
# Data trust and data privacy in the COVID-19 period

## ANU Centre for Social Research and Methods

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## Abstract

In this paper, we focus on data trust and data privacy, and how attitudes may be changing during the COVID-19 period. We also look at the implications of these changes for the take-up and effectiveness of the COVIDSafe App, a mobile phone-based application that was designed to assist in the identification of people who may have unknowingly come into contact with someone who has been infected by COVID-19. On balance, it would appear that Australians are more trusting of organisations with regards to data privacy and less concerned about their own personal information and data than they were prior to the spread of COVID-19. The major determinant of this change in trust with regards to data was changes in general confidence in government institutions. Despite this improvement in trust with regards to data privacy, trust levels are still low.

Trust in data privacy is strongly predictive of the probability of downloading the app. We also find that the age group with the greatest reported level of downloading was 55 to 74 year olds and those in the most advantaged areas are the most likely to have downloaded. Politically, there were no differences between Labor and Coalition voters though we do find a lower probability for those who would not have voted for one of the two major parties. Finally, we also showed a number of other behavioural and attitudinal determinants of COVIDSafe usage. Those who were generally confident in the government, thought it was likely they would be infected, were less populist, more altruistic, and more patient were all more likely to have used the app.



## Acknowledgements

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# Executive summary

In this paper, we focus on data trust and data privacy, and how attitudes may be changing during the COVID-19 period. We also look at the implications of these changes for the take-up and effectiveness of the COVIDSafe App, a mobile phone-based application that was designed to assist in the identification of people who may have unknowingly come into contact with someone who has been infected by COVID-19. Specifically, we attempt to answer four research questions:

1. To what extent have attitudes towards data privacy and data security changed during the COVID-19 period?
2. What factors have been associated with this change?
3. To what extent are attitudes towards data privacy and data security associated with usage of the COVIDSafe app?
4. What are the other determinants of usage of the app?

## Data and methods

The paper is primarily based on the May 2020 ANUpoll which collected data from a representative sample of the Australian population from Life in Australia™, Australia's only probabilistic, longitudinal panel.

Most of the panel members who completed the May 2020 ANUpoll had also completed surveys in January, February and April 2020. That is, they are the same individuals and the longitudinal nature of our data allows us to look at changes through time in circumstances at the individual level from just prior to the spread of COVID-19 through to the first few months of the pandemic. We also use information from the same individuals surveyed in October 2018 and October 2019.

The May 2020 ANUpoll collected information from 3,249 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.

## Findings

Australians are more trusting of organisations with regards to data privacy and less concerned about their own personal information and data than they were prior to the spread of COVID-19. Between October 2019 and May 2020, the decline in an index of concerns with regards to personal information and data was equivalent to around one-fifth of a standard deviation of the baseline (October 2019) whereas the decline in an index of trust in organisations regarding data privacy was equal to slightly over one half of a standard deviation of the baseline (October 2018).

We found some demographic variables were associated with change in attitudes. However, perhaps even more importantly, changes in generalised confidence in government institutions and, to a lesser extent, a positive experience accessing services during the COVID-19 period were highly predictive of improvements in trust.

Our index of trust in data privacy is strongly predictive of the probability of downloading the COVIDSafe app suggesting that if the institutions involved in designing, delivering, and utilising data from the COVIDSafe app were more trusted, then a far higher percentage of people would have downloaded the app.

Contrary to expectations that older Australians would be reluctant users, we find that the age group with the greatest reported level of downloading the app was 55 to 74 year olds.

Politically, there were no differences between Labor and Coalition voters (as identified longitudinally prior to the spread of COVID-19) in downloading of the app, though we do find a lower probability for those who would not have voted for one of the two major parties.

We also showed a number of other behavioural and attitudinal determinants of COVID-19 usage. Those who were generally confident in the government, thought it was likely they would be infected by COVID-19, were less populist, more altruistic, and more patient were all more likely to have used the app. This information can be used to help frame future messages, and to help identify groups who may need specific targeting.

## Concluding comments

There are large negative externalities of eroding trust amongst the general population in the privacy of data. Taking risks, not using the data in a safe way, or not being completely transparent undermines trust in the data ecosystem, which makes policy interventions harder, less effective, and more costly.

# 1 Introduction and overview

In this paper, we focus on data trust and data privacy, and how attitudes may be changing during the COVID-19 period. We also look at the implications of these changes for the take-up and effectiveness of the COVIDSafe App, a mobile phone-based application that was designed to assist in the identification of people who may have unknowingly come into contact with someone who has been infected by COVID-19.

A characteristic of the ongoing pandemic has been the constant reporting of data, almost in real time. There is daily reporting of epidemiological data on the number of new cases of COVID-19, number of deaths, number of tests and the reproductive rate of the virus. The data across Australian states/territories or even within states are often compared as well as how Australia compares to other countries. The health data has also been supplemented by an increasing focus on and critique of economic data, in particular measures of labour market under-utilisation as the economic consequences of imposed and spontaneous physical distancing behaviour have spread.

All of this aggregate data comes from individuals or individual businesses. This includes individuals who have been infected, individuals who have been tested and found to be negative, individuals who have lost their job, and businesses that have experienced significant economic harm. While a significant amount of data is being publicly released, there are actually very few de-identified individual level data sets being released in Australia (apart from those collected in academia, and even there not all are being released) and much of the modelling done by or commissioned by Australian governments has not been released. An important public policy question relates to the extent to which more data and a broader range of data, particularly individual level data, should be released.

Data about individuals is collected by both government and non-government organisations and increasingly we are generating electronic data about our lives that is being held by businesses. For example, the shift towards electronic payments, which has accelerated post COVID-19 (De Vito and Gomez 2020), has created a wealth of data for those institutions that administer the electronic payments system, some of which have been utilised for public policy purposes (Baker et al. 2020). People are utilising social media more often, partly because of an increase in demand for information about COVID-19, but also because of restrictions on other forms of social interaction (Cinelli et al. 2020). People's movements have also been tracked, with that information used to predict the spread of the Coronavirus, as well as the effectiveness of physical distancing policies (Zhou et al. 2020).

There have also been a number of direct demands for our data in order to help with the tracking and tracing of contact with those who are suspected of having been infected. Using analogue technology, we are often asked to give our name and telephone number and/or email address on pen and paper when visiting commercial establishments. At a national level, a number of countries including Australia have designed or endorsed tracking applications on mobile phones that record people who an individual has come into close proximity with, using a variety of technologies and methods. In Australia, the Commonwealth and State/Territory Governments have implemented and strongly encouraged the use of COVIDSafe, a bespoke technology that uses Bluetooth to (anonymously) capture potential contacts between individuals (Thomas et al. 2020; Greenleaf and Kemp 2020; Leins et al. 2020).

While there are still significant limits on accessing data from outside of government, there are examples of data being shared across organisations for both commercial, research, and policy

purposes. Witness, for example, the use of payroll tax data by the Australian Bureau of Statistics to monitor the changing labour market during the COVID-19 pandemic (ABS 2020a), or the use of credit card data by the Commonwealth Bank to track changes in consumption patterns.[1] While this data analysis and data sharing has potential benefits for policy development, there is also an increased privacy risk. Furthermore, it is likely (but difficult to measure) that a data breach or misuse of personal data by an organisation will result in people having lower levels of trust in the ability of other organisations to protect their data and to use it appropriately.

For all this data collection and aggregation to be effective, it requires individuals to willingly provide their personal information, consenting explicitly or implicitly. The data environment during the COVID-19 pandemic has the potential to be affected by the public's views on the safety of their own data, as well as shape these views. The aim of this paper is to capture such relationships using high-quality longitudinal survey data.

This paper seeks to answer the following questions:

1. To what extent have attitudes towards data privacy and data security changed during the COVID-19 period?
2. What factors have been associated with this change?
3. To what extent are attitudes towards data privacy and data security associated with usage of the COVIDSafe app?
4. What are the other determinants of usage of the app?

