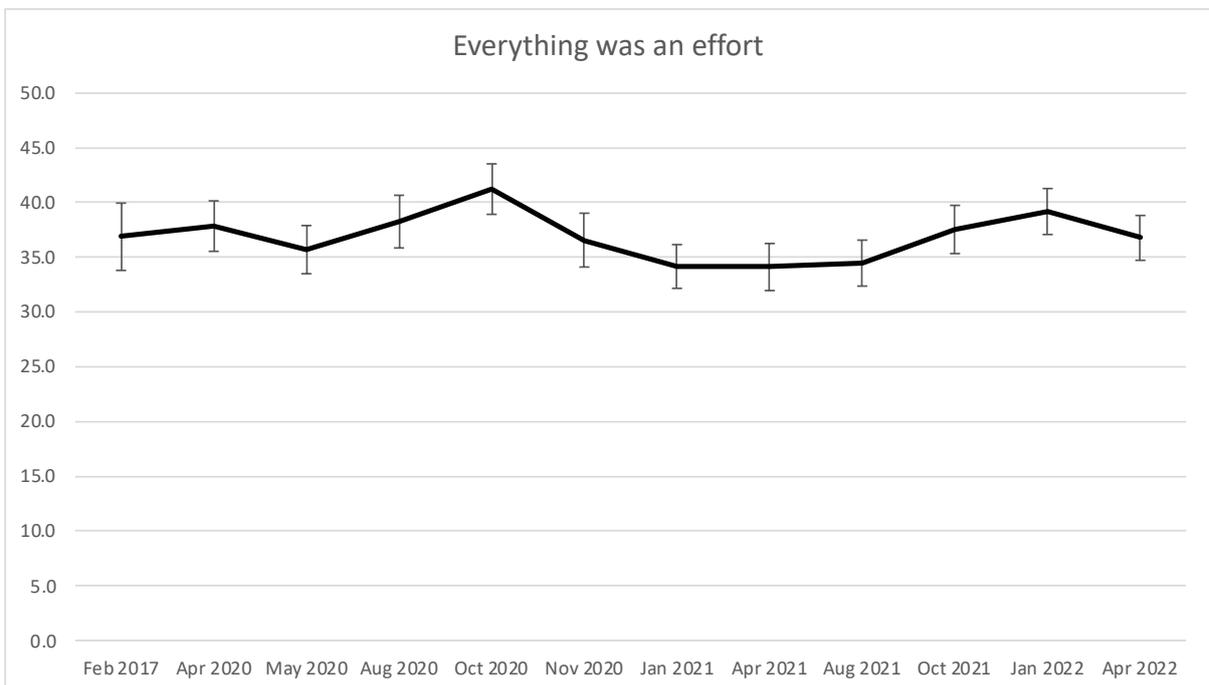


Figure 5e So sad that nothing could cheer you up

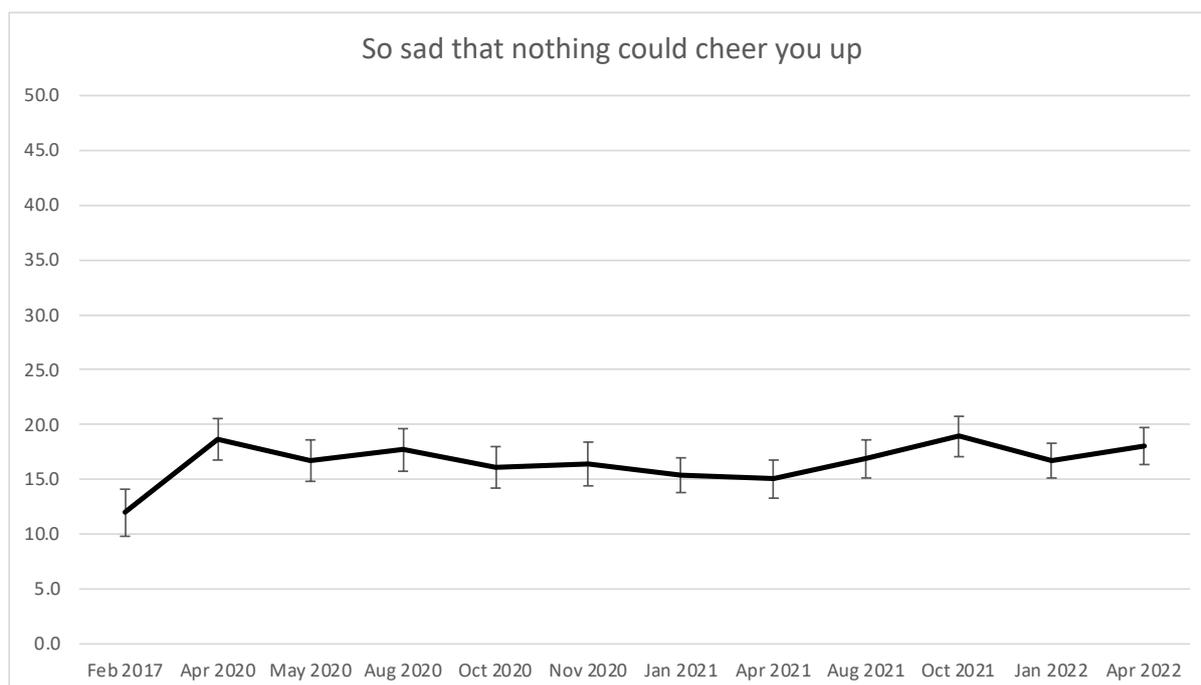
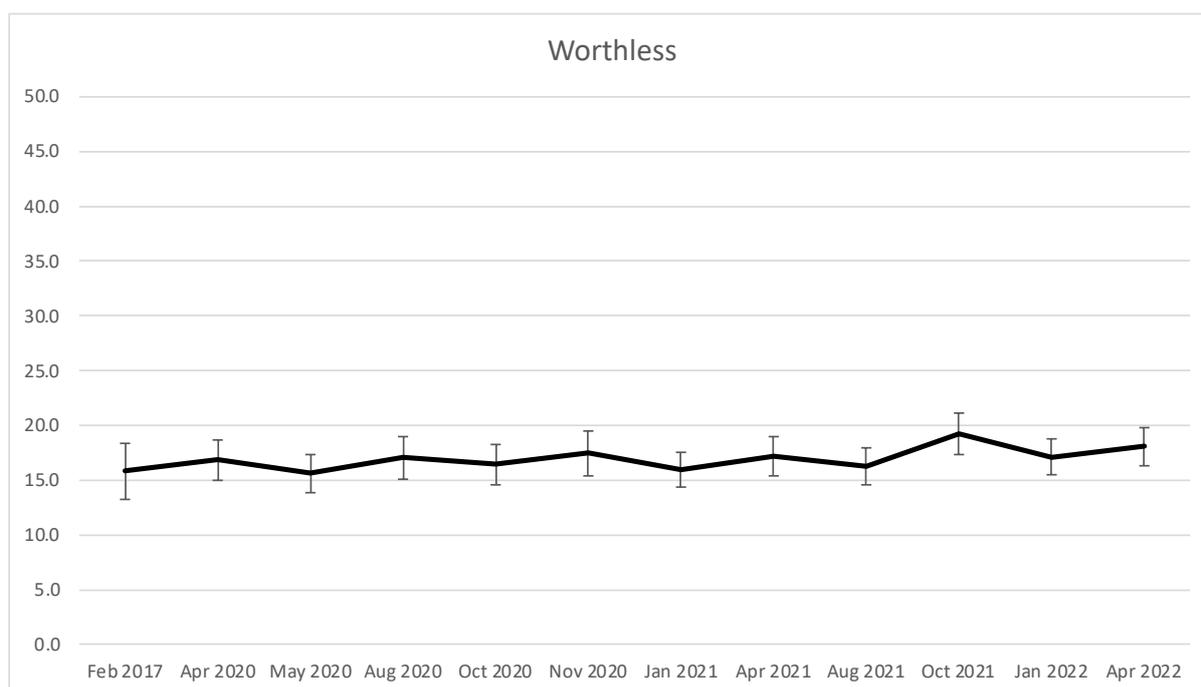


Figure 5f Worthless



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate.

Source: Life in Australia, February 2017; ANUpoll: April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

## 5.2 Psychological distress for different population groups

This section describes the trends in the mental health measures and psychological distress for the different population groups including age and gender. Table 3 shows the K-6 index for each ten-year age group, at each point in time during the pandemic and pre-pandemic (the second part of the table gives standard errors, which can be used for statistical significance testing

## Mental health and wellbeing during the COVID-19 period in Australia

purposes).

There was a large increase in psychological distress for those aged under 44 years, with the pandemic average more than 10 per cent higher than the pre-pandemic baseline. For those aged 45 to 64 years, average levels of psychological distress during the pandemic were very similar to pre-pandemic levels, with the final broad age grouping (aged 65 years and over) actually having a lower level of average psychological distress during the pandemic compared to the February 2017 baseline.

