A national longitudinal study of Muslim diversity and flourishing in Aotearoa New Zealand: A quantitative study protocol

Usman Afzali[1], Jamila S. Badis[1], Parus Khoso[2], Gul e Aqsa[3], Farah Shawkat[1], Fatima A. Junaid[4], Ayca Arkilic[5], Hussain Raissi[6], Hala Burhoum[1], Tuba Azeem[7], Iman Husain[1], Zarqa Shaheen Ali[8], Zahra Haidary[1], Mashal Khan[9], Nasratullah Hamid[10], Zahra Emamzadeh[11], Rizwan Sulehry[12], Somia Tasneem[1], Aamina Ali[13], Adepate Mustapha-Koiki[14], Aarif Rasheed[15], Kumar Yogeeswaran[1], Chris G. Sibley[16], and Joseph A. Bulbulia[17,18]

[1]School of Psychology, Speech and Hearing, University of Canterbury

[2]College of Education, University of Canterbury

[3]School of Health Sciences, University of Canterbury

[4]School of Management, Massey University

[5]School of History, Philosophy, Political Science and International Relations, Victoria University of Wellington

[6]School of Social Sciences, University of Otago

[7]School of ABC, Victoria University of Wellington

[8]ICL Business School, New Zealand Skills and Education College

[9]Department of Psychology, Massey University

[10]School of Psychological Medicine, Universit of Otago

[11]TBA, Ministry of Education

[12]School of Management, Victoria University of Wellington

[13]TBA, TBA

[14]Department of Politics and International Relations, University of Auckland

[15]Just Community

[16]School of Psychology, University of Auckland

[17]School of Psychology, Victoria University of Wellington

[18]Department of Linguistic and Cultural Evolution, Max Planck Institute for Evolutionary Anthropology

Author Note

Usman Afzali https://orcid.org/0000-0001-5119-9388

Jamila S. Badis https://orcid.org/0009-0005-2866-5033

Parus Khoso https://orcid.org/0000-0001-6384-038X

Gul e Aqsa https://orcid.org/0009-0003-0928-8039

Farah Shawkat https://orcid.org/0000-0000-0000-0001

Fatima A. Junaid https://orcid.org/0000-0002-6656-8120

Ayca Arkilic https://orcid.org/0000-0002-1775-3311

Hussain Raissi https://orcid.org/0000-0000-0000-0001

Hala Burhoum https://orcid.org/0000-0000-0000-0001

Tuba Azeem https://orcid.org/0000-0000-0000-0001

Iman Husain https://orcid.org/0000-0003-4032-4387

Zarqa Shaheen Ali https://orcid.org/0000-0002-7145-5788

Zahra Haidary https://orcid.org/0009-0000-5259-622X

Mashal Khan https://orcid.org/0000-0000-0000-0000

Nasratullah Hamid https://orcid.org/0009-0002-0120-7428

Zahra Emamzadeh https://orcid.org/0009-0000-0000-0001

Rizwan Sulehry https://orcid.org/0000-0002-1209-0635

Somia Tasneem https://orcid.org/0000-0001-5471-6934

Aamina Ali https://orcid.org/0000-0000-0000-0001

Adepate Mustapha-Koiki https://orcid.org/0000-0003-4731-1781

Aarif Rasheed https://orcid.org/0000-0000-0000-0001

Kumar Yogeeswaran https://orcid.org/0000-0002-1978-5077

Chris G. Sibley https://orcid.org/0000-0002-4064-8800

Joseph A. Bulbulia https://orcid.org/0000-0002-5861-2056

Correspondence concerning this article should be addressed to Usman Afzali, School of Psychology, Speech and Hearing, University of Canterbury, 20 Kirkwood Ave, Christchurch, Canterbury 8041, New Zealand, Email: usman.afzali@canterbury.ac.nz

Abstract

The New Zealand Attitudes and Values Study is a longitudinal study of social values and attitudes of New Zealanders that started in 2009. Since its inception, it has collected data from thousands of subjects. In addition to examining numerous social, political, and health aspects of New Zealanders' lives, this research has particularly examined negative attitudes towards minority groups, such as discrimination and prejudice have been examined. In 2019, the Muslim community was the target of the worst terrorist attack in New Zealand's modern history. Following this devastating event, we aimed to extract data from the New Zealand Attitudes and Values Study to understand Islamophobia from the Muslim perspective and look deeper into the remarkable resilience of Muslims despite many challenges. In addition, we deem necessary to investigate the overall wellbeing and flourishing of Muslims in New Zealand, and whether values, identity, religiosity, and meaning-making affect Muslims' self-perception and health outcomes. However, we were limited by the sample size of Muslims within the New Zealand Attitudes and Values Study to make such inferences. Therefore, the current project, titled the Muslim Diversity Study, was designed to recruit more Muslim participants within the New Zealand Attitudes and Values Study over a three-year quantitative longitudinal study. This protocol describes the context that motivated this research, our pilot Muslim community consultation, the decisions made and modified based on consultation (e.g., whether or not to translate the questionnaiere, which groups to target, etc.), data collection methods, research team, quantitative measures, and timeline. It also provides our initial findings and observations, mainly based on the first year of the research and addresses the perceived enablers and challengers of data collection from a culturally distinct religious community in New Zealand. This protocol will serve as a reference text for researchers conducting work not only on Islam and the Muslim community in New Zealand but also on other ethnic and religious communities and minorities in the country. It will also allow researchers to apply the methods and findings to other contexts and regions across the world and provide comparative insights and analyses.

Keywords: Muslim, Islam, religion, diversity, discrimination, flourishing, wellbeing,

meaning-making, identity, New Zealand

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Introduction

On 15 March 2019, a devastating far-right extremist attack on two mosques took place in Christchurch, killing 51 Muslims and injuring 40 (*Royal Commission of Inquiry into the Terrorist Attack on Christchurch Masjidain on 15 March 2019*, 2020). Although this attacked shocked the world (*World Leaders Condemn New Zealand Mosque Attacks*, 2019) and was unprecedented in New Zealand (*Jacinda Ardern on the Christchurch Shooting*, 2019), it was not as surprising to the Muslim community (A. Rahman, 2019) due to Muslims' widespread experience of Islamophobia and prejudice in the country (Sibley et al., 2020). Islamophobia has been reportedly increased overseas following these attacks (*Islamophobia After Christchurch Terror Attacks Quadrupled - Australian Report*, 2022), however, the evidence in New Zealand seems to be mixed. News articles have reported increased hate towards Muslims (Frykberg, 2023). On the other hand, our findings are indicative of improved attitudes towards Muslims (Bulbulia et al., 2023; Shanaah et al., 2021) following attacks. Addressing this discrepancy is beyond the scope of current article, however, it is worth noting that most of our research in this area, primarily from the New Zealand Attitudes and Values Study (NZAVS) (*New Zealand Attitudes and Values Study*, 2024) lens, has so far shed light on such attitudes from a non-Muslim perspective. In other words, we have reported on how Muslims are perceived by non-Muslim members of New Zealand society, rather than how Muslims perceive themselves. While the published NZAVS reports are an absolute necessity, the self-experience of Muslims themselves as the direct victims of this heinous crime is equally, if not more, important.