The remainder of the paper is structured as follows. In the next section we discuss the data used to answer the above research questions. In Section 3 we present data on trust in organisations regarding data privacy, making comparisons with longitudinal data from October 2018. In Section 4 we look at concerns individuals have with their own personal information and data, making longitudinal comparisons again, though this time with data from October 2019. In Section 5 we look at the factors associated with having downloaded the COVIDSafe app. Finally, in Section 6 we provide some concluding comments.

## 2 Data collection and data items

The paper is primarily based on the May 2020 ANUpoll (the 34th ANUpoll) which collected data from a representative sample of the Australian population from Life in Australia™, Australia's only probabilistic, longitudinal panel.[2] Most of the panel members who completed the May 2020 ANUpoll (the 38th Wave of data collection on Life in Australia™) had also completed the April 2020 ANUpoll (Wave 37) and the February survey (Wave 35). That is, they are the same individuals. The longitudinal nature of our data allows us to look at the changes in outcomes circumstances at the individual level.[3] The May 2020 ANUpoll collected information from 3,249 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.[4]

The vast majority of respondents completed the surveys online, with a small proportion of respondents enumerated over the phone. For the May 2020 ANUpoll, about half of respondents (1,555) completed the survey on the 12th or 13th of May, with the remaining respondents interviewed between the 14th and 24th of May.[5] Of those individuals who completed the May 2020 ANUpoll, 91.6 per cent or 2,976 individuals had completed the February 2020 survey. The linkage rate was slightly higher with the April 2020 ANUpoll with

2,984 individuals or 91.8 per cent of the May respondents having completed the survey in the previous month. Data for this survey is available through the Australian Data Archive (doi:10.26193/GNEHCQ).

We also use information from individuals surveyed in October 2018 (Wave 21, Data Governance ANUpoll) and October 2019 (Wave 31, Crime and Justice ANUpoll). Of those individuals who completed the May 2020 ANUpoll, 55.4 per cent or 1,800 individuals had completed the February 2020 survey. The linkage rate was slightly lower with the October 2019 ANUpoll with 1,651 individuals or 50.8 per cent of the May respondents having completed that survey. The proportion of respondents to the May 2020 ANUpoll who responded to the 2018 and 2019 surveys is much lower because between October-December 2019, the panel was refreshed with 347 panellists being retired from the panel and 1,810 new panellists being recruited. Neither the retired nor new panellists are available in the linked sample.[6]

There were a number of questions asked on the May 2020 ANUpoll that relate to data trust and data privacy.

First, respondents were asked: 'On a scale of 1 to 10, where 1 is no trust at all and 10 is trust completely, how much would you trust the following types of organisations to maintain the privacy of your data?' This question was asked in October 2018 and May 2019. We asked about eight types of organisations, with the order randomised. These were:

a) The Commonwealth Government in general
b) The State / Territory Government where you live
c) Banks and other financial institutions
d) Social media companies (for example Facebook, Twitter, Google)
e) Universities and other academic institutions
f) Telecommunications companies
g) Companies that you use to make purchases online
h) The Australian Bureau of Statistics

Secondly, respondents were asked: 'Please indicate how much you agree or disagree with the following statements.' This question was asked in October 2019 and May 2020. The statements were randomised, with response options of "totally agree; tend to agree; tend to disagree; and totally disagree". Statements included:

a) You are concerned that your online personal information is not kept secure by websites
b) You are concerned that your online personal information is not kept secure by public authorities
c) You avoid disclosing personal information online
d) You believe the risk of becoming a victim of cybercrime is increasing
e) You are able to protect yourself sufficiently against cybercrime, e.g. by using antivirus software on

Thirdly, respondents were asked: 'Cybercrimes can include many different types of criminal activity. How concerned are you personally about experiencing or being a victim of the following situations…?' This question was asked in October 2019 and May 2020. Response options were "Very concerned; Fairly concerned; Not very concerned; and Not at all concerned" and the two specific situations that were asked about (with random ordering) were:

a) Identity theft (somebody stealing your personal data and impersonating you)

b) Receiving fraudulent emails or phone calls asking for your personal details (including access to your computer, logins, banking or payment information)

While the above questions are exactly the same as those asked in the previous waves, it should be noted that the questions leading up to them were quite different. There might therefore be some priming effects and thus some caution in interpreting changes over time is warranted, especially if the changes are only small.

Finally, in May 2020 we asked a number of specific questions with regards to COVIDSafe. The first was 'Have you installed the COVIDSafe app on your phone?' with three potential response options:

1. Yes
2. No, I tried but could not install the app
3. No, I have not installed the app

For those who had installed the app or had tried but not been able to install the app were then asked 'What is the main reason you installed/tried to install the COVIDSafe app?' with the following options:

1. I want to keep myself safe
2. I want to keep others safe
3. It may help end social distancing restrictions more quickly

96. Any other reason (please specify)

Finally, for those who said that they have not installed and have not tried to install the app, we asked 'What is the main reason you haven't installed the COVIDSafe app?' with the following options:

1. I don't have a smart phone
2. I don't install apps
3. I can't install apps
4. I don't trust the government with my data
5. I don't trust the safety of the app on my smartphone
6. I don't want the government tracking me

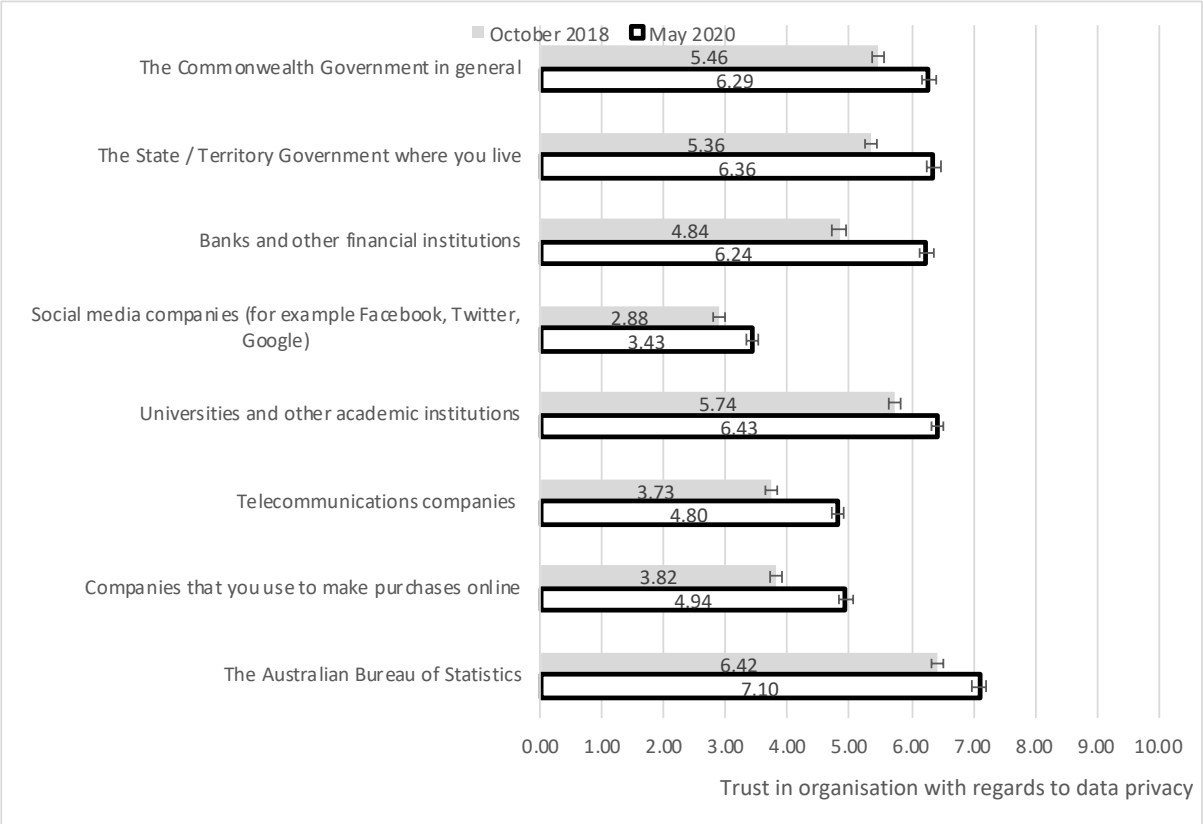
96. Any other reason (please specify)

# 3 Trust in in organisations to maintain data privacy

This section reports data on Australian's level of trust in different types of organisations to maintain the privacy of their personal data and how this has changed since October 2018. There has been a statistically significant increase in the extent to which Australian's say that they trust all eight types of organisations asked about to maintain data privacy (Figure 1). The largest improvements, of just under 30 per cent, was in the level of trust in for companies that are used to make purchases online, banks and other financial institutions, and telecommunications companies.