Mental health and wellbeing during the COVID-19 period in Australia

**Table 3** Average psychological distress scores (K6), by age, February 2017 to April 2022

Age at data collection	Feb 2017	Apr 2020	May 2020	Aug 2020	Oct 2020	Nov 2020	Jan 2021	Apr 2021	Aug 2021	Oct 2021	Jan 2022	Apr 2022	Pandemic average
18-24 years	12.8	14.9	13.9	14.6	15.5	14.0	13.8	13.6	13.8	14.4	14.0	14.5	14.3
25-34 years	12.4	14.0	13.5	13.7	13.5	13.3	13.0	13.1	13.3	13.8	12.9	13.2	13.4
35-44 years	11.1	12.9	12.4	12.2	12.3	12.2	11.8	11.7	12.0	12.6	12.4	12.4	12.3
45-54 years	11.0	11.1	11.1	11.2	11.4	10.9	10.6	10.4	10.7	10.8	11.5	11.1	11.0
55-64 years	10.7	10.5	10.2	10.7	10.5	10.2	10.2	9.8	10.0	10.2	10.4	10.2	10.2
65-74 years	9.9	9.2	9.0	9.0	9.3	9.2	8.8	8.6	8.6	9.0	9.6	9.1	9.0
75 or more years	9.6	9.0	8.5	9.0	9.3	9.2	8.7	8.6	8.4	9.0	9.3	9.0	8.9
----- Standard errors -----													
18-24 years	0.339	0.478	0.539	0.491	0.508	0.633	0.466	0.504	0.510	0.497	0.445	0.443	
25-34 years	0.291	0.314	0.346	0.382	0.374	0.382	0.291	0.304	0.310	0.330	0.278	0.340	
35-44 years	0.426	0.287	0.273	0.254	0.266	0.299	0.266	0.260	0.259	0.295	0.257	0.264	
45-54 years	0.270	0.243	0.266	0.290	0.265	0.292	0.239	0.246	0.256	0.250	0.275	0.272	
55-64 years	0.253	0.224	0.189	0.220	0.196	0.236	0.192	0.184	0.195	0.209	0.194	0.209	
65-74 years	0.207	0.184	0.161	0.171	0.169	0.216	0.160	0.170	0.153	0.164	0.186	0.176	
75 or more years	0.487	0.241	0.211	0.258	0.238	0.289	0.201	0.214	0.191	0.230	0.249	0.240	

Source: Life in Australia, February 2017; ANUpoll: April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

## Mental health and wellbeing during the COVID-19 period in Australia

Unfortunately, we do not have pre-COVID mental health outcomes for a large proportion of the longitudinal sample given that it was most recently asked pre-COVID-19 in February 2017 and since that time there was a fair amount of sample attrition and also a large boost to the sample at the end of 2019. It is therefore not possible to calculate an individual measure of 'worsened mental health' as we were able to calculate for lost life satisfaction.

However, the February 2020 wave of data collection included three questions that are correlated with mental health outcomes – life satisfaction (analysed above), happiness, and self-assessed health.

In order to estimate the individual level characteristics associated with psychological distress a regression model is estimated. The dependent variable is the average level of psychological distress experienced by the individual with the average calculated across all of the post-COVID-19 survey waves to which the individual responded. The three pre-COVID measures of health (life satisfaction, happiness and self-assessed health status) are included as explanatory variables along with a range of individual level characteristics.<sup>8</sup> As far as we are aware, however, this is the most robust measure of the impact of COVID-19 on psychological distress as observed across the full pandemic period.

The results of estimation of the model are reported in Table 4. The first few rows in the model confirm that for the 1,618 individuals who participated in both the February 2020 and April 2022 surveys that those with higher levels of life satisfaction, higher levels of happiness, and better self-assessed health had lower levels of psychological distress during the COVID-19 period.

Controlling for these pre-COVID mental-health related measures, we can see that women had significantly and substantially higher levels of psychological distress over the COVID-19 period than men which is interpreted as meaning that women's mental health was more adversely impacted by COVID than was men's. Young adults (aged 18 to 24 years) appear to have a slightly worse level of psychological distress than those aged 35 to 42 years, though the difference is not statistically significant ( $p$ -value = 0.163) potentially due to low sample sizes. However, older Australians (particularly those aged 65 years and over) clearly have lower levels of psychological distress than those aged under 44 years.

Other individual-level demographic and education variables do not appear to have a strong association with psychological distress during the COVID-19 period, conditional on pre-COVID related measures.

There was an interesting, and complicated relationship between geography and psychological distress. Conditional on pre-COVID measures, and household income, those in relatively disadvantaged **and** advantaged areas had lower levels of psychological distress than those in the middle quintile areas. Compared to New South Wales, those who lived in Victoria had higher levels of psychological distress than those in New South Wales, with those who lived in South Australia and the Northern Territory having lower levels of psychological distress.

The final variable in the table – household income – shows that there is substantial variation by socioeconomic status of a person's household and their psychological distress over the period. Compared to those who lived in the middle household quintile, those who lived in low-income households had higher psychological distress, whereas those who lived in high-income households had lower levels of psychological distress.

Combined, the greatest impact of the pandemic on mental health appears to have been for

## Mental health and wellbeing during the COVID-19 period in Australia

women, young Australians, Aboriginal and Torres Strait Islander Australians, those who live in Victoria, and those who live in low-income households.

**Table 4 Factors associated with average psychological distress (K-6 continuous measure), April 2020 to April 2022**

Explanatory variables	Coeff.	Signif.
Life satisfaction in February 2020	-0.437	***
Happiness in February 2020	-0.328	***
Self assessed health – Very good	0.326	
Self assessed health – Good	1.458	***
Self assessed health – Fair	3.275	***
Self assessed health – Poor	2.913	***
Female	0.742	***
Aged 18 to 24 years	0.887	
Aged 25 to 34 years	0.502	
Aged 45 to 54 years	-1.565	***
Aged 55 to 64 years	-2.228	***
Aged 65 to 74 years	-3.541	***
Aged 75 years plus	-3.879	***
Indigenous	1.302	
Born overseas in a main English-speaking country	0.048	
Born overseas in a non-English speaking country	0.303	
Speaks a language other than English at home	-0.409	
Has not completed Year 12 or post-school qualification	-0.535	
Has a post graduate degree	0.548	
Has an undergraduate degree	-0.017	
Has a Certificate III/IV, Diploma or Associate Degree	-0.234	
Lives in the most disadvantaged areas (1st quintile)	-1.144	***
Lives in next most disadvantaged areas (2nd quintile)	-1.049	***
Lives in next most advantaged areas (4th quintile)	-0.951	***
Lives in the most advantaged areas (5th quintile)	-0.981	***
Lives outside of a capital city	-0.265	
Lives in Victoria	0.493	*
Lives in Queensland	0.382	
Lives in South Australia	-1.065	***
Lives in Western Australia	-0.485	
Lives in Tasmania	-0.049	
Lives in the Northern Territory	-2.253	***
Lives in the Australian Capital Territory	-0.065	
Lives in lowest income household (1st quintile)	1.099	***
Lives in next lowest income household (2nd quintile)	0.747	**
Lives in next highest income household (4th quintile)	-0.655	**
Lives in highest income household (5th quintile)	-1.034	***
Constant	17.586	
Sample size	1,618	

Notes: Linear Regression Models. The base case individual has excellent self-assessed health, is male; aged 35 to 44 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); lives in a capital city; lives in New South Wales, lives in neither a high-income or low-income household (third quintile).

Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*

Source: Life in Australia, February 2020; ANUpoll, April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

These findings are broadly in-line with systematic reviews of studies from overseas showing a decrease in mental health during periods of lockdown (Hossain et al. 2020; Vindegaard and

Benros 2020; Xiong et al. 2020). Looking at the specific drivers of variation, these are also largely reflected in the reviews. In general, these studies showed lower outcomes for women, those on lower incomes and younger people among other factors that were not identified in this study (Hossain et al. 2020; Vindegaard and Benros 2020; Xiong et al. 2020). (It is worth noting that there is some overlap in the papers included in the different reviews, but the different methods used across reviews give a sense of the robustness of the findings even given this overlap.)