This article aims to elaborate on the protocol of a pioneering three-year longitudinal study titled the Muslim Diversity Study poised to achieve this very goal – examining Muslims' self-perception in New Zealand from a variety of angles, as well as, the predictors of resilience, flourishing, and wellbeing within Muslims. The study started in 2023 and is planned to conclude in 2026. The goal is to achieve as many as 650 Muslim respondents. The Muslim community is

expanding in New Zealand.

The Muslim community is expanding in New Zealand. According to the 2018 census, there are more than 60,000 Muslims in the country. The 2023 census results on religion have not been made publicly available yet, however it is expected that the Muslim community has grown in the last few years. Studies also show that the number of converts to Islam, particularly among the Indigenous Māori community, has increased after the 2019 terror attack (Arkilic, 2020). The Muslim community is uniquely positioned in New Zealand: as a growing religious minority, it is a historically stigmatized group that were the direct victims of the 2019 terrorist attack. Despite this tragedy and post-2019 trauma and increasing online hatred towards them, they have shown remarkable resilience (Anwar & Sumpter, 2020; *Royal Commission of Inquiry into the Terrorist Attack on Christchurch Masjidain on 15 March 2019*, 2020; Sibley et al., 2020; Sulaiman-Hill et al., 2021; Sulaiman-Hill et al., 2024). By resilience, we mean….

This study embraces a community-oriented approach in the sense that we have consulted with the Muslim community and made decisions related to translating the questionnaires, pathways to work with community in an effective way, reaching out to community leaders and scholars, etc., based on the feedback received from them. We have also learned from other stakeholders, such as researchers from other institutions (Sulaiman-Hill et al., 2021; Sulaiman-Hill et al., 2024) that had worked with community. It is important that such processes and decisions are recorded in the form of a study protocol so that our findings are shared with the broader public and future researchers in New Zealand and across the globe can benefit from our outputs.

This protocol addresses our pilot community consultation, the decisions made and modified based on consultation, community engagement, data collection, team, and measures. The study primarily aims to explore the diversity of Muslims in New Zealand, assess Muslims' perceived discrimination in comparison with other groups, unearth predictors of flourishing and meaning-making, and measure the effect of service-attendance and religious-identification on these constructs.

Perception of Muslims based on NZAVS

The New Zealand Attitudes and Values Study (NZAVS) is a planned 20-year-long large longitudinal national probability annual panel study of social attitudes, personality, ideology and health outcomes that began in 2009 and is currently in 15th year. It has so far collected data from more than 70,000 subjects (*New Zealand Attitudes and Values Study*, 2024). The NZAVS has been instrumental in exploring key issues related to minorities, including but not limited to discrimination, intergroup relations, identity, distress, security, and the dynamics and mechanisms behind them. For instance, our findings indicated the importance of national identity in Muslim perception (Yogeeswaran et al., 2019). More specifically, the more one believed a specific ancestral heritage (being European or Māori) or cultural aspects (ability to speak English) were important for being considered a *true* New Zealander, the lower they rated their level of warmth toward Muslims (Yogeeswaran et al., 2019). A follow-up longitudinal examination indicated that the rating of warmth towards Muslims has historically been the lowest (based on data from 2012-2018) compared to other minority groups such as Indians, Chinese, and other migrants. However, there was a visible small steady increase in trends of warmth towards all groups along the years 2012-2018 (Sibley et al., 2020). Sibley et al. (2020) also indicated that lower education, lower socioeconomic status, being male, older age, unemployment, lower agreeableness (based on Big-6 personality test), and lower openness (based on Big-6 personality test) predicted lower warmth toward Muslims. These predictors were tested again by (Badis et al.)…. (report predictors here and how they related to Sibley 2020) In addition, studies have pointed out specific anti-Muslim prejudice when compared with other religious groups (Greaves et al., 2020). Interestingly, but not unexpectedly, the overall rating of New Zealanders' warmth towards Muslims was increased unprecedentedly (above and beyond the steady small increase reported in Sibley et al. (2020)) following the 2019 Christchurch shootings (Shanaah et al., 2021) and sustained for three years post shootings (Bulbulia et al., 2023). Bulbulia et al. (2023) argued that shootings caused increase in warmth toward Muslims, but not toward other groups – known as negative controls – stigmatised groups that were not anticipated to be affected by the shootings

(e.g., people with mental illness, overweight people, and elderly people).

The mentioned NZAVS papers used warmth towards Muslims as a proxy for Islamophobia and prejudice towards Muslims. (add islamophobia scale here) (Badis et al.)

Have a look at this too, Jamila if you haven't yet (Greaves et al., 2020):

Anti-Muslim sentiments and Muslim political representation in the media

In the aftermath of the Christchurch shootings, the Government introduced unprecedented counter-terrorism measures. For example, the then Prime Minister Jacinda Ardern announced the prohibition of the sale of all military-style semi-automatic and assault rifles under stricter gun laws less than a week after March 15. The Government also vowed to create the Royal Commission of Inquiry into the Terrorist Attack in Christchurch Masjidain to scrutinise and report on "the actions of the individual, the actions of relevant Public sector agencies and any changes that could prevent such terrorist attacks in the future" (*Royal Commission of Inquiry into the Terrorist Attack on Christchurch Masjidain on 15 March 2019*, 2020). In November 2020, the Royal Commission of Inquiry presented an 800-page report entitled *Ko tō tātou kāinga tēnei* ('This is our home') to emphasise New Zealand's inclusive and welcoming identity, among other measures (Arkilic, 2021).

Until the Christchurch terror attack, news stories on Islam and Muslims in New Zealand media were mostly an extension of 'the negative othering rhetoric' of Western media and portrayed Muslims as terror-prone and a threat to democracy and free speech. New Zealand's Muslim community, particularly converts to Islam, faced scrutiny from security officials, the media, and the public. The national media tended to link Muslim converts to jihadis (Drury, 2016). Yet shortly after March 15, New Zealand press embraced a more inclusive and positive narrative with respect to Islam and Muslims (K. A. Rahman, 2020). Another study has similarly found that rather than embracing an Orientalist approach to Muslims that sidelines or dehumanises them, major New Zealand newspapers, such as *The New Zealand Herald* and *The Press* played a constructive role in condemning the terrorist attack and supporting the Muslim community as essential members of the society after the Christchurch shooting (Kabir, 2024).

