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Social, psychosocial and employment impacts of COVID-19 in New Zealand:
Insights from the New Zealand Attitudes and Values Study 2020/2021

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Authors

Chris G. Sibley, Nickola C. Overall, Danny Osborne, & Nicole Satherley (University of Auckland)

Disclaimer

The views and interpretations in this report are those of the researchers and not the official position of the Ministry of Social Development.

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EXECUTIVE SUMMARY

As the COVID-19 pandemic emerged, the New Zealand Government implemented a 4-tier Alert Level system entailing a set of increasingly progressive restrictions to attempt to eliminate the virus. Alert Level 4 (25 March – 27 April, 2020) constituted a nationwide lockdown requiring New Zealanders to maintain household-level isolation "bubbles". Alert Level 3 (28 April – 13 May) permitted social gatherings of up to 10 people, but public venues and businesses that involved close physical contact remained closed. Alert Level 2 (14 May – 8 June) allowed people to leave their homes and permitted social gatherings of up to 100 people. Alert Level 1 (9 June) involved returning to life as normal, until a second outbreak resulted in Auckland moving to Alert Level 3 and the rest of the nation to Alert Level 2 (12 August – 30 August).

The Alert Level system and associated restrictions were necessary to eliminate the community transmission of COVID-19, but may have had unintended consequences for the population. The aim of this report is to analyse data from the New Zealand Attitudes and Values Study (NZAVS) to assess the effects of the COVID-19 Alert Levels on: (1) health and well-being, (2) personal relationships and social connections, (3) employment and financial outcomes, (4) perceived discrimination, and (5) institutional trust and national identification.

The NZAVS is a nation-wide longitudinal panel study based on a random sample of the Electoral Roll. Thousands of New Zealanders complete the study each year via a postal or web-based survey. Over 1,500 people completed the survey at each of the different Alert Levels providing data from over 12,000 New Zealanders to assess changes in outcomes across these different stages of restrictions. In addition, a propensity-matched control group of over 12,000 New Zealanders surveyed in 2019 before the pandemic allowed us to assess whether restrictions at each Alert Level affected baseline levels of the examined outcomes assessed prior to the pandemic. Potential demographic differences were examined to identify factors that might increase the risk of, or protect against, any effects of each Alert Level.

Health and Well-being

New Zealanders were generally resilient across the Alert Levels with no evidence of detrimental effects on mental health or personal well-being on average. Instead, there were

generally positive effects on fatigue during Alert Level 4 and 3, and improvements to personal well-being at Alert Level 1 as New Zealanders emerged from the restrictions and threat of the COVID-19 pandemic. The general pattern of resilience tended to be stronger for older participants, who sustained higher levels of personal well-being. However, younger people reported greater psychological distress during Alert Levels 3 and 2, perhaps as the continued restrictions exerted a relatively greater influence on their lifestyle across time. This suggests increased efforts to understand the challenges of Alert Level changes (such as restricted social, educational, and employment opportunities), and the resulting psychological burden for young people in particular could have the biggest influence on achieving better wellbeing.

Personal Relationships and Social Connections

Alert Level 4 was accompanied by greater conflict and lower satisfaction in personal relationships. Yet levels of social support and felt belonging did not change across the pandemic, suggesting that Alert Level 4 put pressure on the quality of relationships in the home rather than on social connections outside the home. Moreover, New Zealanders reported a greater sense of community across many of the Alert Levels, which may have contributed to the general pattern of resilience in well-being. These results suggest that efforts directed toward helping New Zealanders sustain the quality of their personal relationships inside the home, including managing conflict in relationships, would be most beneficial.

Employment and Financial Outcomes

Alert Levels 4, 3 and 2 were accompanied by drops in job security. However, at Alert Level 1, job security rebounded, and participants reported higher levels of job satisfaction and feeling more valued by their organisation compared to pre-pandemic levels. These results indicate relief and job appreciation as COVID-19 was contained in New Zealand. Yet, there was tentative evidence that younger participants and those identifying as Pacific, Asian or another non-Māori ethnic minority group experienced poorer outcomes relating to job satisfaction and sense of value in their organisation at Alert Levels 3 and 2. These results suggest further understanding of young people's and specific ethnic groups' experiences of resuming or continuing employment during different Alert Levels is required to ensure all groups in New Zealand feel similarly valued in their organisation and satisfied with their work.

Perceived Discrimination

Reports of gender- and ethnic-based discrimination were elevated across the Alert Levels, particularly for specific demographic groups. Women reported elevated rates of gender-based discrimination at Alert Level 4 that persisted through Alert Levels 3 and 2, likely due to the higher job loss rates (Stats NZ, 2020) and domestic and parenting burdens (Waddell et al., 2020) incurred by women. Māori and those who identified as Pacific, Asian, or another ethnic minority reported increases in ethnic-based discrimination through the Alert Levels and (for Māori) into the second community outbreak. These results reveal that the challenges of the pandemic may have intensified or made salient existing disparities across economic, financial, social, and family domains. These patterns emphasize that planning for future lockdowns and the nation's recovery from the COVID-19 pandemic needs to address the disproportionate job loss and unpaid labour experienced by women and ensure that Māori, Pacific, Asian, and other ethnic minority groups do not bear the brunt of the economic, health and social costs of the Alert Levels and pandemic.

Institutional Trust and National Identification

The Alert Levels were accompanied by a general increase in trust in, and satisfaction with, New Zealand's institutions. This pattern was most notable for satisfaction with the New Zealand Government, showing substantial increases at Alert Level 4 compared to prior to the pandemic, which continued throughout Alert Levels and the second community outbreak. Trust in science, politicians, and the police all increased relative to the matched control group at Alert Level 4 and, in many cases, remained elevated at one or more of the following Alert Levels. Increases in institutional trust were broadly evident across demographic groups in New Zealand, although these increases were slightly more pronounced among women with respect to their trust in politicians, and for women, Māori, and Europeans with respect to satisfaction with the Government. This general pattern of increased trust in, and satisfaction with, the institutions responsible for developing, implementing, and enforcing New Zealand's Alert Level system likely contributed to the elimination of COVID-19 from the New Zealand community.

Taken together, our analyses reveal reasons to feel confident in New Zealand's Alert Level system as well as the need to address the challenges disproportionately felt by women and ethnic minorities. New Zealanders' increased institutional trust, satisfaction with the

Government, and sense of community likely facilitated the success of New Zealand's elimination strategy and may help explain a general pattern of resilience in health and well-being. Nonetheless, increases in conflict and dissatisfaction in personal relationships during Alert Level 4 indicate the importance of efforts to address domestic conflict when mandating home confinement. Moreover, some groups showed specific vulnerabilities that need to be attended to in policies designed to address the economic, health and social costs of the Alert Levels and pandemic. Women reported more gender-based discrimination, particularly during the most restrictive Alert Levels, highlighting the need to address women's greater rates of job loss and increased burden of domestic labour and parenting. Māori, Pacific, Asian, and other ethnic minority groups also reported greater ethnic-based discrimination across the Alert Levels, even during Alert Level 1 when the virus was eliminated, and New Zealanders were generally showing increases in wellbeing and job appreciation. These patterns emphasize the importance of identifying and addressing the unique challenges faced by Māori, Pacific, Asian, and other ethnic minority groups who face additional obstacles to recovering from the diverse and cumulative effects of the pandemic.

BACKGROUND AND AIMS

In late 2019, the first cases of a novel respiratory illness were reported in Wuhan, China; on January 7, 2020, the novel coronavirus was genetically sequenced and linked to the respiratory disease COVID-19 (World Health Organization, 2020). The virus represents a unique global challenge due to its contagiousness and lethality. By April 30, 2020, the virus had spread to 210 countries and territories, infecting over 3 million people and claiming more than 225,000 lives (Worldometers, 2020). As of January 5, 2021, the virus had infected over 86 million people and caused over 1.8 million deaths (Worldometers, 2021).

In response to the rapid and expected exponential spread of the virus, many countries entered "lockdown". Lockdowns typically mandated staying at home, shutting businesses or working from home, and avoiding physical contact with others. Thus, the pandemic has not only involved the threat of illness, but also the challenges that lockdowns may create for mental health and subjective well-being, the quality of personal relationships and social connections, employment and financial outcomes, perceived discrimination, attitudes toward the nation, and attitudes toward the government institutions that enacted and enforced the lockdowns. The aim of this report is to assess these potential diverse effects of the restrictions placed on New Zealanders as part of the Government's strategy to eliminate COVID-19.

Alert Levels: Levels of Restrictions to Eliminate COVID-19 in New Zealand

On 23 March, 2020, 24 days after the first case of COVID-19 was identified in New Zealand, the Government announced that the country would enter Alert Level 4 at 11.59pm on 25 March (Ardern, 2020). Alert Level 4 constituted a nationwide lockdown requiring New Zealanders to develop and maintain household-level isolation "bubbles". People could only leave their homes to obtain groceries, medical supplies or treatment, and exercise within their immediate neighbourhood, with a few exceptions for personal safety, blended families, single-person households, and essential workers such as healthcare and grocery workers (Bloomfield, 2020). Although the cases of COVID-19 rapidly increased in the first few weeks of Alert Level 4 (consistent with the incubation period of the virus), the effectiveness of the lockdown became evident by 6 April when new case numbers began to slowly decline.

The following weeks saw an easement of restrictions as the daily case numbers of new confirmed or suspected infections continued to decline and New Zealand moved into less restrictive Alert Levels. The first easement occurred at 11.59 on 27 April when New Zealand moved into Alert Level 3. Alert Level 3 permitted social gatherings of up to 10 people, but only for weddings, funerals, and tangihanga. Public venues and businesses that involved close physical contact were to remain closed and non-essential workers were asked to work from home if possible. At 11.59 on 13 May, the government eased restrictions further by moving the nation into Alert Level 2. Alert Level 2 allowed people to leave their homes and permitted social gatherings of up to 100 people. As such, Alert Level 2 permitted a much greater amount of social interaction, albeit with social distancing rules still in place, and most people were able to return to work. At 11.59pm on 8 June, New Zealand entered Alert Level 1, which involved returning to life as normal, but with a warning to be prepared to enter a higher Alert Level if COVID-19 reappeared in the community.

After 102 days without community transmission, four new cases of COVID-19 without a known source of infection were reported in Auckland on 11 August 2020. As a result, Auckland moved into Alert Level 3 at noon on 12 August, while the rest of the nation moved into Alert Level 2. On 30 August, Auckland entered a slightly more restrictive Alert Level 2. Auckland stayed at this heightened Alert Level 2 when the rest of New Zealand re-entered Alert Level 1 at 11.59pm on 21 September. Auckland joined the rest of the nation at Alert Level 1 at 11.59pm on 7 October. New Zealand stayed in Alert Level 1 for the rest of 2020, despite the emergence of a few community cases that were quickly contained.

Although the Alert Levels and the speed at which the Government reacted to the COVID-19 pandemic were instrumental to the nation's elimination strategy, the unprecedented restrictions may have had detrimental effects on health and wellbeing, social connections, employment outcomes, and attitudes toward government institutions. The aim of this report is to analyse data from the New Zealand Attitudes and Values Study (NZAVS) to assess the effects of the COVID-19 Alert Levels on these key outcomes, including (1) health and well-being, (2) personal relationships and social connections, (3) employment and financial outcomes, (4) perceived discrimination, and (5) institutional trust and national identification.

Data from the New Zealand Attitudes and Values Study (NZAVS) The NZAVS is a nation-wide longitudinal panel study that began in 2009 based on a random sample of the

Electoral Roll. The primary goal of the NZAVS is to track changes in social psychological and health factors across years. To achieve this aim, thousands of New Zealanders are sampled each year via a postal or web-based survey. Respondents complete the survey at different times of the year, which allows examination of how central outcomes varied across Alert Levels. As shown in Table 1, over 1,500 people completed the survey at each of the different Alert Levels providing data from over 12,000 New Zealanders to assess changes in outcomes across the different stages of the restrictions used to contain COVID-19.

We also compared the responses of participants at each Alert Level to a propensity matched control group surveyed before the pandemic emerged. The goal of propensity score matching is to allow valid comparisons between a treatment group (i.e. people facing restrictions during a global pandemic) and a matched control group (i.e. people not facing restrictions or a global pandemic) when random allocation to conditions is not possible. This is achieved by matching participants who completed the survey during the Alert Levels to similar participants drawn from a larger control sample who completed the survey prior to the pandemic. In the current analyses, we generated a propensity matched control sample by matching all respondents who completed the survey across the Alert Levels (see Table 1) to similar respondents who completed the survey during October – December 2019 on a range of demographic factors (e.g., ethnicity, gender, age, education, socioeconomic status).[1]

Table 1. Number of Respondents within each Alert Level Group and the Propensity Matched Control Group

Group	Dates Data Collected	Sample Size
Propensity matched control	1 Oct 2019 – 31 Dec 2019	12,306
Alert Level 4	26 March 2020 – 27 April 2020	3,511
Alert Level 3	28 April 20202 – 13 May 2020	1,566
Alert Level 2	14 May 2020 – 8 June 2020	1,829
Alert Level 1	9 June 2020 – 11 August 2020	3,938
Alert Level 3 (Auckland) / Alert Level 2 (rest of nation)	12 August 2020 – 30 August 2020	1,528

Note. The sample sizes in each of the Alert Level groups may differ very slightly across each analysis due to individually missing data for specific outcome measures.

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[1] The propensity score matching procedure was thus the same as that used in an earlier published paper looking at outcomes during the first 18 days of lockdown using a much smaller sample (see Sibley et al., 2020).

The propensity score matching approach approximates a randomized controlled experiment (Rosenbaum & Rubin, 1983; Thoemmes & Kim, 2011) and increases the ability to make causal inferences (Austin, 2011; Foster, 2010; Stuart, 2010) because any observed differences between the Alert Level groups and the propensity matched control group are more likely to be due to the COVID-19 pandemic and associated restrictions than to other confounding factors. The analyses presented in this report thus assess whether outcomes at each Alert Level differ from the matched control group (assessed before the pandemic) and allow us to draw stronger conclusions about the relative effect of each Alert Level.

Sampling Procedure: NZAVS Time 11 (2019; conducted from 29.09.2019 to 17.10.2020)
Time 11 (2019) of the NZAVS occurred from 29 September 2019 to 17 October 2020 and thus occurred during the pandemic. Accordingly, procedures differed from Times 1-10 due to an increased focus on online delivery and incomplete phoning of non-respondents.

The Time 11 (2019) NZAVS contained responses from 42,684 participants (36,522 retained from one or more previous wave). The sample retained 2,506 participants from the Time 1 (2009) sample (a retention rate of 38.4%). The sample retained 34,782 participants from Time 10 (2018; a retention rate of 72.5% from the previous year). Participants who provided an email address were first emailed and invited to complete an online version if they preferred. Participants who did not complete the online version (or did not provide an email) were posted a copy of the questionnaire, with a second postal follow-up two months later. We staggered the time of contact, so that participants who had completed the previous wave were contacted approximately one year after they last completed the questionnaire. A second reminder email was sent approximately four months following the first email attempt. We offered a prize draw for participation (five draws each for $1000 grocery vouchers, $5000 total prize pool). As in past years, three attempts were made to phone non-respondents using each available cell and landline number. However, due to the university closure during COVID-19 lockdowns, phoning attempts were made for only 54% of the phoning pool (11,687 from a total of 21,636 non-respondents who provided at least one phone number).

Two additional forms of recruitment were also introduced during Time 11. The first was a large information box in the questionnaire, which asked people: 'Do you have a partner who would also like to join the NZAVS?' with additional details for how partners might join the

study. The second was a Facebook advertisement to maximise sampling during the Alert Levels. The advertisement ran from 4 April – 4 July, 2020 (overlapping with New Zealand's first Alert Levels 4 – 1) and again from 18 August – 4 September (during the second outbreak and Alert Levels), and targeted men and women aged 18-65+ who lived in New Zealand. The advertisement read: "Participate in the New Zealand Attitudes and Values Study. Complete the 2020 Questionnaire online" with the body of text: "If you are part of the NZAVS, but have not heard from us in the last year, then please consider completing the 2020 questionnaire online. The study is more important than ever as we aim to understand the impact of COVID-19 on mental health, wellbeing and resilience in our communities." This paid promotion reached 883,969 people, with 37,850 clicks to the link for the Qualtrics survey). A total of 6,106 people (4,734 opting in to the study for the first time, and 1,372 previously 'lost' participants) completed the questionnaire and provided full contact details, and were thus included in the dataset.[2]

Although the NZAVS makes every effort to obtain a representative sample of the New Zealand adult population, it is important to be mindful of the limitations of the sample. For example, New Zealand Europeans tend to be over-represented and other ethnicities under-represented, while those from lower socio-economic backgrounds tend to be harder to both sample and retain (for example, due to frequent address changes). Thus, results generated from the sample reflect a good but imperfect snapshot of the New Zealand population on the whole.

Sample Demographics

Table 2 presents the demographic details for the complete NZAVS sample, and Table 3 presents the demographic details for the propensity matched control sample and each Alert Level group. Note that the NZAVS sample over-represents women in particular (about 63% women). Hence, for overall estimates of the population, sample weighting should be used when analysing the NZAVS sample. However, as can be seen in Table 3, the level of bias in the NZAVS sample was roughly equivalent across Alert Levels (and also by design in the propensity matched control). To further adjust for possible sample bias across conditions, all analyses were conducted including a large set of covariates (see analysis details below). The inclusion of these covariates adjusted for possible sample differences in various demographic

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[2] The full questionnaire and the sample procedure details for each wave of the NZAVS are provided on the NZAVS website: www.nzavs.auckland.ac.nz

factors across conditions, and further strengthens inference that any observed differences across conditions are due to difference in the Alert Levels, rather than possible differences in the demographics of the sample completing the NZAVS in different lockdown conditions.

Table 2. Demographic Details for Complete Time 11 NZAVS Sample

Full Sample		
Gender	**N**	**%**
Women	27,221	63.77%
Men	15,260	35.75%
Gender Diverse	203	0.48%
Ethnicity (note categories not mutually exclusive)		
European	39,527	92.60%
Māori	4,315	10.11%
Pacific Nations peoples	1,149	2.69%
Asian peoples	1,900	4.45%
Other ethnic groups	1,106	2.60%
Categorical Demographics		
Religious	14,062	32.94%
Parent	31,177	73.04%
Partner	31,108	72.88%
Employed	31,858	74.64%
Urban	34,499	80.82%
Born in New Zealand	33,275	77.96%
Continuous Demographics	**M**	**SD**
Age	52.05	13.87
Education (NZReg 0-10)	5.69	2.66
NZDep (1-10)	4.75	2.72
Socio-Economic Index (2013)	55.56	16.01
Household Income (median)	99,974	

Table 3. Demographic Details of Propensity Matched Control and Alert Level Groups.

	Propensity matched control		Alert Level 4		Alert Level 3		Alert Level 2		Alert Level 1		Alert Level 3 (Auckland), Alert Level 2 (rest of nation)	
Gender	N	%	N	%	N	%	N	%	N	%	N	%
Women	7,959	64.68%	2,301	65.54%	1,029	65.71%	1,243	67.96%	2,413	61.27%	1,009	66.03%
Men	4,289	34.85%	1,178	33.55%	510	32.57%	576	31.49%	1,517	38.52%	512	33.51%
Gender Diverse	58	0.47%	32	0.91%	27	1.72%	10	0.55%	8	0.20%	7	0.46%
Ethnicity (note categories not mutually exclusive)												
European	11,465	93.17%	3,298	93.93%	1,454	92.85%	1,718	93.93%	3,573	90.73%	1,413	92.47%
Māori	1,326	10.78%	377	10.74%	165	10.54%	165	9.02%	508	12.90%	157	10.27%
Pacific Nations peoples	323	2.62%	85	2.42%	33	2.11%	43	2.35%	132	3.35%	38	2.49%
Asian peoples	457	3.71%	105	2.99%	53	3.38%	48	2.62%	207	5.26%	49	3.21%
Other ethnic groups	305	2.50%	101	2.90%	66	4.20%	51	3.30%	113	2.90%	51	3.30%
Categorical Demographics												
Religious	4,117	34.28%	1,171	33.75%	515	33.14%	592	32.56%	1,332	34.77%	525	34.72%
Parent	9,038	73.64%	2,572	73.38%	1,039	66.39%	1,315	72.02%	3,039	77.25%	1,173	76.87%
Partner	8,674	72.34%	2,420	69.94%	1,017	65.78%	1,230	68.03%	2,880	75.27%	1,115	74.28%
Employed	9,049	74.54%	2,454	70.40%	1,050	67.26%	1,240	68.02%	2,860	74.00%	1,084	71.41%
Urban	10,048	82.09%	2,870	82.64%	1,314	84.34%	1,497	82.07%	3,127	79.79%	1,239	81.46%
Born in New Zealand	9,331	76.02%	2,639	75.66%	1,174	75.45%	1,337	73.70%	3,070	78.14%	1,145	75.28%
Continuous Demographics	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Age	52.9600	13.44	54.16	13.95	53.39	16.2	53.66	15.10	53.45	13.30	53.61	14.19
Education (NZReg 0-10)	5.75	2.66	5.87	2.66	5.88	2.69	6.05	2.64	5.35	2.72	5.86	2.62
NZDep (1-10)	4.74	2.73	4.84	2.71	4.93	2.65	4.81	2.74	4.66	2.69	4.59	2.69
Socio-Economic Index (2013)	55.76	16.01	56.35	15.90	56.07	15.78	56.99	15.54	54.29	15.94	56.30	15.69
Household Income (median)	95,148		85,762		90,000		95,893		99,346		90,333	

ANALYTIC OVERVIEW

We present the background, analyses, and conclusions for each outcome in five different sections focusing on: (1) health and well-being, (2) personal relationships and social connections, (3) employment and financial outcomes, (4) perceived discrimination, and (5) institutional trust and national identification. Analyses of each outcome focus on two aims. Note that the same models were also run with the previous (Time 10, 2019) wave of the NZAVS, and no robust difference across the same time periods as the 2020 Alert Levels were observed. This indicates that the differences observed across Alert Levels are not due to seasonal fluctuations that coincided with the different Alert Level dates.

Aim 1: General Effects Across Alert Levels

The first aim was to examine the general effects of the Alert Levels by comparing each outcome across matched control and Alert Level groups. Given that the NZAVS assesses participants across the year, thousands of people completed the survey before the pandemic. We thus used propensity score matching (using the algorithm in SPSS version 26) to match the 12,372 respondents who completed the survey across the Alert Levels in 2020 (see Table 1) with 12,306 respondents from a pool of 23,733 New Zealanders who were surveyed during October 1, 2019 to December 31, 2019 (i.e., before the threat of COVID-19 became known). Participants were matched (match tolerance = .01) on ethnicity, gender, age, education, socioeconomic status, disability status, born in New Zealand or overseas, New Zealand citizenship (vs permanent residency), diagnosis with depression or an anxiety disorder in the last five years, smoking status, rural (vs. urban) residence, and religiosity.

To examine whether responses to the five focal domains varied across the matched control and Alert Level groups, we submitted participants' self-reported responses to 22 independent 1-way analysis of covariances (ANCOVAs). We included several covariates to rule out that any differences were due to key demographic variables that may explain important differences in the outcomes assessed, including gender, age, ethnicity, parental status, whether the participant had a child under 5 living in the home, neighbourhood-level deprivation, and whether participants had opted into the study in 2020 during the pandemic (via a Facebook advertisement; about 10% of the sample) versus had participated at prior waves of the NZAVS before the pandemic.

The initial ANCOVA results reveal whether there is significant variability in the outcome between the matched control group and groups of participants at each Alert Level. To examine specific differences across groups, any significant ANCOVAs were followed-up by a set of pairwise comparisons. These comparisons test whether the outcome at any of the Alert Levels was significantly different to the matched control group, which would indicate that the COVID-19 restrictions affected baseline levels of the given outcome assessed prior to the pandemic. The comparisons also reveal whether significant differences emerged across distinct Alert Levels, such as whether outcomes improved at Alert Level 1 compared to Alert Level 4. To ensure that our analyses do not capitalise on chance variations due to multiple comparisons, we employed a Bonferroni correction to each of these pairwise comparisons.

Aim 2: Demographic Differences

The 1-way ANCOVAs provide an overview of how New Zealanders responded to the various Alert Levels in general, but they cannot inform us e about potentially vulnerable subgroups within the population. Our second aim was to examine whether the effects of the Alert Levels varied across key demographics. In particular, we conducted 2-way ANCOVAs to examine whether differences in the effects across Alert Levels occurred according to: (1) gender (men vs women), (2) ethnicity (European, Māori, and Asian/Pacific Islander/Other)[3], (3) parental status (yes vs. no), (4) health condition/disability status (indication of a health/disability condition in the last 6 months), (5) mental health diagnosis (disclosure of a diagnosis of depression, anxiety, or other behavioural developmental disorder), and (6) age. Each 2-way ANCOVA included the focal moderator, as well as the remaining set of covariates used in the 1-way ANCOVAs. These models thus identify the factors that might increase the risk of, or protect against, any detrimental effects of the Alert Levels on (1) health and well-being, (2) personal relationships and social connections, (3) employment and financial outcomes, (4) perceived discrimination, and (5) institutional trust and national identification.

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[3] For this report, Pacific peoples, Asian peoples and those identifying with another ethnic group were collapsed into one broader category due to limited sample size when split across Alert Levels (see Table 3). As such, it is important to bear in mind that these distinct ethnic groups may have been affected in unique ways by the Alert Level changes that we cannot necessarily detect here.

HEALTH AND WELL-BEING

The Alert Levels were accompanied by established risk factors for poor health and well-being, including social isolation, economic loss and insecurity, increases in work and childcare demands, anxiety about family health and safety, and uncertainty about the future. Examination of people's responses to past community-wide disasters (e.g., natural disasters, war, terrorist attacks; Norris et al., 2002) and outbreaks (e.g., SARS; Kan et al., 2003; Yu et al., 2005) indicate that these types of events present immediate risks to mental and physical health. Accordingly, as the pandemic emerged, mental health experts forecasted a rise in mental health issues, such as depression and anxiety (Holmes et al., 2020). Initial evidence also indicated that people in China, the United States, and Germany experienced heightened levels of stress, anxiety and depression (American Psychological Association, 2020; Twenge & Joiner, 2020; Qiu et al., 2020; Wang et al., 2020) and declines in well-being (Zacher & Rudolph, 2020) in the early months of the pandemic.

Yet, resilience experts have argued that most people will maintain existing levels of health and well-being (Chen & Bonanno, 2020). Such resilience was evident in our initial examination of the well-being implications of the Level 4 Lockdown in NZ (Sibley et al., 2020). Comparing matched samples of New Zealanders assessed before ($N_{\text{pre-lockdown}} = 1,003$) and during the first 18 days of Level 4 lockdown ($N_{\text{lockdown}} = 1,003$) revealed no drops in reported life satisfaction, personal well-being or physical health. The two significant differences that did emerge revealed mixed results. Compared to the pre-lockdown sample, respondents in lockdown reported slightly less fatigue, but slightly higher mental distress.

Examining immediate responses to the early days of the pandemic provides a limited picture of the enduring impact of the pandemic. On the one hand, the stressors associated with the pandemic and lockdowns may build over time as social difficulties, economic insecurity and uncertainty accumulate through the course of the pandemic. Thus, the risk to health and well-being may be more evident as the year progressed. On the other hand, prior research examining people's reactions to major disasters and stressors over time shows that most people who suffer immediate drops in well-being return to baseline levels relatively quickly (Bonnano et al., 2010). The current analyses comparing levels of health and well-being prior to the pandemic (the matched control group) with levels of health and well-being through each Alert Level in New Zealand can evaluate these two possibilities.

We examined the degree to which health and well-being varied across the matched control group sampled in 2019 and groups in each Alert Level in 2020 using indicators of physical health (satisfaction with health, fatigue), mental health (psychological distress, rumination), and subjective well-being (personal well-being, satisfaction with life).

Measures

Satisfaction with Health. Participants rated these three items (Ware & Sherbourne, 1992): "In general, would you say your health is ..." (1 = poor, 7 = excellent)", "I seem to get sick a little easier than other people" (1 = strongly disagree, 7 = strongly agree), and "I expect my health to get worse" (1 = strongly disagree, 7 = strongly agree).

Fatigue. Participants rated a single item to report how often over "the last 30 days" they felt "exhausted" on a 5-point scale (0 = none of the time; 4 = all of the time).

Psychological Distress. Participants completed the clinically-validated Kessler-6, which is a short-form scale of psychological distress (Kessler et al., 2010). Participants reported how often they felt these six symptoms of distress over the past 30 days using a 5-point scale (0 = none of the time; 4 = all of the time): "you feel hopeless", "you feel so depressed that nothing could cheer you up", "you feel restless or fidgety", "you feel that everything was an effort", "you feel worthless", and "you feel nervous".

Rumination. Participants rated a single item adapted from Nolen-Hoeksema and Morrow (1993) assessing how often during the last 30 days they had "negative thoughts that repeated over and over" using a 5-point scale (0 = none of the time; 4 = all of the time).

Personal Well-being. Personal well-being was measured using the mean of four items developed by Cummins and colleagues (2003). Participants rated how satisfied they were with their "standard of living," "health," "future security," and "personal relationships" on an 11-point scale (0 = completely dissatisfied, 10 = completely satisfied).

Satisfaction with Life. Participants rated two items developed by Diener and colleagues (1985) on a 7-point scale (1 = strongly disagree, 7 = strongly agree): "I am satisfied with my life" and "In most ways my life is close to ideal".

Aim 1: General Effects Across Alert Levels

Satisfaction with Health. Satisfaction with health varied significantly across matched control and Alert Level groups, $F = 2.730$, $p = .018$, $\eta_p^2 = .001$. However, pairwise contrasts revealed no significant differences across groups.

Graph 1. General effects on satisfaction with health
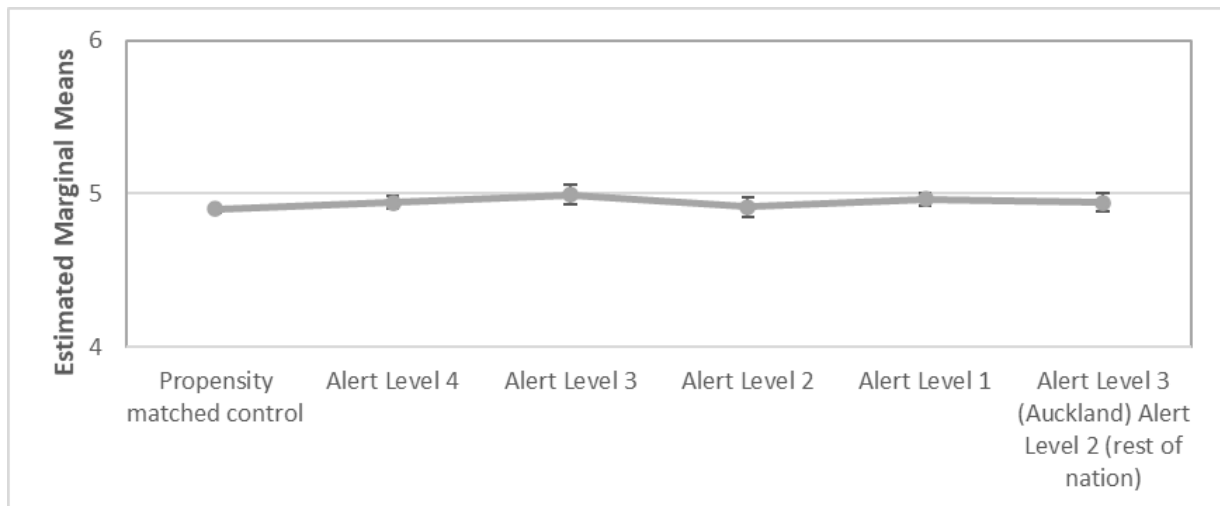
Fatigue. Fatigue varied significantly across groups, $F = 18.825$, $p < .001$, $\eta_p^2 = .004$. Relative to the levels of fatigue reported by the matched control group ($M = 1.665$, 95% CI [1.644, 1.685]), fatigue was lower during Alert Level 4 ($M = 1.477$, 95% CI [1.441, 1.512], $p < .001$), Alert Level 3 ($M = 1.453$, 95% CI [1.398, 1.508], $p < .001$), Alert Level 2 ($M = 1.546$, 95% CI [1.495, 1.597], $p < .001$), and Alert Level 1 ($M = 1.607$, 95% CI [1.574, 1.639], $p = .035$). A rebound pattern occurred with higher fatigue reported at Alert Level 1 ($p < .001$) and the start of the second community outbreak ($M = 1.607$, 95% CI [1.554, 1.661], $p < .001$) compared to the lowest levels of fatigue reported during Alert Level 4 and Level 3.

Graph 2. General effects on fatigue
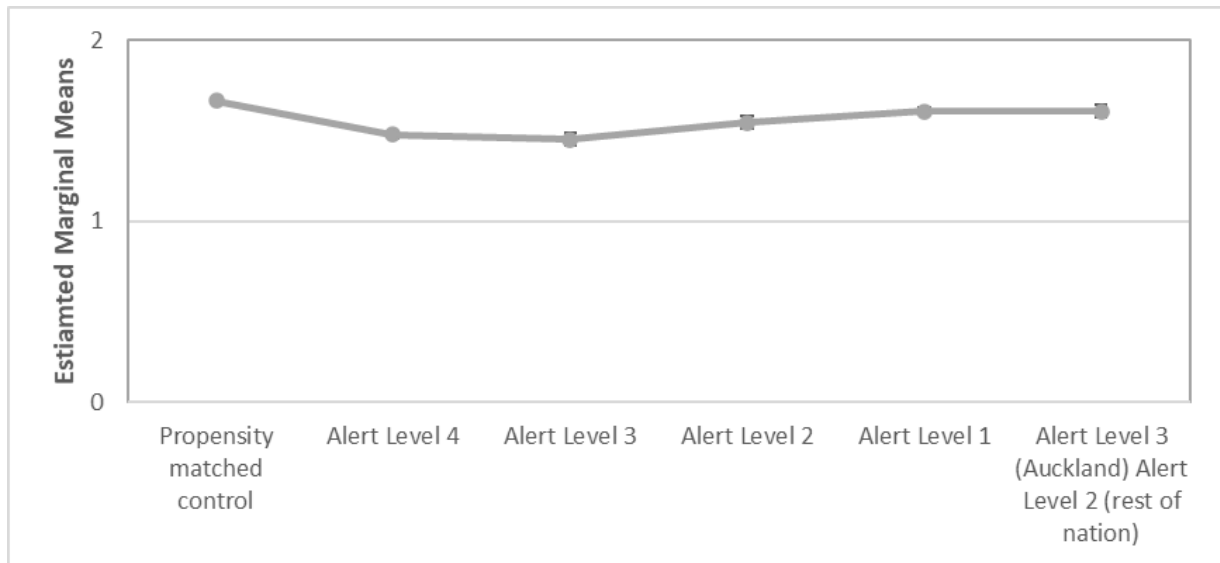
Psychological Distress. Psychological distress did not vary significantly across matched control and Alert Level groups, $F = 1.609$, $p = .154$, $\eta_p^2 = .000$. No pairwise contrasts were significant.

Graph 3. General effects on psychological distress
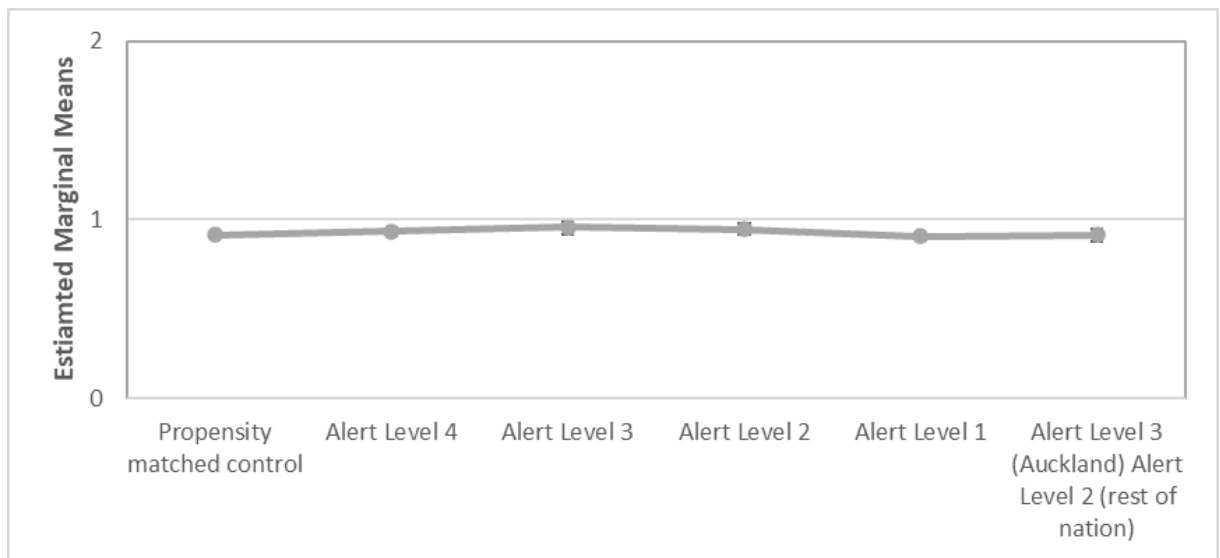
Rumination. Rumination did not vary across the matched control and Alert Level groups, $F = 1.873$, $p = .095$, $\eta_p^2 = .000$. No pairwise contrasts were significant.

Graph 4. General effects on Rumination
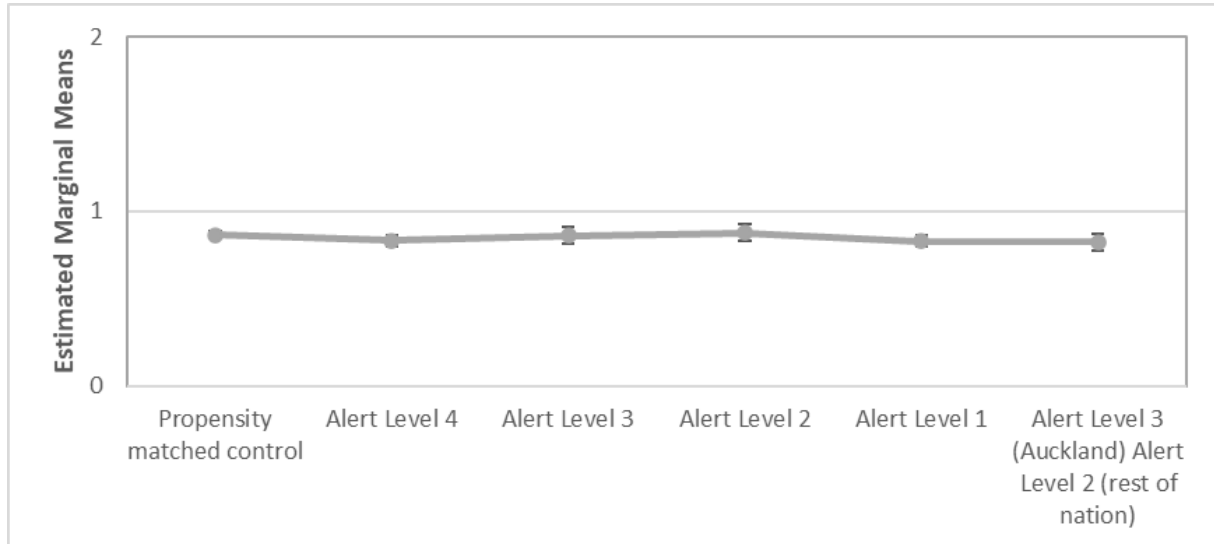
Personal Well-being. Personal well-being varied significantly across Alert Level groups, $F = 3.501$, $p = .004$, $\eta_p^2 = .001$. Relative to the matched control group ($M = 6.888$, 95% CI [6.854, 6.921]), participants reported greater personal well-being during Level 1 ($M = 6.986$, 95% CI [6.932, 7.040], $p = .028$). Participants at Alert Level 1 also reported significantly higher personal well-being compared to participants at Alert Level 2 ($M = 6.832$, 95% CI [6.747, 6.917], $p = .050$). This pattern suggests that, in general, the lockdowns did not decrease personal well-being, but that people experienced a slight elevation in personal well-being following the easement of restrictions at Alert Level 1.

Graph 5. General effects on Personal Wellbeing
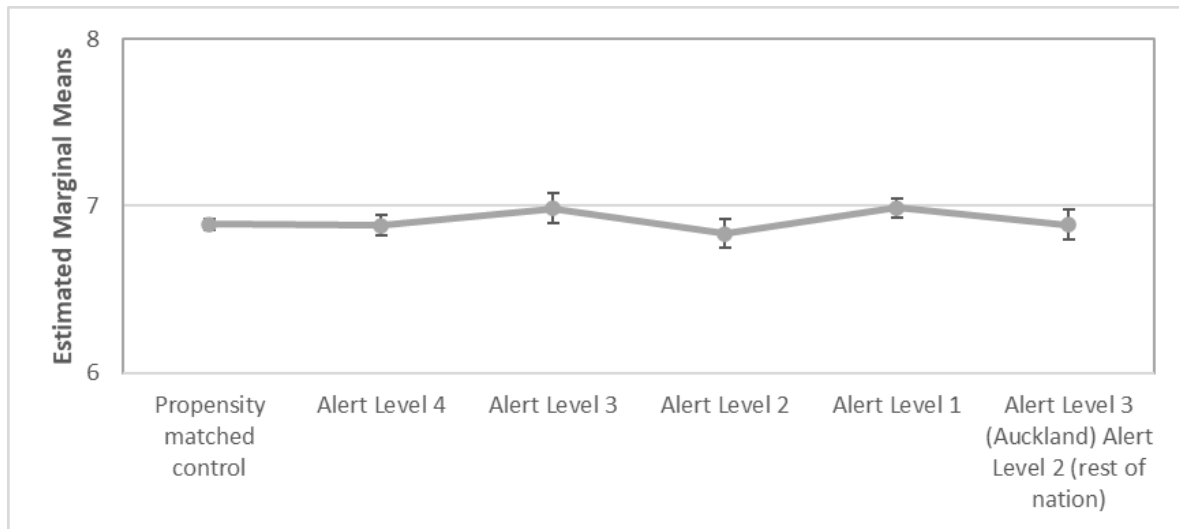
Satisfaction with Life. Satisfaction with life did not vary across groups, $F = 0.600$, $p = .700$, $\eta_p^2 = .000$. No pairwise contrasts were significant.

Graph 6. General effects on Satisfaction with Life
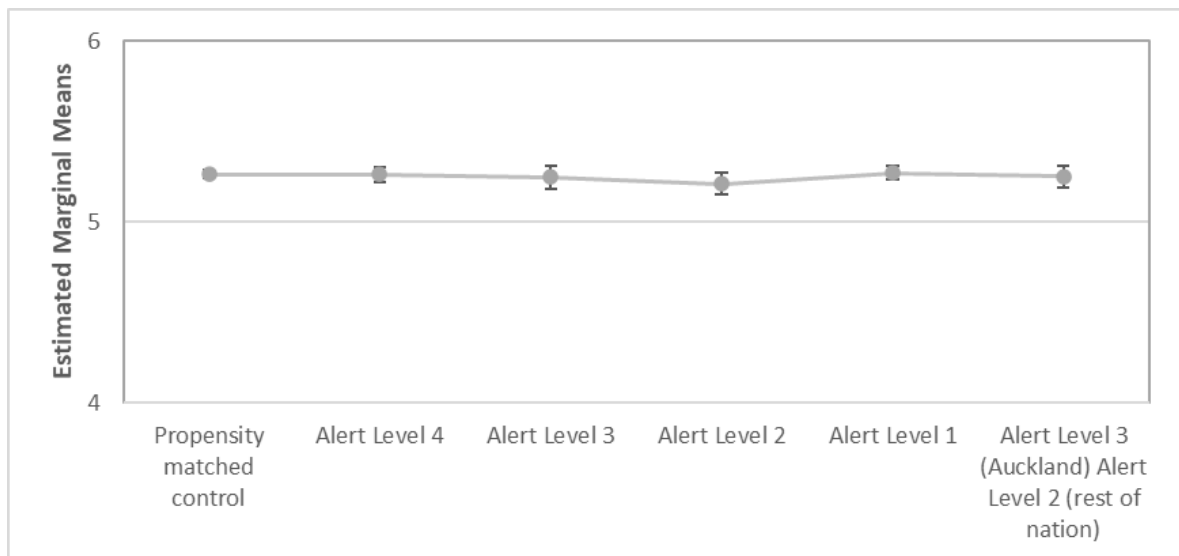
Summary of General Effects on Health and Well-being Across Alert Levels

Overall, the results indicate a general resilience to the challenges of the COVID-19 Alert Levels, and even some potential health and well-being benefits across Alert Levels. There were no differences in mental health (psychological distress, rumination) across the matched control group and any of the Alert Level groups. The differences in physical health supported initial evidence that the Level 4 lockdown had positive effects on fatigue (Sibley et al., 2020).

Compared to the matched control group, people reported significantly less fatigue during Alert Levels 4-1. Although these lower levels of fatigue occurred during Levels 2 and 1, the fatigue benefits were highest at Alert Levels 4 and 3 suggesting that fatigue rebounded as work, school and life routines returned to normal. Finally, there was no evidence that the Alert Levels had detrimental effects on satisfaction with physical health, life satisfaction or personal well-being. Instead, people experienced elevated personal well-being at Alert Level 1, again suggesting that people were resilient during lockdowns and then experienced some health and well-being benefits as they emerged from the restrictions and threat of the COVID-19 pandemic.

Aim 2: Demographic Differences

This section reports analyses whether any effect of Alert Levels differed across six demographic groups: gender, ethnicity, parental status, health condition/disability status, mental health diagnosis, and age.