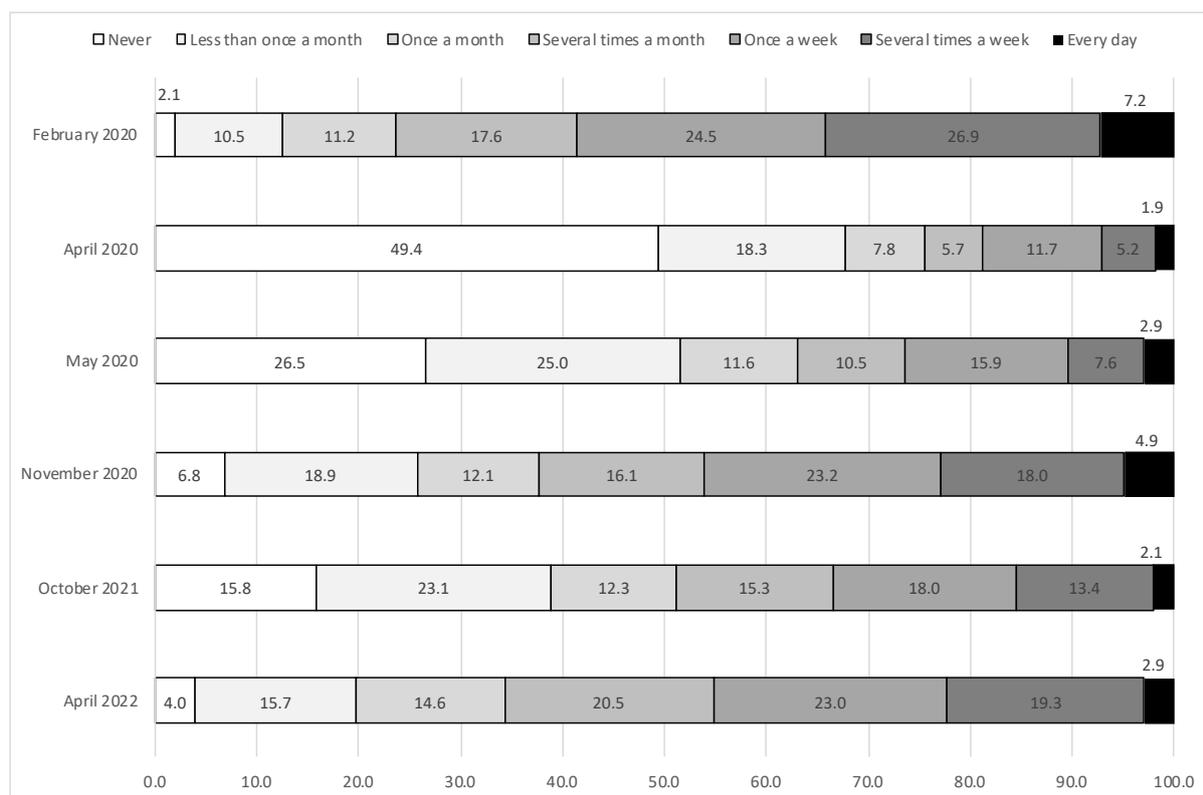
### 6 Loneliness and social isolation

One of the ways in which mental health and wellbeing may have been impacted by the pandemic (in addition to the direct impacts of infection) is through the social isolation that resulted from lockdown and other restrictions (Jurblum et al. 2020; Henssler et al. 2021; Milicev et al. 2022). While these restrictions had public health benefits through a reduction in infection rates and mortality, there were undoubtedly wellbeing costs associated.

In February 2020, respondents were asked 'Thinking about your life now, how often do you meet socially with friends, relatives, or work colleagues?' with seven response options: Never; Less than once a month; Once a month; Several times a month; Once a week; Several times a week; and Every day. This question was repeated in five waves of data collection during the COVID-19 period, with Figure 6 giving the per cent of Australians who reported each of the seven categories.

There was a dramatic decrease in social interaction between February and April 2020, with 2.1 per cent of Australians saying they never meet socially just prior to the pandemic compared to 49.4 per cent in the first month. Two years into the pandemic, however, social interaction had not returned to pre-pandemic levels. There were roughly twice as many people who never met socially, a roughly fifty per cent increase in those who met less than once a month, and a large increase in those who met once a month or several times a month. Combined, there were 54.8 per cent of Australians who met socially less than once a week in April 2022 compared to 41.4 per cent in February 2020.

Figure 6 Social interaction, Australia, February 2020 to April 2022

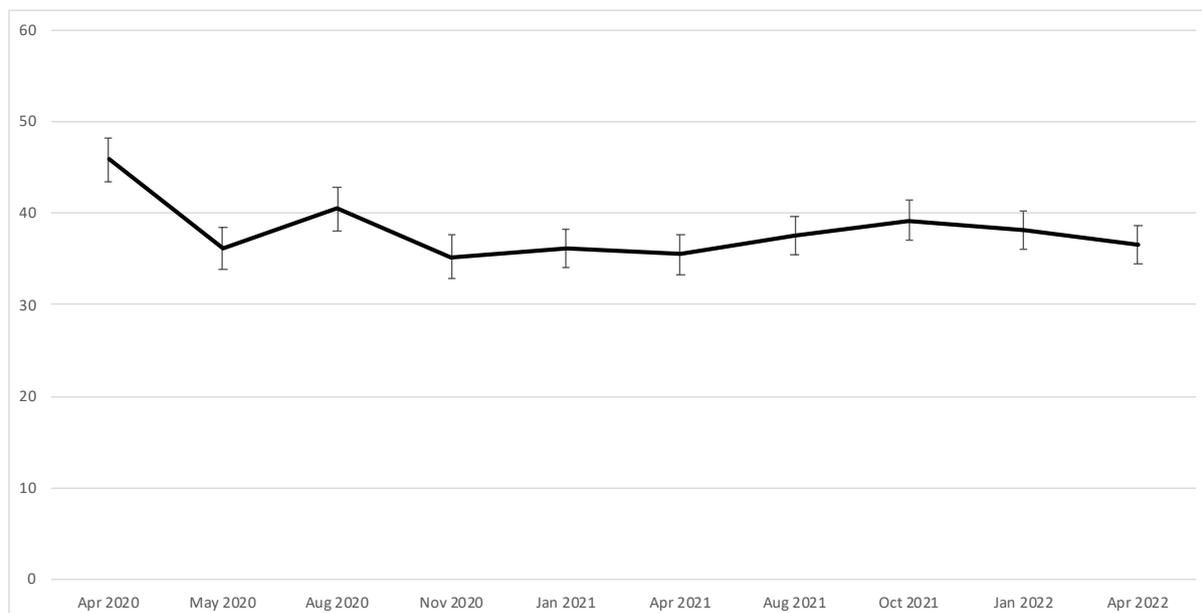


Source: Life in Australia, February 2017; ANUpoll: April, May, and November 2020; October 2021; and April 2022

Since the start of the pandemic, respondents have been asked ‘In the past week, how often have you felt lonely?’ with four response options: Rarely or none of the time (less than 1 day); Some or a little of the time (1 to 2 days); Occasionally or a moderate amount of time (3 to 4 days); Most or all of the time (5 to 7 days).

Figure 7 shows that there was a very high level of loneliness in the first month of data collection during the pandemic, with 45.8 per cent of Australians saying that they were lonely at least some of the time (data on loneliness was not collected prior to the pandemic). Loneliness declined after that first month of country-wide lockdowns, and then fluctuated slightly throughout the next two years. Even by April 2022, however, there were still more than one-third of Australians who in the week prior to the survey experienced loneliness at least some of the time.

Figure 7 Per cent of Australians reporting that they had experienced loneliness, April 2020 to April 2022



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate.

Source: ANUpoll: April, May, August, and November 2020; January, April, August, October 2021; and January, and April 2022

Similar to the analysis of average psychological distress over the period, we calculated an individual measure of average loneliness across the ten waves of the COVID-19 Impact Monitoring surveys. We did this by giving a value of 1 for Rarely or none of the time; 2 for Some or a little of the time; 3 for Occasionally or a moderate amount of time; and 4 for Most or all of the time (5 to 7 days). We estimated a predicted value using an ordered probit model for waves where that respondent did not complete a survey.

A linear regression model of factors associated with average loneliness over the COVID-19 period is estimated. In an attempt to control for pre-COVID loneliness, the February 2020 measure of social interaction is included as an explanatory variable. Social interaction in February 2020 was not only found to be predictive of average loneliness over the period, but when we analysed loneliness in April 2022 as a function of social interaction in April 2022, there was a very strong association. The results of the estimation of the model are reported in Table 5.

Controlling for social interaction pre-COVID, women appear to be slightly more likely to have experienced loneliness during the COVID-19 period, though with a p-value of 0.101 the coefficient was not quite statistically significant at standard levels of significance. There were no differences by broad age group within the 18 to 44 year population, but those aged 45 years and over and particularly those aged 65 years and over had much lower levels of loneliness than those aged under 44.

Those born overseas in a non-English speaking country had higher average loneliness, but those who spoke a language other than English had a lower level of loneliness. There do not appear to have been differences by education.

We find similar patterns in terms of loneliness across area-level and household-level socioeconomic status (as proxied by household income) with those in the middle quintile of

## Mental health and wellbeing during the COVID-19 period in Australia

area level disadvantage having the highest level of loneliness, but those in the lowest income households having the highest level of loneliness. Interestingly, there does not appear to be strong evidence that those who lived in Victoria had higher levels of loneliness than New South Wales (the base case), but there are some states and territories (particularly South Australia) that had lower levels of loneliness.