Notably, this was not the case in the past. Findings from before the 2019 Christchurch provided evidence for media-induced Islamophobia in New Zealand (Shaver et al., 2017).

However, media and public interest in the Muslim community has declined rapidly. Many Muslim leaders have warned that the threat of white supremacist violence has not disappeared after the Christchurch attacks (Arkilic, 2021). Studies have shown that anti-Muslim hate crimes and Islamophobic abuse have increased dramatically after the March 15 terrorist attacks (Wilson & Shastri, 2020). Spoonley (2020) has also confirmed that there were approximately 60 to 70 groups and 150 to 300 core right-wing activists in New Zealand in 2020, which is not a small number given New Zealand's small population of five million. Another study has suggested that while the Muslim community was the focus of intense and positive public and media coverage soon after March 15, more recent media articles about Muslims mostly involved negative words, such as sad, angry, upset and fearful. This is in stark contrast to stories involving the Christian community, which are overall neutral (*New Zealand Media Coverage on Muslims Mostly Use Negative Language - Study*, 2021).

The Muslim Diversity Study becomes all the way more important given recent developments that the governmental change has triggered. The new Government's decision to end the coordinated response to the March 15 attacks has undermined trust and a sense of belonging in New Zealand's Muslim community (Arkilic & Lisdonk, 2024). Concerns about the safety and security of everyone in New Zealand have also been called into question with the Government's separate announcement it is overhauling firearms laws, which could see the reintroduction of the military-style semi-automatic weapons used in the March 15 attack.

As it stands, we have explored perception of Muslims and the mechanisms of attitudinal changes towards Muslims following 15 March 2019 attacks (Byrne et al., 2022; Hawi et al., 2019; Sibley et al., 2020; Yogeeswaran et al., 2019). However, much of the NZAVS work to date with the Muslim community has focused on conveying information about how Muslims are perceived by the non-Muslim members of New Zealand society. After receiving strong positive signals from the Muslim community to scientifically explore diversity, discrimination, self-perception,

resilience, meaning-making, and flourishing; this longitudinal study was conceived in 2022 to address this scholarly and community knowledge gap.

Introduce the context of the study, emphasizing the need to understand the psychological impact of mass trauma events on diverse populations such as the Christchurch Muslim community. Highlight the significance of longitudinal research in assessing long-term mental health outcomes.

Perceived discrimination and belonging: Raissi

Initial community consultation (Parus)

1. Far right terrorism and attitudes toward Muslims (Usman)
2. Other research on Muslim wellbeing (Dr Fatima)
3. Other ongoing projects: Qual (Farah); and Islamophobia scale to verify our previous findings (Jamila).

Background

- Provide a brief overview of the Christchurch mosque attacks and their aftermath.
- Discuss existing literature on the psychological effects of mass trauma events, particularly on diverse cultural groups.
- Outline the gaps in current knowledge regarding the long-term psychological effects of such events on the Muslim community.

Research Aims

- Clearly state the research questions and objectives of the longitudinal study.
- Emphasize the importance of assessing psychological outcomes over time to understand the trajectory of mental health in the affected population.

Hypotheses

Given that the present project functions as a booster for the NZAVS and uses the same questionnaires, the questions that can be answered by MDS can be limitless, and one coud suggest a large number of hypotheses to be tested and questions that can be answered from these data in

the years to come. However, immediately we are trying to test the following hypotheses – within the span of MDS:

Hypothesis 1: Muslims with the strongest ties to their community as measured by service attendance and prayer are buffered most from anti-Muslim prejudice.

Hypothesis 2: Muslims experience greater challenges to employment and health than matched members of other religious groups.

Hypothesis 3: Subjective well-being, the meaning of life, and psychological distress are similar among Muslims and matched members of religious groups from the buffering of religious community-making.

Based on your initial findings, can you here include any hypothesis about how perceptions of Islamophobia and racism have changed for Muslims after the 2019 ChCh attack? This would be one of the key goals and contributions of this study. (Ayca)

Having sensed interest in these data from researchers in New Zealand and overseas, it maybe possible to immediately test other hypotheses within the realm of MDS, that would be published as independent research articles.

Method

- **Study Design:** Describe the longitudinal design of the study, including the planned follow-up periods.
- **Participant Selection:** Define the inclusion criteria for participants, specifying age, residency, and other relevant factors.

  Muslim = 1.3% of New Zealand population.

Materials

NZAVS questionnaire has a large number of measures. Here, we are only highlighting and explaining those that are pertinent to the readily planned papers that are going to published from the booster study, with levels of measurement indicated, as well as the reversed coded ones. Please visit Sibley (2024) for further details and history of NZAVS measures.

For Likert type scales, we are noting the the minimum and maximum level along with description. For instance, *(Not important 1-7 Very important)* would mean that it is rated on a scale of 1 to 7 where 1 indicates not important and 7 indicates very important. Notwithstanding, we might choose to report further measures too, which will then be elaborated upon in the individual articles.

- Service attendance and religiosity:

    1. Do you identify with a religion and/or spiritual group? (Yes/No). If yes, what religion or spiritual group? (String entry).
    2. How many times did you attend a church or place of worship in the last month? (String entry)
    3. How many times did you pray in the last week? (String entry)
    4. How many times did you read religious scripture in the last week? (String entry)
    5. How important is your religion to how you see yourself? (String entry) (Not important 1-7 Very important)
    6. I identify as a spiritual person. (Strongly Disagree 1-7 Strongly Agree)
    7. Do you believe in God? (Yes/No)
    8. Do you believe in any form of spirit or life force? (Yes/No)

- Prejudice:

    1. I feel that I am often discriminated against because of my religious/spiritual beliefs. (Strongly Disagree 1-7 Strongly Agree)
    2. People from my ethnic group are discriminated against in New Zealand. (Strongly Disagree 1-7 Strongly Agree)
    3. I feel that I am often discriminated against because of my age. (Strongly Disagree 1-7 Strongly Agree)

4. I feel that I am often discriminated against because of my ethnicity. (Very Innacurate 1-7 Very Accurate)
5. I feel that I am often discriminated against because of my gender. (Very Innacurate 1-7 Very Accurate)

- Intergroup Warmth Ratings: Participants are asked to rate their feelings of warmth toward different groups using "feeling thermometer scale" for each group from least to most warmth on a 1-7 Likert scale (see Figure 1 for reference). Groups include: NZ Europeans, Māori, Asians in general, Pacific Islanders, Elderly people, People with a disability, Refugees, Overweight people, Immigrants in general, Chinese, Indians, Muslims, LGBTQ+ people, People with mental illness.