Differences across Gender

Satisfaction with Health. Men and women reported similar levels of satisfaction with health, $F = 1.126$, $p = .289$, $\eta_p^2 = .000$, but there was evidence of a small gender difference in how satisfaction with health varied across alert levels, $F = 2.264$, $p = .045$, $\eta_p^2 = .000$. The pattern indicates that the small boost in satisfaction with health at Alert Level 1 occurred for women, but not men ($p <.01$).

Graph 7. Gender Differences in Satisfaction with Health
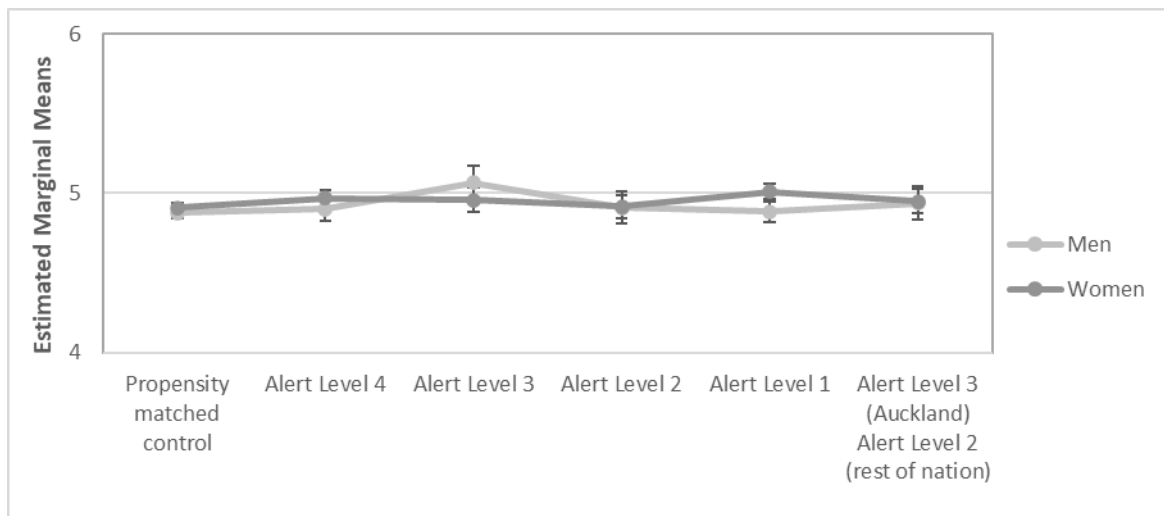
Fatigue. Women reported greater fatigue, $F = 17.154$, $p < .001$, $\eta_p^2 = .004$, and this demographic difference did not vary across Alert Levels, $F = 0.870$, $p = .500$, $\eta_p^2 = .000$.

Graph 8. Gender Differences in Fatigue
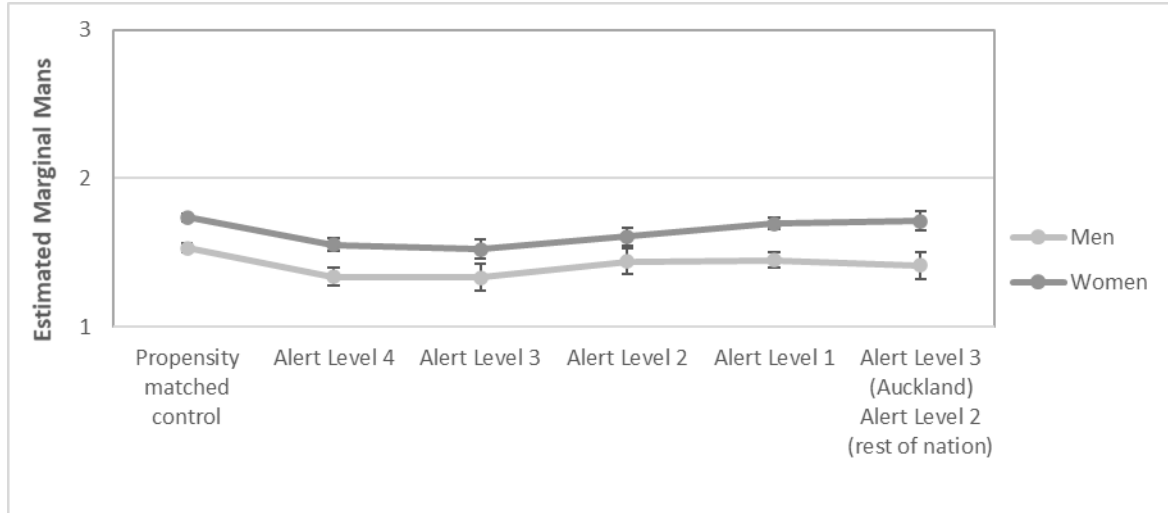
Psychological Distress. Women reported greater psychological distress in general, $F = 25.195$, $p = < .001$, $\eta_p^2 = .001$, but this difference did not differ across Alert Levels, $F = 2.145$, $p = .057$, $\eta_p^2 = .000$.

Graph 9. Gender Differences in Psychological Distress

Rumination. There were no gender differences in rumination, $F = 3.235$, $p = .072$, $\eta_p^2 = .000$, but gender differences significantly varied across Alert Levels, $F = 2.316$, $p = .041$, $\eta_p^2 = .000$, with women experiencing greater rumination at Alert Level 3.

Graph 10. Gender Differences in Rumination
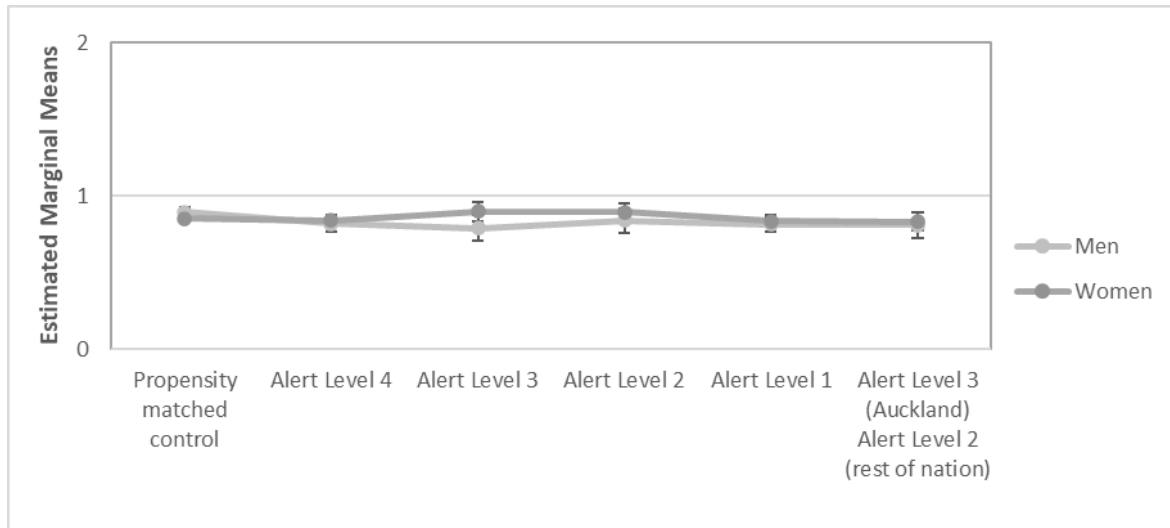
Personal Well-being. Women reported greater well-being, $F = 26.656$, $p < .001$, $\eta_p^2 = .001$, and this difference did not vary across Alert Levels, $F = 1.288$, $p = .266$, $\eta_p^2 = .000$.

Graph 11. Gender Differences in Personal Wellbeing
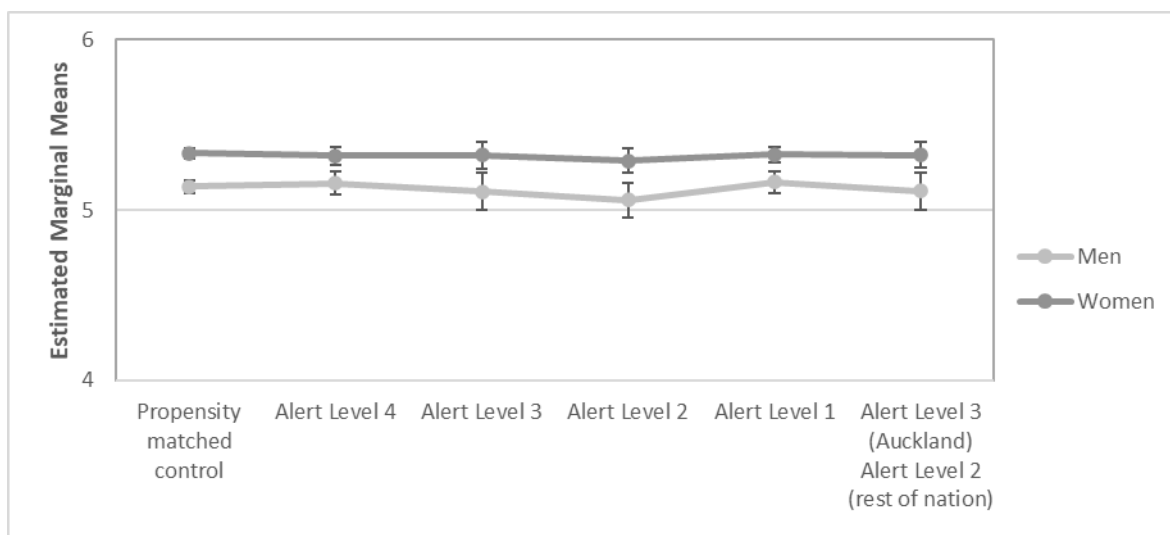
Satisfaction with life. Women reported greater life satisfaction, $F = 84.710$, $p < .001$, $\eta_p^2 = .003$, and this difference did not vary by Alert Levels, $F = 0.356$, $p = .878$, $\eta_p^2 = .000$.

Graph 12. Gender Differences in Satisfaction with Life
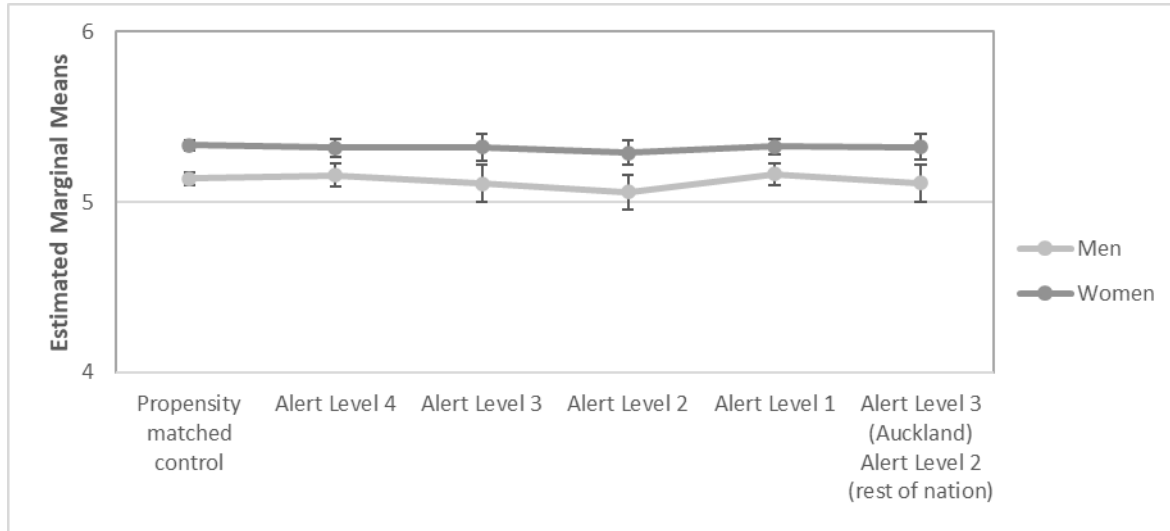
Summary of Differences across Gender. Women and men differed in levels of health and well-being. On average, women reported more fatigue and psychological distress, as well as greater personal well-being and life satisfaction, than did men. These differences tended to remain stable with only small differences emerging across Alert Levels. These patterns indicate that women reported higher rumination particularly during Level 3, perhaps due to growing challenges managing increased work and family demands. An additional pattern indicated that women were most likely to experience the boost in satisfaction with health when entering Alert Level 1.

Differences across Ethnic Groups

Comparisons were made across European, Māori, and Asian/Pacific Islander/Other (as a broad category) due to limited sample size when split across Alert Levels.

Satisfaction with Health. There were significant differences across ethnic groups in satisfaction with health in general, $F = 6.029$, $p = .002$, $\eta_p^2 = .000$, but these differences did not vary across Alert Levels, $F = 0.755$, $p = .673$, $\eta_p^2 = .000$.

Graph 13. Ethnic Differences in Satisfaction with Health
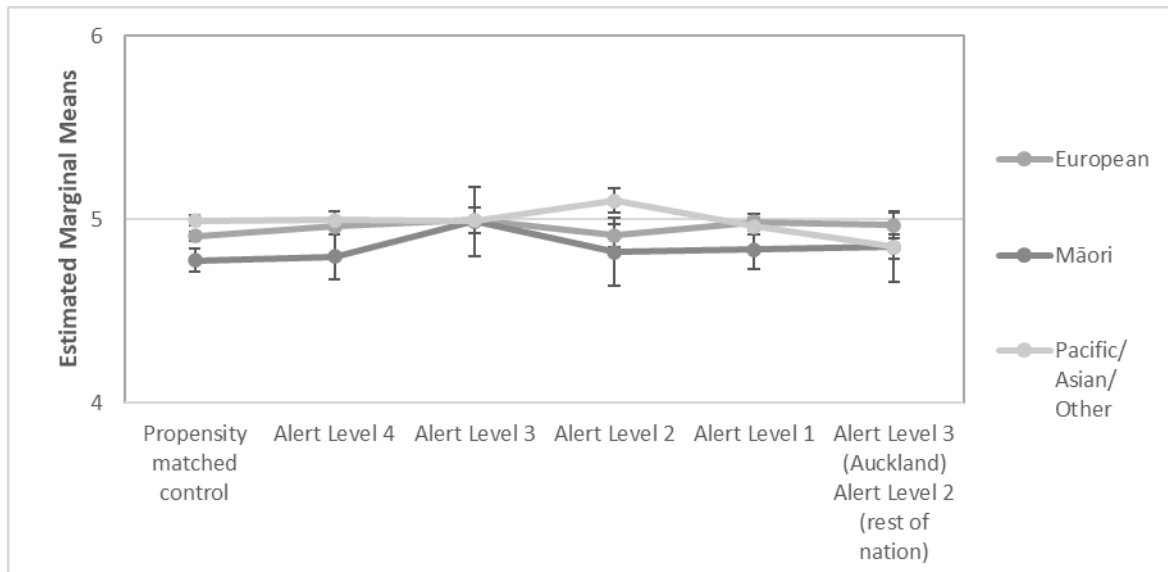
Fatigue. There were no significant differences across ethnic groups in fatigue, $F = 2.815$, $p = .060$, $\eta_p^2 = .000$, and differences across ethnic groups did not significantly vary across Alert Levels, $F = 0.987$, $p = .452$, $\eta_p^2 = .000$.

Graph 14. Ethnic Differences in Fatigue
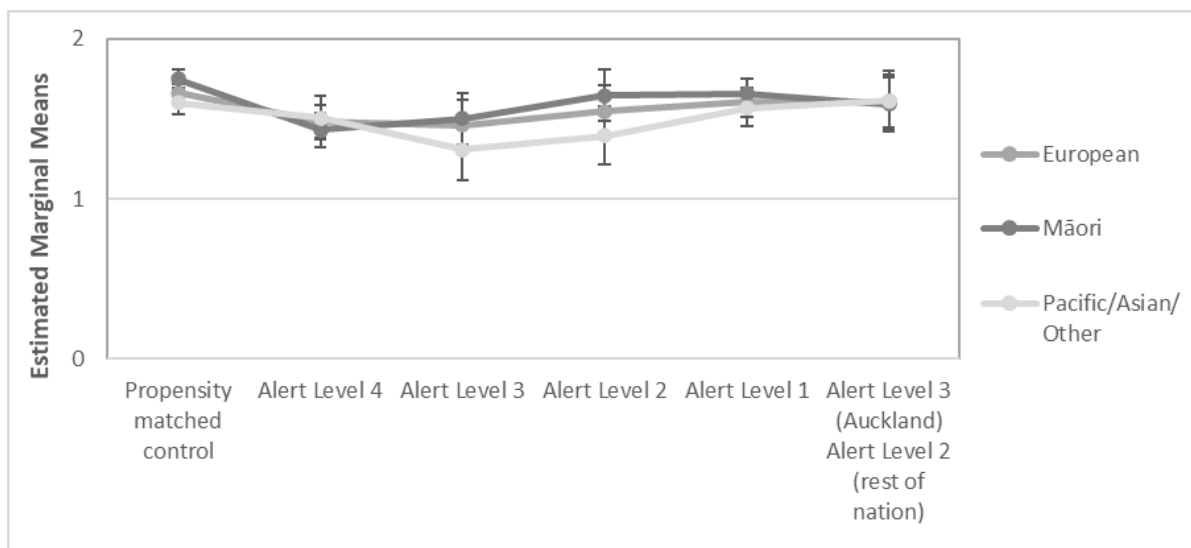
Psychological Distress. There were no differences in psychological distress across ethnic groups, $F = 1.792$, $p = .167$, $\eta_p^2 = .000$, and this did not vary across Alert Levels, $F = 0.707$, $p = .719$, $\eta_p^2 = .000$.

Graph 15. Ethnic Differences in Psychological Stress
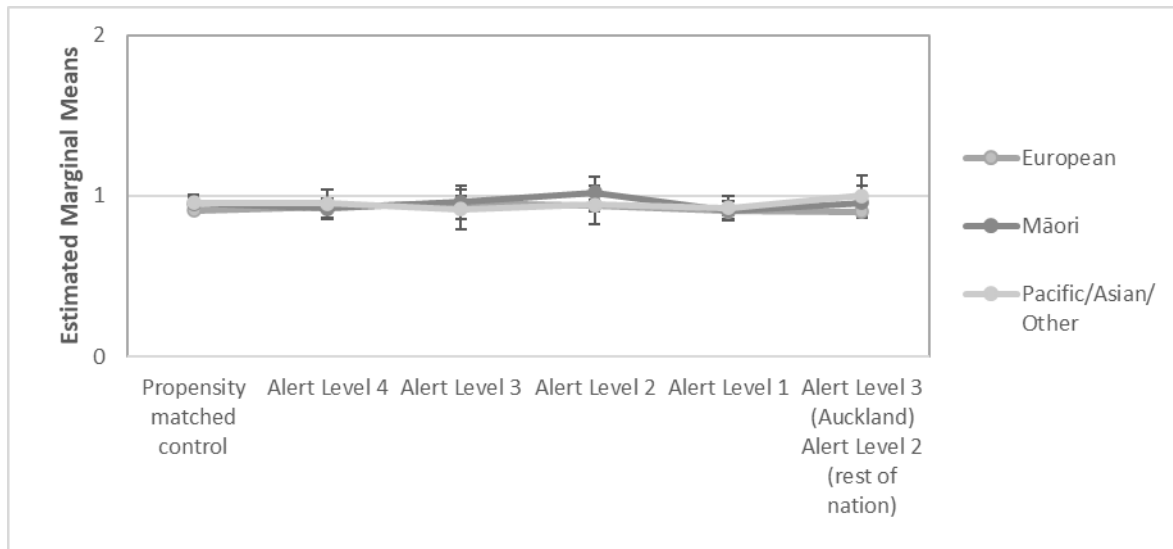
Rumination. There were no differences in rumination across ethnic groups, $F = 2.245$, $p = .106$, $\eta_p^2 = .000$, and this did not vary across Alert Levels, $F = 1.320$, $p = .213$, $\eta_p^2 = .001$.

Graph 16. Ethnic Differences in Rumination
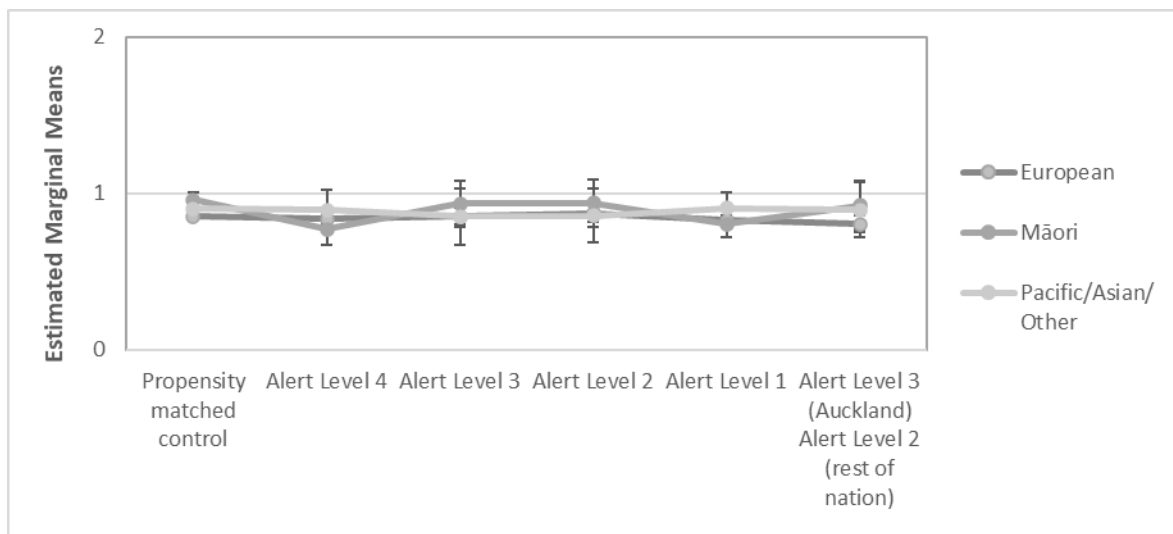
Personal Well-being. There were significant differences across ethnic groups in personal well-being in general, $F = 21.929$, $p < .001$, $\eta_p^2 = .002$, but these differences did not vary across Alert Levels, $F = 1.143$, $p = .325$, $\eta_p^2 = .000$.

Graph 17. Ethnic Differences in Personal Wellbeing
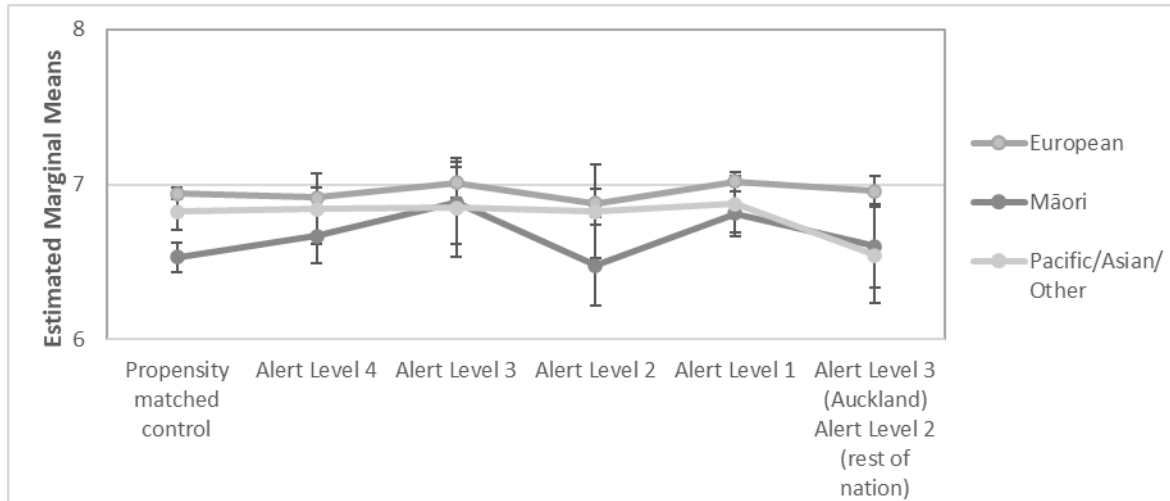
Satisfaction with life. There were ethnic group differences in satisfaction with life, $F = 7.600$, $p = .001$, $\eta_p^2 = .001$, but these did not differ across Alert Levels, $F = 0.949$, $p = .486$, $\eta_p^2 = .000$.

Graph 18. Ethnic Differences in Satisfaction with Life
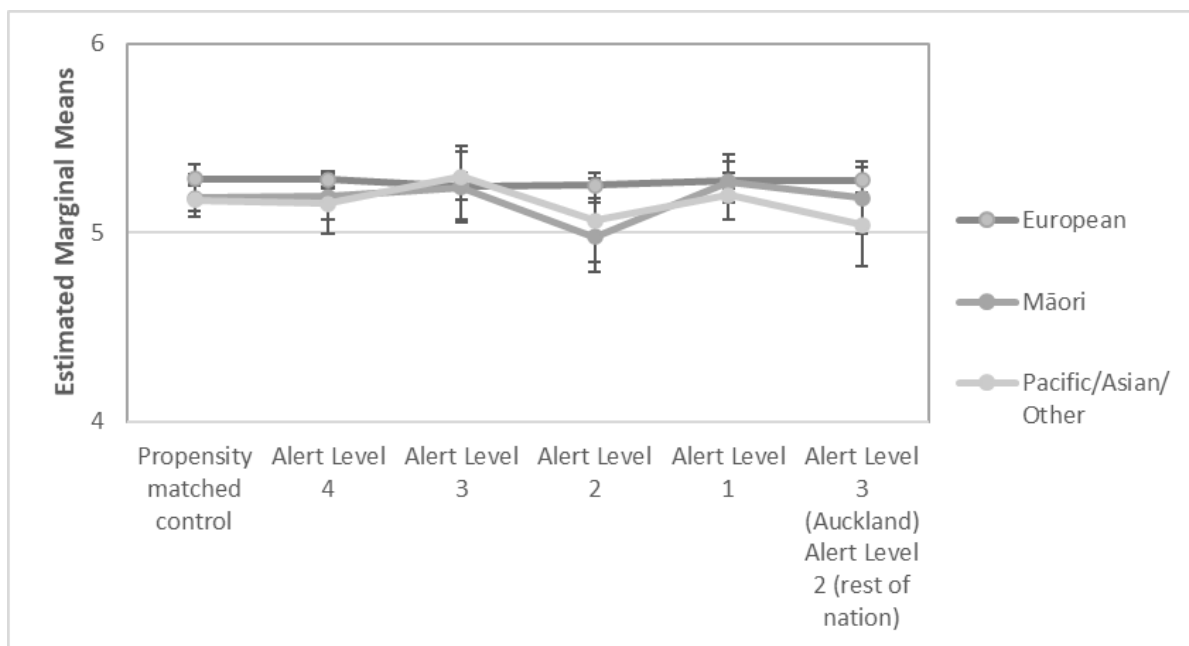
Summary of Differences across Ethnic Groups. Some average differences occurred across ethnic groups which indicated, in general, that Māori reported lower satisfaction with health, personal well-being, and satisfaction with life. These differences did not vary across Alert Levels suggesting that these differences were not exacerbated during the COVID-19 pandemic and associated restrictions of the Alert Levels in NZ.

Differences across Parental Status

Satisfaction with Health. Parents reported greater satisfaction with health, $F = 53.935$, $p < .001$, $\eta_p^2 = .002$, which did not vary across Alert Levels, $F = 0.657$, $p = .656$, $\eta_p^2 = .000$.

Graph 19. Parental Status Differences in Satisfaction with Health
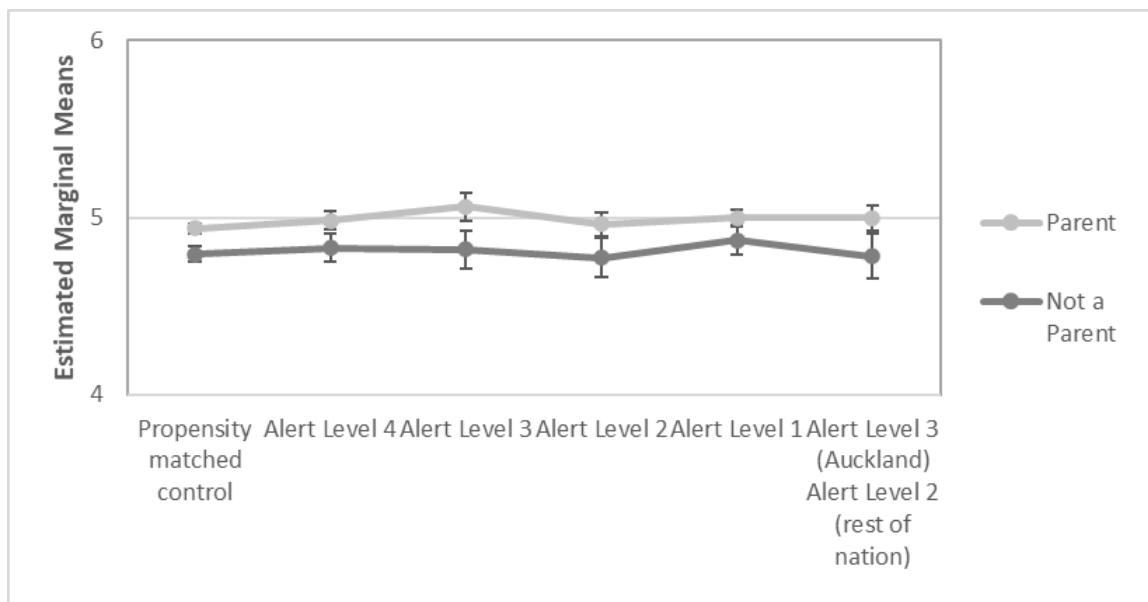
Fatigue. Parental status was not associated with differences in fatigue in general, $F = 2.851$, $p = .091$, $\eta_p^2 = .000$, but this varied across Alert Levels, $F = 2.364$, $p = .037$, $\eta_p^2 = .000$. The pattern suggested that parents experienced greater fatigue in the second outbreak, perhaps as their resilience in managing work and family life, including supporting children to complete schoolwork from home, waned.

Graph 20. Parental Status Differences in Satisfaction with Health
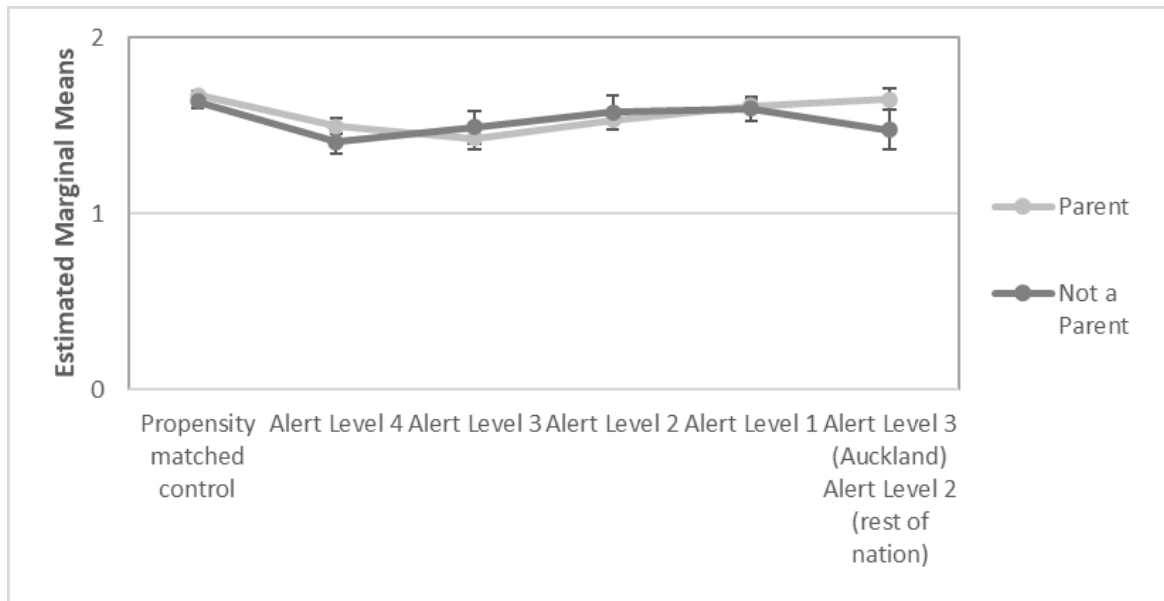
Psychological Distress. Parents reported lower psychological distress, $F = 87.425$, $p < .001$, $\eta_p^2 = .004$, and this difference across parental status did not vary across Alert Levels, $F = 1.675$, $p = .137$, $\eta_p^2 = .000$.

Graph 21. Parental Status Differences in Psychological Distress
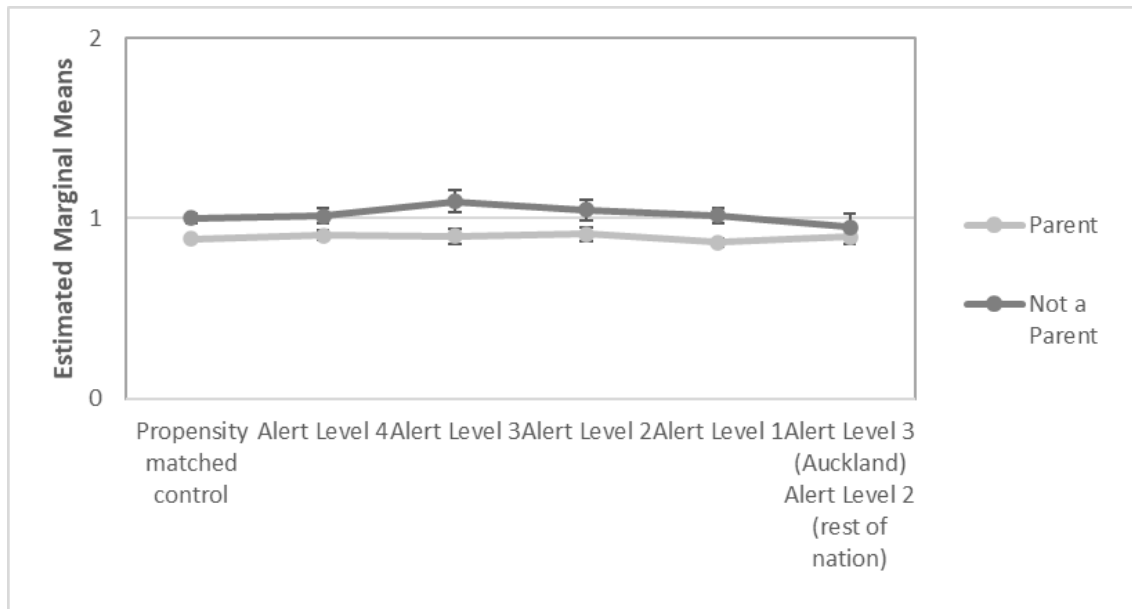
Rumination. Parents reported lower rumination in general, $F = 92.004$, $p < .001$, $\eta_p^2 = .004$, and this difference did not vary across Alert Levels, $F = 1.296$, $p = .262$, $\eta_p^2 = .000$.

Graph 22. Parental Status Differences in Rumination
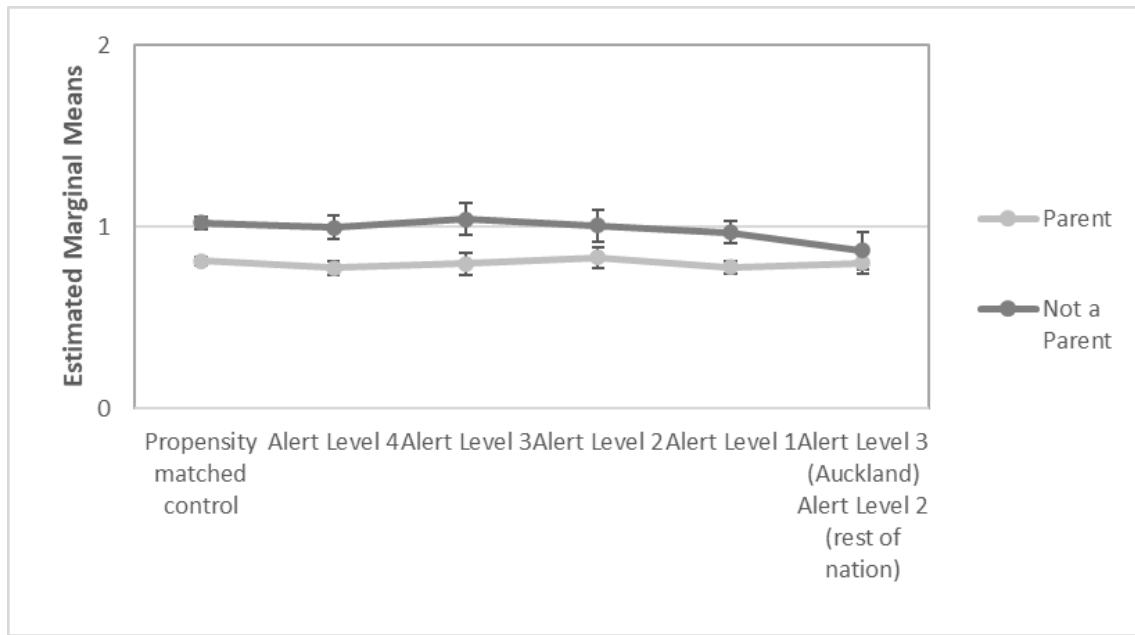
Personal Well-being. Parents reported greater personal well-being, $F = 58.053$, $p < .001$, $\eta_p^2 = .002$, and this difference varied across Alert Levels, $F = 2.428$, $p = .033$, $\eta_p^2 = .000$. Parents reported greater wellbeing at Level 3 compared to participants who were not parents.

Graph 23. Parental Status Differences in Personal Wellbeing
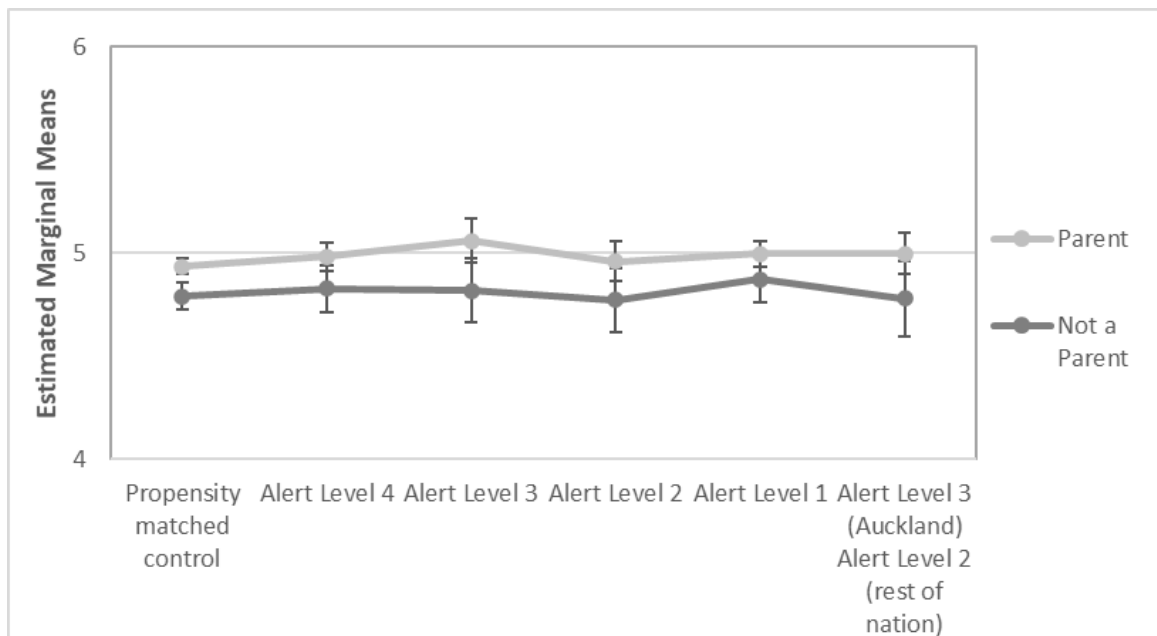
Satisfaction with life. Parents reported greater life satisfaction, $F = 147.998$, $p < .001$, $\eta_p^2 = .006$, which did not vary across Alert Levels, $F = 0.976$, $p = .430$, $\eta_p^2 = .000$.

Graph 24. Parental Status Differences in Satisfaction with Life
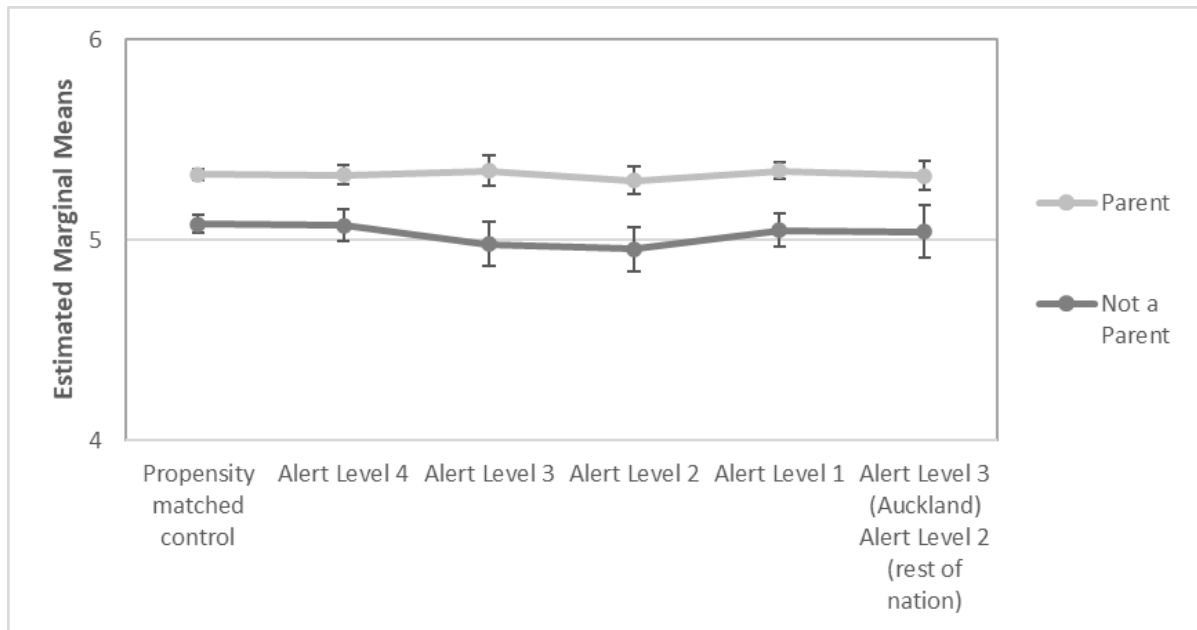
Summary of Differences across Parental Status. On average, parents reported greater health and wellbeing, including greater satisfaction with health, lower psychological distress, lower rumination, greater personal well-being and greater satisfaction with life. These effects were consistent across matched control and Alert Level groups. Two exceptions present inconsistent patterns. Compared to participants without children, parents reported greater well-being during Alert Level 3 in particular, but reported greater fatigue during the second outbreak, perhaps as managing work and family life became challenging again.

Differences across Health Condition/Disability Status

Satisfaction with Health. Participants with a health condition or disability reported lower satisfaction with health in general, $F = 2732.357$, $p < .001$, $\eta_p^2 = .102$, and this difference did not vary across Alert Levels, $F = 1.217$, $p = .298$, $\eta_p^2 = .000$.

Graph 25. Health Condition/Disability Status Differences in Satisfaction with Health
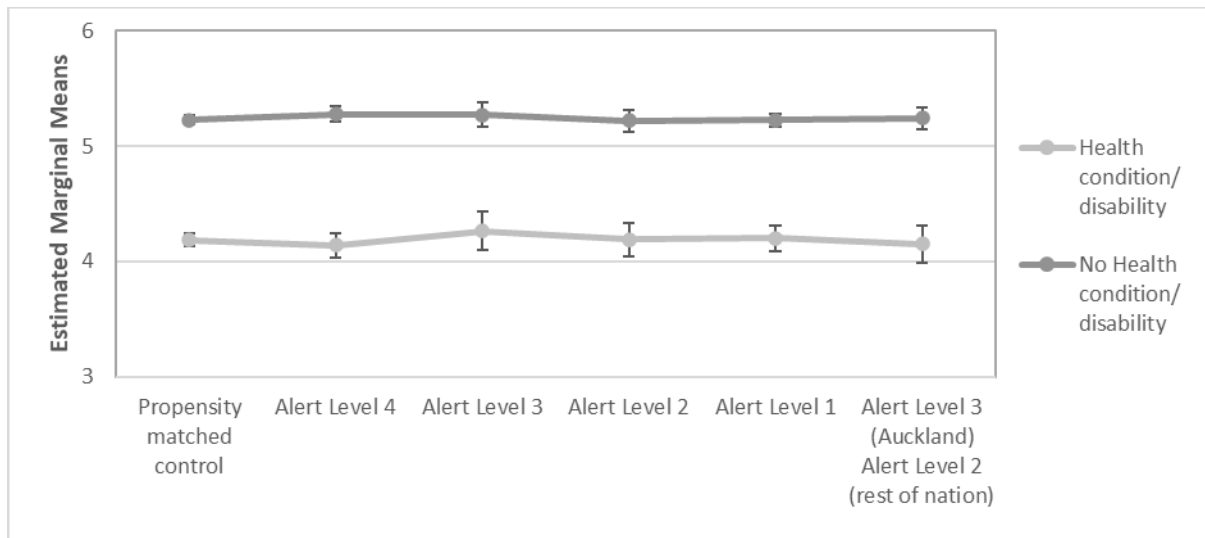
Fatigue. Participants with a health condition or disability reported greater fatigue in general, $F = 684.713$, $p < .001$, $\eta_p^2 = .000$, and this difference did not vary across Alert Levels, $F = 1.045$, $p = .389$, $\eta_p^2 = .000$.