**Table 5** Factors associated with average loneliness, April 2020 to April 2022

Explanatory variables	Coeff.	Signif.
Meets socially - Less than once a month	-0.259	
Meets socially - Once a month	-0.294	
Meets socially - Several times a month	-0.366	*
Meets socially - Once a week	-0.380	**
Meets socially - Several times a week	-0.335	*
Meets socially - Every day	-0.418	**
Female	0.055	
Aged 18 to 24 years	0.080	
Aged 25 to 34 years	0.070	
Aged 45 to 54 years	-0.107	**
Aged 55 to 64 years	-0.131	**
Aged 65 to 74 years	-0.376	***
Aged 75 years plus	-0.374	***
Indigenous	0.207	
Born overseas in a main English-speaking country	0.014	
Born overseas in a non-English speaking country	0.111	*
Speaks a language other than English at home	-0.132	**
Has not completed Year 12 or post-school qualification	-0.101	
Has a post graduate degree	0.062	
Has an undergraduate degree	-0.045	
Has a Certificate III/IV, Diploma or Associate Degree	-0.066	
Lives in the most disadvantaged areas (1st quintile)	-0.262	***
Lives in next most disadvantaged areas (2nd quintile)	-0.120	**
Lives in next most advantaged areas (4th quintile)	-0.161	***
Lives in the most advantaged areas (5th quintile)	-0.174	***
Lives outside of a capital city	-0.064	
Lives in Victoria	0.070	
Lives in Queensland	0.057	
Lives in South Australia	-0.169	***
Lives in Western Australia	-0.040	
Lives in Tasmania	-0.129	
Lives in the Northern Territory	-0.036	
Lives in the Australian Capital Territory	0.166	
Lives in lowest income household (1st quintile)	0.246	***
Lives in next lowest income household (2nd quintile)	0.125	**
Lives in next highest income household (4th quintile)	-0.170	***
Lives in highest income household (5th quintile)	-0.235	***
Constant	1.969	***
Sample size	1,618	

Notes: Linear Regression Models. The base case individual is male; aged 35 to 44 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); lives in a capital city; lives in New South Wales, lives in neither a high-income or low-income household (third quintile).

Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*

Source: Life in Australia, February 2020; ANUpoll, April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

## Mental health and wellbeing during the COVID-19 period in Australia

Given the patterns observed in Figure 6 and Table 5, it is not surprising that there is a strong correlation between average psychological distress over the period and loneliness (correlation coefficient of 0.49). Those Australians who experienced significant levels of loneliness tended to be those who experienced poor mental health outcomes during the COVID-19 period, with loneliness a clear potential mechanism for the pandemic worsening mental health in Australia.

There is a growing body of research on COVID-19 and loneliness. Pai and Vella (2021) in an early systematic review shows containment measures drove up loneliness around the world although results were inconsistent. Ernst et al. (2022) who also reviewed the literature agrees with this, although argues that the effect was small and heterogeneous. It is worth noting that loneliness would be driven in large part by containment policies which varied greatly around the world. We would expect to see a large effect in Australia even if much of the rest of the world did not have as clear an effect because Australia had particularly strong containment policies. We aimed to achieve 'COVID zero' when much of the rest of the world did not (Hale et al. 2021). This explanation is undermined somewhat though by the lack of a substantially higher level of loneliness in Victoria (which had the most days in lockdown) compared to other states.

## 7 Social cohesion

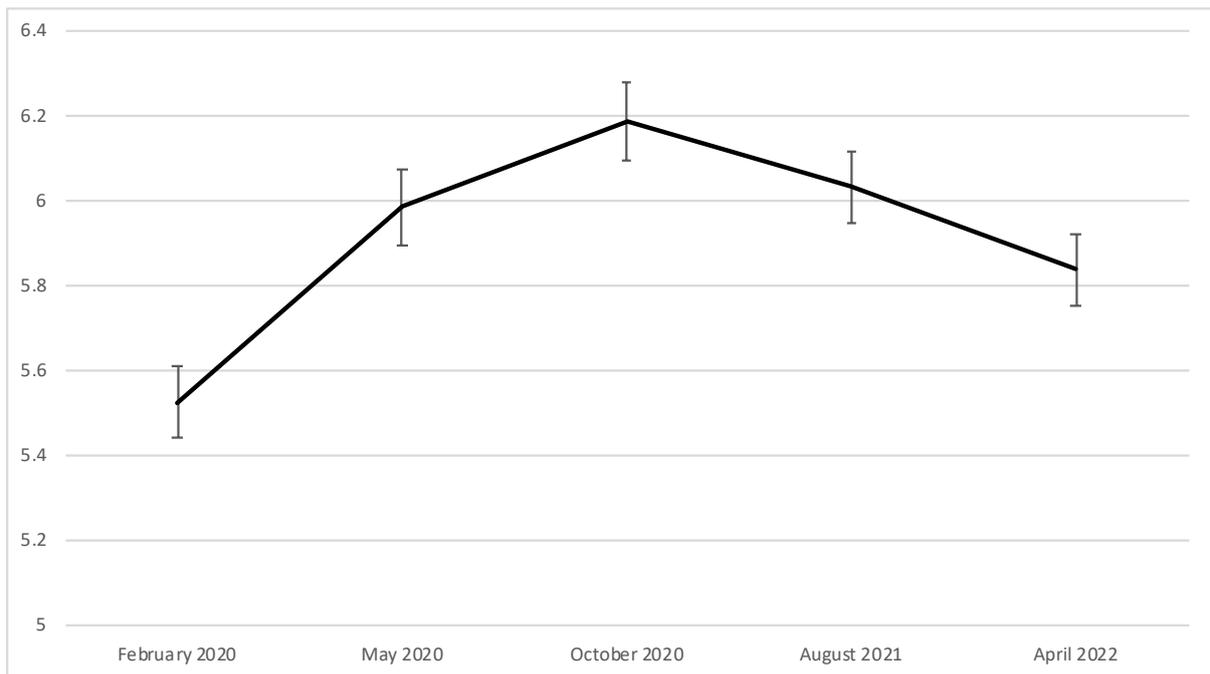
Not all of the impacts of COVID-19 have been negative. In previous papers, we have discussed the impact of COVID-19 on confidence in institutions. While confidence levels have started to return to pre-COVID levels, throughout the first few years of the pandemic there were consistently high levels of confidence in governments, the public service, police, and hospitals/public health system. Confidence, or at least trust, in Australians in general also improved substantially during the early COVID-19 period and, as shown below, have remained above pre-COVID levels.

In February 2020, we asked respondents on the Life in Australia panel three questions related to social cohesion:

- Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Please answer on a scale from 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted.
- Do you think that most people would try to take advantage of you if they got the chance, or would they try to be fair? Please answer on a scale from 0 to 10, where 0 means most people would try to take advantage of you and 10 means most people would try to be fair.
- Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves? Please answer on a scale from 0 to 10, where 0 means people mostly look out for themselves and 10 means people mostly try to be helpful.

Taking the average of these as a proxy for social cohesion, Figure 8 shows that there was a significant increase from February 2020 to May 2020 (from 5.53 to 5.98), and a further increase to October 2020 (6.19). Since October 2020, this measure of social cohesion has started to decline, with values of 6.03 in August 2021 and 5.84 in April 2022. Social cohesion in April 2022 is still, however, above the pre-COVID-19 measure from February 2020.

Figure 8 Social cohesion index (higher value higher social cohesion), Australia, February 2020 to April 2022



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate.

Source: Life in Australia, February 2020; ANUpoll: May and October 2020; August 2021; April 2022

When we analyse the factors associated with the social cohesion index in April 2022 and control for the pre-COVID values, we find very few differences across observable characteristics. There were no differences by sex, country of birth/language spoken, education, income, or state/territory. There are two exceptions though, which may reflect quite different experiences over the COVID-19 period. Those who lived outside of a capital city had a larger increase in the social cohesion index between February 2020 and April 2022 (0.47) compared to those who lived in a capital city (0.38).

There were differences by age as well. Young adults (aged 18 to 24 years) had a slightly larger increase in the social cohesion index (0.42) than those in the next age bracket (0.29, for those aged 25 to 34 years) with those in the next three age brackets also having a below-average increase (0.37 for those aged 35 to 44, 0.35 for those aged 45 to 54, and 0.37 for those aged 55 to 64). The largest increases, however, were for those beyond retirement age with an increase in the social cohesion index of 0.52 for those aged 65 to 74 years and 0.77 for those aged 75 years and over. So, while social cohesion increased across the age distribution, there was a much greater increase for the relatively young and particularly for the relatively old.

There has been a great deal written about the potential impacts of the pandemic on social cohesion, and there is an emerging empirical literature, although much of this focuses on the effect of social cohesion as a protective factor against the harms of a pandemic rather than the effect of the pandemic on cohesion. Of the papers in this latter group, the most comparable is Borkowska and Laurence (2021) which found a very different effect to that shown in this section.<sup>9</sup> The research used longitudinal data of 40,000 households in the UK who had been followed since 2009-10 and showed that cohesion had never been lower than in June 2020 (near the peak of cohesion in our data). This study uses a different operationalisation of cohesion (and it is worth noting its cohesion index includes the item “I regularly stop and talk

with people in my neighbourhood” which would necessarily be affected negatively due to lockdown, even if actual attitudes do not worsen). This difference may also reflect differences in the responses of government and society in the two countries.

