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Tracking outcomes during the COVID-19 pandemic (August 2020) – Divergence within Australia

ANU Centre for Social Research and Methods

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Abstract

In order to monitor the impacts of COVID-19, the ANU Centre for Social Research and Methods has established a COVID-19 impact monitoring survey program. The first wave of data collection occurred in April 2020, during the peak of the first wave of infections in Australia. This was followed by a survey in May 2020 as restrictions began to ease across the country, and infection rates started to decline in most States and Territories. The third wave of data collection occurred in August 2020, a time when infection rates in Victoria (and Melbourne in particular) were at their highest yet observed, Sydney continued to have a small number of new infections each day, and the rest of the country was, for the most part, experiencing zero confirmed cases. If the first two waves of data collection were at a time of ‘we are all in this together’, our third wave of data collection occurred when jurisdictions were experiencing significant divergence in terms of severity of lockdown, other policy interventions, and infection/mortality rates. The aim of this paper is to update the national-level trends in wellbeing outcomes using the most recently available data, as well as provide an initial analysis of divergence of outcomes within Australia.

Data collected using Life in Australia™ is still the only longitudinal survey of a large, representative sample of Australians with information from the same individuals prior to and during the Coronavirus pandemic. We show that anxiety and worry due to COVID-19 have increased since their low in May 2020, and measures of subjective wellbeing and psychological distress have worsened. Hours worked have increased across Australia since May 2020, but those in employment are more worried about losing their job than they were in May 2020. We find a relative worsening in outcomes for Victoria compared to the rest of Australia between May 2020 and August for six key outcomes in particular: psychological distress; loneliness; life satisfaction; satisfaction with direction of country; expected likelihood of being infected by COVID-19; and hours worked.

Acknowledgements

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Executive Summary

This paper provides estimates of how the outcomes of Australians are tracking as the COVID-19 pandemic progresses within Australia. It uses data collected as part of the ANU Centre for Social Research and Methods COVID-19 impact monitoring program. Surveys had been conducted with the same group of respondents in January and February, just before the COVID-19 pandemic started in Australia. Surveys were then conducted in April, May and August, after the pandemic started to cause impacts in Australia in a major way. The August survey is based on interviews with over 3,000 Australian adults from all States and Territories, and across the age distribution.

In August 2020 about one-in-five Australian adults reported having been tested for COVID-19, up from about one-in-twenty in May and about one-in-fifty in April 2020.

Australians have reported high rates of anxiety and worry due to COVID-19 over the period April to August 2020; the rate was highest in April (66.7 per cent), fell quite substantially in May (57.3 per cent) and increased again between May and August (62.6 per cent). There has been a greater increase in anxiety and worry due to COVID-19 in Victoria compared to other areas of Australia, and a greater increase between April and May 2020 for females compared to males.

There has been a substantial decline in the per cent of people who are following the physical distancing requirements from earlier in the year, such as keeping 1.5 meters away from others, and avoiding crowded or public places. Declines were greatest outside of Victoria, but even in Victoria there have been fewer people following the requirements since April.

Following massive job losses between February and April 2020, the employment rate increased slightly between April and May, and has again increased between May and August 2020. The average number of hours worked (including those who worked zero hours) fell from 21.9 hours per week in February to 18.5 hours per week in May, but has then increased to be 19.7 hours in August. The largest falls in hours worked have been for women and those aged 65 to 74 years, although men and other age groups have all experienced a reduction in the number of hours worked. In Victoria there was virtually no recovery in hours worked between May and August 2020, unlike in the rest of Australia where there was some recovery.

Despite the increase in average hours worked since May 2020, perceived job security has worsened significantly. The largest increase in perceived job insecurity has been amongst those who have completed Year 12 but do not have a degree.

COVID-19 has had a large negative impact on household incomes. Income fell quickly and substantially between February and April, and has not recovered since April 2020. While average income has fallen, the JobKeeper and COVID-19 supplementary social security payments have limited the size of the average income loss and have seen incomes increase at the bottom end of the income distribution. The largest drops in income (in dollar terms) have been for younger Australians and older Australians (relative to those aged 35 to 44 years), those born overseas in non-English speaking countries and those who have completed Year 12 but do not have a university degree.

In April 2020 45.8 per cent of the adult Australian population said they felt lonely at least some of the time. With the easing of social restrictions by May this had fallen to 35.7 per cent but by August it had increased to 40.5 per cent. Loneliness worsened in Victoria relative to other areas of Australia between May and August 2020.

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Overall, psychological distress increased between February 2017 (when it was last measured for our respondents) and April 2020, followed by a significant reduction, although still higher than the pre COVID-19 levels, between April and May. Psychological distress has worsened slightly between May and August. The worsening between May and August has been driven by declines in the mental health of women and people living in Victoria.

Life satisfaction declined substantially during the first wave of the pandemic in Australia and following some improvement between April and May, has fallen again between May and August 2020. It has fallen more in Victoria between May and August 2020 than it has in other areas of Australia that have not experienced the second wave of COVID-19 and the reimposition of strict lockdown conditions.

As measured by life satisfaction, there is a strong negative association between loneliness, low income, and housing stress on subjective wellbeing. Furthermore, those working part-time hours have experienced a greater fall in life satisfaction. An important finding is that those who have remained employed but are working zero hours per week at the time of the survey have a higher level of life satisfaction than do the unemployed.

1 Introduction and overview

In order to monitor the impacts of COVID-19, the ANU Centre for Social Research and Methods has established a COVID-19 impact monitoring longitudinal survey program. It builds upon data collected in January and February 2020, prior to COVID-19 restrictions being implemented and significant numbers of cases in Australia, and is therefore following the same group of individuals prior to and through the COVID-19 pandemic period. This program provides population level estimates of the impact of COVID-19 and allows measurement of the variation in and the determinants of the change in outcomes for Australians.

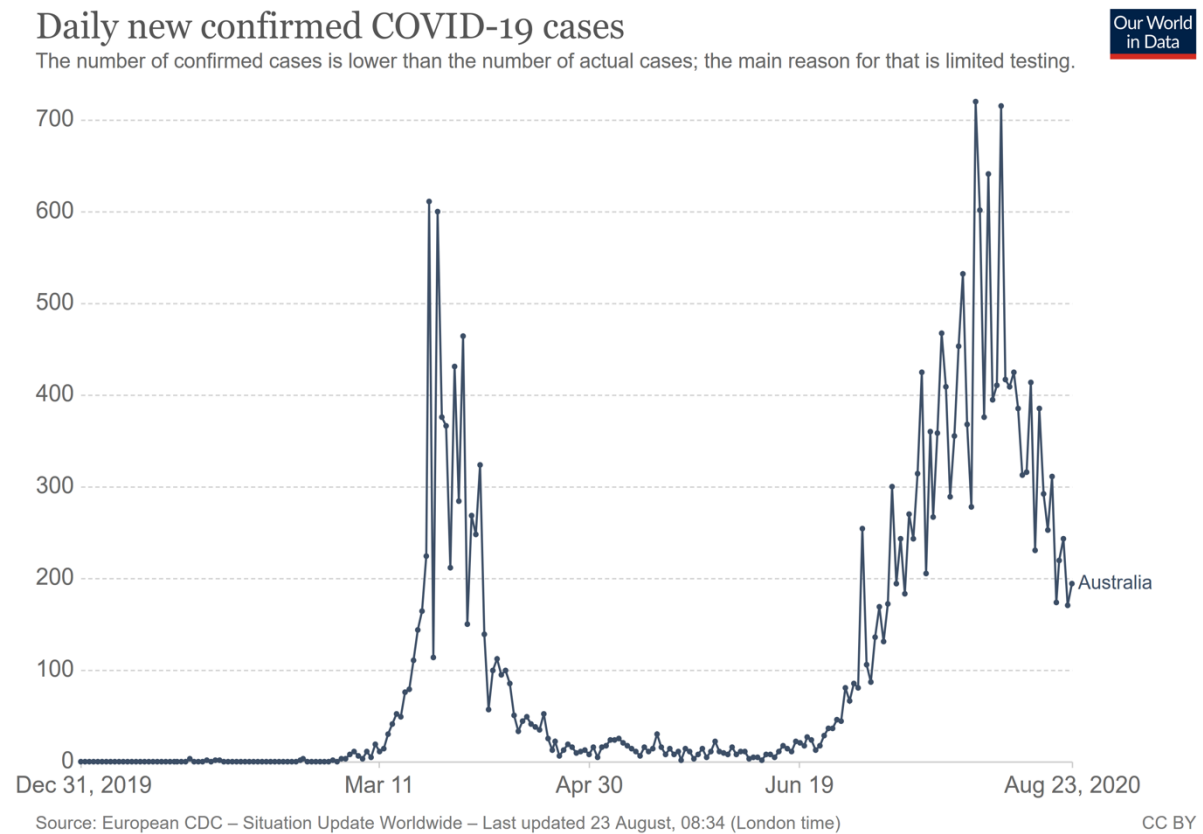
The surveys include a core set of questions on attitudes to COVID-19, labour market outcomes, household income, financial hardship, life satisfaction and mental health. In addition, each survey contains some specific questions of policy interest at the particular point in time in which the data was collected. The first wave of the COVID-19 monitoring surveys was conducted in April and this was followed by a second wave of data collection in May 2020. The data presented in this paper was collected in mid-August 2020 and additional waves of data will be collected in late 2020 and 2021, with data from these surveys made available from the Australian Data Archive as soon as possible after the data collection has finished.

1.1 COVID-19 infections, deaths, and restrictions in Australia

When the first paper summarising the May 2020 ANUpoll was finalised (May 25th) there were 7,109 confirmed infections in Australia, with 102 confirmed deaths.¹ By the time of finalising this paper (August 28th) there were 25,448 confirmed cases in Australia, and 584 confirmed deaths. Figure 1 shows, however, that cases have not occurred consistently across the period. The first wave of infections peaked at a little over 600 confirmed cases in late March, with very few cases occurring from mid-April through to mid-June. Cases increased again from late-June through to mid-August, peaking at a little over 700 cases per day.

While infection rates have fluctuated across the period spanned by our data surveys (with two clear peaks), mortality rates have stayed quite low by international standards (in *per capita* terms). As shown in Figure 2, Australia has lower *per capita* mortality rates than the UK, the US, Italy, Sweden, Brazil, and Norway. With a mortality rate of 10.9 per million persons, Australia has a higher mortality rate than Taiwan (0.294), New Zealand (4.562), Singapore (4.615), South Korea (5.949), Japan (8.223), but a lower mortality rate than all other developed countries with robust data collection systems.

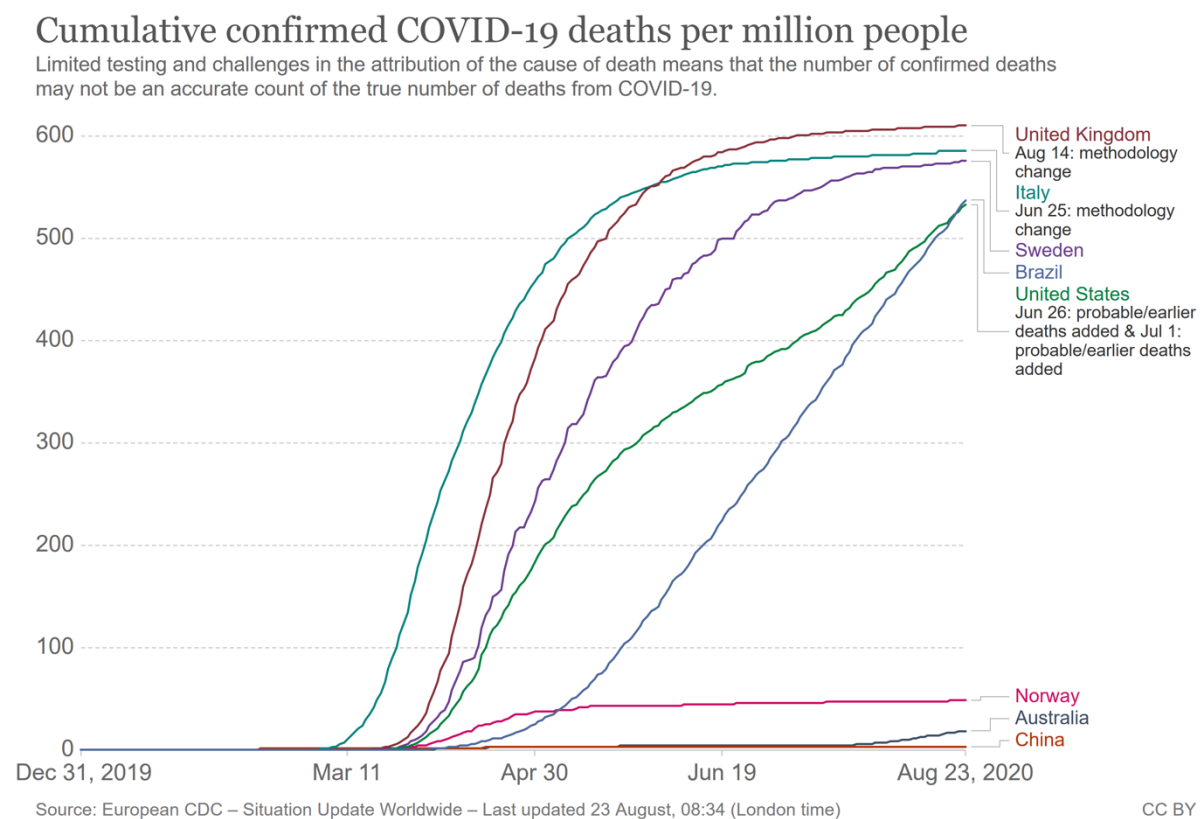
Figure 1 Confirmed COVID-19 cases by day, Australia



Note:

Source: Data and chart from Our World in Data, University of Oxford, Oxford Martin Programme on Global Development and Global Change Data Lab (<https://ourworldindata.org/>).

