

Exploring Institutional Trust in New Zealand Pre/Post COVID-19 Pandemic

New Zealand Attitudes and Values Study: Years 2019-2022 N = 42,681

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NZAVS Report on Institutional Trust Pre/Post COVID

This report delves into the changes in institutional trust among New Zealanders from the pre-pandemic period in 2019 to 2022.

The New Zealand Attitudes and Values Study uses a two-item scale to measure **Trust in Science**

- “I have a high degree of confidence in the scientific community.”(Nisbet, Cooper, and Garrett 2015)
- “Our society places too much emphasis on science.”(reverse coded)

We average these scores to form a single score (Hartman et al. 2017).¹ These items were introduced in NZAVS Wave 11 (2019 - 2020)²

Previous research using a propensity score design reported on changes in Trust in Science during the first three weeks of New Zealand’s COVID lockdown in March and April 2020 (Sibley et al. 2020).

COVID-19 Government response (Marques et al. 2022)

- “I trust the Government to make sensible decisions about how to best manage COVID-19 in New Zealand.”
- “The New Zealand government response to COVID-19.”

Trust in politicians (Sibley et al. 2020)

- “Politicians in New Zealand can generally be trusted.”

Institutional trust in police (Tyler 2005)

- “People’s basic rights are well protected by the New Zealand Police.”
- “There are many things about the New Zealand Police and its policies that need to be changed.”
- “The New Zealand Police care about the well-being of everyone they deal with.”

General tendency to believe in conspiracies(Lantian et al. 2016)

¹We do not blindly adhere to the standard measurement approaches in psychometrics. It might be preferable to work with single items instead of the averaged score. See (VanderWeele 2022) for more information on this point.

²We must be cautious: causal identification requires contrasting outcomes under different exposures. Because all were exposed to the COVID-19 pandemic, these contrasts are not identified without the strong assumption that there were no pre-existing trends in the acceptance of science before the COVID-19 pandemic struck.

- “I think that the official version of major world events given by authorities often hides the truth.”

Sample responses: years 2019-2020: Pre-Covid, Lockdown, Post-Lockdown

Forms of Institutional Trust	pre_covid	lockdown	post_lockdown
	(N=29812)	(N=3511)	(N=9358)
Trust_in_Science			
Mean (SD)	5.36 (\pm 1.28)	5.66 (\pm 1.23)	5.55 (\pm 1.27)
Missing	289 (1.0%)	16 (0.5%)	70 (0.7%)
Trust_in_Politicians			
Mean (SD)	3.72 (\pm 1.44)	4.00 (\pm 1.48)	3.78 (\pm 1.48)
Missing	685 (2.3%)	25 (0.7%)	143 (1.5%)
Trust_in_Police			
Mean (SD)	4.61 (\pm 1.23)	4.60 (\pm 1.34)	4.50 (\pm 1.33)
Missing	12 (0.0%)	0 (0%)	3 (0.0%)
Conspiracy_Beliefs			
Mean (SD)	4.38 (\pm 1.60)	4.29 (\pm 1.68)	4.31 (\pm 1.69)
Missing	940 (3.2%)	43 (1.2%)	214 (2.3%)

Here is a graph of the same.