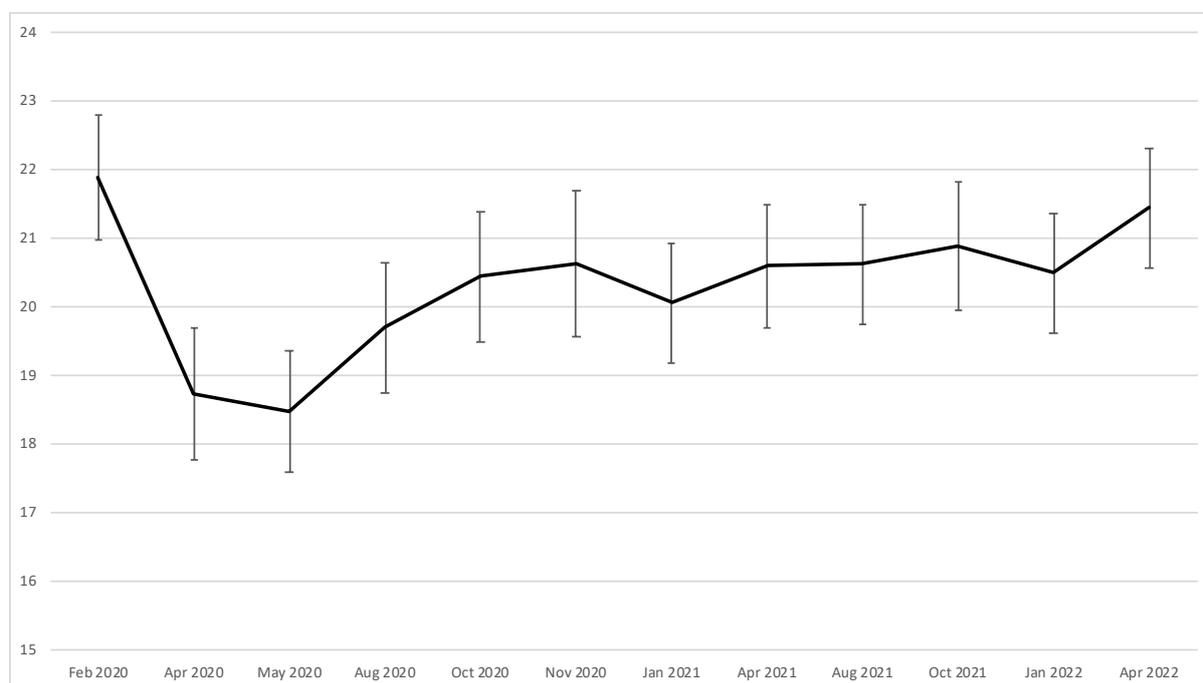
### 8 Economic and financial outcomes

The trends in measures of economic wellbeing throughout the pandemic have been quite different to the social and mental wellbeing measures presented in previous sections. For the most part, Commonwealth and state/territory governments have cushioned Australians from many of the economic effects either directly through increased transfer payments or indirectly through wage subsidies paid to employers. However, as shown in this section, there have been economic impacts, with these impacts felt disproportionately by particular population sub-groups.

#### 8.1 Hours worked

In the early stages of the pandemic, there was a dramatic decline in the number of hours that people worked, on average. If we set the hours worked of those who were not employed to zero, we estimate a substantial decline in average hours worked between February 2020 and April 2020 from 21.9 hours per adult to 18.7 hours (Figure 9), with another slight decline to May 2020 (18.5 hours). Hours worked then steadily increased (apart from declines in January 2021 and 2022 reflecting normal seasonal patterns), with average hours worked in April 2022 now very similar to the pre-pandemic levels – 21.4 hours per adult.

**Figure 9** Average hours worked per week, February 2020 to April 2022



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate. People who did not work during the reference week were included in the denominator, and in the numerator as working zero hours.

Source: Life in Australia, February 2020; ANUpoll: April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

Averaged across the entire pandemic period and using predicted values when a person is not observed in a given wave, 58.0 per cent of adult Australians worked fewer hours than they did

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in February 2020. The average ‘lost hours’ was 1.64 hours per week, or 174 hours over the 106 weeks from the start of data collection for the April 2020 ANUpoll to the end of data collection for the April 2022 ANUpoll.

The major determinant of the number of hours that a person lost (on average) over the period is the number of hours that they worked in February 2020. This is not surprising, and captures the normal process of reversion to the mean, whereby a variable fluctuates around a person’s long-term average somewhat randomly, and high values in one period of data collection (relative to that long-term average) are associated with a drop in subsequent periods. If we had more waves of pre-COVID data, that would be smoothed somewhat. However, controlling for baseline values in a regression model captures the effect, somewhat.

We estimate a single regression model using ordinary least squares, with the dependent variable the number of ‘lost hours’ over the COVID-19 period relative to hours worked in February 2020. In addition to controlling for hours worked in February 2020, we include demographic, socioeconomic, and area-level measures as explanatory variables. We focus on those who worked one hour or more in February 2020, and include broad groupings of occupation and industry of employment, as of February 2020. These groupings were based on a preliminary analysis where all occupations and industries at the 1-digit level were included as categories, with those occupations/industries that were estimated to have more than one extra lost hours compared to the base category grouped into the ‘additional lost hours’ grouping, and those occupations/industries that had one fewer lost hour than the base category grouped into the ‘fewer lost hours’ grouping, regardless of statistical significance.

The middle category of industries included the most common industry group (Health Care and Social Assistance) as well as Retail Trade; Rental Hiring and Real Estate Services; Professional Scientific and Technical Services; Administrative and Support Services; and Public Administration and Safety. Controlling for observable characteristics, lost a similar number of hours over the period. Those industries that lost fewer hours than this group (conditional on other characteristics including hours worked in February 2020) were Agriculture Forestry Fishing; Mining; Manufacturing; Electricity Gas Water and Waste Service; Construction; and Financial and Insurance Services. On average, these industries lost 2.7 less hours per week over the period. There were, however, a number of industries that lost more hours than the base grouping. These were Wholesale Trade; Accommodation and Food Services; Transport Postal and Warehousing; Information Media and Telecommunication; Education and Training; Arts and Recreation Services; and Other Services.

There were no occupations that lost substantially less hours than Professionals. There were, however, two occupation groupings that lost a roughly similar number of hours – Managers, and Machinery Operators and Drivers. The remaining five occupation categories lost a substantially greater number of hours, namely Technicians and Trades Workers; Community and Personal Service Workers; Clerical and Administrative Workers; Sales Workers; and Labourers.

Despite there being large gender differences in the distribution of workers across industries, women still lost a significantly and substantially greater number of hours compared to men, over the period. Controlling for hours worked and broad industry/occupation groupings, women lost 2.7 more hours on average over the COVID-19 period compared to men. Younger workers also lost more hours, as did those aged 55 to 64 years. While the difference was not statistically significant, there is some evidence that Aboriginal and Torres Strait Islander

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Australians lost more hours on average than non-Indigenous Australians (4.0 hours holding constant other characteristics, with a p-value of 0.163).

There were some differences by broad country of birth groupings, with those who were born overseas in an English-speaking country losing fewer hours than those born in Australia, and some weak evidence that those born overseas in a non-English speaking country lost more hours (albeit with a p-value of 0.156). There is stronger evidence that those who spoke a language other than English lost fewer hours than those who spoke English only.

High levels of education appear to have provided some cushioning to losing hours over the period, even after we control for occupation and industry (which is highly correlated with education). In particular, those who have a post-graduate degree lost 1.7 hours less than those with no qualifications. There is weaker evidence that those with a bachelor degree only also lost fewer hours, though this difference was not statistically significant (p-value = 0.363).

Finally, in terms of geography, it would appear to be the socioeconomic characteristics of the area in which a person lived that was associated with the greatest variation in lost hours. Non-capital cities lost slightly fewer hours but the difference was not statistically significant and, apart from the outlier of the Northern Territory, there does not appear to be a greater or lesser number of lost hours by state/territory. Rather, it is those who lived in the most disadvantaged areas that lost the greatest number of hours, losing 1.8 hours on average more than those who lived in the middle quintile of areas.