Figure 2 Deaths per one million population, Australia and selected other countries

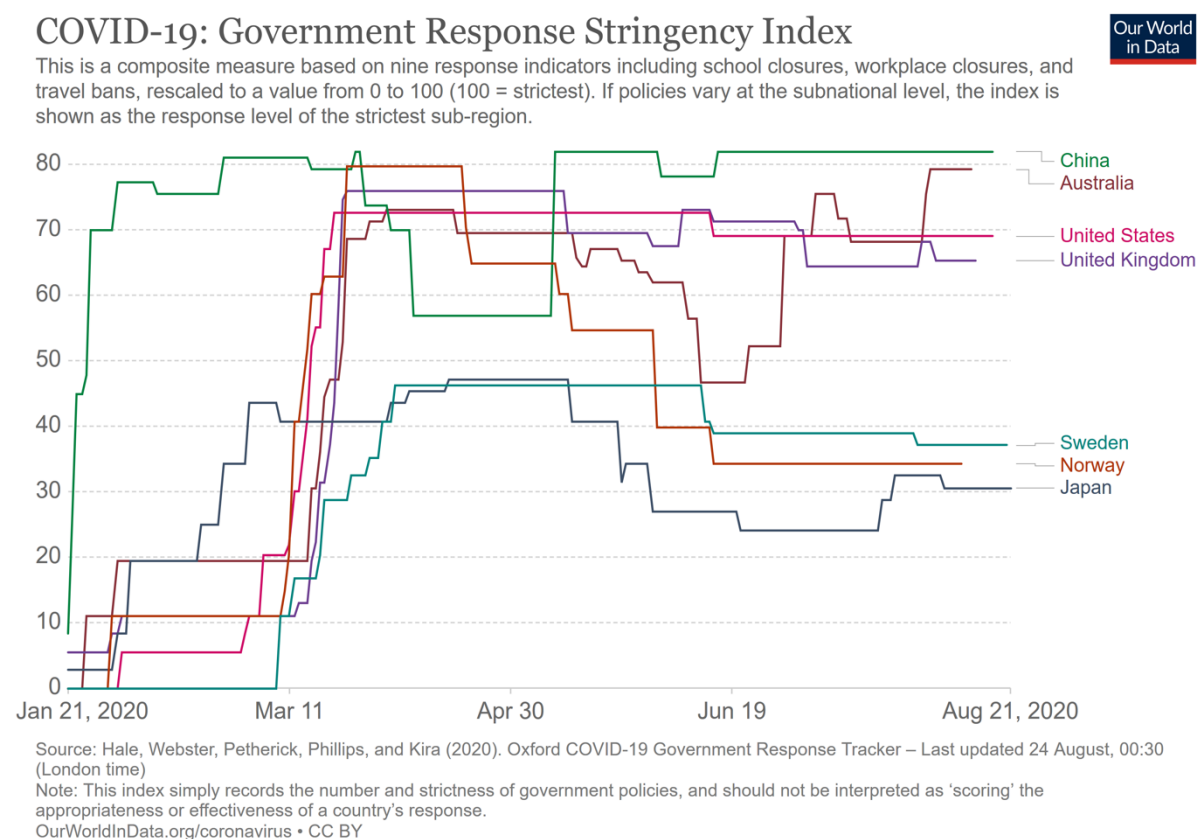


Source: Data and chart from Our World in Data, University of Oxford, Oxford Martin Programme on Global Development and Global Change Data Lab (<https://ourworldindata.org/>).

While Australia has moderate infection rates and low mortality rates relative to other comparable countries, Australia has one of the most restrictive policy frameworks in terms of local and international travel, with borders between Australia and the rest of the world effectively closed, and travel restricted between most Australian States and Territories. There also continues to be significant restrictions on gathering size, opening hours for many businesses, public transport, and many education restrictions.

The severity of the restrictions in Australia can be demonstrated by the Oxford Stringency Index (Hale et al. 2020). This index is a composite measure across nine types of policy responses to COVID-19. If policies vary at the subnational level, then the country’s index value is the response level from the strictest sub-region. In late August 2020, Australia had the second-highest value (after China) of 79.17, with the next highest values amongst developed, democratic countries being 68.98 in the US, 68.06 in the UK, and 67.13 in Canada. All three of these countries, however, had vastly higher mortality and infection rates than Australia.

Figure 3 Oxford Stringency Index for Australia and other countries



Source: Data and chart from Our World in Data, University of Oxford, Oxford Martin Programme on Global Development and Global Change Data Lab (<https://ourworldindata.org/>).

The restrictions on travel, as well as the physical distancing and isolation measures that are captured by Figure 3 have had negative effects on the Australian economy. The Australian Bureau of Statistics (ABS 2020a) estimates from the Labour Force Survey (LFS) that seasonally adjusted employment fell by a little over 600,000 people between March and April 2020 (from around 12,989,000 individuals in March to 12,382,000 individuals in April) with a further, albeit smaller, decline between April and May 2020 (to 12,118,000 individuals). There have been some improvements between May and July (the most recent data available), although the 12,461,000 individuals employed in July 2020 was still well below the peak experienced prior to the spread of COVID-19.

Although Labour Force Survey data is not available for August at the time of writing, weekly payroll data suggests that employment has again declined from July into August (ABS 2020b). Nationally, the change in the index was -0.8 per cent between the 25th of July and the 8th of August, with total wages declining by -0.6 per cent over the same period.

The most recent decline in jobs, however, has not been evenly spread across States and Territories. Tasmania and the Northern Territory experienced a small increase in payroll jobs between July and August, with New South Wales, South Australia and Western Australia experiencing small declines. Queensland (-0.9%) and the Australian Capital Territory (-1.5%) experienced larger declines, but it is Victoria (-1.6%) that has been impacted the most during the second wave of infections described in Figure 1.

Victoria has also been the most impacted from a health perspective. The vast majority of infections in Australia have occurred in Victoria, particularly during the second wave. Of the 25,448 confirmed cases in Australia, 18,822 or almost three-quarters (74.0 per cent) have occurred in Victoria. Of the 584 confirmed deaths, an even greater share (496 or 84.9 per cent) have occurred in Victoria. Indeed, because the Oxford Stringency Index is based on the most restrictive set of regulations within a country, it is in fact Victoria that is driving Australia's relatively high ranking on the index (Stage 3 restrictions in Melbourne from July 9 and Stage 4 restrictions in Melbourne from 2 August).

Since early August, people living in metropolitan Melbourne have been subject to what are known as Stage 4 restrictions. These restrictions include a curfew from 8pm to 5am with the only allowable reasons for leaving home during the curfew being work, medical care and caregiving. At other times people are only allowed to leave home: to purchase necessary goods and services within 5km of home (unless essential goods and services are further away); to exercise (once per day for no longer than one hour and within 5km of home); to provide care or access health care; and work for permitted workers. When leaving home the wearing of a mask is mandatory unless an exemption applies.

In most areas of Victoria outside of metropolitan Melbourne, what are known as Stage 3 restrictions apply. These are not as strict as the Stage 4 restrictions but are still highly restrictive with only four reasons allowed for leaving home: to shop for necessary goods and services; provide care, for compassionate reasons or to seek medical treatment; to exercise or for outdoor recreation; and for work or education if it can't be done at home. The wearing of a facemask when leaving home is mandatory. The borders between Victorian and other states and territories of Australia are closed with few exceptions and people who do leave Victoria for other areas of Australia are required to go into quarantine for a period.

1.2 Data collection and remainder of paper

Not long after the Stage 4 (Melbourne) and Stage 3 (rest of Victoria) restrictions were imposed, (10th August), respondents on Life in Australia™ were invited to participate in the August 2020 ANUpoll (the 41st wave of data collection from the panel). Life in Australia™ is Australia's only probability-based online panel, managed by the Social Research Centre with adult panel members from across Australia, representing all income levels, education categories, adult age cohorts, and major industries and occupations.

This paper provides a summary of data from this survey, collected between the 10th and 24th of August 2020. It adds another month's data to the first and, so far, only longitudinal survey data on the impact of COVID-19 with respondents interviewed in April (Biddle et al. 2020a) and May (Biddle et al. 2020b) as well as in January and February prior to the spread of COVID-19.

The August 2020 ANUpoll collected data from 3,061 respondents aged 18 years and over across all eight States/Territories in Australia, and is weighted to have a similar distribution to the Australian population across key demographic and geographic variables. Data for the vast majority of respondents was collected online (94.1 per cent), with a small proportion of respondents enumerated over the phone. A limited number of telephone respondents (17 individuals) completed the survey on the first day of data collection, with a little under half of respondents (1,222) completing the survey on the 11th or 12th of August.

The data presented in this survey has both cross-sectional and longitudinal relevance, with very high rates of linkage through time. Of those who completed the August 2020 wave of data collection, 2,916 individuals (95.3 per cent) also completed the May 2020 ANUpoll, 2,833

individuals (92.6 per cent) also completed the April 2020 ANUpoll, 2,828 individuals (92.4 per cent) also completed the February 2020 Life in Australia™ survey², and finally, 2,790 individuals (91.1 per cent) also completed the January 2020 ANUpoll (during the height of the Black Summer Bushfire crisis).

In total, we have data on almost two-and-a-half thousand Australians (2,492 total respondents) for all five waves of data collection in 2020. However, unless otherwise stated, when data for a given month is presented, it is based on the cross-sectional sample for that particular month.

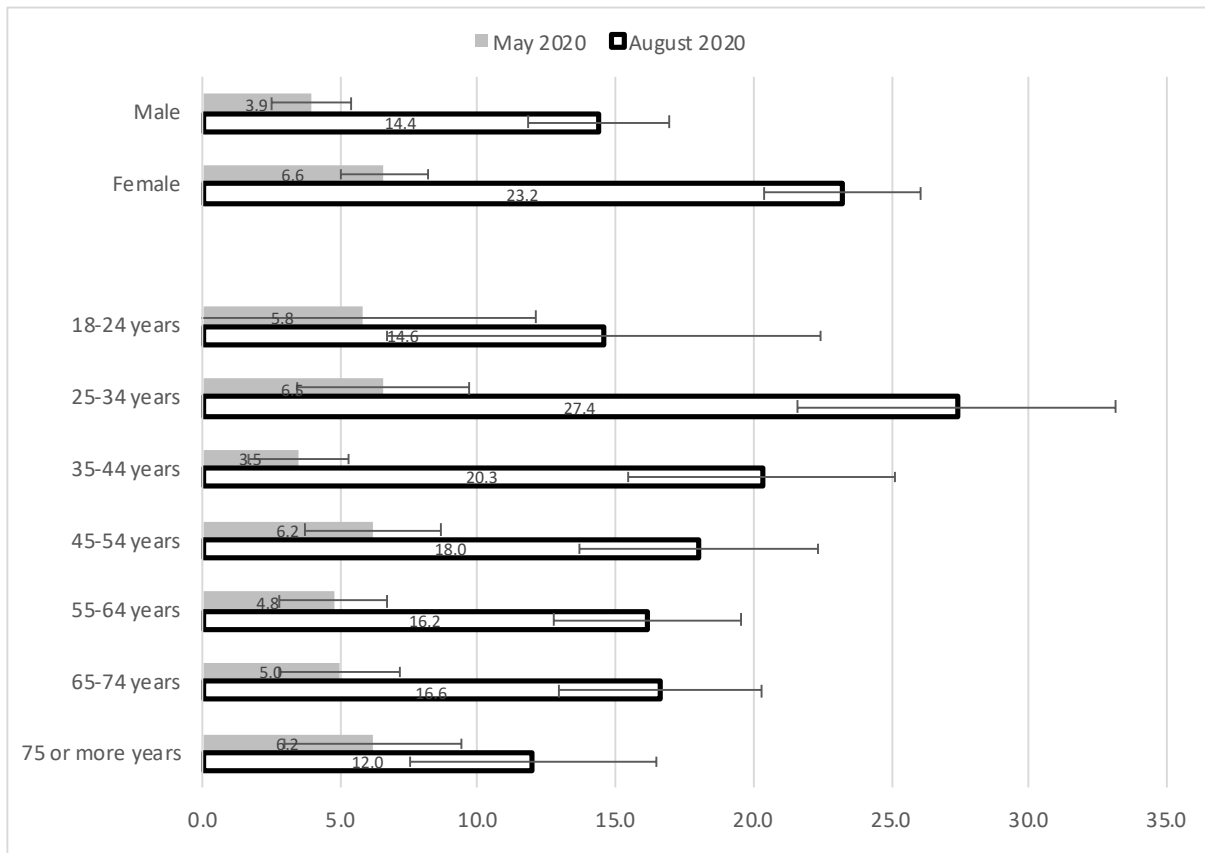
This paper provides a summary of outcomes for Australians during the peak of the second wave of COVID-19 infections (August 2020), as well as how selective outcomes have changed since before the spread of COVID-19 (January or February 2020, depending on the measure used) or since the initial wave of infections (April or May 2020). We begin our analysis at the national level, focusing on views and attitudes directly related to COVID-19 (Section 2); followed by adherence to physical distancing recommendations (Section 3). This is followed by changes in economic circumstances (Section 4); and changes in mental health and wellbeing (Section 5). We then provide a detailed analysis of how outcomes in Victoria have diverged from the rest of Australia (Section 5), holding constant other individual-level characteristics. The final section of the paper concludes.