The highest level of trust is in the Australian Bureau of Statistics, followed by universities and other academic institutions, state and territory governments and the Commonwealth Government. On the other hand, very low levels of trust social media companies maintaining data privacy are reported.

Figure 1 Average trust in types of organisations to maintain privacy of data, October 2018 and May 2020




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

Source: ANUpoll, October 2018 and May 2020.

## 3.1 Factors associated with trust in organisations to maintain data privacy

There is a very strong correlation between trust in one type of organisation and trust in many of the other types of organisations. The strongest correlation (Appendix Table 1) is between trust in the Commonwealth Government and trust in State/Territory governments whereas the weakest correlation is between trust in social media companies and trust in the Australian Bureau of Statistics.

This high correlation means that the responses to the question about trust in the ability of each type of organisation to maintain data privacy can be used to construct an overall index of trust. The index is constructed using principal components analysis[7] and standardised to have a mean of zero and standard deviation of one across the sample. Principal components analysis is an appropriate technique to use given that the index is used in this paper as a point in time measure. A higher value of the index indicates that the individual has a higher level of trust in the overall ability of the different types of organisations to maintain data privacy.

Table 1 reports estimates, from a regression model, of the associations between individual level demographic and socioeconomic characteristics and geographic variables and overall level of trust in organisations to maintain data privacy. Females are more likely to trust organisations to maintain the privacy of their data (relative to males), as are those aged 65 years and over (compared to those aged 35 to 44 years). Indigenous Australians are significantly and substantially less likely to trust organisations with their data, with the difference almost exactly equal to one-half of a standard deviation. This potentially reflects a past, negative experience with government for Indigenous Australians, and is a potential

reason for the strong recent push for data sovereignty amongst Indigenous peoples in Australia and internationally (Kukutai and Taylor 2016). Those who speak a language other than English at home are more trusting, whereas those who have not completed Year 12 are less trusting than those who have completed Year 12, with the difference equal to around one-quarter of a standard deviation. We found similar associations when we analysed the October 2018 data as a cross-sectional dataset (Biddle et al. 2018).

Table 1 Factors associated with overall trust in organisations to maintain privacy of data, May 2020

| | Coeff. | Signif. |
|---|---|---|
| Female | 0.092 | ** |
| Aged 18 to 24 years | -0.010 | |
| Aged 25 to 34 years | -0.100 | |
| Aged 45 to 54 years | 0.014 | |
| Aged 55 to 64 years | 0.027 | |
| Aged 65 to 74 years | 0.174 | ** |
| Aged 75 years plus | 0.345 | *** |
| Indigenous | -0.499 | *** |
| Born overseas in a main English-speaking country | -0.067 | |
| Born overseas in a non-English speaking country | -0.043 | |
| Speaks a language other than English at home | 0.216 | *** |
| Has not completed Year 12 or post-school qualification | -0.236 | *** |
| Has a post graduate degree | -0.050 | |
| Has an undergraduate degree | 0.037 | |
| Has a Certificate III/IV, Diploma or Associate Degree | -0.043 | |
| Lives in the most disadvantaged areas (1st quintile) | 0.015 | |
| Lives in next most disadvantaged areas (2nd quintile) | 0.032 | |
| Lives in next most advantaged areas (4th quintile) | 0.064 | |
| Lives in the most advantaged areas (5th quintile) | 0.122 | * |
| Lives in a non-capital city | 0.043 | |
| Constant | -0.108 | |
| Sample size | 3,017 | |

Notes: Linear 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 *.

Source: ANUpoll, May 2020.

## 3.2 Factors associated with change in trust in organisations to maintain data privacy

By linking the data through time, we are able to measure the individual level factors associated with changes in trust in organisations to maintain data privacy between 2018 and 2020. Change in trust of organisation to maintain data privacy is measured using the change between 2018 and 2020 in the average level of trust across the eight types of organisations asked about. The average e is used rather than an index generated from principal components analysis because the principal components-based index would, by construction, have the same average in both years and therefore not be useful for measuring change. The average overall level of trust in organisations to maintain data privacy increased from 4.78 to 5.70 between 2018 and 2020 based on the full samples for each year and by 0.81 on average for the sample that responded to both the 2018 and 2020 surveys (i.e., the longitudinal sample).

In order to estimate the factors associated with changes between 2018 and 2020 in level of trust in organisation to maintain data privacy a regression model is used. Two models are estimated. The first model includes as explanatory variables individual level demographic and socio-economic characteristics and geographic variables. The second model includes additional variables derived from the January, February, April and May 2020 surveys that relate to people's potential determinants of trust. There are a number of potential reasons why people's trust measures might improve, including their general view on the organisations involved (that is, not specifically related to data), specific changes in policy or practice related to data, and the individual's own experience. While the data we use in our analysis was not designed to answer these questions directly, there are a number of variables that do capture these potential determinants of change.

Specifically, the first set of variables measures change in average confidence in three institutions – the Federal Government in Canberra; the public service; and the State/Territory Government in which the person lives. Values range from 1 (none at all) to 4 (a great deal of confidence). We include baseline measures of confidence in January to control for any potential changes between October 2018 and just prior to the spread of COVID-19, as well as the change between January 2020 and April 2020, with the average change for the linked sample being 0.209. Unfortunately, we do not have any measures of confidence in other types of organisations included in the trust in data privacy measure

The second set of variables measure social cohesion at a more individual level. In both February 2020 and April 2020, participants were asked whether most people can be trusted; whether people are fair (as opposed to taking advantage of others); and whether people are helpful. The responses are given on a scale from 0 to 10 where 0 is the most negative assessment and 10 the most positive. We include the average value across these three measures in February 2020, as well as the change in the average between February and April 2020 (with the average change in the average being 0.297).

The final two variables relates to whether the respondent had sought help for a list of issues and had no difficulties accessing services, whether they had sought help but had difficult accessing services or whether they had not sought help (either because they did not have any issues or they had issues but had not sought help) the omitted category in the regression model).[8]

Three key sets of findings emerge from the analysis presented in Table 2. First, there are a number of demographic variables that are associated with changes in the overall level of trust in organisations to maintain privacy of data. Without controlling for the other government-related variables (i.e. focusing on Model 1), females, those aged 45 years and over, and those who live in relatively advantaged areas have increased their trust with regards to data privacy between October 2018 and May 2020. This cannot be directly attributable to COVID-19 as there have been other changes in Australia over the period. However, it does give *prima facie* evidence that *improvements* in trust during COVID-19 have been concentrated in certain groups, not just that there is variation in trust across Australia.

The second important thing to note is that of the three sets of variables included in Model 2, levels and changes in confidence in government institutions have the strongest association with change in trust. There is a positive and not insubstantial coefficient for the positive interaction with service providers variable, but it is not quite statistically significant at the standard levels of significance (p-value = 0.163). With a larger sample size, we may have been

able to obtain a more precise estimate of this relationship. At the moment though, there is only weak evidence that a positive interaction with service providers during the COVID-19 pandemic has led to an improvement in trust with regards to data privacy.

There is much stronger evidence that improvements in overall confidence in government institutions is associated with improvements in trust with regards to data privacy. Average levels of confidence in January 2020 is associated with improvements in trust between October 2018 and May 2020. This may be due to reverse causality (change in trust with regards to data leading to changes in confidence in government), or it may reflect the effect of any changes in confidence from October 2018 to January 2020. Unfortunately, we do not have data from the same individuals on confidence in government prior to October 2018 in order to measure this directly.

