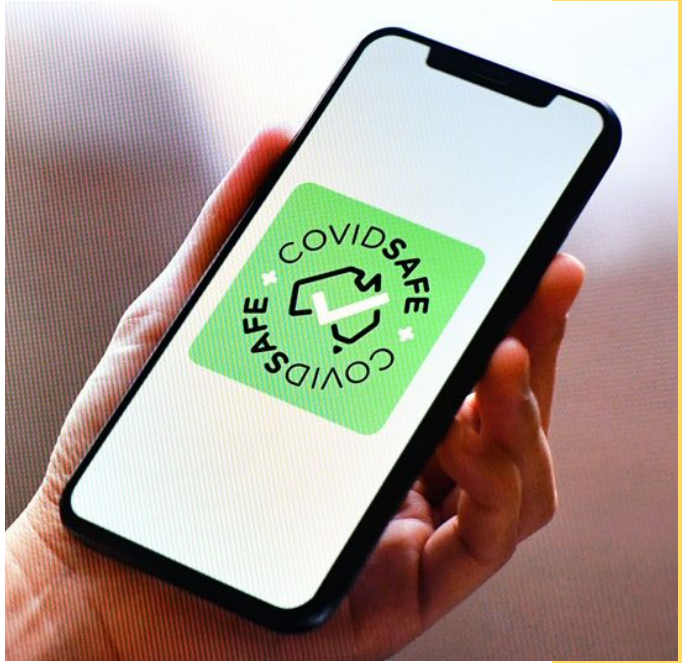
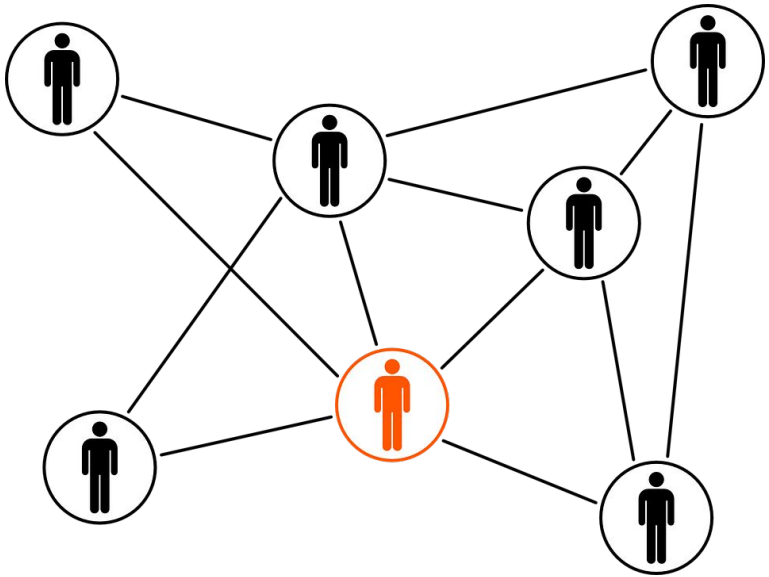


Public Perceptions of COVID-19 Tracking Technologies

Prof. Simon Dennis
Paul M. Garrett
Joshua White

In collaboration with:
Stephan Lewandowsky, Yoshi Kashima, Daniel Little, Amy Perfors, Lewis Mitchell, Nic Geard, & Martin Tomko

TODAY'S PRESENTATION



01

Introduction and Rapid Science

Professor Simon Dennis

02

Methods and Results

Dr Paul Garrett

03

Predicting Acceptance: Logit Models

Joshua White

INTRO & RAPID SCIENCE

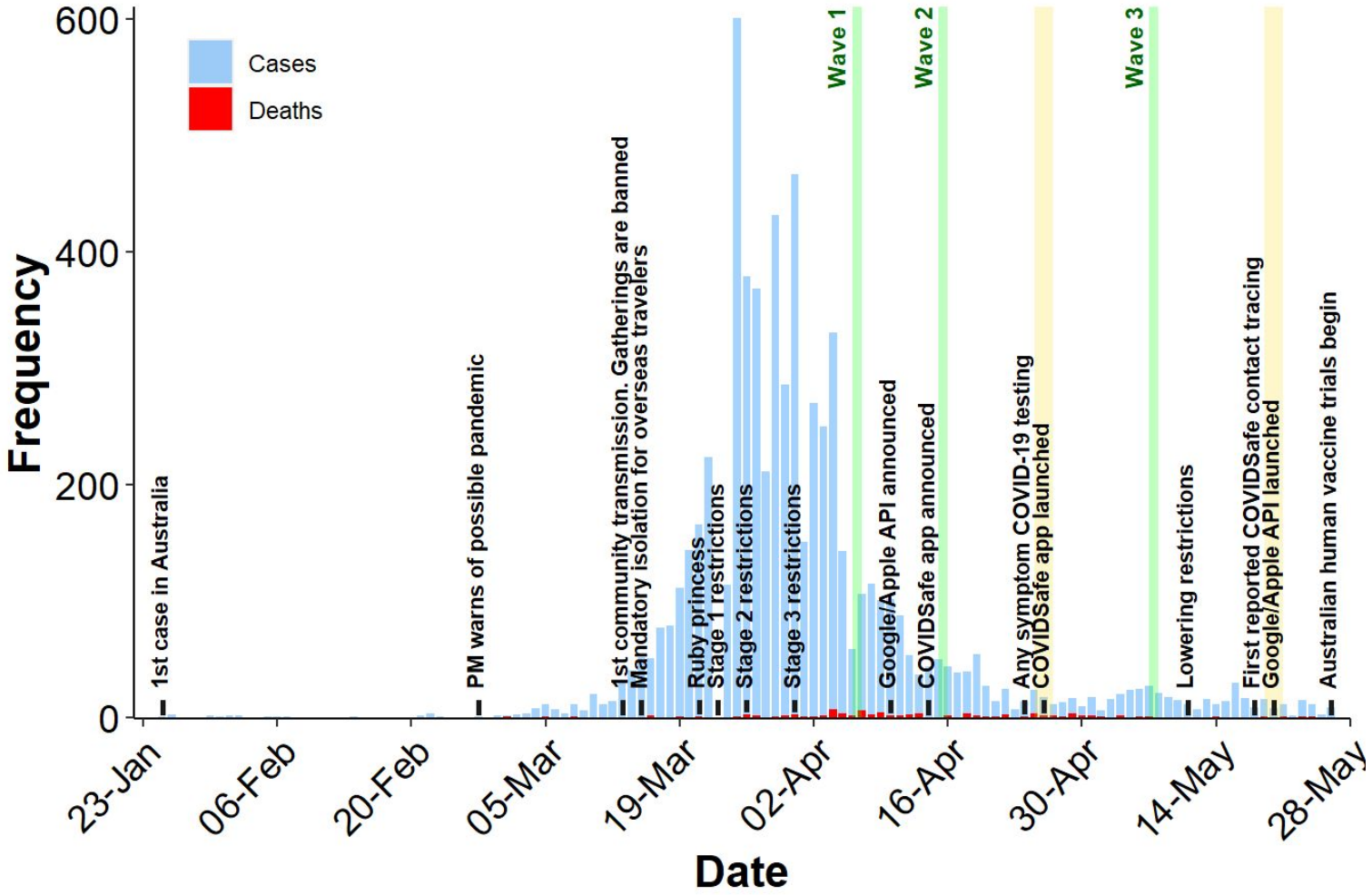
Professor Simon Dennis

01

Rapid Science

Mid 2018	LUMAS project starts
	Social license of WIFI data
February 27th	Survey released
March 21st	Decided to adapt for COVID19
	Contact by Stephan Lewandowsky
	Contact by James McCaw
March 22nd	Wrote funding proposals
March 24th	Funded by philanthropic funds
March 27th	Slack workspace created
April 3rd	Ethics amendment approved
April 6th	Wave 1 launched

Australian COVID-19 Cases and Deaths



02

METHODS AND RESULTS

Paul M. Garrett

Method

Three Australian representative samples collected on April 6th, April 15th, and May 7th 2020.

Participants were recruited through the data collection platform Dynata and completed a 10 - 15 minute Qualtrics survey.

Samples were **stratified by age, gender and state** of residence as per the 2016 census.

In each wave of collection, we assessed participant's:

- **Demographics**
- **Impact from COVID-19**
- **Perception of the COVID-19 pandemic**
- **Attitudes** towards one of three forms of **mobile phone tracking** for COVID-19

In Wave 3 we examined attitudes to a real world scenario: The COVIDSafe app.

Tracking Scenarios

We assessed three hypothetical scenarios, and one real-world scenario, COVIDSafe.

Telecommunication Network Tracking - Mandatory tracking that uses phone networks to identify locations. Can be used by the Government to enforce fines for violating lockdown laws. (Waves 1 & 2; N = 801)

Apple/Google API - Voluntary tracking. Creates a Bluetooth contact registry & notifies you through an app if you were exposed to someone with COVID-19. Identification as COVID+ is voluntary & anonymous. (Wave 2; N = 383)

Government App - Same as above, except that data is accessible to the health department for manual contact tracing. (Waves 1 & 2; N = 806)

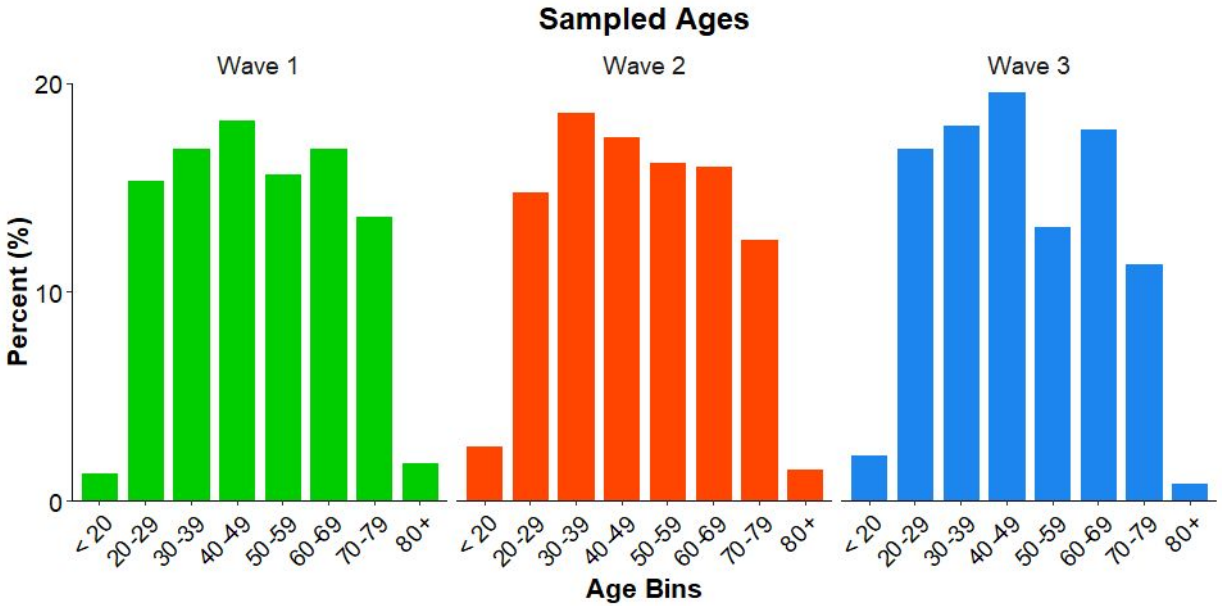
COVIDSafe Government App (Real World) - Same as Gov App, however, we highlight that easing social distancing restrictions depends in part on community uptake. (Wave 3; N = 449)

Demographics

Wave 1:
N = 821. 48% Women.

Wave 2:
N = 1169. 49% Women.

Wave 3:
N = 449. 51% Women.