Graph 26. Health Condition/Disability Status Differences in Fatigue
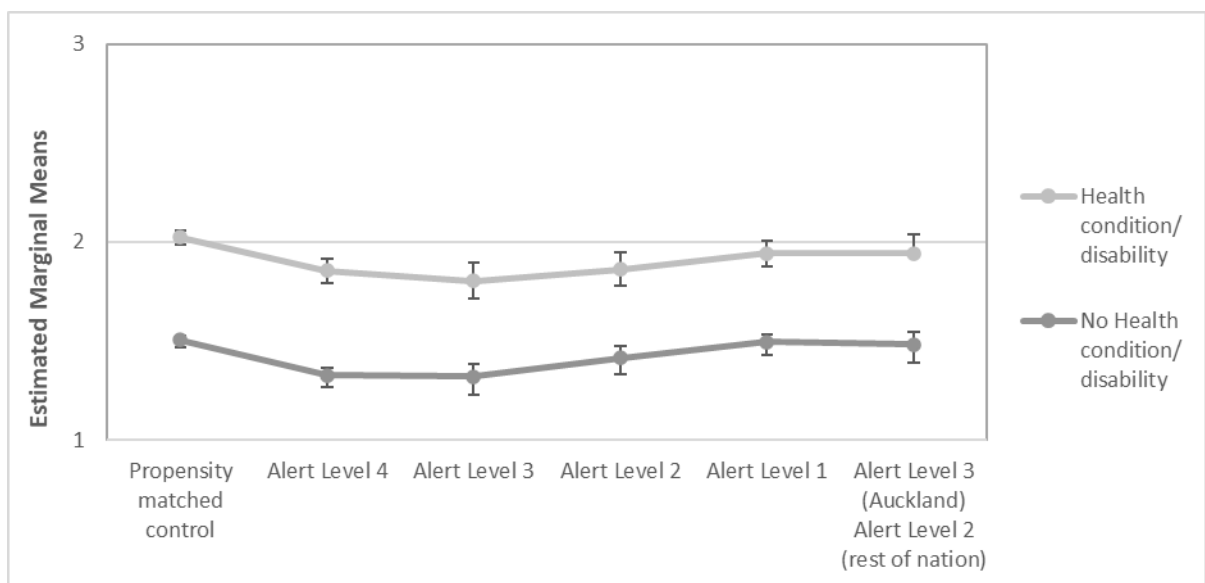
Psychological Distress. Participants with a health condition or disability reported greater psychological distress in general, $F = 705.872$, $p < .001$, $\eta_p^2 = .029$, but this difference did not vary across Alert Levels, $F = 1.912$, $p = .089$, $\eta_p^2 = .000$.

Graph 27. Health Condition/Disability Status Differences in Psychological Distress
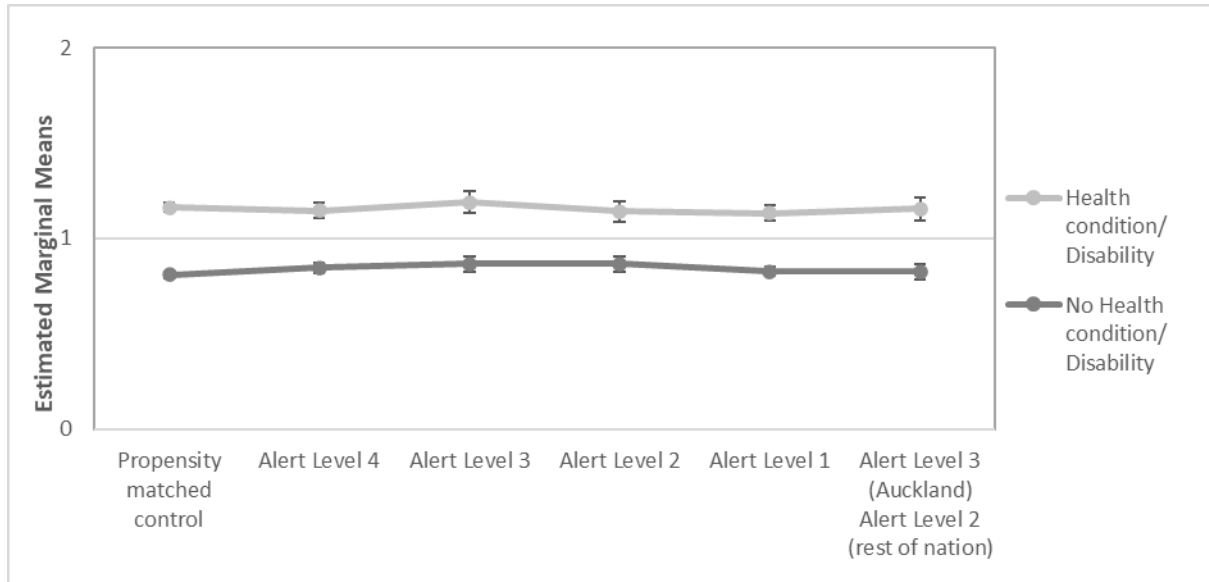
Rumination. Participants with a health condition or disability reported greater rumination in general, $F = 298.490$, $p < .001$, $\eta_p^2 = .012$, but this difference did not vary across Alert Levels, $F = 1.573$, $p = .164$, $\eta_p^2 = .000$.

Graph 28. Health Condition/Disability Status Differences in Rumination
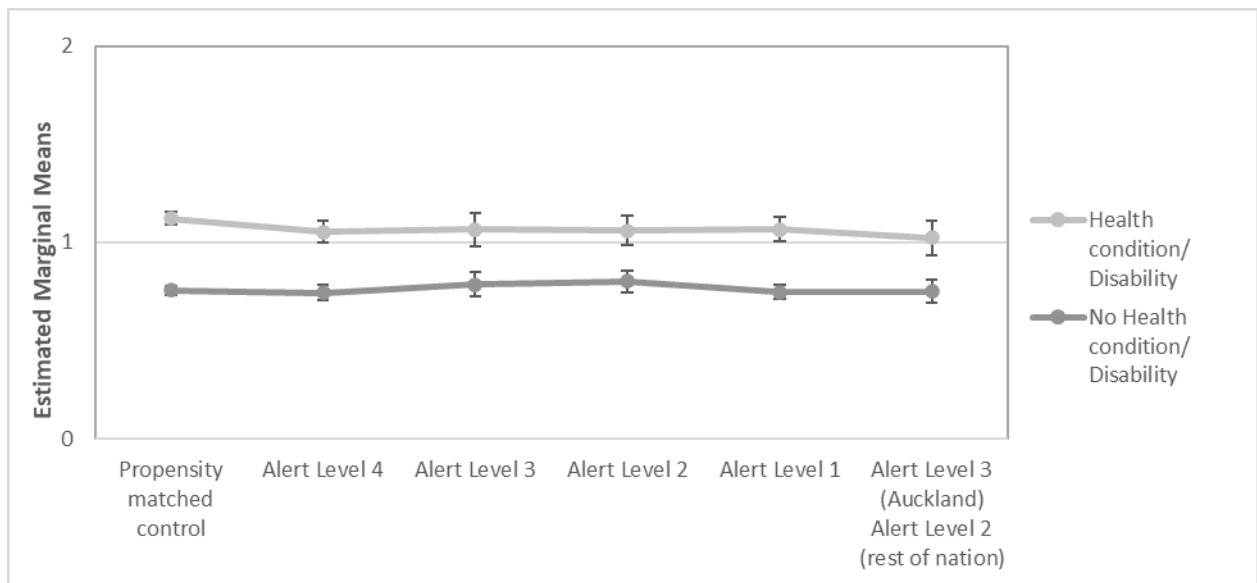
Personal Well-being. Participants with a health condition or disability reported lower personal well-being in general, $F = 1263.638$, $p < .001$, $\eta_p^2 = .050$, and this difference did not vary across Alert Levels, $F = 0.868$, $p = .501$, $\eta_p^2 = .000$.

Graph 29. Health Condition/Disability Status Differences in Personal Wellbeing
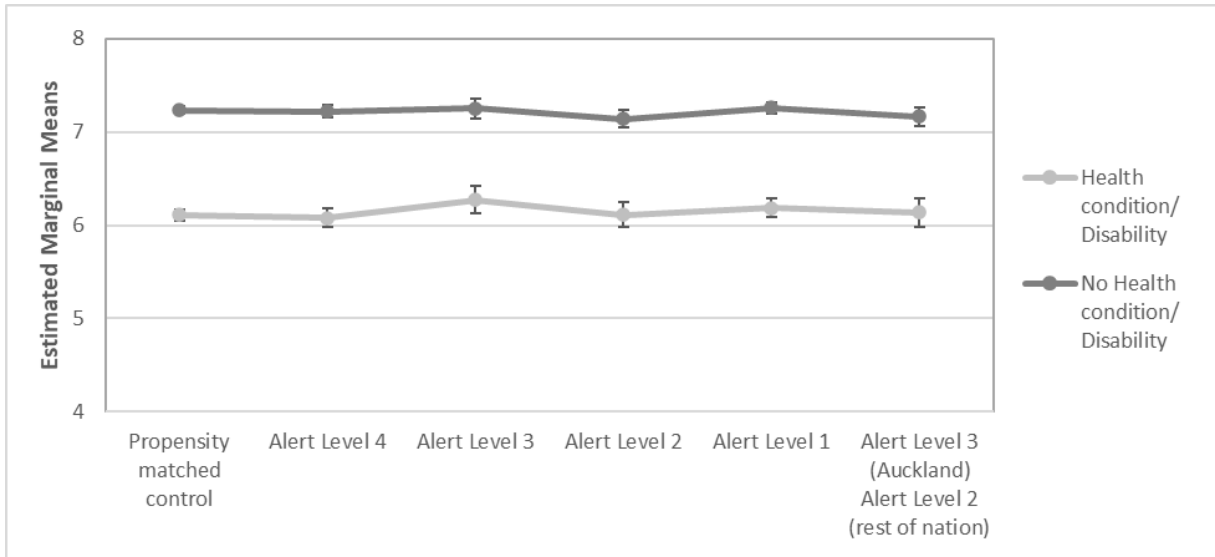
Satisfaction with life. Participants with a health condition or disability reported lower satisfaction with life in general, $F = 641.245$, $p < .001$, $\eta_p^2 = .026$, and this difference did not vary across Alert Levels, $F = 1.588$, $p = .160$, $\eta_p^2 = .000$.

Graph 30. Health Condition/Disability Status Differences in Satisfaction with Life
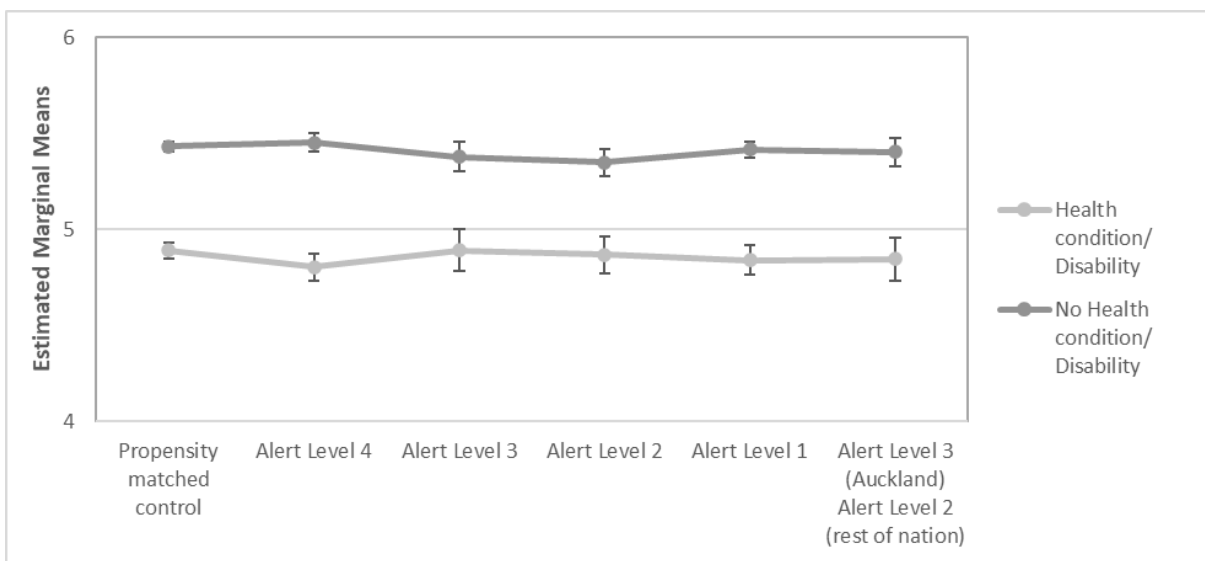
Summary of Differences across Health Condition/Disability Status. Participants with a health condition or disability reported poorer health and wellbeing across all measures. These poorer outcomes were consistent across matched control and Alert Level groups.

Differences across Mental Health Diagnosis

Satisfaction with Health. Participants who reported a mental health diagnosis experienced lower satisfaction with health in general, $F = 973.11$, $p < .001$, $\eta_p^2 = .039$, and this difference did not vary across Alert Levels, $F = 2.035$, $p = .071$, $\eta_p^2 = .000$.

Graph 31. Mental Health Diagnosis Status Differences in Satisfaction with Health
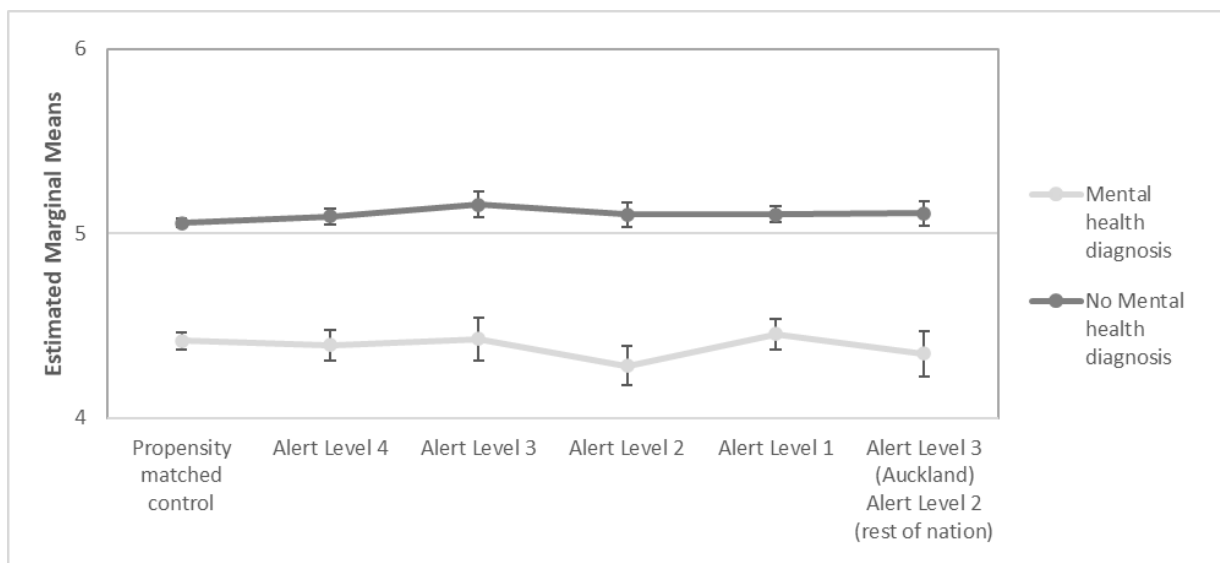
Fatigue. Participants with a mental health diagnosis experienced greater fatigue, $F = 1026.233$, $p < .001$, $\eta_p^2 = .041$, which did not differ across all Alert Levels, $F = 1.295$, $p = .263$, $\eta_p^2 = .000$.

Graph 32. Mental Health Diagnosis Status Differences in Fatigue
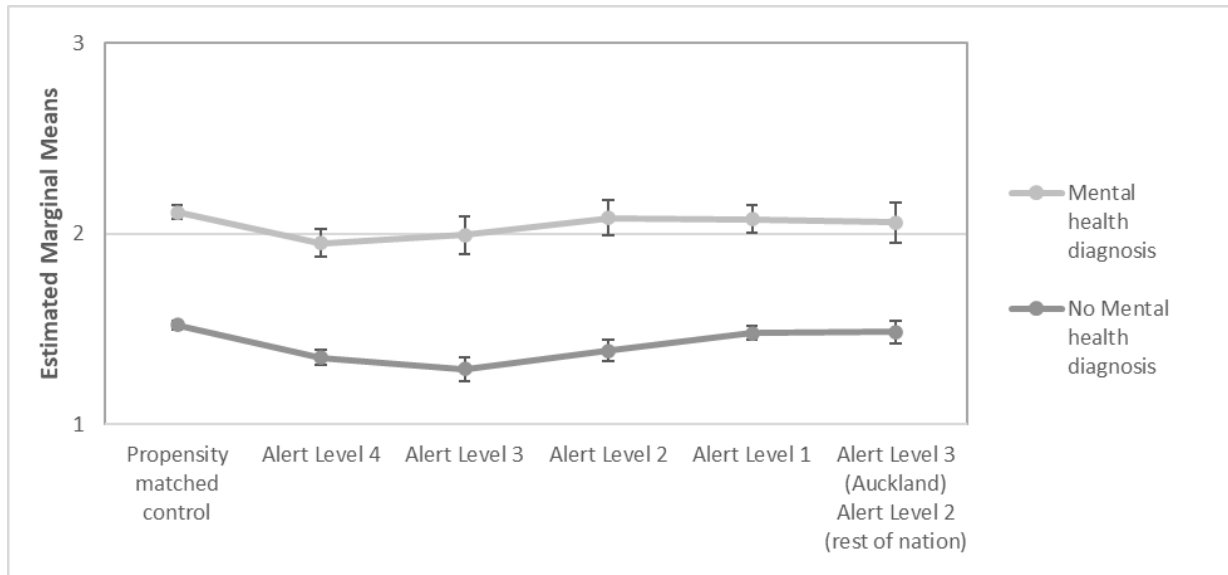
Psychological Distress. Participants with a mental health diagnosis experienced greater psychological distress, $F = 2372.439$, $p < .001$, $\eta_p^2 = .090$, and this difference did not vary across Alert Levels, $F = 1.026$, $p = .400$, $\eta_p^2 = .000$.

Graph 33. Mental Health Diagnosis Status Differences in Psychological Distress
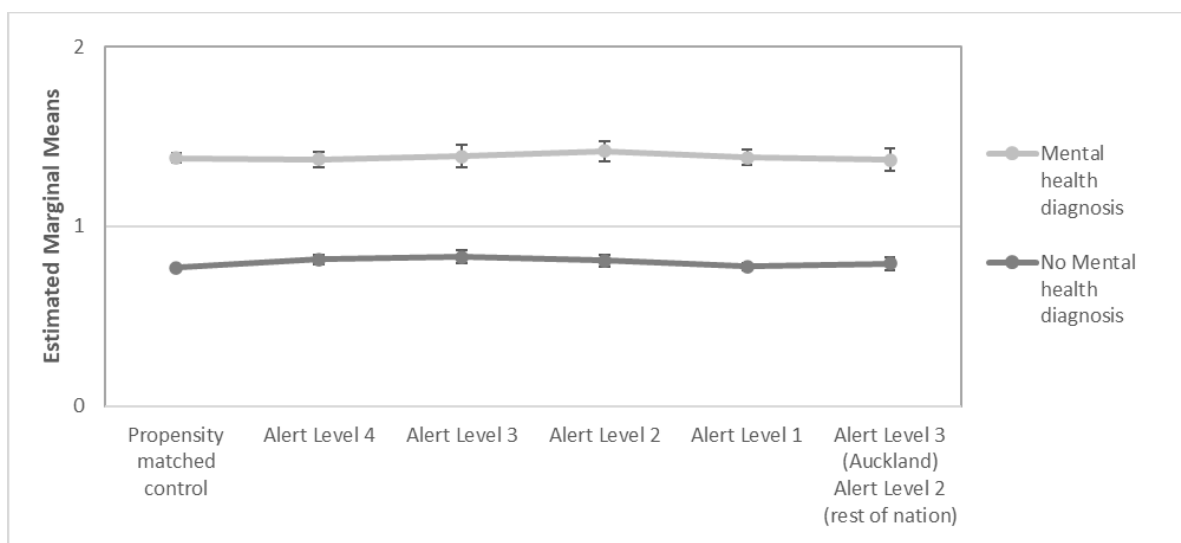
Rumination. Participants with a mental health diagnosis reported greater rumination, $F = 1529.244$, $p < .001$, $\eta_p^2 = .060$, but this varied across Alert Levels, $F = 3.660$, $p = .003$, $\eta_p^2 = .001$, as lower differences in rumination occurred in Alert Levels 4 and 3.

Graph 34. Mental Health Diagnosis Status Differences in Rumination
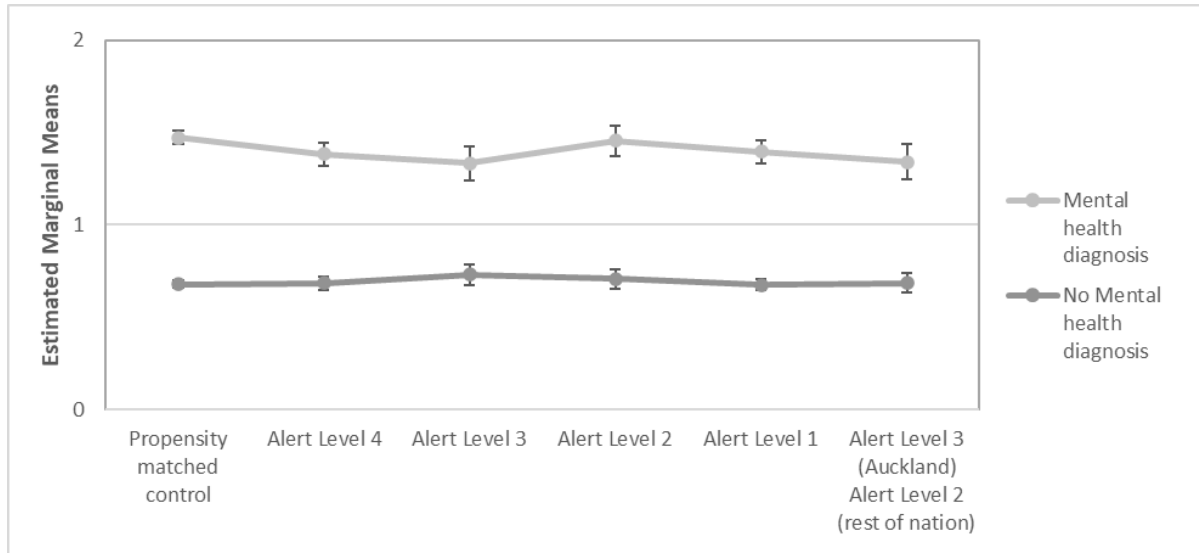
Personal Well-being. Participants with a mental health diagnosis reported lower well-being, $F = 913.633$, $p < .001$, $\eta_p^2 = .036$, across all Alert Levels, $F = 0.454$, $p = .811$, $\eta_p^2 = .000$.

Graph 35. Mental Health Diagnosis Status Differences in Personal Wellbeing
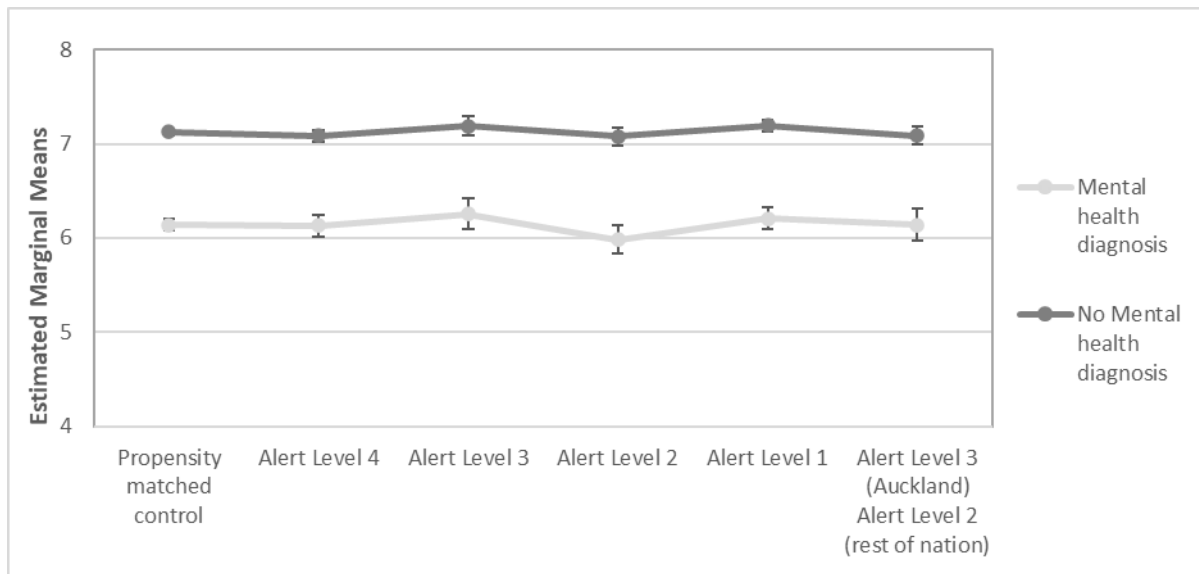
Satisfaction with life. Participants with a diagnosis experienced lower life satisfaction, $F =$

987.523, $p < .001$, $\eta_p^2 = .039$, across Alert Levels, $F = 0.564$, $p = .728$, $\eta_p^2 = .000$.

Graph 36. Mental Health Diagnosis Status Differences in Satisfaction with Life
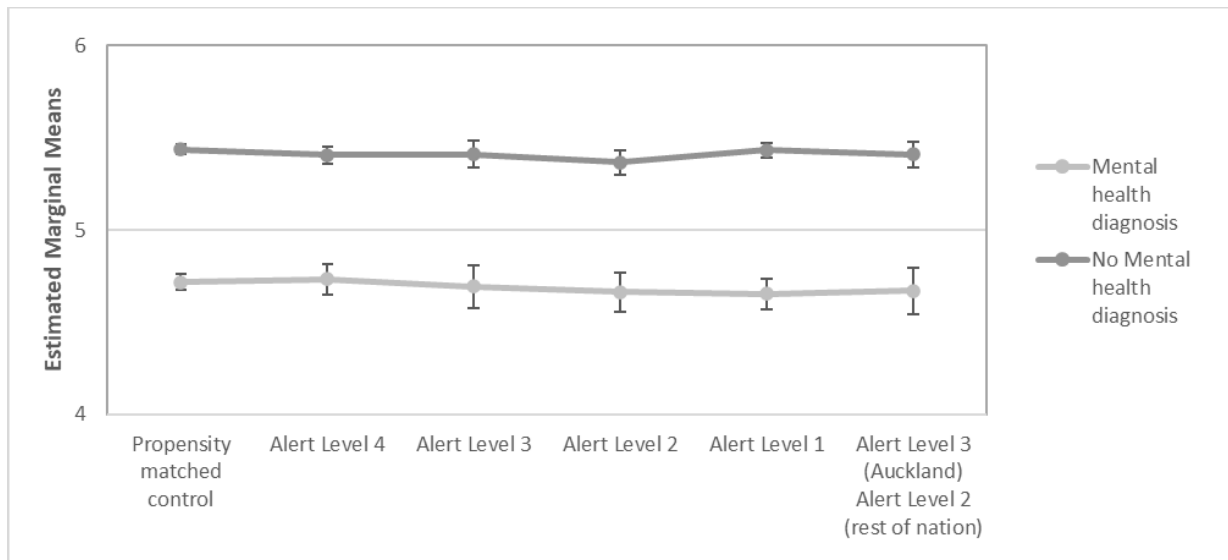
Summary of Differences across Mental Health Diagnosis. Participants who reported a mental health diagnosis experienced poorer health and wellbeing across all measures, and these poorer outcomes were consistent across Alert Levels. Only one significant interaction suggested that rumination differences between people with or without a diagnosis decreased in Level 4 and Level 3, as those with a diagnosis began to ruminate less.

Differences across Age Groups

We present comparisons across three age groups: 18-29, 30-64 and 65 + years. As these are quite broad age groups that may reflect people under quite different circumstances, appendix II presents comparisons across six age groups: 18-24, 25-34, 35-44, 45-54, 55-64 and 65+ years. Consistent patterns emerged across both analytic strategies.

Satisfaction with Health. Younger participants reported lower satisfaction with health, $F = 8.797$, $p < .001$, $\eta_p^2 = .001$, and this difference did not vary across Alert Levels, $F = 1.161$, $p = .312$, $\eta_p^2 = .000$.

Graph 37. Age Differences in Satisfaction with Health
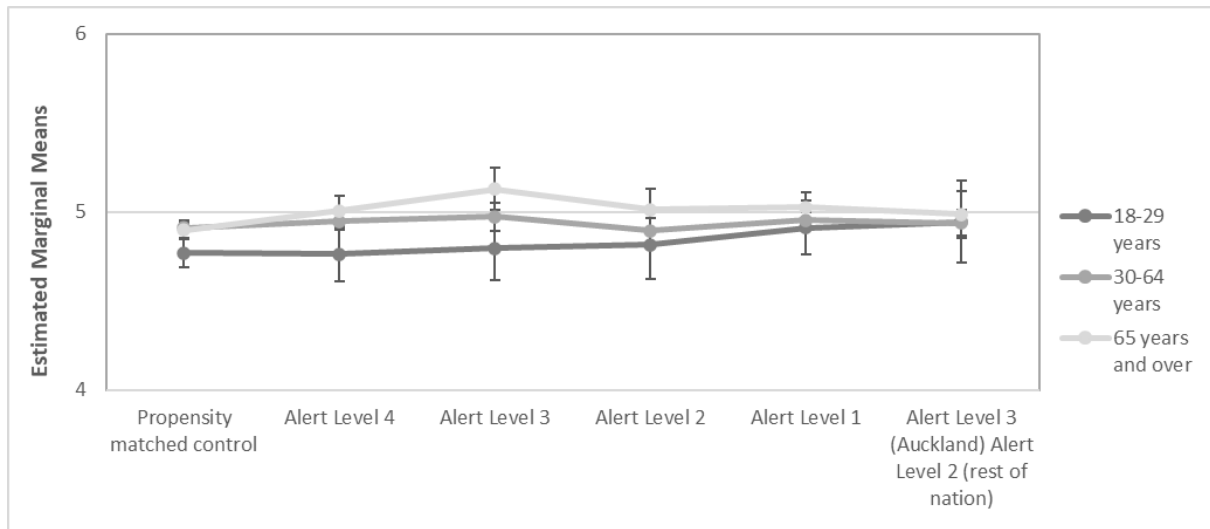
Fatigue. Younger participants reported greater fatigue, $F = 296.161$, $p < .001$, $\eta_p^2 = .024$. This difference varied across Alert Levels, $F = 1.915$, $p = .038$, $\eta_p^2 = .001$, becoming most pronounced during Alert Level 2.

Graph 38. Age Differences in Fatigue
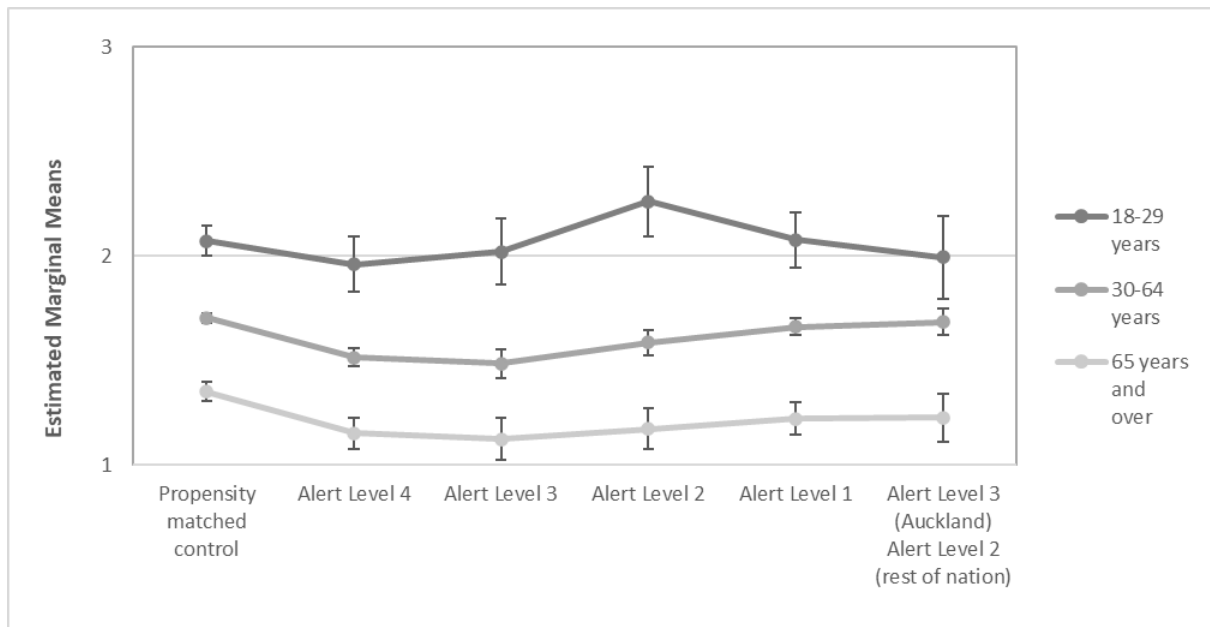
Psychological Distress. Younger participants reported greater psychological distress in general, $F = 389.743$, $p < .001$, $\eta_p^2 = .031$. This difference varied across Alert Levels, $F = 2.402$, $p = .008$, $\eta_p^2 = .001$, becoming most pronounced during Alert Level 3 and 2.

Graph 39. Age Differences in Psychological Distress
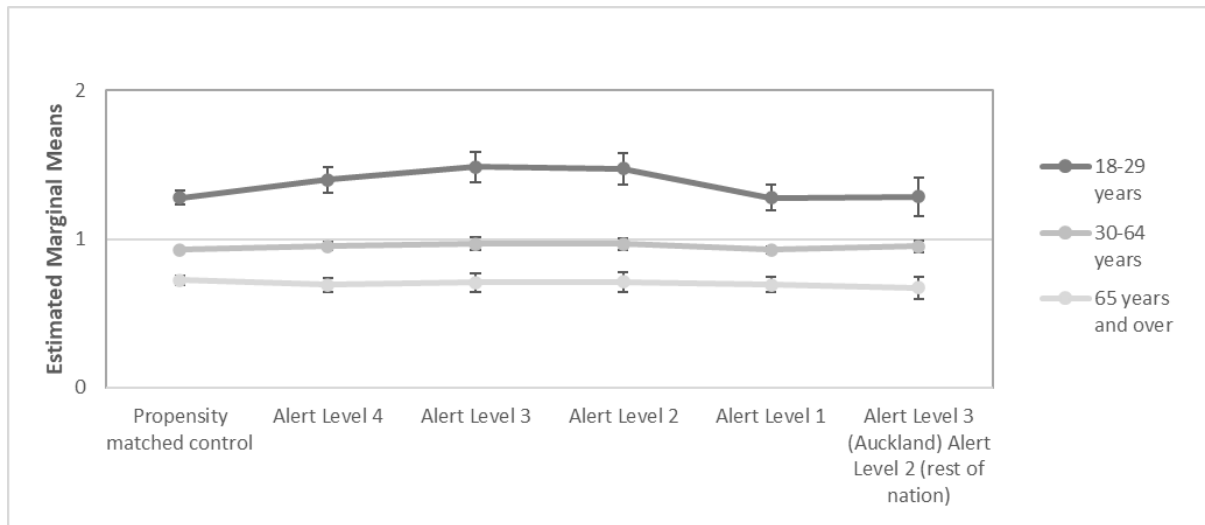
Rumination. Younger participants reported greater fatigue, $F = 162.207$, $p < .001$, $\eta_p^2 = .013$, and this difference did not vary across Alert Levels, $F = 1.537$, $p = .119$, $\eta_p^2 = .001$.

Graph 40. Age Differences in Rumination
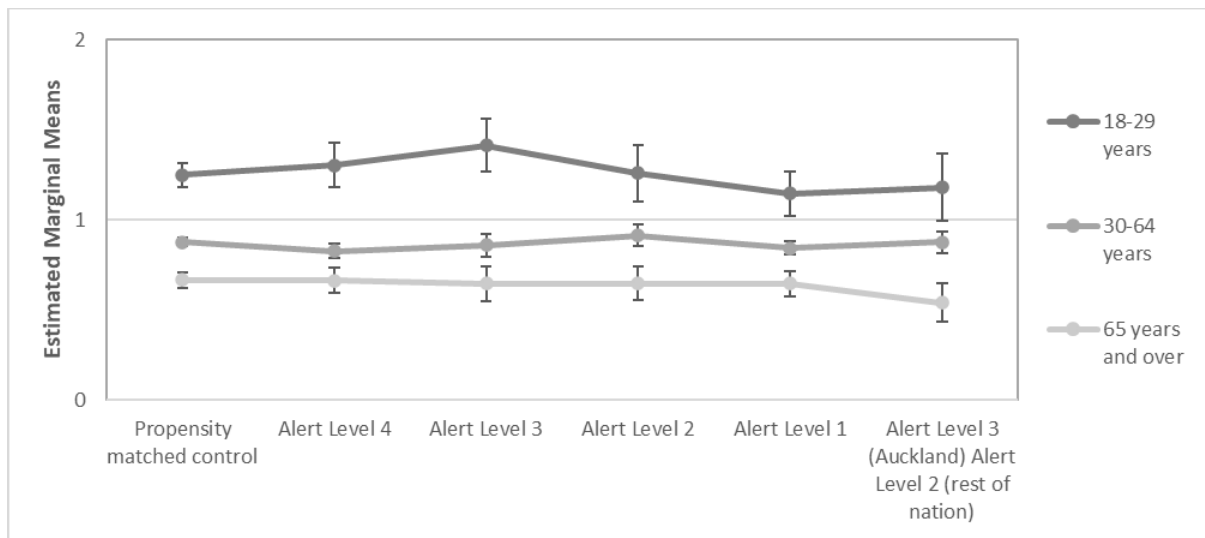
Personal Well-being. Older participants reported greater personal well-being in general, $F = 129.611$, $p < .001$, $\eta_p^2 = .011$. This age difference varied across Alert Levels, $F = 2.951$, $p = .001$, $\eta_p^2 = .001$, with older adults showing this advantage during Alert Level 4, 3 and 2, as well as during the second outbreak.

Graph 41. Age Differences in Personal Wellbeing

Graph 41. Age Differences in Personal Wellbeing
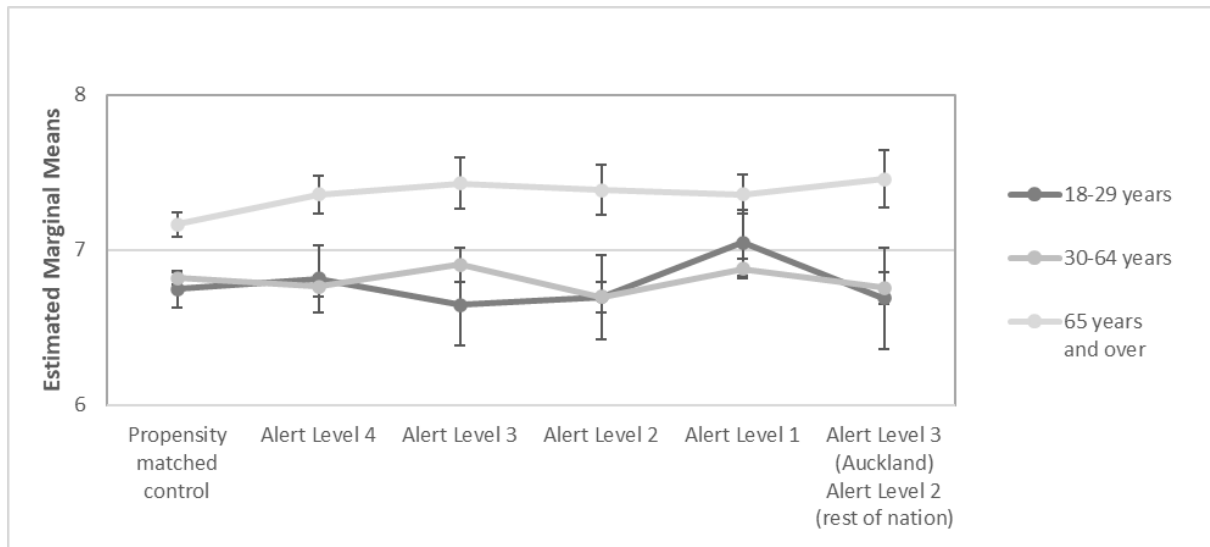
Satisfaction with life. Older participants reported greater satisfaction with life in general, $F = 122.223$, $p < .001$, $\eta_p^2 = .010$. This age difference varied across Alert Levels, $F = 2.915$, $p = .001$, $\eta_p^2 = .001$, with older adults showing this advantage during Alert Level 4, 3 and 2, as well as during the second outbreak.

Graph 42. Age differences in Satisfaction with Life
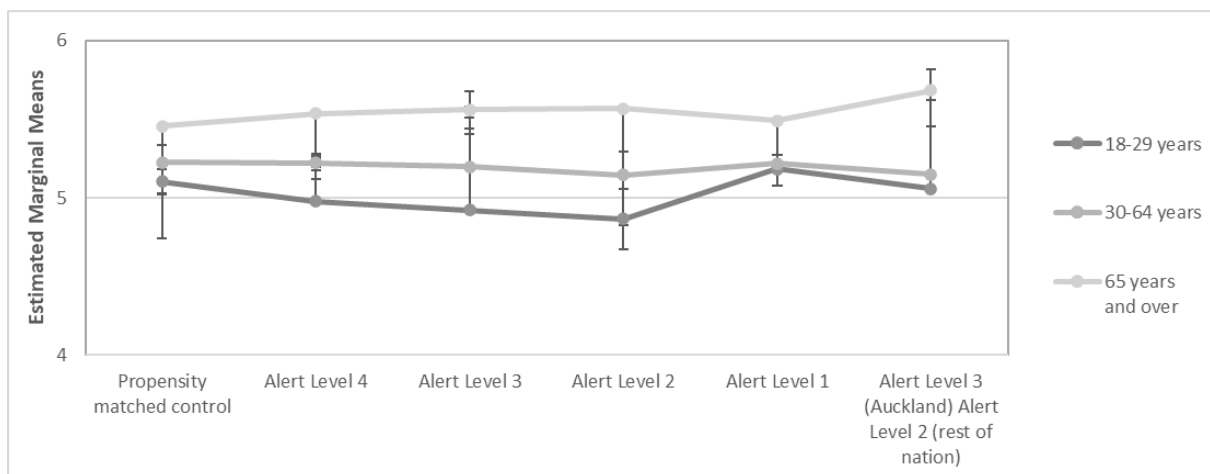
Summary of Differences across Age Groups. General differences across age groups emerged with younger participants (age 18-29 years) reporting lower satisfaction with health, greater fatigue, greater psychological distress and greater rumination compared to those in the 30-34 and 65+ age brackets. The fatigue and psychological distress noted by younger participants was greater during Alert Level 3 and 2. In contrast, older participants (65+ years) reported greater personal well-being and satisfaction with life compared to the other two age groups,

particularly during Alert Level 4, 3 and 2 as well as the second outbreak. These data are consistent with established age differences that have also been shown to persist during the pandemic. Compared to younger participants, older adults in the US reported more frequent positive emotions and less intense negative emotions despite being more aware of the greater health risk posed to them by COVID-19 (Carstensen et al., 2020). These differences may be due to the pandemic and associated restrictions limiting the exploration and personal development goals central to younger age groups, but perhaps increasing the focus on meaningful aspects of life prioritised by older people. They may also relate to older people having greater financial and material stability on average, allowing them to better cope with the uncertainty of the Alert Level changes.

Summary of Demographic Differences in Health and Well-being

Women, Māori, younger people, and participants with a health condition, disability or mental health diagnosis reported poorer health and well-being in general. By contrast, parents and older adults (65+) reported greater health and well-being. However, these demographic differences varied little across Alert Levels. The exceptions indicate that women and younger people experienced greater psychological distress during Alert Level 3 and 2, perhaps as the challenges of the restrictions accumulated. In contrast, older participants (65+ years) reported greater personal well-being and satisfaction with life, particularly at Alert Levels 4, 3, and 2 and the second outbreak, showing an emotional resilience to the challenges of the pandemic.

<center>**Health and Well-being Conclusion**</center>

New Zealanders were generally resilient across the Alert Levels with no evidence of detrimental effects on mental health (psychological distress, rumination) or personal well-being (satisfaction with health, life satisfaction or personal well-being) on average. Instead, there were generally positive effects on fatigue during the lockdowns associated with Alert Level 4 and 3, and improvements to personal well-being at Alert Level 1 as New Zealanders emerged from the restrictions and threat of the COVID-19 pandemic. The general pattern of resilience tended to be stronger for older participants, who sustained higher levels of personal well-being during the restrictions of Alert Level 3 and 2, as well as at the second outbreak. By contrast, younger people reported greater psychological distress during Alert Level 3 and 2, perhaps as the continued restrictions became more challenging across time. These results highlight the importance of addressing the challenges that young people face during the

restrictions of the Alert Levels, including lost education and employment opportunities that this group may face.