- Felt belonging:

1. I know that people in my life accept and value me. (Very Innacurate 1-7 Very Accurate)
2. I feel like an outsider. (Very Innacurate 1-7 Very Accurate)
3. I know that people in around me share my attitudes and beliefs. (Very Innacurate 1-7 Very Accurate)

- Support:

1. There are people I can depend on to help me if I really need it. (Strongly Disagree 1-7 Strongly Agree)
2. There is no one I can turn to for guidance in times of stress (R). (Strongly Disagree 1-7 Strongly Agree)
3. I know there are people I can turn to when I need help. (Strongly Disagree 1-7 Strongly Agree)

- Employment:

1. What is your highest level of qualification? (String entry)
2. Are you currently employed (This includes self-employed of casual work)? (Yes/No). This leads to a four-point nominal response: employed full-time, employed part-time, unemployed, and not in the labour force.
3. In that job, what is your current occupation (String entry)
4. What is the main activity of the business or employer that you work for? (String entry)
5. How long have you worked at your current organization? (String entry: years/months)
6. How satisfied are you with your current job? (Not satisfied 1-7 Very satisfied)
7. How secure do you feel in your current job? (Not secure 1-7 Very secure)
8. How valued do you feel by your current organization? (Not valued 1-7 Very valued)

- Health:

1. In general, would you say your health is… (Poor 1-7 Excellent)
2. I seem to get sick a little easier than other people. (Strogly disagree 1-7 Strongly agree)
3. I expect my health to get worse. (Strogly disagree 1-7 Strongly agree)
4. Do you have a health condition or disability that limits you, and that has lasted for 6+ months? (Yes/No). If yes, please state: (String entry)
5. How often do you have a drink containing alcohol? Measured using a 6 point nominal scale (Never - I don't drink, Monthly or less, Up to 4 times a month, Up to 3 times a week, 4 or more times a week, Don't know)
6. Have you ever regularly smoked tobacco cigarettes? (Yes/No).
7. Have you ever regularly used e-cigarettes? (Yes/No).
8. Do you currently smoke tobacco cigarettes? (Yes/No).

9. Do you currently vape or use e-cigarettes? (Yes/No).
10. Access to and satisfaction with GP: Do you have a regular family doctor/GP? (Yes/No). (If yes) How satisfied are you with the service and care you receive from your family doctor/GP? (Not satisfied 1-7 Very satisfied). Do you think your doctor/GP shares a similar cultural background to you? (Definitely no 1-7 Definitely yes). Does your doctor/GP respect your cultural background when you are discussing health issues with them? (Definitely no 1-7 Definitely yes).
11. Please estimate how many hours you spent during each of the following things last week (String entry). Options provided: Working in paid employment, housework/cooking, looking after children, volunteer/charitable work, exercising/physical activity, watching TV/Netflix/movies, travelling/commuting, watching/reading news, using the internet (in total), using social media (e.g., Facebook), playing video games/computer games.
12. BMI: Calculated by using a person's weight (Kg) divided by square root of height (m) that are asked separately, using "What is your height? (String entry (meters))", and "What is your weight? (String entry (kgs))"
13. Forgiveness vs vengeful rumination: Sometimes I can't sleep because of thinking about past wrongs I have suffered., I can usually forgive and forget when someone does me wrong., I find myself regularly thinking about past times that I have been wronged. (1 = Strongly disagree, 7 = Strongly agree)
14. During the past month, on average, how many hours of actual sleep did you get per night? (String entry)
15. Do you have a health condition or disability that limits you, and that has lasted for 6+ months? (Yes/No). If yes, please state: (String entry)
16. Chronic diseases diagnosis: See Figure 2.

- Matching with other religious group: Similar to Bulbulia et al. (2023), we will use the

following demography and personality variables to identify matching members in different religions groups.

1. Age: What is your age? (String entry) and when is your date of birth (String entry)
2. Education: An 11-point ordinal scale (No qualification 0-11 Doctoral degree, based on the New Zealand Qualification Framework (*The New Zealand Qualifications Framework*, 2016)) based on the responses to the qualification-related question.
3. Employment: A binary variable is created (0 = unemployed, 1 = employed) based on the responses to employment items "Are you currently employed?"
4. Ethnicity: The items displayed in Figure 3 are categorised following the New Zealand Census Groups: European, Māori, Pacific Peoples, Asian, MELAA (Middle Eastern, Latin American/African), and Other.
5. Gender: Responses to the string entry item "What is your gender?", gender will be used to create a binary measure (Male = 1, Not male = 0).
6. Area-unit deprivation: Measured based on 2018 New Zealand Deprivation Index (Atkinson et al., 2019) that assigns a decile-rank index (Least deprived 1-10 Most deprived) using participants' immediate neighbourhood's aggregate census information. This index is calculated using component factor analysis of nine variables in weighted order as follows: proportion of adults who received a means-tested benefit, household income, proportion not owning own home, proportion of single-parent families, the proportion of unemployed, proportion lacking qualifications, proportion household crowding, proportion no telephone access, and proportion no car access. Hence, this index reflects nationwide mean deprivation level for small neighbourhood-type units (i.e., small community areas consisting about 80-90 people).
7. Socioeconomic status: A census-derived occupation-based measure NZSEI (New Zealand Socioeconomic Index) is used to estimate one's socioeconomic status. It uses

an open-ended question regarding their occupation, which is subsequently classified in accordance with the Australian and New Zealand Standard Classification of Occupations (ANZSCO) Level 3. In the case of missing values, the measures is imputed using a combination of age and education.

8. Parent: Measured by assigning a binary variable (1 = those with children, 0 = the rest) to the item: How many children have you given birth to, fathered, or adopted? (String entry).
9. Partner: Responses to "What is you relationship status?" are assigned a binary variable (1 = Has a partner, 0 = Doesn't have a partner).
10. Religious identification: "Yes" responses to "Do you identify with a religion and/or spiritual group?" are assigned 1 and "No" responses are coded 0.
11. Political orientation: Based on responses to "Please rate how politically left-wing versus right-wing you see yourself as being", political orientation is assigned a 7-point scale (extremely left-wing 1-7 extremely right-wing).
12. Residence: Urban or rural residence (a two-item nominal variable) is identified based on the physical addresses provided.
13. Region of habituation: coded whether they are living in an urban or rural area (1 = Urban, 0 = Rural) based on the addresses provided
14. Occupational prestige (?)
15. Race-based rejection anxiety: People from other races would be likely to reject me on the basis of my race. (Strogly disagree 1-7 Strongly agree)
16. Big six personality traits: Six personality traits, agreeableness, conscientiousness, extraversion, openness, honesty-humility, and neuroticism, are measured using a 7-point (very inaccurate 1-7 very accurate) Mini-IPIP6 scale (Sibley et al., 2011).

