



Australian Government

Chief Scientist

17 May 2020

The Hon Greg Hunt MP
Minister for Health
Parliament House
CANBERRA ACT 2600

CC:

The Hon Karen Andrews MP, Minister for Industry, Science and Technology

Dear Minister

Please find attached a response to your request for an analysis of the available evidence to respond to your question:

What motivates people to download and continue to use the COVIDSafe app?

This rapid response has been prepared by the Rapid Research Information Forum that I Chair. The report synthesises the evidence base on this matter and has been informed by relevant experts and has been peer reviewed. Details of the authors and peer reviewers can be found in the Appendix.

I hope this document proves useful to you and your colleagues.

Yours sincerely,

A handwritten signature in purple ink, appearing to read 'Alan Finkel'.

Dr Alan Finkel AO FAA FTSE FAHMS
Australia's Chief Scientist

17 May 2020

This rapid research brief responds to the question: what motivates people to download and continue to use the COVIDSafe app?

- Since launching on 26 April 2020, 5.7 million Australians have downloaded COVIDSafe, the fastest uptake of any app in Australian history (as at 15 May).
- As a digital aid to manual contact tracing, COVIDSafe offers a potentially valuable supplement to protecting public health in an ongoing epidemic. Similar apps are in use globally.
- Collective and societal wellbeing are strong motivators for uptake of COVIDSafe, as is the ability to exercise individual choice and control, including to permanently delete the app and its data.
- Potential barriers to the uptake of COVIDSafe include access, language, trust in government, privacy concerns, and reliability of the technology.
- The motivation to continue use of COVIDSafe will rely on addressing the above potential barriers as well as demonstrating a positive impact on contact tracing, confidence in government management of further outbreaks, transparency, and effective messaging from community leaders.
- The success of COVIDSafe will ultimately be measured by the number of positive cases identified and quarantined because of the app and its contribution to containing community spread as lockdown restrictions are relaxed.

The COVID-19 pandemic is an urgent, population-wide health challenge. The Australian Government's public health response necessitated rapid and extensive viral testing, physical distancing, isolation protocols and contact tracing. The COVIDSafe app for android and iPhone smartphones is a form of digital contact tracing that offers a potentially useful supplement to manual tracing. COVIDSafe is one of several contact tracing apps being rapidly developed around the world. Uptake is voluntary and relies on wide deployment (download and installation) and sustained use. Since launching on 26 April 2020, COVIDSafe has been downloaded by 5.7 million Australians, the fastest uptake of any app in Australian history. This represents more than a third of the estimated 16.4 million adult smartphone users in Australia.¹

While user sentiment and consumer surveys are beginning to emerge, there is as yet little data on what motivates Australians to download COVIDSafe.²⁻⁴ To understand the drivers of adoption, this paper looks at past successful public health campaigns as well the use of non-commercial apps (i.e., volunteer fire and emergency services apps).⁵ The paper also looks more broadly at behavioural research that addresses public motivation at the national and global levels, risk calculations, attitudes to data collection, privacy, and trust in government.

What motivates people to download and continue to use the COVIDSafe app?

The evolving COVID-19 pandemic will continue to shape societal and personal behaviours and attitudes. So far, the key determinants of whether the public will install and continue to use COVIDSafe include:

- beliefs about COVIDSafe data privacy, security and control
- trust in government and public health experts
- perceptions of individual and collective safety, including perceived risk of contracting the virus and likely severity of health impacts
- consistent messages across levels of governments, business and local role models
- collective purpose and community-minded messaging
- technological facility with app use, including ease of use, and appropriate user support
- updates on COVIDSafe's effectiveness in reducing infection spread and saving lives if this emerges.

Digital contact tracing aims to complement manual tracing

Contact tracing is a valuable epidemiological strategy for managing highly infectious diseases, in concert with active testing, physical distancing and quarantine protocols.^{6,7} Manual contact tracing is labour intensive, involving structured interviews of infected people by trained health workers and follow-up with all points of known contact. Further contacts are likely to be interviewed as well as required to undergo mandatory testing, self-quarantines, and medical observation.