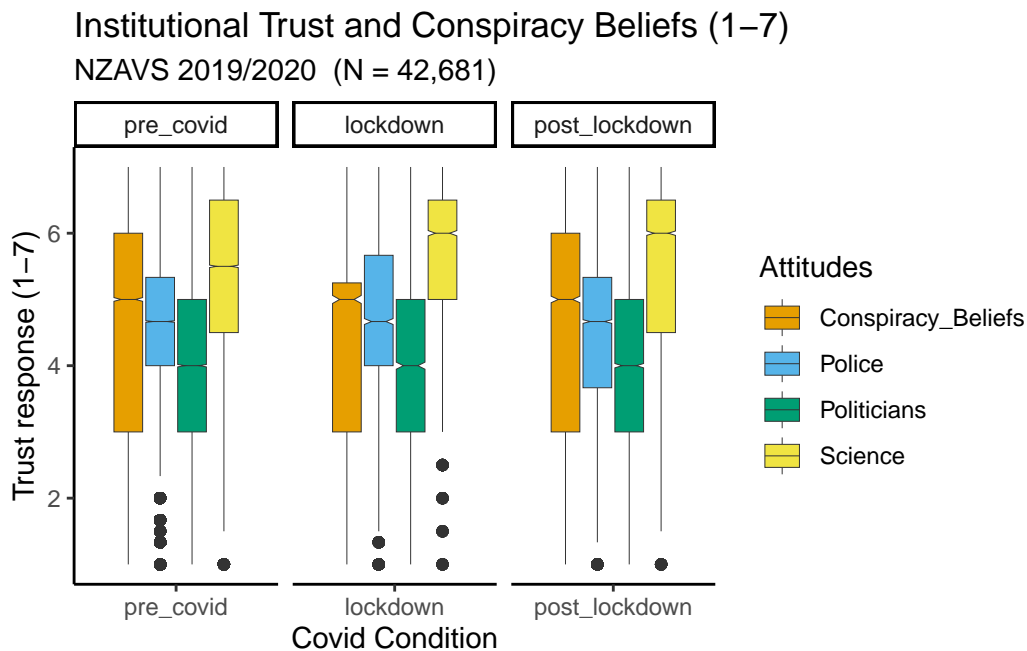


Figure 1: Boxplot for Institutional Trust: NZAVS Waves During Covid: Years 2020

This table and graph compare the trust in science, police, and politicians across three different periods: pre-Covid, lockdown, and post-lockdown.

We observe:

1. Trust in science increased during the lockdown period and remained higher in the post-lockdown period compared to the pre-Covid period.

2. Trust in police remained relatively stable across all three periods, although the trend tracked downward after lockdown.
3. Trust in politicians increased during the lockdown period. It decreased slightly in the post-lockdown period but remained higher than in the pre-Covid period.
4. Conspiracy Beliefs: the average mistrust of official versions of major world events given by authorities appear to decrease during lockdown but subsequently decrease.

Notably, the central tendency may not always be the interesting statistic for understanding social change. There may be greater galvanisation in response that is masked by overall average response. In future work, we will examine this point. For now, the trends suggest overall stability during 2019-2020, with increasing confidence in science.

NZAVS sample responses: years 2019-2022

Next, we examine changes in institutional trust across two waves following the 2019/2020 NZAVS wave.

Table:

Forms of Institutional Trust	X2019	X2020	X2021
	(N=42681)	(N=42681)	(N=42681)
Trust_in_Science			
Mean (SD)	5.43 (± 1.28)	5.67 (± 1.24)	5.70 (± 1.26)
Missing	375 (0.9%)	9475 (22.2%)	14231 (33.3%)
Trust_in_Politicians			
Mean (SD)	3.76 (± 1.45)	4.05 (± 1.49)	3.92 (± 1.56)
Missing	853 (2.0%)	10078 (23.6%)	15406 (36.1%)
Trust_in_Police			
Mean (SD)	4.58 (± 1.26)	4.53 (± 1.26)	4.43 (± 1.30)
Missing	15 (0.0%)	9378 (22.0%)	13770 (32.3%)
Trust_in_Govt_Covid_Response			
Mean (SD)	NA (\pm NA)	5.66 (± 1.55)	4.79 (± 1.94)
Missing	42681 (100%)	9620 (22.5%)	15123 (35.4%)
Conspiracy_Beliefs			
Mean (SD)	4.36 (± 1.63)	4.10 (± 1.68)	4.02 (± 1.74)
Missing	1197 (2.8%)	9676 (22.7%)	15110 (35.4%)

Here is a graph of the same.

Descriptive findings.

Trust in Science: The average trust score increased from 5.43 (± 1.28) in 2019 to 5.67 (± 1.24) in 2020 and to 5.70 (± 1.26) in 2021. The number of missing values increased from 375 (0.9%) in 2019 to 9,475 (22.2%) in 2020 and further to 14,231 (33.3%) in 2021.

Trust in Politicians: The average trust score increased from 3.76 (± 1.45) in 2019 to 4.05 (± 1.49) in 2020, then slightly decreased to 3.92 (± 1.56) in 2021. The number of missing values increased from 853 (2.0%) in 2019 to 10,078 (23.6%) in 2020 and further to 15,406 (36.1%) in 2021.

Trust in Police: The average trust score decreased from 4.58 (± 1.26) in 2019 to 4.53 (± 1.26) in 2020 and further to 4.43 (± 1.30) in 2021. The number of missing values increased from 15 (0.0%) in 2019 to 9,378 (22.0%) in 2020 and further to 13,770 (32.3%) in 2021.