- Subjective wellbeing/psychological distress: Measured using the Kessler-6 items (items 1-6

in Figure 4) rated on a 5-point scale (None of the time 0-4 All of the time) (Kessler et al., 2010).

- Meaning of life: My life has a clear sense of purpose (Strongly disagree 1-7 Strongly agree) and I have a good sense of what makes my life meaningful (Strongly disagree 1-7 Strongly agree).

- Life satisfaction and national wellbeing: Items from Figure 5 measured on 11-item measure (Completely dissatisfied 0-10 Completely satisfied). In addition, "I am satisfied with my life. (Strongly disagree 1-7 Strongly agree)" and "In most ways my life is close to ideal. (Strongly disagree 1-7 Strongly agree)".

7. Self esteem: On the whole am satisfied with myself. Take a positive attitude toward myself. Am inclined to feel that I am a failure.
8. Gratitude: I have much in my life to be thankful for. When I look at the world, I don't see much to be grateful for. I am grateful to a wide variety of people.
9. Community making: I feel a sense of community with others in my local neighbourhood (Strongly disagree 1-7 Strongly agree).
10. Intergroup anxiety: I feel anxious about interacting with people from other races. (Strongly disagree 1-7 Strongly agree).
11. Rumination: During the last 30 days, how often did…. you have negative thoughts that repeated over and over? (0 = None of the time, 4 = All of the time).
12. Forgivingness versus Vengeful Rumination. Sometimes I can't sleep because of thinking about past wrongs I have suffered. (1-7 Strongly disagree 1-7 Strongly agree). I can usually forgive and forget when someone does me wrong (1-7 Strongly disagree 1-7 Strongly agree).. I find myself regularly thinking about past times that I have been wronged. (1-7 Strongly disagree 1-7 Strongly agree).

- **Recruitment:** Detail the recruitment strategy, including outreach methods and sources of recruitment.

- **Data Collection:** Explain the quantitative measures to be used in data collection, including validated self-report instruments and clinical assessments.

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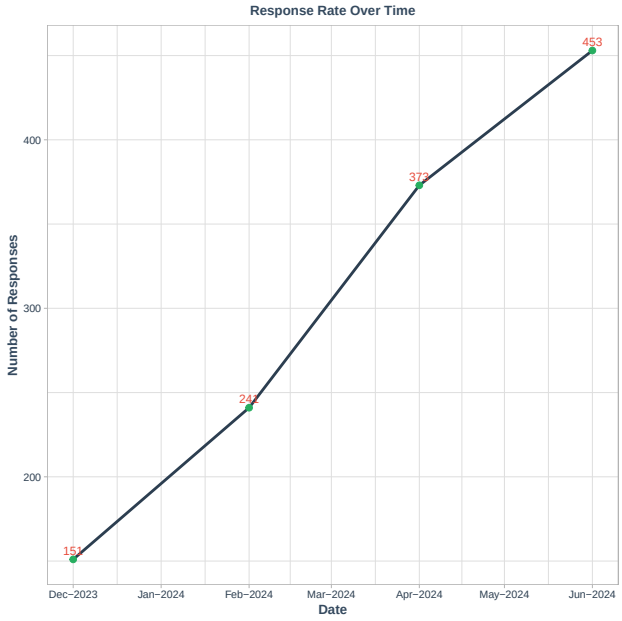
Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
i Please use `linewidth` instead.
```



- **Procedure:** Outline the procedure for data collection at each time point, whether face-to-face or virtual.

1. Community consultation in 2022: Aqsa and Parus
2. Current Wave general procedure: Usman and Jamila with input from all RA's: Farah, Hussain, Hala, Zarqa, Zahra H, Nasrat

- **Ethical Considerations:** Discuss ethical approval obtained for the study and procedures for obtaining informed consent from participants.
- **Data Analysis:** Provide an overview of the planned data analysis methods, including statistical techniques for longitudinal data analysis.
- **Preregistration:** The design, hypotheses, measures, and anticipated data analysis are preregistered on OSF (). The study was preregistered before any attempted analyses of data.

Expected Outcomes

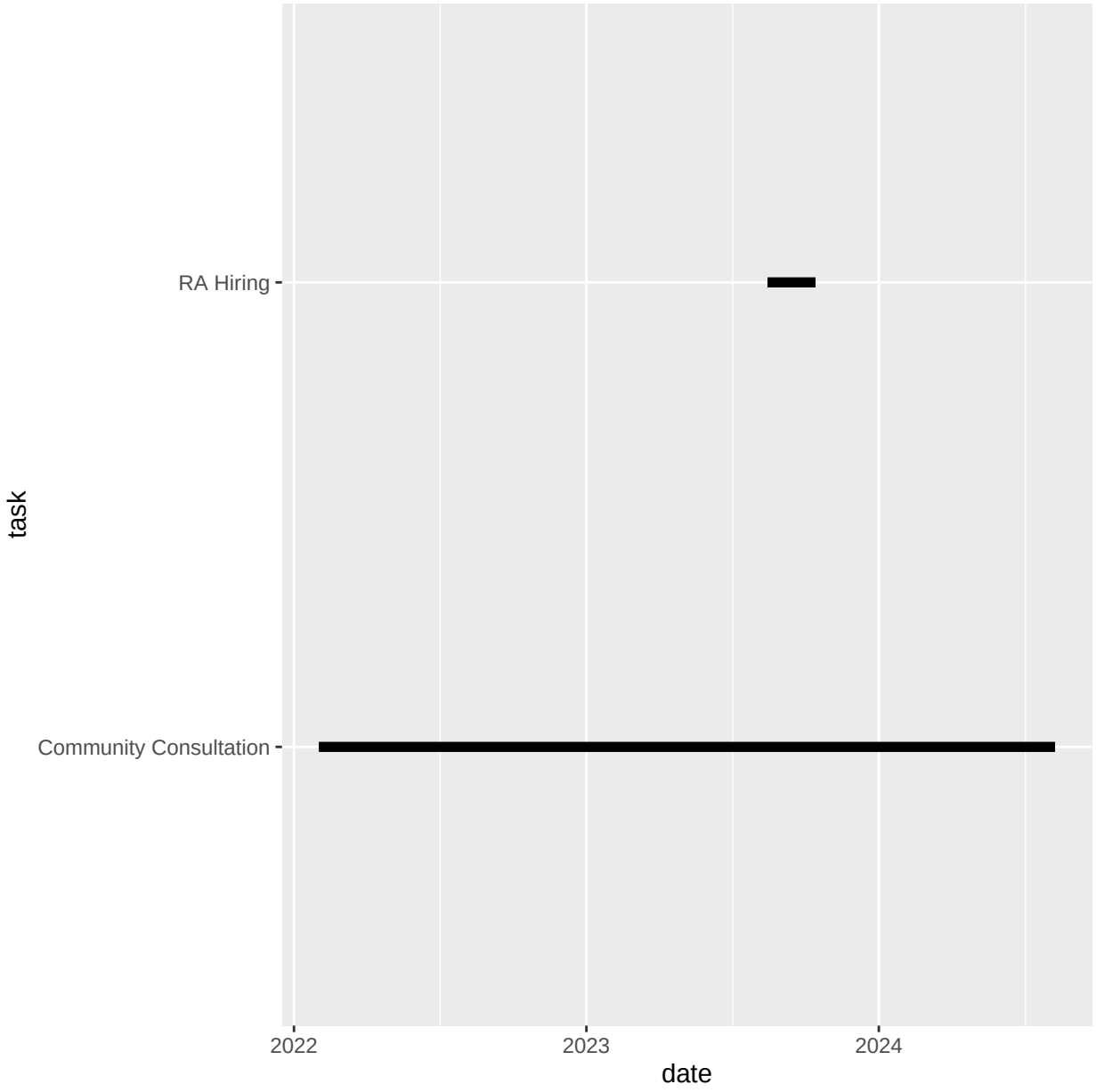
- Anticipated findings based on the research questions and objectives.
- Potential contributions of the study to the field of mental health research and implications for policy and practice.

Timeline

- Present a timeline indicating key milestones in the study, including recruitment periods, data collection waves, and analysis phases.

1. Usman and Jamila

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.4     v readr     2.1.5
v forcats   1.0.0     v stringr   1.5.1
v lubridate 1.9.3     v tibble    3.2.1
v purrr     1.0.2     v tidyr     1.3.1
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to
```