PERSONAL RELATIONSHIPS AND SOCIAL CONNECTIONS

Understanding the effects of the pandemic and lockdowns on personal relationships and social connection is essential because belongingness and support are critical to people's ability to cope and remain resilient in the face of stressful events (Holt-Lunstad et al., 2015; Jetten et al., 2011; Muldoon et al., 2017). We examined whether people's personal relationships (relationship satisfaction, and conflict) and broader social connections (social support, belonging, and sense of community) across Alert Levels during the pandemic differed from the matched control group assessed before the pandemic.

Personal Relationships. Personal relationships involve people's close relationship partner, whom many respondents were confined with during lockdowns (around 65% of people were cohabiting with their partner across Alert Levels). High quality relationships protect health and well-being during challenging life events (Pietromonaco & Collins, 2017). However, lockdowns required many relationship partners to balance work, family demands and household labour isolated from other social resources that would help to alleviate these burdens. By narrowing personal networks, lockdowns also amplified the risk of stress contagion and the burden of support to those in the home. The resulting anxiety, economic insecurity and social loss associated with the pandemic and lockdowns are established risks for relationship conflict and dissatisfaction (Pietromonaco & Overall, 2020).

Accordingly, research assessing couples prior to and during the early stages of the pandemic in Germany, the US and New Zealand indicate that some people may experience increased conflict and dissatisfaction in their personal relationships (Overall et al., in press; Schmid et al., 2020; Williamson, 2020). No published data, however, has comprehensively assessed relationship conflict and satisfaction before the pandemic and across different stages of the pandemic. The current analyses comparing personal relationship outcomes across the matched control group sampled in 2019 and groups in each Alert Level in 2020 enable identification of when greater conflict and lower satisfaction may be most likely to occur, and whether risks to personal relationships continue past the initial stages of the pandemic.

Social Connection. The quality of broader social connection may also be challenged by the pandemic. Many of the Alert Levels substantially reduced face-to-face social contact and broader connections with others outside the home. Research examining natural disasters also indicates that large-scale social threats can undermine social connectedness (Kaniasty &

Norris, 1993). Yet, shared threats also provide an opportunity for people to increase social cohesion and connection (Bonanno et al., 2010; Kessler, 2006). This potential for increased connectedness was evident in our initial examination of the effects of Alert Level 4 in New Z (Sibley et al., 2020). During the first 18 days of Alert Level 4, people reported a greater sense of community than did a matched control group assessed before the lockdown. Yet, such initial benefits may have been fleeting as the economic and social ramifications of the pandemic grew across the year.

Measures

Relationship Conflict. Participants rated the item, "To what extent do you experience conflict or disagreement with your partner", on a 7-point scale (1 = no conflict at all, 7 = a great deal of conflict).

Relationship Satisfaction. Participants rated the item, "How satisfied are you with your relationship with your partner", on a 7-point scale (1 = not satisfied, 7 = very satisfied).

Social Support. Social support was measured using the mean of three items adapted from Cutrona and Russell (1987): "There are people I can depend on to help me if I really need it," "There is no one I can turn to for guidance in times of stress" (reverse-coded), and "I know there are people I can turn to when I need help". Items were rated on a 7-point scale (1 = very inaccurate; 7 = very accurate).

Belonging. Felt belonging was measured using the mean of three items adapted from Hagerty and Patusky (1995): "I know that people in my life accept and value me", "I feel like an outsider" (reverse-scored), and "I know that people around me share my attitudes and beliefs". Items were rated on a 7-point scale (1 = very inaccurate; 7 = very accurate).

Sense of Community. Participants rated their agreement with the item, "I feel a sense of community with others in my local neighbourhood", on a 7-point scale (1 = strongly disagree, 7 = strongly agree; see Sengupta et al., 2013).

Aim 1: General Effects Across Alert Levels

Relationship Conflict. Relationship conflict varied significantly across groups, $F = 2.341$, $p = .039$, $\eta_p^2 = .001$. Relative to the matched control group ($M = 2.917$, 95% CI [2.885, 2.948]), participants surveyed during Alert Level 4 reported more relationship conflict ($M = 3.027$, 95% CI [2.970, 3.084], $p = .023$). No other pairwise comparisons were significant.

Graph 43. General effects on relationship conflict
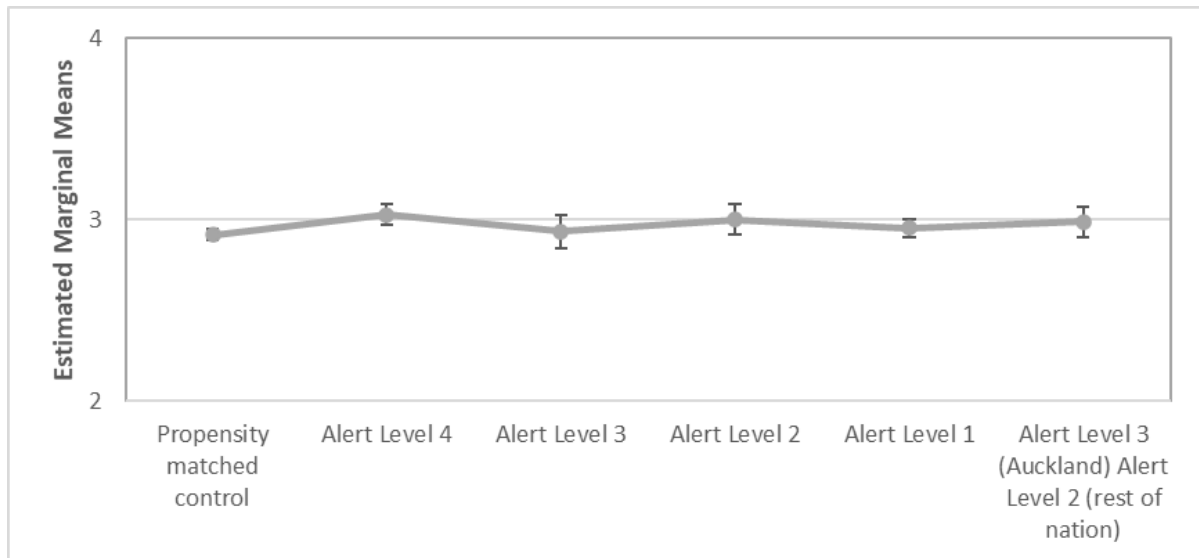
Relationship Satisfaction. Relationship satisfaction varied significantly across groups, $F = 4.251$, $p = .001$, $\eta_p^2 = .001$. Relative to the matched control group ($M = 6.013$, 95% CI [5.985, 6.042]), participants surveyed during Alert Level 4 reported less relationship satisfaction ($M = 5.899$, 95% CI [5.847, 5.950], $p = .004$). By Alert Level 1, relationship satisfaction rebounded and was significantly higher than at Alert Level 4 ($M = 6.034$, 95% CI [5.988, 6.080], $p = .002$). No other comparisons were significant.

Graph 44. General effects on relationship satisfaction
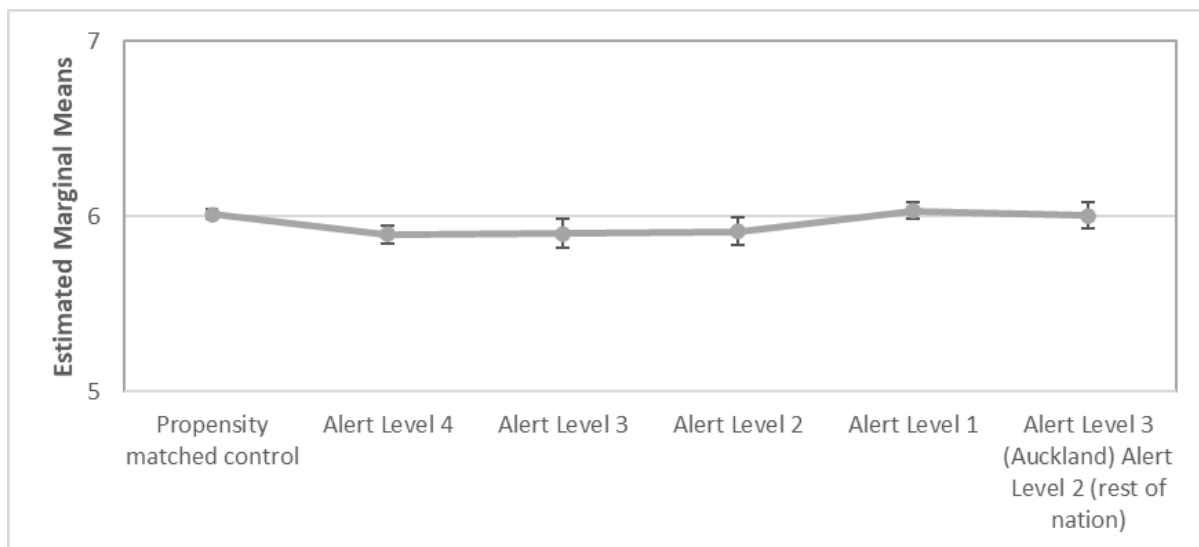
Social Support. Social support did not vary significantly across groups, $F = 0.385$, $p = .859$, $\eta_p^2 = .000$. None of the pairwise comparisons were significant.

Graph 45. General Effects on Social Support
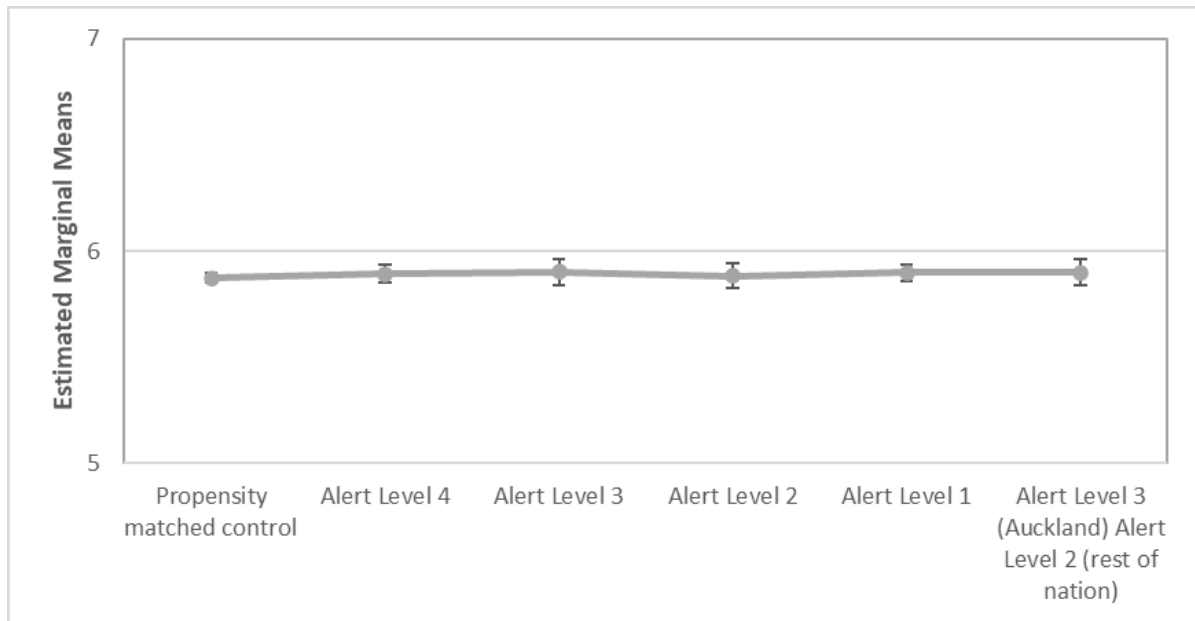
Belonging. Felt belonging varied significantly across groups, $F = 5.119$, $p < .001$, $\eta_p^2 = .001$. Participants felt significantly higher belonging at Alert Level 1 ($M = 5.090$, 95% CI [5.055, 5.124]) than in Alert Level 4 ($M = 4.991$, 95% CI [4.953, 5.029], $p = .003$), Alert Level 3 ($M = 4.963$, 95% CI [4.904, 5.022], $p = .005$), and Alert Level 2 ($M = 4.960$, 95% CI [4.905, 5.015], $p = .002$). No other pairwise comparisons were significant.

Graph 46. General Effects on Belonging
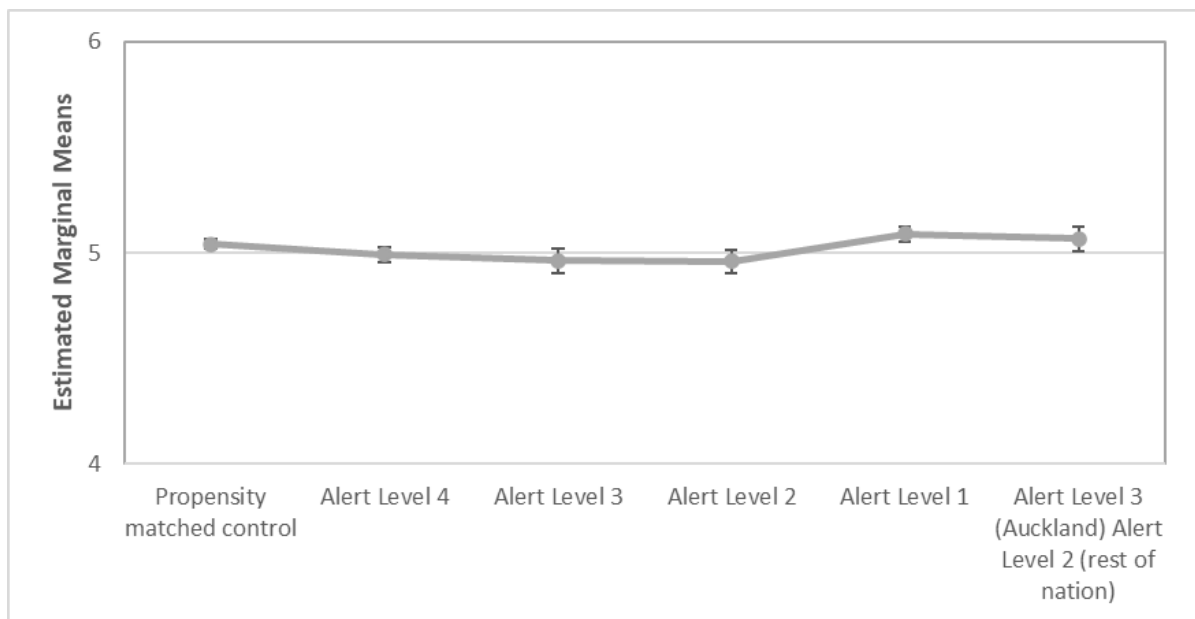
Sense of Community. Sense of community varied significantly across groups, $F = 10.501$, $p <$ .001, $\eta_p^2 = .002$. Relative to the matched control group ($M = 4.201$, 95% CI [4.169, 4.232]), sense of community was greater at Alert Level 4 ($M = 4.420$, 95% CI [4.364, 4.475], $p <$ .001), Alert Level 2 ($M = 4.362$, 95% CI [4.286, 4.387], $p = .008$), and Alert Level 1 ($M =$ 4.336, 95% CI [4.286, 4.387], $p < .001$).

Graph 47. General Effects on Sense of Community
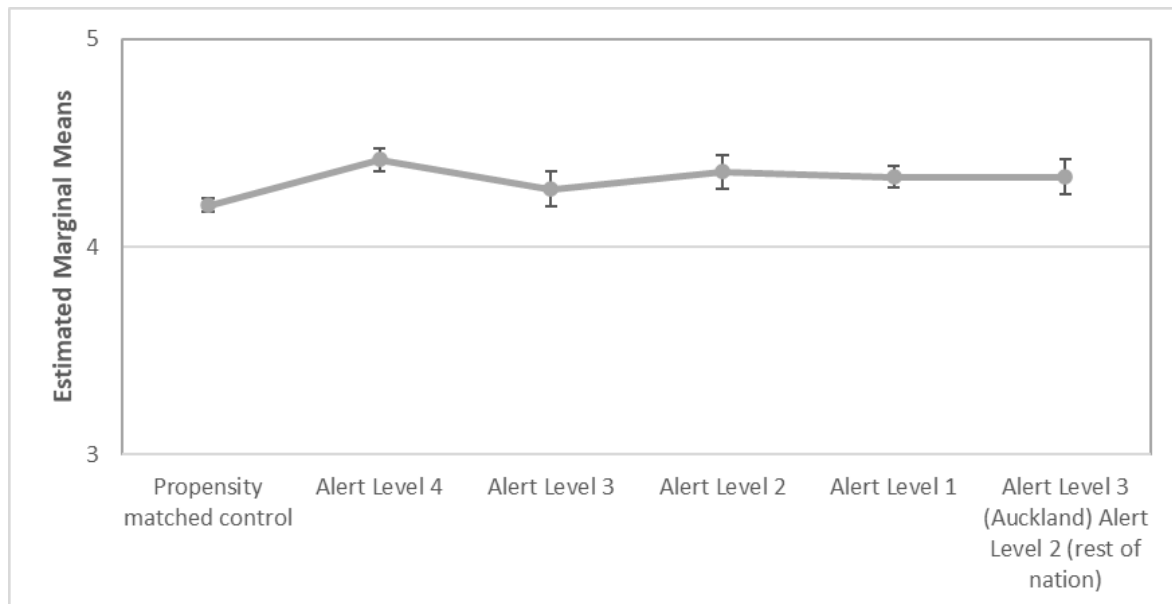
Summary of General Effects on Personal Relationships and Social Connections

These results indicate that the challenges of the COVID-19 pandemic and lockdowns pose a risk to the quality of personal relationships, but may have benefits to broader social connectedness. People reported greater conflict and lower satisfaction in their personal relationships at Alert Level 4 compared to the matched control group. Lower levels of satisfaction had rebounded by the time New Zealand entered Alert Level 1 suggesting that, on average, the relationship strain experienced during the Level 4 lockdown alleviated after the restrictions of the initial lockdowns had been lifted.

The impact of Alert Level 4 on personal relationship quality was not evident for more general levels of social support or belongingness. These results indicate that Alert Level 4 put pressure on relationships in the home rather than on the social connections with friends and family outside the home. The strain to personal relationships also appeared to be countered by a greater sense of community in the local neighbourhood across many of the Alert Levels

compared to the matched control group. This pattern is consistent with the shared experience of the lockdown, and the more local living the pandemic created, which generated a stronger sense of social connection in local environments. Moreover, this seems to emphasize the importance of symbolic (in addition to physical) connections with others for wellbeing. Because broader social connectedness helps people cope with challenges and buffers the effects of stress (Jetten et al., 2011), a stronger sense of community may have contributed to the general resilience in well-being observed across Alert Levels despite the challenges to personal relationships during lockdown.

Aim 2: Demographic Differences

This section reports analyses examining whether any effect of Alert Levels differed across six demographic groups: gender, ethnicity, parental status, health condition/disability status, mental health diagnosis, and age.

Differences across Gender

Relationship Conflict. Men and women did not differ in reported conflict, $F = 1.006$, $p = .316$, $\eta_p^2 = .000$, and this did not vary across Alert Levels, $F = 0.389$, $p = .856$, $\eta_p^2 = .000$.

Graph 48. Gender differences in relationship conflict
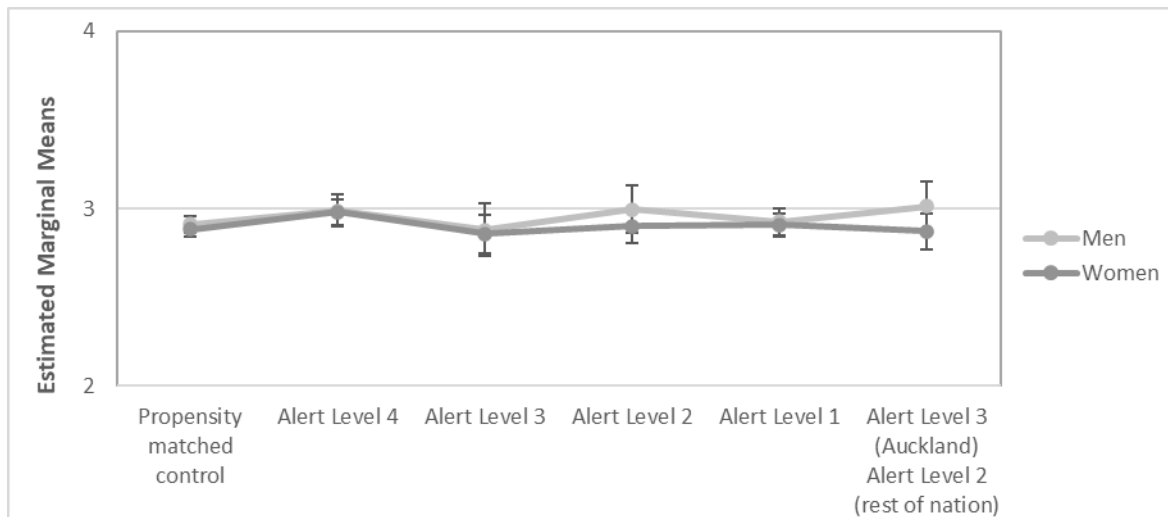
Relationship Satisfaction. Women reported lower relationship satisfaction, $F = 6.820$, $p = .009$, $\eta_p^2 = .000$, which did not vary across Alert Levels, $F = 1.482$, $p = .192$, $\eta_p^2 = .000$.

Graph 49. Gender differences in relationship satisfaction
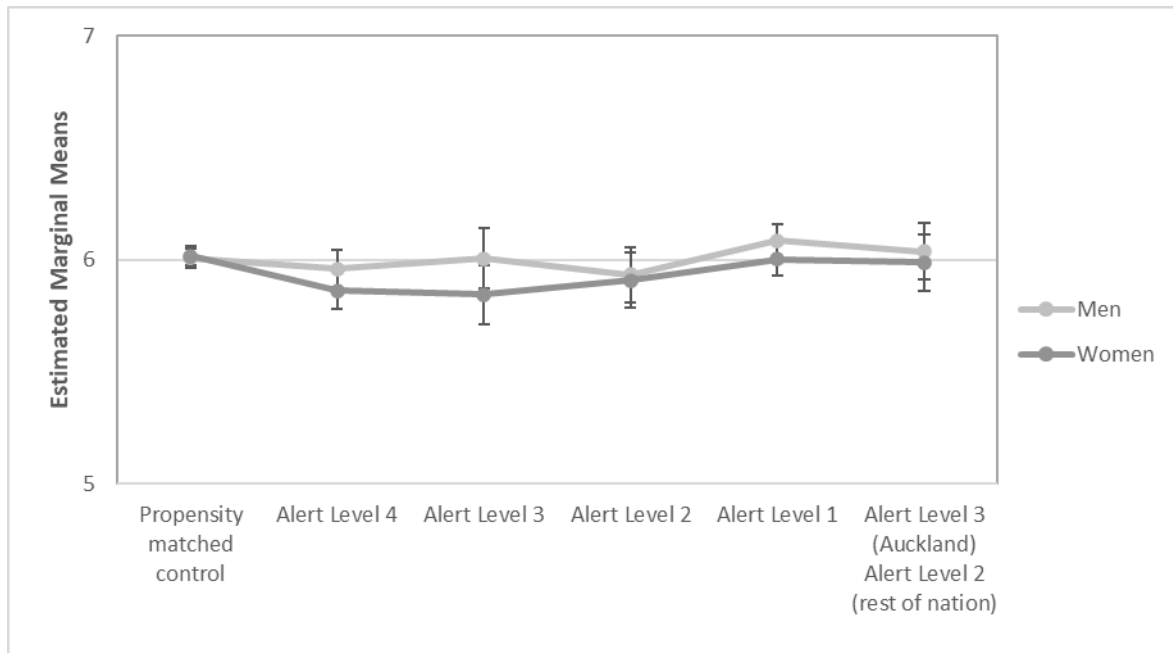
Social Support. Men reported less social support, $F = 213.273$, $p < .001$, $\eta_p^2 = .009$, and this gender difference did not vary across Alert Levels, $F = 0.360$, $p = .876$, $\eta_p^2 = .000$.

Graph 50. Gender Differences in Social Support
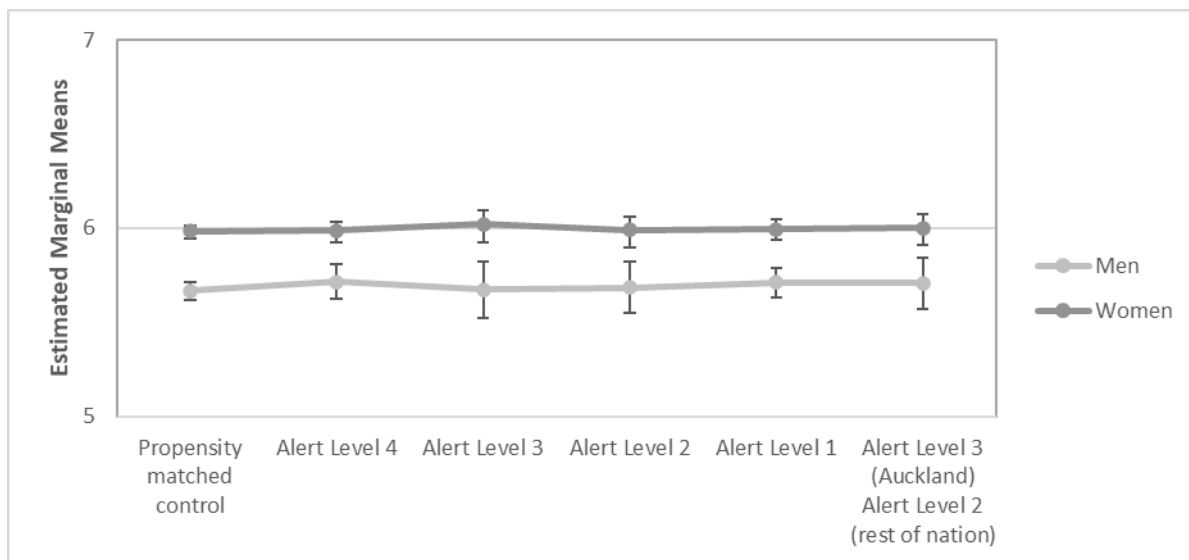
Belonging. Men felt less belonging, $F = 105.465$, $p < .001$, $\eta_p^2 = .004$, and this gender difference did not vary across Alert Levels, $F = 1.138$, $p = .338$, $\eta_p^2 = .000$.

Graph 51. Gender Differences in Belonging
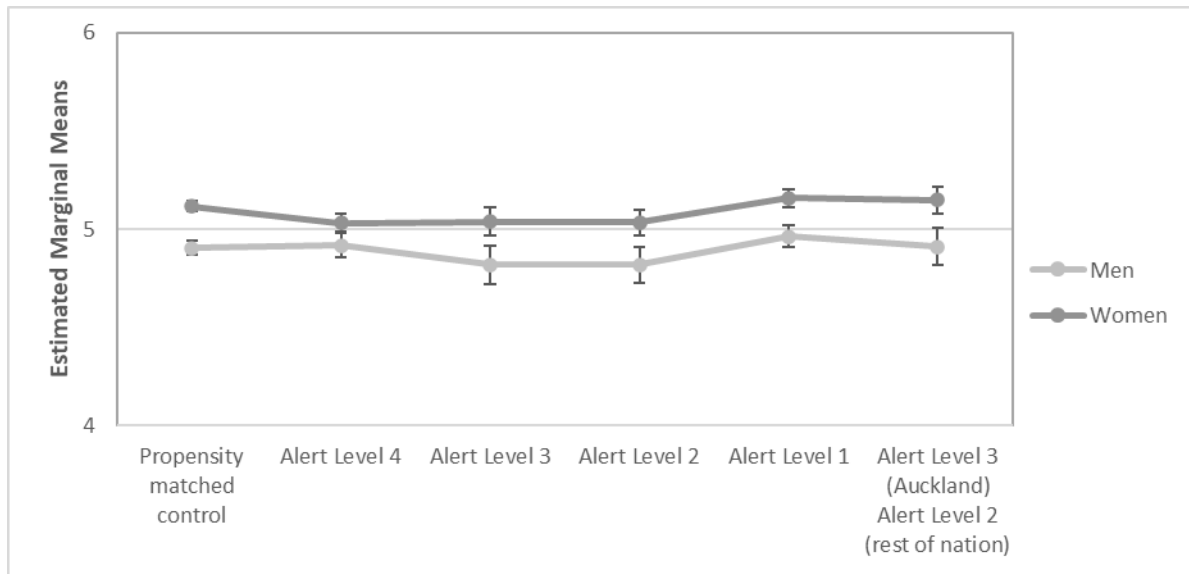
Sense of Community. Men reported a lower sense of community, $F = 80.729$, $p < .001$, $\eta_p^2 = .003$. This difference did not vary across Alert Levels, $F = 1.127$, $p = .334$, $\eta_p^2 = .000$.

Graph 52. Gender Differences in Sense of Community
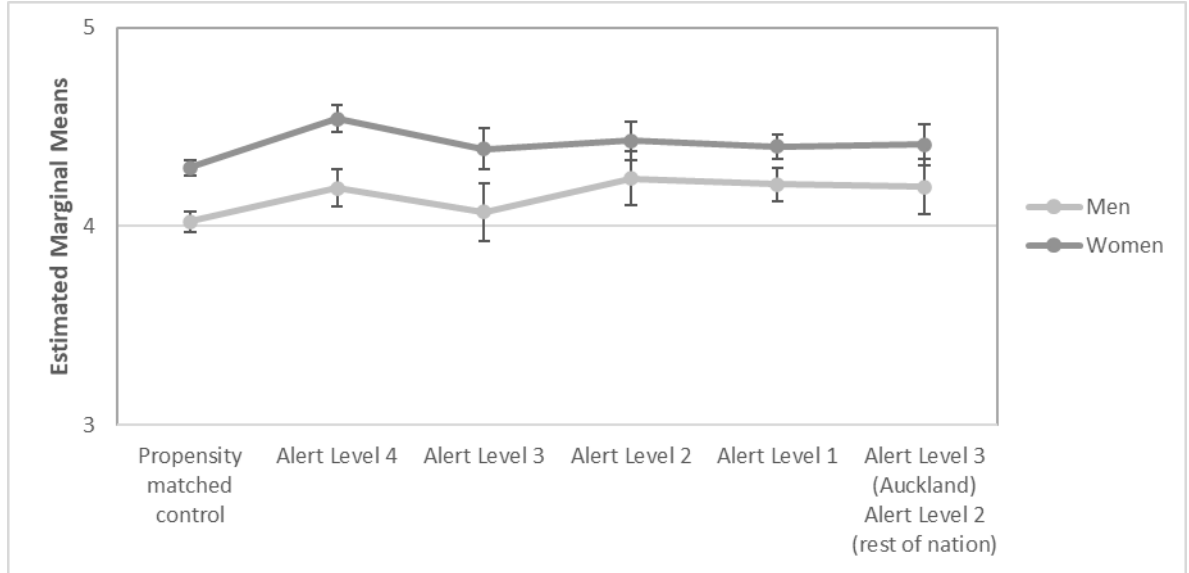
Summary of Differences across Gender. On average, women reported less satisfaction with their personal relationship, whereas men reported less social support, belongingness, and sense of community. These differences were, however, stable across Alert Levels.

Differences across Ethnic Groups

Comparisons were made across European, Māori, and Asian/Pacific Islander/Other (as a

broad category) due to limited sample size when split across Alert Levels.

Relationship Conflict. There were significant differences in relationship conflict across ethnic groups, $F = 14.241$, $p < .001$, $\eta_p^2 = .002$, which varied across Alert Levels, $F = 1.916$, $p = .038$, $\eta_p^2 = .001$. People identifying as Asian, Pacific or another non-Māori ethnicity had similar levels of conflict as participants identifying as European across Alert Levels, with the exception that the average increases in conflict during Alert Level 4 were less pronounced for European participants relative to people identifying as Asian, Pacific or another non-Māori ethnicity ($p = .02$). There were no significant differences between participants identifying as European across all Alert Levels.1

Graph 53. Ethnic Group Differences in Relationship Conflict
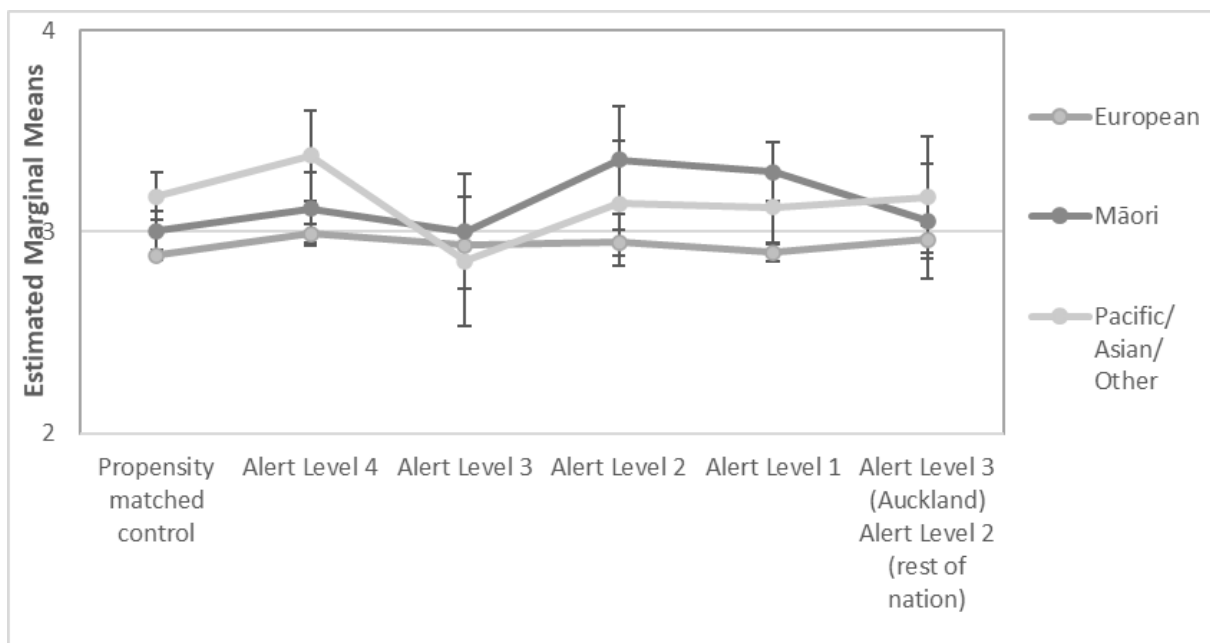
Relationship Satisfaction. There were no differences across ethnic groups, $F = 1.091$, $p = .336$, $\eta_p^2 = .000$, nor did they vary across Alert Levels, $F = .634$, $p = .786$, $\eta_p^2 = .000$.

Graph 54. Ethnic Group Differences in Relationship Satisfaction
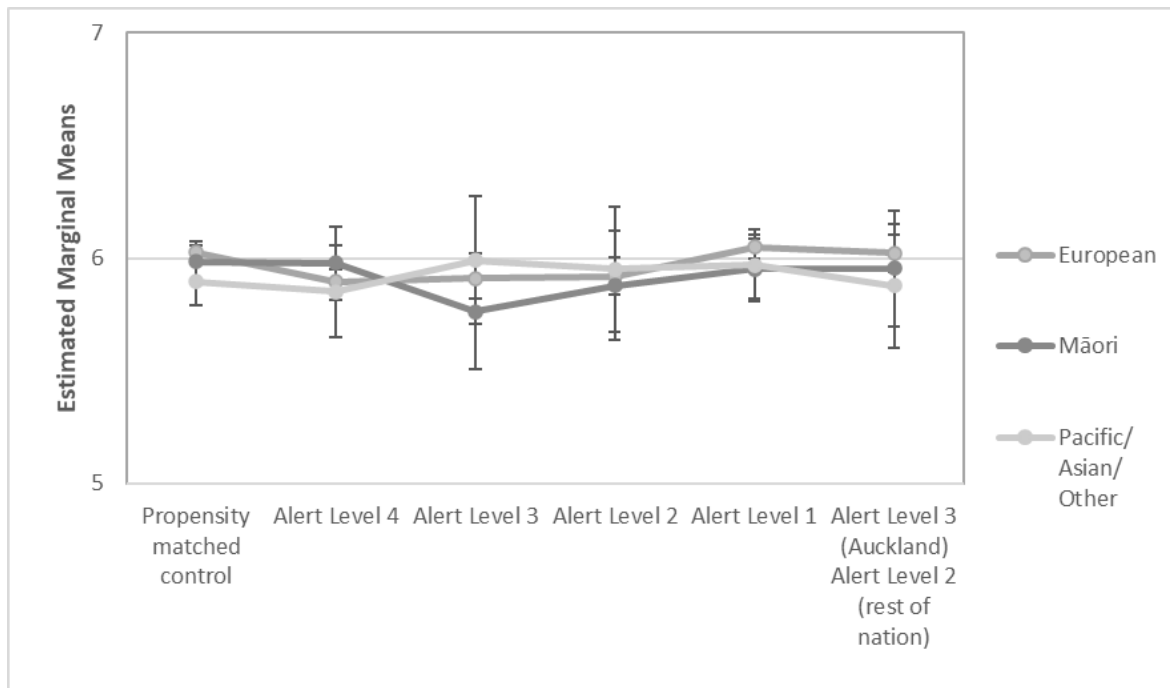
Social Support. There were significant differences in social support across ethnic groups, $F = 7.994$, $p < .001$, $\eta_p^2 = .001$, but these differences did not vary across Alert Levels, $F = 1.076$, $p = .337$, $\eta_p^2 = .000$.

Graph 55. Ethnic group differences in social support
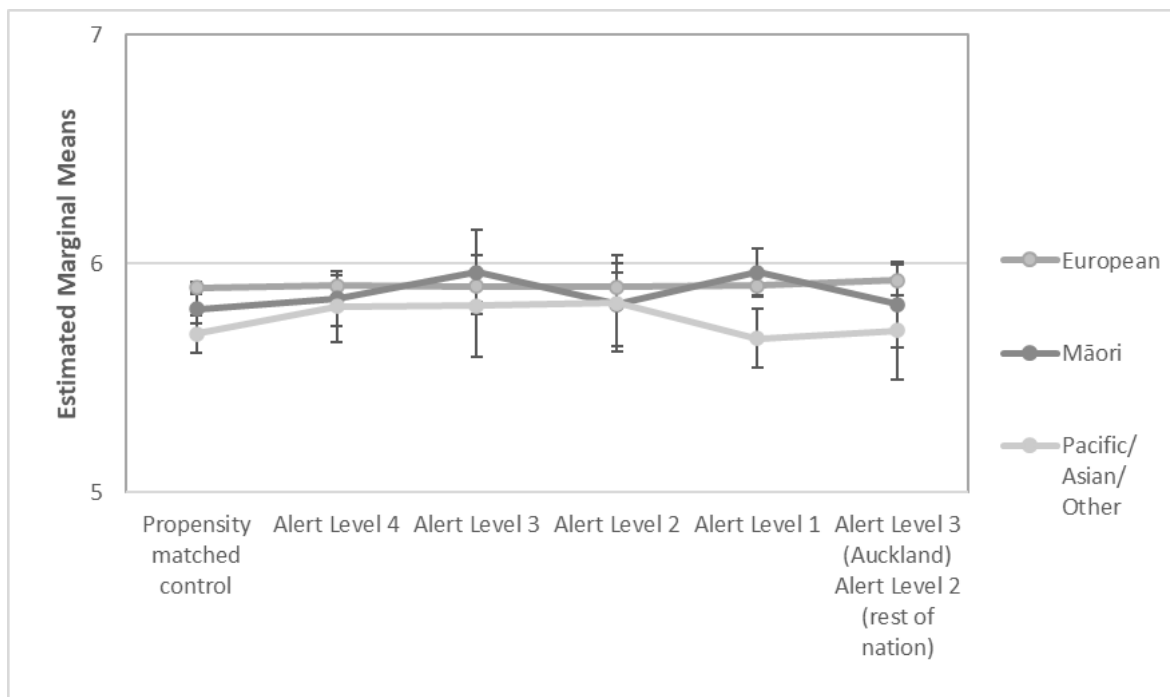
Belongingness. There were significant differences in belongingness across ethnic groups, $F = 16.324$, $p < .001$, $\eta_p^2 = .001$, but these differences did not vary across Alert Levels, $F = 0.755$, $p = .672$, $\eta_p^2 = .000$.

Graph 56. Ethnic Group Differences in Belonging
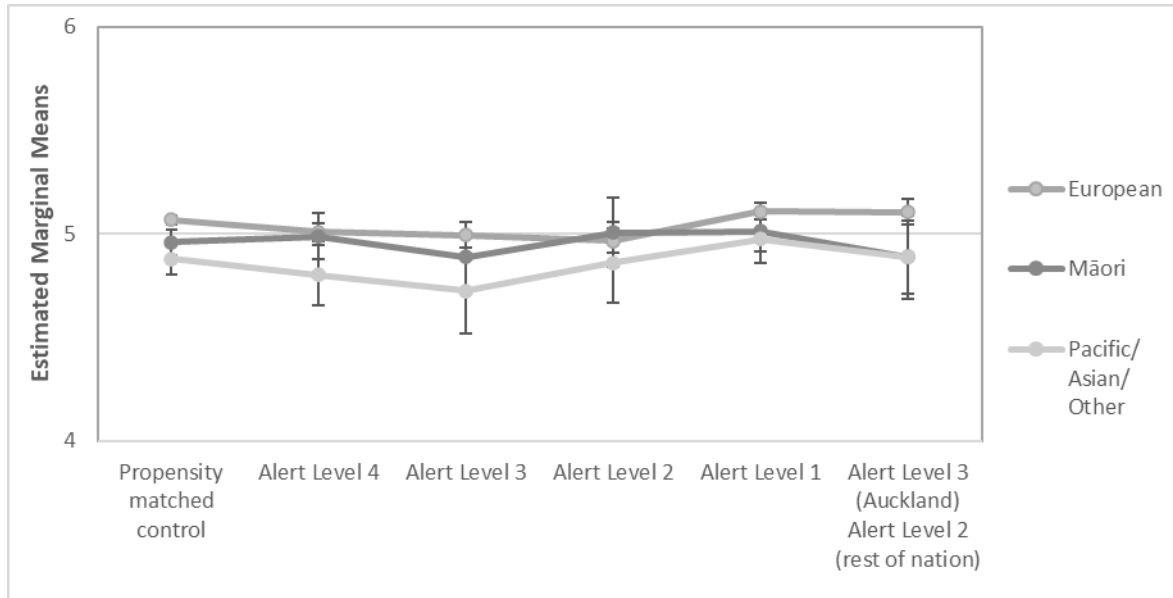
Sense of Community. There were no differences across ethnic groups, $F = 1.581$, $p = .206$, $\eta_p^2 = .000$, nor did they vary across Alert Levels, $F = .491$, $p = .897$, $\eta_p^2 = .000$.

Graph 57. Ethnic Group Differences in Sense of Community
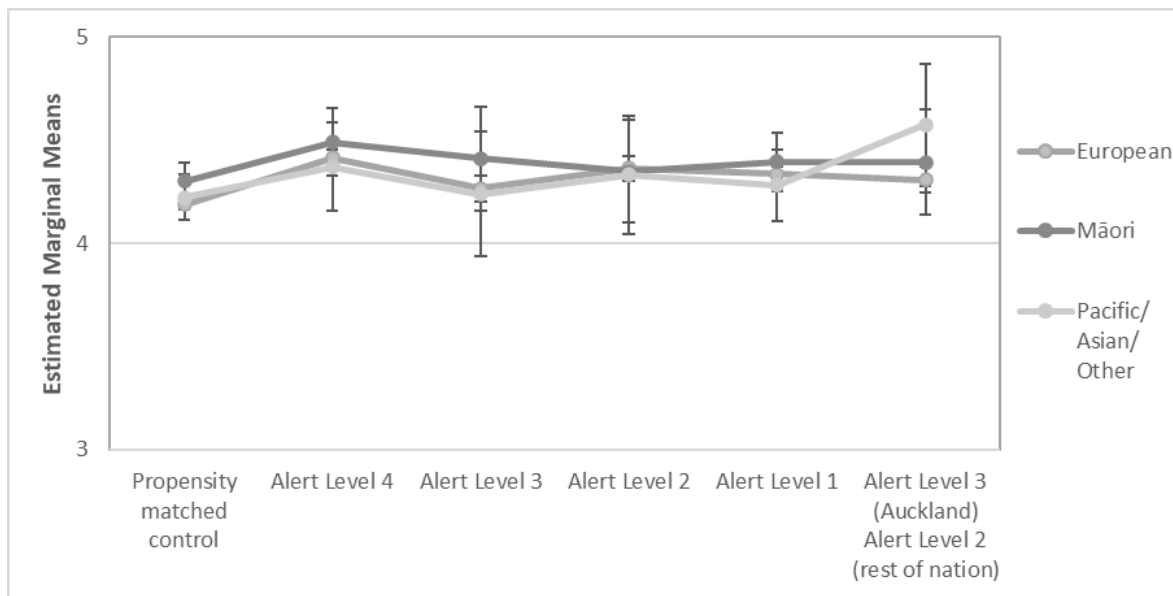
Summary of Differences across Ethnic Groups. Some mean differences in relationship conflict, social support and felt belonging emerged across ethnic groups, but these differences generally did not vary across alert levels. One exception was that participants who identified as European were less likely to report greater relationship conflict shown on average at Level 4 relative to people identifying as Asian, Pacific or another non-Māori ethnicity.

Differences across Parental Status

Relationship Conflict. Parents reported greater relationship conflict, $F = 48.981$, $p < .001$, $\eta_p^2 = .003$, and this did not vary across Alert Levels, $F = 0.842$, $p = .519$, $\eta_p^2 = .000$.