The finding that changes in confidence in government between January 2020 and April 2020 is also associated with changes in trust in organisations does, however, suggest that the generally positive view that individuals had towards government in Australia during the first few months of the pandemic is a key predictor of the improvement in trust with regards to data privacy (Evans et al. 2020). The counterpoint to that though is that if views towards the government with regards to how the COVID-19 pandemic is being handled worsen, then trust in organisations with regards to data also might change. This is reinforced by the final point from Table 2, which is that measures of social cohesion (that is, the extent to which people trust other Australians) were not statistically significant and that the predicted change in trust for the omitted category declined between Model 1 and Model 2. Improvements in trust may not be permanent and enduring if the general positive views towards government because of the relatively low infection and mortality rate at the early stages of the COVID-19 pandemic do not continue.

Table 2 Factors associated with change in trust in types of organisations to maintain privacy of data (change between October 2018 and May 2020)

| Explanatory variables | Model 1 | | Model 2 | |
|---|---|---|---|---|
| | Coeff. | Signif. | Coeff. | Signif. |
| Confidence in government institutions – January 2020 | | | 0.527 | *** |
| Change in confidence in government institutions – January to April 2020 | | | 0.292 | ** |
| Social cohesion – February 2020 | | | 0.001 | |
| Change in social cohesion – February to April 2020 | | | 0.003 | |
| No difficulty accessing services (May 2020) | | | 0.167 | |
| Difficulty accessing services (2020) | | | -0.004 | |
| Female | 0.210 | ** | 0.081 | |
| Aged 18 to 24 years | -0.389 | | -0.546 | * |
| Aged 25 to 34 years | -0.297 | | -0.034 | |
| Aged 45 to 54 years | 0.296 | * | 0.377 | ** |
| Aged 55 to 64 years | 0.327 | ** | 0.259 | |
| Aged 65 to 74 years | 0.742 | *** | 0.555 | *** |
| Aged 75 years plus | 0.606 | *** | 0.514 | ** |
| Indigenous | -0.016 | | 0.030 | |
| Born overseas in a main English-speaking country | -0.058 | | -0.091 | |
| Born overseas in a non-English speaking country | -0.160 | | -0.181 | |
| Speaks a language other than English at home | -0.031 | | -0.156 | |
| Has not completed Year 12 or post-school qualification | -0.088 | | 0.067 | |
| Has a post graduate degree | -0.168 | | 0.021 | |
| Has an undergraduate degree | 0.119 | | 0.244 | |
| Has a Certificate III/IV, Diploma or Associate Degree | 0.034 | | 0.149 | |
| Lives in the most disadvantaged areas (1st quintile) | 0.260 | | 0.219 | |
| Lives in next most disadvantaged areas (2nd quintile) | 0.042 | | 0.106 | |
| Lives in next most advantaged areas (4th quintile) | 0.166 | | 0.098 | |
| Lives in the most advantaged areas (5th quintile) | 0.394 | *** | 0.340 | * |
| Lives in a non-capital city | -0.045 | | -0.032 | |
| Change in trust for base case | 0.377 | | 0.267 | |
| Sample size | 1,659 | | 1,302 | |

Notes: Linear Regression Model. The base case individual for Model 1 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. For Model 2, the base case is further defined as having the average levels of confidence in government institutions as observed in January 2020 (2.47) and the average levels of social cohesion as observed in February 2020 (5.65), but no change in these measures from the baseline until April.

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, October 2018, January 2020, April 2020, and May 2020 and Life in Australia™ February 2020.

# 4 Level of concern regarding personal data and information

While trust in organisations to maintain data privacy is a somewhat abstract concept, the way in which people make decisions with regards to their own personal data may also be impacted on by more immediate and direct threats and concerns. There have been some reductions in concern with regards to data breaches and data privacy with individual's own data between October 2019 and May 2020 (Figure 2). However, the change has not been as large and

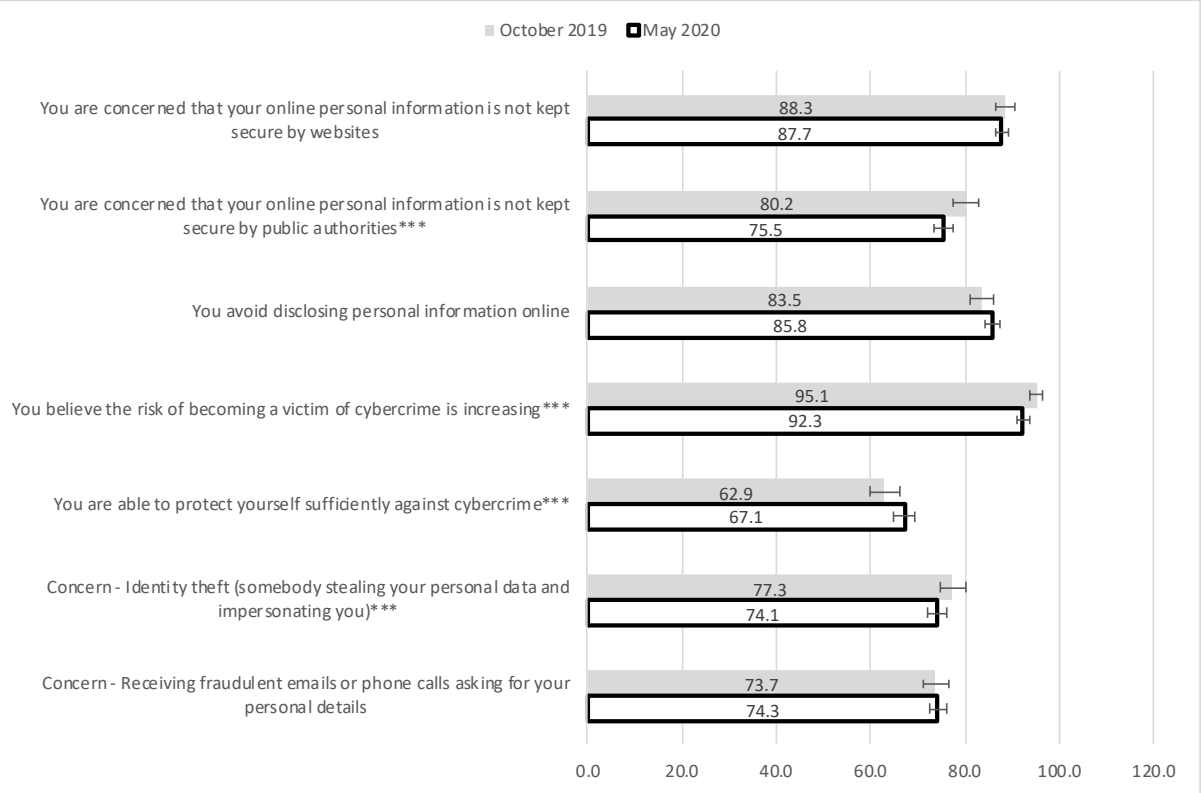
consistent as for trust in organisations (possibly because the change in level of concern about personal data and information is measured over a shorter time period).

In May 2020 the highest level of concern was about their personal information not being kept secure by websites (87.7 per cent tend to agree or totally agree that they were concerned about this),with very similar levels of concerns about their information not being kept secure by public authorities (75.5 per cent), identity theft (74.1 per cent) and about receiving fraudulent emails or phone calls asking for personal details (74.3 per cent).

There was a statistically significant decline in concern about public authorities (from 80.2 per cent in October 2019 to 75.5 per cent in May 2020) and no change in in concern about websites in general (from 88.3 per cent in October 2019 and 87.7 per cent in May 2020).

We did not observe any change in self-reported behaviour, with roughly the same percentage of people in May 2020 saying that they avoid disclosing personal information online (85.8 per cent) compared to October 2019 (83.5 per cent). However, there was a significantly smaller per cent of the population who think that the risk of being a victim of cybercrime is increasing (92.3 per cent in May 2020 compared to 95.1 per cent in October 2019) and a significantly larger per cent who feel that they are able to protect themselves against cybercrime (from 62.9 per cent to 67.1 per cent). Finally, there was a small decline in the level of concern about identity theft (77.3 per cent in May 2020 compared to 74.1 per cent in October 2019), but no significant change in concern about receiving fraudulent emails or phone calls.