2 Views on and exposure to COVID-19

One of the ways in which countries and jurisdictions can understand and respond to outbreaks of COVID-19 is through high quality and rapid testing and tracing of cases. According to West et al. (2020) of the Mayo Clinic in the US, ‘expanded testing for COVID-19 is a necessary immediate step toward understanding and resolving this crisis.’ Australia has had a high number of tests relative to the size of the population (6,052,236 at the time of writing), but many people are likely to have been tested more than once – for example health workers, those with particular health conditions, or those who travel frequently. The proportion of the population who have been tested is therefore likely to be much smaller than the number of tests as a proportion of the population. As far as we are aware, data from ANUpoll is the only large, probability-based sample which gives the rate of testing for individuals.

In August 2020, 19.3 per cent of Australian adults were estimated to have been tested for COVID-19. This is a very large increase from May 2020 when only 5.2 per cent of adults were estimated to have been tested, and even more so from April 2020 when only 2.1 per cent had. Testing is not evenly distributed across the adult population, nor is change through time. As shown in Figure 4 (which is based on the May and August cross-sectional samples), females were far more likely to have been tested than males, with those of prime working age (aged 25 to 34 years in particular, but also aged 35 to 44 years) the most likely to have been tested.

Figure 4 Per cent of Australian adults who have been tested for COVID-19 by age and sex, May and August 2020



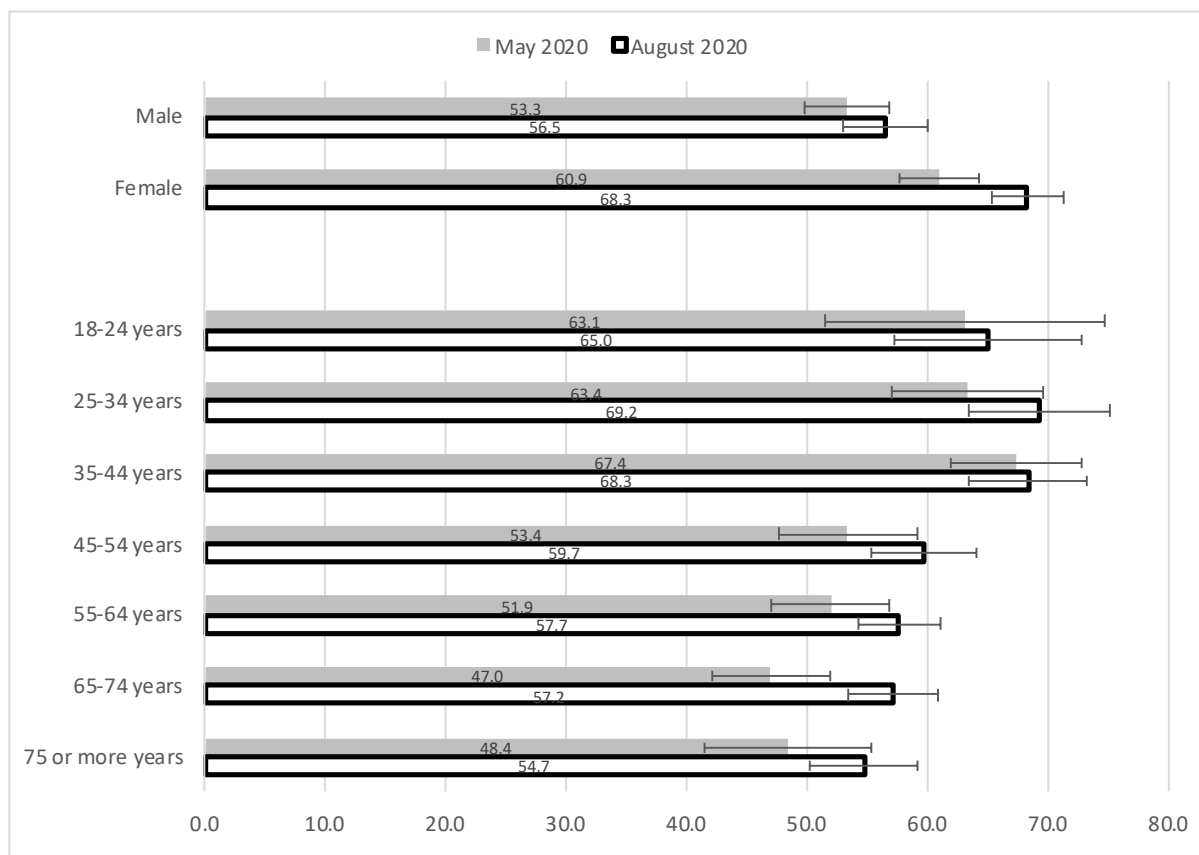
Notes: The “whiskers” on the bars indicate the 95 per cent confidence intervals for the estimate.

Source: ANUpoll, May and August 2020.

Australia continues to experience high rates of anxiety and worry due to COVID-19, with fluctuations through time that reflect the trends in infection rates during the COVID-19 pandemic. More than three-in-five Australians (62.6 per cent) in the August ANUpoll reported that they were anxious and worried, an increase from May 2020 (57.3 per cent), but still a slight decline from the April 2020 peak (66.7 per cent).

Between May and August, the biggest increases in anxiety and worry occurred for females, increasing from 60.9 per cent in May to 68.3 per cent in August (Figure 5). Females had higher rates of anxiety and worry than males before the second wave of infections, and this gap has increased over the period. There has, however, been some convergence by age, with the largest increase in anxiety and worry experienced by those aged 65 to 74 years – from 47.0 per cent to 57.2 per cent. Young Australians, and particularly those aged 25 to 34 years, continue to have the highest rates of anxiety and worry.

Figure 5 Per cent of Australians who reported anxiety and worry due to COVID-19 by age and sex, May and August 2020



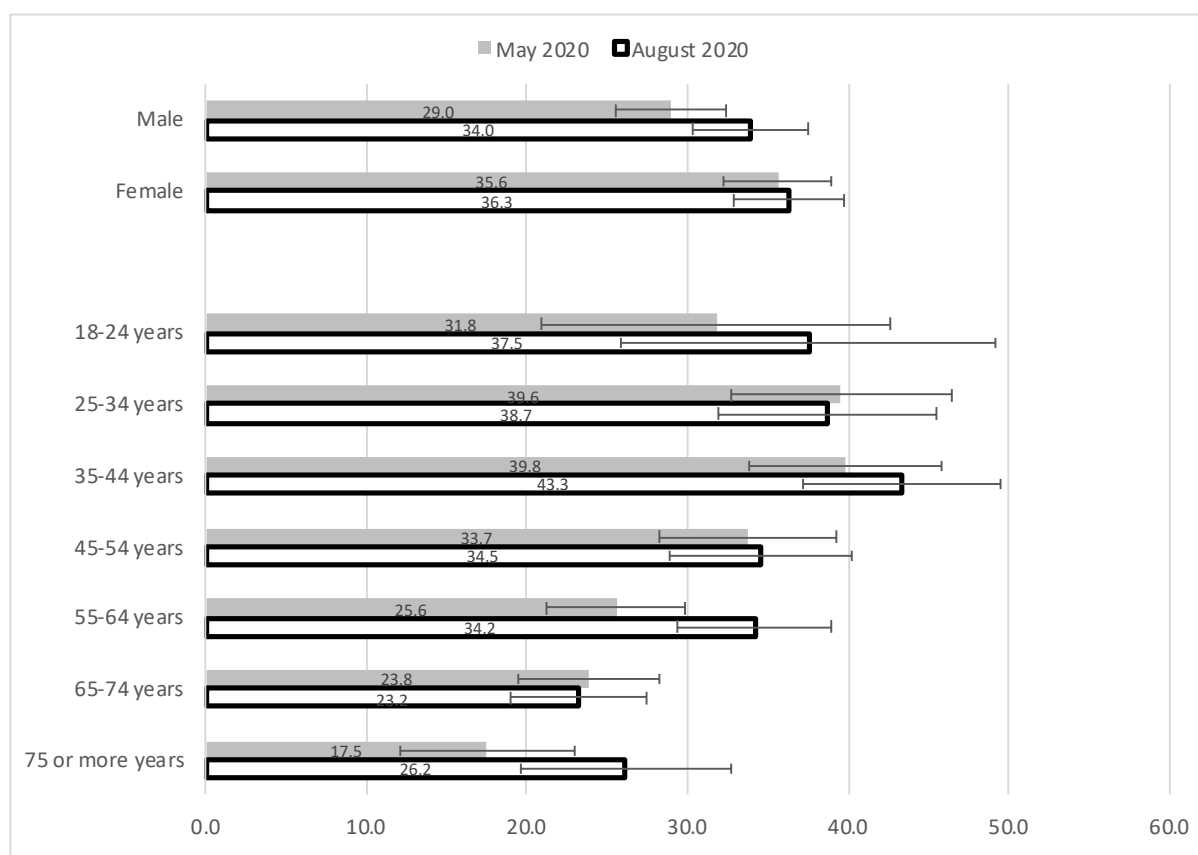
Notes: The “whiskers” on the bars indicate the 95 per cent confidence intervals for the estimate.

Source: ANUpoll, May and August 2020.

In April, May and August 2020, respondents were asked about how likely they thought it would be that they would become infected by COVID-19 over the next six-months. There was an initial fall in the percentage of Australians who thought that it was likely or very likely that they would be infected by COVID-19, from 39.5 per cent in April to 31.5 per cent in May 2020. However, the expected likelihood rose again between May and August, to 34.1 per cent of the population. Given the total number of COVID-19 cases in Australia was only 988 per one million persons (less than one-tenth of one per cent of the population), this represents an extremely high over-estimate of likely infections, unless something changes dramatically in Australia over the next six months.

The fall in the percentage of Australians thinking that it is likely or very likely that they will be infected by COVID-19 over the next six-months between April and May 2020 was greater for males than females (Biddle et al. 2020b). This was reversed between May and August 2020 though (Figure 6) with males now roughly as likely to think that they will be infected (34.0 per cent) as females (36.3 per cent).

Figure 6 Per cent of Australians who think it likely or very likely that they will be infected by COVID-19 in next 6 months by age and sex, May and August 2020



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

Source: ANUpoll, May and August 2020.

3 Physical distancing behaviours

In the absence of a vaccine or effective anti-viral treatment for COVID-19, the main public health responses continue to be physical/social distancing; reductions in travel and population movement; contact tracing; and isolation/quarantining for those who have a heightened probability of having COVID-19.

There has been a significant decline in the per cent of people who are following the physical distancing requirements from earlier in the year, such as keeping 1.5 meters away from others, and avoiding crowded places. In total, 72.2 per cent of Australians reported that in the 7 days preceding the survey they always or mostly avoided crowded places in August 2020, compared to 94.3 per cent in April 2020. A smaller percentage said they always or mostly avoided public places (55.8 per cent), a substantial decline from April (86.5 per cent). There was a smaller decline in the per cent of people who said they always or mostly kept 1.5 metres from others from 96.0 per cent in April to 86.9 per cent in August.

These three variables are highly correlated with each other. They were combined using an additive index with a value of 3 for those who never did any of the three physical distancing behaviours, and a value of 15 for those who always did all three. The index fell from an average of 13.2 in April to 11.4 in August. Even more interestingly though, the change was not consistent across the population, as shown through a linear regression model with the additive

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index value in August as the dependent variable, and the value in April as a control variable. The largest relative declines were for those aged 25 to 64 years. That is, there is no significant differences between those aged 25 to 34 years, 45 to 54 years, and 55 to 64 years with the base case category (35 to 44 years), though there are higher values for 18 to 24 years olds (albeit not statistically significant) and those aged 65 years and over. Relative declines were also larger for those born overseas in an English-speaking country; and those who lived outside a capital city. There were smaller declines for those aged 65 years and over, and for those with a postgraduate degree.