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**Table 5** Factors associated with lost hours worked, February 2020 to April 2022

Explanatory variables	Coeff.	Signif.
Hours worked in February 2020	0.540	***
Worked in an industry that lost fewer hours <i>(Agriculture Forestry Fishing; Mining; Manufacturing; Electricity Gas Water and Waste Service; Construction; and Financial and Insurance Services)</i>	-2.704	***
Worked in an industry that lost more hours <i>(Wholesale Trade; Accommodation and Food Services; Transport Postal and Warehousing; Information Media and Telecommunication; Education and Training; Arts and Recreation Services; and Other Services)</i>	1.871	***
Worked in an occupation that lost more hours <i>(Technicians and Trades Workers; Community and Personal Service Workers; Clerical and Administrative Workers; Sales Workers; and Labourers)</i>	2.413	***
<hr/>		
Female	2.696	***
Aged 18 to 24 years	3.226	***
Aged 25 to 34 years	0.228	
Aged 45 to 54 years	0.479	
Aged 55 to 64 years	3.759	***
Indigenous	3.990	
Born overseas in a main English-speaking country	-1.883	*
Born overseas in a non-English speaking country	1.536	
Speaks a language other than English at home	-1.643	*
Has not completed Year 12 or post-school qualification	0.099	
Has a post graduate degree	-1.660	*
Has an undergraduate degree	-0.777	
Has a Certificate III/IV, Diploma or Associate Degree	-1.138	
Lives in the most disadvantaged areas (1st quintile)	1.775	*
Lives in next most disadvantaged areas (2nd quintile)	1.067	
Lives in next most advantaged areas (4th quintile)	0.704	
Lives in the most advantaged areas (5th quintile)	0.269	
Lives outside of a capital city	-0.238	
Lives in Victoria	0.705	
Lives in Queensland	0.171	
Lives in South Australia	-0.420	
Lives in Western Australia	-1.330	
Lives in Tasmania	1.784	
Lives in the Northern Territory	-11.949	*
Lives in the Australian Capital Territory	1.796	
Constant	-17.122	***
Sample size	1,345	

Notes: Linear Regression Models. The base case individual worked in one of the following industries - Health Care and Social Assistance, Retail Trade; Rental Hiring and Real Estate Services; Professional Scientific and Technical Services; Administrative and Support Services; and Public Administration and Safety. They worked as one of the following occupations – Professionals, Managers, and Machinery Operators and Drivers. Furthermore, the base case is male; aged 35 to 44 years; non-Indigenous; born in Australia; does not speak a language other than English at home; has completed Year 12 but does not have a post-graduate degree; lives in neither an advantaged or disadvantaged suburb (third quintile); lives in a capital city; lives in New South Wales, lives in neither a high-income or low-income household (third quintile).

Coefficients that are statistically significant at the 1 per cent level of significance are labelled \*\*\*; those significant at the 5 per cent level of significance are labelled \*\*, and those significant at the 10 per cent level of significance are labelled \*

Source: Life in Australia, February 2020; ANUpoll, April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

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The Australian Bureau of Statistics' (ABS) Labour Account which draws on surveys of households, businesses and administrative data showed similar findings. While the disparity between professionals and other workers is less clear in the ABS figures, the data shows a similar drop and similar industry patterns (Australian Bureau of Statistics 2021). Note that this data does not allow for analysis by any of the demographic variables we used in showing differential impacts. However, the fact that industries with more educated workers fared better and industries with more women fared worse suggests that our data is representative of the experience of most Australians (Richardson and Denniss 2020; Australian Bureau of Statistics 2021, 2020).

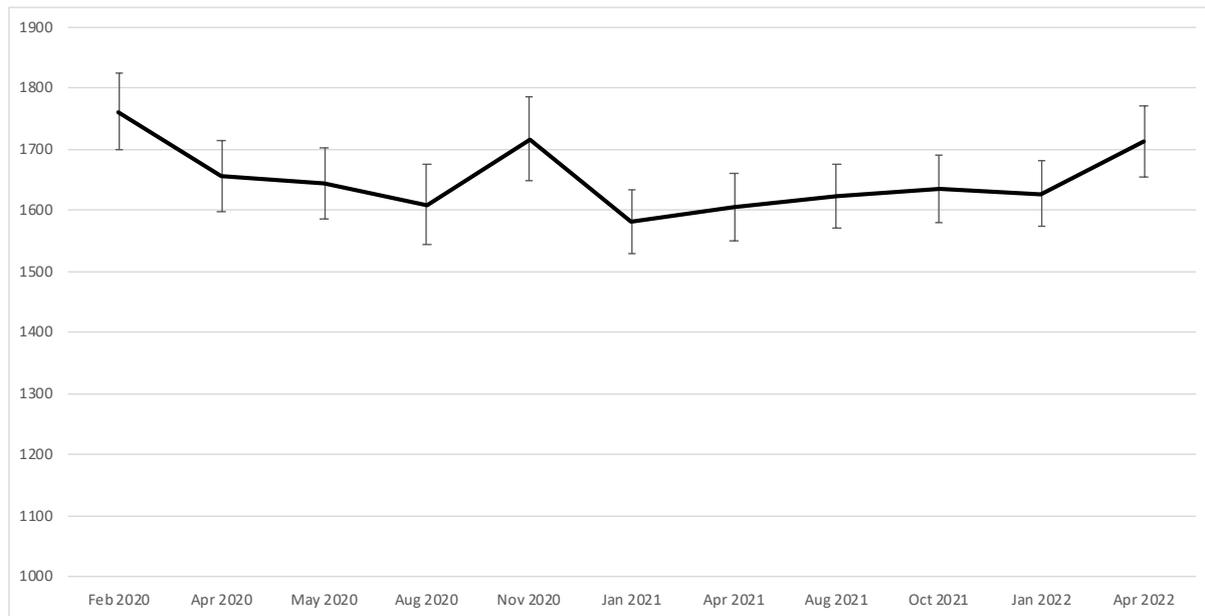
### 8.2 Household income

Australia as a nation suffered a substantial drop in income and production over the COVID-19 period. As measured by GDP per capita, there was a decline of 1.5 per cent over the 2019/20 financial year compared to the 2018/19 financial year, with GDP per capita only increasing by 0.9 per cent into the 2020/21 financial year. That is, income declined substantially at the start of the pandemic, but did not make up for that loss over the subsequent financial year.<sup>10</sup>

Much of that decline was cushioned by the Commonwealth, and to a lesser extent state/territory governments. On the eve of the pandemic, it appeared that the Commonwealth government would have a budget surplus for the 2019/20 financial year. However, because of very large financial outlays due to the pandemic, the budget deficit ended up being a little over 4 per cent of GDP for the 2019/20 financial year, and a little over 6 per cent of GDP for the 2020/21 financial year. The budget deficit does appear to be reducing, but deficits are forecast for many years to come.<sup>11</sup>

Because of that support from government, the patterns in terms of household income have been very different over the period. Figure 10 gives an estimate of weekly household income (adjusted for inflation using quarterly CPI) for February 2020 and for ten waves of data collection during the COVID-19 period.<sup>12</sup> There was a large drop in income between February and April 2020, from \$1,761 per week to \$1,655 per week, adjusting for the deflation that occurred over the period. Income continued to decline to January 2021, though there was a spike in income in November 2020. Even adjusting for inflation, income then increased steadily from January 2021 through to April 2022, with average income at the end of the period only slightly below that of the pre-COVID data when adjusting for inflation (i.e. \$1,712 in real terms), and above income in February 2020 without adjusting for inflation (i.e. \$1,819 in nominal terms).

Figure 10 Average household income per week, February 2020 to April 2022



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate.

Source: Life in Australia, February 2020; ANUpoll: April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

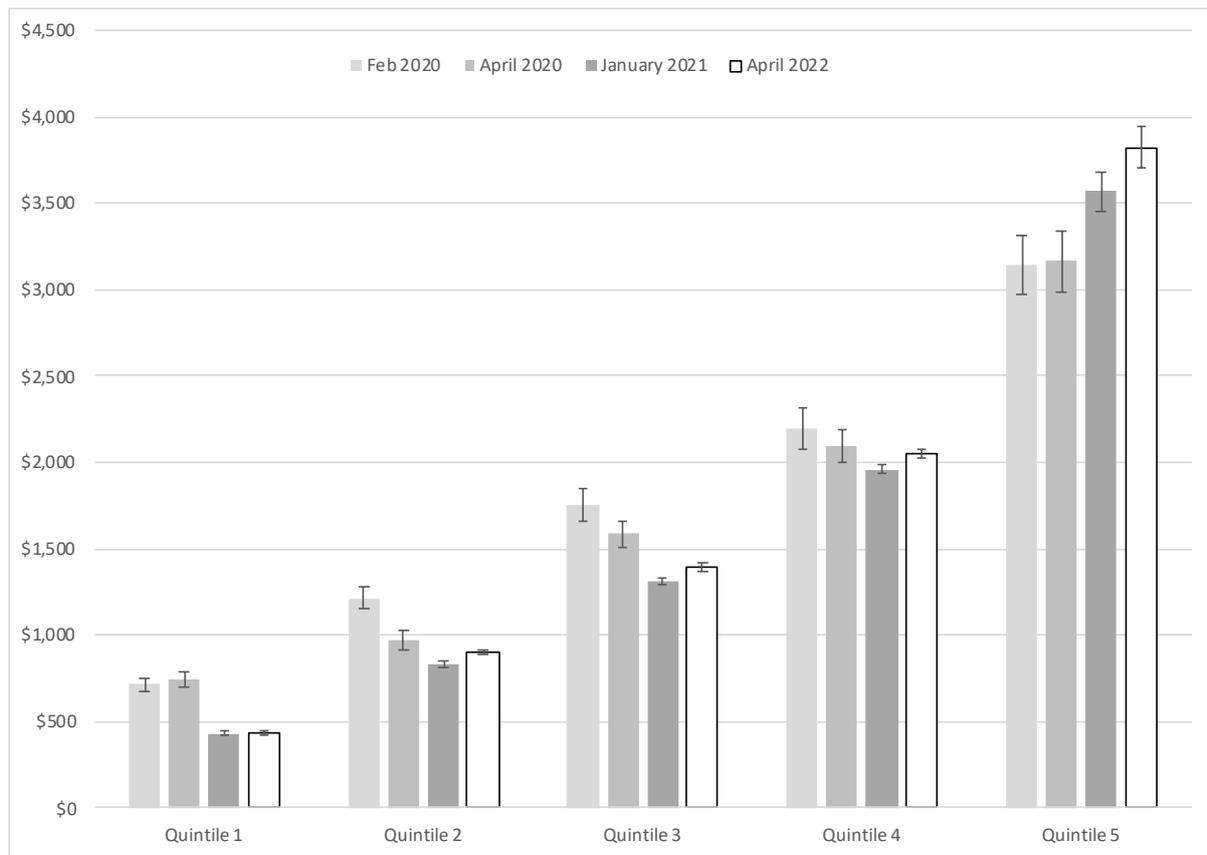
While there have been some changes over the period, results presented in Figure 10 imply a degree of income stability over the period. However, this hides some very different income trends at different points on the income distribution. We can see this by calculating the average income for each income quintile (20 per cent of the population), where quintile boundaries and members are re-estimated at each wave of data collection (Figure 11).