Strengths and Limitations

1. Zahra E, Rizwan, Somia

Conclusion

Summarize the importance of the longitudinal study in understanding the psychological effects of the Christchurch mosque attacks on the Muslim community and reiterate the significance of the research aims.

1. Zahra E, Rizwan, Somia

Ethics

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Data Availability

The data described in this study are part of the Muslim Diversity Study, that is conducted under the New Zealand Attitudes and Values Study.

CoI

We have no conflict of interest to disclose.

References

Anwar, N. D., & Sumpter, C. (2020). Societal resilience following terrorism: community and coordination in Christchurch. *Behavioral Sciences of Terrorism and Political Aggression*, *14*(1), 70–95. https://doi.org/10.1080/19434472.2020.1800785

Arkilic, A. (2020). *What is islam's appeal to māori?* http://newsroom.co.nz/2020/08/18/what-is-islams-appeal-to-maori/

Arkilic, A. (2021). *The Christchurch shooting and the 2020 New Zealand election* (S. Levine, Ed.; pp. 225–239). Victoria University Press.

Arkilic, A., & Lisdonk, N. van de. (2024). *'They are us' loses its lustre*. http://newsroom.co.nz/2024/09/01/they-are-us-loses-its-lustre/

Atkinson, J., Salmond, C., & Crampton, P. (2019). *NZDep2018 Index of Deprivation*.

Badis, J. S., Afzali, M. U., & Sibley, C. G. *Predictors of Islamophobia in New Zealand: Findings from the New Zealand Attitudes and Values Study*.

Bulbulia, J. A., Afzali, M. U., Yogeeswaran, K., & Sibley, C. G. (2023). Long-term causal effects of far-right terrorism in New Zealand. *PNAS Nexus*, *2*(8). https://doi.org/10.1093/pnasnexus/pgad242

Byrne, K. G., Yogeeswaran, K., Dorahy, M. J., Gale, J., Afzali, M. U., Bulbulia, J., & Sibley, C. G. (2022). Psychological impact of far-right terrorism against Muslim minorities on national distress, community, and wellbeing. *Scientific Reports*, *12*(1), 1620. https://doi.org/10.1038/s41598-022-05678-x

Drury, A. (2016). *Islam's history and integration in the new zealand society: A Convert's view* (E. Kolig & V. M, Eds.; pp. 113–129). Rowman.

Frykberg, L. (2023). *Online hate towards Muslims 'increasing' since mosque attacks*. https://www.1news.co.nz/2023/03/12/online-hate-towards-muslims-increasing-since-mosque-attacks/

Greaves, L. M., Rasheed, A., D'Souza, S., Shackleton, N., Oldfield, L. D., Sibley, C. G., Milne, B., & Bulbulia, J. (2020). Comparative study of attitudes to religious groups in New Zealand

reveals Muslim-specific prejudice. *Kōtuitui: New Zealand Journal of Social Sciences Online*, *15*(2), 260–279. https://doi.org/10.1080/1177083x.2020.1733032

Hawi, D., Osborne, D., Bulbulia, J., & Sibley, C. G. (2019). Terrorism anxiety and attitudes toward muslims. *New Zealand Journal of Psychology (Online)*, *48*(1), 8089.

Islamophobia after Christchurch terror attacks quadrupled - Australian report. (2022). https://www.rnz.co.nz/news/national/463304/islamophobia-after-christchurch-terror-attacks-quadrupled-australian-report

Jacinda Ardern on the Christchurch shooting: 'One of New Zealand's darkest days'. (2019). https://www.theguardian.com/world/2019/mar/15/one-of-new-zealands-darkest-days-jacinda-ardern-responds-to-christchurch-shooting

Kabir, S. N. (2024). 'They are us': Orientalist perspective challenged in New Zealand newspapers' coverage. *Journal of Arab & Muslim Media Research*. https://doi.org/10.1386/jammr_00077_1

Kessler, R. C., Green, J. G., Gruber, M. J., Sampson, N. A., Bromet, E., Cuitan, M., Furukawa, T. A., Gureje, O., Hinkov, H., Hu, C.-Y., Lara, C., Lee, S., Mneimneh, Z., Myer, L., Oakley-Browne, M., Posada-Villa, J., Sagar, R., Viana, M. C., & Zaslavsky, A. M. (2010). Screening for serious mental illness in the general population with the K6 screening scale: results from the WHO World Mental Health (WMH) survey initiative. *International Journal of Methods in Psychiatric Research*, *19*(S1), 4–22. https://doi.org/10.1002/mpr.310

New Zealand Attitudes and Values Study. (2024). https://osf.io/75snb/

New zealand media coverage on muslims mostly use negative language - study. (2021). https://www.rnz.co.nz/news/national/458598/new-zealand-media-coverage-on-muslims-mostly-use-negative-language-study