Phone Usage:
Wave 2 - 95%
Wave 3 - 93%

M = 49 Years	M = 48 Years	M = 47 Years
SD = 17 Years	SD = 17 Years	SD = 17 Years

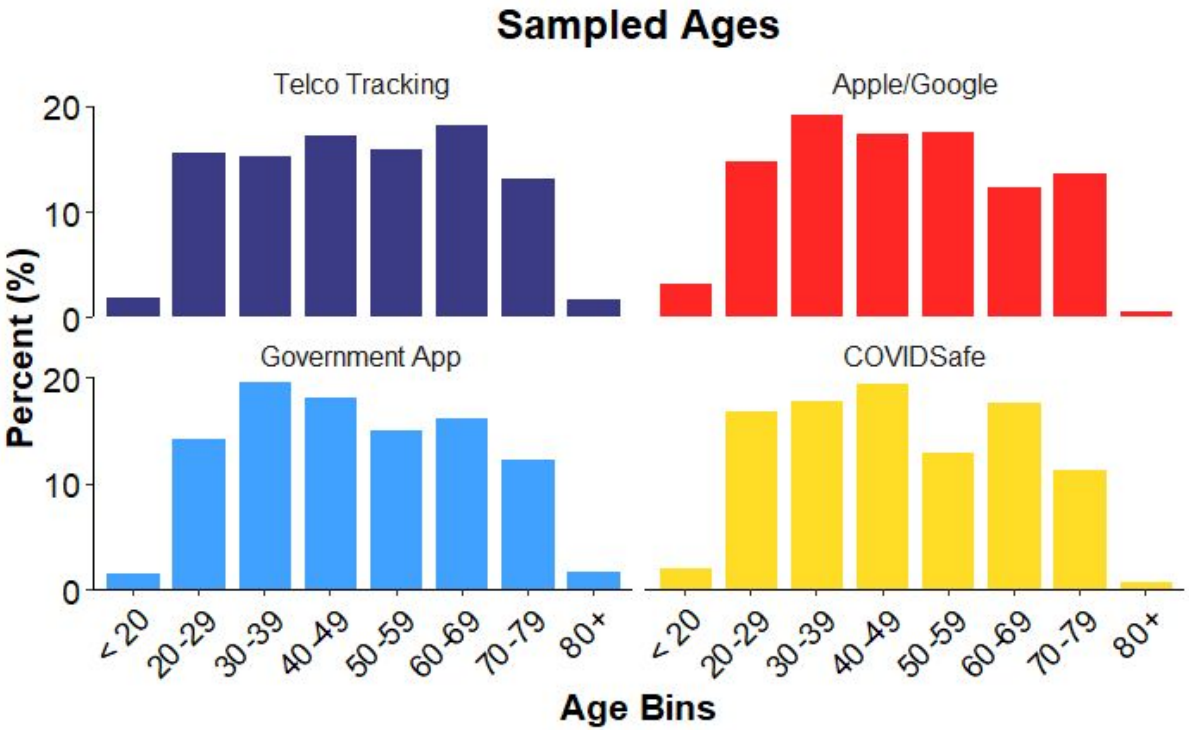
Demographics

Wave 1:
N = 821. 48% Women.

Wave 2:
N = 1169. 49% Women.

Wave 3:
N = 449. 51% Women.

Phone Usage:
Wave 2 - 95%
Wave 3 - 93%

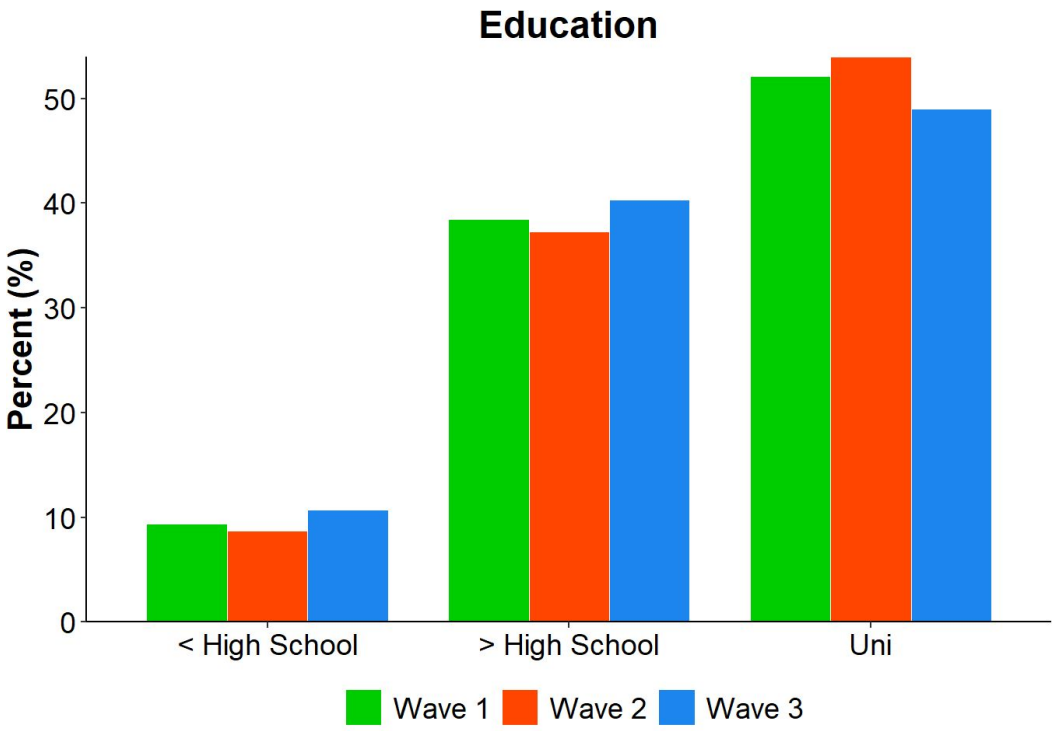


Demographics

Representative samples*

Education:
Bias towards university education.

*well, as close to a representative sample as we could manage.



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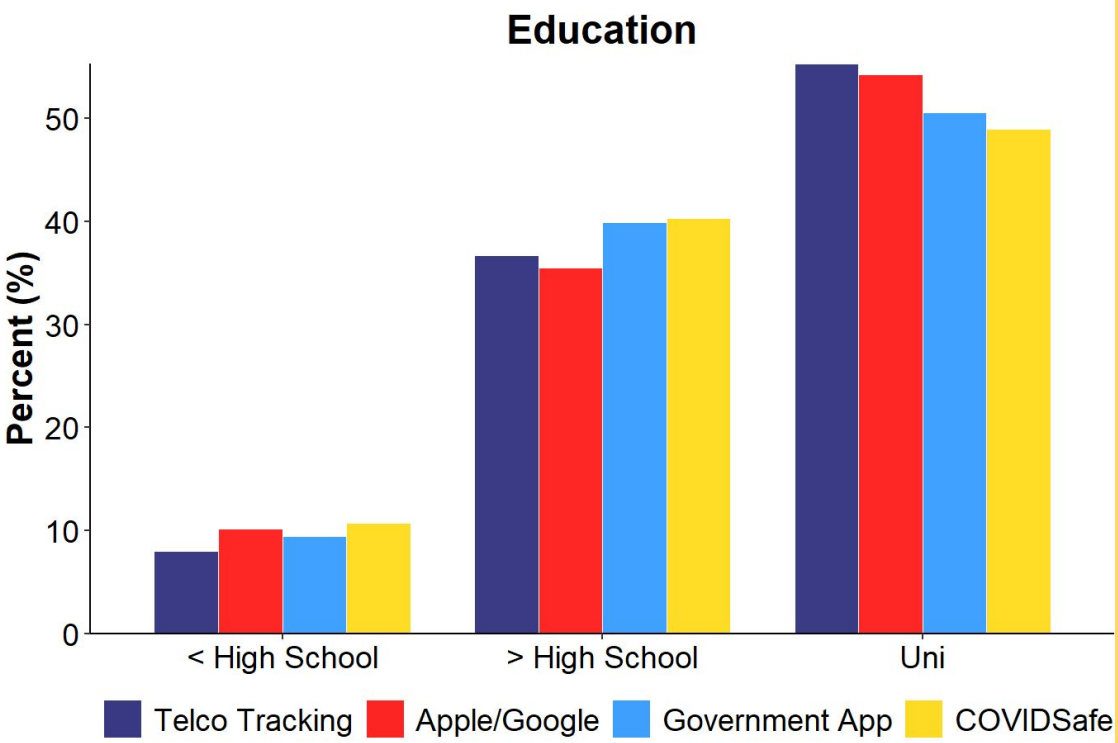


Impact of COVID-19

The percentage of self-reported COVID-19 cases increased slightly with each wave:

- Wave 1: 0.2% (n=5)
- Wave 2: 1% (n=11)
- Wave 3: 1.5% (n=7)

Those who knew someone who had tested COVID + also increased:

- Wave 1: 6% (n=49)
- Wave 2: 8% (n=93)
- Wave 3: 8.5% (n=38)

On average, **18% of individuals lost their jobs** due to COVID-19.

- Wave 1: 18% (n = 151)
- Wave 2: 19% (n = 223)
- Wave 3: 17% (n = 75)

Impact of COVID-19

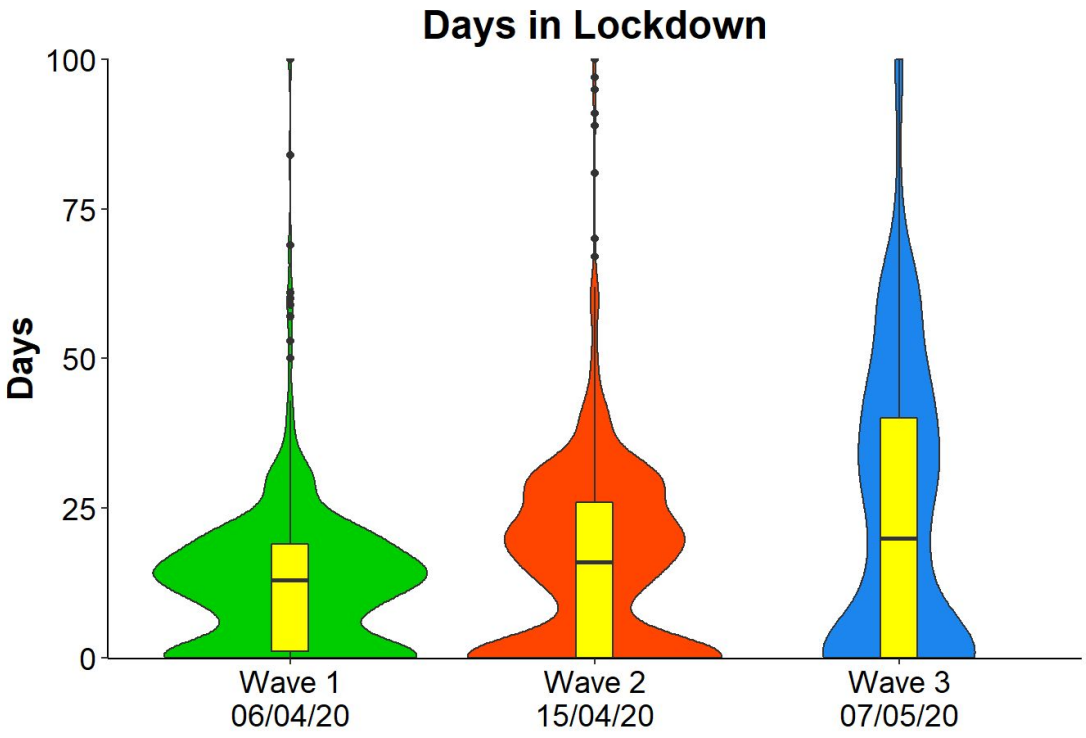
The average number of days in lockdown was 17 (SD = 17) days.

Days in lockdown extended with each wave of data collected:

- Wave 1: 13 (SD = 12) days
- Wave 2: 16 (SD = 15) days
- Wave 3: 24 (SD = 25) days

However, the **most frequently reported number of days in lockdown was zero days** (25%):

- Wave 1: 21%
- Wave 2: 26%
- Wave 3: 29%

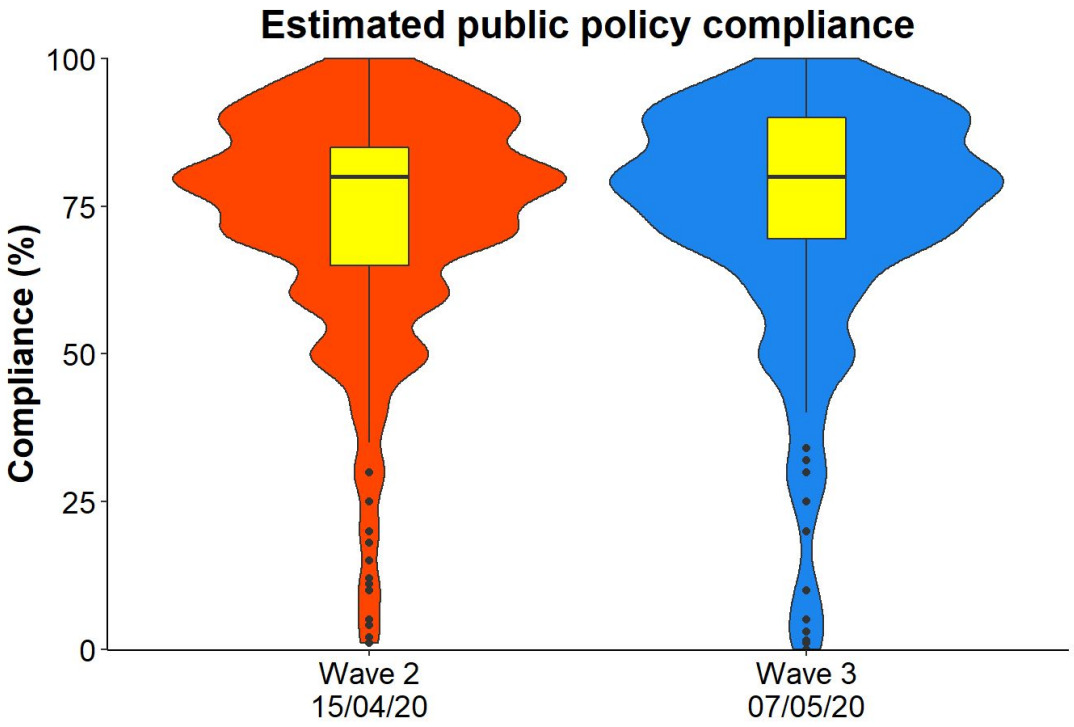


Impact of COVID-19

COVID-19 policies have included stay-at-home orders, a ban on public gatherings, & social distancing.