*Graph 58. Parental Status Differences in Relationship Conflict*
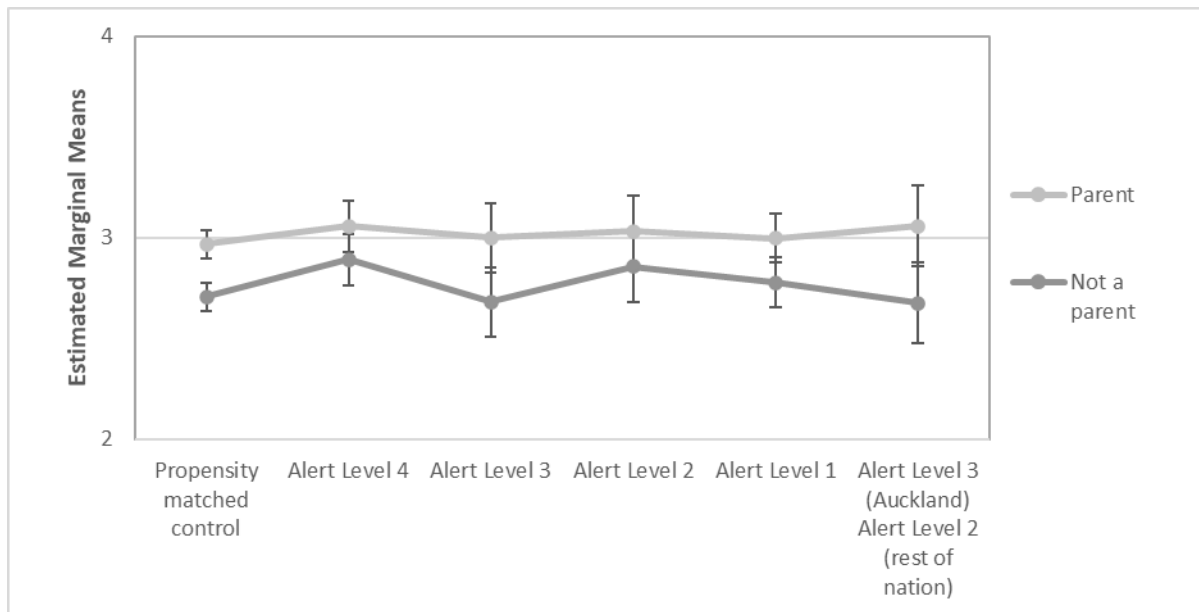
Relationship Satisfaction. Parents reported lower relationship satisfaction, $F = 31.225$, $p < .001$, $\eta_p^2 = .002$, and this did not vary across Alert Levels, $F = 0.666$, $p = .649$, $\eta_p^2 = .000$.

Graph 59. Parental Status Differences in Relationship Satisfaction
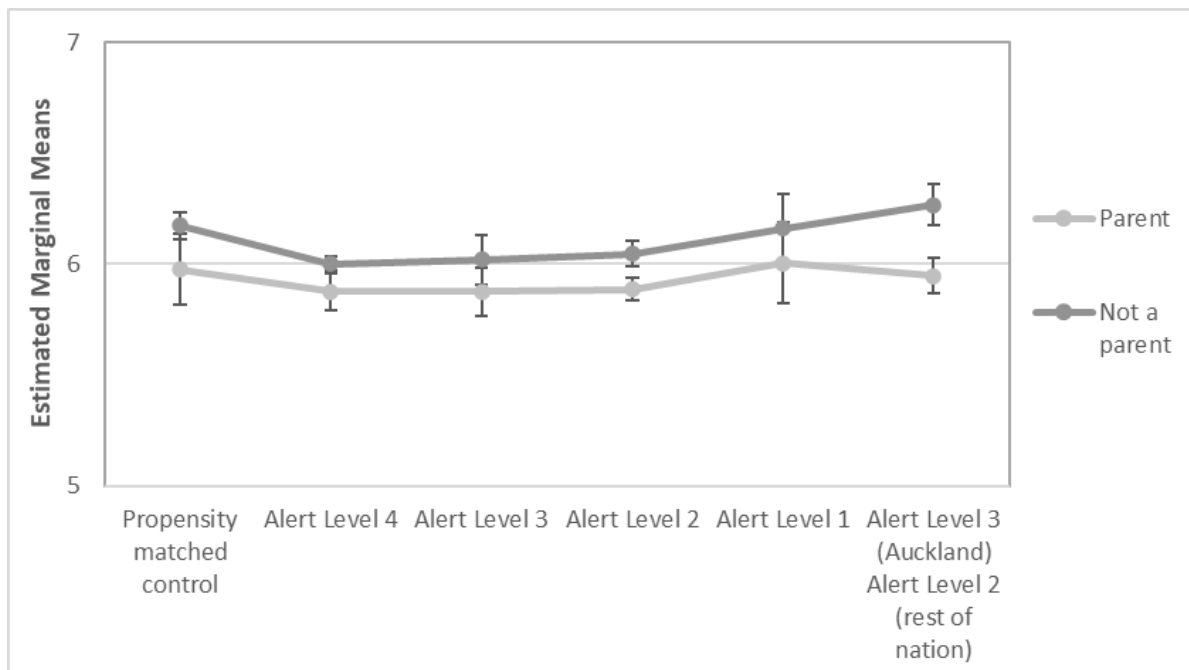
Social Support. Parents reported greater social support on average, $F = 30.322$, $p < .001$, $\eta_p^2 = .001$, and this did not vary across Alert Levels, $F = 1.812$, $p = .107$, $\eta_p^2 = .000$.

Graph 60. Parental Status Differences in Social Support
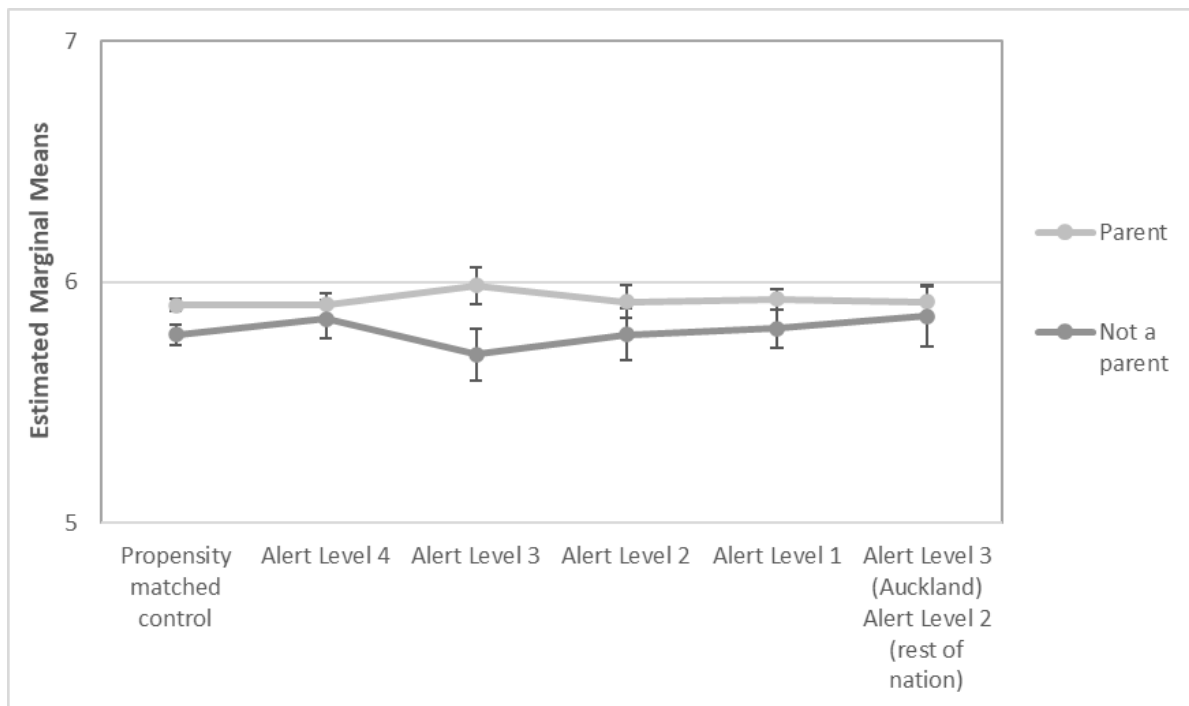
Belonging. Parents felt greater levels of belonging, $F = 73.016$, $p < .001$, $\eta_p^2 = .003$, and this did not vary across Alert Levels, $F = 0.634$, $p = .674$, $\eta_p^2 = .000$.

Graph 61. Parental Status Differences in Belonging
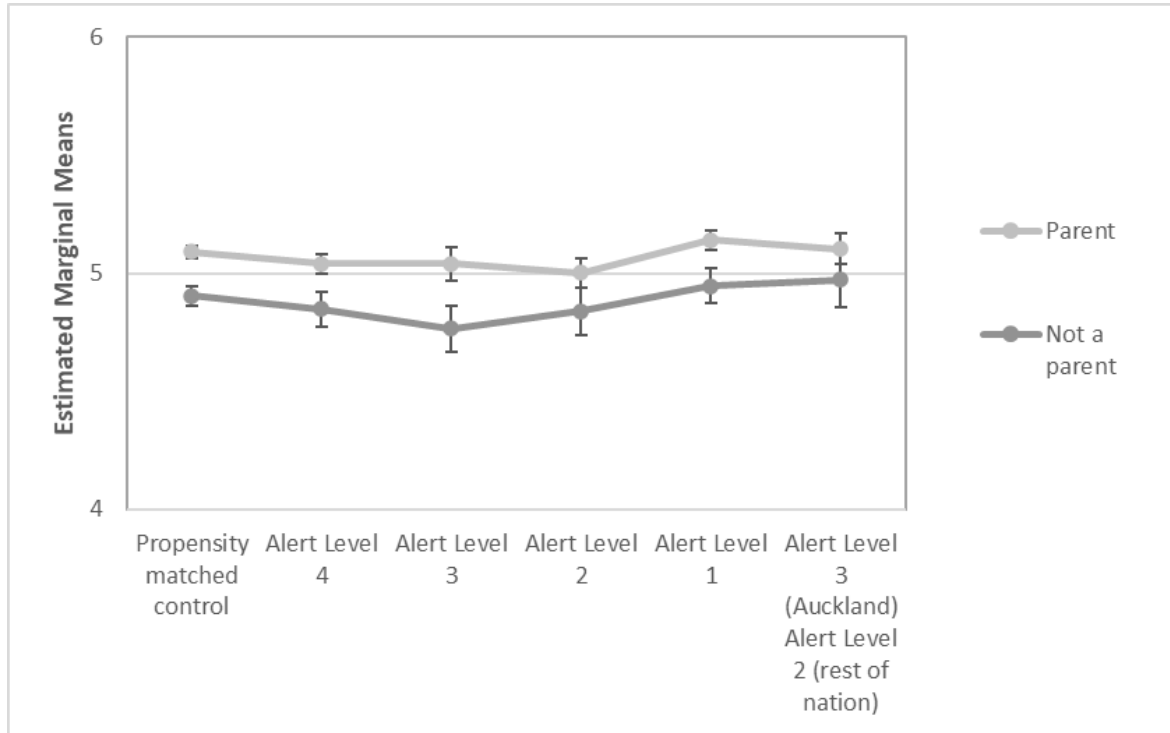
Sense of Community. Parents reported a greater sense of community, $F = 130.202$, $p < .001$, $\eta_p^2 = .005$, and this did not vary across Alert Levels, $F = 0.467$, $p = .801$, $\eta_p^2 = .000$.

Graph 62. Parental Status Differences in Sense of Community

Graph 62. Parental Status Differences in Sense of Community
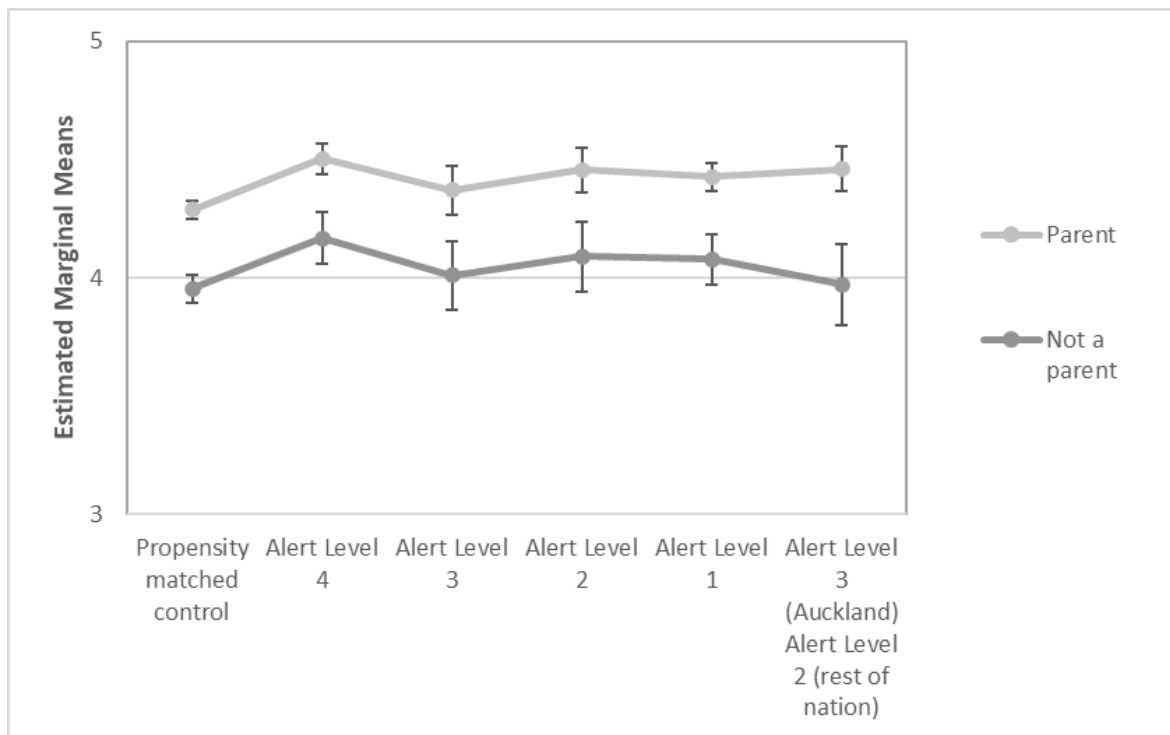
Summary of Differences across Parental Status. Parents reported lower personal relationship quality (greater conflict and lower satisfaction), but greater social connectedness (social support, belongingness, sense of community). These differences did not vary across Alert Levels indicating that these average effects were not exacerbated by the lockdowns.

Differences across Health Condition/Disability Status

Relationship Conflict. Participants with a health condition or disability reported greater conflict, $F = 13.508$, $p < .001$, $\eta_p^2 = .001$. This difference did not vary across Alert Levels, $F = 0.327$, $p = .897$, $\eta_p^2 = .000$.

Graph 63. Health Condition/Disability Status Differences in Relationship Conflict
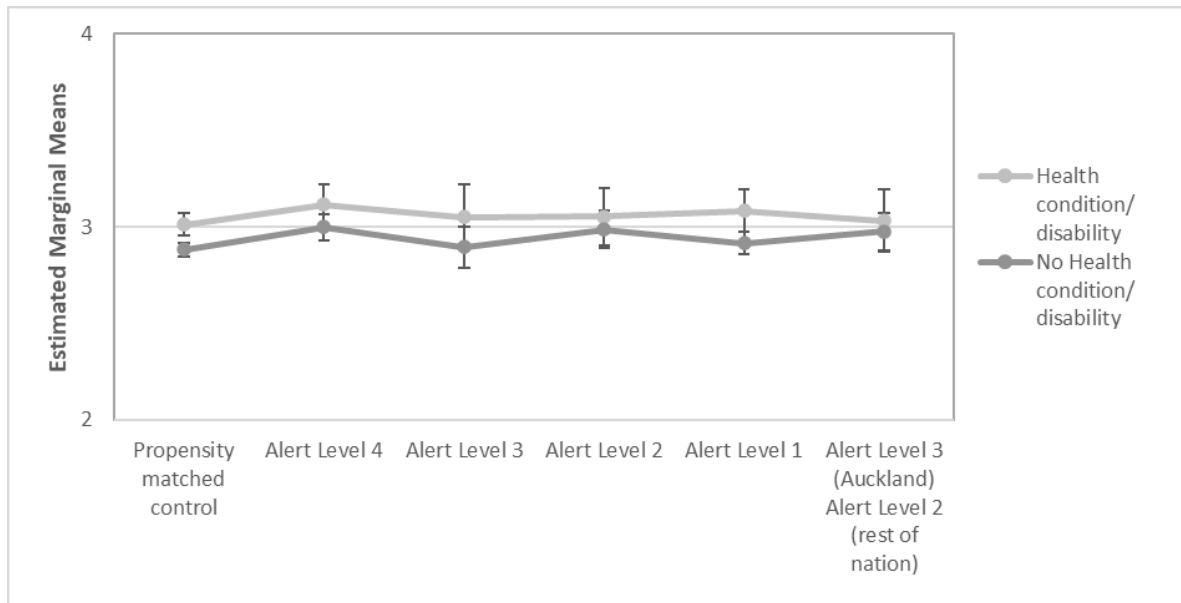
Relationship Satisfaction. Participants with a health condition or disability reported lower relationship satisfaction, $F = 9.041$, $p = .003$, $\eta_p^2 = .001$. This small difference did not vary across Alert Levels, $F = 1.473$, $p = .195$, $\eta_p^2 = .000$.

Graph 64. Health Condition/Disability Status Differences in Relationship Satisfaction
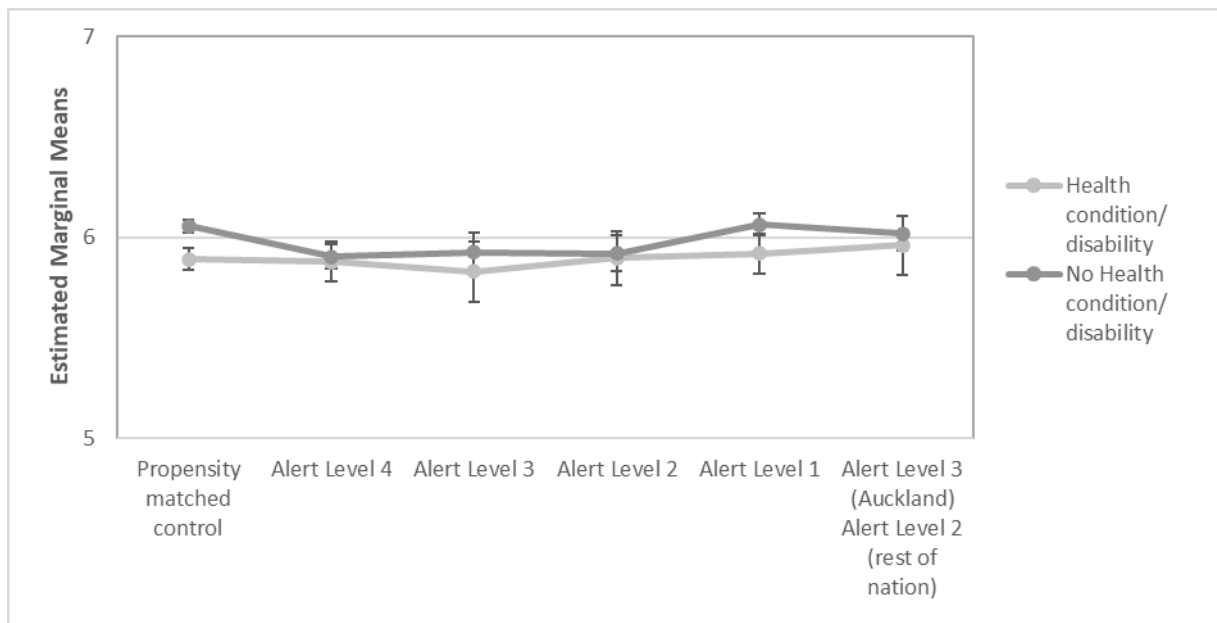
Social Support. Participants with a health condition or disability reported lower social support, $F = 192.304$, $p < .001$, $\eta_p^2 = .008$. This difference did not vary across Alert Levels, $F = 0.887$, $p = .489$, $\eta_p^2 = .000$.

Graph 65. Health Condition/Disability Status Differences in Social Support
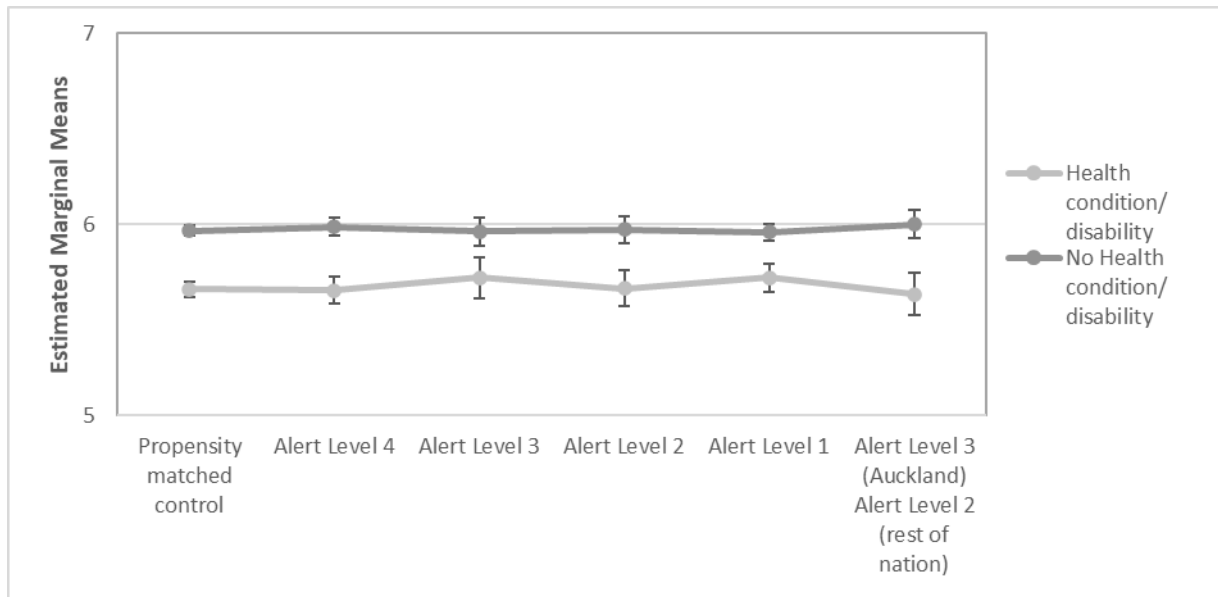
Belonging. Participants with a health condition or disability felt lower belonging, $F = 353.713$, $p < .001$, $\eta_p^2 = .015$, and this difference did not vary across Alert Levels, $F = 0.292$, $p = .918$, $\eta_p^2 = .000$.

Graph 66. Health Condition/Disability Status Differences in Belonging
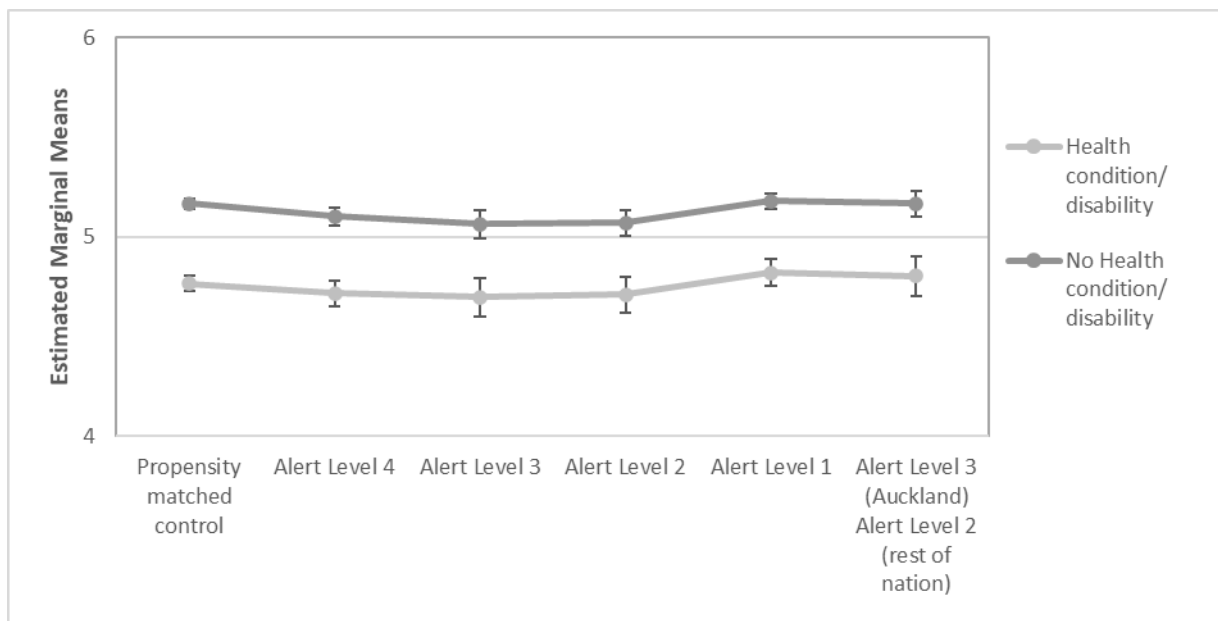
Sense of Community. Participants with a health condition or disability felt a lower sense of community, $F = 32.060$, $p < .001$, $\eta_p^2 = .001$, and this difference varied across Alert Levels, $F = 2.542$, $p = .026$, $\eta_p^2 = .001$, which was most pronounced during Alert Level 4.

Graph 67. Health Condition/Disability Status Differences in Sense of Community
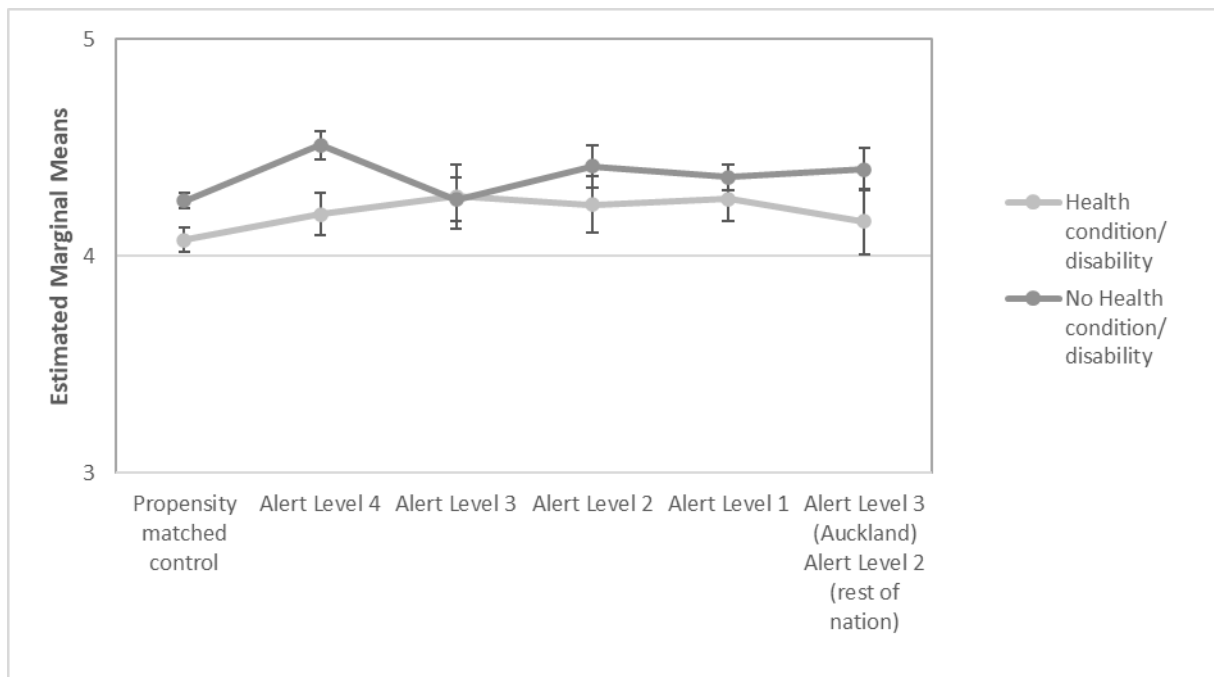
Summary of Differences across Health Condition/Disability Status. On average, participants with a health condition or disability reported poorer personal relationships and social connectedness. These poorer outcomes did not vary across Alert Levels, with one exception: differences in a sense of community were most pronounced at Alert Level 4, suggesting that the boosts in community connection that generally occurred during the Alert Levels were not experienced by those with a pre-existing health condition/disability status.

Differences across Mental Health Diagnosis

Relationship Conflict. Participants with a mental health diagnosis reported greater relationship conflict, $F = 61.001$, $p < .001$, $\eta_p^2 = .004$. This difference did not vary across Alert Levels, $F = 0.582$, $p = .714$, $\eta_p^2 = .000$.

Graph 68. Mental Health Diagnosis Status Differences in Relationship Conflict
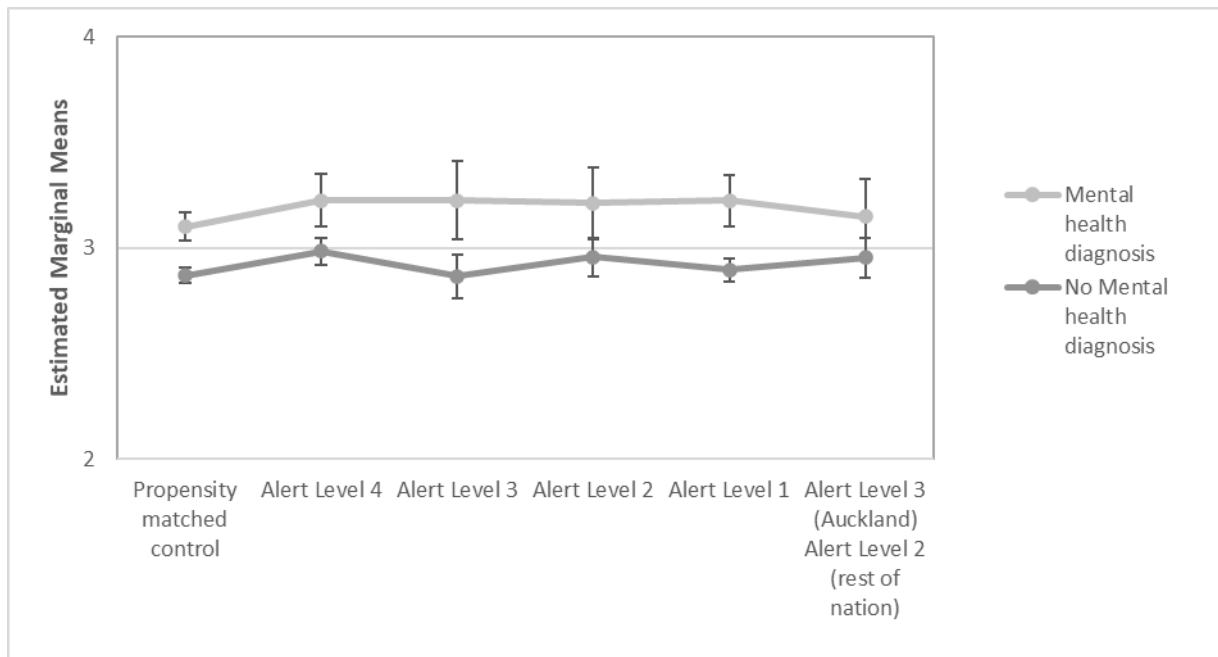
Relationship Satisfaction. Participants with a mental health diagnosis reported lower relationship satisfaction, $F = 68.822$, $p < .001$, $\eta_p^2 = .004$. This difference did not vary across Alert Levels, $F = 1.377$, $p = .230$, $\eta_p^2 = .000$.

Graph 69. Mental Health Diagnosis Status Differences in Relationship Satisfaction
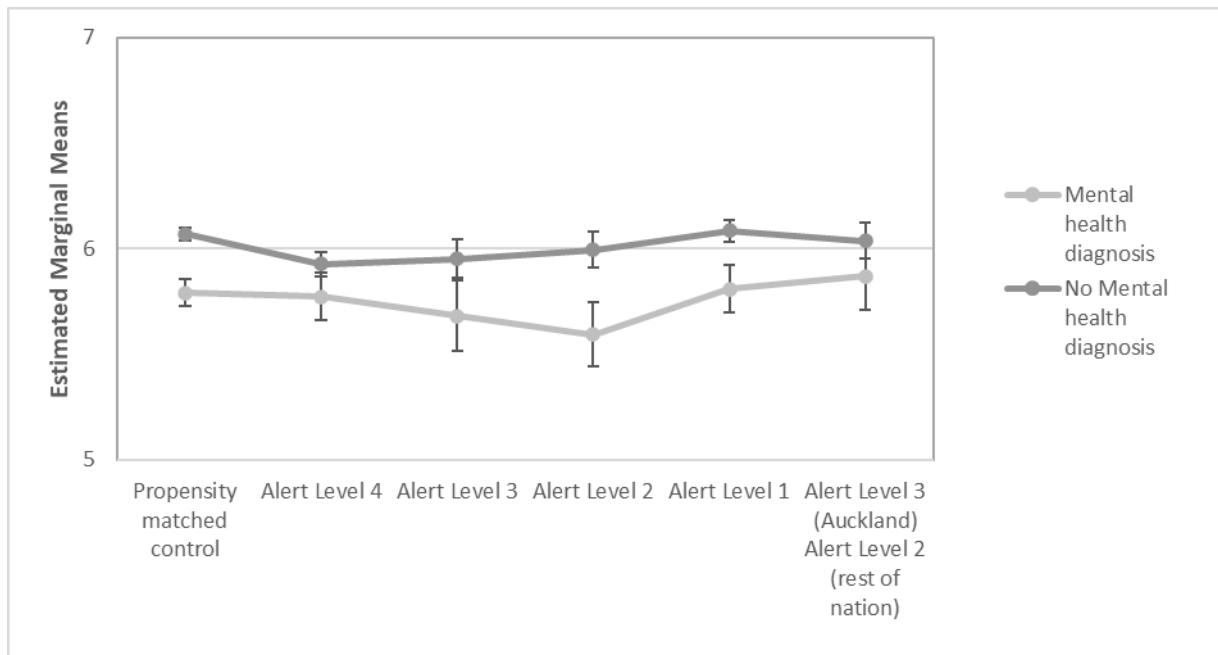
Social Support. Participants with a mental health diagnosis reported lower social support, $F = 337.183$, $p < .001$, $\eta_p^2 = .014$. This difference did not vary across Alert Levels, $F = 0.596$, $p = .703$, $\eta_p^2 = .000$.

Graph 70. Mental Health Diagnosis Status Differences in Social Support
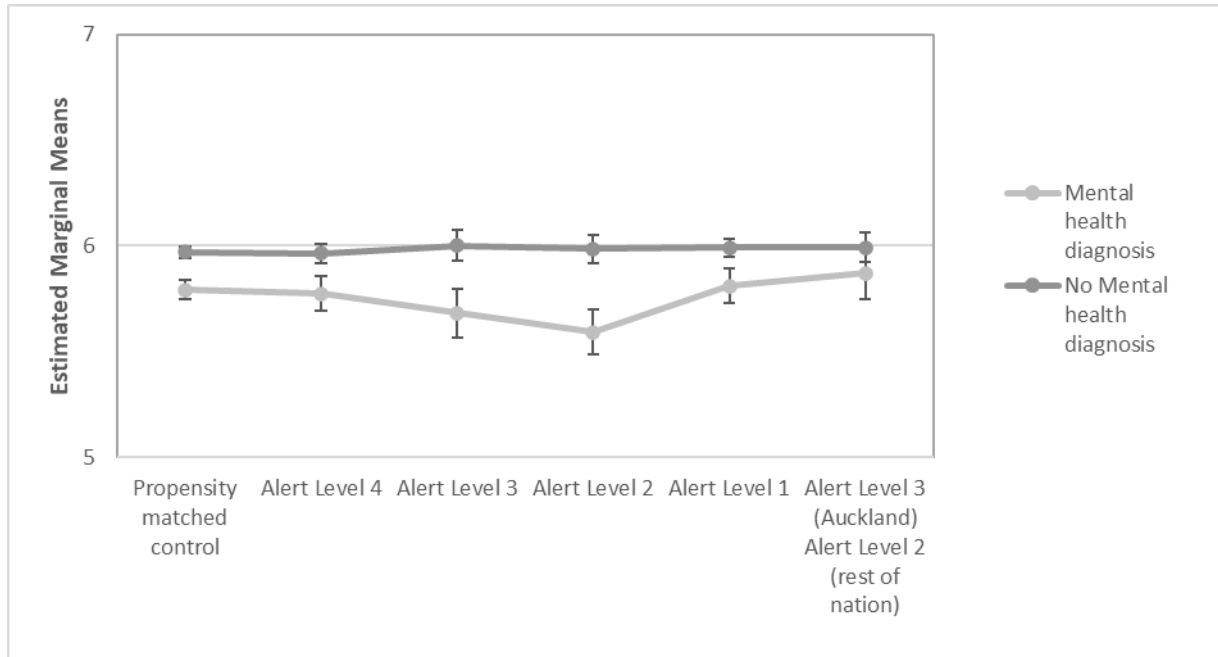
Belonging. Participants with a mental health diagnosis felt lower belonging, $F = 800.821$, $p < .001$, $\eta_p^2 = .032$, with this difference consistent across Alert Levels, $F = 1.230$, $p = .292$, $\eta_p^2 = .000$.

Graph 71. Mental Health Diagnosis Status Differences in Belonging
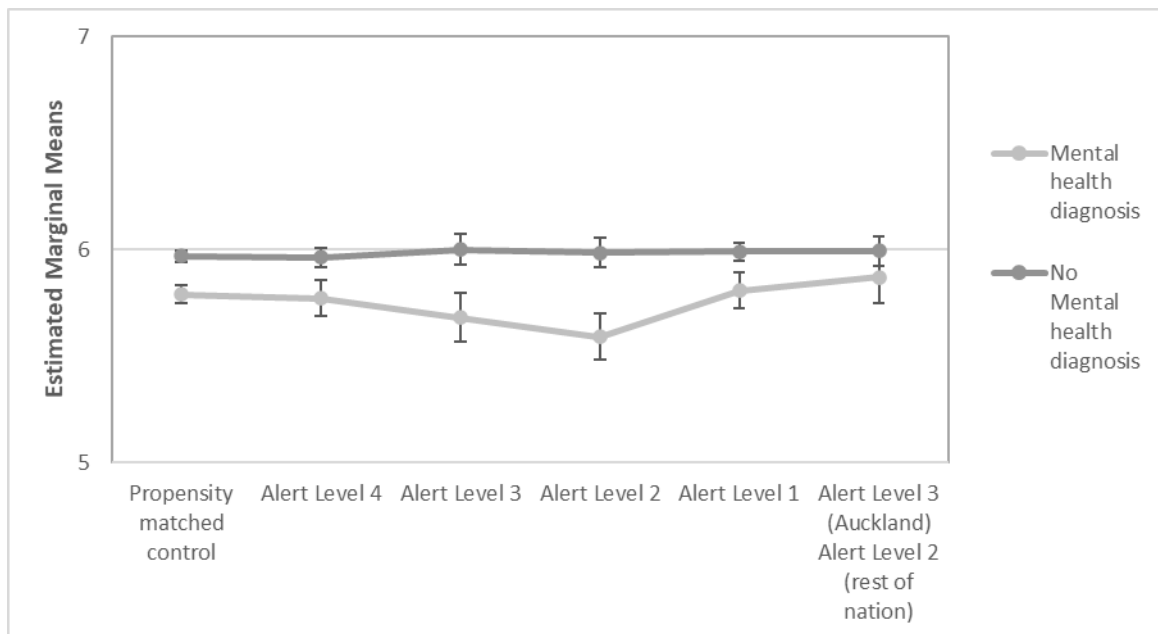
Sense of Community. Participants with a mental health diagnosis felt a lower sense of community, $F = 143.872$, $p < .001$, $\eta_p^2 = .006$. This difference did not vary across Alert Levels, $F = 0.620$, $p = .685$, $\eta_p^2 = .000$.

Graph 72. Mental Health Diagnosis Status Differences in Sense of Community
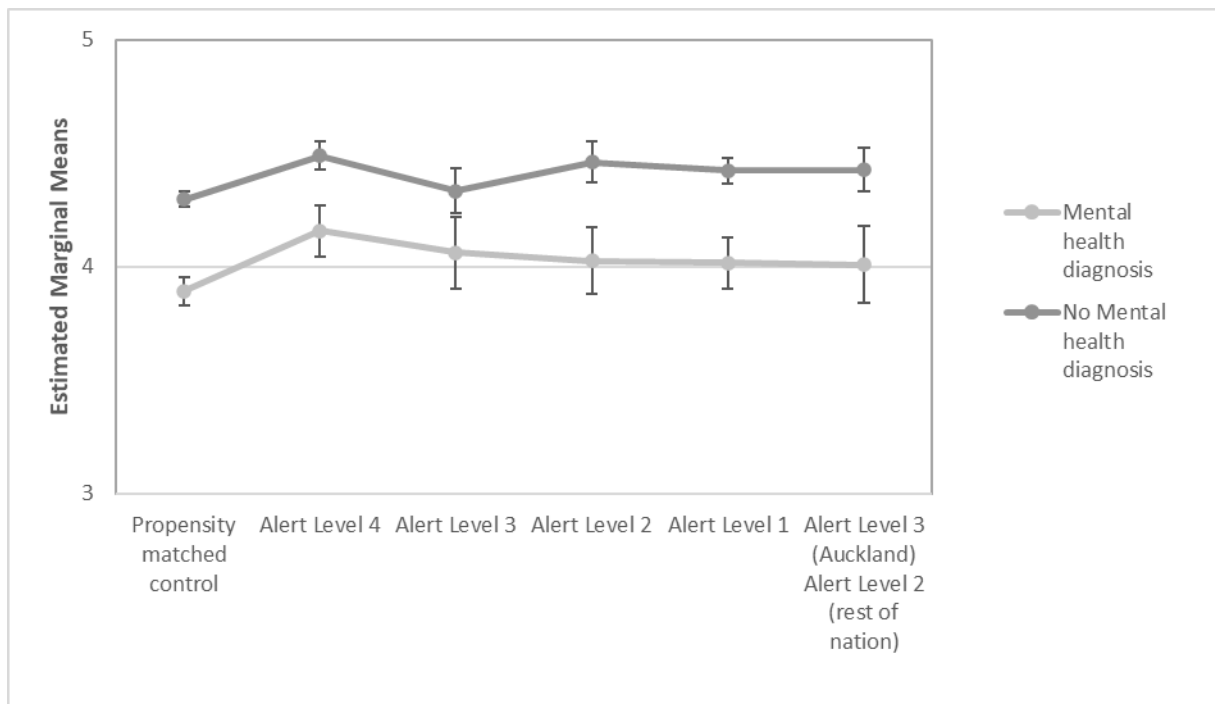
Summary of Differences across Mental Health Diagnosis. Participants who reported a mental health diagnosis experienced poorer relationships and social connectedness across all measures, but these poorer outcomes did not vary across Alert Levels.

Differences across Age Groups

We present comparisons across three age groups: 18-29, 30-64 and 65 + years. Appendix II presents comparisons across six age groups: 18-24, 25-34, 35-44, 45-54, 55-64 and 65+ years. Consistent patterns emerged across both analytic strategies.

Relationship Conflict. Older participants (65+) reported lower conflict, $F = 15.702$, $p < .001$, $\eta_p^2 = .002$. This did not vary across Alert Levels, $F = 0.984$, $p = .455$, $\eta_p^2 = .001$.

Graph 73. Age Differences in Relationship Conflict
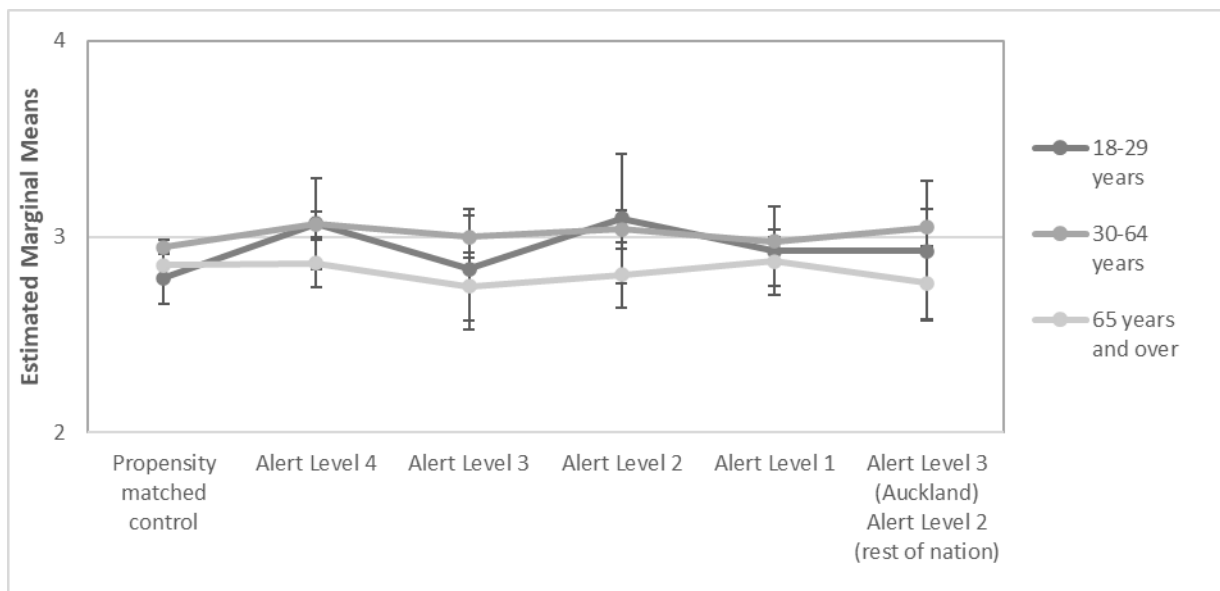
Relationship Satisfaction. Older participants (65+) reported greater satisfaction, $F = 33.535$, $p < .001$, $\eta_p^2 = .004$, across Alert Levels, $F = 0.718$, $p = .708$, $\eta_p^2 = .001$.