Rahman, A. (2019). *Islamic Women's Council repeatedly lobbied to stem discrimination*. https://www.rnz.co.nz/news/on-the-inside/384911/islamic-women-s-council-repeatedly-lobbied-to-stem-discrimination

Rahman, K. A. (2020). News media and the Muslim identity after the Christchurch mosque

massacres. *Kōtuitui: New Zealand Journal of Social Sciences Online*, *15*(2), 360–384. https://doi.org/10.1080/1177083x.2020.1747503

Royal Commission of Inquiry into the terrorist attack on Christchurch Masjidain on 15 March 2019. (2020). https://christchurchattack.royalcommission.nz

Shanaah, S., Yogeeswaran, K., Greaves, L., Bulbulia, J. A., Osborne, D., Afzali, M. U., & Sibley, C. G. (2021). Hate begets warmth? The impact of an anti-Muslim terrorist attack on public attitudes toward Muslims. *Terrorism and Political Violence*, 119.

Shaver, J. H., Sibley, C. G., Osborne, D., & Bulbulia, J. (2017). News exposure predicts anti-Muslim prejudice. *PLOS ONE*, *12*(3), e0174606. https://doi.org/10.1371/journal.pone.0174606

Sibley, C. G. (2024). *New Zealand Attitudes and Values Study*. https://osf.io/75snb/wiki/home/

Sibley, C. G., Afzali, M. U., Satherley, N., Ejova, A., Stronge, S., Yogeeswaran, K., Grimshaw, M., Hawi, D., Mirnajafi, Z., & Barlow, F. K. (2020). Prejudice toward Muslims in New Zealand: Insights from the New Zealand Attitudes and Values Study. *New Zealand Journal of Psychology*, *49*(1).

Sibley, C. G., Luyten, N., Purnomo, M., Mobberley, A., Wootton, L. W., Hammond, M., Sengupta, N., Perry, R., West-Newman, T., Wilson, M., McLellan, L., Hoverd, W. J., & Robertson, A. (2011). The mini-IPIP6: Validation and extension of a short measure of the big-six factors of personality in new zealand. *New Zealand Journal of Psychology*, *40*(3), 142–159.

Spoonley, P. (2020). *Far-right extremists still threaten new zealand, a year on from the christchurch attacks*. http://theconversation.com/far-right-extremists-still-threaten-new-zealand-a-year-on-from-the-christchurch-attacks-133050

Sulaiman-Hill, R. C., Porter, R., Schluter, P., Beaglehole, B., Dean, S., Tanveer, S., Boden, J., & Bell, C. (2024). Research following trauma in minority ethnic and faith communities: lessons from a study of the psychosocial sequelae of the Christchurch mosque terror attacks. *BJPsych Open*, *10*(1). https://doi.org/10.1192/bjo.2023.641

Sulaiman-Hill, R. C., Porter, R., Tanveer, S., Boden, J., Beaglehole, B., Schluter, P. J., Dean, S., &

Bell, C. (2021). Psychosocial impacts on the christchurch muslim community following the 15 march terrorist attacks: A mixed-methods study protocol. *BMJ Open*, *11*(10), e055413.

The New Zealand Qualifications Framework. (2016).

Wilson, C., & Shastri, S. (2020). *Hate crimes against muslims spiked after the mosque attacks, and ardern promises to make such abuse illegal*. http://theconversation.com/hate-crimes-against-muslims-spiked-after-the-mosque-attacks-and-ardern-promises-to-make-such-abuse-ill

World leaders condemn New Zealand mosque attacks. (2019). https://www.aljazeera.com/news/2019/3/15/the-world-reacts-to-new-zealand-mosque-attacks

Yogeeswaran, K., Afzali, M. U., Andrews, N. P., Chivers, E. A., Wang, M.-J., Devos, T., & Sibley, C. G. (2019). Exploring new zealand national identity and its importance for attitudes toward muslims and support for diversity. *New Zealand Journal of Psychology (Online)*, *48*(1), 29–35.

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CRediT Taxonomy Statement

M. Usman Afzali: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Data Curation, Writing - Original Draft, Writing - Review & Editing, Visualization, Supervision, Project Administration, Funding Acquisition. **Jamila Badis:** Data Curation, Project Administration, Writing - Original Draft, Writing - Review & Editing. **Parus Khoso:** Formal analysis, Data Curation, Writing - Original Draft (Pilot Community Consultation), Writing - Review & Editing. **Gul e Aqsa:** Formal analysis, Data Curation, Writing - Original Draft (Pilot Community Consultation), Writing - Review & Editing. **Farah Shawkat:** Data Curation, Writing - Original Draft (Other Related Work), Writing - Review & Editing. **Fatima Junaid:** Writing - Original Draft (Introduction), Writing - Review & Editing. **Ayca Arkilic:** Writing - Original Draft (Introduction), Writing - Review & Editing. **Hussain Raissi:** Writing - Original Draft (Method), Writing - Review & Editing. **Hala Burhoum:** Data Curation, Writing - Original Draft (Method), Writing - Review & Editing. **Tuba Azeem:** Data Curation, Writing - Original Draft (Method), Writing - Review & Editing. **Iman Husain:** Data Curation, Writing - Original Draft (Method), Writing - Review & Editing. **Zarqa Shaheen Ali:** Data Curation, Writing - Original Draft (Method), Writing - Review & Editing. **Zahra Haidary:** Data Curation, Writing - Original Draft (Method), Writing - Review & Editing. **Nasratullah Hamid:** Data Curation, Writing - Original Draft (Method), Writing - Review & Editing. **Zahra Emamzadeh:** Writing - Original Draft (Strengths and Limitations, Conclusion), Writing - Review & Editing. **Rizwan Sulehry:** Writing - Original Draft (Strengths and Limitations, Conclusion), Writing - Review & Editing. **Somia Tasneem:** Writing - Original Draft (Strengths and Limitations, Conclusion), Writing - Review & Editing. **Aarif Rasheed:** Conceptualization, Data Curation, Writing - Review & Editing, Funding Acquisition. **Kumar Yogeeswaran:** Conceptualization, Methodology, Writing - Original Draft, Writing - Review & Editing, Funding Acquisition. **Chris G. Sibley:** Conceptualization, Methodology, Resources, Data Curation, Supervision, Writing - Original Draft, Writing - Review & Editing, Project Administration, Funding Acquisition. **Joseph A. Bulbulia:** Conceptualization, Methodology, Resources, Supervision, Writing - Original Draft,

Writing - Review & Editing, Project Administration, Funding Acquisition.