Table 1 Factors associated with physical distancing behaviour, August 2020

	Coeff.	Signif.
Physical distancing index in April 2020	0.598	***
Female	0.109	
Aged 18 to 24 years	0.524	
Aged 25 to 34 years	-0.192	
Aged 45 to 54 years	0.077	
Aged 55 to 64 years	0.134	
Aged 65 to 74 years	0.661	***
Aged 75 years plus	0.774	***
Indigenous	0.502	
Born overseas in a main English speaking country	-0.591	***
Born overseas in a non-English speaking country	0.003	
Speaks a language other than English at home	0.273	
Has not completed Year 12 or post-school qualification	0.252	
Has a post graduate degree	0.617	**
Has an undergraduate degree	0.250	
Has a Certificate III/IV, Diploma or Associate Degree	0.296	
Lives in the most disadvantaged areas (1st quintile)	0.111	
Lives in next most disadvantaged areas (2nd quintile)	0.211	
Lives in next most advantaged areas (4th quintile)	0.218	
Lives in the most advantaged areas (5th quintile)	0.187	
Lives in a non-capital city	-0.403	**
Constant	2.942	
Sample size	2,688	

Source: ANUpoll, May and August 2020.

Notes: OLS Regression Model. The base case individual is female; aged 35 to 44; 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); and lives in a capital city

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 *.

Given the imposition of Stage 4 lockdown restrictions in Melbourne, and Stage 3 restrictions in the rest of Victoria, alongside a more general relaxation in other parts of the country (apart from State/Territory borders), it is not surprising that there has been a divergence in behaviour between Victoria and the rest of the country. Based on the additive index, there was a significant decline in the rest of Australia from 13.1 in April 2020 to 10.8 in August 2020. For Victoria, on the other hand, the index value stayed reasonably steady between the Wave 1 and Wave 2 infections, 13.4 in April 2020 and 13.0 in August 2020. It should be noted though that this difference is still statistically significant, showing that even in Victoria there has been a small decline in adherence to physical distancing recommendations.

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When we last asked about physical distancing behaviour (in April), masks were not recommended to be worn, apart from health workers or those who otherwise had significant exposure to people who were likely to be infected. By August, however, masks were not only more likely to be worn, but were required in a number of circumstances and we therefore asked two new physical distancing questions – whether a person wore masks indoors when in a public place, or outdoors when in a public place. In the August survey, 39.3 per cent of respondents said they mostly or always wore masks indoors, and 37.3 per cent said they mostly or always wore masks outdoors.

Combining the two (that is, whether or not someone always or mostly wore masks **both** indoors and outdoors), the most frequent mask wearers as identified through a regression analysis were young Australians (aged 18 to 24 years) and older Australians (75 years and over); those who spoke a language other than English at home; those with an undergraduate or postgraduate degree; and those who lived in a capital city. It is noteworthy that despite the discussion in the media and by politicians that young people are not observing distancing rules, data from the August ANUpoll suggests that rate of mask wearing by those aged 18 to 24 years are similar to rates amongst those aged 75 years or older. Both these groups are significantly more likely to wear masks than other age groups.

Table 2 Factors associated with mask wearing behaviour, August 2020

	Marginal Effect	Significance
Female	0.031	
Aged 18 to 24 years	0.142	**
Aged 25 to 34 years	-0.073	*
Aged 45 to 54 years	-0.022	
Aged 55 to 64 years	-0.042	
Aged 65 to 74 years	0.034	
Aged 75 years plus	0.138	***
Indigenous	-0.018	
Born overseas in a main English speaking country	-0.053	
Born overseas in a non-English speaking country	0.029	
Speaks a language other than English at home	0.078	*
Has not completed Year 12 or post-school qualification	0.047	
Has a post graduate degree	0.148	***
Has an undergraduate degree	0.098	**
Has a Certificate III/IV, Diploma or Associate Degree	0.049	
Lives in the most disadvantaged areas (1st quintile)	0.044	
Lives in next most disadvantaged areas (2nd quintile)	0.081	**
Lives in next most advantaged areas (4th quintile)	0.046	
Lives in the most advantaged areas (5th quintile)	0.066	*
Lives in a non-capital city	-0.130	***
Probability of base case	0.534	
Sample size	2,901	

Source: ANUpoll, May and August 2020.

Notes: Probit regression, with results presented as marginal effects. The base case individual is female; aged 35 to 44; 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); and lives in a capital city.

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 *.

4 Economic circumstances

Australia's economic circumstances have been impacted substantially by the COVID-19 pandemic. International comparisons and cross-jurisdictional analyses in large countries like the US have shown that the negative economic effects of COVID-19 have come from a combination of individual decision making (people deciding not to consume goods or services); the flow-on economic effects of other countries and jurisdictions (reduced trade), and the economic costs of physical distancing restrictions and other isolation measures (Aum et al. 2020).

4.1 Employment and hours worked

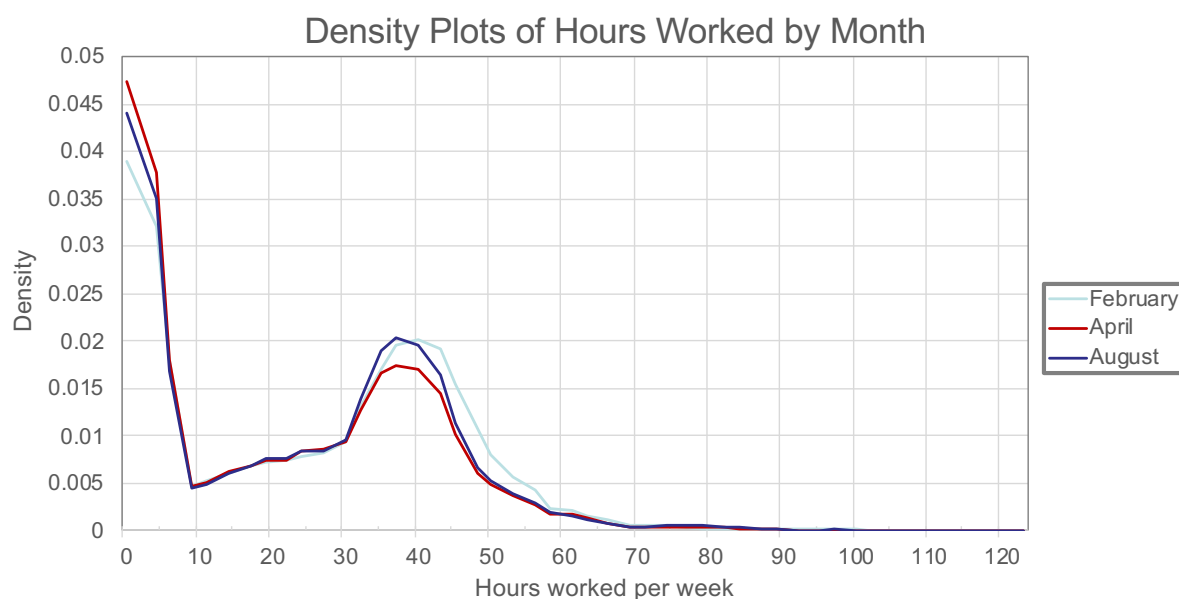
Using data from Life in Australia™, there were massive job losses between February and April 2020 with the proportion of the adult population employed falling from 62.0 to 58.9 per cent. There were further, but smaller, falls in the employment rate to 57.1 per cent in May. With some of the physical distancing restrictions being eased (with the exception of Victoria), between May and August the employment rate increased to 59.1 per cent. While this is higher than the low point observed in our data, it remains well below the pre-COVID-19 level.

Hours worked has followed a similar path. Average hours worked (setting the hours of those who were not employed to zero) for Australian adults declined from 21.9 hours per week in February 2020, to 18.7 hours per week in April, with little further change between April and May (18.5 hours per week). We observed an increase between May and August 2020, up to an average of 19.7 hours per week.

Much of this decline between February and April 2020, and then increase between April/May and August was driven by a reduction in the proportion of people who did not work any hours in the reference week (Figure 7).

Not all of the increase in the proportion of the population who worked zero hours is due to job loss, with a significant increase in the proportion of the employed who reported that they were working zero hours. Prior to COVID-19 (February 2020), only 0.8 per cent of employed adults were working zero hours. This increased more than fivefold between February and April (to 4.4 per cent), and then declined between April and May (to 3.2 per cent) and then again between May and August (to 2.4 per cent).

Figure 7 Distribution of hours worked, February, April and August 2020



Source: ANUpoll, April and August 2020 and Life in Australia Wave 35, February 2020.

As outlined in the introduction, using the longitudinal nature of the Life in Australia surveys, we are able to track changes in employment outcomes at the individual level. Using the linked February-August sample and setting those who were not employed to zero hours, 32.6 per cent of the population worked fewer hours in August than in February 2020, 46.9 per cent worked the same number of hours and 20.5 per cent worked more hours. While overall hours worked have declined, for about one-in-five Australians the COVID-19 period has been associated with an increase in the number of hours worked.

Using a regression analysis and focusing to start with on those who were employed in both periods (the first column of results in Table 3), it is estimated that women’s working hours fell by 2.2 hours per week more than the fall for men over the February to August 2020 period. The largest fall in hours was for those aged 65 to 74 years who experienced a 5.6 hour per week greater fall in hours worked than those aged 35 to 44 years.³ Those who were born overseas also worked fewer hours in August than those born in Australia, controlling for hours worked prior to the spread of COVID-19 (about a 1.7 hour per week greater fall than those born in Australia).

One of the more interesting findings from our comparison between hours worked in August and April at the individual level is that the first six months of the COVID-recession appears to have impacted on the middle part of the education distribution the most. Compared to those who have completed Year 12 but do not have a university qualification, those who have a post-graduate degree were working 4.1 more hours in August, whereas those with an undergraduate degree were working 2.9 hours more per week. This is not surprising, as recessions tend to impact less on the relatively high skilled (Borland, 2020). What is surprising though is that those who have not completed Year 12 were also working 2.9 hours more per week than those who had completed Year 12, controlling for age and hours worked in February.

Looking at the total linked sample in the second column of results (that is setting those who were not employed to zero hours and allowing for movement into and out of employment),

the direction of the associations are quite similar, but the statistical significance isn't always the same.

Table 3 Factors associated with hours worked, August 2020

	Employed in both waves		Total linked sample	
	Coeff.	Signif.		
Hours worked in February 2020	0.581	***	0.653	***
Female	-2.231	***	-1.188	
Aged 18 to 24 years	-1.449		-2.059	
Aged 25 to 34 years	0.313		0.292	
Aged 45 to 54 years	0.458		0.308	
Aged 55 to 64 years	-0.297		-2.537	**
Aged 65 to 74 years	-5.640	***	-7.657	***
Indigenous	-0.656		-5.001	*
Born overseas in a main English speaking country	-1.641	*	0.045	
Born overseas in a non-English speaking country	-1.683		-2.088	
Speaks a language other than English at home	0.009		-0.289	
Has not completed Year 12 or post-school qualification	2.854	*	1.248	
Has a post graduate degree	4.089	***	3.808	**
Has an undergraduate degree	2.889	**	2.073	
Has a Certificate III/IV, Diploma or Associate Degree	1.786		0.166	
Lives in the most disadvantaged areas (1st quintile)	0.280		-0.968	
Lives in next most disadvantaged areas (2nd quintile)	-1.429		-2.960	***
Lives in next most advantaged areas (4th quintile)	0.300		-1.156	
Lives in the most advantaged areas (5th quintile)	-0.814		-1.079	
Lives in a non-capital city	-0.218		0.382	
Constant	12.792		9.174	
Sample size	1,450		2,400	

Source: ANUpoll, August 2020 and Life in Australia Wave 35, February 2020

Notes: OLS Regression Model. The base case individual is female; aged 35 to 44; 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); and lives in a capital city

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 *.

4.2 Labour market security

While hours worked have increased since the May 2020 tracking survey, the perceived job security of those who are employed has worsened significantly. In all three of our post-COVID-19 tracking surveys, respondents who were currently employed were asked what they thought the chances were of them losing their job at some stage over the next 12-months. In April 2020, the average perceived probability was 24.6 per cent, far higher than ever recorded using a similar question on the Household, Income, and Labour Dynamics in Australia (HILDA) survey (Foster and Guttman 2018). Job insecurity declined to 22.0 per cent in May, but has increased again in our most recent data to an average expected likelihood of 25.0 per cent, significantly higher than the May average, but not significantly different from the previous April 2020 peak.

Most of the growth in job insecurity between May and August 2020 has been driven by the middle part of the education distribution.⁴ For those who have completed Year 12 but do not have a degree, there was an increase in the average expected probability of losing one's job by 4.6 percentage points. For those who had not completed Year 12, the increase was only 1.6

percentage points, whereas for those who have a university degree there was a further decline between May and August 2020 (by -0.1 percentage points for those with an undergraduate degree and -1.3 percentage points for those with a postgraduate degree). Particularly in the last few months, the economic effects of COVID-19 have manifested themselves as a middle-education recession.

4.3 Income and financial stress

At the time of writing, the latest available data from the Australian National Accounts was from the June quarter, with the Australian economy contracting by 7.0% , a large increase from the contraction of 0.3% in the March quarter 2020 (ABS 2020c).⁵ In addition, using weekly payroll data, the ABS (2020b) has found that between the week ending 14th March 2020 and the week ending 8th August 2020 (just prior to the data collection for this paper), total wages decreased by 6.2 per cent.