Figure 2 Per cent of Australians who tended to agree or totally agree that they are concerned about the security of their personal data and information, October 2019 and May 2020




Notes: The "whiskers" on the bars indicate the 95 per cent confidence intervals for the estimate. Differences between October 2019 and May 2020 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, October 2019 and May 2020.

In order to measure the overall level of concern about the security of personal data an index which combines all seven questions (reported in Figure 2) is constructed. The index varies from a value of 7 for those who are least concerned about personal information and data to 28 for those who are most concerned. [9] Between October 2019 and May 2020, the index declined from 21.4 to 20.8, equivalent to around one-fifth of a standard deviation of the baseline (October 2019) data. By comparison, the decline in the aggregate score for the trust in organisations additive index was equal to slightly over one half of a standard deviation.

There is a reasonably strong negative correlation between people's trust in organisations with regards to data privacy and their concern about personal data (coefficient = -0.3039). There is a weaker (though still negative) correlation between changes in the two measures (coefficient = -0.0909). As shown in Table 3, the determinants of concern are also quite different.

A second index is constructed using only the May 2020 survey data based on a principal components analysis.[10] This index is scaled to have a mean of zero and standard deviation of one, with higher values for those who have greater levels of concern. The association between individual level demographic and socio-economic characteristics and geographic variables and the index of concern about security of data and personal information is estimated using a regression model and the results reported in Table 3. Females are estimated to report a lower level of concern than males, which is consistent with the finding from above that they have

more trust in organisations with regards to their own data. The age differences, however, go in opposite directions to what we might expect based on the earlier results. Specifically, although older Australians have a greater level of trust in organisations with regards to data privacy, they are significantly (and substantially) more likely to express concerns with regards to their personal information and data. Specifically, controlling for other factors, those aged 75 years and over had an almost one-half a standard deviation higher value in the index than those aged 35 to 44 years, and an almost three-quarters of a standard deviation higher value than those aged 18 to 24 years. Finally, there are no differences with regards to education or socioeconomic measures, but there are some differences by ethnicity with those born in a non-English speaking country or who speak a language other than English at home being more likely to be concerned.

Table 3 Factors associated with index of concern with regards to security of personal information and data, May 2020

| | Coeff. | Signif. |
|---|---|---|
| Female | -0.096 | ** |
| Aged 18 to 24 years | -0.246 | ** |
| Aged 25 to 34 years | -0.131 | |
| Aged 45 to 54 years | 0.083 | |
| Aged 55 to 64 years | 0.185 | ** |
| Aged 65 to 74 years | 0.353 | *** |
| Aged 75 years plus | 0.446 | *** |
| Indigenous | -0.054 | |
| Born overseas in a main English-speaking country | -0.114 | |
| Born overseas in a non-English speaking country | 0.177 | ** |
| Speaks a language other than English at home | 0.326 | *** |
| Has not completed Year 12 or post-school qualification | 0.114 | |
| Has a post graduate degree | 0.018 | |
| Has an undergraduate degree | -0.091 | |
| Has a Certificate III/IV, Diploma or Associate Degree | 0.108 | |
| Lives in the most disadvantaged areas (1st quintile) | 0.047 | |
| Lives in next most disadvantaged areas (2nd quintile) | -0.061 | |
| Lives in next most advantaged areas (4th quintile) | -0.095 | |
| Lives in the most advantaged areas (5th quintile) | -0.009 | |
| Lives in a non-capital city | -0.015 | |
| Constant | -0.155 | |
| Sample size | 3,029 | |

Notes: Indexed of concern about security of data and personal information is derived using the results of principal component analysis and has a mean of zero and a standard deviation of one.

Linear 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 *.

Source: ANUpoll, May 2020.

There are no demographic or socioeconomic variables that are associated with change in concerns regarding data and personal information, apart from those aged 65 to 74 years having a greater increase than those aged 35 to 44 years. There was also no correlation with generalised confidence in the Federal Government. There was, however, a significant

association with difficulties accessing services. Specifically, those who did not need to access any services in the two months leading up to the May 2020 survey had a decline in the additive index of 0.91. For those who had a need, but had no barriers to access, the decline was equal to 0.97 (difference not statistically significant). However, for those who had barriers to accessing services, we observed an increase in the level of concern regarding personal information and data of 0.13, with that difference statistically significant at the 1 per cent level of significance.

# 5 Download and use of the COVID-safe App

One of the most important mechanisms that public health officials have for controlling the spread of COVID-19 is contact tracing. In Australia, the government has been strongly encouraging Australians' to download and use on their mobile phone the COVIDSafe app which is designed to swap details with other mobile phones which also have the COVIDSafe app active and which it is in close proximity to for more than fifteen minutes. This information is intended to be accessed by public health officials for contract tracing purposes if an individual tests positive to COVID-19.

According to the Australian Government Department of Health website,[11] the app 'is a tool that helps identify people exposed to coronavirus (COVID-19)' that is promised to help the government 'support and protect you, your friends and family.' According to Prime Minister Scott Morrison 'The more people who download this important public health app, the safer they and their family will be, the safer their community will be and the sooner we can safely lift restrictions and get back to business and do the things we love.'[12]

The COVIDSafe app involves the potential sharing of personal information with public health officials and has a potential public health benefit, but has also lead to some privacy concerns. Downloading of the app is voluntary, although some workplaces are strongly encouraging their employees to download and use the COVIDSafe app.

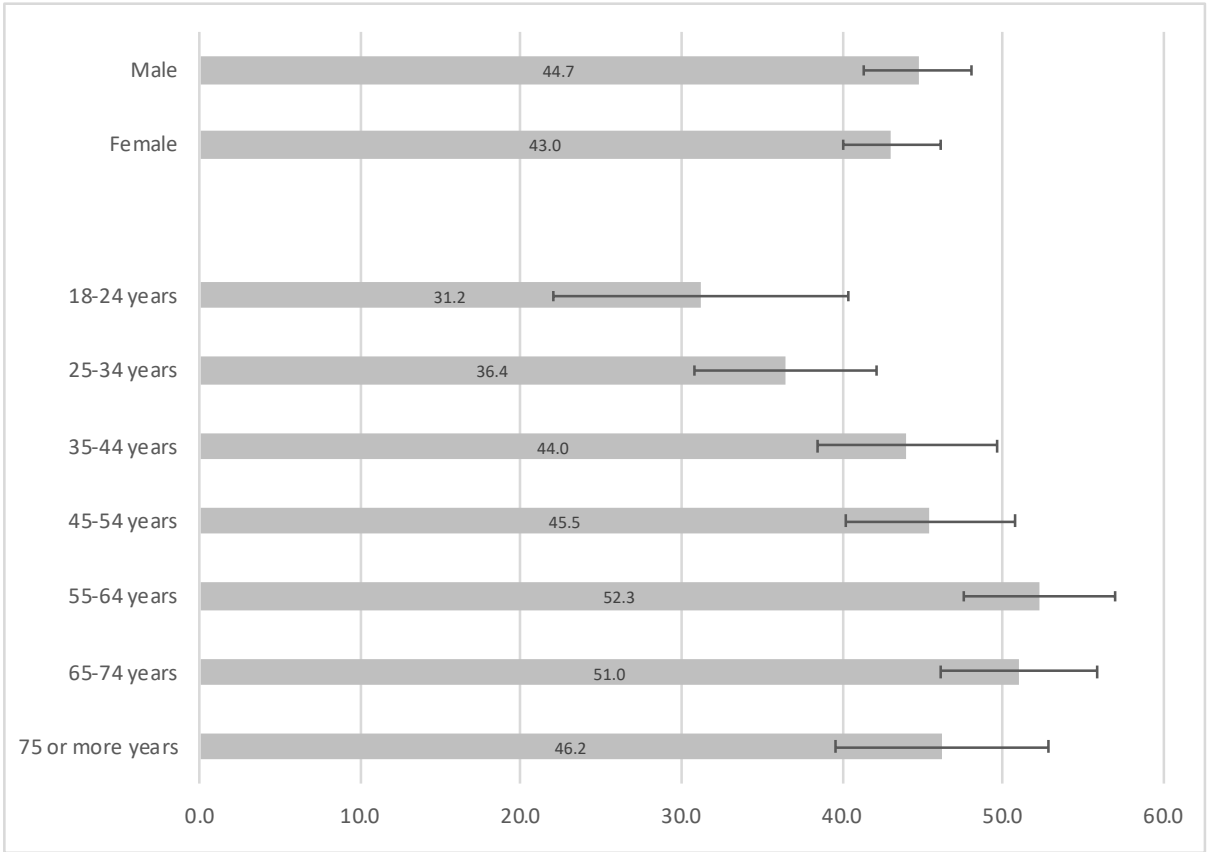
When case numbers were relatively low in Australia, there was understandable uncertainty as to whether the app would be useful from a public health perspective. However, since early July when infection rates have started to increase again (particularly in Melbourne), there has been renewed criticism of the app and the minimal impact it has had on identifying any community transmissions that would not have been able to have been identified otherwise. However, even if these criticisms are accepted this does not of course mean that the app won't end up being very useful.