Of all those sampled…

73% thought other Australians were complying with Government policies.



Impact of COVID-19

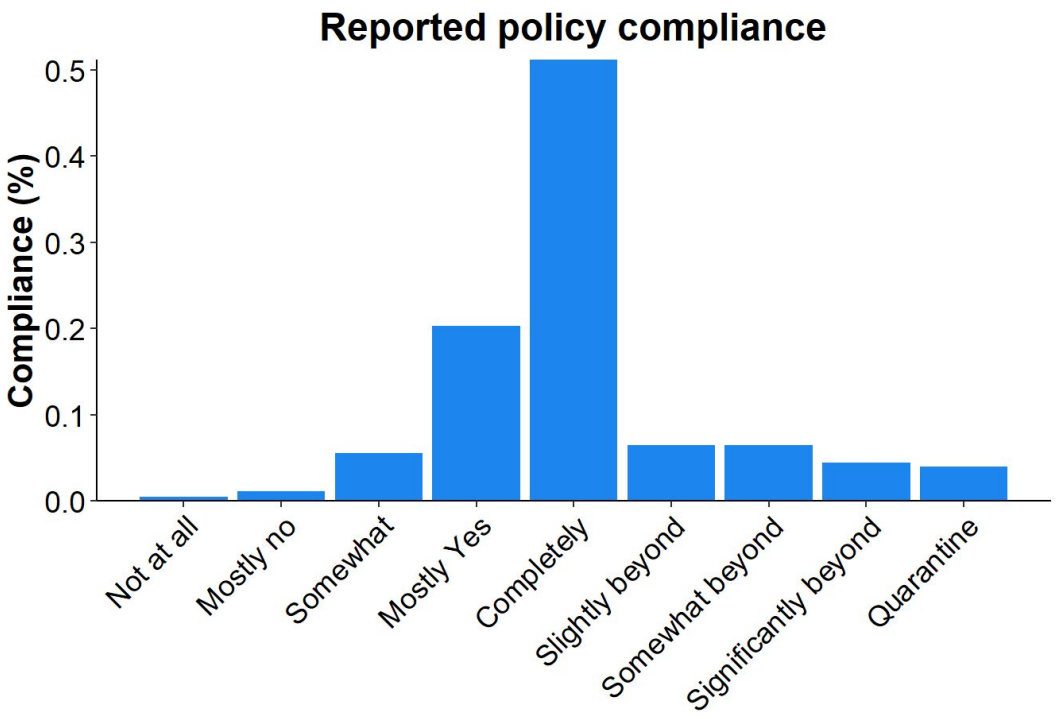
COVID-19 policies have included stay-at-home orders, a ban on public gatherings, & social distancing.

Of all those sampled…

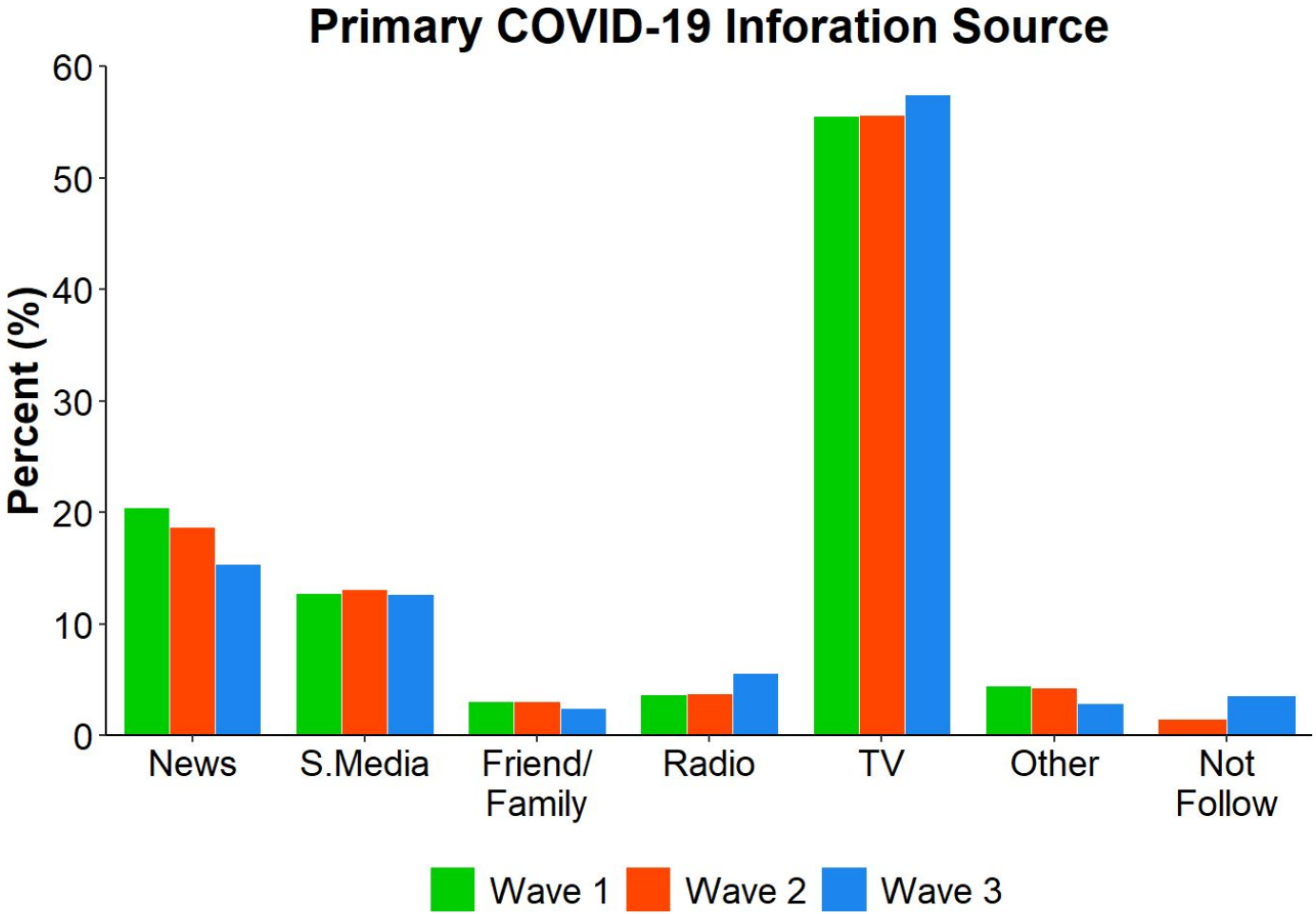
73% thought other Australians were complying with Government policies.

And in Wave 3…

75% indicated they were complying with, or going beyond Governmental Policy recommendations.



Perceptions of COVID

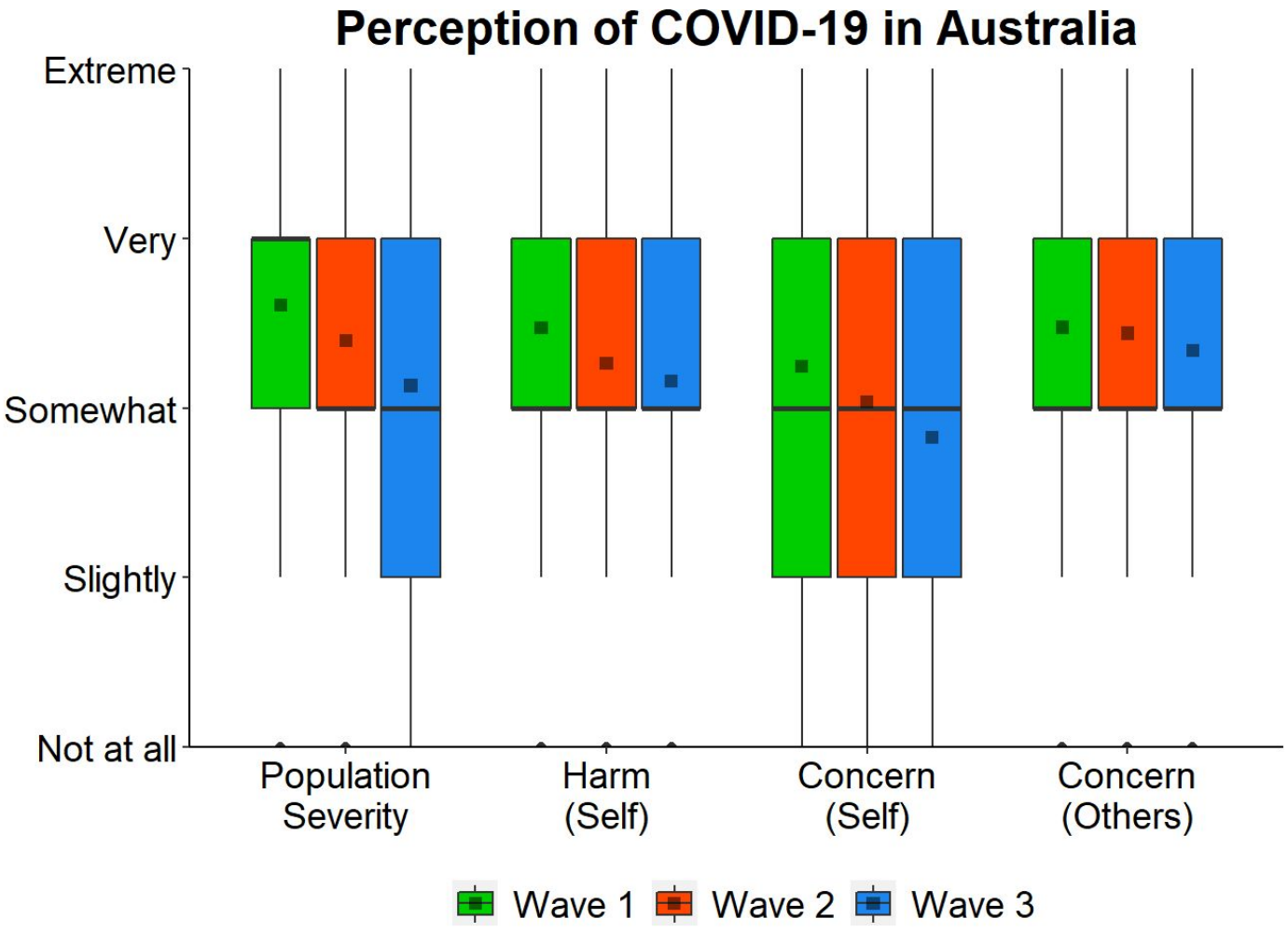


We asked participants to report:

How severe they thought COVID-19 would be for the population?

How harmful it would be to their health?

And the **concern** they had about the virus **for themselves and others** around them.