Graph 74. Age Differences in Relationship Satisfaction
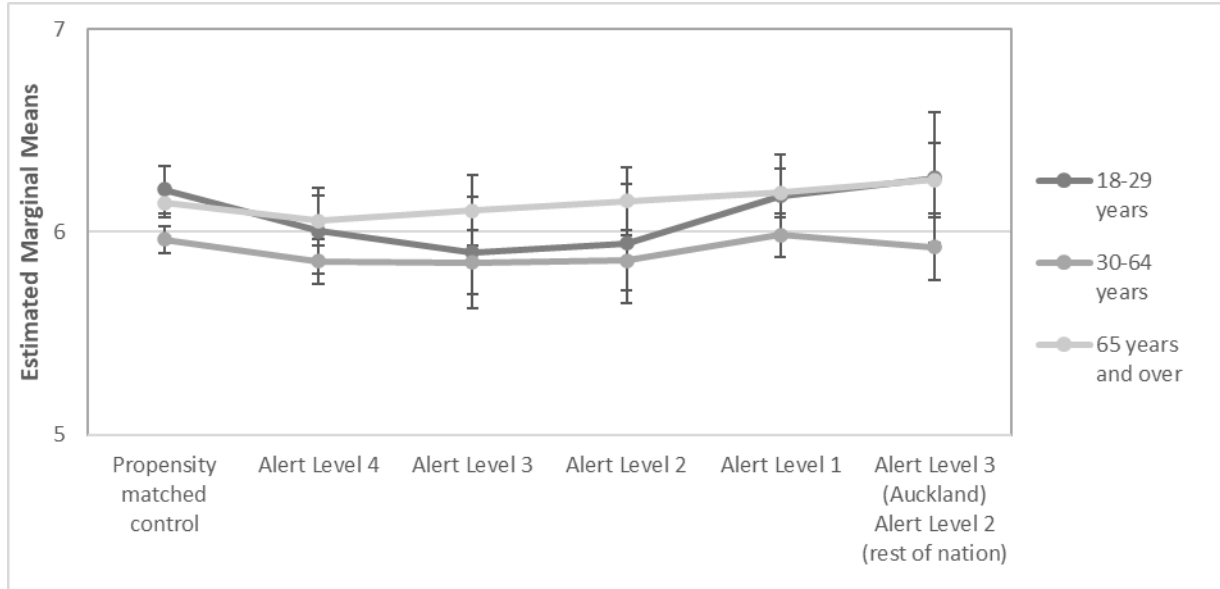
Social Support. Older participants reported greater social support, $F = 20.494$, $p < .001$, $\eta_p^2 = .002$. This did not vary across Alert Levels, $F = 1.422$, $p = .163$, $\eta_p^2 = .001$.

Graph 75. Age Differences in Social Support
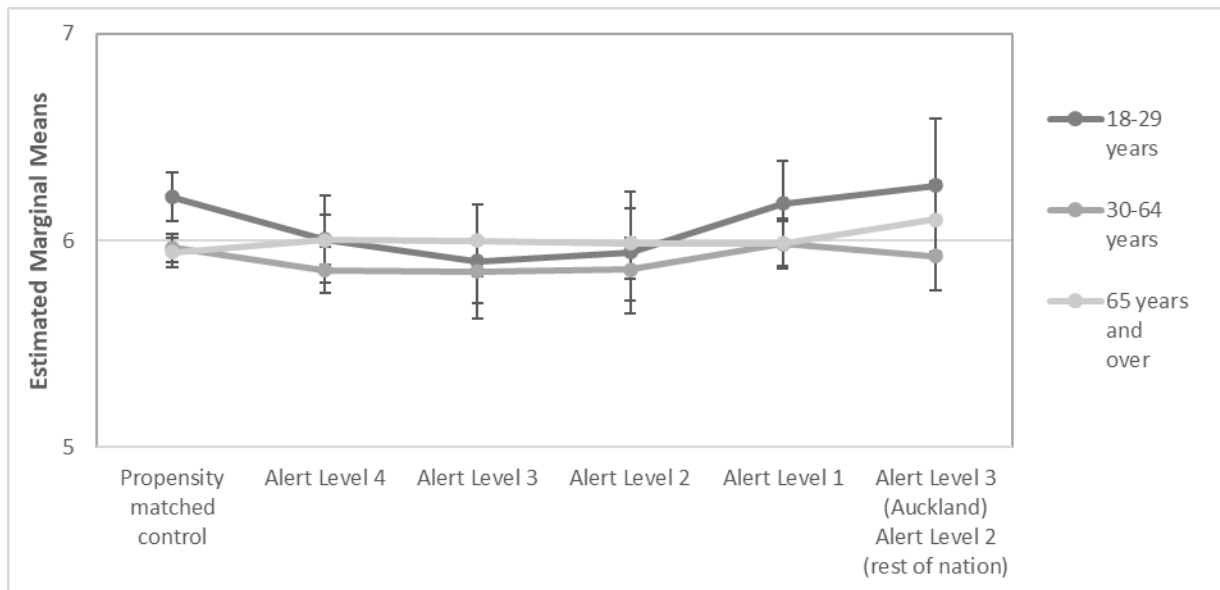
Belonging. Older participants felt greater belonging, $F = 92.902$, $p < .001$, $\eta_p^2 = .008$. This did not vary across Alert Levels, $F = 1.652$, $p = .086$, $\eta_p^2 = .001$.

Graph 76. Age Differences in Belonging
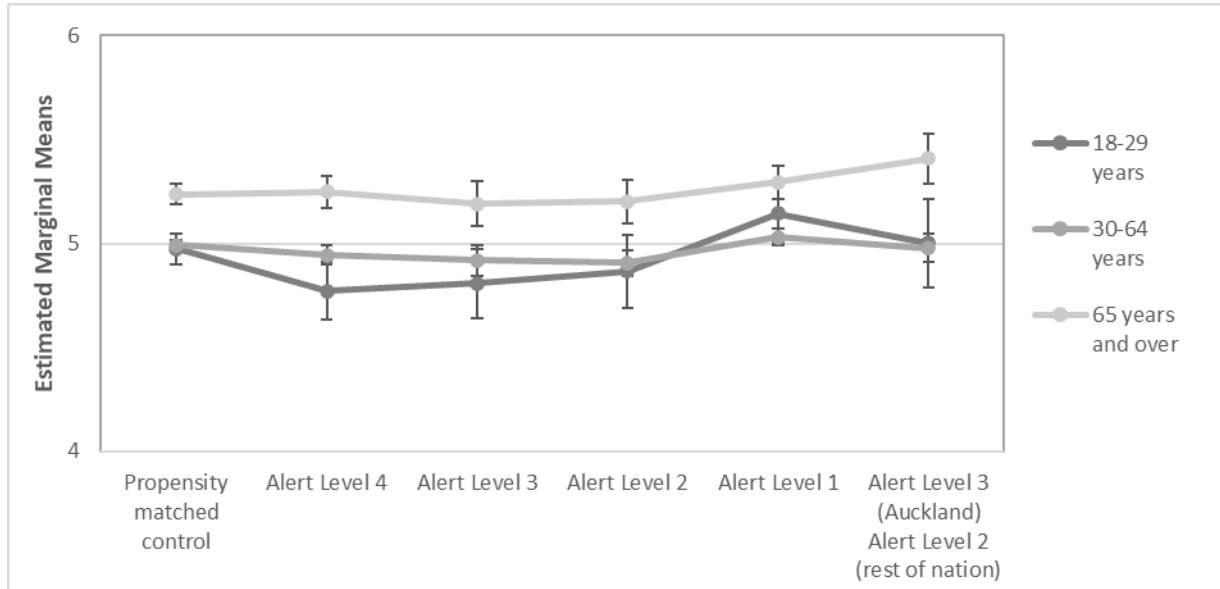
Sense of Community. Large age differences emerged, $F = 229.155$, $p < .001$, $\eta_p^2 = .019$. Younger participants (18-29 years) felt a lower sense of community than did the other age groups, whereas older participants (65+) felt the highest sense of community. These age differences did not vary across Alert Levels, $F = 0.731$, $p = .696$, $\eta_p^2 = .000$.

Graph 77. Age Differences in Sense of Community
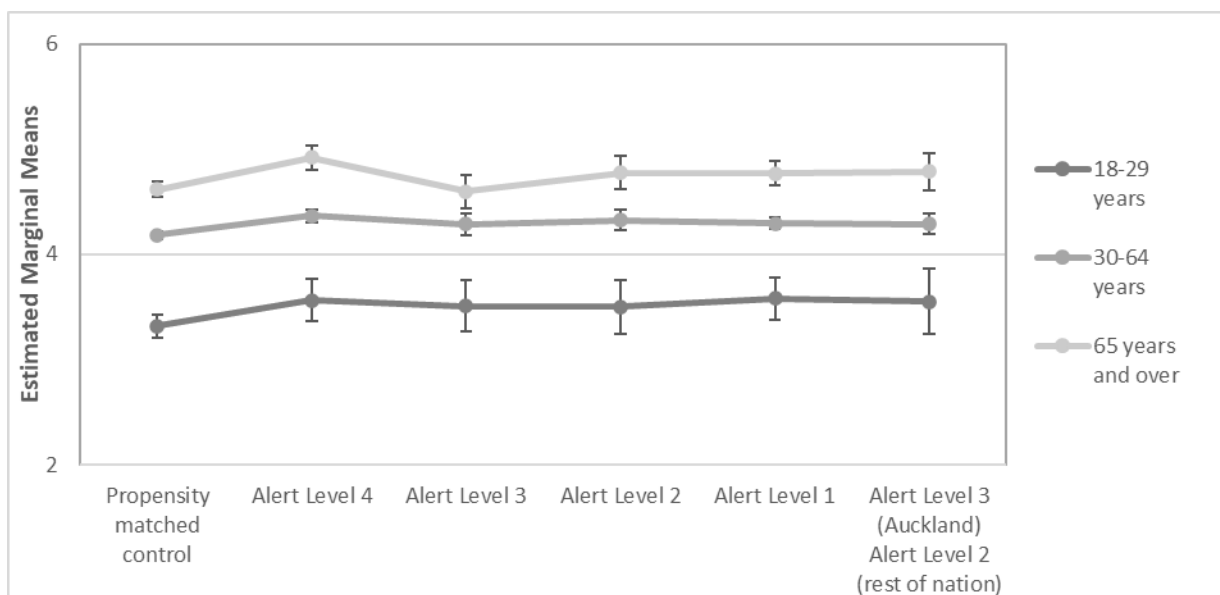
Summary of Differences across Age Groups. Older participants (65+ years) reported greater relationship quality and social connectedness across all measures, whereas younger participants (18-29 years) experienced a lower sense of community in particular. These mean age differences were consistent across Alert Levels.

Summary of Demographic Differences in Personal Relationships and Social Connections

Although there were average differences in the quality of personal relationships and social connections across demographic groups, these typically did not vary across Alert Levels. Two exceptions suggested that European participants were less likely to report the increases in relationship conflict that generally occurred at Level 4 and participants with a health condition or disability were less likely to experience the boosts in community connection that occurred on average during the Alert Levels.

Personal Relationships and Social Connections Conclusion

Overall, the results indicate that the COVID-19 pandemic and Alert Levels were accompanied by challenges to the quality of personal relationships, but benefits to broader social connectedness. People reported greater conflict and lower satisfaction in their personal relationships at Alert Level 4, but relationship satisfaction rebounded by the second outbreak indicating that the relationship strain experienced during Level 4 alleviated as the restrictions eased in New Zealand. Despite these challenges to personal relationships, levels of social support or belongingness did not change. This suggests that Alert Level 4 put pressure on relationships in the home rather than on social connections outside the home. Moreover, New Zealanders reported a greater sense of community in the local neighbourhood across many of the Alert Levels, which may have contributed to the general pattern of resilience in wellbeing. Participants with a health condition or disability, however, were less likely to experience boosts in their community connection. These results suggest that efforts should be directed toward (1) helping New Zealanders sustain the quality of their personal relationships, including reducing conflict in the home, and (2) ensuring all New Zealanders feel connected to the community when enacting restrictions to contain the COVID-19 virus.

The Alert Levels involved changes to both working conditions and employment stability. For people who were able to continue to work, Alert Level 4 and (for many) Level 3 required people to work from home. Working from home may have yielded some benefits, such as more family time and less time commuting. Yet, many challenges likely occurred while working from home, including managing work-family conflict, isolation from colleagues, and additional work stress arising from suddenly working remotely and increased pressure to sustain and demonstrate performance (Allen et al., 2014; Schmid et al., 2020). These conditions can undermine job satisfaction and feelings of being valued by organisations, which may be amplified when organisations under economic threat expect additional investment from employees. Indeed, the pandemic and Alert Level restrictions on businesses posed massive economic threats, including major job losses, changes to the future of many sectors of the economy, and other uncertainties (McKibbin & Fernando, 2020). Between the March and September quarters, the number of people unemployed in New Zealand increased by 31,000 and the number of people underutilised increased by 84,000 (seasonally adjusted figures; Stats NZ, 2020). Such changes in the labour market are likely to reduce job security. To assess these employment and financial outcomes, we examined whether people's job satisfaction, job security, feelings of being valued by their organisation, and frustration over their earnings compared to others (relative deprivation) differed across Alert Levels and the matched control group assessed before the pandemic.

Measures

Job Satisfaction. Participants rated a single item, "How satisfied are you with your current job", on a 7-point scale (1 = not satisfied, 7 = very satisfied).

Job Security. Participants rated a single item, "How secure do you feel in your current job", on a 7-point scale (1 = not secure, 7 = very secure).

Valued by Organisation. Participants rated a single item, "How valued do you feel by your current organisation", on a 7-point scale (1 = not valued, 7 = very valued).

Relative Deprivation. Participants rated two items adapted from Abrams and Grant (2012) on a 7-point scale (1 = strongly disagree; 7 = strongly agree): "I'm frustrated by what I earn relative to other people in NZ" and "I generally earn less than other people in NZ".

Aim 1: General Effects Across Alert Levels

Job Satisfaction. Job satisfaction varied significantly across groups, $F = 3.647$, $p = .003$, $\eta_p^2 = .001$. Compared to the matched control group ($M = 5.283$, 95% CI [5.250, 5.316], $p = .005$),

those who completed the survey in Alert Level 1 ($M = 5.397$, 95% CI [5.343, 5.451]) reported higher levels of job satisfaction.

Graph 78. General Effects on Job Satisfaction
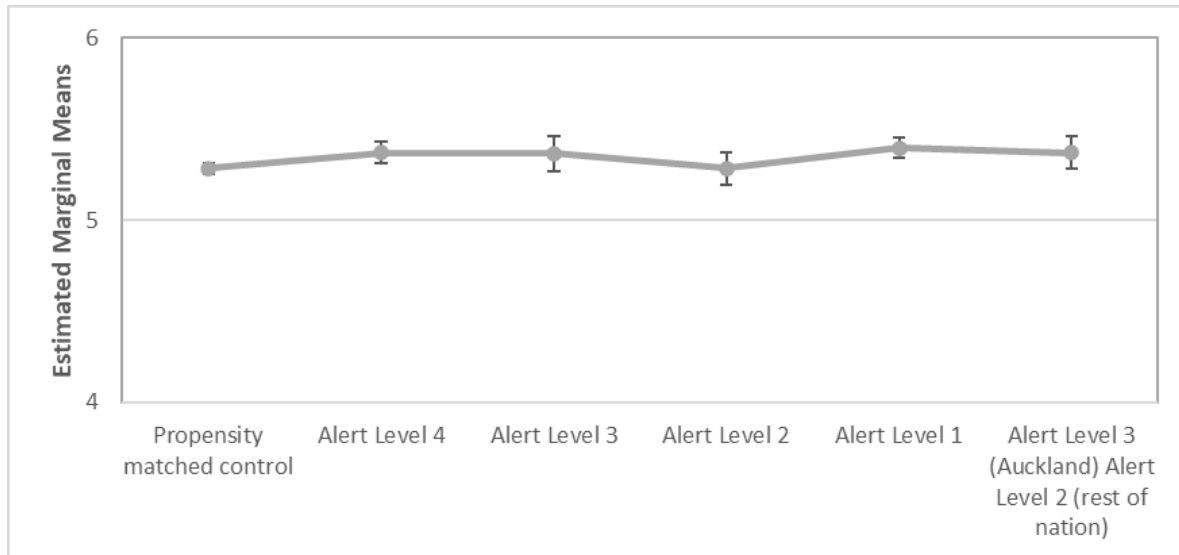
Job Security. Job security varied significantly across groups, F = 17.174, $p < .001$, $\eta_p^2 = .005$. Compared to the matched control group ($M = 5.405$, 95% CI [5.367, 5.442], $ps < .001$), participants felt less secure in their jobs at Alert Level 4 ($M = 5.038$, 95% CI [4.969, 5.107]), Alert Level 3 ($M = 5.110$, 95% CI [5.001, 5.219]), and Alert Level 2 ($M = 5.156$, 95% CI [5.054, 5.258]). Job security tended to rebound across Alert Levels: job security at Alert Level 1 ($M = 5.353$, 95% CI [5.291, 5.415]) was greater than Level 4 ($p < .001$), Level 3 ($p = .003$) and Level 2 ($p = .022$). Job security was also higher at the second outbreak ($M = 5.306$, 95% CI [5.203, 5.409]) than at Alert Level 4 ($p < .001$).

Graph 79. General Effects on Job Security
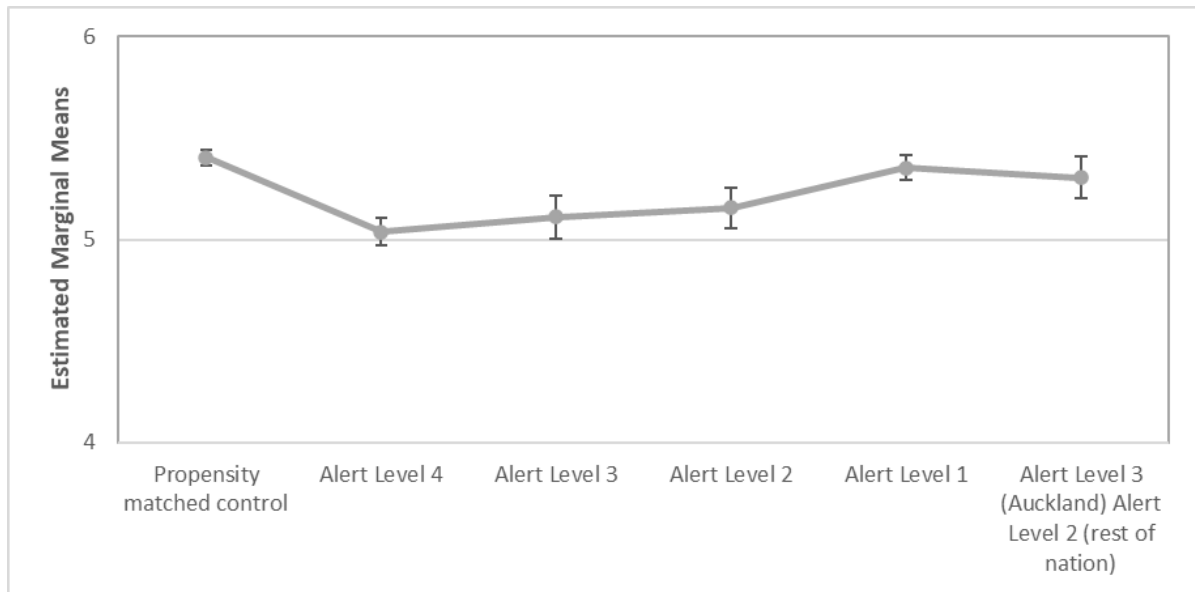
Valued by Organisation. Participants' feelings of being valued by their organisation varied significantly across groups, $F = 3.133$, $p = .008$, $\eta_p^2 = .001$. Compared to the matched control group ($M = 5.130$, 95% CI [5.092, 5.168], participants felt more valued by their organisation at Alert Level 1 ($M = 5.253$, 95% CI [5.191, 5.316], $p = .010$).

Graph 80. General Effects on Valued by Organisation
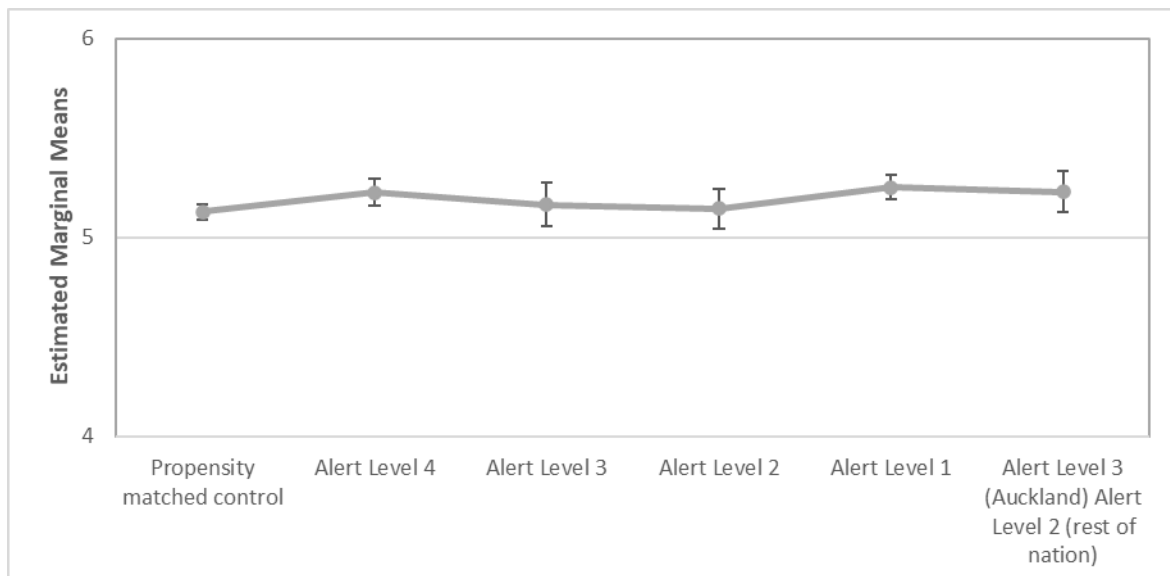
Relative Deprivation. Relative deprivation did not vary across matched control and Alert Level groups, $F = 1.203$, $p = .305$, $\eta_p^2 = .000$.

Graph 81. General Effects on Relative Deprivation
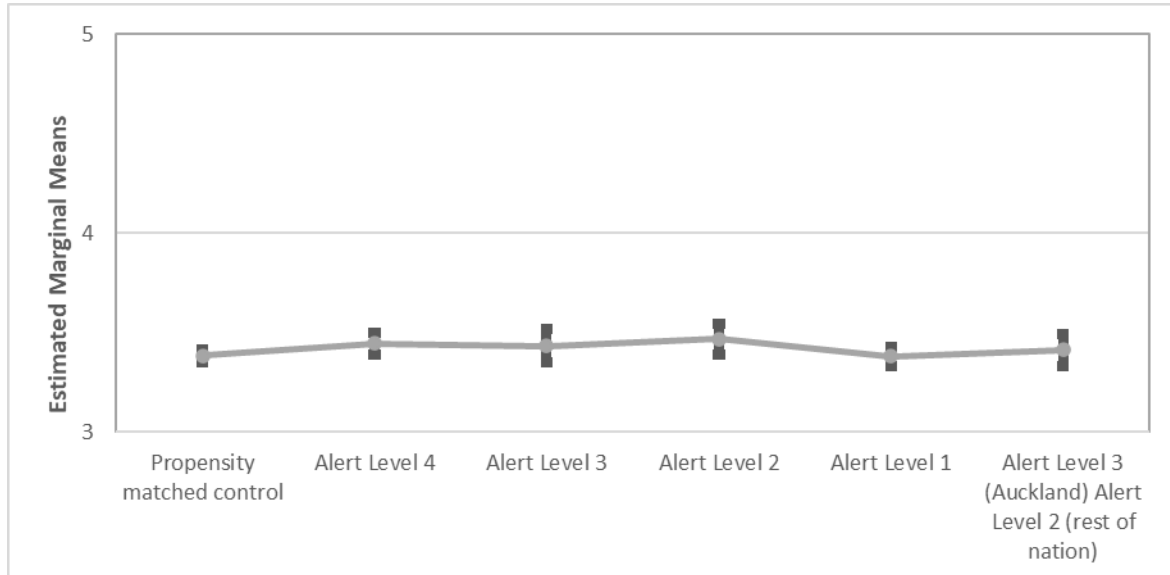
Summary of Employment and Financial Outcomes Across Alert Levels

Participants reported lower job security at Alert Levels 4, 3 and 2 compared to the matched control group assessed prior to the pandemic. However, job security tended to rebound to pre-pandemic levels at Level 1. Moreover, compared to assessments prior to the pandemic, those sampled at Alert Level 1 reported higher levels of job satisfaction and felt more valued by their organisation. These data show that, as COVID-19 was contained in New Zealand, relief from the potential employment and financial costs of the pandemic were accompanied by a boost in job appreciation.

Aim 2: Demographic Differences

This section reports analyses examining whether any effect of Alert Levels differed across six demographic groups: gender, ethnicity, parental status, health condition/disability status, mental health diagnosis, and age.

Differences across Gender

Job Satisfaction. Men and women did not differ in overall job satisfaction, $F = 3.499$, $p = .061$, $\eta_p^2 = .000$, and this effect did not vary across alert levels, $F = 1.888$, $p = .093$, $\eta_p^2 = .000$.

Graph 82. Gender Differences in Job Satisfaction
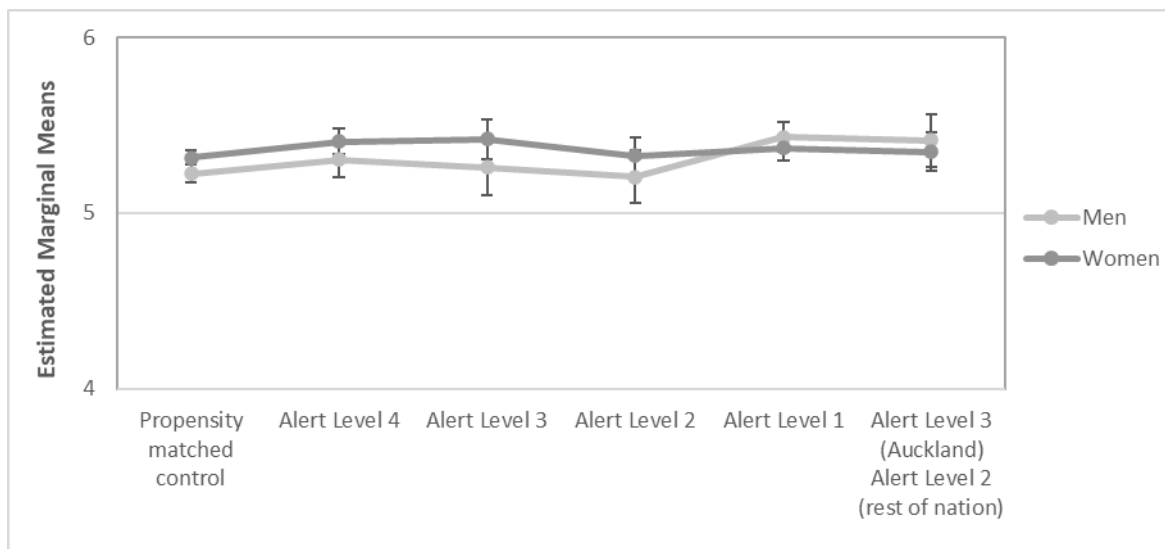
Job Security. Men and women did not differ in job security, $F = 0.993$, $p = .319$, $\eta_p^2 = .000$, and this did not vary across alert levels, $F = 0.511$, $p = .768$, $\eta_p^2 = .000$.

Graph 83. Gender Differences in Job Security

Graph 83. Gender Differences in Job Security
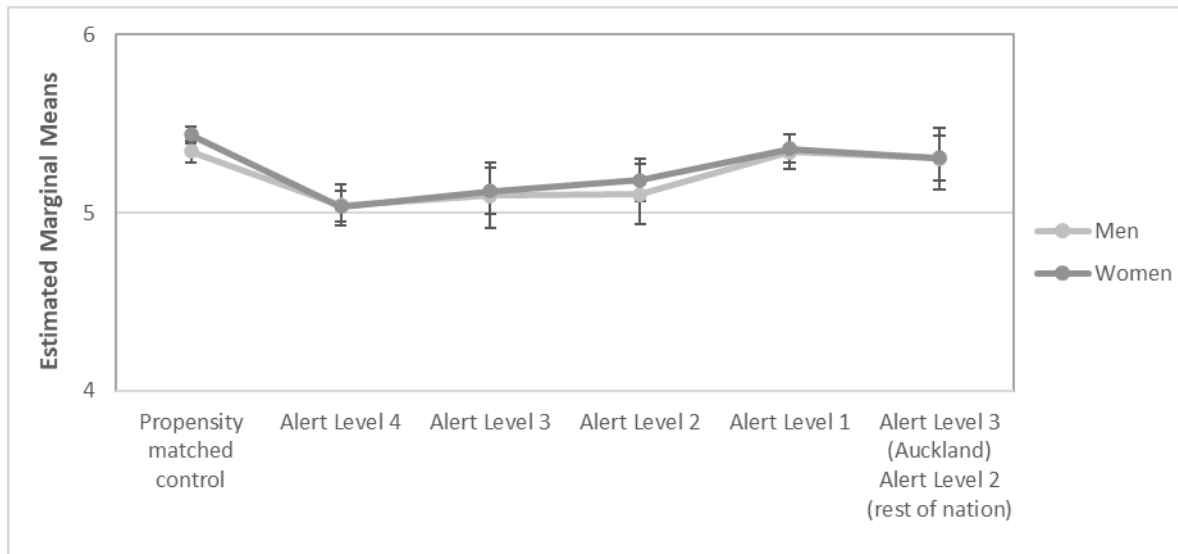
Valued by Organisation. Women felt less valued by their organisation, $F = 4.644$, $p = .031$, $\eta_p^2 = .000$, but this did not vary across alert levels, $F = 0.974$, $p = .432$, $\eta_p^2 = .000$.

Graph 84. Gender Differences in Valued by Organisation

Graph 84. Gender Differences in Valued by Organisation
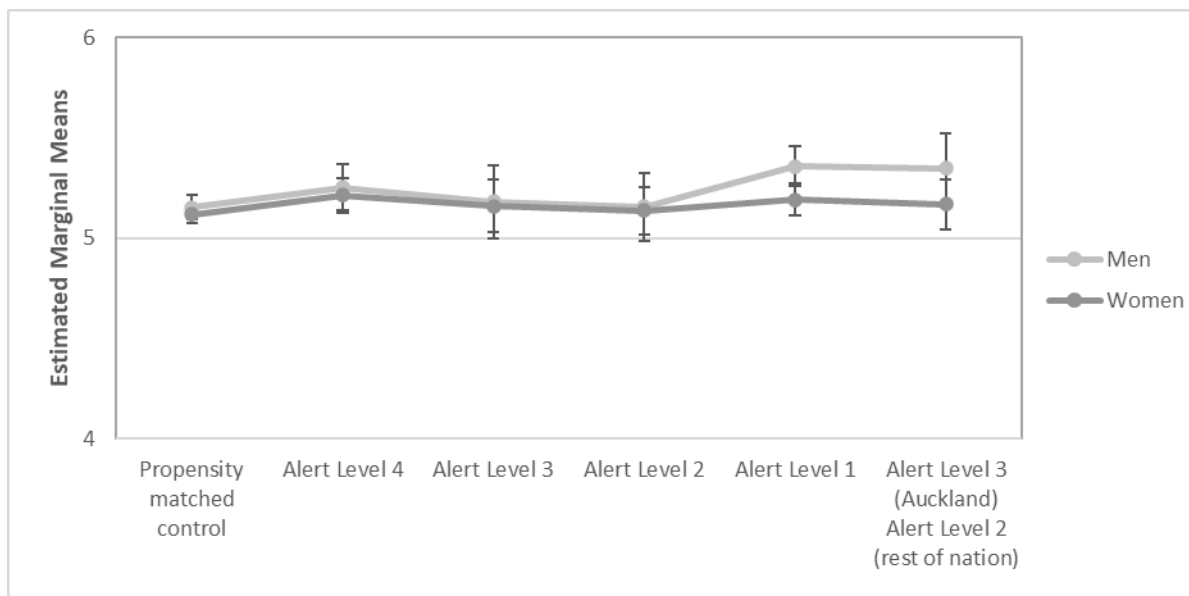
Relative Deprivation. Women reported greater relative deprivation, $F = 46.219$, $p < .001$, $\eta_p^2 = .002$, but this did not vary across alert levels, $F = 1.164$, $p = .324$, $\eta_p^2 = .000$.

Graph 85. Gender Differences in Relative Deprivation
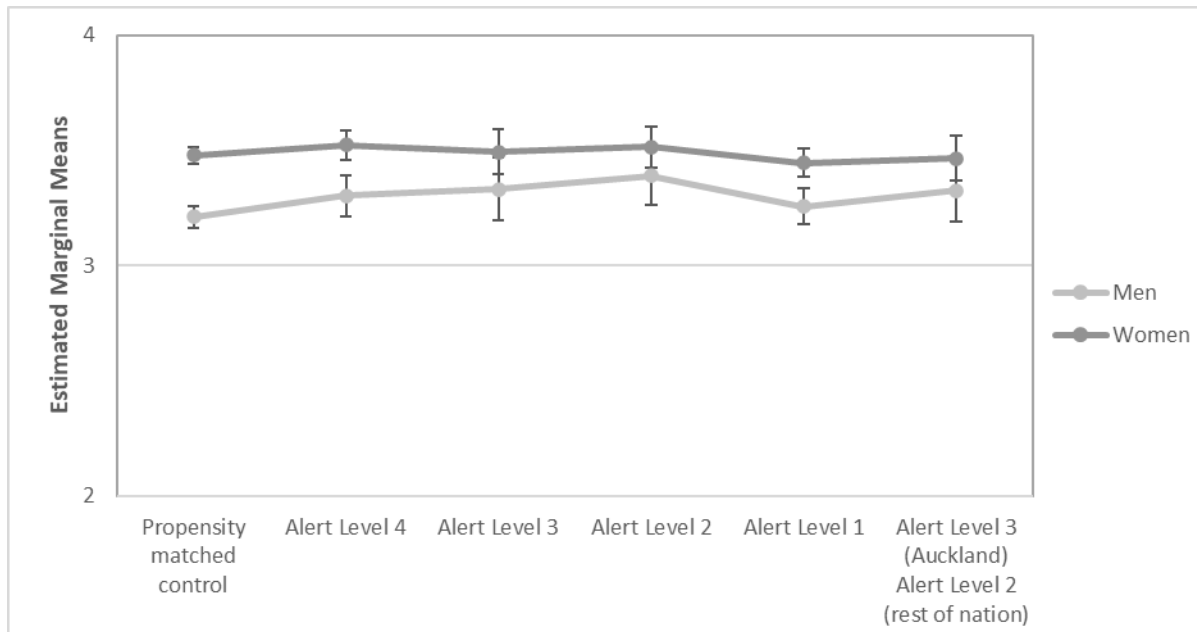
Summary of Differences across Gender. Women felt less valued by their organisation and greater relative deprivation, but gender differences were consistent across Alert Levels.

Differences across Ethnic Groups

Comparisons were made across European, Māori, and Asian/Pacific Islander/Other (as a broad category) due to limited sample size when split across Alert Levels.

Job Satisfaction. There were no differences across ethnic groups, $F = 0.524$, $p = .592$, $\eta_p^2 = .000$, and this did not vary across Alert Levels, $F = 1.172$, $p = .305$, $\eta_p^2 = .001$.

Graph 86. Ethnic Group Differences in Job Satisfaction
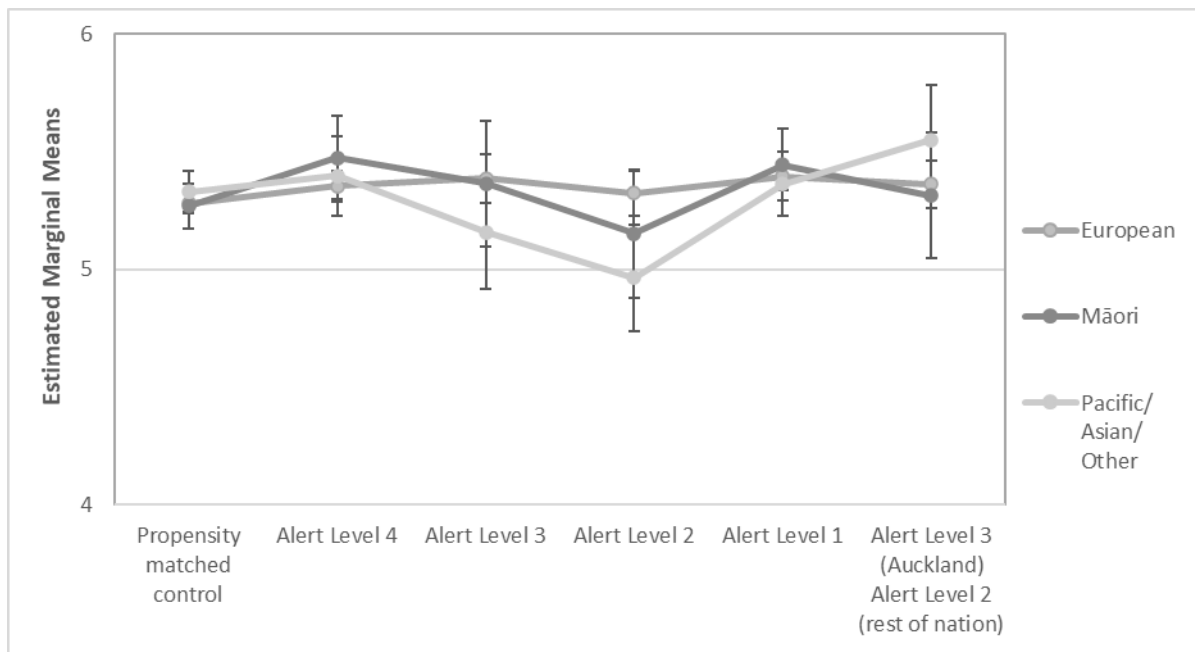
Job Security. Job security significantly differed across ethnic groups, $F = 4.235$, $p = .014$, $\eta_p^2 = .000$, but this was consistent across alert levels, $F = 1.526$, $p = .123$, $\eta_p^2 = .001$.

Graph 87. Ethnic Group Differences in Job Security
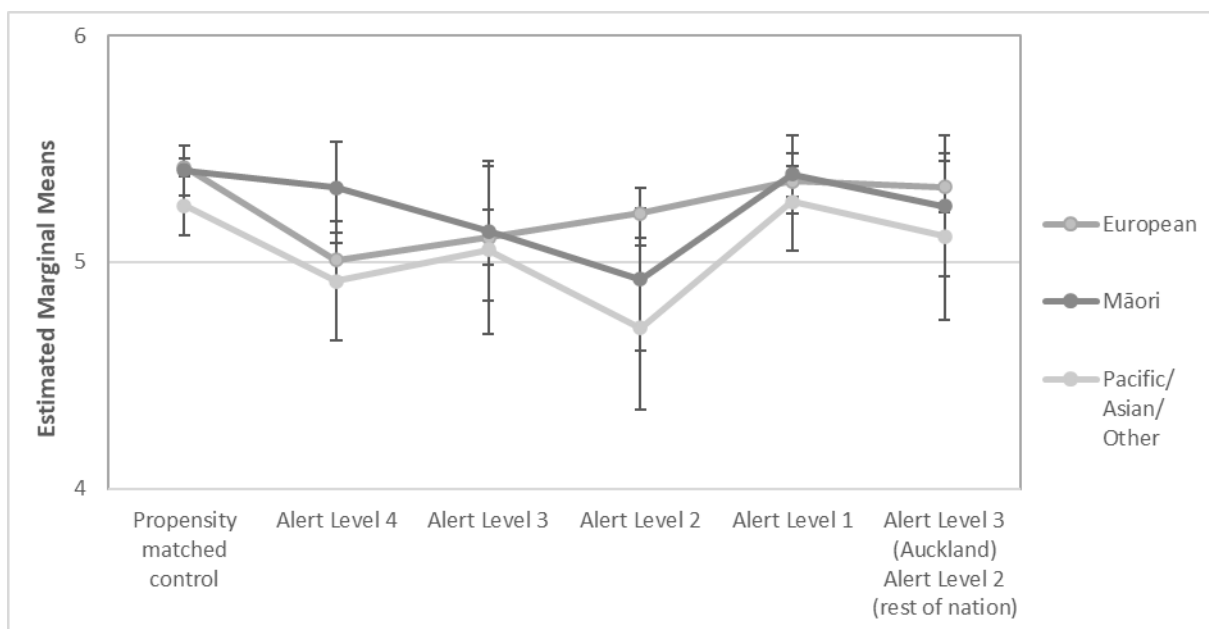
Valued by Organisation. There were significant differences across ethnic groups, $F = 4.043$, $p = .018$, $\eta_p^2 = .000$, which varied across alert levels, $F = 2.113$, $p = .020$, $\eta_p^2 = .001$. Compared to European respondents, people identifying as Pacific, Asian or another non-

Māori ethnic group felt less valued by their organisation at Alert Level 2.

Graph 88. Ethnic Group Differences in Valued by Organisation
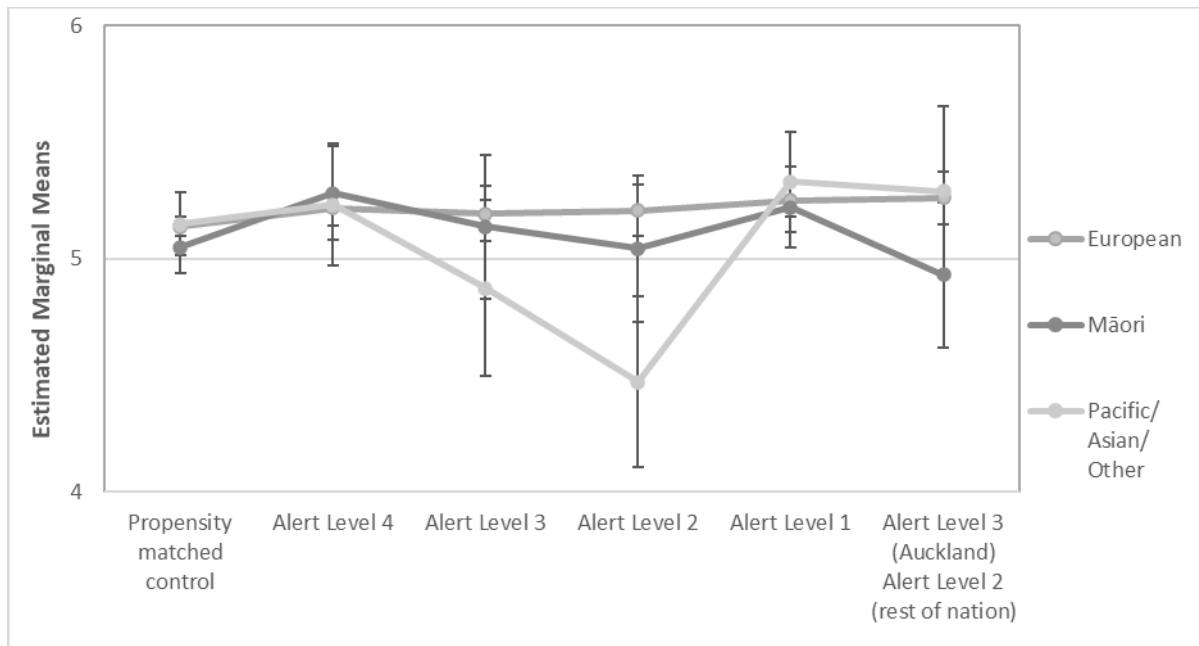
Relative Deprivation. Significant differences across ethnic groups, $F = 15.091$, $p < .001$, $\eta_p^2 = .001$, did not vary across Alert Levels, $F = 1.095$, $p = .362$, $\eta_p^2 = .000$.