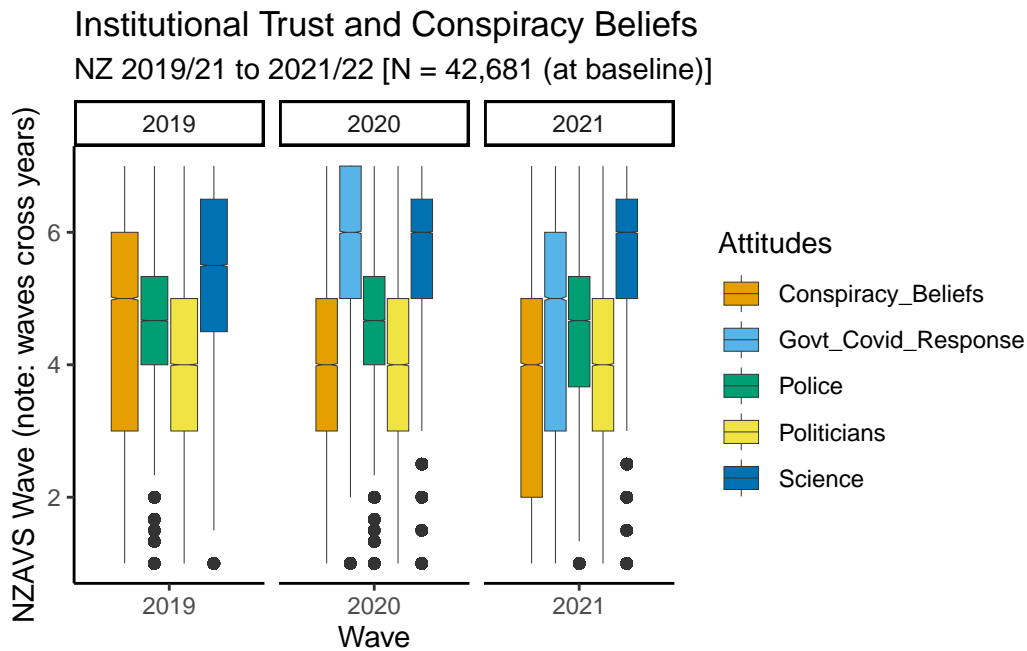


Figure 2: Boxplot for Institutional Trust: NZAVS Waves 11-13 (years 2019-2022)

Trust in Government's COVID Response: This metric was not applicable in 2019. The average trust score was 5.66 (± 1.55) in 2020 and decreased to 4.79 (± 1.94) in 2021. The number of missing values was 42,681 (100%) in 2019, 9,620 (22.5%) in 2020, and 15,123 (35.4%) in 2021.

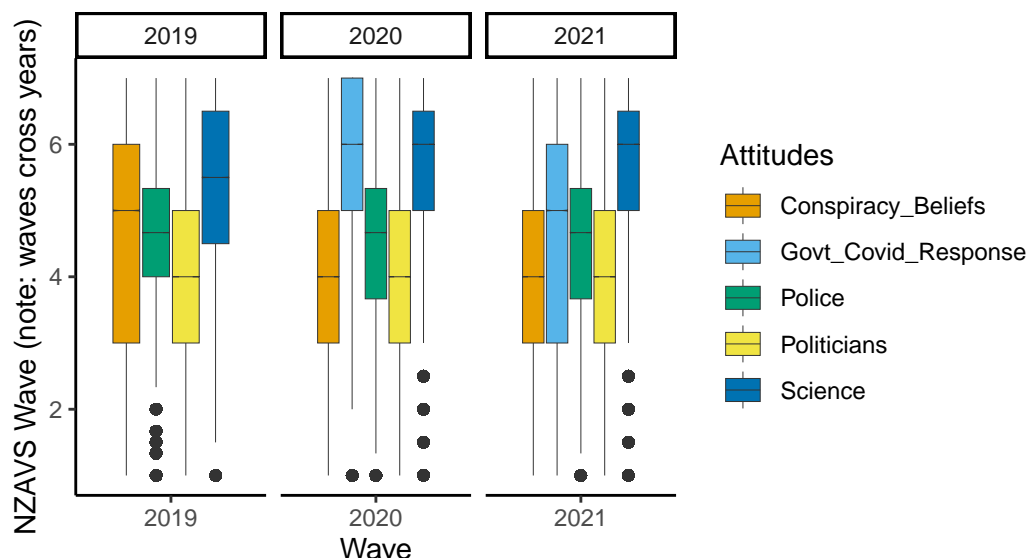
Conspiracy Beliefs: The average score decreased from 4.36 (± 1.63) in 2019 to 4.10 (± 1.68) in 2020 and further to 4.02 (± 1.74) in 2021. The number of missing values increased from 1,197 (2.8%) in 2019 to 9,676 (22.7%) in 2020 and further to 15,110 (35.4%) in 2021.

How should we interpret these findings? Missing data from non-response and panel attrition may bias estimates for the population. We must address bias from missing responses. We address this bias through multiple imputation.