Irrespective of the ultimate value of the COVIDSafe app for contract tracing purposes, understanding the individual level factors which are associated with a higher level of take-up and use of the app is of value to policy makers. It is likely that there will be a desire for the population to take-up the COVIDSafe app or other similar apps and technologies in the future in in Australia or elsewhere.

Estimates from the May 2020 ANUpoll are that by mid to late May 43.8 per cent of adult Australians had successfully downloaded the COVIDSafe app. An additional 6.1 per cent said that they had tried to do so but could not install, with the remaining 50.2 per cent of Australians not having tried to install the app. Figure 3 shows that there were very few differences between males and females in the proportion who had downloaded the app, but there were large differences across the age distribution. Young Australians were the least likely to have

downloaded (31.2 per cent) with those aged 55 to 64 years the most likely to have downloaded the app (52.3 per cent).

Figure 2 Per cent of Australians who had downloaded the COVIDSafe app, and May 2020




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

Source: ANUpoll, May 2020.

The most common reason given for having downloaded the app was because it may help end social distancing restrictions more quickly. This was given by 37.8 per cent of those who either had installed, or who had tried to install the app. The next most common reason given was that the respondent wanted to keep themselves safe, given by 32.0 per cent of the relevant sample, followed by 22.8 per cent who said they wanted to keep others safe. The remaining 6.0 per cent gave another reason.

For those who had not tried to download the app, the two most common reasons given for not having done so related to trust. 20. 8 per cent said that 'I don't trust the government with my data' with an additional 20.5 per cent saying that 'I don't trust the safety of the app on my smartphone.' A further 16.9 per cent said that they 'don't want the government tracking me.'

Given these self-reported reasons for not having downloaded the app, it is not surprising that one of the key determinants of having downloaded COVIDSafe is trust in government with regards to data privacy. However, as shown in Table 5, there are a number of other important variables, some of which are related to the spread of COVID-19, that also influence take-up of the app.

Specifically, we estimate five models, all with the probability of having downloaded the COVIDSafe app as the dependent variable. The first model includes the basic demographic,

socioeconomic, and geographic variables, first introduced in Table 1. The second model includes the two additive indices discussed in the previous two sections capturing trust in organisations with regards to data privacy and concerns for personal information and data respectively. The third model includes the background variables, as well as the party (or party grouping) that the individual said they would have voted for in January if an election was held then.

In the fourth model, we include all the variables from Models 1-3, but also introduce a range of other variables related in part to the self-reported reasons for downloading the app described above. Where possible, we include variables that were asked before the introduction of the app, in order to maximise the likelihood that the causal direction flows from the independent to the dependent variables. These variables are:

- Whether or not the respondent had confidence in the Federal Government when interviewed in April 2020;
- Whether or not, when asked in April 2020, the individual thought it was likely that they would be infected by COVID-19 in the subsequent six months;
- A measure of support for notions of populism, taken from the June 2019 Comparative Study of Electoral Systems (CSES) and repeated in April 2020;[13]
- A measure of self-reported altruism, based on responses to a question in February 2020 as to whether the individual thought the following description matched themselves: 'It's very important to him/her to help the people around him/her. He/She wants to care for their well-being

As these questions were asked across multiple waves of data, the sample sizes for Models 3-4 are smaller than that for Models 1-2. In Model 5, however, we reduce the sample size even further by including a measure of willingness to take risks and willingness to delay financial rewards into the future, taken from the April 2019 wave of ANUpoll (Wave 26 of Life in Australia™).[14] These are standardised to have a mean of zero and a standard deviation of one across the original (Wave 26) dataset.

A number of key findings emerge from Table 5. Beginning in Model 1, the regression analysis confirms that the age groups with the highest level of app usage are those aged 55 to 74 years. However, we can also see that Indigenous Australians are less likely to have downloaded the app, whereas those who were born overseas in an English-speaking country. Those who live in the most disadvantaged areas were less likely to have downloaded the app, whereas those who live in the most advantaged areas were more likely to have had done so. Finally, those who live outside of Australia's capital cities were significantly less likely to have downloaded the app. This latter finding may reflect the relatively low levels of infection in less urban parts of the country. With a few exceptions, these differences hold once we control for the more expanded variables in Models 2 and 3, though some are no longer significant with the smaller sample in Model 4.

In Model 2, we can see that those who have a high level of trust in organisations with regards to the privacy of their data are significantly and substantially more likely to have downloaded the COVIDSafe app. When we only control for the demographic, geographic and socioeconomic variables, a one standard deviation increase in the index is associated with a 15.2 percentage point increase in download probability. Interestingly though, there is no association with the individuals concern about their own personal information and data. From a policy perspective, this would suggest that building trust in the organisations that are

associated with COVIDSafe is likely to be a far more effective approach than focusing on the individual's own sense of security.

Interestingly, in Model 3 we can see that there was no significant difference between those who said they would have voted Labor when asked in January compared to those who said they would have voted for the Coalition. It should also be noted that there is no statistically significant difference between Labor and Coalition voters when other characteristics are not controlled for. At the time the app was being introduced, it was a broadly bipartisan intervention, with a number of Labor State/Territory Premiers and Chief Ministers also publicly supporting the app. This appears to have translated into broadly bipartisan support across the voting public.

Since the May ANUpoll took place, there has been a divergence in views at the Federal level, with the Labor Opposition strongly criticising the implementation of the app. For example, in mid-July, Federal Opposition frontbencher (and former Opposition Leader) Bill Shorten said that "Labor gave support in principle if the app could make us safer, but I have to say it looks like an expensive dud, another IT bungle."[15] It will be important to follow whether support remains consistent across voters for the two major parties if differences emerge between the respective parties positions regarding the app.

While there was no difference between Labor and the Coalition, there was lower levels of support amongst voters for other parties. For those who said they would have voted Greens when asked in January, the probability of having downloaded the COVIDSafe app was 0.101 lower than for those who voted for the Coalition when only demographic, socioeconomic and geographic variables are controlled for. When other variables are controlled for though (in Models 4-5) the difference is no longer statistically significant. This implies that Greens voters were less likely to have downloaded the app because of other observable characteristics, rather than because of their voting intentions *per se*.

For those who said that they would have voted for none of the three major parties (but who knew who they were going to vote for), the probability is substantially lower in Model 3, with a marginal effect of -0.235, and the difference is statistically significant even when a range of other characteristics are controlled for. There would appear to be something different about those who say they would not vote for the major parties in terms of downloading of the app that is not captured by other characteristics. This could reflect a profound scepticism of the political system.

In Model 4, we can see that there are a number of other attitudinal variables that are important explanators of the decision to download the COVIDSafe app. In addition to specific trust with regards to data, general confidence in the Federal Government is associated with a higher probability of downloading the app. This suggests that data protocols and security are not the only factors that individuals take into account when deciding whether or not to download the app, and that the perceived ability of the government to operate effectively may also be important.

Those who think that it is likely that they will be infected by COVID are significantly more likely to have downloaded the app. Keeping in mind that we are using responses to this question from April, and the app wasn't introduced till May, this would suggest that concern about the virus was driving a number of people's behaviour. While there is a very fine balance to be struck and potential downsides of unnecessarily worrying people about COVID-19, findings for this

variable would suggest that the apparent success in Australia of keeping down infection and mortality rates may have dampened demand for the app.