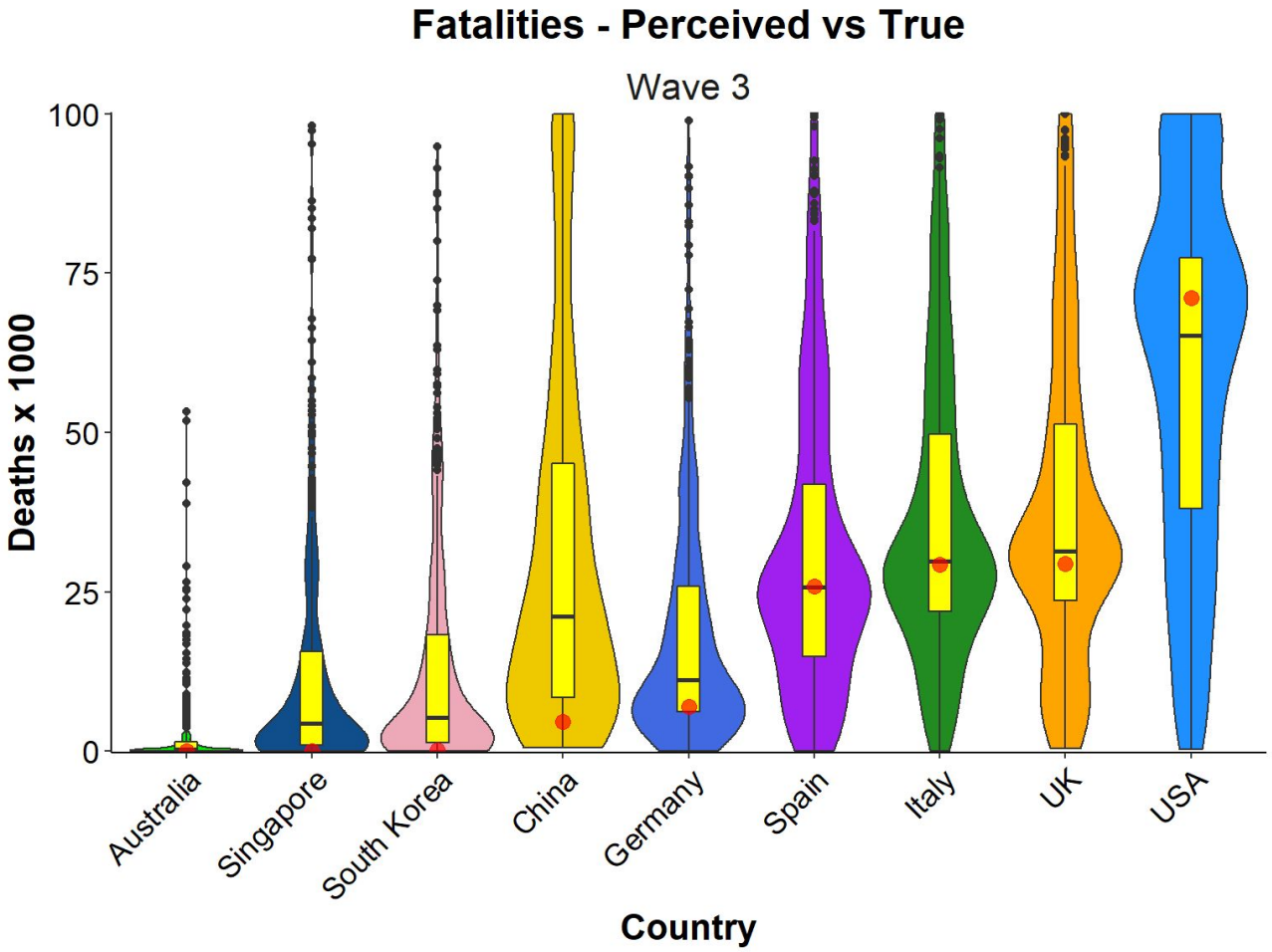
Estimated fatalities are generally **higher** than true fatalities.

Estimates for China are particularly **poor…**

…But why?
- Lack of information?

- Lack of trust in the provided information?

- Estimates anchored on population size?

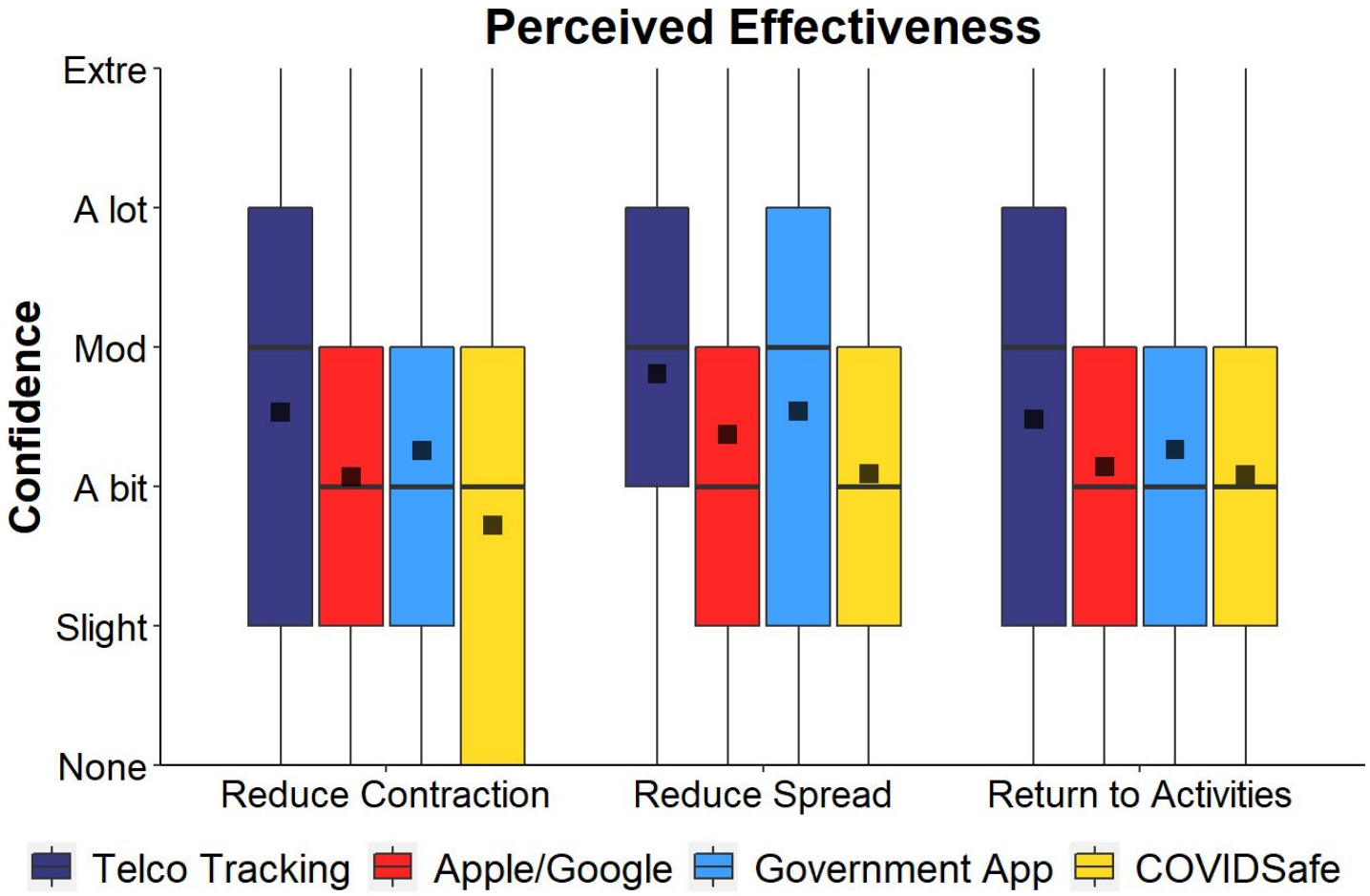


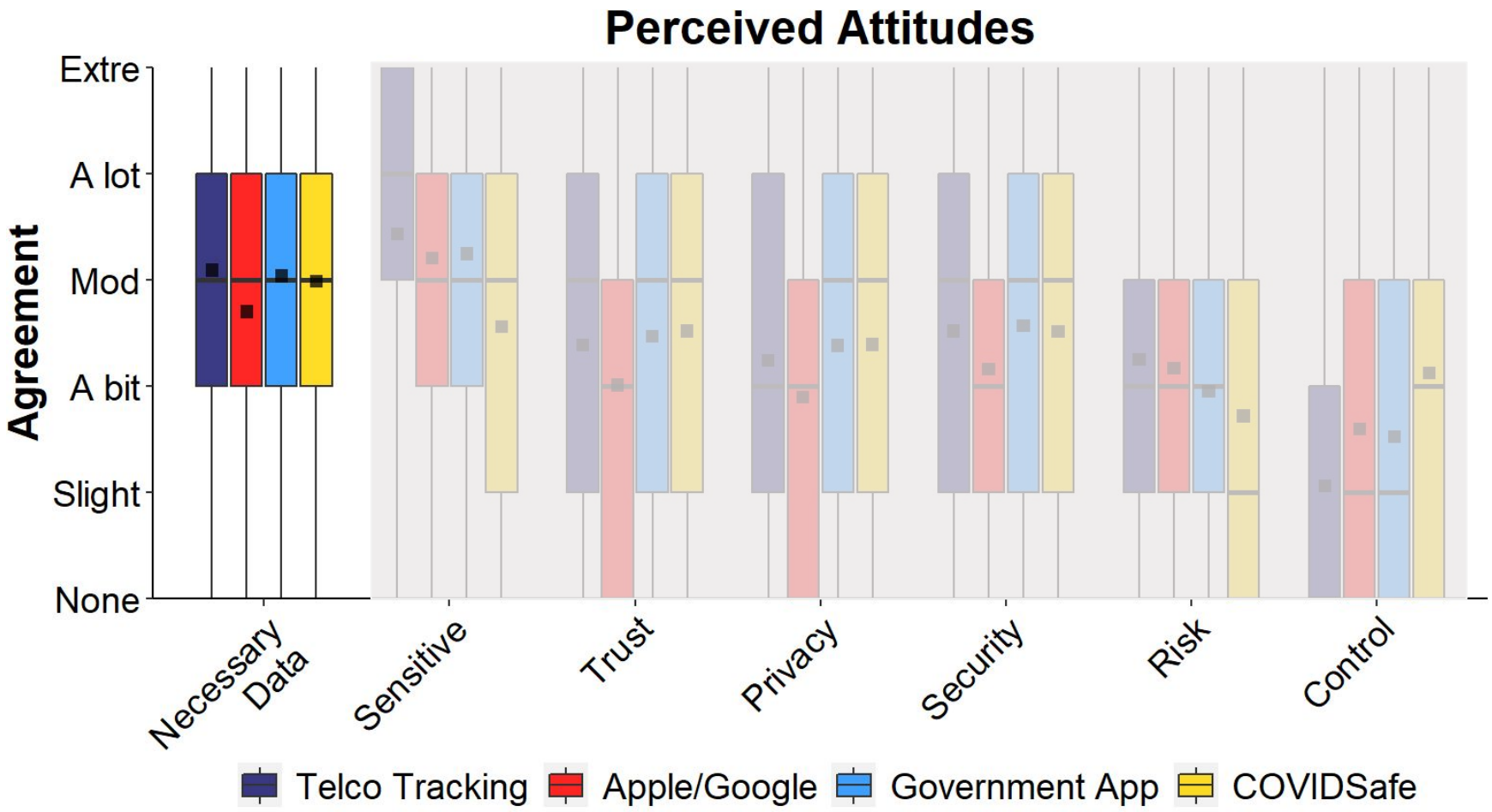
Perceived Effectiveness

Network tracking perceived as most effective.
It did not allow P's to opt out.

Slight decline in effectiveness between hypothetical Gov App and COVIDSafe.

Possibly due to media exposure?