Handling missingness

To handle missing data, we must model and predict missing responses. We attempt two types of missing data imputation. Both use machine learning. The first is the `m1im` package in R, which uses model tuning to optimise the prediction of missing values. The second is the `mice` package in R. It uses predictive mean matching (ppm) to optimise the prediction of missing values. We find that the `mice` package/ppm performs better, and present the `theppm` results here. We present the code for both approaches below.

Institutional Trust and Conspiracy Beliefs: Missingness Multiply– NZ 2019/21 to 2021/22 [N = 42,681 (at baseline)]



Forms of Institutional Trust	X2019	X2020	X2021
	(N=469491)	(N=469491)	(N=469491)
Trust_in_Science			
Mean (SD)	5.43 (\pm 1.28)	5.64 (\pm 1.25)	5.65 (\pm 1.28)
Missing	375 (0.1%)	9475 (2.0%)	14231 (3.0%)
Trust_in_Politicians			
Mean (SD)	3.76 (\pm 1.45)	4.02 (\pm 1.50)	3.85 (\pm 1.57)
Missing	853 (0.2%)	10078 (2.1%)	15406 (3.3%)
Trust_in_Police			
Mean (SD)	4.58 (\pm 1.26)	4.50 (\pm 1.27)	4.37 (\pm 1.32)
Missing	15 (0.0%)	9378 (2.0%)	13770 (2.9%)
Trust_in_Govt_Covid_Response			
Mean (SD)	NA (\pm NA)	5.64 (\pm 1.56)	4.74 (\pm 1.96)
Missing	469491 (100%)	9620 (2.0%)	15123 (3.2%)
Conspiracy_Beliefs			
Mean (SD)	4.36 (\pm 1.63)	4.13 (\pm 1.68)	4.06 (\pm 1.75)
Missing	1197 (0.3%)	9676 (2.1%)	15110 (3.2%)

The imputed data contain ten imputed datasets plus the original data with missing values. We will need to adjust for the uncertainties of multiple imputation using Rubin's rule.

Additionally, we are now grouping pre and post responses together in the 2019 wave. So we are no longer identifying specific responses of to the COVID pandemic and response. To identify the specific effects of the COVID pandemic and response requires care. There are no contrasts from which to derive comparisons. That is, because all in the population were subject to the exposure, we cannot straightforwardly infer how people would have responded were they not exposed. We will return to this issue in future work.

These provisos aside, we find evidence for continued average confidence in science, with some evidence for a continued downward shift in trust for the NZ police.

Next, we formally model change over time using generalised estimating equations (GEE). They models take into account uncertainties from multiple imputation. We employ survey weights to recover population estimates.

Results for average responses.

Trust in science

Table 4: Trust in Science by NZAVS Wave

term	estimate	std.error	statistic	df	p.value
(Intercept)	5.451	0.007	756.404	62762.541	0
Wave2020	0.192	0.006	29.781	176.552	0
Wave2021	0.215	0.007	29.572	146.591	0

Table 5: Trust in Politicians by NZAVS Wave

term	estimate	std.error	statistic	df	p.value
(Intercept)	3.736	0.008	441.327	14871.025	0
Wave2020	0.251	0.009	28.251	93.102	0
Wave2021	0.080	0.009	8.803	259.975	0

Table 6: Trust in Police by NZAVS Wave

term	estimate	std.error	statistic	df	p.value
(Intercept)	4.539	0.008	574.900	103491.441	0
Wave2020	-0.110	0.007	-16.752	111.240	0
Wave2021	-0.247	0.008	-31.849	133.079	0

Table 7: Trust in Science by NZAVS Wave

term	estimate	std.error	statistic	df	p.value
(Intercept)	5.614	0.011	523.237	103.496	0
Wave2021	-0.903	0.011	-81.429	67.518	0

Table 8: Conspiracy Beliefs by NZAVS Wave

term	estimate	std.error	statistic	df	p.value
(Intercept)	4.362	0.009	464.975	4101.840	0
Wave2020	-0.251	0.012	-20.768	49.163	0
Wave2021	-0.308	0.013	-23.368	48.228	0

The results reflect findings in the descriptive tables.

Trust in Science by NZAVS Wave:

- From 2019 to 2020, trust in science reliably increased (estimate = 0.192, $p < 0.001$).
- From 2019 to 2021, trust in science also reliably increased (estimate = 0.215, $p < 0.001$).

There is no downward trend in average Trust in Science.