Between February and April 2020 there was actually an increase in income at the bottom quintile of the distribution, increasing from \$712 per week to \$749, reflecting large increases in JobSeeker and other transfer payments, as well as the introduction of JobKeeper. The largest declines in income during the early part of the pandemic were for the second income quintile, with smaller declines for the third and fourth quintile and a very steady income for the top quintile.

Between April 2020 and January 2021 there were very large declines in income for the lowest and to a lesser extent middle income quintiles as the COVID-specific income support was wound back. However, income for the top income quintile increased substantially between April 2020 and January 2021, reaching \$3,566 compared to \$3,165 in April 2020 and \$3,145 in February 2020 (adjusting for inflation).

Between January 2021 and April 2022, the largest increases in (real) income were for the second and fifth income quintiles, with income at the bottom of the income distribution remaining steady. Taken together, across the COVID-19 period, household income at the top of the income distribution has pulled away from the middle part of the distribution, with the middle part of the distribution in turn pulling further away from the bottom.

Figure 11 Average household income per week, by income quintile February 2020 to April 2022



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate.

Source: Life in Australia, February 2020; ANUpoll: April 2020; January 2021; and April 2022

This differential effect on incomes is also shown in Davidson’s (2022) analysis of ABS *Survey of Income and Housing* data (this survey collected a cross-sectional sample of 3080 households and 5904 persons). It showed shrinking income inequality during the early part of the pandemic driven by expanded support payments, followed by a widening income gap once these additional payments were rolled back. These changes to the lowest quintile corresponded with substantial changes in poverty rates, first a decrease and then an increase in line with the fall in relative incomes (Davidson 2022).

### 8.3 Financial stress

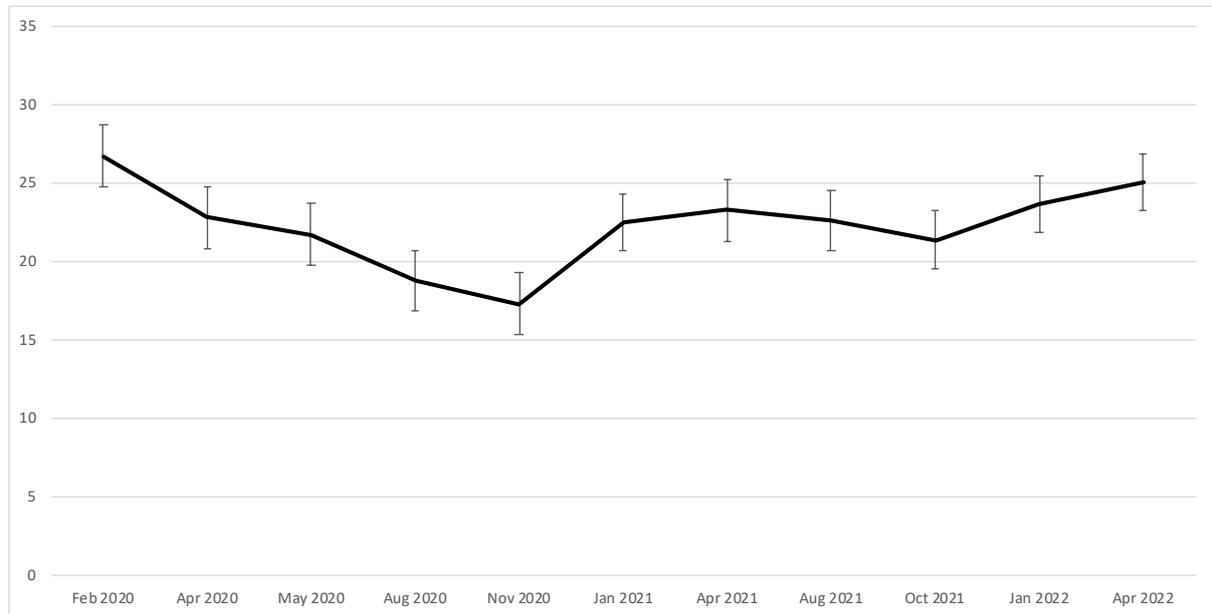
Since February 2020, we have asked respondents ‘Which of the following descriptions comes closest to how you feel about your household’s income nowadays?’ with four possible response options: Living comfortably on present income; Coping on present income; Finding it difficult on present income; and Finding it very difficult on present income. This measure of financial stress is relevant for the COVID-19 period as it captures both a person’s income, as well as their required expenditure. With expenditure requirements declining during the early COVID-19 period as restrictions were put in place on many services (including international travel) changes in income and expenditure options/requirements are likely to impact on this measure.

Grouping those who either found it difficult or very difficult, Figure 12 shows a steady decline in this measure of financial stress during the first eight months of the pandemic, declining from

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26.7 per cent finding it difficult pre-pandemic to only 17.3 per cent in November 2020. After this low level, however, this measure of financial stress began to increase in 2021 and particularly into 2022, reaching 25.0 per cent by April 2022, which was not significantly different from pre-COVID.

**Figure 12** Per cent of Australians finding it difficult or very difficult on present income, February 2020 to April 2022



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate.

Source: Life in Australia, February 2020; ANUpoll: April, May, August, October, and November 2020; January, April, August, October 2021; and January, and April 2022

We find very different trends in this measure of financial stress by income quintile. For those in the bottom income quintile, there were declines in financial stress in the early pandemic, with a small increase in financial stress between April 2020 and January 2021, and then a very large increase to April 2022. There were also declines in financial stress for the second quintile in the first few months of the pandemic, however, this measure of financial stress was steady thereafter. For the fourth income quintile there were steady levels of financial stress over the period, whereas for the highest income quintile there were large declines and lower levels than baseline.

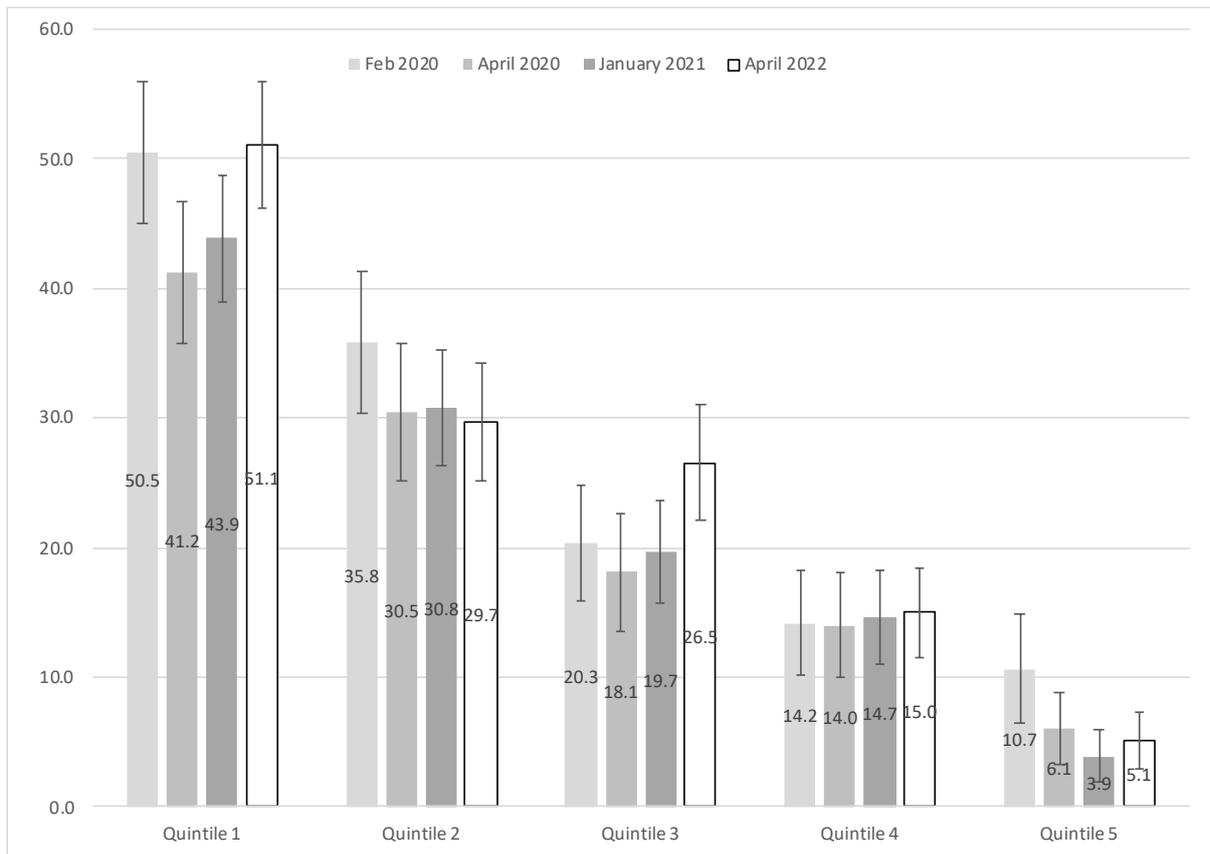
The only income quintile that has significantly higher levels of financial stress (on this measure) at the end of the period compared to the start was the middle-income quintile. This group had steady levels of financial stress up until January 2021, but then a very large increase (by 35 per cent) between January 2021 and April 2022. It would appear that this group suffered from stagnant real incomes since January 2021, but may have experienced a very large increase in expenditure requirements over the 15 months up until our most recent survey.