Graph 89. Ethnic Group Differences in Relative Deprivation
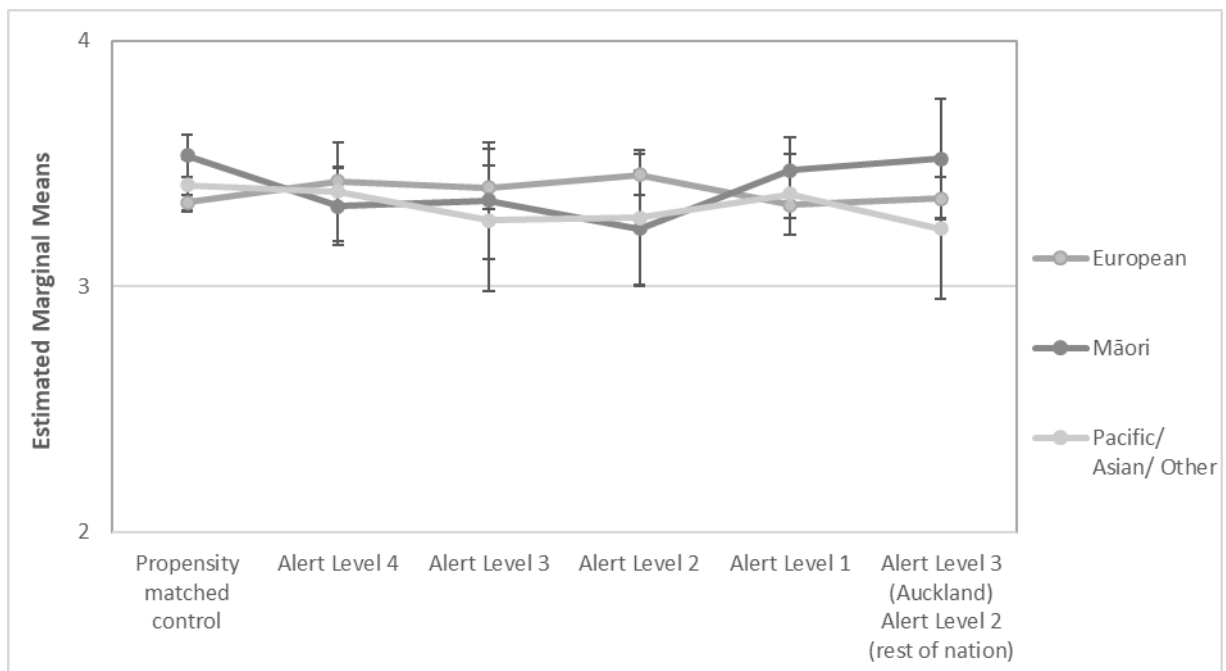
Summary of Differences across Ethnic Groups. General differences occurred across ethnic groups in financial and employment outcomes, but these did not vary across Alert Levels. One exception indicated that, compared to European respondents, people identifying as Pacific, Asian or another non-Māori ethnic group felt less valued by their organisation during Alert Level 2, when people may have been returning to work from stricter lockdowns.

Differences across Parental Status

Job Satisfaction. Parents reported greater job satisfaction, $F = 17.908$, $p < .001$, $\eta_p^2 = .001$, and this did not vary across Alert Levels, $F = 0.871$, $p = .500$, $\eta_p^2 = .000$.

Graph 90. Parental Status Differences in Job Satisfaction
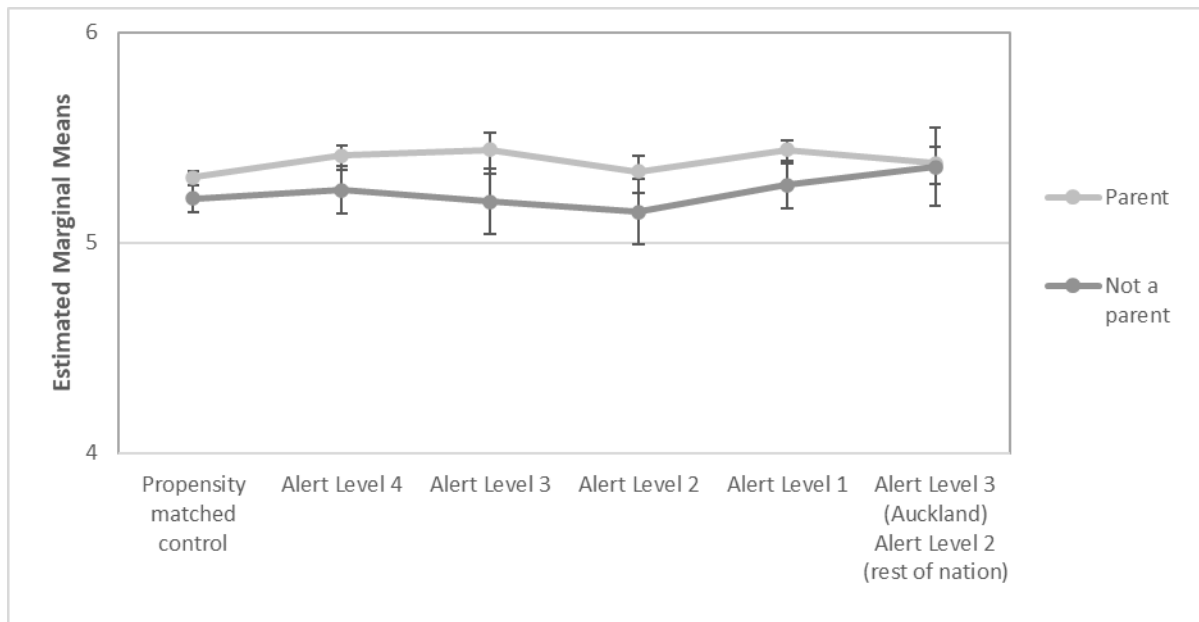
Job Security. Parents reported greater job security, $F = 19.469$, $p < .001$, $\eta_p^2 = .001$, and this did not vary across Alert Levels, $F = 0.448$, $p = .815$, $\eta_p^2 = .000$.

Graph 91. Parental Status Differences in Job Security
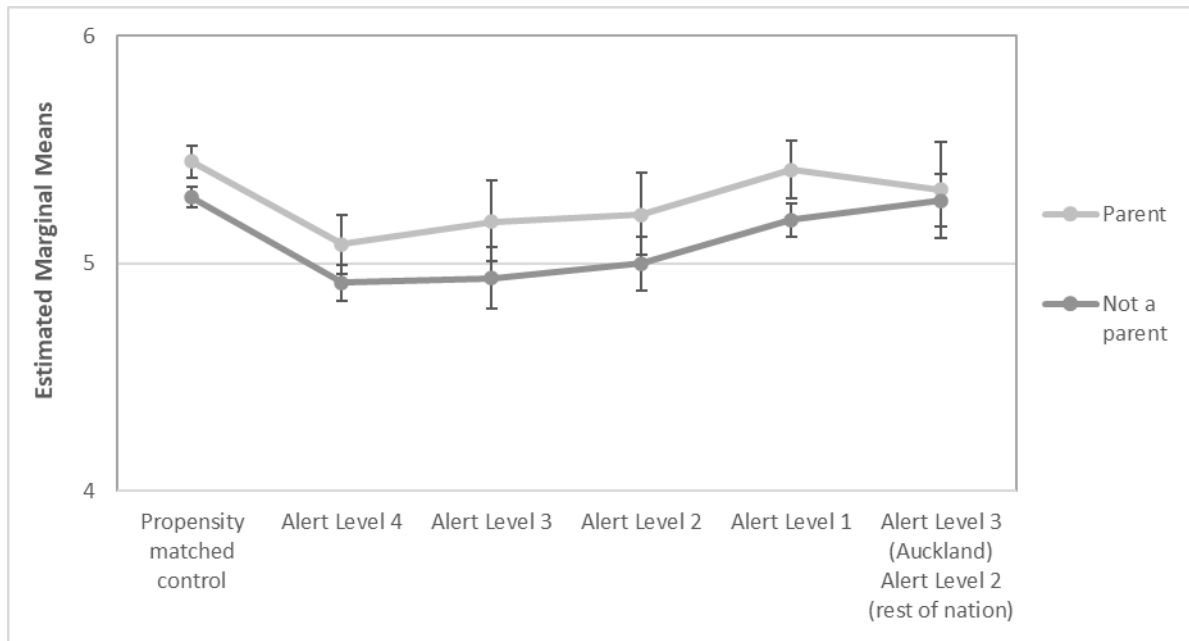
Valued by Organisation. Parents reported feeling more valued, $F = 3.885$, $p = .049$, $\eta_p^2 = .000$, and this did not vary across Alert Levels, $F = 0.647$, $p = .664$, $\eta_p^2 = .000$.

Graph 92. Parental Status Differences in Valued by Organisation
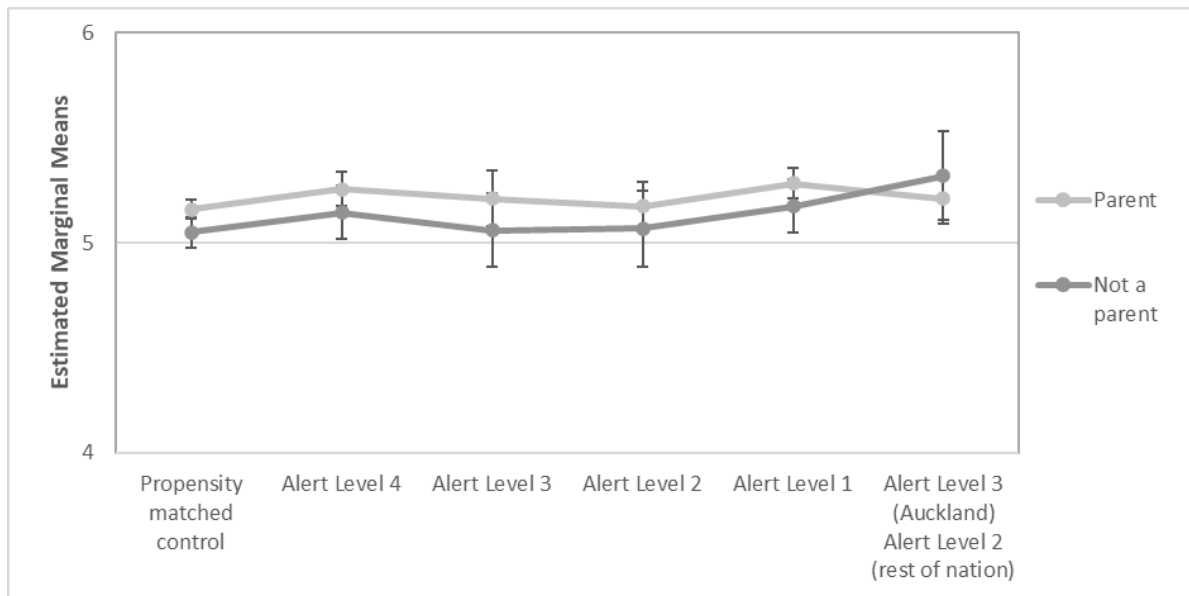
Relative Deprivation. Participants who were not parents reported feeling more frustrated by their relative earnings, $F = 24.704$, $p < .001$, $\eta_p^2 = .001$, and this varied across Alert Levels, $F = 2.352$, $p = .038$, $\eta_p^2 = .000$. The pattern indicates that people who were not parents felt greater relative deprivation particularly at Alert Level 3.

Graph 93. Parental Status Differences in Relative Deprivation
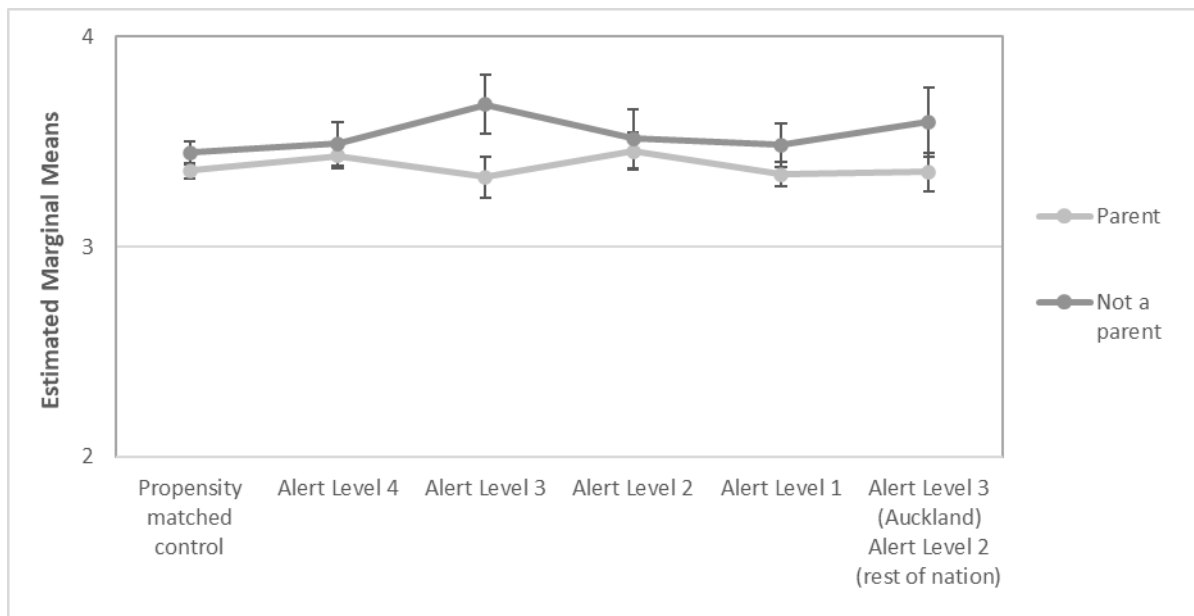
Summary of Differences across Parental Status. Parents reported better financial and employment outcomes, which did not generally vary across Alert Levels. The one exception indicated that people who were not parents felt greater relative deprivation particularly at Alert Level 3, perhaps due to variation in the opportunity to resume typical employment.

Differences across Health Condition/Disability Status

Job Satisfaction. Participants with a health condition or disability reported lower job satisfaction, $F = 54.771$, $p < .000$, $\eta_p^2 = .003$, and this did not vary across Alert Levels, $F = 0.863$, $p = .505$, $\eta_p^2 = .000$.

Graph 94. Health Condition/Disability Status Differences in Job Satisfaction
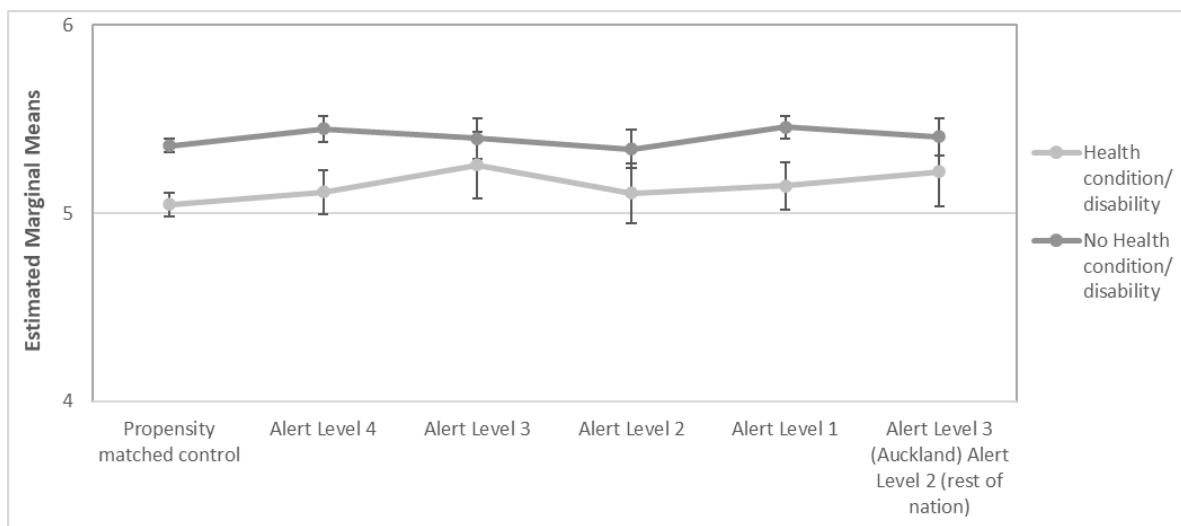
Job Security. Participants with a health condition or disability reported lower security, $F = 59.436$, $p < .000$, $\eta_p^2 = .003$, across Alert Levels, $F = 1.509$, $p = .183$, $\eta_p^2 = .000$.

Graph 95. Health Condition/Disability Status Differences in Job Security
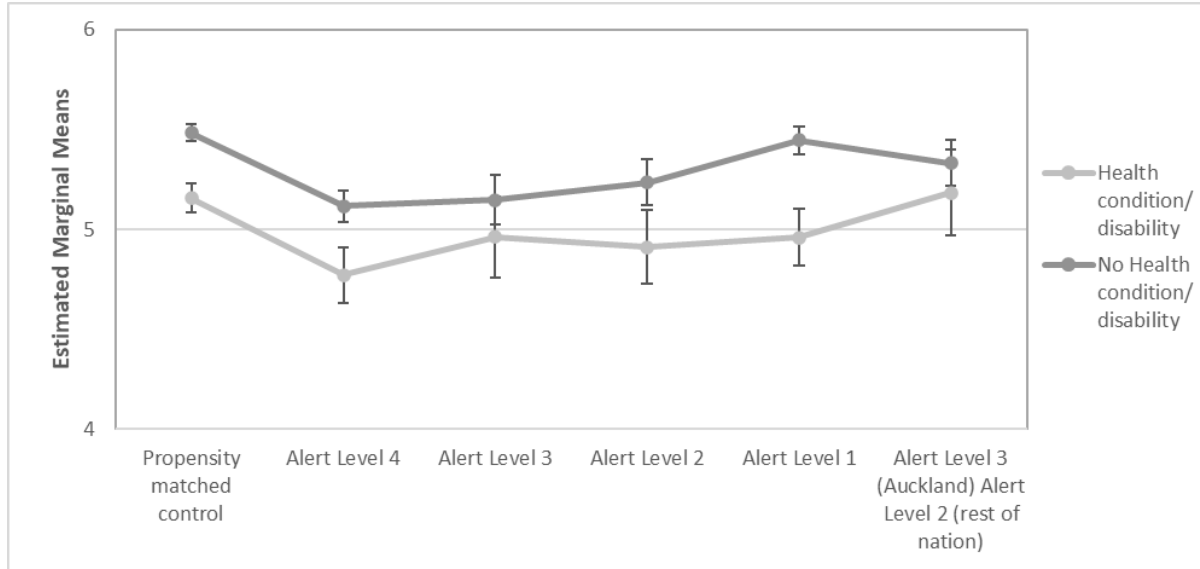
Valued by Organisation. Participants with a health condition or disability felt less valued, $F = 46.172$, $p < .000$, $\eta_p^2 = .003$, across Alert Levels, $F = 0.476$, $p = .795$, $\eta_p^2 = .000$.

Graph 96. Health Condition/Disability Status Differences in Valued by Organisation
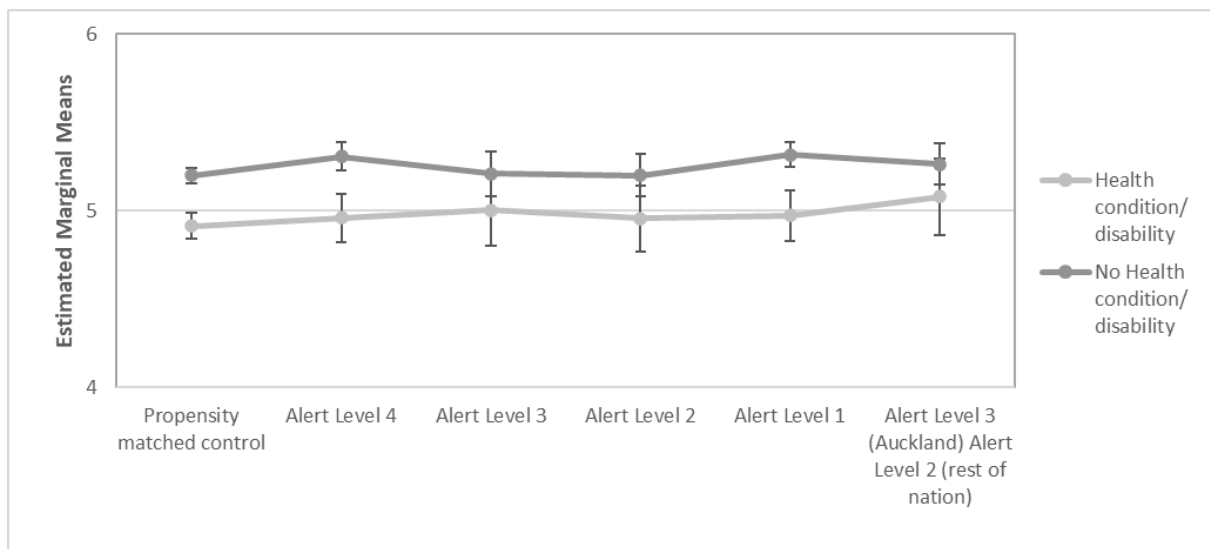
Relative Deprivation. Participants with a health condition or disability felt more frustrated by their relative earnings compared to others, $F = 340.464$, $p < .000$, $\eta_p^2 = .014$, and this did not vary across Alert Levels, $F = 0.083$, $p = .995$, $\eta_p^2 = .000$.

Graph 97. Health Condition/Disability Status Differences in Relative Deprivation
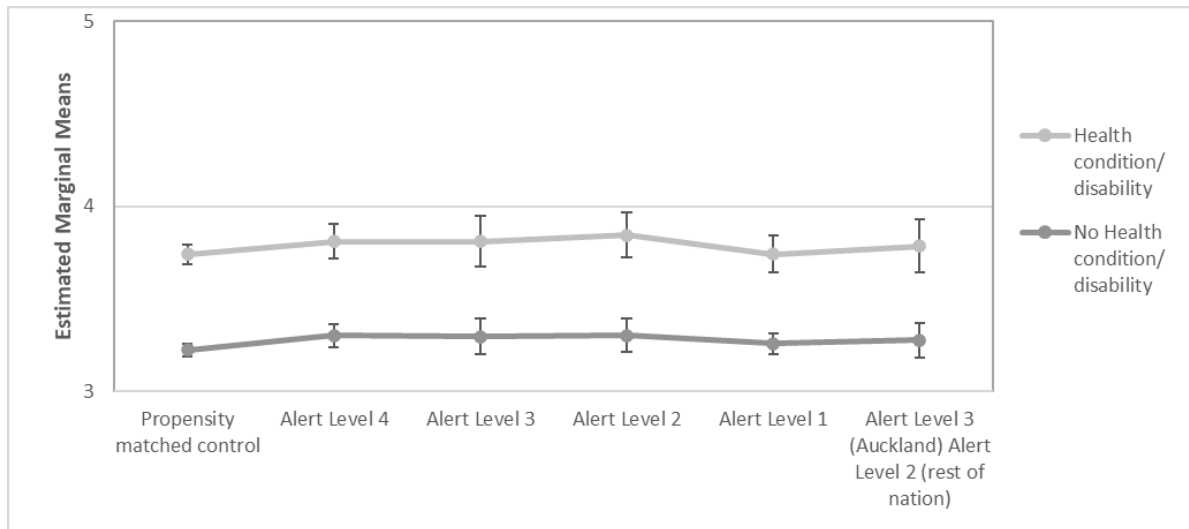
Summary of Differences across Health Condition/Disability Status. Participants with a health condition or disability reported poorer employment and financial outcomes, but these differences did not vary across Alert Levels and thus were not exacerbated by the pandemic.

Differences across Mental Health Diagnosis

Job Satisfaction. Participants with a mental health diagnosis reported lower job satisfaction, $F = 66.934$, $p < .000$, $\eta_p^2 = .004$, and this did not vary across Alert Levels, $F = .701$, $p = .622$, $\eta_p^2 = .000$.

Graph 98. Mental Health Diagnosis Status Differences in Job Satisfaction
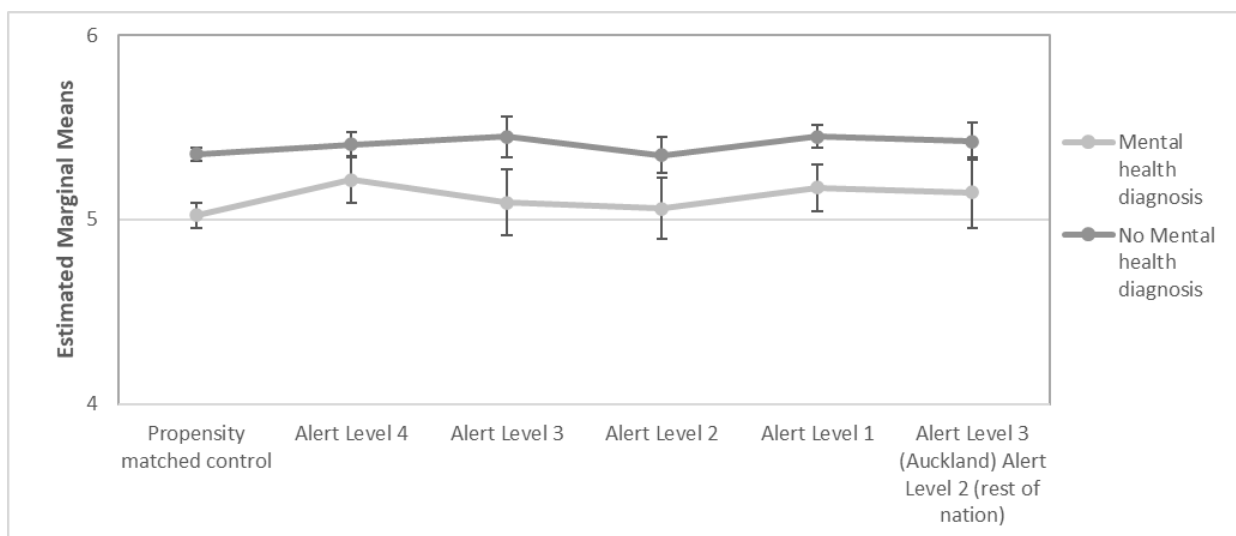
Job Security. Participants with a mental health diagnosis reported lower job security, $F = 103.835$, $p < .000$, $\eta_p^2 = .006$, across Alert Levels, $F = 0.510$, $p = .769$, $\eta_p^2 = .000$.

Graph 99. Mental Health Diagnosis Status Differences in Job Security
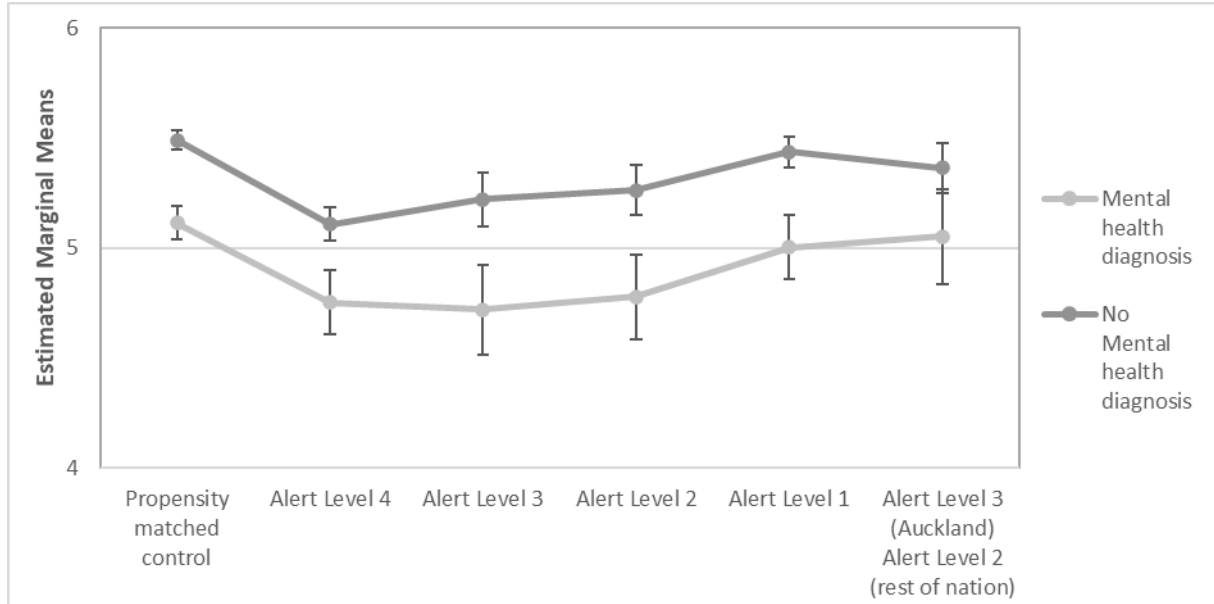
Valued by Organisation. Participants with a mental health diagnosis felt less valued, $F = 67.211$, $p < .000$, $\eta_p^2 = .004$, across Alert Levels, $F = 0.740$, $p = .594$, $\eta_p^2 = .000$.

Graph 100. Mental Health Diagnosis Status Differences in Valued by Organisation
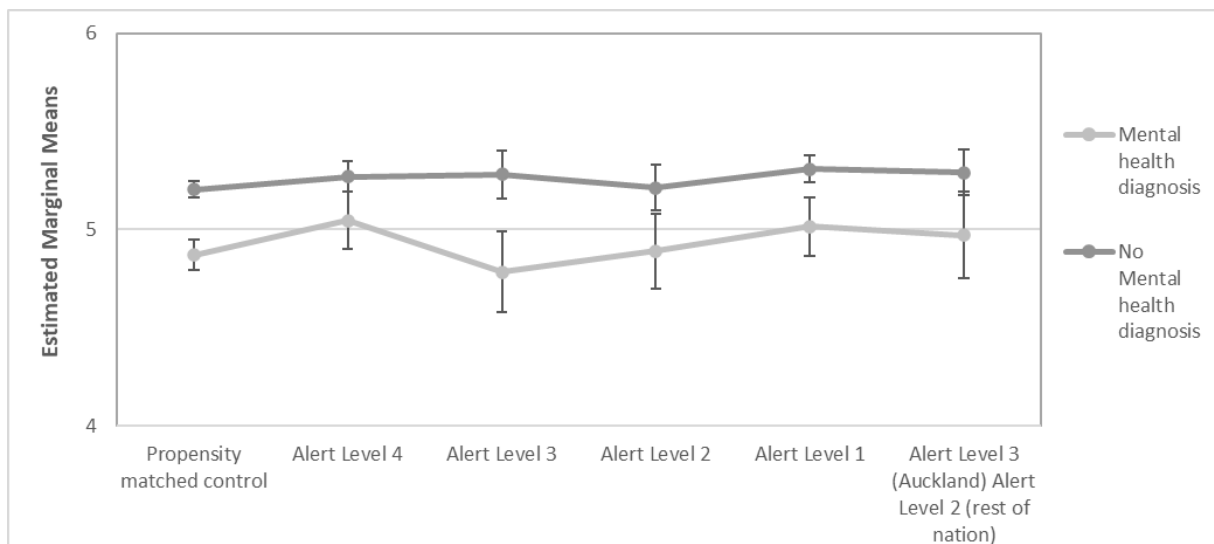
Relative Deprivation. Participants with a mental health diagnosis felt more frustrated by their relative earnings, $F = 286.402$, $p < .000$, $\eta_p^2 = .012$, and this did not vary across Alert Levels, $F = 1.050$, $p = .386$, $\eta_p^2 = .000$.

Summary of Differences across Mental Health Diagnosis. Participants who reported a mental health diagnosis reported poorer employment and financial outcomes, but these differences did not vary across Alert Levels and thus were not exacerbated by the pandemic.

Differences across Age Groups

We present comparisons across three age groups: 18-29, 30-64 and 65 + years. See Appendix II for consistent patterns across 18-24, 25-34, 35-44, 45-54, 55-64 and 65+ years.

Job Satisfaction. Older participants (65+) reported greater job satisfaction, $F = 76.392$, $p < .000$, $\eta_p^2 = .009$, but these varied across Alert Levels, $F = 1.916$, $p = .038$, $\eta_p^2 = .001$, as 18-29 year olds reported lower job satisfaction at Alert Level 2.

Graph 102. Age Differences in Job Satisfaction
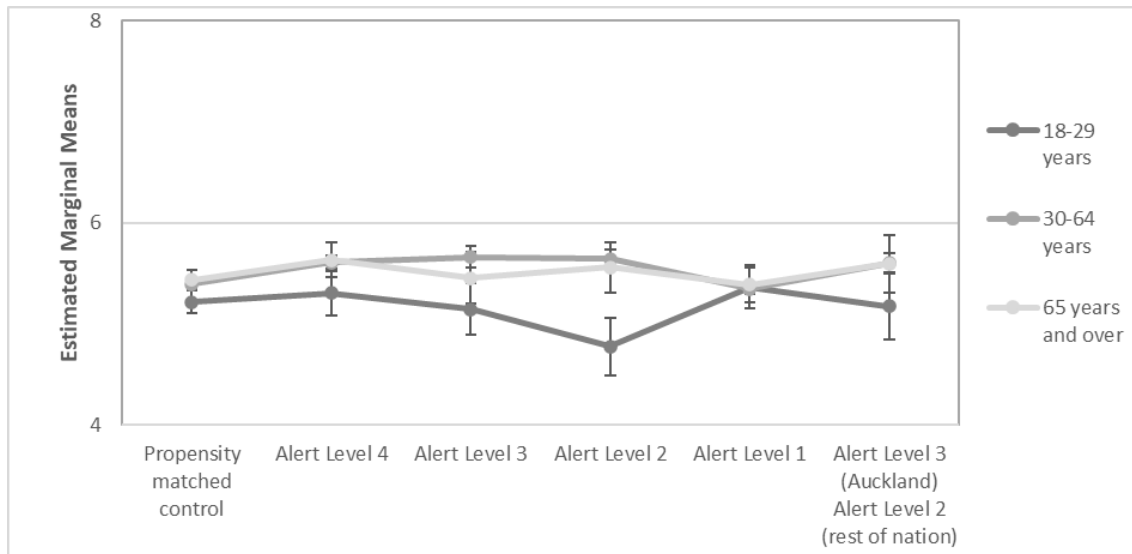
Job Security. Job security significantly differed across age groups, $F = 22.856$, $p < .000$, $\eta_p^2 = .003$, but this did not vary across Alert Levels, $F = 1.509$, $p = .129$, $\eta_p^2 = .001$.

Graph 103. Age Differences in Job Security
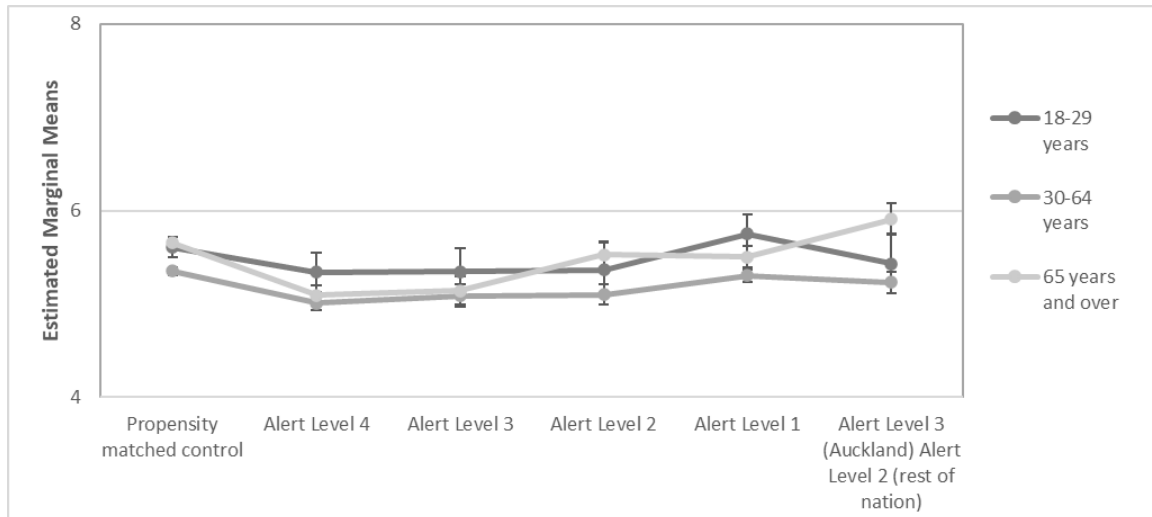
Valued by Organisation. Older participants (65+) felt more valued, $F = 47.655$, $p < .000$, $\eta_p^2 = .005$, across Alert Levels, $F = 1.043$, $p = .403$, $\eta_p^2 = .001$.

Graph 104. Age Differences in Valued by Organisation
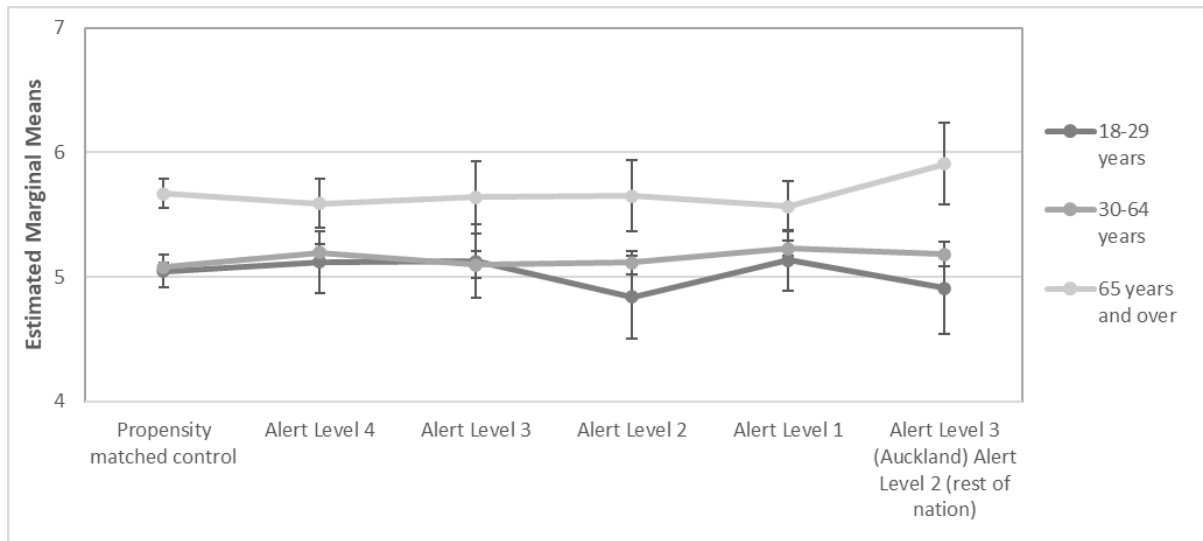
Relative Deprivation. 18-29 year olds felt more frustrated by their relative earnings, $F = 75.657$, $p < .000$, $\eta_p^2 = .006$, across Alert Levels, $F = 1.180$, $p = .298$, $\eta_p^2 = .000$.

Graph 105. Age Differences in Relative Deprivation
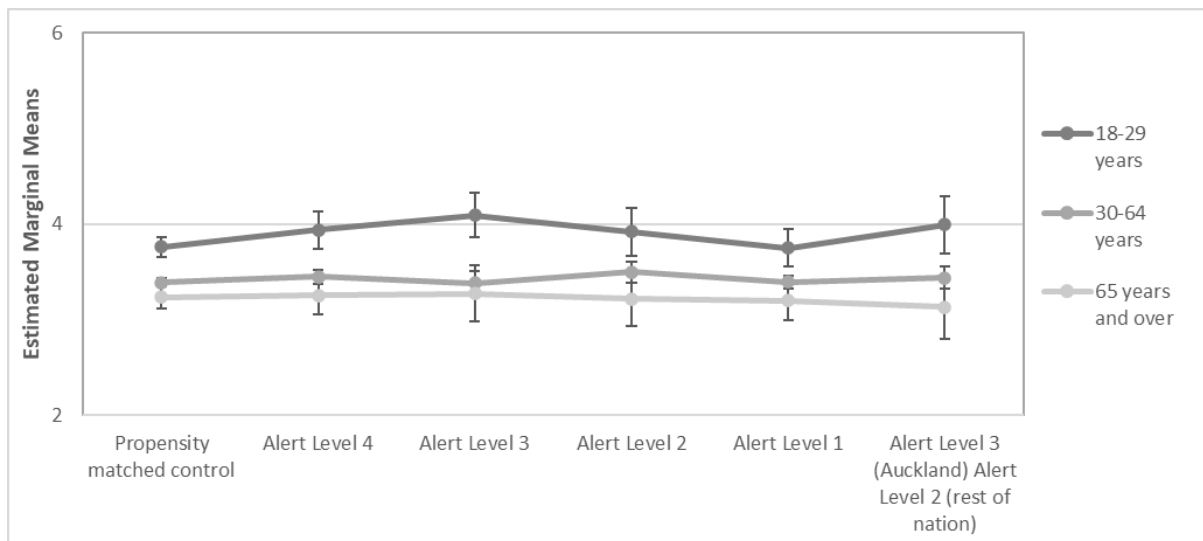
Summary of Differences across Age Groups. Older participants (65 +) felt more satisfied with their job and more valued by their organisation, whereas younger participants (18-29 years) felt more frustrated by their relative earnings. Age differences were consistent across Alert Levels, with the exception that younger participants (18-29 years) exhibited even lower job satisfaction at Alert Level 2 when typical employment was expected to resume.

Summary of Demographic Differences in Employment and Financial Outcomes

Women and participants with a health condition, disability or mental health diagnosis reported poorer employment and financial outcomes, whereas parents and older participants (65+) reported better employment and financial outcomes. These demographic differences were consistent across Alert Levels and thus were not exacerbated by the pandemic, with three exceptions. Compared to European respondents, people identifying as Pacific, Asian or another non-Māori ethnic group felt less valued by their organisation at Alert Level 2. People who were not parents felt greater relative deprivation, particularly at Alert Level 3. Younger participants (18-29 years) also reported even lower job satisfaction at Alert Level 2. These effects at Alert Levels 3 and 2 indicate that some groups may be more vulnerable due to variation in the opportunity or expectation to resume typical employment.

Employment and Financial Outcomes Conclusion

The COVID-19 pandemic and associated restrictions at Alert Levels 4, 3 and 2 were accompanied by drops in job security. Yet, job security tended to rebound at Level 1, when participants also reported higher levels of job satisfaction and feeling more valued by their organisation compared to pre-pandemic levels. This pattern indicates that the potential job and financial costs of the pandemic that were alleviated by New Zealand's elimination of COVID-19 fostered a boost in job appreciation. However, there was some tentative evidence that younger participants and those identifying as Pacific, Asian or another non-Māori ethnic group experienced poorer outcomes at Alert Levels 3 and 2. These results indicate that addressing variation in the opportunity to resume employment at different stages of restrictions may help sustain the economic well-being of New Zealanders.

PERCEIVED DISCRIMINATION

COVID-19 and efforts to contain its spread changed people's daily routines and how social groups interacted with each other, which may alter perceptions of discrimination. First, the COVID-19 pandemic could have increased perceptions of gender-based discrimination. Job loss has been unequally distributed across men and women (Dang & Nguyen, in press). Between the March and September quarters, the number of women unemployed in New Zealand increased by 19,000 versus 11,000 for men and the number of women underutilised increased by 48,000 compared to 36,000 for men (seasonally adjusted figures; Stats NZ, 2020). One reason for this disproportionate effect on women is that COVID-19 affected industries differently. For example, many of the jobs lost by women involved employment in tourism industries. Moreover, relevant to women's greater loss of employment and gender-based discrimination, the pandemic exacerbated inequities in the division of labour. Women performed more domestic labour before the pandemic, even when both women and men were employed outside the home (Fuwa, 2004; Greenstein, 2009). Research during the pandemic in Australia (Craig & Churchill, 2020), the US (Carlson et al., 2020) and in New Zealand (Waddell et al., 2020) indicate that these inequities continue despite lockdowns providing women and men more opportunity to share housework and parenting responsibilities. Thus, women have shouldered more of the increased need to balance paid work, domestic labour and increased childcare and schooling at home during the Alert Levels.

Pandemics can also inflame intergroup relations by increasing the salience of scarce resources. Research within social psychology reveals that, as resource scarcity increases, so does racial and ethnic discrimination (Krosch et al., 2017). On the supply-side of economics, drops in the value of basic commodities—a threat during the pandemic given New Zealand's dependence on dairy exports—predict increases in violence between groups (e.g., Hovland & Sears, 1940; c.f. Hepworth & West, 1988). Also, concern about disease increases people's tendency to categorise others as outgroup members (Makhanova et al., 2015), a known predictor of discrimination (see Tajfel et al., 1971). Accordingly, minorities' experiences with discrimination increased markedly since the start of the COVID-19 pandemic (Lee & Waters, in press). Together, these factors could have increased ethnic-based discrimination during the Alert Levels.

Finally, given that efforts to contain the spread of COVID-19 included restrictions on the size

of gatherings, religious communities may have felt particularly targeted by the Alert Level restrictions. Moreover, a number of highly salient events increased attention on religion during the pandemic. For example, a church in South Korea was found liable for a super-spreader event that infected at least 5,200 (Osborne, 2020). Data from The Netherlands also showed that the number of patients hospitalised with COVID-19 in cities correlated strongly with church attendance (Vermeer & Kregting, 2020). Events like these focused attention on religion during the pandemic and could have increased religious-based discrimination.

Measures

Gender-based Discrimination. Respondents rated their agreement with this one item: "I feel that I am often discriminated against because of my gender" (1 = strongly disagree; 7 = strongly agree; Stronge et al., 2016).

Ethnic-based Discrimination. Respondents rated their agreement with this one item: "I feel that I am often discriminated against because of my ethnicity" (1 = strongly disagree; 7 = strongly agree; Stronge et al., 2016).

Religious-based Discrimination. Respondents rated their agreement with this one item: "I feel that I am often discriminated against because of my religious/spiritual beliefs" (1 = strongly disagree; 7 = strongly agree; Stronge et al., 2016).

Aim 1: General Effects Across Alert Levels

Gender-based Discrimination. Gender-based discrimination varied significantly across groups, $F = 8.151$, $p < .001$, $\eta_p^2 = .002$. Participants in Alert Level 4 ($M = 2.848$, 95% CI [2.790, 2.905], $p < .001$), Alert Level 3 ($M = 2.874$, 95% CI [2.785, 2.962], $p = .003$), and Alert Level 2 ($M = 2.880$, 95% CI [2.798, 2.963], $p = .001$) reported more gender-based discrimination than did those in the matched control group ($M = 2.685$, 95% CI [2.653, 2.718]). Those in Alert Level 4, Alert Level 3, and Alert Level 2 also reported more gender-based discrimination than did those in Alert Level 1 (ps < .001).