Offsetting some of the decrease in wages over the period, social security and other payments by government have increased substantially. These include the Economic Support payment of \$750 for existing social security payment recipients and the provision of a \$550 per fortnight Coronavirus Supplement to new and existing eligible income support recipients (including those receiving student support payments or Jobseeker payments, comprising both unemployment benefits or parenting payments). In addition to the above payments made mostly to those who were not employed, the JobKeeper payment of \$1,500 per fortnight was made to eligible businesses for each eligible employee to enable them to continue to pay their staff from the first week of May.

In separate research using the ANU Centre for Social Research and Methods' PolicyMod microsimulation model and preliminary August 2020 ANUpoll data, Phillips et al. (2020) showed that in aggregate terms the introduction of these payments 'have reduced measures of poverty and housing stress, with both now below what they were prior to COVID-19.' However, the research also found that 'the protective impact has been reduced somewhat by the July policy announcement to make these supplementary payments less generous.' (p ii).

Using data from the February and April 2020 surveys, it is estimated that average household after-tax income fell by 9.1 per cent and per person household after-tax income fell by 10.4 per cent (Biddle et al. 2020a).⁶ Data from the April, May and August 2020 ANUpolls shows no further change in per person household income since April (it is estimated to be \$663 per week in April, \$665 per week in May, and \$669 per week in August). Despite significant increases in hours worked since April 2020, there have been no improvements in income for Australian households. A potential explanation for this is that those whose hours worked had increased since April were those in receipt of the JobKeeper payment.

Looking over the period February to August 2020 and controlling for income in February 2020, there was a larger drop in per person household income for young Australians (by an extra \$95 per week than those aged 35 to 44 years) and older Australians (by an extra \$87 and \$62 per week for those aged 65 to 74 years and 75 years and older respectively). There was also a larger decline in income for those born overseas in a non-English speaking country (an extra \$93 per week decline than those born in Australia). Those with relatively high levels of education had a smaller decline than those who had completed Year 12 but did not have a university degree, with income in August higher by \$75 per week for those with a postgraduate degree and \$80 per week for those with an undergraduate degree, conditional on income in February.

Table 4 Factors associated with per person household income, August 2020

	Coeff.	Signif.
Income in February 2020	0.643	***
Female	-30.840	
Aged 18 to 24 years	-95.292	*
Aged 25 to 34 years	11.876	
Aged 45 to 54 years	1.062	
Aged 55 to 64 years	-1.754	
Aged 65 to 74 years	-87.878	***
Aged 75 years plus	-61.564	**
Indigenous	-82.904	
Born overseas in a main English speaking country	18.277	
Born overseas in a non-English speaking country	-92.752	***
Speaks a language other than English at home	24.916	
Has not completed Year 12 or post-school qualification	-5.053	
Has a post graduate degree	75.409	
Has an undergraduate degree	80.384	**
Has a Certificate III/IV, Diploma or Associate Degree	-10.170	
Lives in the most disadvantaged areas (1st quintile)	-28.516	
Lives in next most disadvantaged areas (2nd quintile)	6.234	
Lives in next most advantaged areas (4th quintile)	25.913	
Lives in the most advantaged areas (5th quintile)	41.601	
Lives in a non-capital city	25.935	
Constant	213.334	
Sample size	2,412	

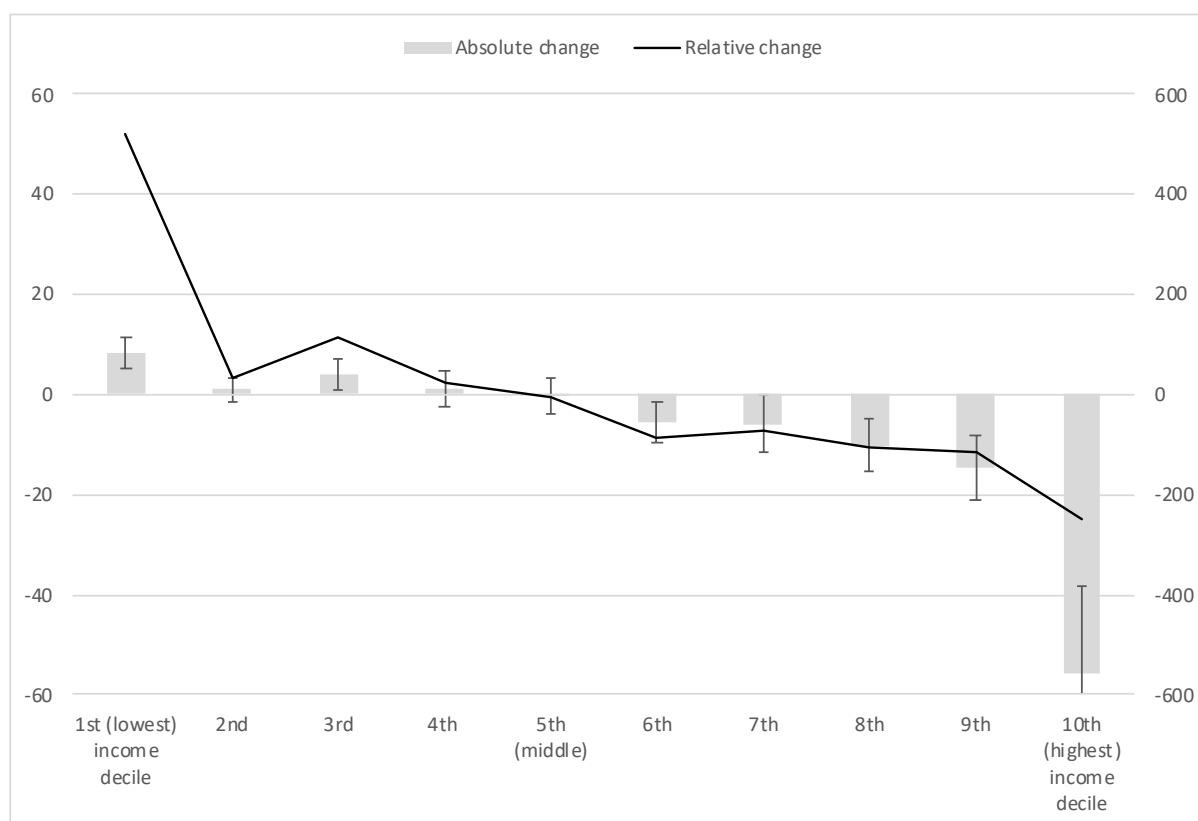
Source: ANUpoll, August 2020, and Life in Australia™, February 2020.

Notes: OLS Regression Model. The base case individual is female; aged 35 to 44; 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); and lives in a capital city

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 *.

Change in income between February and August 2020 is negatively correlated with income in February 2020 (correlation coefficient = -0.4804), as reflected by the poverty calculations in Phillips et al. (2020). This is further demonstrated in Figure 8, which gives the average change in income (for those in both samples) by the decile of income in February 2020 in both absolute and relative (to February 2020 income) terms.

Figure 8 Change in per person household after-tax income between February and August 2020, by income decile in February



Notes: The “whiskers” on the bars indicate the 95 per cent confidence intervals for the estimate. Restricted to those who completed both the February and August 2020 surveys.

Source: ANUpoll, August 2020 and Life in Australia Wave 35, February 2020

We have also seen a continuous decline in the per cent of Australians who think it is difficult or very difficult to live on their current income. In February 2020, 26.7 per cent said they were finding it difficult or very difficult, decreasing to 22.8 per cent in April, 21.7 per cent in May and 18.7 per cent in August. This decline is likely due to those at the bottom part of the income distribution experiencing an increase or only a small decline in income, as well as less opportunities for expenditure during the COVID-19 period.

5 Mental health and wellbeing

The COVID-19 pandemic is having a negative impact on mental health and subjective wellbeing across the world, and Australia is no exception (Biddle et al. 2020c). The decline in hours worked are likely to impact on people’s subjective wellbeing and mental health, with long-run, cross-country evidence (Schröder, 2020: p. 1) suggesting that ‘life satisfaction of men and especially fathers ... increases steeply with paid working hours. In contrast, the life satisfaction of childless women is less related to long working hours, while the life satisfaction of mothers hardly depends on working hours at all.’ Employment and loss of income have also been shown to have a strong association with mental health outcomes, although the causal direction of this association is difficult to establish (Murphy and Athanasou. 1999).

The social isolation created by lockdowns are also likely to have a negative impact on mental health and wellbeing (Hamermesh 2020). For example, Gerino et al. (2017) has shown that

Loneliness influences mental (as well as physical) health amongst older populations, whereas Richardson et al. (2017) showed that ‘after controlling for demographics and baseline mental health, greater loneliness predicted greater anxiety, stress, depression and general mental health over time’ for a sample of UK university students.’ These negative effects of loneliness may be counterbalanced by reduced stress due to fewer pressures on time and finances. Another counterbalancing effect of the COVID-19 crisis is likely to be comparisons that people have made or are making with regards to how bad things could have been in Australia, with the current infection and mortality rates compared across jurisdictions, countries, demographic groups, or early-pandemic projections.

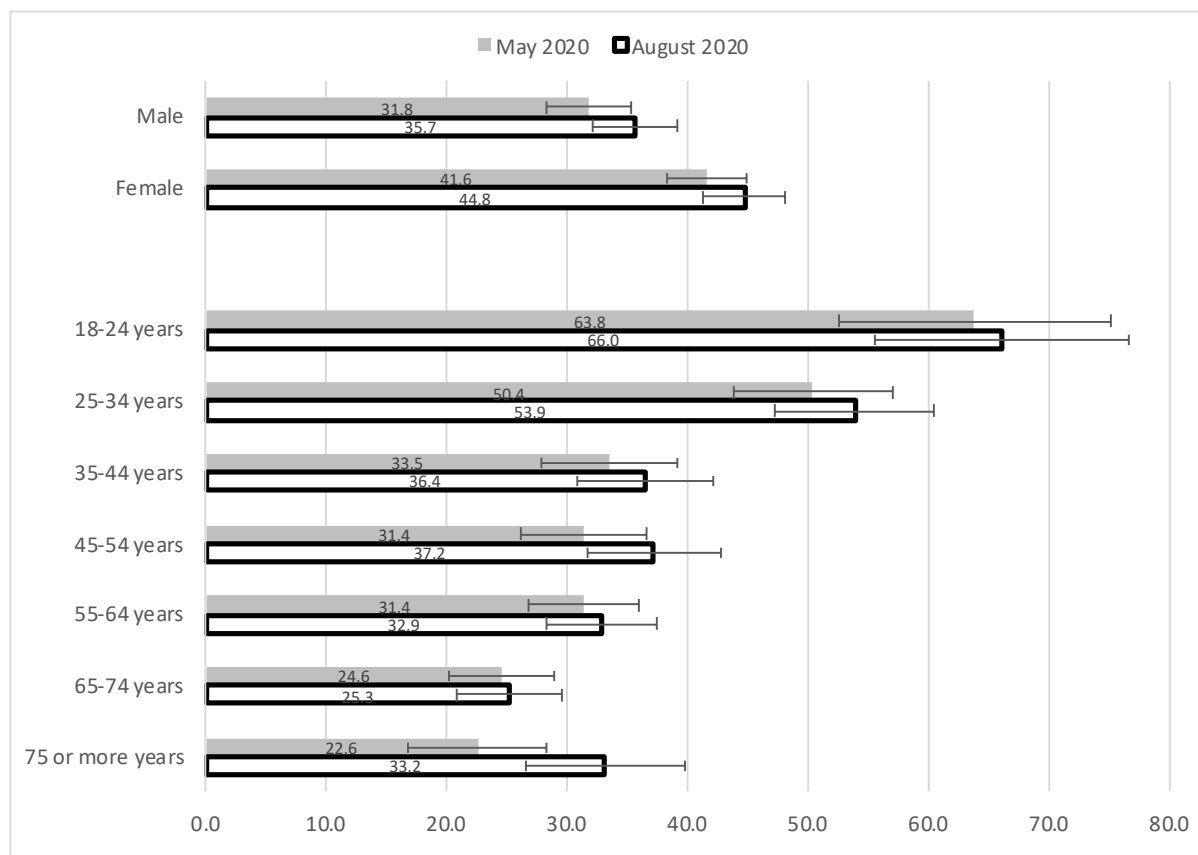
5.1 Loneliness

Since the start of the COVID-19 period, we have asked individuals how often in the last week they have felt lonely. When we first asked in April 2020, 45.8 per cent of respondents said they had felt lonely at least some of the time (that is, one or more days per week). This declined to 36.1 per cent in May 2020 when most restrictions had begun to be lifted across Australia, but increased again to 40.5 per cent in August during the second wave of infections and the return to lockdown conditions in some parts of the country.