Figure 1

Feeling thermometer scale

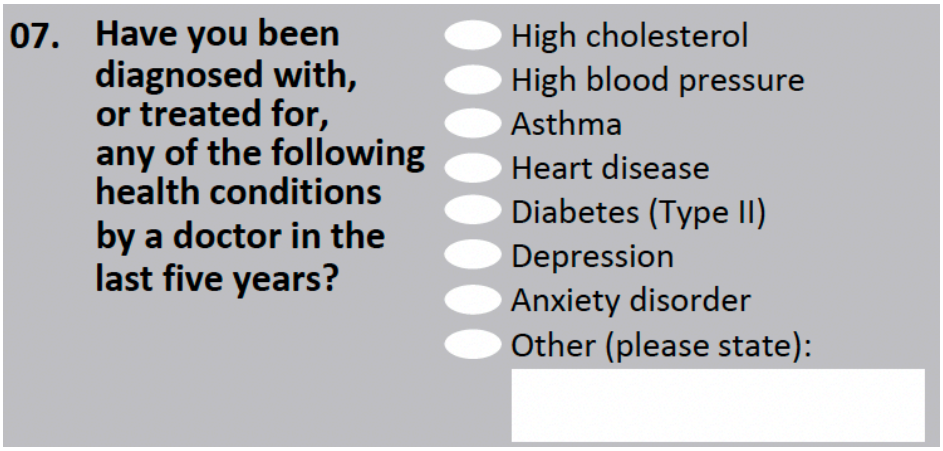
Please rate your feelings of WARMTH toward the following groups using the "feeling thermometer scale" for each group.

Feel LEAST WARM Toward This Group 1	2	3	Neutral 4	5	6	Feel MOST WARM Toward This Group 7
NZ Europeans	1	2	3	4	5	6	7
Māori	1	2	3	4	5	6	7
Asians in general	1	2	3	4	5	6	7
Pacific Islanders	1	2	3	4	5	6	7
Elderly people	1	2	3	4	5	6	7
People with a disability	1	2	3	4	5	6	7
Refugees	1	2	3	4	5	6	7
Overweight people	1	2	3	4	5	6	7
Immigrants in general	1	2	3	4	5	6	7
Chinese	1	2	3	4	5	6	7
Indians	1	2	3	4	5	6	7
Muslims	1	2	3	4	5	6	7
LGBTQ+ people	1	2	3	4	5	6	7
People with mental illness	1	2	3	4	5	6	7

Note. From NZAVS Wave 15 https://osf.io/75snb/

Figure 2

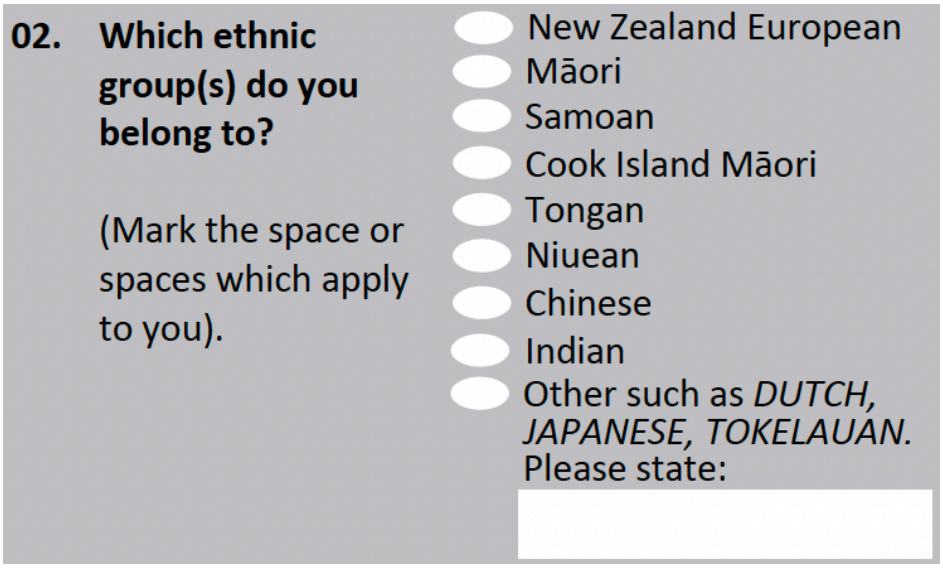
Chronic disease diagnosis



Note. From NZAVS Wave 15 https://osf.io/75snb/

Figure 3

Ethnic Groups



Note. From NZAVS Wave 15 https://osf.io/75snb/

Figure 4

Kessler 6

During the last 30 days, how often did....	(Please use the scale below to circle a number for each question)				
	None Of The Time 0	**A Little Of The Time** 1	**Some Of The Time** 2	**Most Of The Time** 3	**All Of The Time** 4
1. ... you feel hopeless?	0	1	2	3	4
2. ... you feel so depressed that nothing could cheer you up?	0	1	2	3	4
3. ... you feel restless or fidgety?	0	1	2	3	4
4. ... you feel that everything was an effort?	0	1	2	3	4
5. ... you feel worthless?	0	1	2	3	4
6. ... you feel nervous?	0	1	2	3	4
7. ... you have negative thoughts that repeated over and over?	0	1	2	3	4
8. ... you feel exhausted?	0	1	2	3	4
9. ... other people exclude you from conversations?	0	1	2	3	4

Note. From NZAVS Wave 15 https://osf.io/75snb/

Figure 5

Life Satisfaction

Instructions: **Please rate your level of satisfaction with the following aspects of your life and New Zealand.**

	Completely Dissatisfied 0	1	2	3	4	5	6	7	Somewhat Satisfied 8	9	Completely Satisfied 10
1. Your standard of living.	0	1	2	3	4	5	6	7	8	9	10
2. The economic situation in New Zealand.	0	1	2	3	4	5	6	7	8	9	10
3. The quality of New Zealand's natural environment.	0	1	2	3	4	5	6	7	8	9	10
4. Your health.	0	1	2	3	4	5	6	7	8	9	10
5. The social conditions in New Zealand.	0	1	2	3	4	5	6	7	8	9	10
6. The performance of the current New Zealand government.	0	1	2	3	4	5	6	7	8	9	10
7. Your future security.	0	1	2	3	4	5	6	7	8	9	10
8. Business in New Zealand.	0	1	2	3	4	5	6	7	8	9	10
9. Your personal relationships.	0	1	2	3	4	5	6	7	8	9	10
10. Your access to health care when you need it (e.g., doctor, GP).	0	1	2	3	4	5	6	7	8	9	10
11. The quality and health of the waterways in your local region.	0	1	2	3	4	5	6	7	8	9	10

Note. From NZAVS Wave 15 https://osf.io/75snb/

Appendix

Title for Appendix