Those who support more populist attitudes were less likely to have downloaded the app. While the marginal effect looks reasonably small, it should be noted that this variable has a standard deviation across the sample of 4.4. A one standard-deviation increase in the measure is therefore associated with a reasonably large decline in the probability of having downloaded the app. While in some countries views in support of populism tend to be associated with parties traditionally considered to be right of centre, this does not appear to be the case in Australia, at least for the measures from the CSES. Indeed, there was a higher average value on the index for those who said they would have voted Labor in January (19.3) than those who said they would have voted for the Coalition (17.0) and an even larger gap for those who said they would have voted Greens (19.9). Given both major parties were in support of COVIDSafe at the time the survey was undertaken, this provides some evidence for their being a policy return for both major parties from reducing support for populism in the electorate.

The final variable in Model 4 focuses on self-reported altruism (taken from the February 2020 survey). The mean for this variable across the February sample was 4.7 and the standard deviation was 1.1. The positive marginal effect does support the notion that many people downloaded the app not because of the benefit to them as individuals, but also because of the broader benefits to society, a key part of the message from those who were advocating the use of the app.

In the final model used in the paper, we included measures from April 2019 of a person's time and risk preference, with higher values indicating they were more willing to delay receipt of payments for a higher value in the future and were more willing to take risks respectively. Interestingly, and somewhat surprisingly, there was no difference in the downloading of the app by risk preference. This may be an indication that downloading the app was not necessarily the most or least risky option. Rather, it would appear that it involved trading off one form of risk (not knowing that someone you had come into contact with had been infected by COVID-19) with a different type of risk (that data about you as an individual will be somehow compromised).

We did, however, find that people who were less present biased (that is, they were more willing to delay financial returns into the future) were more likely to have downloaded the app. This would suggest that there were a proportion of people who thought that the benefits of the app were more likely to be felt in the future whereas the costs of doing so were felt in the present, and this influenced their decision. Reducing this short-term cost, even if it does not seem onerous to those administering the app, may have increased usage.

Table 5 Factors associated with trust in types of organisations to maintain privacy of data, May 2020

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | M.Effect | Signif. | M.Effect | Signif. | M.Effect | Signif. | M.Effect | Signif. | M.Effect | Signif. |
| Index of trust in organisations with data privacy | | | 0.152 | *** | | | 0.117 | *** | 0.118 | *** |
| Index of concerns with personal information and data | | | 0.001 | | | | -0.011 | | -0.007 | |
| Intention in January to vote Labor | | | | | -0.038 | | 0.008 | | 0.001 | |
| Intention in January to vote Greens | | | | | -0.101 | ** | -0.039 | | -0.028 | |
| Intention in January to vote for another party | | | | | -0.235 | *** | -0.122 | ** | -0.193 | *** |
| Undecided voter in January | | | | | -0.035 | | 0.045 | | 0.034 | |
| Confident in Federal Government in Canberra in April | | | | | | | 0.091 | ** | 0.133 | *** |
| Thought it was likely to be infected by COVID-19 in April | | | | | | | 0.063 | ** | 0.099 | ** |
| Index of support for populism | | | | | | | -0.011 | *** | -0.011 | ** |
| Self-reported altruism | | | | | | | 0.027 | ** | 0.014 | |
| Index of willingness to take risks | | | | | | | | | 0.029 | |
| Index of patience for the future | | | | | | | | | 0.038 | ** |
| Female | 0.003 | | -0.006 | | -0.013 | | -0.047 | * | -0.007 | |
| Aged 18 to 24 years | -0.085 | | -0.092 | | -0.035 | | -0.044 | | -0.004 | |
| Aged 25 to 34 years | -0.069 | * | -0.058 | | -0.034 | | -0.036 | | -0.083 | |
| Aged 45 to 54 years | 0.028 | | 0.032 | | 0.054 | | 0.045 | | 0.043 | |
| Aged 55 to 64 years | 0.103 | *** | 0.097 | ** | 0.102 | *** | 0.115 | ** | 0.095 | |
| Aged 65 to 74 years | 0.090 | ** | 0.092 | ** | 0.089 | ** | 0.099 | ** | 0.054 | |
| Aged 75 years plus | 0.042 | | 0.034 | | 0.034 | | 0.024 | | -0.042 | |
| Indigenous | -0.132 | * | -0.075 | | -0.118 | | -0.073 | | -0.063 | |
| Born overseas in a main English-speaking country | 0.064 | * | 0.079 | ** | 0.072 | ** | 0.077 | * | 0.130 | ** |
| Born overseas in a non-English speaking country | -0.012 | | -0.013 | | -0.010 | | -0.006 | | 0.047 | |
| Speaks a language other than English at home | -0.035 | | -0.065 | | -0.062 | | -0.075 | | -0.059 | |
| Has not completed Year 12 or post-school qualification | -0.043 | | -0.017 | | -0.027 | | 0.005 | | 0.060 | |
| Has a post graduate degree | 0.044 | | 0.048 | | 0.062 | | 0.054 | | 0.040 | |
| Has an undergraduate degree | 0.035 | | 0.022 | | 0.057 | | 0.010 | | 0.041 | |
| Has a Certificate III/IV, Diploma or Associate Degree | 0.020 | | 0.017 | | 0.054 | | 0.023 | | 0.062 | |
| Lives in the most disadvantaged areas (1st quintile) | -0.064 | * | -0.063 | | -0.075 | * | -0.072 | | 0.014 | |
| Lives in next most disadvantaged areas (2nd quintile) | 0.034 | | 0.037 | | 0.034 | | 0.038 | | 0.092 | |
| Lives in next most advantaged areas (4th quintile) | 0.033 | | 0.028 | | 0.034 | | 0.034 | | 0.082 | |
| Lives in the most advantaged areas (5th quintile) | 0.104 | *** | 0.090 | ** | 0.088 | ** | 0.064 | | 0.105 | * |
| Lives in a non-capital city | -0.052 | ** | -0.067 | ** | -0.048 | * | -0.065 | ** | -0.054 | |

| | | | | | |
|---|---|---|---|---|---|
| Probability of base case | 0.414 | 0.428 | 0.443 | 0.457 | 0.393 |
| Sample size | 3,069 | 2,979 | 2,799 | 2,404 | 1,371 |

Notes: Probit Regression Model, results presented as marginal effects or difference in predicted probability from a one unit change from the base case, holding other characteristics constant. 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 *.

Source: ANUpoll, April 2019, January 2020, April 2020, and May 2020.

# 6 Concluding comments

As a result of the COVID-19 threat, there has been an increased focus on the use of individual-level data to track and respond to the spread of the pandemic. The level of trust, confidence and concerns of the Australian population about sharing their personal data and how it is shared and used is critical to the extent to which governments are able to use personal data to monitor and control the spread of COVID-19. And in turn the extent to which governments' protect personal data will help shape the views of Australians about how their data is shared and used into the future.

This paper provides new data on Australian's attitudes towards data privacy and security and how these attitudes have changed since COVID-19. A novel feature of the data used in this paper is that it collected from the same group of people before and after COVDI-19 which allows the individual level factors associated with changes in attitudes to be estimated. On balance, it would appear that during the COVID-19 period Australians have become more trusting of organisations with regards to data privacy and less concerned about their own personal information and data.

The increases in trust in organisations to maintain the privacy of personal data appears to be strongly related to the increases in confidence in the Federal government, State/Territory governments and the Public Service.

These findings provide strong support for the notion that trust and confidence in different aspects of policy design and delivery interact with each other creating vicious or virtuous circles. However, while there have been improvements in trust with regards to data privacy, trust levels are still quite low with only one type of organisation (the Australian Bureau of Statistics) having an average value of seven or higher (on a scale of 1 to 10). It would appear that this low (albeit improving) level of trust is one of the key factors for the somewhat low take-up of the COVIDSafe app. Specifically, we estimate in mid-late May 2020 that only 43.8 per cent of adult Australians had successfully downloaded the COVIDSafe app. Our index of trust in data privacy is strongly predictive of the probability of downloading the app providing *prima facie* evidence that if the institutions involved in designing, delivering, and utilising data from the COVIDSafe app were more trusted, then a far higher percentage of people would have downloaded the app.