COVIDSafe is intended to expedite manual contact tracing by automating and accelerating data collection.⁸⁻¹⁰ It uses Bluetooth-enabled smartphone technology to identify when a person is in proximity to another user of the app and for how long. According to existing arrangements, when a person tests positive for COVID-19, the doctor or hospital will notify public health officials who initiate manual contact tracing. If the infected person has installed the app, they may be asked by public health officials to upload data from their device to a central database. The system is intended to help public health officials identify all the contacts of an infected person, including those unknown to them, during the period they were considered contagious. Public health officials remain responsible for notifying people of a positive test result, verifying the data and making risk and exposure determinations for contacts. One potential drawback is the amount of additional work digital contact tracing could generate.¹¹

The use of contact tracing apps is new

As of 7 May 2020, 23 countries have COVID-19 tracing apps, nine are in development and 14 have been launched.¹² They vary according to location technologies, data storage and retention practices as well as oversight and review.^{11,13} The majority of global apps use centralised data storage and absolute location technology, including global positioning systems (GPS) and cell-tower triangulation. The choice of how and

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where to store user data may impact adoption and usage rates.¹⁴ Australia's approach involves collection and storage of user data on a local device. In the event of a positive test, depending on user consent, data will be stored centrally using Amazon Web Services. Australia's choice to use Bluetooth (i.e., proximity data rather than absolute location) for COVIDSafe is in line with best-practice protocols for privacy-preserving contact tracing, as it forgoes the collection of a broader set of data.¹⁵

The uptake of contact tracing apps globally has been uneven. It is not yet clear what the optimum adoption rate is and how this might change over the course of the pandemic.¹⁶ Governments and public health officials are modifying the apps in real time. The uptake rate at the time of launch may correlate with the perceived success of a government's management of the pandemic and sustained use may depend on continued successful overall management. Iceland, for example, has a very high adoption rate of a voluntary contact-tracing app (almost 40% of the population by 22 April, about three weeks after launching).^{17,18} At launch, Iceland had already embarked on a mass testing program combined with aggressive quarantine measures to contain community spread.

Technical issues have also impacted uptake. Singapore's TraceTogether has experienced technical problems, such as iPhone incompatibility, and general problems with functionality (not able to take calls with the app running in the background). Less than 20% of its population has downloaded the app to date.¹⁹

Motivations for downloading COVIDSafe

The role of COVIDSafe differs from the Australian Government's previous public health and educational campaigns where apps have been used predominately as a communication platform.²⁰ Social drivers for the uptake of an app that collects personal information include self-interest, tradeoffs between perceived benefits, a clear sense that the app will play a central role in the desired outcome, and trust in government.²¹ While the motives for adoption between commercial and non-commercial apps are likely to differ, the rapid uptake of the volunteer fire and emergency services apps during the 2019–20 bushfire season offers evidence for widespread civic engagement and trust of a governmental app to provide immediate personal safety and broader community safety.²²

Public campaigns that have aimed to 'get the community on board' have led to lasting behaviour change without having to resort to coercive measures.²³ Previous Australian public health campaigns, such as 'Slip Slop Slap' and 'SunSmart' achieved social and individual change, based on research, evaluation, and consistency and continuity of messaging.²⁴ Queensland Water's 'Water Wise' campaign saw a reduction in per capita water consumption and was highly effective not only in providing information, but also in appealing to a shared identity and purpose, and a sense that people have, on altruistic grounds, a duty to take on small costs when doing so can prevent severe harms from occurring to others.^{25–28}

Impact of the digital divide on COVIDSafe

Uptake and use of COVIDSafe may be negatively impacted by Australia's 'digital divide'. There are challenges of access, affordability and ability for Australians with lower levels of income, education and employment, and for people over 65, Indigenous Australians, people with disability and those living in regional and remote Australia.^{29–31} According to one widely-used measure of digital inclusion, these gaps are substantial and have proved to be persistent. Australians in the lower income 'quintiles', for example, consistently score substantially lower than the Australian average. The digital inclusion gap between Australians in the highest income and those in the lowest remains unchanged since 2014.²⁹ Addressing the needs of these diverse groups is important as many are in high-risk categories for COVID-19.

