Who are the NFDS

An OutcomeWide Study

2023-05-12

Abstract

Who are the NFDs anyway?

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Introduction

Who are the NFDs anyway?(Sibley 2012)

Method

Questions related to religion are as follows

Belief in God

Using one item from Eurobarometer (2005), we asked participants "Do you believe in a God" (1 = Yes, 0 = No) (Eurobarometer 2005).

Belief in Sprituality

Using one item from Eurobarometer (2005), we asked participants "Do you believe in some form of spirit or lifeforce? (1 = Yes, 0 = No) (Eurobarometer 2005).

Religion Affiliation

Participants were asked to indicate their religion identification ("Do you identify with a religion and/or spiritual group?") on a binary response (1 = Yes, 0 = No). We then asked "What religion or spiritual group?" These questions are used in the New Zealand Census.

Religious Identification

If participants answered *yes* to "Do you identify with a religion and/or spiritual group? we asked"How important is your religion to how you see yourself?" (1 = Not important, 7 = Very important). Those participants who were not religious were imputed a score of "1".

Frequency of Church Attendence

If participants answered *yes* to "Do you identify with a religion and/or spiritual group?" we measured their frequency of church attendance using one item from Sibley (2012): "how many times did you attend a church or place of worship in the last month?". Those participants who were not religious were imputed a score of "0".

Spiritual Identification

Spiritual identification was measured using one item ("I identify as a spiritual person.") from Postmes, Haslam, and Jans (2013). Participants indicated their agreement with this item (1 = Strongly Disagree to 7 = Strongly Agree).

Frequency of Prayer

If participants answered *yes* to "Do you identify with a religion and/or spiritual group?" we measured their frequency of prayer by asking "how many times did you pray in the last week?" Those participants who were not religious were imputed a score of "0" (S. Bulbulia J. A. 2015) .

Frequency of Scripture Reading

If participants answered *yes* to "Do you identify with a religion and/or spiritual group?" we measured their frequency of scripture reading by asking "how many times did you read religious scripture in the last week?" Those participants who were not religious were imputed a score of "0" (J. Bulbulia et al. 2016).

Perceived Discrimination – Religion

"I feel that I am often discriminated against because of my religious/spiritual beliefs." (1 = Strongly Disagree to 7 = Strongly Agree). (Developed for the NZAVS, Time 7 - time 14)

Descriptive statistics

Analytic approach

We next leveraged longitudinal data to investigate whether changing from transiting from a Christian denomination to a Christian NFD affiliation affect people's religious behaviors. That is, we used the longitudinal features of NZAVS data collection to evalutate the causal question of whether becoming a Christian NFD makes somebody less religious.(Eurobarometer 2005)

Selection criteria.

1. We selected people who participated in both the NZAVS 2016 and 2017 waves.
2. Christian at baseline, not NFD.
3. Christian at baseline + 1, either NFD or not NFD.
4. Outcomes are all the variables in the NZAVS that measure religion and spirituality.
5. Missing data multiply imputed (to adjust for sampling bias).
6. Control for baseline confounders
7. Estimation by Inverse probability weighting and G-computation.
8. Recover the **Average Treatment Effect in the Treated**.

Sample

Table 1: Sample Statistics (baseline = 2018)

	Time 10 (baseline)
	(N=10787)
Male	
Male	4003 (37 %)
Not_male	6784 (63 %)
Cohort	
Gen_Silent: born< 1946	714 (7 %)
Gen Boomers: born >= 1946 & b.< 1965	5229 (48 %)
GenX: born >=1961 & b.< 1981	3311 (31 %)
GenY: born >=1981 & b.< 1996	1421 (13 %)
GenZ: born >= 1996	112 (1 %)
NZ-European	
No	2018 (19 %)
Yes	8730 (81 %)
Missing	39 (0.4%)
Education	
Mean (SD)	5.63 (± 2.66)
Missing	37 (0.3%)
Employed	
No	2714 (25 %)
Yes	8064 (75 %)
Missing	9 (0.1%)
NZDep2018	
Mean (SD)	4.70 (± 2.73)
Missing	117 (1.1%)
NZSEI13	
Mean (SD)	54.9 (± 16.0)
Missing	56 (0.5%)
Rural_GCH2018	
1	6632 (61 %)
2	2092 (19 %)
3	1254 (12 %)
4	567 (5 %)
5	126 (1 %)
Missing	116 (1.1%)
Born NZ	
Mean (SD)	0.800 (± 0.400)
Missing	18 (0.2%)
Parent	
No	2574 (24 %)
Yes	8212 (76 %)
Missing	1 (0.0%)
Partner	
No	2576 (24 %)
Yes	7903 (73 %)
Missing	308 (2.9%)

	Time 10 (baseline)
Politically_Liberal	
Mean (SD)	3.57 (± 1.38)
Missing	497 (4.6%)
Left_Wing	
Mean (SD)	3.71 (± 1.31)
Missing	537 (5.0%)
Religious_Identification	
Mean (SD)	1.72 (± 2.58)
Missing	68 (0.6%)

Description of Changes in Attitudes in Sample Pre-Post Attacks (one year)

The sample consists of 10,878 participants who responded the NZAVS 2016/17 Time 8 survey and who again responded to the NZAVS 2018/19 Time 10 survey.