Contrary to expectations that older Australians would be reluctant users of the COVIDSafe app, we find that the age group with the greatest reported level of downloading was those 55 to 74 years of age, with those 75 years and older not having a lower probability than those aged 35 to 44 years. We also do not find an association with education, though we do find an association with the socioeconomic area in which a person lives, with those in the most advantaged areas the most likely to have downloaded. Politically, there were no differences in download rates between Labor and Coalition voters (as measured prior to the spread of COVID-19) though we do find a lower probability of having downloaded the COVIDSafe app amongst those who would not have voted for one of the two major parties. The generally bipartisan nature of the debate in May 2020 appears to have led to consistent usage across supporters of the two major parties. The more recent partisan debate with regards to the app may create a divergence with ongoing usage or with future technology-based interventions for COVID-19.

We also showed a number of other behavioural and attitudinal determinants of COVIDSafe usage. Those who were generally confident in the government, thought it was likely they would

be infected by COVID-19, were less populist, more altruistic, and more patient were all more likely to have used the app. This information can be used to help frame future messages, and to help identify groups who may need specific targeting.

There is a certain irony in us as researchers using somewhat sensitive data on individuals who are tracked through time to measure trust in data privacy and its effects. However, respondents to our surveys provide informed consent for their data to be used in such a way, with their data kept confidential and no personally identifiable information available to us as researchers. We would argue also that papers like this highlight the value of high-quality longitudinal survey data to supplement and corroborate data generated through the delivery of services and administration of public policy. We would also note that, unlike some of the other data collected and used to make policy recommendations and evaluations during the COVID-19 period that we have made the data freely available through the Australian Data Archive for validation and interrogation. We would argue that not providing data to individuals outside one's own organisation or research team or not doing so in a safe and privacy preserving way has the potential to undermine trust in the data ecosystem.

Ultimately, what we think the data analysed and presented in this paper has shown is that there are large negative externalities of eroding trust amongst the general population in the privacy of data. It may be tempting for individuals in all the types of organisations that we ask about in our survey (including academic institutions) to take risks with people's data, to be less than transparent, and to use that data to cause the individuals harm. However, taking such risks undermines trust in the data ecosystem, which makes policy interventions that much harder, less effective, and more costly when they are really needed, like during a global pandemic. On a more positive note though, there are positive externalities and the relatively transparent use of high-quality data to help track the health, economic, and social impacts of COVID-19 appears to have rebuilt some of that trust. It would be a real shame if that was again eroded.

Appendix Table 1 Correlation with trust in different types of organisations to maintain privacy of data, May 2020

| | Commonwealth government | State/Territory government | Banks and other financial institutions | Social media | Universities and other academic institutions | Telecommunications companies | Online shopping | Australian Bureau of Statistics |
|---|---|---|---|---|---|---|---|---|
| Commonwealth government | | | | | | | | |
| State/Territory government | 0.7857 | | | | | | | |
| Banks and other financial institutions | 0.6391 | 0.6027 | | | | | | |
| Social media | 0.3531 | 0.3712 | 0.3382 | | | | | |
| Universities and other academic institutions | 0.5213 | 0.5843 | 0.4953 | 0.3446 | | | | |
| Telecommunications companies | 0.5136 | 0.5128 | 0.5170 | 0.5317 | 0.4718 | | | |
| Online shopping | 0.3439 | 0.3913 | 0.3526 | 0.5487 | 0.4091 | 0.5471 | | |
| Australian Bureau of Statistics | 0.6153 | 0.6599 | 0.5257 | 0.2540 | 0.5943 | 0.4456 | 0.3587 | |

Source: ANUpoll, May 2020.

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## Endnotes

1 https://www.commbank.com.au/guidance/business/commbank-card-data-indicates-falls-in-spending-are-becoming-more-202004.html

2 https://www.srcentre.com.au/services/life-in-australia-panel

3 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. It builds upon data collected in January and February 2020 prior to COVID-19 restrictions being implemented, thereby 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 particular 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 the most recent survey conducted in May 2020. A number of additional waves of data will be collected throughout 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.

4 Data for this survey is available through the Australian Data Archive in unit record form (doi:10.26193/GNEHCQ).

5 Of those who completed the May 2020 wave of data collection, 2,986 individuals (91.9 per cent) also completed the April 2020 ANUpoll (the 37th wave of data collection). Of those who completed both the April and May surveys, 2,810 respondents (94.1 per cent) also completed the February 2020 survey (35th wave of data collection).

6 This recruitment used a G-NAF (Geocoded National Address File) sample frame and push-to-web methodology. Only online participants were recruited in order to balance the demographics (the age profile of panel members was older and more educated than that of the Australian population). The recruitment rate for the replenishment was 12.1 per cent.

7 The eigenvalue for the first component (using analytical weights) was 4.45 with all variables having a loading of at least 0.25. The second component had an eigenvalue of 1.12 with three variables having a positive loading – trust in social media (0.5880); online companies (0.5259); and telecommunications companies (0.2960). We do not analyse this second component in this paper, but do recognise that there are certain types of organisations that are trusted by the same type of individual.

8 These set of variables are described in Biddle and Gray (2020).

9 Specifically, for the first four variables, we assign a value of 4 for totally agree through to 1 for totally disagree. For the fifth variable (able to protect yourself) we assign a

value of 1 for totally agree and 4 for totally disagree. For the last two variables, we assign a value of 4 for very concerned and 1 for not at all concerned.

10 The eigenvalue for the first component (using analytical weights) was 2.65 with all variables having a loading of at least 0.25, apart from feeling able to protect oneself against cybercrime, which had a loading of -0.0656. This latter variable does not, therefore, contribute by very much to the index of concern. The second component had an eigenvalue of 1.11

11 https://www.health.gov.au/resources/apps-and-tools/covidsafe-app

12 https://www.pm.gov.au/media/covidsafe-new-app-slow-spread-coronavirus

13 Specifically, in June 2019 and in April 2020 respondents were asked: Please indicate the extent to which you agree or disagree with the following statements…?

a) You feel you understand the most important political issues facing Australia
b) What people call compromise in politics is really just selling out on one's principles
c) Most politicians do not care about the people
d) Most politicians are trustworthy
e) Politicians are the main problem in Australia
f) Having a strong leader in government is good for Australia even if the leader bends the rules to get things done
g) The people, and not politicians, should make our most important policy decisions
h) Most politicians care only about the interests of the rich and powerful

Respondents were given five options: 1. Strongly agree; 2. Somewhat agree; 3. Neither agree nor disagree; 4. Somewhat disagree; and 5. Strongly disagree. We undertook a principal components analysis on the data, with questions b, c, e, g, and h strongly loading positively on the first component, and d strongly loading negatively. Questions a and f did not load strongly on the first component. We therefore constructed an additive index, with b, c, e, g, and h reverse coded (e.g. 5 = strongly agree) to indicate greater support for populism, and d coded as originally in the question. Questions a and f were not included.

The index of populism therefore has a minimum value of 6, and a maximum value of 30, with a value of 18 indicating an average neutrality on the populism questions.

14 In ANUPoll 29, risk preferences of 2,054 individuals were recorded using questions on time and risk preference sourced from the Global Preferences Survey (https://www.briq-institute.org/global-preferences/home). These questions were of two types. Namely, self-reported questions and staircase method (or “unfolding bracket”) questions. For self-reported questions, each participant rated their perceived risk or time preference on a 11 point scale with 0 being completely unwilling to take risks and 10 being very willing to take risks. For the staircase question, each participant was given a lottery choice sequence where the individual had to choose between winning a lottery x with some probability p or a sure payment y (to measure risk) and

separately asked for their choice between a given payment now as opposed to a payment of a different amount in the future.

This process of varying the sure/current payment allowed us to determine an individual's certainty equivalence and thereby it allowed to determine their willingness to take risks or delay financial payments. Since the staircase questions provide a more precise quantitative indication of an individual's risk/time preference in a monetary setting, we utilized these responses over the self-reported responses as our measure of risk/time preference.

15 https://www.canberratimes.com.au/story/6831411/covidsafe-app-hasnt-found-virus-contacts/