Davidson (2022) looked at a number of different measures of financial stress (the NAB Financial Stress Index, searches for food aid and data from previous releases in this series) and showed similar patterns across all of them. Financial stress fell early in the pandemic (for lower income and higher income earners, the report does not split out the mid-level earners) before rising in 2021. This finding is less clear in ABS data on the ability to raise money for unexpected expenses and ability to pay bills. These statistics seem to show a small decrease in financial

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stress during early 2020 followed by an increase in stress in late 2020 and early 2021. However, they also show a decrease in financial stress between mid-2021 and the present that does not mirror our findings.

**Figure 13** Per cent of Australians finding it difficult or very difficult on present income, February 2020 to April 2022



Note: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate.

Source: Life in Australia, February 2020; ANUpoll: April 2020; January 2021; and April 2022

## 9 Concluding comments

Australia is now more than two years into the COVID-19 pandemic. The impact of the pandemic on mental health and wellbeing is likely to take a number of years to fully emerge. However, more than two years since the first cases in Australia, the first border closures, and the first stay-at-home orders, it is an opportune time to ask the questions:

- what was the impact of the first two years of COVID-19 on the mental health and wellbeing of Australians?
- how did these impacts vary across key population sub-groups? and
- who is still experiencing the costs and consequences of the pandemic and associated policy responses?

The answers to these questions are complex, and depend on the outcome being looked at and the specific measure used. To answer them, a certain type of data is required. This data must have multiple measures of wellbeing. It must include data from pre-pandemic, as well as at different points across the pandemic period. It must be representative of the Australian

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population, and include information across the age, geographic, and socioeconomic distributions. Ideally it should be longitudinal allowing for the measurement in change at the individual-level, and it should be available to the public for validation purposes and to ensure transparency.

In April 2020, the Social Research Centre on behalf of the ANU Centre for Social Research and Methods collected the first wave of data as part of the centre's COVID-19 Impact Monitoring Series. Since that first wave of data collection, surveys have been undertaken a further 10 times, with the most recent wave of data collection undertaken in April 2022. Surveys had also been conducted with the same group of respondents in January and February 2020, just before the COVID-19 pandemic started in Australia. This allows us to track outcomes for the same group of individuals from just prior to COVID-19 impacting Australia through to two-and-a-bit years since COVID-19 first reached Australia.

This paper documents large impacts of COVID-19 on outcomes in Australia. A significant proportion of Australians experienced lower levels of wellbeing, higher levels of psychological distress, long periods of loneliness and social isolation, fewer hours worked, and a drop in income. Across the measures used in this paper, there was more positive news on financial stress, though the declines in financial stress partly reflect a drop in expenditure opportunities. The changes in social cohesion are more positive still though, with large increases early in the pandemic, and values in April 2022 that are still well above those prior to the pandemic.

The impacts of the pandemic have varied across population sub-groups, though not always consistently. There are some groups that appear to have been consistently negatively impacted. Young Australians experienced the largest increase in psychological distress, the greatest increase in loneliness, and the largest decline in hours worked. Across levels of education, those with low levels of education appear to also have been impacted more than those with higher levels, particularly for some of the economic measures. Low-income Australians also saw their incomes fall further behind the middle and top of the income distribution. Although impacts were not greater for all measures, those who live in Victoria appear to have been impacted the most by the pandemic.

Good policy requires good data. In the case of COVID-19, collecting data after the pandemic has started without any pre-COVID comparisons makes it very difficult to make judgements about the real impact. We need to have information from prior to such shocks in order to measure what has changed, and we need to have it on the same individuals to see who was impacted the most. No-one knows when the next pandemic or next exogenous shock is going to occur, so it is important to maintain investments in high quality, longitudinal data even during what might be classified as 'normal' times. Having information on those who seek out participation in data collection is not sufficient either, as these individuals are very different to the general population. Without ongoing investment in robust data collection, policy making is essentially flying blind, with the inevitable consequence that the real negative impacts of exogenous shocks are not dealt with, and the positive impacts not built upon.

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## Endnotes

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- 1 <https://csrcm.cass.anu.edu.au/research/publications/covid-19>
- 2 The ANUpoll series of surveys is collected on a probability-based, longitudinal panel (Life in Australia™). By using probability-based recruiting (predominantly telephone-based) the unknown and unquantifiable biases inherent in opt-in (non-probability) panels are minimised and it is also possible to quantify the uncertainty around the estimates due to sampling error using standard statistical techniques. This is not possible with non-probability surveys.
- 3 The unit record survey data is available for download through the Australian Data Archive.  
<https://dataverse.ada.edu.au/dataset.xhtml?persistentId=doi:10.26193/AXQPSE>
- 4 The contact methodology adopted for the online Life in Australia™ members is an initial survey invitation via email and SMS (where available), followed by multiple email reminders and a reminder SMS. Telephone follow up of panel members who have not yet completed the survey commenced in the second week of fieldwork and consisted of reminder calls encouraging completion of the online survey. The contact methodology for offline Life in Australia™ members was an initial SMS (where available), followed by an extended call-cycle over a two-week period. A reminder SMS was also sent in the second week of fieldwork.
- 5 Taking into account recruitment to the panel, the cumulative response rate for this survey is around 6.8 per cent.
- 6 The explanatory variables used in the model are: sex, age, Indigenous status, broad country of birth, language spoken at home, year 12 completion, post-school qualifications, socio-economic characteristics of the person's neighbourhood, whether or not the person lives in a capital city, and state/territory of residence.
- 7 The model estimated for this relationship is  $Lifesatisfaction_{jan20} = 4.868825 + 0.286096 * \ln(hhincome_{feb20})$
- 8 Similar to the analysis of lost life satisfaction, where someone was not observed in a particular wave of data collection during the COVID-19 period, we ascribe a predicted value based on the same model of psychological distress.
- 9 Zetterberg et al. (2021) shows a gain in social cohesion in the Umeå municipality in Sweden similar to that shown in the Australian data. However, due to a small sample size of 168 and the lack of detail in the brief report, this is worth taking into account.
- 10 <https://www.abs.gov.au/statistics/economy/national-accounts/australian-system-national-accounts/latest-release>
- 11 <https://budget.gov.au/2022-23/content/overview/index.htm>
- 12 The original question asks about household income in ranges. The income categories were: \$0 to \$24,554 (\$0 to \$472 weekly); More than \$24,554 to \$38,896 (more than \$472 to \$748 weekly); More than \$38,896 to \$52,884 (more than \$478 to \$1,017 weekly); More than \$52,884 to \$69,524 (more than \$1,017 to \$1,337 weekly); More than \$69,524 to \$88,452 (more than \$1,337 to \$1,701 weekly); More than \$88,452 to \$109,304 (more than \$1,701 to \$2,102 weekly); More than \$109,304 to \$134,784 (more than \$2,102 to \$2,592 weekly); More than

\$134,784 to \$168,688 (more than \$2,592 to \$3,244 weekly); More than \$168,688 to \$222,300 (more than \$3,244 to \$4,275 weekly); or More than \$222,300 (more than \$4,275 weekly). These ranges are converted to a continuous income measure using interval regression. The natural log of the lower and upper bound of the income categories is the relevant dependent variable, and using the same demographic, socioeconomic and geographic measures in the regression equations up until now as explanatory variables. The predictions from the model are constrained to be in the same income category as they are observed to fall into.