Table 2: Average warmth ratings before and one-year after attacks

	Pre Attacks(Time 10)	Post Attacks(Time 11)
	(N=10787)	(N=10787)
Warm Muslims		
Mean (SD)	4.09 (1.46)	4.35 (1.41)
Median [Min, Max]	4.00 [1.00, 7.00]	4.00 [1.00, 7.00]
Missing	286 (2.7%)	1672 (15.5%)
Warm Asians		
Mean (SD)	4.54 (1.27)	4.64 (1.23)
Median [Min, Max]	4.00 [1.00, 7.00]	4.00 [1.00, 7.00]
Missing	265 (2.5%)	1647 (15.3%)
Warm Chinese		
Mean (SD)	4.39 (1.34)	4.47 (1.32)
Median [Min, Max]	4.00 [1.00, 7.00]	4.00 [1.00, 7.00]
Missing	280 (2.6%)	1673 (15.5%)
Warm Immigrants		
Mean (SD)	4.54 (1.23)	4.64 (1.23)
Median [Min, Max]	4.00 [1.00, 7.00]	4.00 [1.00, 7.00]
Missing	282 (2.6%)	1674 (15.5%)
Warm Indians		
Mean (SD)	4.31 (1.36)	4.42 (1.34)
Median [Min, Max]	4.00 [1.00, 7.00]	4.00 [1.00, 7.00]
Missing	277 (2.6%)	1669 (15.5%)
Warm Refugees		
Mean (SD)	4.68 (1.34)	4.80 (1.31)
Median [Min, Max]	5.00 [1.00, 7.00]	5.00 [1.00, 7.00]
Missing	283 (2.6%)	1654 (15.3%)
Warm Pacific		
Mean (SD)	4.78 (1.24)	4.87 (1.20)
Median [Min, Max]	5.00 [1.00, 7.00]	5.00 [1.00, 7.00]
Missing	265 (2.5%)	1654 (15.3%)
Warm Maori		

	Pre Attacks(Time 10)	Post Attacks(Time 11)
Mean (SD)	5.00 (1.27)	5.03 (1.26)
Median [Min, Max]	5.00 [1.00, 7.00]	5.00 [1.00, 7.00]
Missing	270 (2.5%)	1660 (15.4%)
Warm NZ Euro		
Mean (SD)	5.57 (1.23)	5.58 (1.24)
Median [Min, Max]	6.00 [1.00, 7.00]	6.00 [1.00, 7.00]
Missing	282 (2.6%)	1659 (15.4%)
Warm Elderly		
Mean (SD)	5.52 (1.16)	5.51 (1.15)
Median [Min, Max]	6.00 [1.00, 7.00]	6.00 [1.00, 7.00]
Missing	258 (2.4%)	1648 (15.3%)
Warm Overweight		
Mean (SD)	4.21 (1.37)	4.22 (1.38)
Median [Min, Max]	4.00 [1.00, 7.00]	4.00 [1.00, 7.00]
Missing	274 (2.5%)	1660 (15.4%)
Warm Mental-illness		
Mean (SD)	4.60 (1.29)	4.64 (1.28)
Median [Min, Max]	4.00 [1.00, 7.00]	4.00 [1.00, 7.00]
Missing	288 (2.7%)	1671 (15.5%)

Table 3: Personality ratings at baseline. In addition to demographic indicators we also used personality ratings to multiply impute missing values

	Time 10 (baseline)
	(N=10787)
AGREEABLENESS	
Mean (SD)	5.36 (± 0.968)
Missing	36 (0.3%)
CONSCIENTIOUSNESS	
Mean (SD)	5.15 (± 1.01)
Missing	33 (0.3%)
EXTRAVERSION	
Mean (SD)	3.85 (± 1.16)
Missing	33 (0.3%)
HONESTY_HUMILITY	
Mean (SD)	5.51 (± 1.16)
Missing	33 (0.3%)
NEUROTICISM	
Mean (SD)	3.38 (± 1.15)
Missing	36 (0.3%)
OPENNESS	
Mean (SD)	4.95 (± 1.12)
Missing	33 (0.3%)

Selection Bias

Although the timing of the attacks was random with respect to NAVS data collection, non-response and panel attrition may potentially bias inferences. A simple version of this threat is indicated in **?@fig-dag**. .... We used both demographic indicators (see Table 1) and personality indicators (see Table 3) when multiply imputing missing responses.