Indeed, it is in these parts of the country that have had a return to lockdown conditions where loneliness has worsened. We will discuss this using more complicated methods in the next section of the paper. However, the simple descriptive statistics are also quite clear on the differences across the country. For the other seven States and Territories, there was no significant difference between loneliness in May 2020 (37.1 per cent) and August 2020 (38.8 per cent). For Victoria, on the other hand, the per cent of the population who were lonely at least some of the time increased from 35.7 per cent in May 2020 to 44.5 per cent in August 2020.

Females continue to experience higher rates of loneliness than males (44.8 per cent in August for females, compared to 35.7 per cent for males), as do those aged 18 to 24 years (Figure 9). Between May and August 2020, however, the largest increase in loneliness was amongst those aged 75 years and over, with a more than 10 percentage point increase from 22.6 per cent in May to 33.2 per cent in August.

Figure 9 Per cent of Australians who experienced loneliness in previous week, by age and sex, May and August 2020



Notes: The “whiskers” on the bars indicate the 95 per cent confidence intervals for the estimate.
 Source: ANUpoll, May and August 2020.

5.2 Mental health outcomes

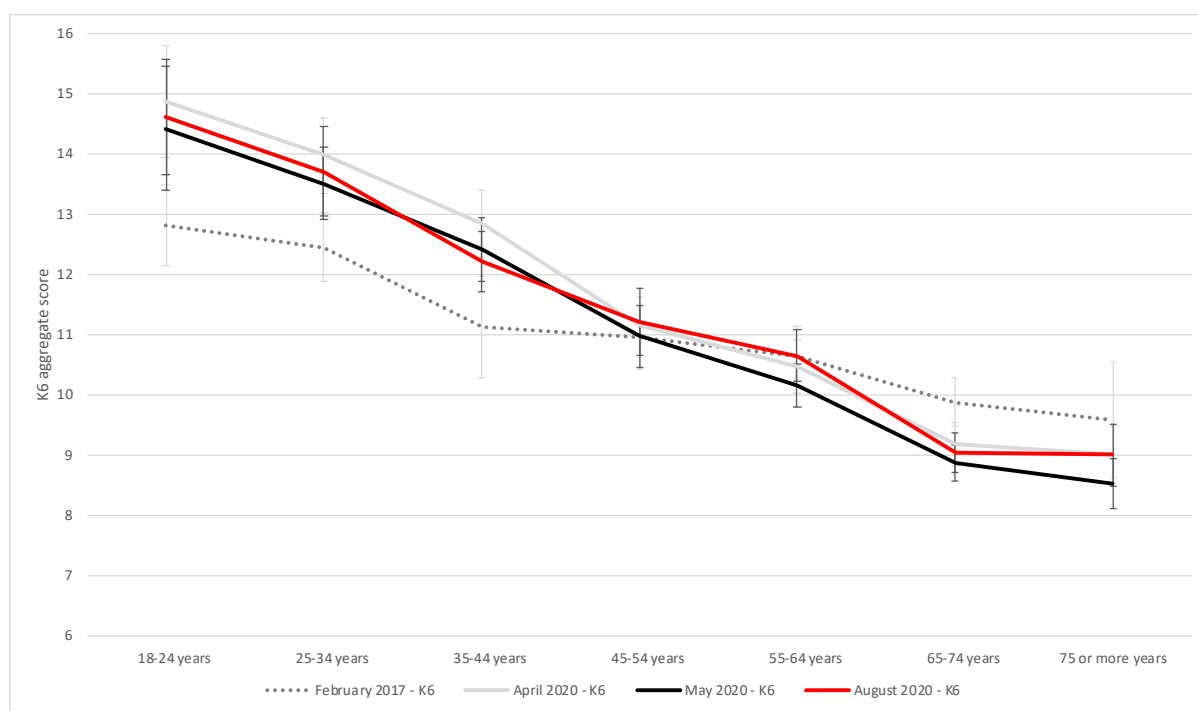
We have been tracking mental health outcomes in our COVID-19 monitoring surveys using the Kessler 6 (K6) scale which is a measure of psychological distress.⁷ Respondents who score highly on this measure are considered to be at risk of a serious mental illness (other than a substance use disorder). These questions were previously asked in February 2017 and therefore allow us to measure long-term change through time in outcomes.

The K6 measure of psychological distress used in this paper has been constructed to have a minimum value of 6 and a maximum value of 30. In February 2017 when the question was last asked on Life in Australia™, the average value was 11.2. By April 2020, the score had increased to have a mean of 11.9. Between April and May 2020 there was a significant reduction in psychological distress, although the K6 measure was still above the pre-COVID-19 values (mean = 11.5 in May 2020). Mental health worsened again though between May 2020 and August 2020, with an average in our most recent data collection of 11.7.

There was a divergence in psychological distress over the most recent period between males and females, with the latter having higher levels of psychological distress to start with. Specifically, males maintained the same level of psychological distress between May and August 2020 (11.2 on the K-6 scale). Females, on the other hand, worsened from 11.7 to 12.0 amongst the linked sample, with the difference of 0.3 being statistically significant.

Much of the worsening in mental health in the early stages of the COVID-19 pandemic occurred amongst the young population (Figure 10), particularly those aged 18 to 24 years. For this group, psychological distress stayed reasonably stable over the most recent period. For older Australians, there was a reduction in psychological distress in the early stages of the pandemic. However, while psychological distress is still lower for those aged 65 years and over, the only age group that worsened substantially between May and August 2020 were those aged 75 years and over.

Figure 10 Psychological distress by age, February 2017 and April, May and August 2020



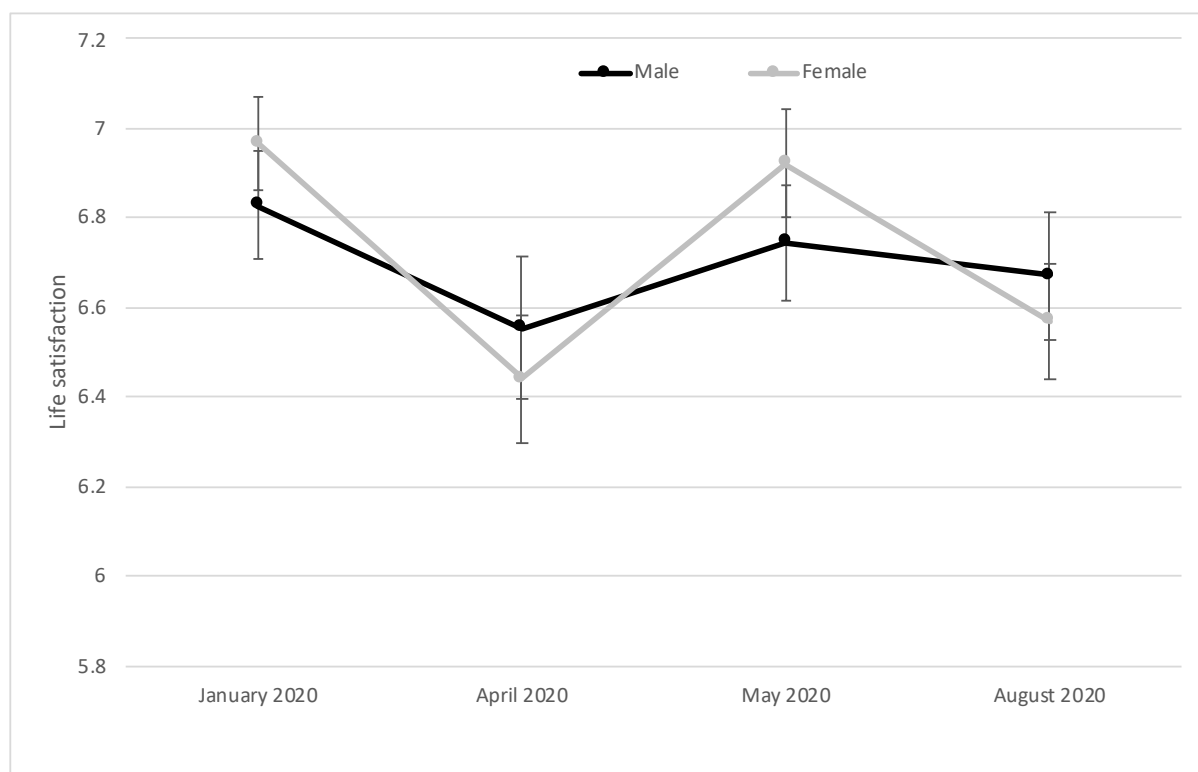
Notes: The “whiskers” on the bars indicate the 95 per cent confidence intervals for the estimate.

Source: ANUpoll, January April and August 2020 and Life in Australia Wave 35, February 2020.

5.3 Life satisfaction and satisfaction with the direction of the country

Life satisfaction continues to be highly volatile in Australia, particularly for females (Figure 11). For all Australians, in January 2020 life satisfaction averaged 6.90 on a scale of 0 to 10 (pre-pandemic, but during the Black Summer bushfires). Average life satisfaction declined substantially during the first wave of the pandemic in Australia (to 6.52 in April 2020) and then increased to 6.83 during May 2020 as infection rates had come down and physical distancing requirements had started to be eased. In August 2020, our most recent wave of data, life satisfaction had declined again to 6.62.

Figure 11 Life satisfaction by sex, January, April, May and August 2020



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

Source: ANUpoll, January, April, May and August 2020.

There has been a similar level of volatility in satisfaction with the direction of the country, although the early period of the pandemic had very different patterns than with life satisfaction. Between January and April 2020, there was a significant increase in the per cent of Australians who were satisfied or very satisfied with the direction of the country – from 59.5 per cent to 76.2 per cent. There was a further small increase between April and May 2020 (to 80.6 per cent), but a decline between May and August 2020 to a percentage slightly lower than during the first wave of infections (to 74.6 per cent).

5.4 Understanding the predictors of life satisfaction

With three waves of ANUpoll data now having been collected since the COVID-19 pandemic in Australia there is sufficient data available to understand the factors that are most strongly predictive of a person’s subjective wellbeing during the COVID-19 period. Is it their views on how the country is going, their loneliness, their employment and hours worked, their income, or their level of housing stress? The short answer is that all of these things matter, but that they matter to different degrees and sometimes in surprising ways.

This section reports on the results of a linear, random effects model that exploits the longitudinal nature of the data and controls for time invariant characteristics to estimate the factors associated with life satisfaction (Table 5).⁸

Australians who were satisfied with the direction of the country had a life satisfaction value that was around 1.10 points (on a scale from 0 to 10) higher than those who were not satisfied. The effect of the lockdowns and the impact that it is having on loneliness in particular also appears to be having an effect. Those who reported that they were lonely at least some of the

time had a level of subjective wellbeing that was 0.68 points lower than those who were not lonely.

There is a statistically significant relationship between hours worked and subjective wellbeing, but the relationship is complicated. The regression results show that those working 30 or more hours per week have the highest level of life satisfaction and that those working less than 30 hours per week have lower levels of life satisfaction. Those working very short part-time hours (1 to 9 hours per week) have particularly low levels of life satisfaction, showing the challenge and stress of working part time during the COVID-19 period. Those who were employed, but worked zero hours per week had lower levels of life satisfaction than those working 30 or more hours per week, but the difference was not statistically significant due to relatively small sample sizes.

Those who were not in the labour force had lower levels of life satisfaction than those who were employed 30 or more hours. The lowest level of life satisfaction based on the employment variables, however, was for those who were unemployed, with a life satisfaction measure about 0.46 points lower than those employed 30 hours or more per week, and significantly lower than those who were employed but were not working any hours at the time of the survey. The JobKeeper payments appear to have had benefits in terms of life satisfaction, which could be due to perceived job security, income security, having a continued employment link, or lack of stigma associated with being unemployed.

The regression model includes income as an explanatory variable and hence the relationship between hours worked/employment status and life satisfaction is after controlling for differences in income.

While there is a clear relationship between labour market outcomes (hours worked and labour force status) and life satisfaction, the associations are much smaller than that between loneliness and life satisfaction.

The final measures in the model capture access to economic resources and financial stress. As income goes up, life satisfaction also goes up. However, the effect is non-linear. Specifically, the linear and quadratic term are both jointly significant, with the former being positive, and the latter negative. What this means is that there is a larger increase in life satisfaction for a \$1 increase in income for those at the bottom of the income distribution than those at the top of the distribution. This is a consistent finding across countries and across age groups that predates the COVID-19 pandemic (Kahneman and Deaton 2010). However, it is particularly relevant at the current point in time, as we have shown that income has increased for those at the bottom of the distribution but declined for those at the top, meaning that the distributional changes during COVID-19 in Australia are likely to have had a buffering impact on wellbeing.

Where financial changes have potentially had a large negative impact on subjective wellbeing is through housing stress. We reported previously that there was a very large increase in the proportion of people who said they were unable to pay their rent or mortgage between April and May 2020 (from 6.9 per cent to 15.1 per cent). In our August 2020 data, we found that this measure of mortgage stress was reasonably steady between May and August (14.2 per cent at the end of the period). In our life satisfaction modelling, we show that those who were unable to pay their mortgage or rent had a significantly lower level of life satisfaction than those who could, controlling for income and other characteristics (0.23 points lower).