A review of Australia's public health response to the H1N1 pandemic found a need for "consistent approaches to engaging with high-risk communities" including Indigenous people and those from non-English-speaking backgrounds, where "unsupported mass media has not been shown to be effective".³²

While Indigenous Australians in both remote and non-remote areas score lower on digital inclusion and access, they score above the national average in terms of positive attitudes to digital technologies, and are already strong users of social media and other platforms to maintain community connections.^{33–35} There are opportunities to leverage existing Indigenous platforms such as the #thismymob app to support the uptake of COVIDSafe, in collaboration with trusted community health organisations.

Research from Taiwan suggests the need for public communications to better cater to multilingual populations during the COVID-19 pandemic.³⁶ While culturally and linguistically diverse Australians scored above the national average in a survey of digital inclusion, there is significant internal diversity within this community, depending on factors such as age, income, and educational levels.^{29,37,38} There is benefit in providing multilingual communication to encourage the use of COVIDSafe by diverse communities; this may include multilingual versions of the app, as well as culturally appropriate messaging.³⁹

Challenges to continued rates of adoption will include privacy, and trust in government

Major barriers for user uptake of COVIDSafe include concerns about privacy, the security of data-storage services and future unsanctioned use of the data collected by contact tracing apps. This is evident in research literature and the media.^{40,41} The complex relationship between attitudes to privacy and individual behaviour is well documented, including differential disclosure practices involving government and commercial entities – the blend of governmental and commercial entities in COVIDSafe development and delivery is an additional complexity.^{42,43} That people routinely use commercial apps that are far more intrusive on privacy points to the 'privacy paradox', a stated commitment to privacy belied by willingness to trade privacy for relatively small benefits.⁴⁴ Researchers have also shown that there is a significant 'endowment effect' when it comes to

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privacy: if we think it is already lost we won't pay much to get it back; but if we have it we're unlikely to let go of it.⁴⁵

Attitudes to privacy can depend on the type of data.^{46,47} The sharing of personal health and medical information in Australia has been an ongoing issue for many consumers, illustrated by concerns expressed during the rollout of MyHealth Record.⁴⁸ However, research on health data prior to the pandemic suggests a majority of Australians are willing to share personal medical information for the purposes of disease tracking (60% of respondents, according to one poll), improving patient care (74%) and advancing medical research (79%).⁴⁹

A 2018 report found high levels of "support for government to use and share data" but much less confidence that the Australian Government has the right safeguards in place or can be trusted with people's data.⁵⁰ This may suggest a concern over the potential for 'function creep', the possibility that data collected for one purpose is used for other purposes. Recently conducted research on another form of biometric data collection – facial recognition technology – found that, despite expressed privacy concerns, 61% of interviewed people supported the use of facial recognition when the goal was framed in terms of safety and security.^{51,52} Research also shows that people are more likely to accept the presence of intrusive technologies when they are not coerced into acceptance, but instead motivated by a collective benefit, supported by a sense of solidarity and shared identity.^{14,53,54}

On the other hand, research on Australian attitudes toward the collection and use of personal information suggests that privacy concerns are often expressed in terms of a perceived lack of control over personal data.⁵⁵ For instance, there has been increasing public awareness that existing practices of 'deidentification' of user data are not as secure as once thought.^{56,57} Uptake and ongoing use of COVIDSafe may then be influenced by an emphasis on the sense of control provided by multiple decision points for app users: whether to install, the ability to delete, the decision to keep one's phone on (or carry it with oneself), the ability to disable Bluetooth, and the choice to share contact information upon diagnosis. Confidence that robust privacy safeguards are in place may positively influence uptake.⁵⁸ Motivations for continued use will vary.

The effectiveness of COVIDSafe will ultimately be measured by the number of positive cases identified and quarantined because of the app, as this will most directly reflect the public health agenda to prevent transmission of the virus.⁹ Illustrating that COVIDSafe works as intended may assist decision-making for those yet to download the app.^{59,60}

What motivates people to download and continue to use the COVIDSafe app?

COVIDSafe will not only need to stay installed on people's phones, it will need to remain active. It is not known whether the motivation to continue use differs from that for the initial download and installation; there are very few sources of reliable insight or knowledge upon which to draw and no longitudinal data.