Results

Causal effect estimates on the difference scale are presented in **?@fig-results1**. Contrasts are presented in standardised response units. Again, these causal effect estimates are modelled as a contrast in (1) expected group attitudes for the entire population prior to the attacks (NZAVS Time 10 pre-attacks) with (2) expected group attitudes for the entire population during the following year weighted by 2018 census data to recover post-stratification estimates. Assuming correct model specification and no measurement error, such contrasts would be unbiased estimates for the intention-to-treat effect for random "assignment" to the attack condition. [Note: see supplement X for a discussion of the distinction between the per-protocol and intention to treat effects]. Note that standard errors were obtained both by simulation and the delta method (simulated contrasts are reported here.) As indicated in **?@fig-results1**, we replicate previous findings revealing a strong increase in the acceptance of Muslims. Furthermore, we find evidence for the transference of acceptance to prototypical minorities. We do not find a boost in acceptance for non-prototypical minority groups. Nor do we find acceptance for groups that may be regarded as "negative controls." The exception to this pattern is in evidence of an increase in the acceptance of Pacific peoples. Additionally, we find evidence for acceptance of those with mentally illness.

Before attempting to interpret the naive analysis, however, we must adjust for the possibility of temporal trends (see: Table 4, Table 6, Table 5.)

?@fig-results2 presents a sensitivity analysis for causal effect estimates on the difference scale. Panel (a) presents the "worst case" scenario for increasing acceptance in pre-attack trajectories, implying that the attacks would have increased acceptance for all groups. This finding would be consistent with a strong "Jacidina Effect" (see Discussion.)

Panel (b) presents the scenario in which increasing acceptance in pre-attack trajectories adjusted at the mean of the pre-attack trends. Here we find stronger evidence for the transference of acceptance to non-prototypical groups. Panel (c) presents the "best case" scenario for increasing acceptance in pre-attack acceptance, implying that the attacks did not increase acceptance as strongly as would appear in the naive analysis. Prototypical Attitude Response Theory survives the strongest estimate of the pre-attack increase in acceptance. For this reason our most conservative estimats supports Prototypical Attitude Response Theory. Notably, at every level of the sensitivity analysis, the causal effects of attitudes to Muslims are estimated lower than in the naive analysis. This is because the acceptance of Muslims had been growing more steeply in the years prior to the attacks than had the acceptance of other groups. Notably, we find that as people age, they tend to be less accepting of the elderly and of the dominant NZ European majority.

Table 4: Estimated annual increase in acceptance for prototypical minority groups. Note that attitudes to refugees were not measured in the 2016/17 NZAVS Wave, rendering estimates for this trajectory less reliable than other estimates.

Parameter	Muslims	Indians	Asians	Refugees	Immigrants	Chinese
time	0.05 (0.04, 0.06)	0.02 (7.24e-03, 0.03)	4.55e-03 (-6.34e-03, 0.02)	0.01 (2.16e-04, 0.03)	6.38e-03 (-4.39e-03, 0.02)	0.01 (3.66e-03, 0.02)

Table 5: Estimated annual increase in acceptance for non-prototypical groups

Parameter	Pacific	NZ European	Maori
(Intercept)	0.004 (-0.02, 0.02)	0.035 (0.01, 0.06)	0.011 (-0.01, 0.03)
time	-0.010 (-0.02, 6.86e-04)	-0.034 (-0.05, -0.02)	-0.016 (-0.03, -4.92e-03)

Table 6: Estimated annual increase in acceptance for negative controls. Note that attitudes to those with Mental Illness were not measured in the 2016/17 NZAVS Wave, rendering estimates for this trajectory less reliable than other estimates

Parameter	Overweight	Mental Illness	Elderly
time	-0.006 (-0.02, 4.98e-03)	0.010 (-6.45e-03, 0.03)	-0.023 (-0.04, -7.72e-03)

Discussion

Points to consider:

- Muslim acceptance post attacks is evident whether the pre-attack acceptance trend is bounded at its highest or lowest confidence interval.
- Prototypical minority acceptance is also evident whether the pre-attack acceptance trend is bounded at its highest or lowest confidence interval.
- The magnitude of prototypical minority acceptance is about half that of the Muslim acceptance post-attack benefit.
- At the lower bound of the pre-attack acceptance trajectory, all groups experience a lift in post-attack acceptance. This scenario suggests the potential for a "Jacinda Effect".
- However, the complex interplay of social events at that time in New Zealand History remains unclear – and cannot be disentangled from observed data....
- At the upper bound of the pre-attack acceptance trajectory, only prototypical minority groups saw a lift in acceptance over and above expectations from the pre-attack trajectory.
- Notably, although the confidence intervals for prototypical minorities were reliably above zero on this "best-case" pre-attack trajectory, the confidence intervals between prototypical and non-prototypical minority groups overlapped. We can therefore infer only somewhat weak overall support for prototyping in the attack responses.
- This study reveals the potential for psychological science to reframe how popolar understandings of minority groups. In New Zealand Pacific peoples tend to be grouped with Māori peoples. However, the pattern of response to Pacific peoples following the Christchurch attacks is more closely aligned with the prototypical minority group response.
- Moreover, the declining acceptance of elderly people and for New Zealand Europeans over time merits further attention. Overall acceptance of these populations remains the highest of all groups. The pattern does not necessarily imply increasing prejudice: it may rather reflect declining affective responses to the familar. Whether and how people naturally become less "warm" to others as we age is another matter for future investigations.
- Overall this study reveals both the power and the limitations of longitudinal data to address questions of fundamental interest across the social sciences.
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Acknowledgments

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