Taken together, the results presented in this subsection have shown that a large proportion of the variation in life satisfaction over the COVID-19 period was explained by variation in observed characteristics, and that these point to some of the potential policy effects and challenges in maintaining the wellbeing of the Australian population. Loneliness, which could be driven by the restrictions on social interaction, is a strong predictor of life satisfaction. Those who became unemployed during the period or who found it difficult to pay their mortgage have also been shown to have had lower levels of wellbeing. However, those who worked zero hours, but still classified themselves as employed maintained a much higher level of wellbeing, with improvements in income at the bottom of the distribution also likely to have improved wellbeing.

Table 5 Factors associated with life satisfaction, April, May and August 2020

Independent variables	Coeff.	Signif.
Satisfied with direction of country	1.096	***
Lonely at least some of the time	-0.681	***
Employed, but worked zero hours	-0.099	
Worked 1 to 9 hours	-0.241	**
Worked 10 to 19 hours	-0.088	
Worked 20 to 29 hours	-0.123	*
Not in the labour force	-0.114	*
Unemployed	-0.459	***
Income (linear)	0.000308	***
Income (squared)	-0.000000044	
Unable to pay mortgage or rent on time	-0.229	***
Aged 65 to 74 years	0.506	***
Aged 75 years and over	1.028	***
May 2020 data collection	0.276	***
August 2020 data collection	0.066	*
Constant	5.789	
Sample size (number of observations)	7,320	
Sample size (number of individuals)	2,765	

Source: ANUpoll, April, May and August 2020.

Notes: Random effects linear regression Model. The base case individual is employed and worked 30 hours or more per week; Aged 18 to 64 years; and was interviewed in April 2020

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 *.

6 Comparing outcomes in Victoria with the rest of Australia

With the second wave of COVID-19 infections in Australia having largely been contained to Victoria and the return to severe “lockdown” conditions to that State, comparison of changes in outcomes for the Victorian population compared to the experience in the rest of Australia provides new insights into the impact of increases in the infection rate and lockdown on outcomes. In this section we show that, taken as a whole, outcomes in Victoria have worsened compared to the rest of Australia between May and August 2020.

In previous papers in this series where we have been able to track outcomes through time, geography has tended to be important at a structural level (capital city vs non-capital city, or rich vs poor areas), but there has not tended to be much divergence by State or Territory.

Tracking wellbeing outcomes during the COVID-19 pandemic – August 2020

The basic empirical approach used in this section is to compare outcomes in Victoria to outcomes for similar individuals elsewhere in the country. That is, someone who had similar characteristics in May 2020. We also use additional controls for a range of demographic and socioeconomic outcomes.⁹ The model is estimated using the linked May to August 2020 sample. The lagged dependent variable is included to ensure that any pre-existing differences in outcomes between Victoria and the rest of Australia prior to the second wave of infections are taken into account. Demographically and socioeconomically, Victoria was not the same as the rest of Australia, and nor was it the same in terms of many of the outcomes of interest. This approach is similar to the widely used difference-in-difference model.

These results are summarised in Table 6 which shows the statistical significance of living in Victoria in August 2020 compared to living in the rest of Australia, as well as the direction of that difference. Select figures are also included in the remainder of this section to demonstrate the scale of the divergence in outcomes between Victoria and the rest of Australia. The detailed results of the model are presented in Appendix Table 1a (for the non-economic variables) and Table 1b (for the economic variables).

Of the 12 variables included in our analysis, there was strong evidence for a relative worsening in outcomes for six of the variables (that is, the variable for Victoria was significant at least at the 5 per cent level of significance) and a further two variables where there is weaker but still convincing evidence (that is, significant at the 10 per cent level of significance only). There were no variables for which Victoria had improved relative to the rest of Australia between May and August 2020, and four for which the change in outcomes was the same for both Victoria and the rest of Australia.

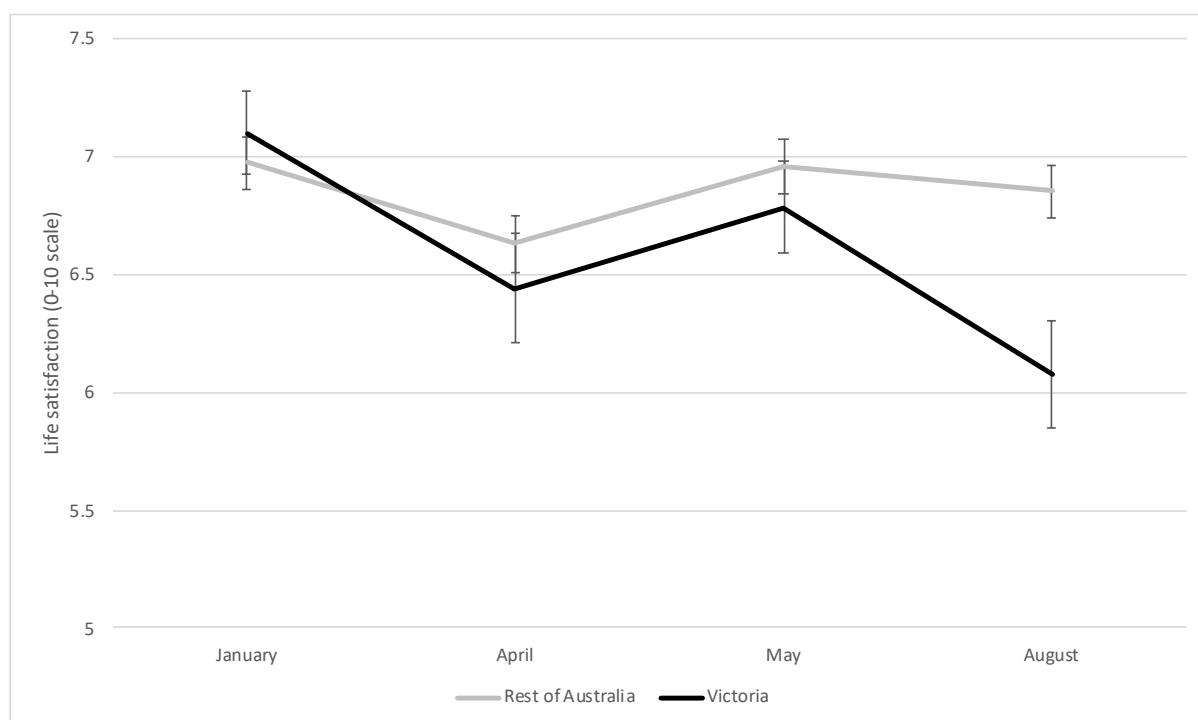
Table 6 Relative changes in outcomes between Victoria and the rest of Australia, May to August 2020, controlling for baseline values and demographic/socioeconomic outcomes

Relative worsening in Victoria (5% statistical confidence level)	Relative worsening in Victoria (10% statistical confidence level)	No relative change	Relative improvement in Victoria
Psychological distress Loneliness Life satisfaction Satisfaction with direction of country Likely to be infected by COVID-19 Hours worked	Anxiety and worry due to COVID-19 Expected probability of losing one's job	Employed Household income per person Unable to pay rent or mortgage on time Difficult to meet expenditure on current income	

Looking at life satisfaction to start with, one of our key indicators of wellbeing in our tracking surveys, Victoria had slightly higher life satisfaction in January 2020 than the rest of Australia, though the difference was not statistically significant (Figure 12). It appears that there was a small divergence between January and April 2020 and then into May, though once again the difference is not statistically significant. Between May 2020 and August 2020, however, there was a significant and substantial divergence in life satisfaction, with values for the rest of Australia staying reasonably steady (6.96 in May 2020 down to 6.85 in August 2020) but very

large and statistically significant declines for Victoria (6.78 in May 2020 down to 6.08 in August 2020).

Figure 12 Life satisfaction in Victoria and the rest of Australia, January, April, May, and August 2020



Notes: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate. Restricted to those who completed all four waves of data collection

Source: ANUpoll, January, April, May and August 2020.

Psychological distress, a more negative measure of wellbeing, also worsened by more between May and August 2020 in Victoria compared to the rest of the country. In May 2020, the K-6 index was 12.06 in Victoria, already significantly higher than the value of 11.26 in the rest of Australia. Between May and August 2020, there was no statistically significant change for the rest of Australia (11.33), whereas the measure of psychological distress increased to 12.50 in Victoria.

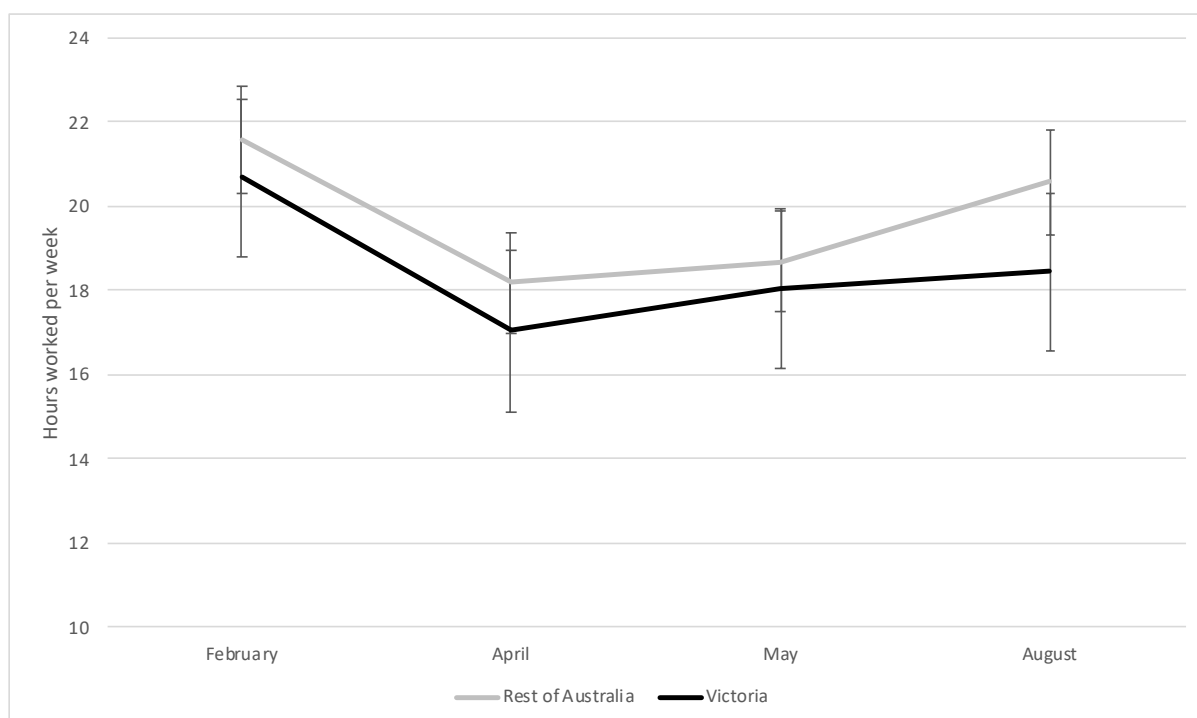
These two findings were somewhat different to that reported by the ABS, with the ABS Head of Household Surveys quoted as saying “While Victoria has experienced the greatest surge in recent cases of COVID-19, our latest Household Impacts of COVID-19 Survey showed that the affects [sic] on how Australians are feeling are country-wide. In fact, the mid-August results were consistent across Australia with no significant differences reported by people in Victoria when compared to the rest of Australia.”

The main reasons for the difference in our results compared to those of the ABS is that we make more extensive use of the longitudinal nature of our survey, and we have a significantly larger sample size (more than twice as large), which means that we are able to make more precise estimates for individual jurisdictions and population sub-groups. Indeed, for all six of the measures of psychological distress reported by the ABS in their survey, Victoria had a lower per cent of people in August 2020 who reported having those negative feelings ‘none of the

time.’ However, the standard errors around these estimates from the ABS are too large to make definitive conclusions.

Not all the variables had as dramatic a divergence between Victoria and the rest of Australia between May and August 2020, though the ‘difference-in-difference’ was still both statistically significant and qualitatively important. For example, hours worked moved in a similar direction for Victoria and the rest of Australia between February and April 2020 (a large decline) and April and May 2020 (a small increase). Between May and August 2020, however, average hours worked in the rest of Australia increased significantly (from 18.7 hours per week to 20.6 hours per week), whereas for Victoria it has stayed more or less the same (18.0 hours to 18.4 hours).