Research into previous public health campaigns and app use suggests that confidence and trust in the technology is likely to be critical.⁴⁰ An ongoing program of published independent third-party testing may also increase confidence in the technology and allay privacy concerns, as may the release of the source code. MIT's COVID Tracing Tracker rates apps according to five measures, one of which is transparency.^{11,15}

Potential technical challenges risk undermining confidence and continued use.¹¹ These include:

- the current functionality of the app on both operating systems
- inter-operability with other functionality of the handset and operating system (i.e., current iPhone issues, battery life)
- timing of updates to operating systems or changes in the app
- upgrades of phone handsets.

From a usability and functionality perspective, the following factors might help overcome perceived technical challenges and help improve uptake (based on analogous mental health apps used at population level): level of personalisation; amount of feedback; ease of use; good design; visualisation; support; and autonomy.^{11,30,61–63}

Another factor in continued use will be the extent to which the app no longer feels voluntary or helpful. This could include 'alert fatigue' if a person is repeatedly contacted by health officials based on their COVIDSafe data (i.e., someone working in a high exposure location), or if there are false positive or requirements for excessive testing, or people feel pressure by their employers or other groups to use the app.

Continued use will also rely on public awareness that the other elements of the public health campaign are in place and working together effectively; the app cannot be perceived as a direct means of preventing infection. Over-promising the benefits of the app, or overloading manual contact tracers, risks COVIDSafe being perceived as failing to live up to expectations, thereby potentially reducing support for its continued uptake.

There is confidence in the government's handling of the pandemic. However, previous research shows more than 60% of the population is concerned or very concerned about their data being used by the Australian Government to make "unfair decisions".⁵⁰ The continued use of COVIDSafe will be driven both by trust in the government and its success with the current pandemic.

The decision by individuals to download and continue to use COVIDSafe will involve reasoned calculations and it will also involve emotional appeals and sentiment. The role of media, and of social influencers, should not

be underestimated.⁶⁴ Empirical evidence from the Ebola crisis shows that leadership by communities and community support centres had an important role to play; they were seen as credible and trusted sources of information.^{65,66} The stories we will tell about Australian responses to, and uses of, COVIDSafe will matter too. The voices of trusted figures, community leaders, healthcare workers and citizens will likewise inform the adoption, and continued use of, COVIDSafe.

[An important note on available COVID-19 research](#)

Although current COVID-19 research is available through pre-print servers, many of these articles have not yet been peer reviewed (an imperative pillar of the scientific method) and the relatively short time length of the current outbreak has resulted in variable testing and reporting practices in different countries. Conclusions drawn need to be interpreted with caution. Pre-prints are marked with a § in the reference list.

This brief is accurate at the time of writing and may become out of date at a later time of reading. Consultation with the Australian Academy of the Humanities is possible if the reader has questions.

APPENDIX

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RAPID RESEARCH INFORMATION FORUM

Motivators for use of the COVIDSafe app

The Rapid Research Information Forum (RRIF) is a forum for rapid information sharing and collaboration within the Australian research and innovation sector. It is convened by Australia's Chief Scientist, Dr Alan Finkel AO FTSE FAA FAHMS, and its operations are led by the Australian Academy of Science.

RRIF provides a mechanism to rapidly bring together relevant multidisciplinary research expertise to address pressing questions about Australia's response to COVID-19, as they emerge.

RRIF enables timely responses to be provided to governments based on the best available evidence. RRIF also informs the Chief Scientist's interactions and collaboration with other national chief scientific advisers. It demonstrates the critical value of research and innovation in driving societal as well as economic progress now and into the future.

Forum member organisations

- Australia's Chief Scientist (Chair)
- Australian Academy of Science (AAS)
- Australian Academy of Health and Medical Sciences (AAHMS)
- Australian Academy of Technology and Engineering (ATSE)
- Academy of the Social Sciences in Australia (ASSA)
- Australian Academy of the Humanities (AAH)
- Royal Society Te Apārangi (New Zealand)
- Australian Council of Learned Academies (ACOLA)
- State and Territory Chief Scientists and representatives
- Chief Science Advisor to the Government of New Zealand
- Scientific expert members of the National Science and Technology Council (NSTC)
- CSIRO
- Universities Australia (UA)
- Science & Technology Australia (STA)