Perceived Attitudes
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Mod
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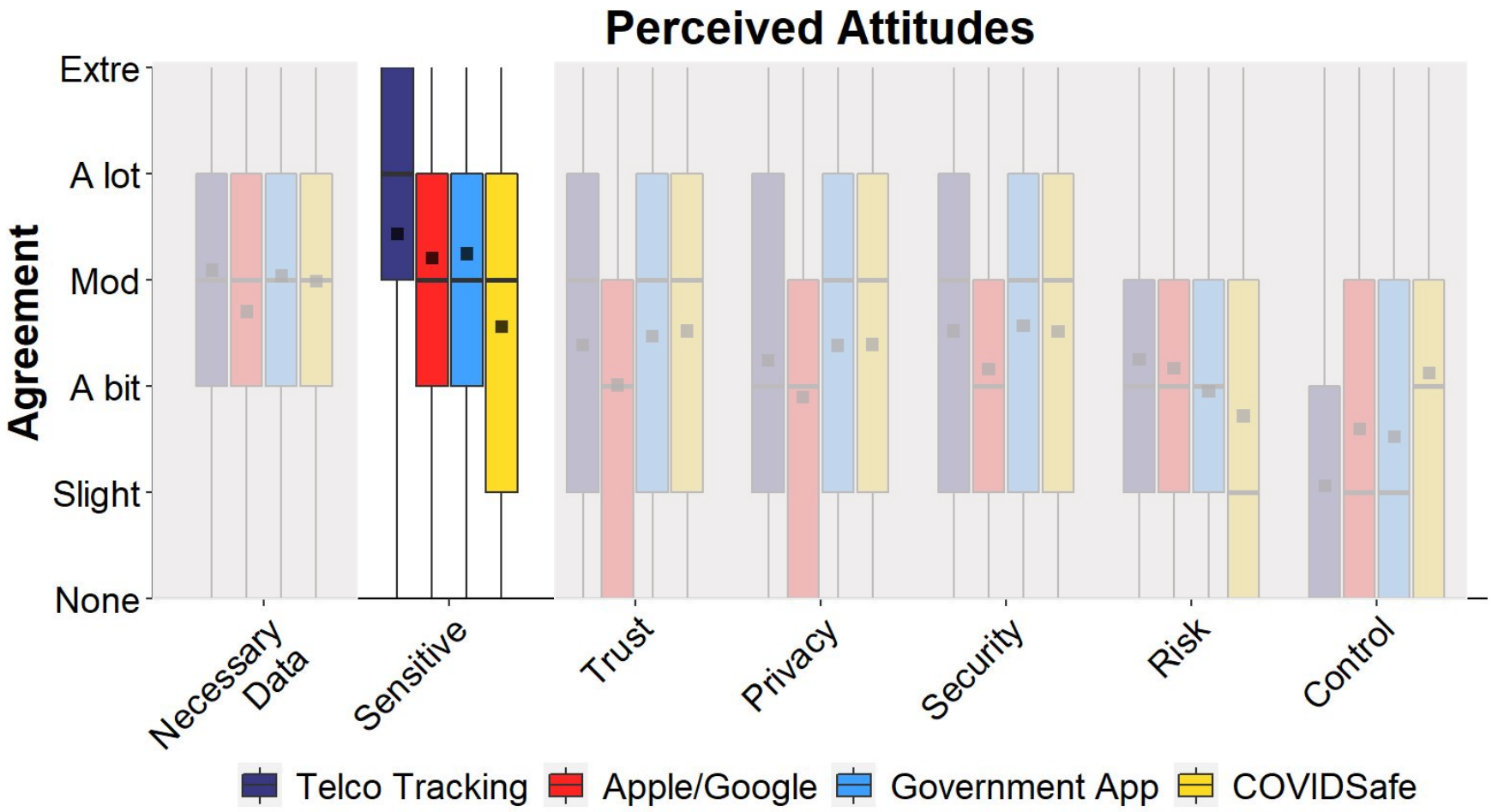
Necessary Data
Sensitive
Trust
Privacy
Security
Risk
Control
Telco Tracking
Apple/Google
Government App
COVIDSafe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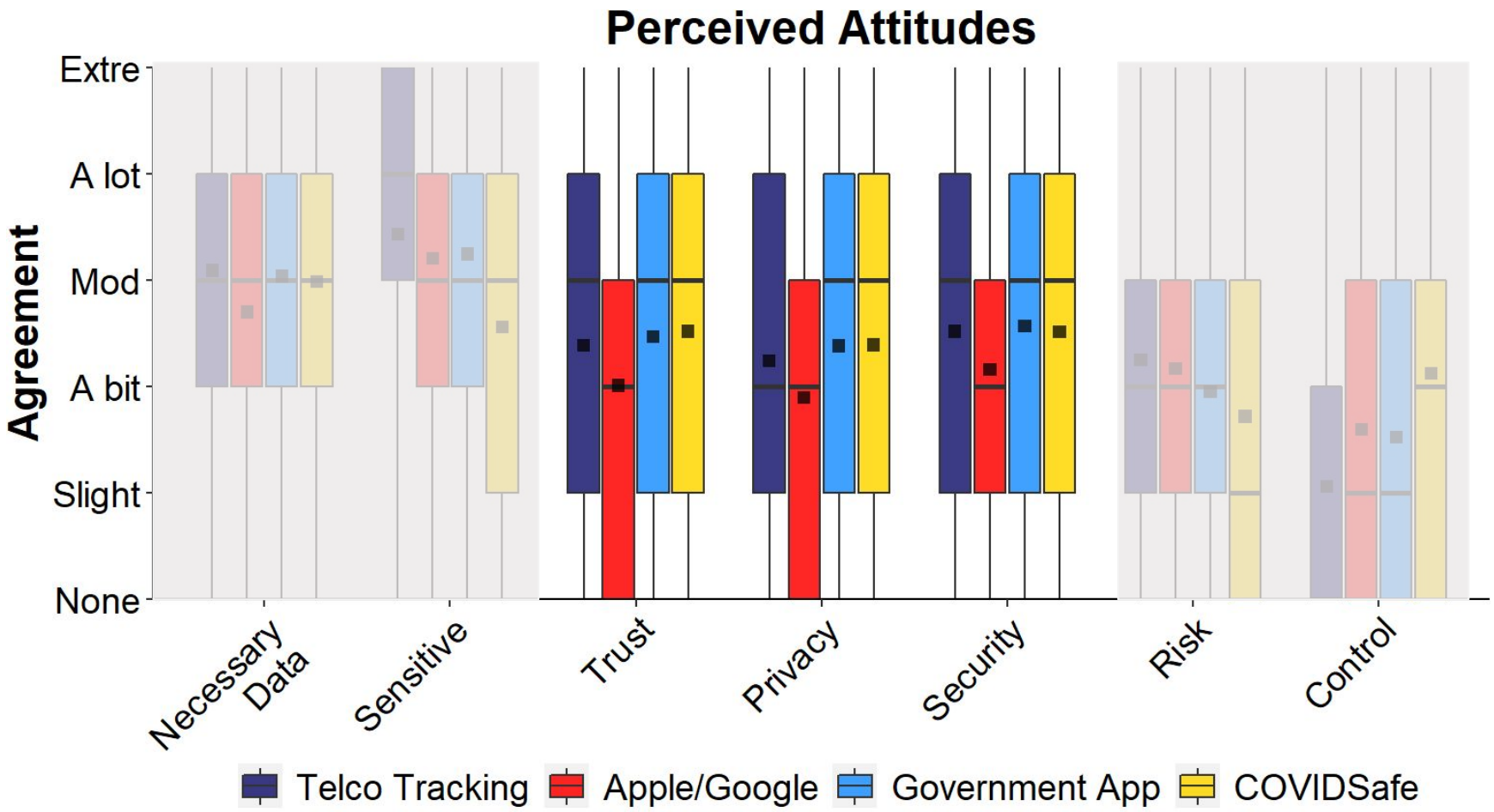
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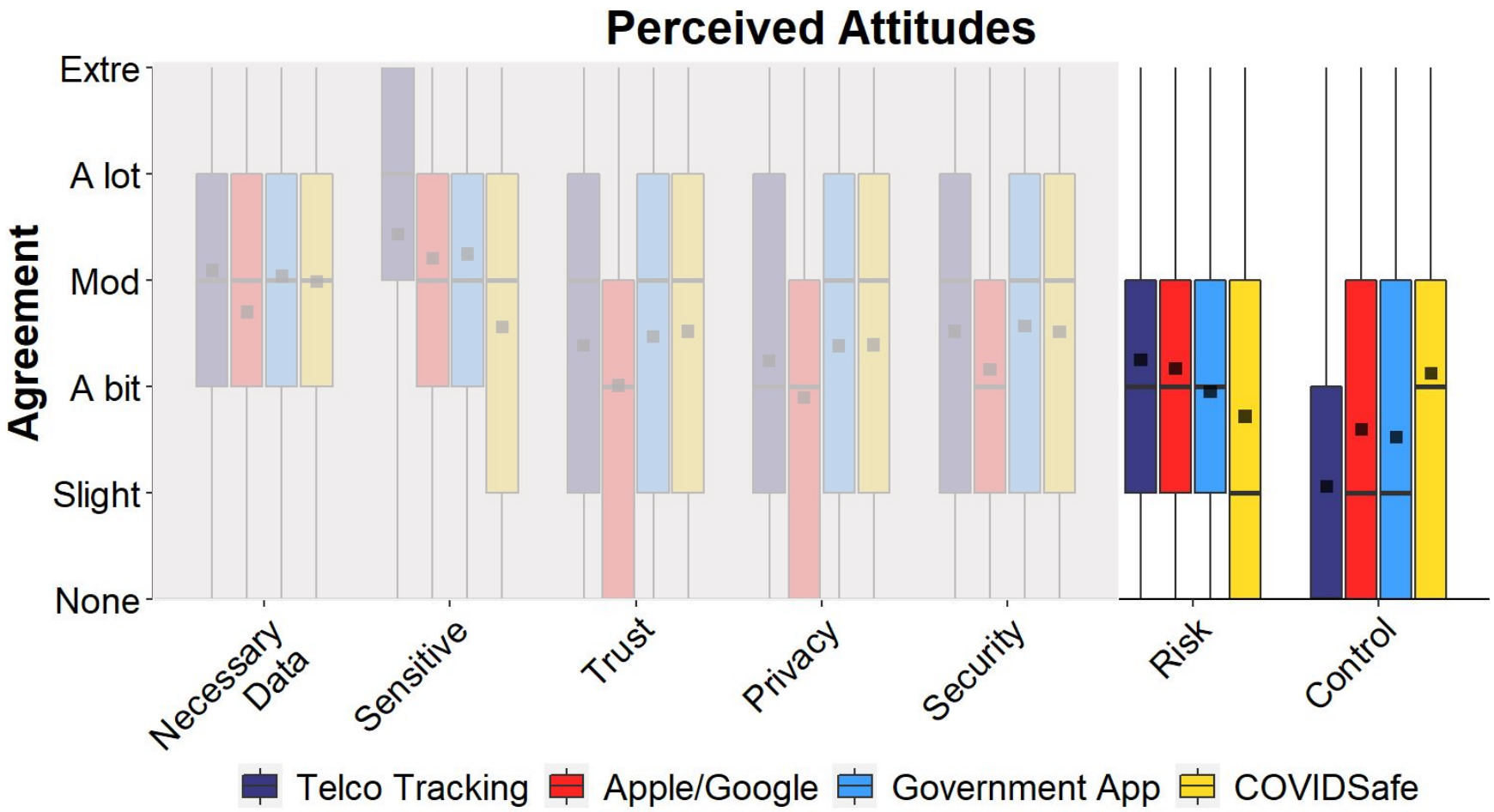
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Trust
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Risk
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Telco Tracking
Apple/Google
Government App
COVIDSafe

Acceptability of Tracking

After answering questions about each tracking method, participants were asked if the tracking scenario was acceptable. If no, conditional acceptability was assessed:

Sunset clause (All): would you accept tracking if the data had an expiry window of 6 months?

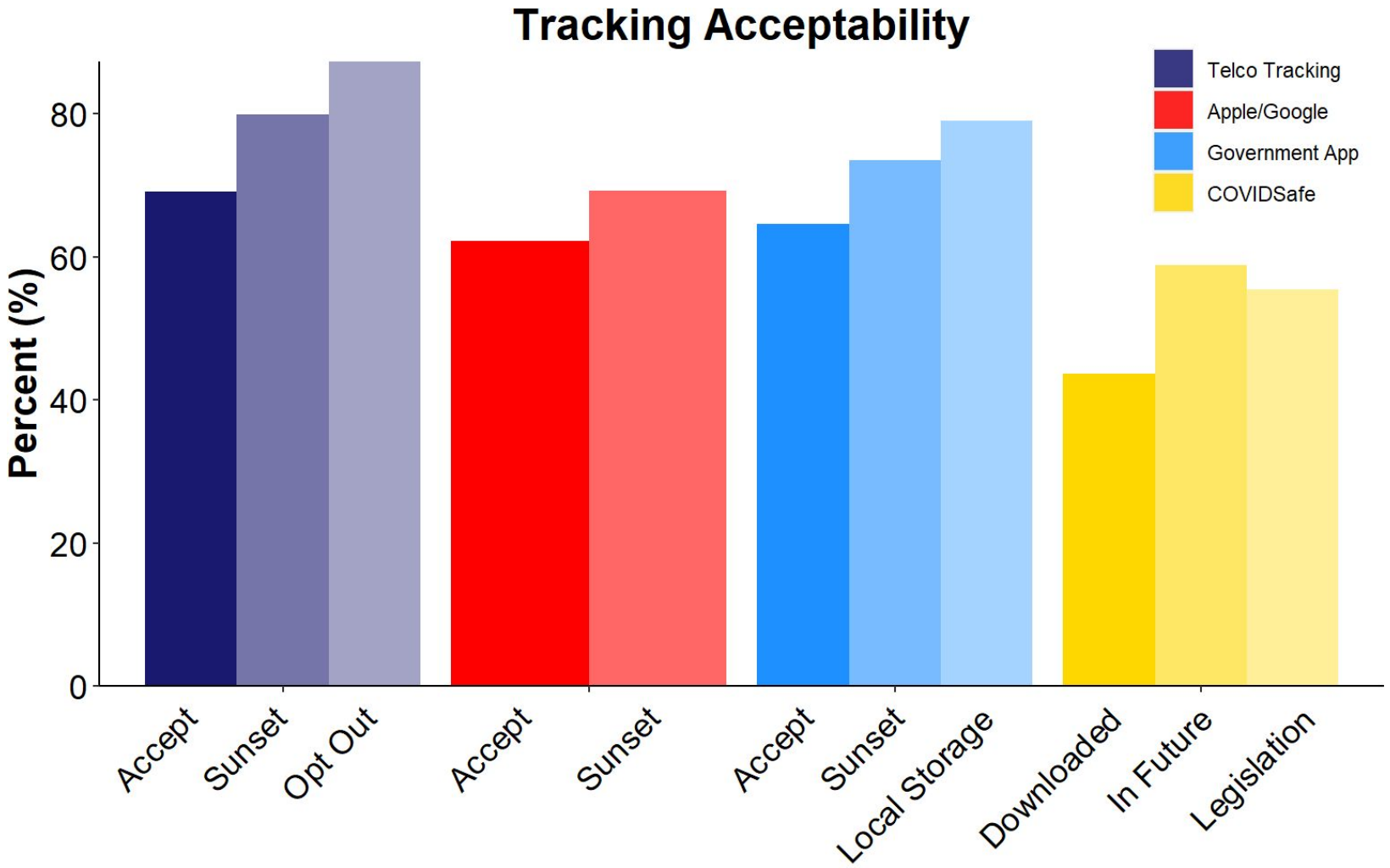
Network: Would you consent if the tracking had an option to opt-out?