Trust in Politicians by NZAVS Wave:

- From 2019 to 2020, the increase in trust in politicians was reliable (estimate = 0.251, $p < 0.001$).
- From 2019 to 2021, the increase in trust in politicians was also reliable (estimate = 0.080, $p < 0.001$).

Comparisons here are with the baseline wave, comparing 2019 and 2021 we find evidence for regression to the baseline wave. Whereas trust in politicians increased during the initial COVID-19 attack and response, gains to average trust appear to have been dropping.

Trust in Police by NZAVS Wave:

- From 2019 to 2020, the decrease in trust in police was reliable (estimate = -0.110, $p < 0.001$).
- From 2019 to 2021, the decrease in trust in police was also reliable (estimate = -0.247, $p < 0.001$).

Here we find evidence for declining Trust in the NZ police. Notably, however, overall levels of Trust in the NZ police remain high.

Trust in Government COVID Response by NZAVS Wave (only two waves):

- From 2019 to 2021, the decrease in trust in the NZ government's COVID response was reliable (estimate = -0.903, $p < 0.001$). This represents a major drop in confidence. Notably, this drop in confidence for the NZ government's COVID response has not considerably affected attitudes to science.

Conspiracy Beliefs:

- From 2019 to 2020, the decrease in conspiracy beliefs was reliable (estimate = -0.251, $p < 0.001$).
- From 2019 to 2021, the decrease in conspiracy beliefs was also reliable (estimate = -0.308, $p < 0.001$).

On average, we find that conspiracy beliefs are falling. However, this evidence is based on the assumptions that the model we have used impute missing conspiracy beliefs is adequate. It is possible that real change in conspiracy beliefs, and indeed for all imputed variables differs from what we have recovered in the imputation model.

Summary

The results indicate a reliable increase in trust in science from 2019 to 2020, and that this shift has remained constant. In contrast, changes in trust in politicians, trust in police, trust in the government's COVID response, across the waves were generally unreliable. Evidence suggests that average conspiracy beliefs may have declined.

The preliminary findings merit further research.

Firstly, multiple imputation models rely on assumptions. These assumptions must be tested.

Secondly, when a population becomes more polarized, the average response may be misleading, potentially indicating no change. We must investigate change at the margins of response, not merely at the average response.

Thirdly, we need not assume that the items model a univariate latent construct. We might instead model items from the scales individually, as suggested by VanderWeele (2022).

In the near future, that address these challenges. Stay tuned!

Information about the New Zealand Attitudes and Values Study.

For more information about the NZAVS see: [here](#) and [here](#)

- Hartman, Robert O., Nathan F. Dieckmann, Amber M. Sprenger, Bradley J. Stastny, and Kenneth G. DeMarree. 2017. "Modeling Attitudes Toward Science: Development and Validation of the Credibility of Science Scale." *Basic and Applied Social Psychology* 39: 358–71. <https://doi.org/10.1080/01973533.2017.1372284>.
- Lantian, Anthony, Dominique Muller, Cécile Nurra, and Karen M Douglas. 2016. "Measuring Belief in Conspiracy Theories: Validation of a French and English Single-Item Scale." *International Review of Social Psychology* 29 (1): 114.
- Marques, Mathew D, Chris G Sibley, Marc Wilson, Joseph A Bulbulia, Danny Osborne, Kumar Yogeeswaran, Carol Lee, Isabelle M Duck, Karen Douglas, and Aleksandra Cichocka. 2022. "Psychological Predictors of COVID-19 Vaccination in New Zealand."
- Nisbet, Erik C., Kathryn E. Cooper, and R. Kelly Garrett. 2015. "The Partisan Brain: How Dissonant Science Messages Lead Conservatives and Liberals to (Dis)trust Science." *The ANNALS of the American Academy of Political and Social Science* 658 (1): 36–66. <https://doi.org/10.1177/0002716214555474>.
- Sibley, Chris G, Lara Greaves, Nicole Satherley, Petar Milojev, Joseph Bulbulia, Fiona Barlow, Danny Osborne, et al. 2020. "What Happened to People in New Zealand During Covid-19 Home Lockdown? Institutional Trust, Attitudes to Government, Mental Health and Subjective Wellbeing." osf.io/e765a.
- Tyler, Tom R. 2005. "Policing in Black and White: Ethnic Group Differences in Trust and Confidence in the Police." *Police Quarterly* 8 (3): 322342.
- VanderWeele, Tyler J. 2022. "Constructed Measures and Causal Inference: Towards a New Model of Measurement for Psychosocial Constructs." *Epidemiology* 33 (1): 141. <https://doi.org/10.1097/EDE.0000000000001434>.