Figure 13 Average hours worked in Victoria and the rest of Australia, February, April, May, and August 2020

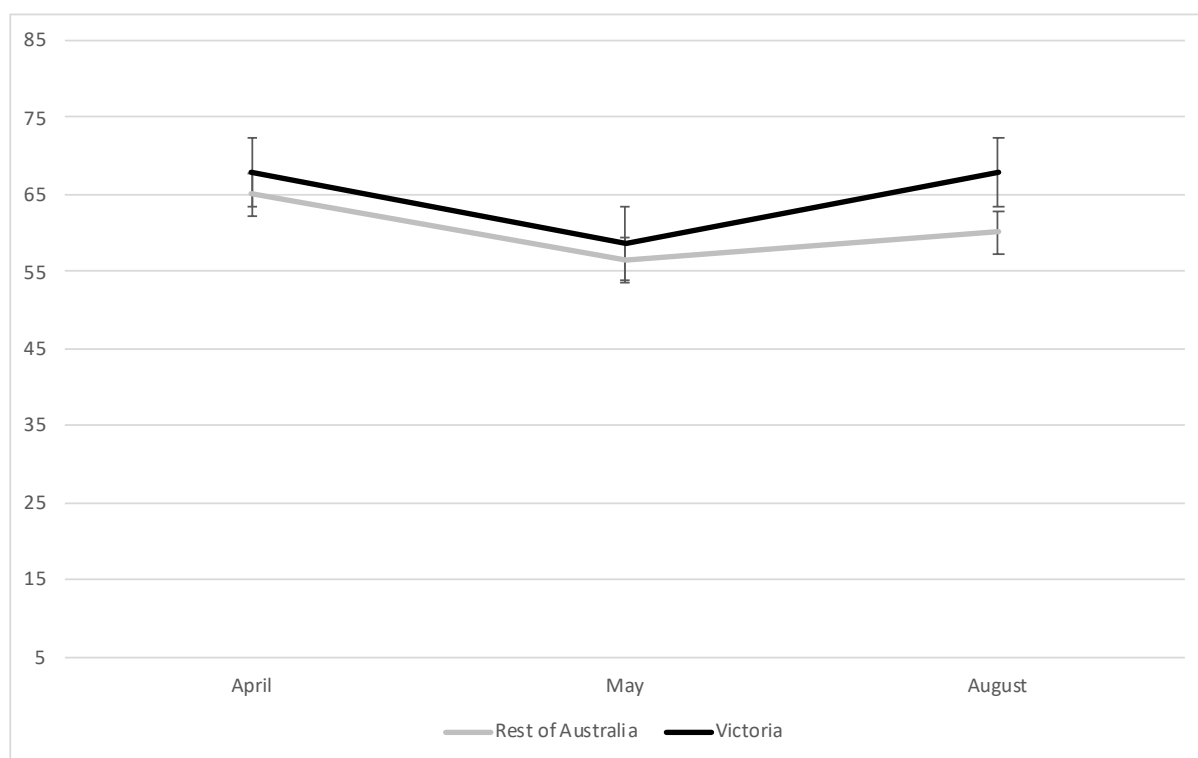


Notes: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate. Restricted to those who completed all four waves of data collection

Source: ANUpoll, April, May and August 2020 and Life in Australia Wave 35, February 2020.

For anxiety and worry, on the other hand, both Victoria and the rest of Australia experienced an increase between May and August 2020, albeit with a slightly larger increase for Victoria (from 58.9 per cent to 68.1 per cent) than for the rest of Australia (56.6 per cent to 60.2 per cent). Prior to the second wave of lockdowns, there was no statistically significant difference between Victoria and the rest of Australia in terms of anxiety and worry, but by August 2020 the difference was both larger and significant.

Figure 14 Anxiety and worry due to COVID-19 in Victoria and the rest of Australia, April, May, and August 2020



Notes: The “whiskers” on the lines indicate the 95 per cent confidence intervals for the estimate. Restricted to those who completed all four waves of data collection

Source: ANUpoll, April, May and August 2020.

7 Concluding comments

This paper provides estimates of how outcomes of the Australian population are tracking as the COVID-19 pandemic continues to impact Australia. At the time of data collection in August 2020, while experiencing a second wave of COVID-19 infections, Australia still has moderate infection rates of COVID-19 and a low mortality rate relative to other comparable countries. Furthermore, the second wave of COVID-19 infections have largely been confined to Victoria. In response to the rising and relatively high infection rate in Victoria, from early August people living in metropolitan Melbourne have been subject to very stringent physical distancing and social isolation measures, with those in the rest of the State under less strict, but still quite stringent lockdown conditions.

This paper uses data collected as part of the ANU Centre for Social Research and Methods COVID-19 impact monitoring program. Surveys have been conducted with the same group of respondents in January and February just before the COVID-19 pandemic started in Australia and in April, May and August after the pandemic started to impact in Australia in major way. This is, as far as we are aware the only longitudinal survey of a large, representative sample of Australians with information from the same individuals prior to and during the Coronavirus pandemic.

We provide the first nationally representative population level estimates (as far as we are aware) of COVID-19 testing, showing that in August 2020 about one-in-five Australian adults

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reported having been tested for COVID-19, up from about one-in-twenty in May and about one-in-fifty in April 2020.¹⁰

We show that anxiety and worry due to COVID-19 have increased since their low in May 2020, whereas measures of subjective wellbeing and psychological distress have worsened. Hours worked have increased across Australia since May 2020, but people who are employed are more worried about losing their job than they were in May 2020.

We provide the first longitudinal analysis of the effect of the second wave of infections and associated lockdown measures on the outcomes of Victorians, by comparing the relative change in outcomes for people from that jurisdiction to the change in the rest of Australia, controlling for other observable characteristics. We find a relative worsening in outcomes for Victoria compared to the rest of Australia between May 2020 and August for six key outcomes in particular: psychological distress; loneliness; life satisfaction; satisfaction with direction of country; expected likelihood of being infected by COVID-19; and hours worked.

We find smaller, but still statistically significant worsening in two additional outcomes: Anxiety and worry due to COVID-19; and the expected probability of losing one's job. We do not find any statistically significant effects on employment; household income per person; unable to pay rent or mortgage on time; and difficulty meeting expenditure on current income.

The COVID-19 pandemic continues to impact Australians physically, economically, and emotionally. Unlike in the earlier period of the pandemic, there has been a significant divergence in a range of outcomes between Victoria and the rest of the country. It is only with high quality, longitudinal data from a representative sample of the Australian population that we are able to monitor outcomes, identify those who are doing it toughest, and target support to those that need it most.

Appendix tables

Appendix Table 1a Relationship between living in Victoria and select outcome variables, controlling for lagged dependent variables

Explanatory variables	Psychological distress [†]		Loneliness*		Life satisfaction [†]		Satisfaction with direction of country*		Anxious and worried due to COVID-19*		Likely to be infected by COVID-19*	
	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.
Lagged dependent variable	0.746	***	1.514	***	0.627	***	1.613	***	1.548	***	1.325	***
Victoria	0.448	***	0.228	***	-0.610	***	-0.313	***	0.153	***	0.226	***
Female	0.418	**	0.137	***	-0.184	***	0.015	***	0.305	*	-0.009	***
Aged 18 to 24 years	0.709	**	0.328	*	0.147	**	-0.248		-0.175	***	-0.092	
Aged 25 to 34 years	0.639		0.274	*	-0.066		0.033		0.076		-0.119	
Aged 45 to 54 years	0.112	*	0.119	**	-0.227		-0.116		-0.035		-0.128	
Aged 55 to 64 years	0.331		0.028		0.035	*	-0.113		-0.011		0.004	
Aged 65 to 74 years	-0.359		-0.154		0.101		-0.037		0.030		-0.359	
Aged 75 years plus	-0.330		0.178		0.358		0.025		0.002		-0.145	***
Indigenous	1.271		0.293		0.104	***	-0.130		-0.253		-0.105	
Born overseas in a main English speaking country	-0.078	*	-0.032		0.062		0.046		-0.118		0.049	
Born overseas in a non-English speaking country	-0.047		0.113		0.143		0.128		-0.069		0.059	
Speaks a language other than English at home	0.216		0.069		-0.121		0.385		0.112		0.148	
Has not completed Year 12 or post-school qualification	0.105		-0.128		0.130		0.053	***	-0.216		-0.103	
Has a post graduate degree	0.592		-0.170		0.122		-0.038		-0.045	*	-0.182	
Has an undergraduate degree	-0.068	*	-0.153		0.216		-0.044		-0.259		-0.127	
Has a Certificate III/IV, Diploma or Associate Degree	0.126		-0.087		0.028	*	-0.066		-0.148	**	-0.097	
Lives in the most disadvantaged areas (1st quintile)	0.100		-0.076		0.178		-0.064		0.118		-0.069	
Lives in next most disadvantaged areas (2nd quintile)	-0.560		-0.203		0.134		-0.013		0.198		0.006	
Lives in next most advantaged areas (4th quintile)	-0.354	*	-0.300	*	0.115		0.092		0.213	*	-0.006	
Lives in the most advantaged areas (5th quintile)	-0.244		-0.233	***	0.125		0.041		0.137	*	0.083	
Lives in a non-capital city	-0.272		-0.162	**	0.054		0.210		-0.068		-0.013	
Constant	2.690		-0.813	*	2.327		-0.573	**	-0.637		-0.777	
Sample size	2,765		2,769		2,606		2,767		2,770		2,598	

Source: ANUpoll, April, May and August 2020.

Notes: [†]Linear regression model or *Probit model. The base case individual did not live in Victoria; is female; aged 35 to 44; 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); and lives in a capital city. 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 *.

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Appendix Table 1b Relationship between living in Victoria and select outcome variables, controlling for lagged dependent variables

Explanatory variables	Employed*		Hours worked*		Probability of losing job ⁺		Per person household income ⁺		Unable to pay mortgage or rent on time*		Difficult meeting expenditure on income*	
	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.	Coeff.	Signif.
Lagged dependent variable	2.673	***	0.75	***	0.54	***	0.77	***	1.373	***	1.773	***
Victoria	-0.181	***	-1.54	***	3.22	***	-6.31	***	-0.135	***	0.017	***
Female	-0.093		-1.67	**	2.37	*	-28.25		-0.131		0.087	
Aged 18 to 24 years	-0.002		-0.16	***	-1.32		-47.81		0.075		-0.322	
Aged 25 to 34 years	-0.054		0.07		-1.24		38.47		0.084		0.004	
Aged 45 to 54 years	0.041		1.20		-0.04		-6.76		-0.094		-0.053	
Aged 55 to 64 years	-0.528		-2.84		0.75		33.27		-0.187		-0.042	
Aged 65 to 74 years	-0.968	***	-7.07	***	2.87		-42.50		-0.681		-0.046	
Aged 75 years plus	-1.488	***	-7.85	***	-16.82		-23.18	*	-0.858	***	-0.260	
Indigenous	-0.412	***	-0.43	***	4.44	**	-13.12		0.151	***	-0.066	
Born overseas in a main English speaking country	0.276		-0.23		3.51		2.83		0.090		-0.105	
Born overseas in a non-English speaking country	-0.429	**	-1.44		3.61		-23.54		0.401		0.210	
Speaks a language other than English at home	0.368	**	0.58		-0.27		1.53		0.061	***	0.082	
Has not completed Year 12 or post-school qualification	0.104	**	1.39		-6.50		-49.38		0.235		-0.087	
Has a post graduate degree	0.020		2.11		-6.51		11.79	*	0.025		-0.429	
Has an undergraduate degree	0.097		2.53	*	-7.18	**	49.37		0.053		-0.365	**
Has a Certificate III/IV, Diploma or Associate Degree	-0.021		0.93	***	-2.40	***	-17.89		0.335		-0.075	**
Lives in the most disadvantaged areas (1st quintile)	-0.325		-0.88		-0.04		-23.12		-0.162	**	-0.091	
Lives in next most disadvantaged areas (2nd quintile)	-0.288	*	-2.26		-0.05		18.95		0.032		-0.280	
Lives in next most advantaged areas (4th quintile)	-0.230	*	-0.89	***	-0.07		74.38		0.211		-0.149	**
Lives in the most advantaged areas (5th quintile)	0.027		0.19		1.34		21.44	***	0.012		-0.336	
Lives in a non-capital city	0.054		0.07		1.48		8.26		0.020		-0.070	**
Constant	-0.579		8.84		12.02		151.89		-1.569		-1.237	
Sample size	2,759		2,727		1,348		2,412		2,748		2,762	

Source: As for Appendix Table 1a.

Notes: As for Appendix Table 1a.

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Endnotes

- 1 <https://ourworldindata.org/coronavirus-data#tests-cases-and-deaths>
- 2 The February wave of data collection was conducted as Australian social Survey, in parallel with the European social Survey
- 3 Those aged 75 years or older are excluded from the regression model.
- 4 These results hold when we model the expected job loss in August 2020 as a function of expected job loss in May 2020, demographic, socioeconomic (including education) and geographic variables.
- 5 In seasonally adjusted chain volume terms.
- 6 The specific income question that we asked in February, April and May 2020 was ‘Please indicate which of the following describes your household's total income, after tax and compulsory deductions, from all sources?’ 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). Respondents are then asked to choose from one of ten income categories. These categories have been converted into 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.
- 7 The K6 comprises six items and has been widely used and validated in many epidemiological studies (e.g., Kessler et al., 2002).
- 8 We also control for those aged 65 to 74 years and aged 75 years and over, but drop other age variables or sex as they are not statistically significant.
- 9 Jurisdictional migration was not captured in the data, but is negligible between May and August.
- 10 There is some other survey data on physical distancing, but as far as we are aware none of been undertaken using a probability based national representative survey. For example the numbers reported by the Doherty Institute (Meagher et al. 2020) are from the non-probability YouGov online panel.