Gov App: Would you consent to tracking if the data were stored locally on your phone?

COVIDSafe: Do you intend to download the app in the future?

COVIDSafe: Would you download the app if appropriate legislation were put in place?

Tracking Acceptability



COVIDSafe - A Real World Scenario

44% downloaded the app, of which:

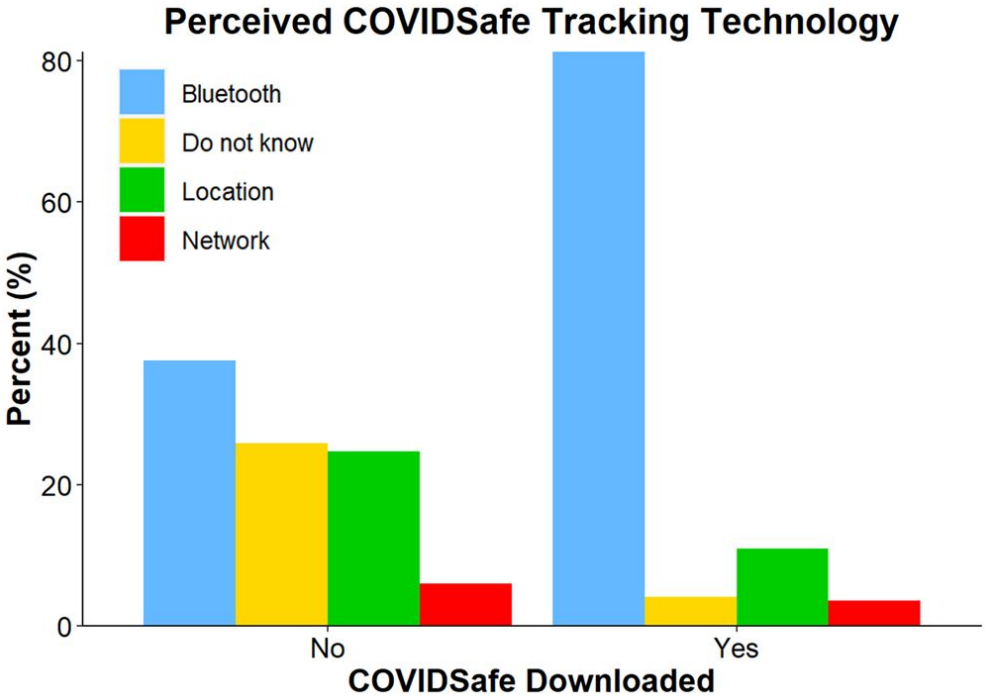
90% were registered users,

96% kept the app installed,

91% Bluetooth on when out and use the app as detailed* by Gov.

99% would upload their contact info if they tested as COVID+

58% tried to share the app with others.



*At this time the app did not make Apple users aware the app was not effective unless open on the front screen & unlocked.

COVIDSafe

Participants rank-ordered the individual(s) who convinced you to Download COVIDSafe.

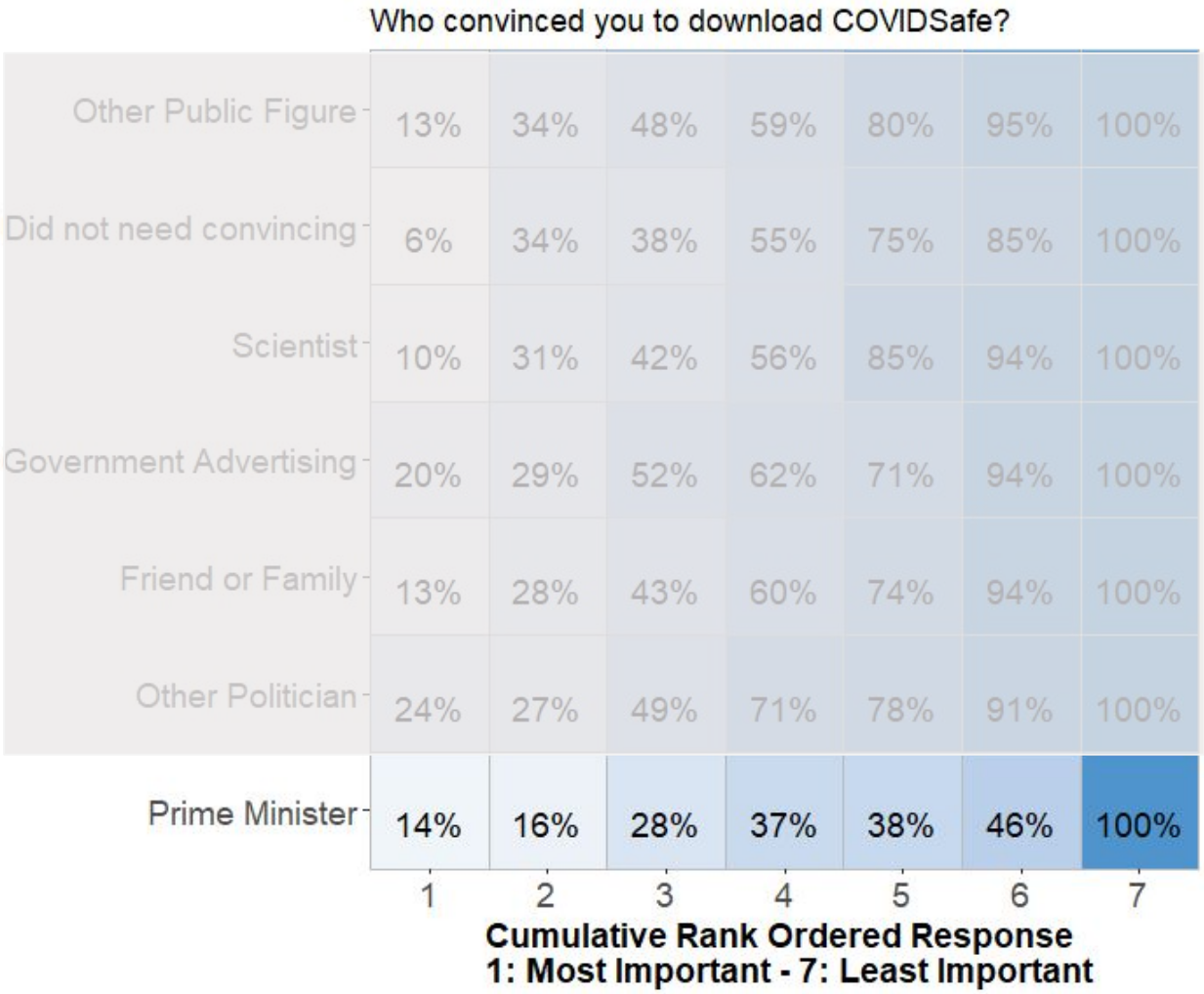
Who convinced you to download COVIDSafe?

	1	2	3	4	5	6	7
Other Public Figure	13%	34%	48%	59%	80%	95%	100%
Did not need convincing	6%	34%	38%	55%	75%	85%	100%
Scientist	10%	31%	42%	56%	85%	94%	100%
Government Advertising	20%	29%	52%	62%	71%	94%	100%
Friend or Family	13%	28%	43%	60%	74%	94%	100%
Other Politician	24%	27%	49%	71%	78%	91%	100%
Prime Minister	14%	16%	28%	37%	38%	46%	100%

Cumulative Rank Ordered Response
1: Most Important - 7: Least Important

COVIDSafe

Participants rank-ordered the individual(s) who convinced you to Download COVIDSafe.



COVIDSafe

Participants rank-ordered the individual(s) who convinced you to Download COVIDSafe.

Gov Advertising & **Other Politicians** (not PM) **were top-ranked**.

By **second selection**, other **Public Figures** & **Did not need convincing** were best ranked.

The PM was poorly ranked overall.

Who convinced you to download COVIDSafe?

	1	2	3	4	5	6	7
Other Public Figure	13%	34%	48%	59%	80%	95%	100%
Did not need convincing	6%	34%	38%	55%	75%	85%	100%
Scientist	10%	31%	42%	56%	85%	94%	100%
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Prime Minister	14%	16%	28%	37%	38%	46%	100%

Cumulative Rank Ordered Response
1: Most Important - 7: Least Important

COVIDSafe

Rank-ordered reasons for downloading COVIDSafe.

Other's health top ranked.

Economy worst ranked.

On second selection, **returning to normal activities** was best-ranked, then **self-** and **others-health**.

For what reasons did you download COVIDSafe?

	1	2	3	4	5
Return to Activities	18%	55%	74%	96%	100%
Self Health	19%	46%	84%	89%	100%
Others Health	27%	41%	66%	87%	100%
Gov Policy	22%	35%	48%	70%	100%
Economy	14%	22%	28%	58%	100%

Cumulative Rank Ordered Response
1: Most Important - 5: Least Important

COVIDSafe

Rank-ordered reasons for **not** downloading COVIDSafe.

Privacy concerns were top-ranked.

Followed by tie between **Gov Trust**, **Battery Usage**, and a belief the **app is not effective**.

Not knowing how was lowest ranked, however, smartphone usage was 93%.

Why will you not download the app in future?

	1	2	3	4	5	6	7
Privacy	31%	47%	53%	69%	79%	91%	100%
Gov Trust	18%	39%	49%	62%	83%	97%	100%
Battery Usage	19%	38%	43%	51%	75%	98%	100%
Non-Effective	19%	34%	42%	53%	75%	96%	100%
Normalising Gov Tracking	8%	24%	38%	68%	80%	97%	100%
Civil Liberties	5%	12%	53%	68%	76%	85%	100%
Not know how	1%	7%	21%	29%	31%	37%	100%

Cumulative Rank Ordered Response
1: Most Applicable - 7: Least Applicable

Summary

We assessed three [mostly] representative samples of the Australian public and determined:

- **The Impact COVID-19 has had on these people's lives:**
  18% job loss with 1.5% infected and an average of 17 days in lockdown.
  73% perceived compliance & 75% actual compliance with Gov Policy.

- **The Public's Perception of the COVID-19 pandemic**
  Estimated fatalities by nation were higher than true fatalities & TV main info source.

- **Public Attitudes towards mobile tracking methods to arrest the spread of COVID-19.**
  Network tracking most accepted, followed by Government App, then Apple/Google.

  There is a gap in attitudes & behaviour. **65% acceptance** for a Gov App, but only **44% downloads**.

  Primary reason for downloading COVIDSafe was to return to normal activities, and to look after one's personal health & the health of others.

PREDICTING ACCEPTANCE: LOGIT MODELS

Joshua White

03

Predicting Acceptance: Method

- A binary response variable was recorded for each scenario.

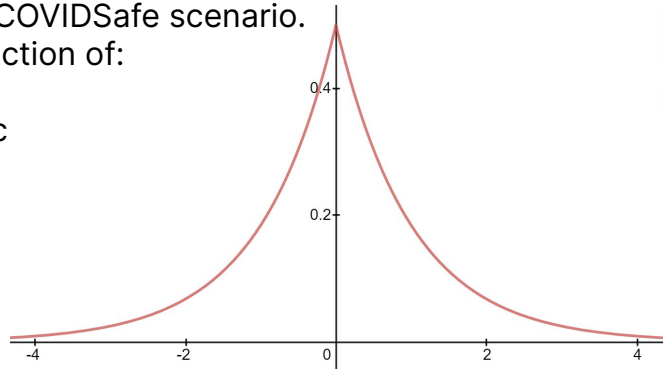
Hypothetical Telco Tracking: Is the governmental use of telecommunication data acceptable?

Hypothetical Apple/Google Bluetooth Tracking: Would you use an Apple/Google smartphone contact tracing capability?

Hypothetical Government App: Would you download and use a Government tracking app?

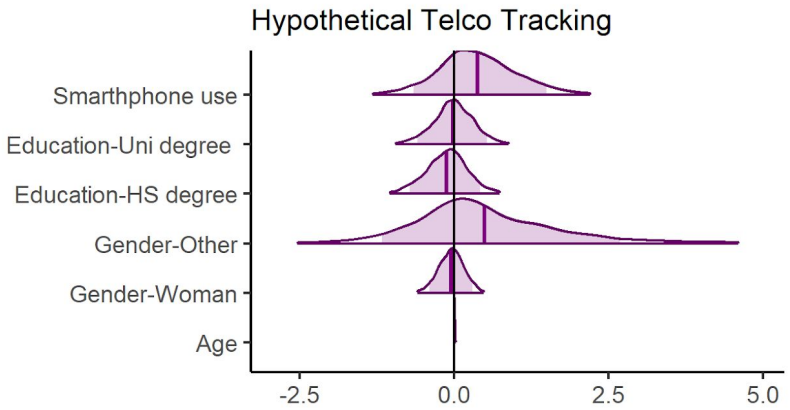
COVIDSafe App: Have you downloaded the COVIDSafe app?

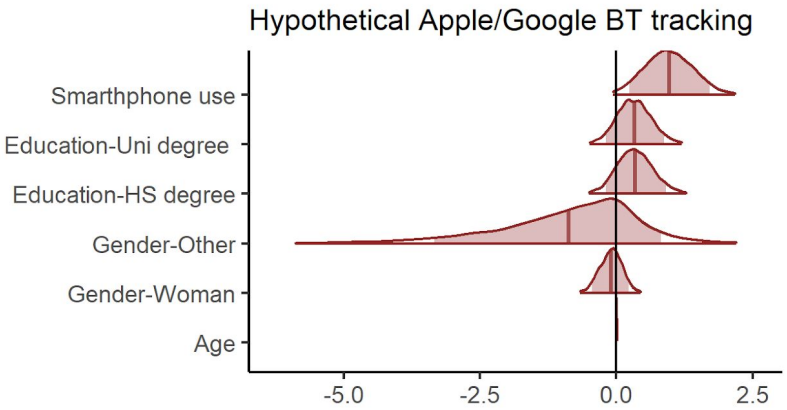
- Wave 2 data used for hypothetical scenarios, wave 3 for COVIDSafe scenario.
- Each scenario was modeled separately as an additive function of:
  - Demographics
  - Perceptions and experience of COVID-19 pandemic
  - Perceptions of tracking effectiveness
  - Perceptions of tracking privacy
  - Ideology

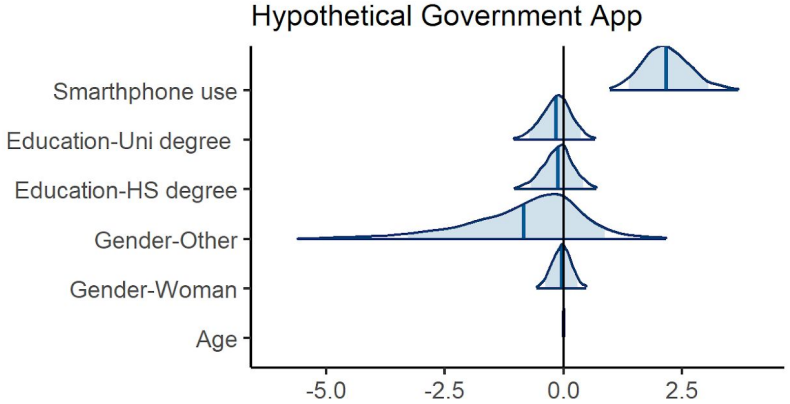


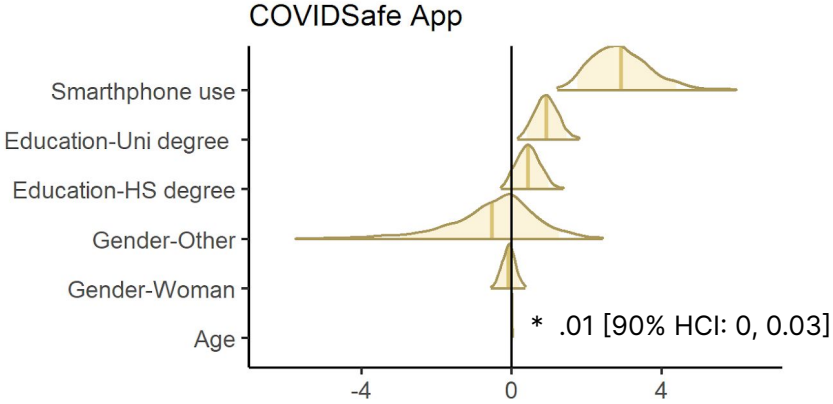
Model Details
Likert ratings treated as interval data.
Categorical variables dummy coded with ‘treatment’ contrasts..
Bayesian logistic regression with Laplacian priors (location = 0, scale = 1 / range) over regression weights, and binomial likelihood
Posterior distributions approximated by MCMC (2 chains, 2000 iterations incl. 500 ‘burn-ins’) using the ‘R’ package *brms* (implemented through Stan)

Predicting Acceptance: Demographics



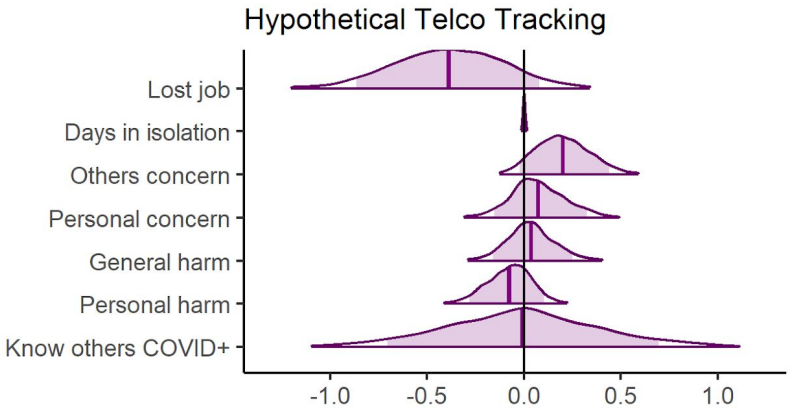


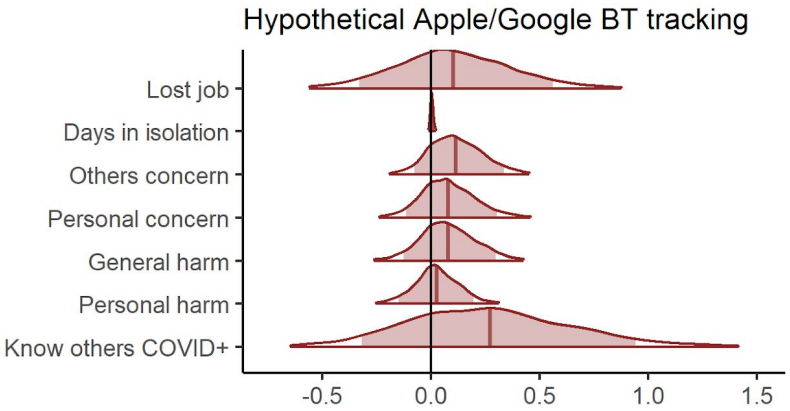


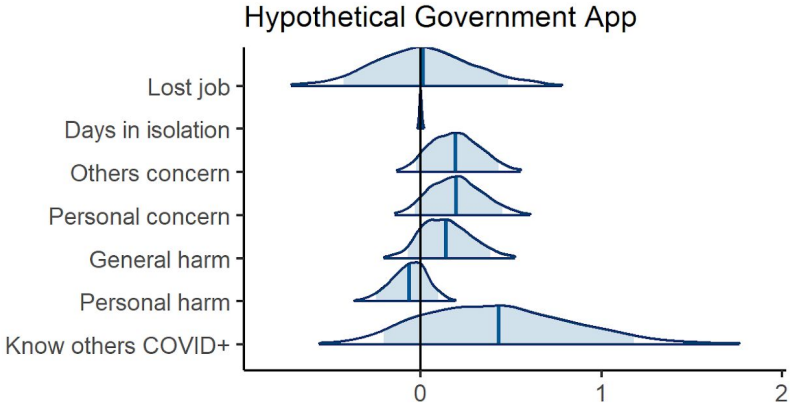


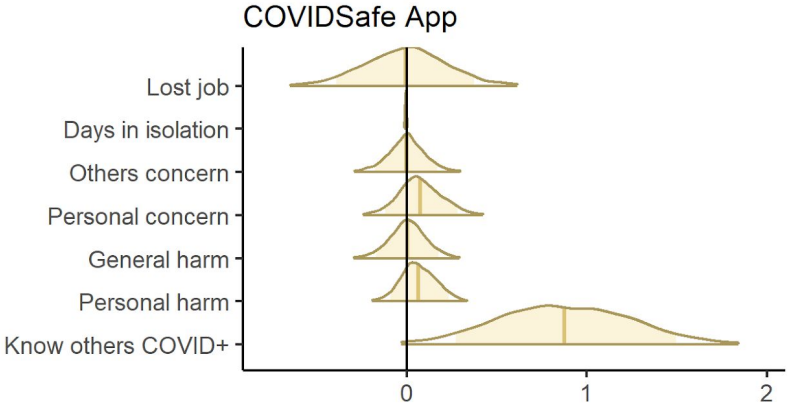
Demographics

Predicting Acceptance: Perceptions and impact of COVID-19

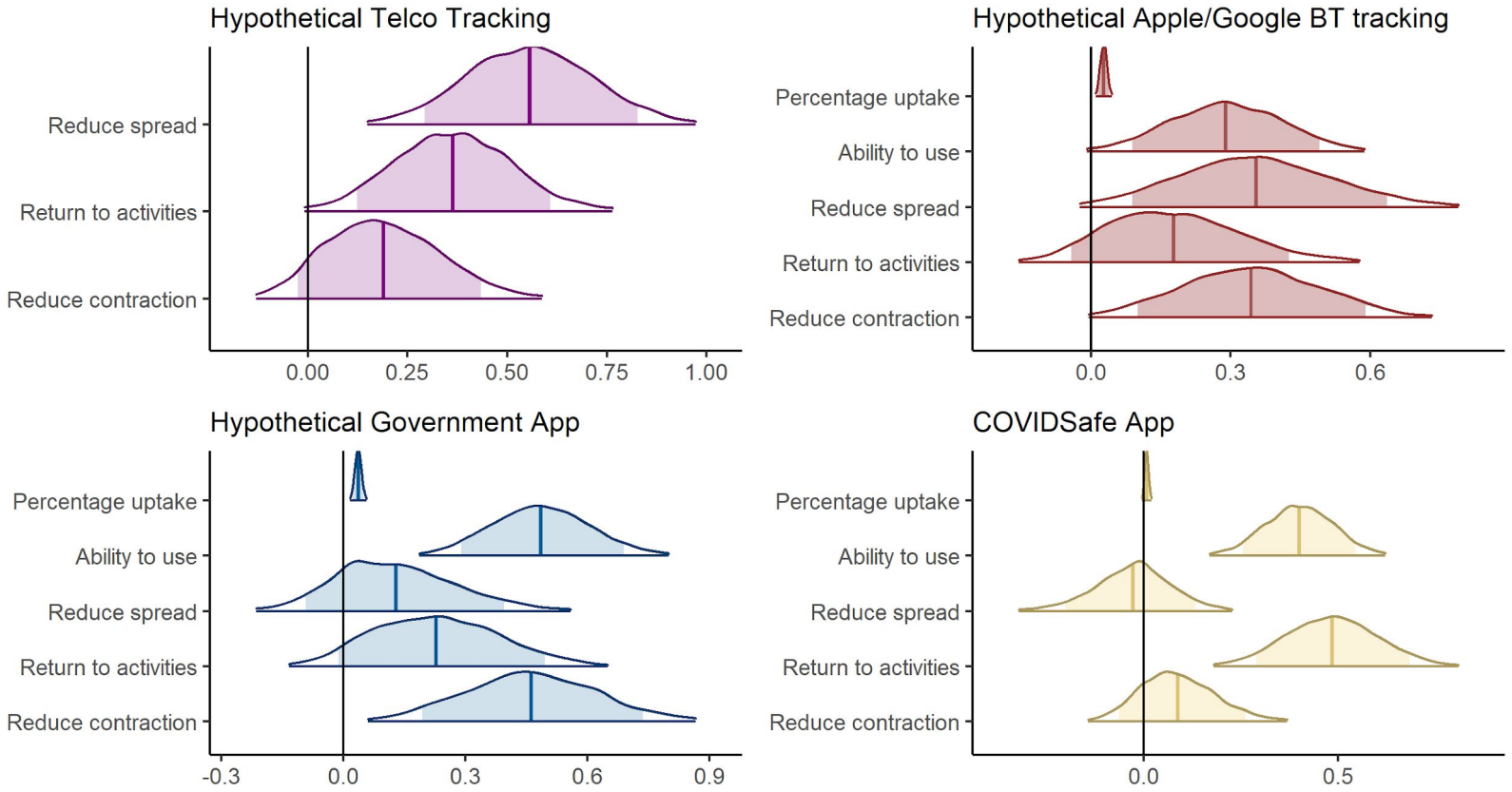




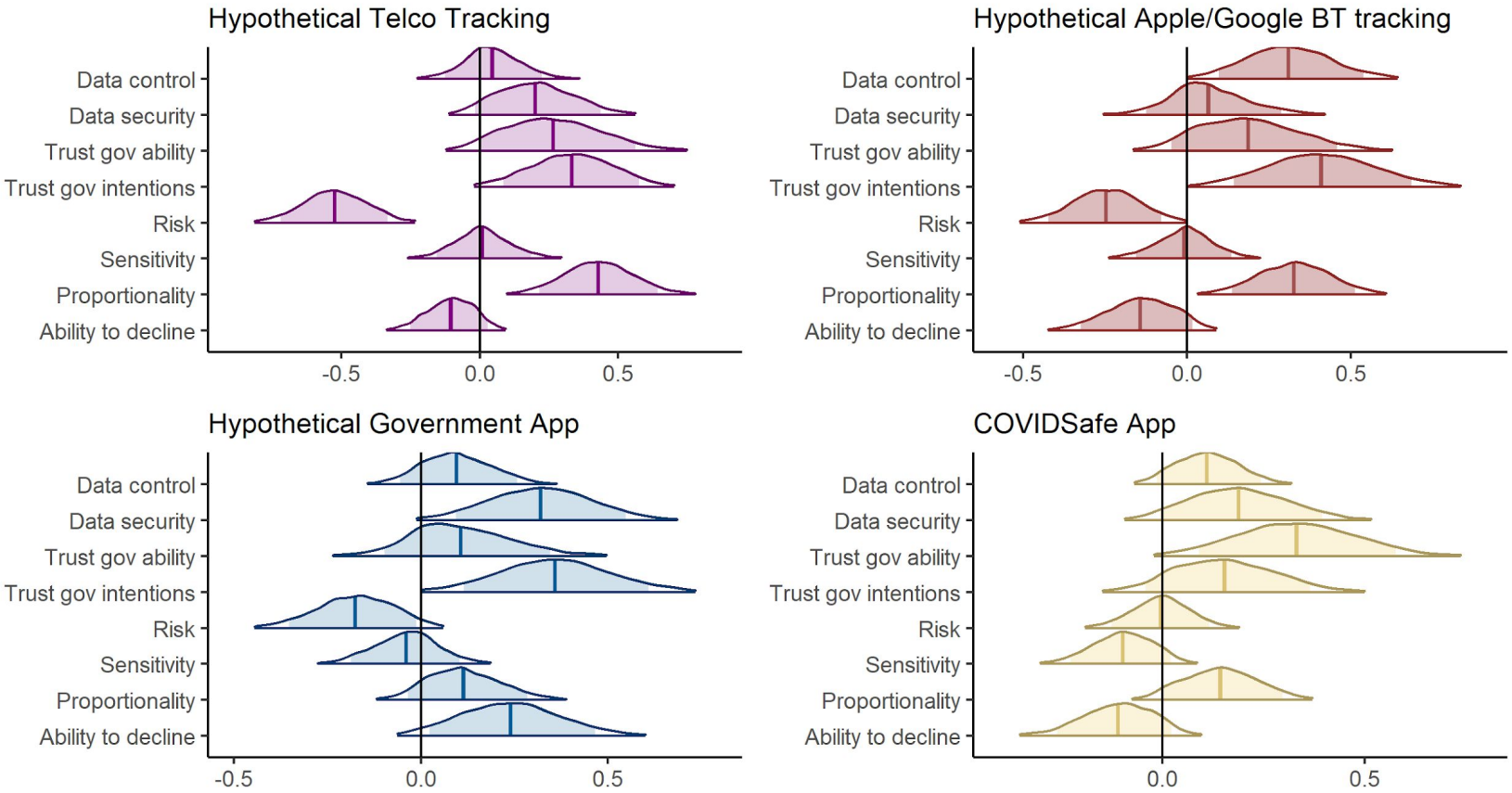




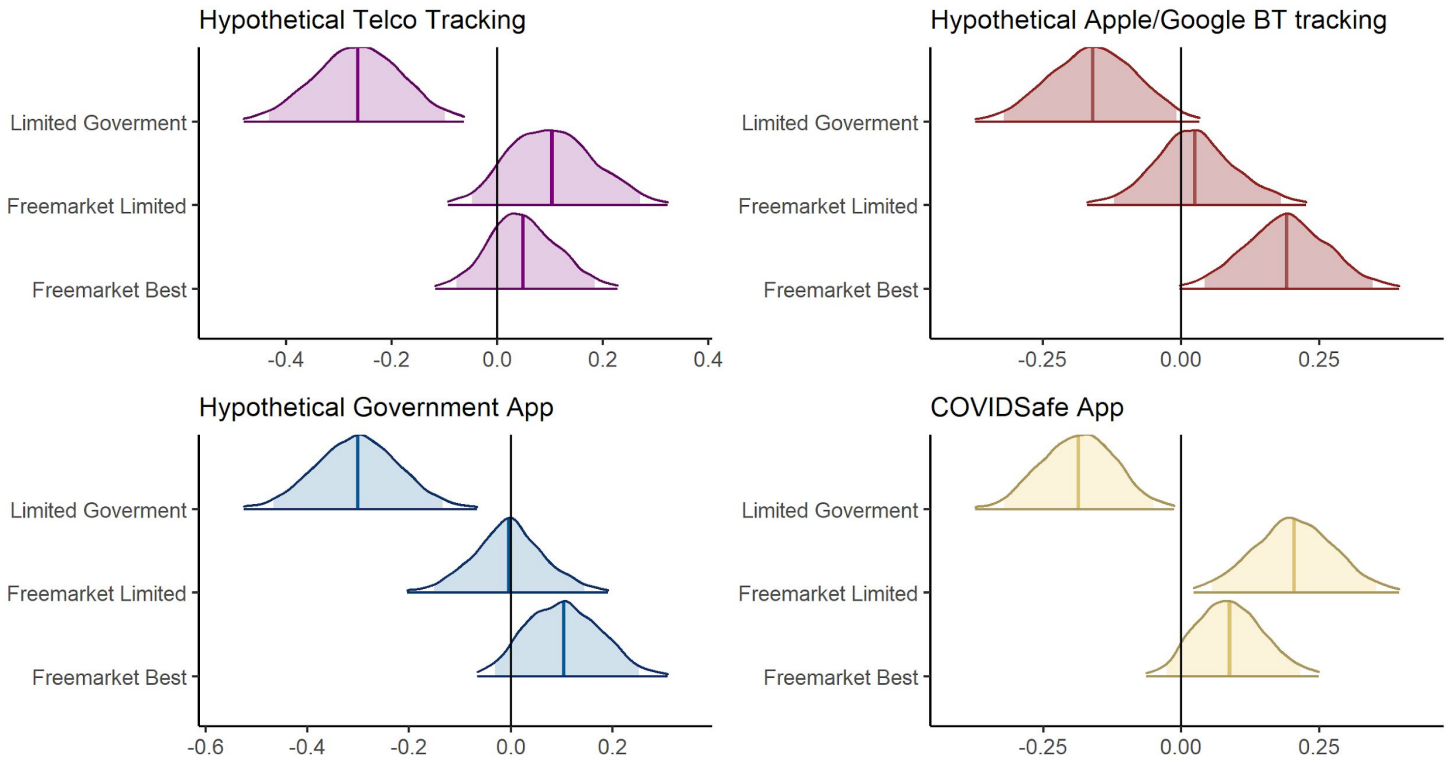
Predicting Acceptance: Perceptions of Tracking Effectiveness



Predicting Acceptance: Perceptions of Tracking Privacy



Predicting Acceptance: Ideology



Limited Government: *"The government should interfere with the lives of citizens as little as possible"*

Predicting Acceptance: Summary

Demographics:

- Increase in both *age* and *education* predicted greater likelihood of COVIDSafe uptake
- Hypothetical scenarios - no demographic predictors (except phone use - not surprising!)

Perceptions and experience of COVID-19 pandemic:

- Very few predictors. Except:
- *Knowing others that were COVID+* predicted greater likelihood of COVIDSafe uptake

Perceptions of Tracking Technology Effectiveness:

- Only *ability to use tracking technology* predicted greater likelihood in all scenarios.
- Otherwise mixed results. But, overall, more belief in tracking effectiveness → more likelihood of uptake.

Perceptions of Tracking Technology Privacy:

- Very few systematic predictors across scenarios.
- *Trust in government intentions* and *risk of harm* were both predictors in hypothetical scenarios, but not for COVIDSafe.
- *Trust in government to respect privacy* only predictor of COVIDSafe app uptake

Ideology:

- In all scenarios, *support for limited Government* predicted less likelihood of supporting/using COVID-19 tracking.

OVERALL SUMMARY

- Importance of **rapid science**.
- Need for **rapid contact tracing**.
- Difference between predicting **actual behaviour** and **hypothetical intentions**.
- Age, education, ideology, smartphone use, trust in government ability, ability to use app, & belief that app will let us return to activities all predict **COVIDSafe uptake**.

THANKS!

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QUESTIONS?

Tracking Scenarios

Mandatory government mobile network tracking (waves 1 and 2)

"The COVID-19 pandemic has rapidly become a worldwide threat. Containing the virus' spread is essential to minimize the impact on the healthcare system, the economy, and save many lives. The Australian Government might consider using phone tracking data supplied by telecommunication companies to identify and contact those who may have been exposed to people with COVID-19. This would help reduce community spread by identifying those most at risk and allowing health services to be appropriately targeted. **All people using a mobile phone would be included in the project, with no possibility to opt-out.** Data would be stored in an encrypted format on a secure server **accessible only to the Australian Government who may use the data to locate people who were violating lockdown orders and enforce them with fines and arrests where necessary.** Data would also be used to inform the appropriate public health response and to contact those who might have been exposed to COVID-19, and individual quarantine orders could be made on the basis of this data."

Tracking Scenarios

Voluntary government Bluetooth tracking (waves 1 and 2)

"The COVID-19 pandemic has rapidly become a worldwide threat. Containing the virus' spread is essential to minimize the impact on the healthcare system, the economy, and save many lives. The Australian Government might consider using smartphone tracking data to identify and contact those who may have been exposed to people with COVID-19. This would help reduce community spread by identifying those most at risk and allowing health services to be appropriately targeted. **Only people that downloaded a government app and agreed to be tracked and contacted would be included in the project**. The more people that download and use this app the more effectively the Government would be able to contain the spread of COVID-19. **Data would be stored in an encrypted format on a secure server accessible only to the Australian Government. Data would only be used to contact those who might have been exposed to COVID-19.**"

Tracking Scenarios

Apple/Google Bluetooth API tracking (wave 2 only)

"The COVID-19 pandemic has rapidly become a worldwide threat. Containing the virus' spread is essential to minimize the impact on the healthcare system, the economy, and save many lives. **Apple and Google have proposed adding a contact tracing capability to existing smartphones to help inform people if they have been exposed to others with COVID-19**. This would help reduce community spread of COVID-19 by allowing people to voluntarily self-isolate. When two people are near each other, their phones would connect via Bluetooth. If a person is later identified as being infected, the people they have been in close proximity to are then notified **without the government knowing who they are. The use of this contact tracing capability would be completely voluntary. People who are notified would not be informed who had tested positive.**"

Tracking Scenarios

COVIDSafe government Bluetooth tracking (wave 3 only)

"The COVID-19 pandemic has rapidly become a worldwide threat. Containing the virus' spread is essential to minimise the impact on the healthcare system, the economy, and save many lives. The Australian Government has recently released the COVIDSafe smartphone app to help identify and contact those who may have been exposed to people with COVID-19. **The use of this app is completely voluntary, but the government has explicitly stated that easing social distancing restrictions depends at least in part on the degree of community uptake of this voluntary app.** This is because, the more people that download and use this app the more effectively it will help to contain the spread of COVID-19. **The app works with bluetooth and no location data is collected**: when two people are near each other, their phones connect and keep a record of all these connections. If a person is later identified as being infected, that person may **voluntarily upload their bluetooth contacts to a secure server accessible only to the Health Department of the Australian Government. This data would only be used by the Health Department of the Australian Government to contact those who might have been exposed to COVID-19.**"