Graph 106. General Effects on Gender-based Discrimination
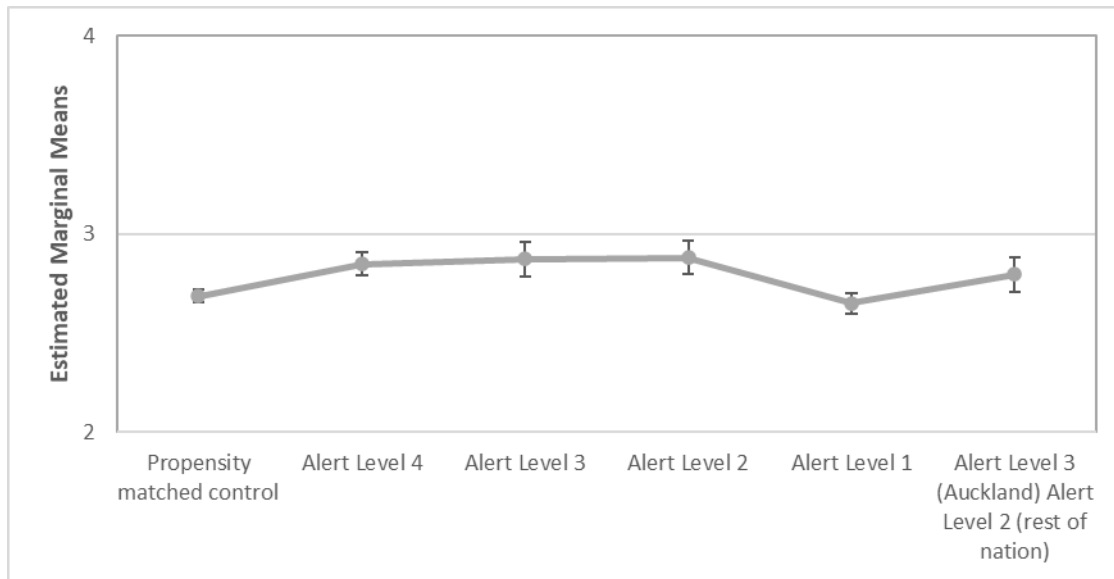
Ethnic-based Discrimination. Ethnic-based discrimination varied significantly across groups, $F = 3.839$, $p = .002$, $\eta_p^2 = .001$. Relative to the matched control group ($M = 1.895$, 95% CI [1.867, 1.922]), those in Alert Level 4 ($M = 1.984$, 95% CI [1.935, 2.032], $p < .043$) and Alert Level 1 ($M = 1.994$, 95% CI [1.950, 2.039], $p = .002$) reported more discrimination.

Graph 107. General Effects on Ethnic-based Discrimination
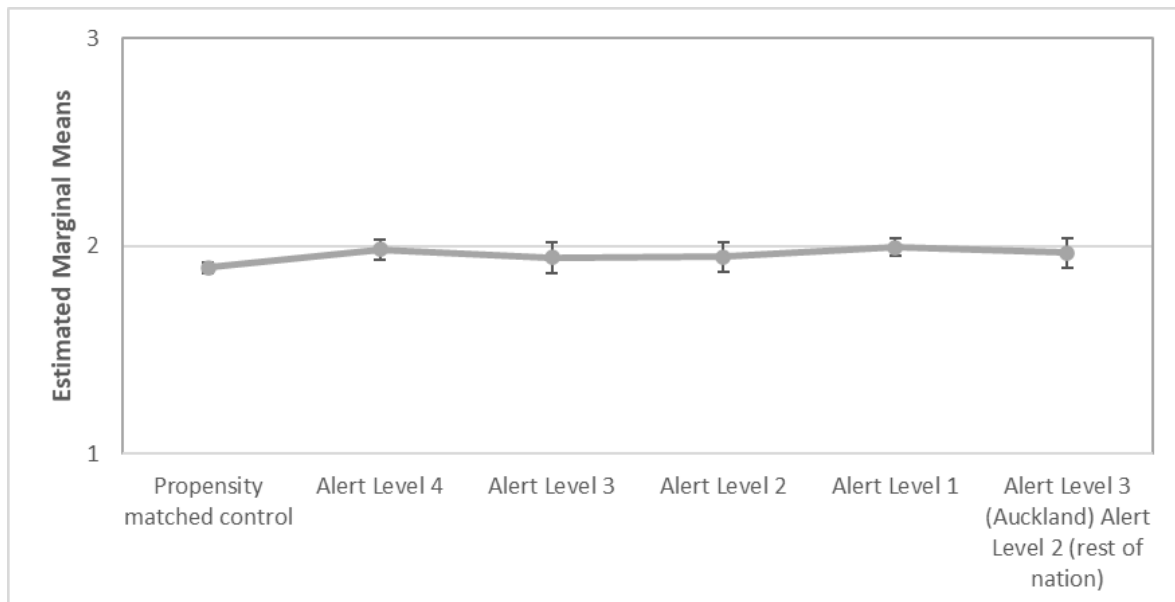
Religious-based Discrimination. Religious-based discrimination varied significantly across groups, $F = 3.805$, $p = .002$, $\eta_p^2 = .001$. Those in Alert Level 4 ($M = 2.056$, 95% CI [2.006, 2.106], $p = .036$) and Alert Level 3 ($M = 2.104$, 95% CI [2.026, 2.181], $p = .020$) reported more religious-based discrimination than did those in the matched control group ($M = 1.962$, 95% CI [1.933, 1.991]). Those in Alert Level 3 also tended to report more religious-based discrimination than did those in Alert Level 1 ($M = 1.954$, 95% CI [1.908, 2.000], $p = .022$).

Graph 108. General Effects on Religious-based Discrimination

Summary of General Effects of Alert Levels on Perceived Discrimination

Reports of gender-, ethnic, and religious-based discrimination increased slightly at Alert Level 4 relative to the matched control group. Although heightened levels of gender-based discrimination persisted through Alert Level 3 and Alert Level 2, ethnic- and religious-based discrimination returned to levels seen among the matched control group at Alert Level 3. Ethnic-based discrimination increased again at Alert Level 1. Together, these results show that perceived discrimination increased during the challenges of the most restrictive Alert Level 4. However, gender-based discrimination continued across Alert Levels 3 and 2 when the lockdowns required people to balance family life and employment in the home, whereas ethnic-based discrimination abated and then re-emerged at Level 1, as family, employment and broader social interactions returned to normal.

Aim 2: Demographic Differences

The next section examines whether any effect of Alert Levels differed across six demographic groups: gender, ethnicity, parental status, health condition/disability status, and mental health diagnosis.

Differences across Gender

Gender-based Discrimination. Women reported more gender-based discrimination, $F = 1545.321$, $p < .001$, $\eta_p^2 = .060$, but this difference varied across Alert Levels, $F = 5.697$, $p < .001$, $\eta_p^2 = .001$. Whereas men's reports were stable across Alert Levels, women reported more gender-based discrimination at Alert Levels 4- 2, and during the second outbreak relative to the matched control group.

Graph 109. Gender Differences in Gender-based Discrimination
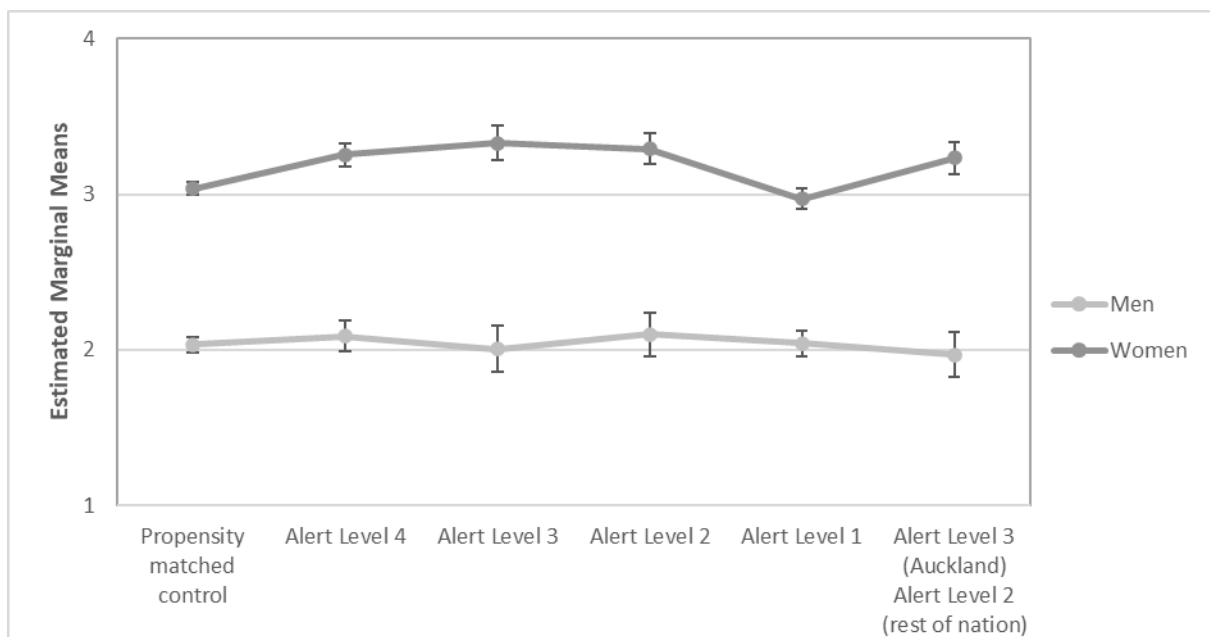
Ethnic-based Discrimination. Men reported more ethnic-based discrimination, $F = 130.715$, $p < .001$, $\eta_p^2 = .005$, but this varied across Alert Levels, $F = 2.986$, $p = .011$, $\eta_p^2 = .001$. Whereas women's reports were stable across Alert Levels, men reported more ethnic-based discrimination at Alert Levels 4-2 relative to the matched control group.

Graph 110. Gender Differences in Ethnic-based Discrimination
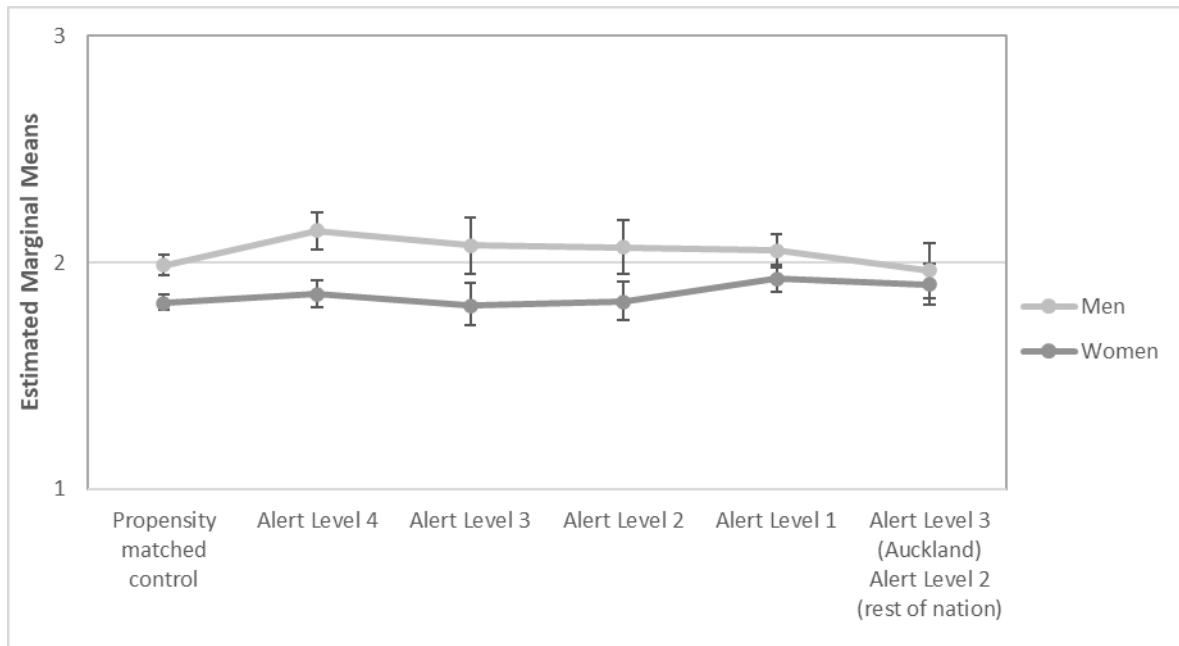
Religious-based Discrimination. Men reported more religious-based discrimination, $F = 26.927$, $p < .001$, $\eta_p^2 = .001$, across Alert Levels, $F = 1.109$, $p = .353$, $\eta_p^2 = .000$.

Graph 111. Gender Differences in Religious-based Discrimination
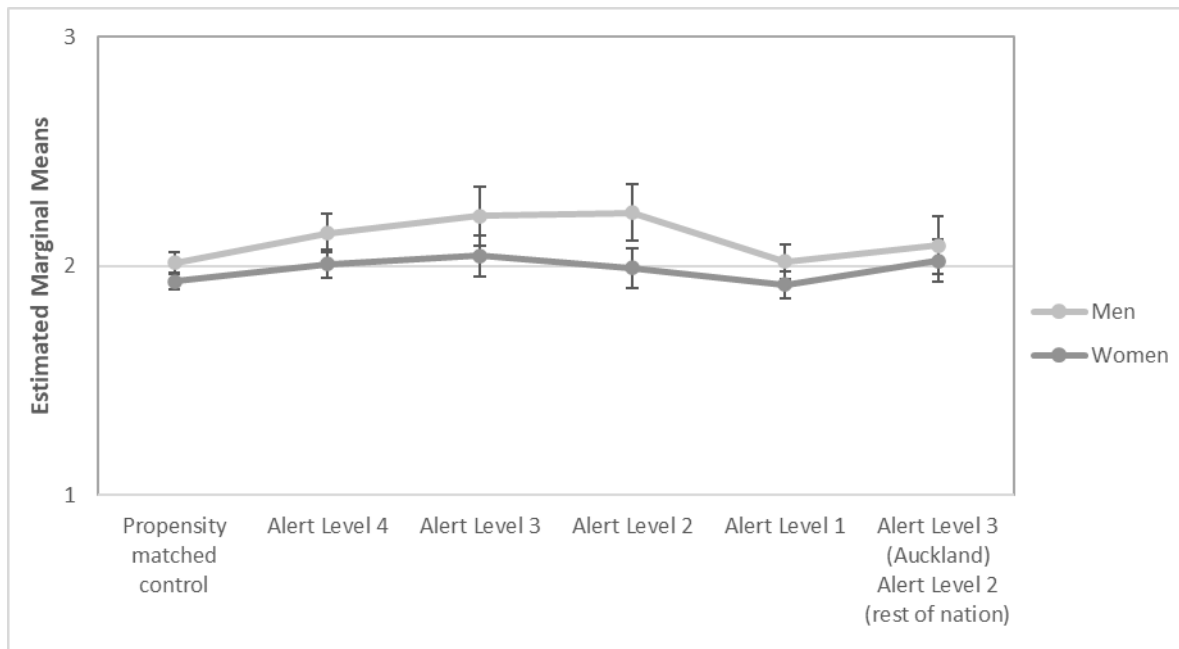
Summary of Differences across Gender. Women reported more gender-based discrimination, which increased across Alert Levels 4-2 and the second outbreak compared to the matched control group. In contrast, men reported more ethnic- and religious-based discrimination, and

men's ethnic-based discrimination was higher across Alert Levels 4-2 relative to the matched control group.

Differences across Ethnic Groups

Comparisons were made across European, Māori, and Asian/Pacific Islander/Other (as a broad category) due to limited sample size when split across Alert Levels.

Gender-based Discrimination. There were significant differences in reports of gender-based discrimination across ethnic groups, $F = 9.606$, $p < .001$, $\eta_p^2 = .001$, but these did not vary across Alert Levels, $F = 0.589$, $p = .824$, $\eta_p^2 = .000$.

Graph 112. Ethnic Group Differences in Gender-based Discrimination
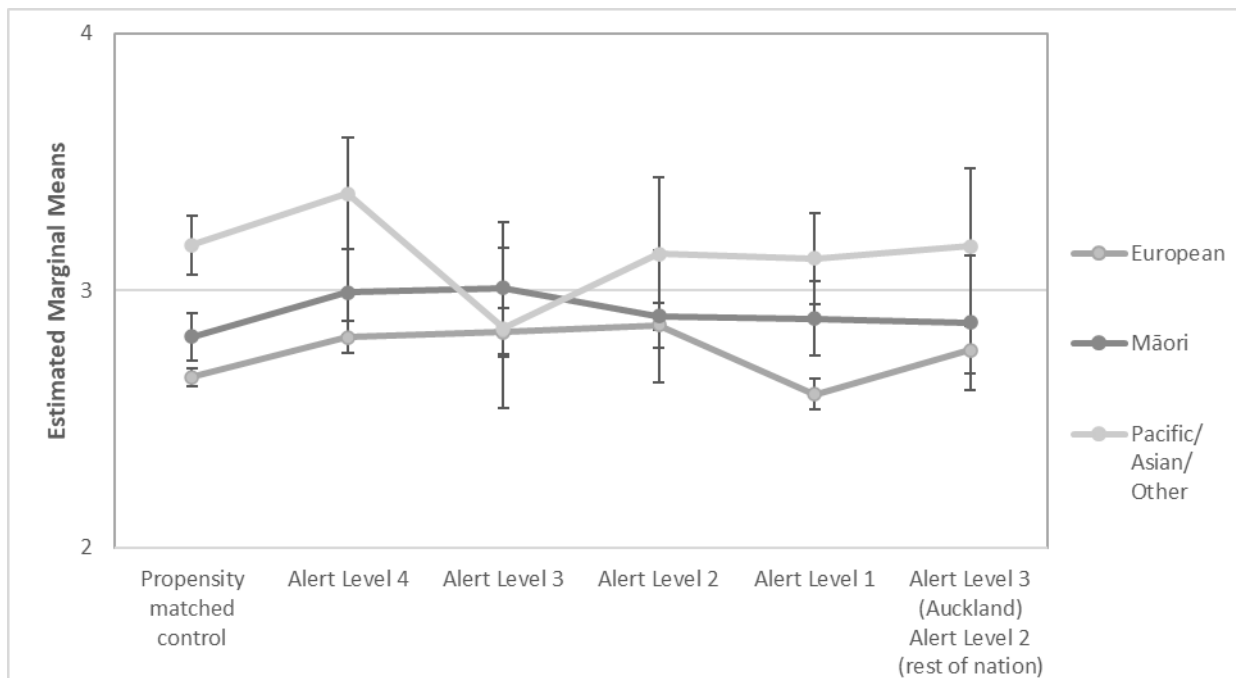
Ethnic-based Discrimination. Māori and those who identified as Pacific, Asian, or another ethnicity reported more ethnic-based discrimination than did Europeans, $F = 968.209$, $p < .001$, $\eta_p^2 = .074$, and these differences varied across Alert Levels, $F = 2.698$, $p = .003$, $\eta_p^2 = .001$. Europeans' reports of ethnic-based discrimination were stable across Alert Levels. However, Māori reported more ethnic-based discrimination at Alert Level 2, Alert Level 1, and at the second outbreak than did the matched control group. Those who identified as Pacific, Asian, or another non-Māori ethnicity also reported more discrimination at Alert Levels 4, 3 and 1 relative to the matched control group.

Graph 113. Ethnic Group Differences in Ethnic-based Discrimination
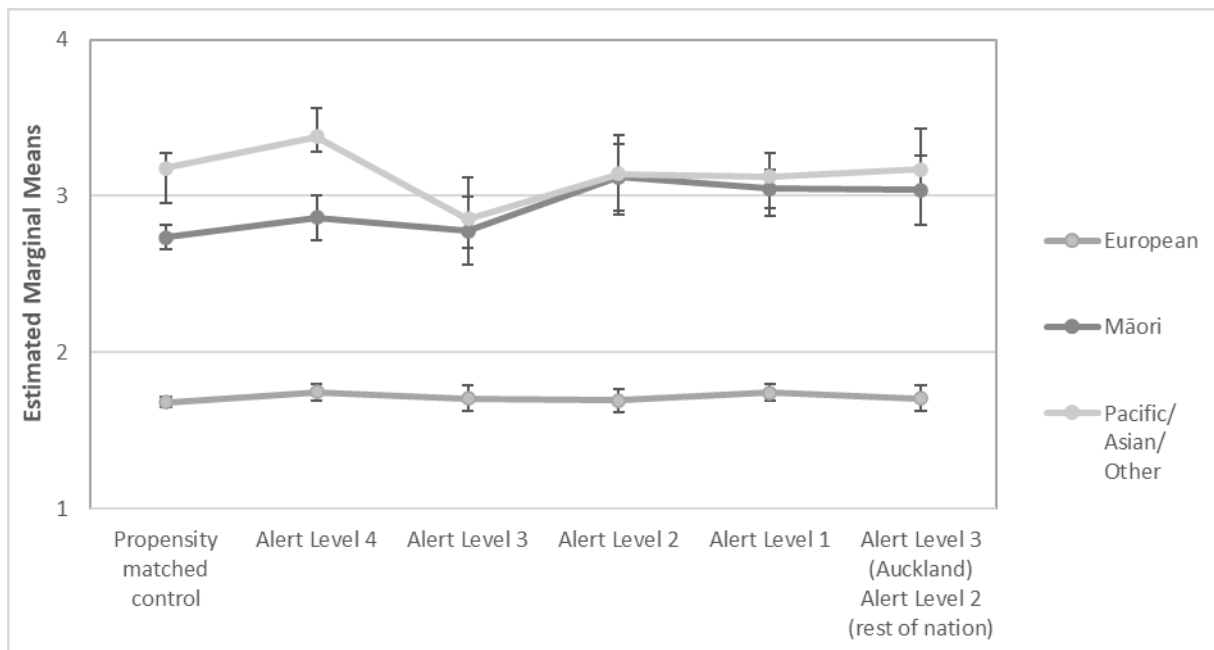
Graph 113. Ethnic Group Differences in Ethnic-based Discrimination

Religious-based Discrimination. Māori and those who identified as Pacific, Asian, or another ethnicity reported more religious-based discrimination than did Europeans, $F = 65.949$, $p = .001$, $\eta_p^2 = .006$, but this did not vary by Alert Level, $F = 1.138$, $p = .329$, $\eta_p^2 = .000$.

Graph 114. Ethnic Group Differences in Religious-based Discrimination
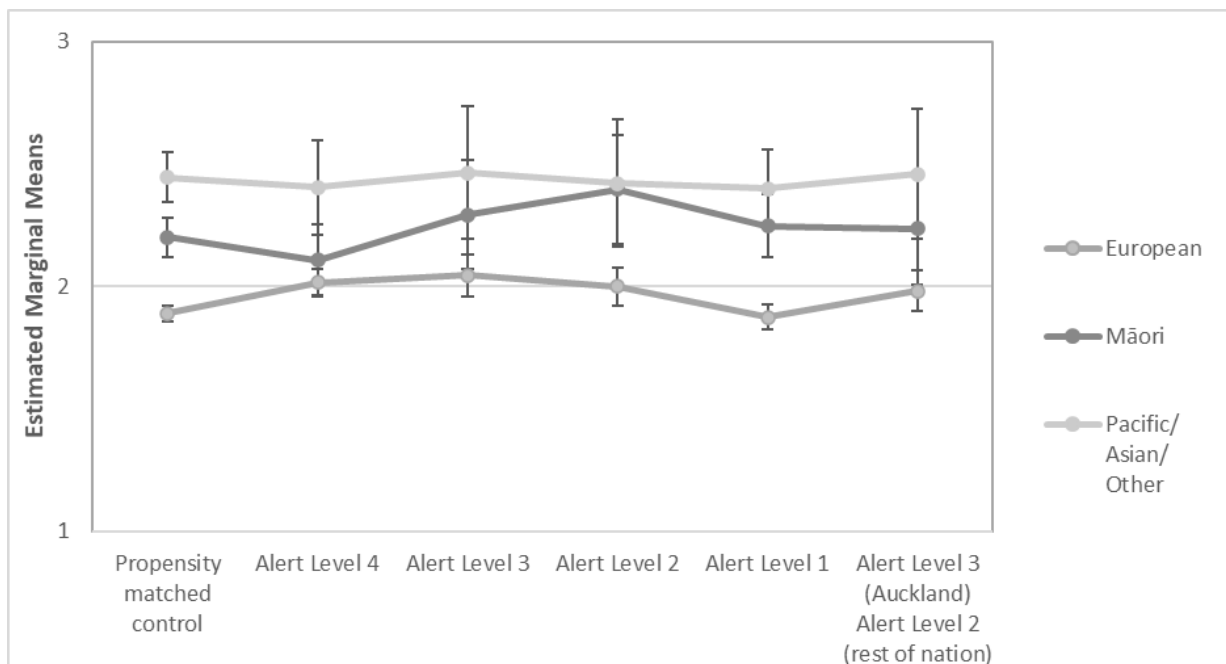
Summary of Differences across Ethnicity. Māori and those who identified as Pacific, Asian, or another ethnicity reported more gender-, ethnic-, and religious-based discrimination than did Europeans. Differences in ethnic-based discrimination intensified during the Alert Levels, including during the most restrictive lockdowns (especially for Pacific, Asian, or another non-Māori ethnicity) and during Alert Levels 2 and, 1 and the second outbreak (especially for Māori) as broader social interactions and employment resumed.

Differences across Parental Status

Gender-based Discrimination. Parents reported less gender-based discrimination, $F = 20.085$, $p < .001$, $\eta_p^2 = .001$, across Alert Levels, $F = .700$, $p = .623$, $\eta_p^2 = .000$.

Graph 115. Parental Status Differences in Gender-based Discrimination
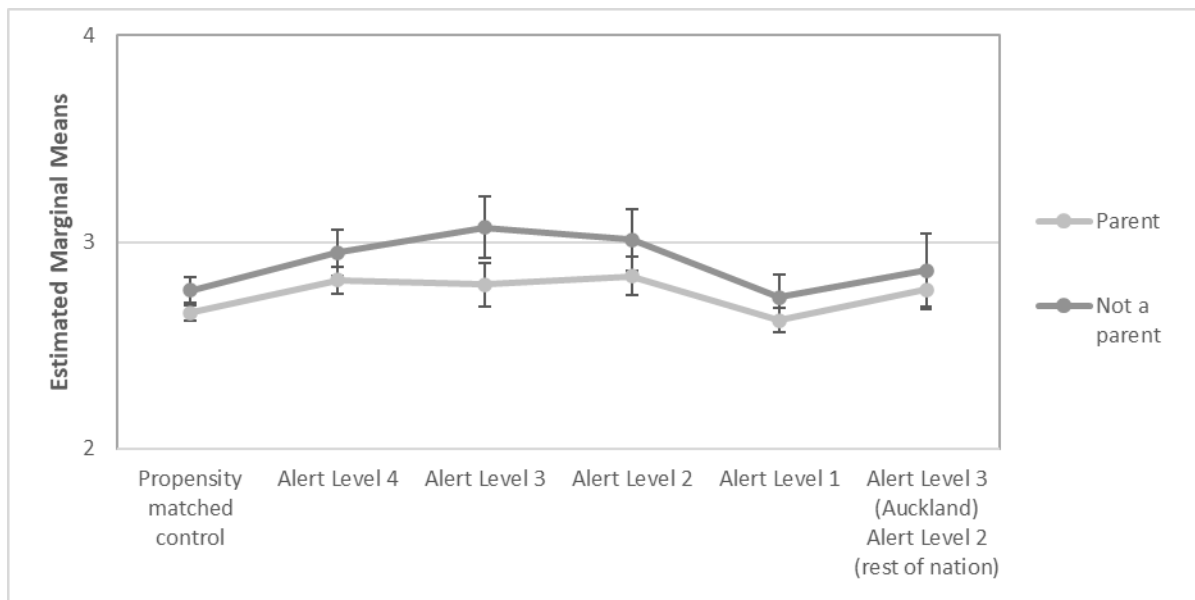
Ethnic-based Discrimination. Parents reported more ethnic-based discrimination, $F = 19.720$, $p < .001$, $\eta_p^2 = .001$, across alert levels, $F = 1.363$, $p = .235$, $\eta_p^2 = .000$.

Graph 116. Parental Status Differences in Ethnic-based Discrimination
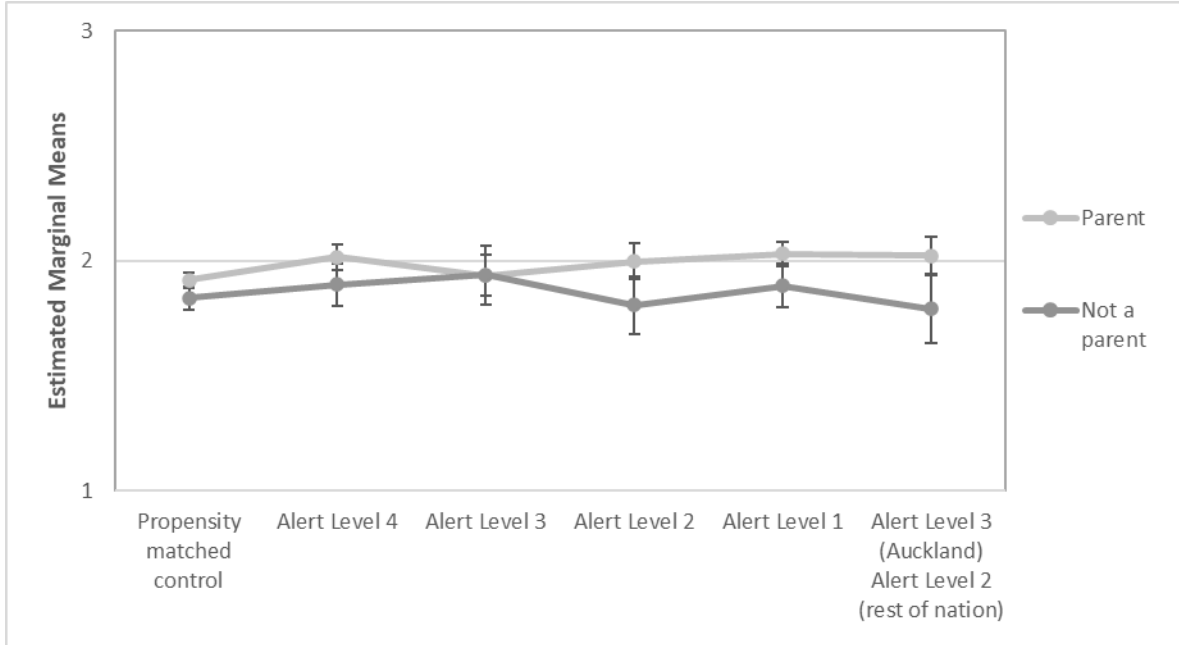
Religious-based Discrimination. Parents noted more religious-based discrimination, $F = 11.682$, $p = .001$, $\eta_p^2 = .000$, across alert levels, $F = 1.609$, $p = .154$, $\eta_p^2 = .000$.

Graph 117. Parental Status Differences in Religious-based Discrimination

Summary of Differences across Parental Status. Parents reported more gender-, ethnic-, and religious-based discrimination, but these were not elevated by the Alert Levels.

Differences across Health Condition/Disability Status

Gender-based Discrimination. Respondents with a health condition or disability reported more gender-based discrimination, $F = 67.36$, $p < .001$, $\eta_p^2 = .003$, but this did not vary across alert levels, $F = 1.300$, $p = .261$, $\eta_p^2 = .000$.

Graph 118. Health Condition/Disability Status Differences in Gender-based Discrimination
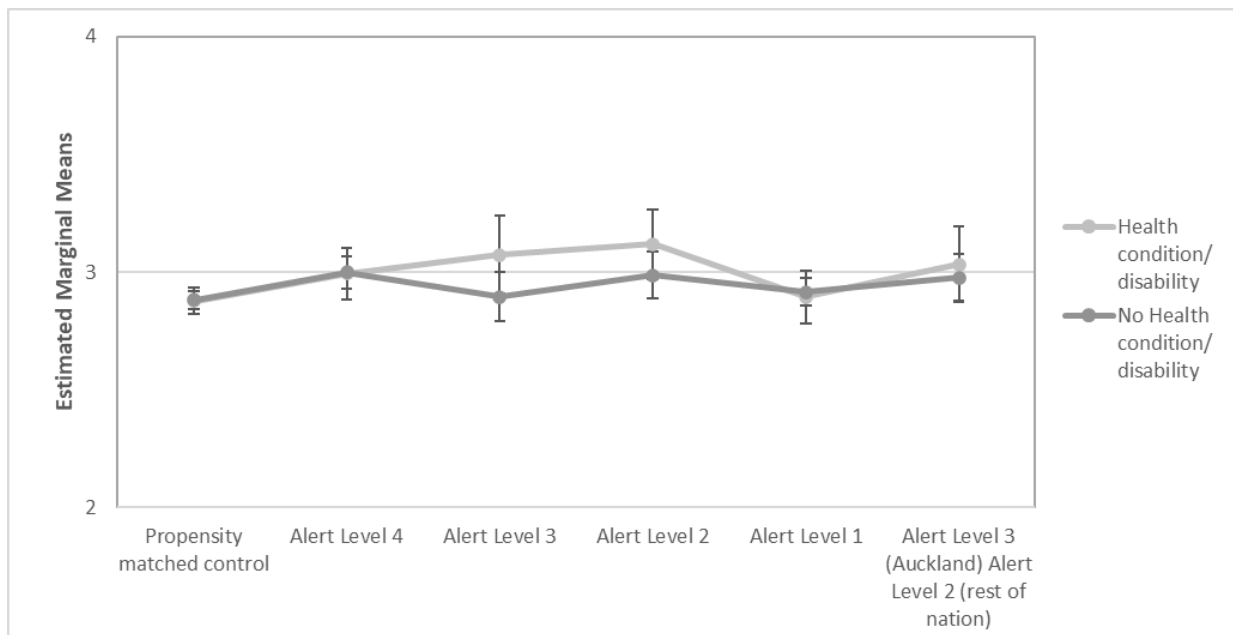
Ethnic-based Discrimination. Participants with a health condition or disability reported more ethnic-based discrimination, $F = 39.777$, $p < .001$, $\eta_p^2 = .002$, which slightly varied across alert levels, $F = 2.266$, $p = .045$, $\eta_p^2 = .000$, appearing higher at Alert Level 2.

Graph 119. Health Condition/Disability Status Differences in Ethnic-based Discrimination
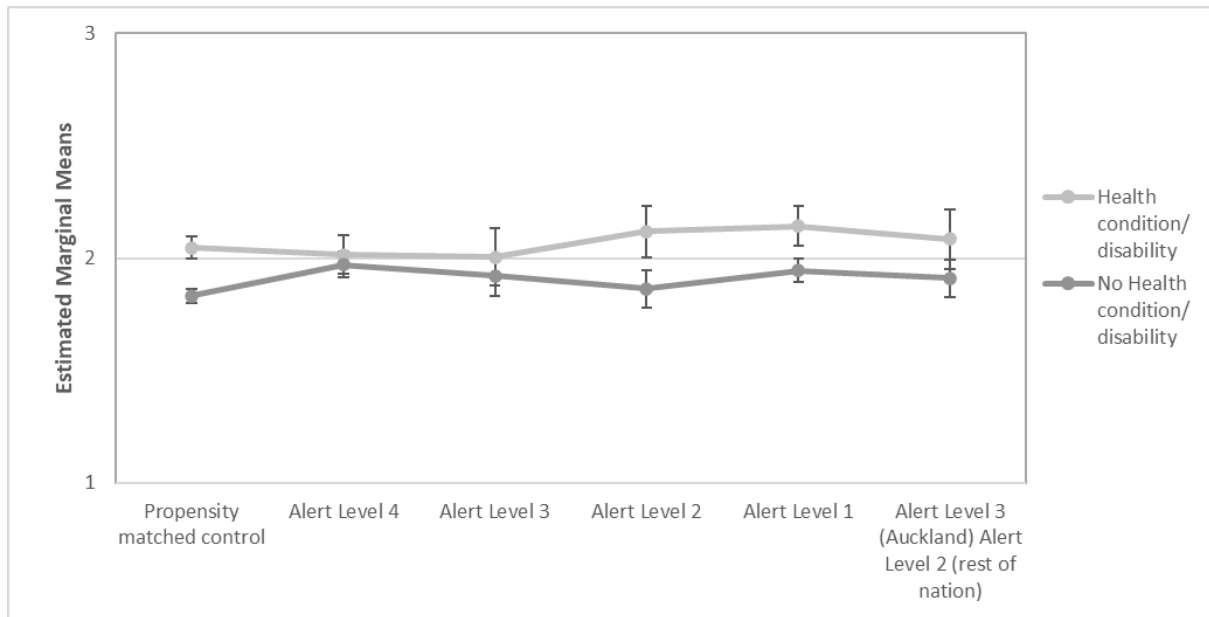
Religious-based Discrimination. Participants with a health condition or disability reported more religious-based discrimination, $F = 122.083$, $p < .001$, $\eta_p^2 = .005$, but this difference did not vary across Alert Levels, $F = .763$, $p = .576$, $\eta_p^2 = .000$.

Graph 120. Health Condition/Disability Status Differences in Religious-based Discrimination
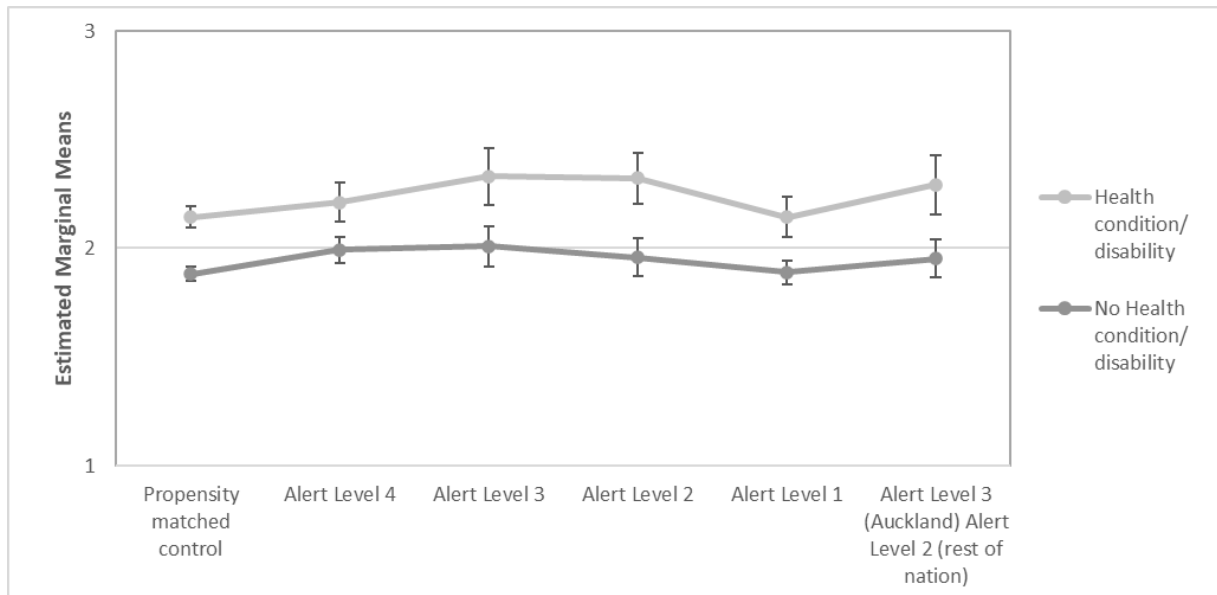
Summary of Differences across Health Condition/Disability Status. Gender-, ethnic-, and religious-based discrimination were higher amongst those who reported a health condition or disability, and this generally was consistent across Alert Levels.

Differences across Mental Health Diagnosis

Gender-based Discrimination. Participants with a mental health diagnosis reported more gender-based discrimination, $F = 73.241$, $p < .001$, $\eta_p^2 = .003$, but this difference did not vary across Alert Levels, $F = .790$, $p = .557$, $\eta_p^2 = .000$.

Graph 121. Mental Health Diagnosis Status Differences in Gender-based Discrimination
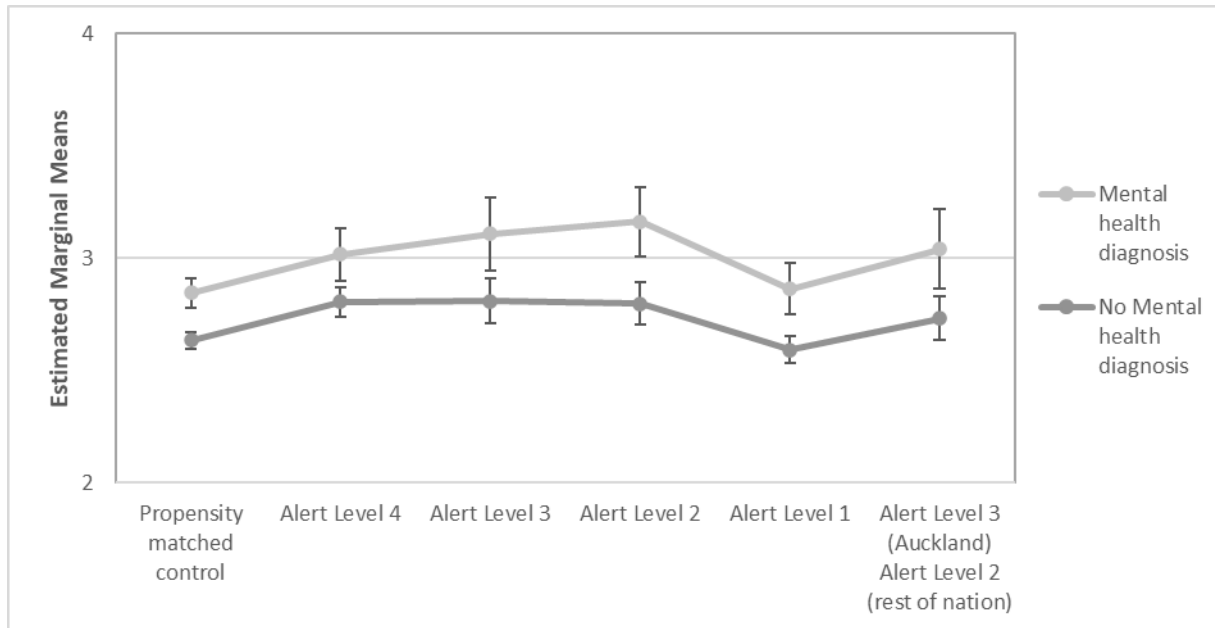
Ethnic-based Discrimination. Participants with a mental health diagnosis reported more ethnic-based discrimination, $F = 4.653$, $p = .031$, $\eta_p^2 = .000$, but this difference did not vary across Alert Levels, $F = .994$, $p = .420$, $\eta_p^2 = .000$.

Graph 122. Mental Health Diagnosis Status Differences in Ethnic-based Discrimination
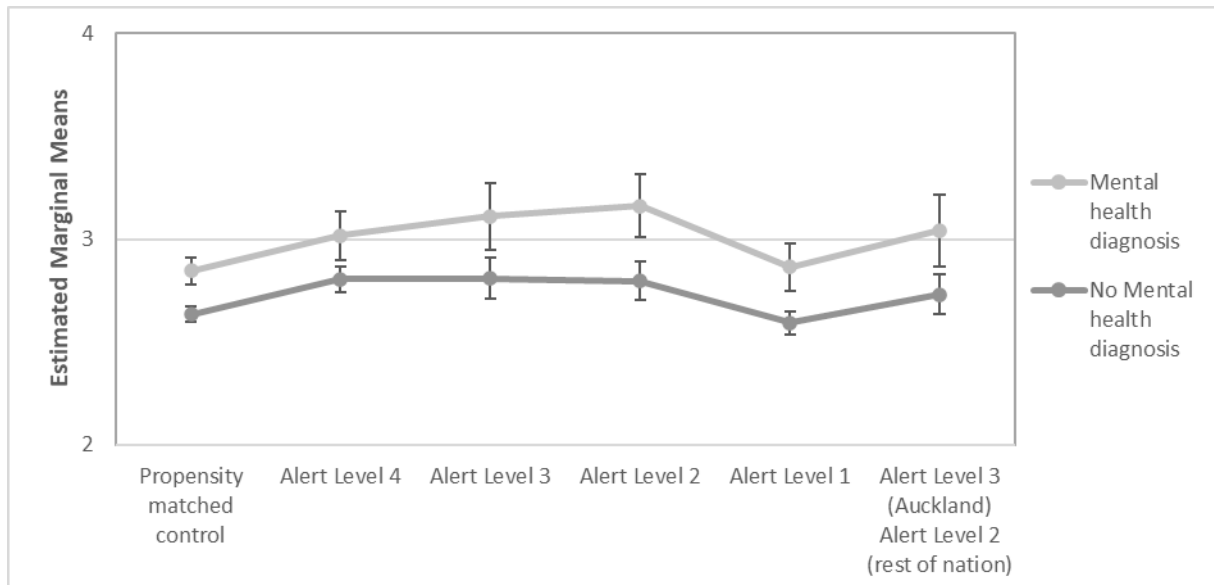
Religious-based Discrimination. Participants with a mental health diagnosis reported more religious-based discrimination, $F = 28.898$, $p = .001$, $\eta_p^2 = .001$, but this difference did not vary across Alert Levels, $F = .430$, $p = .828$, $\eta_p^2 = .000$.

Graph 123. Mental Health Diagnosis Status Differences in Religious-based Discrimination
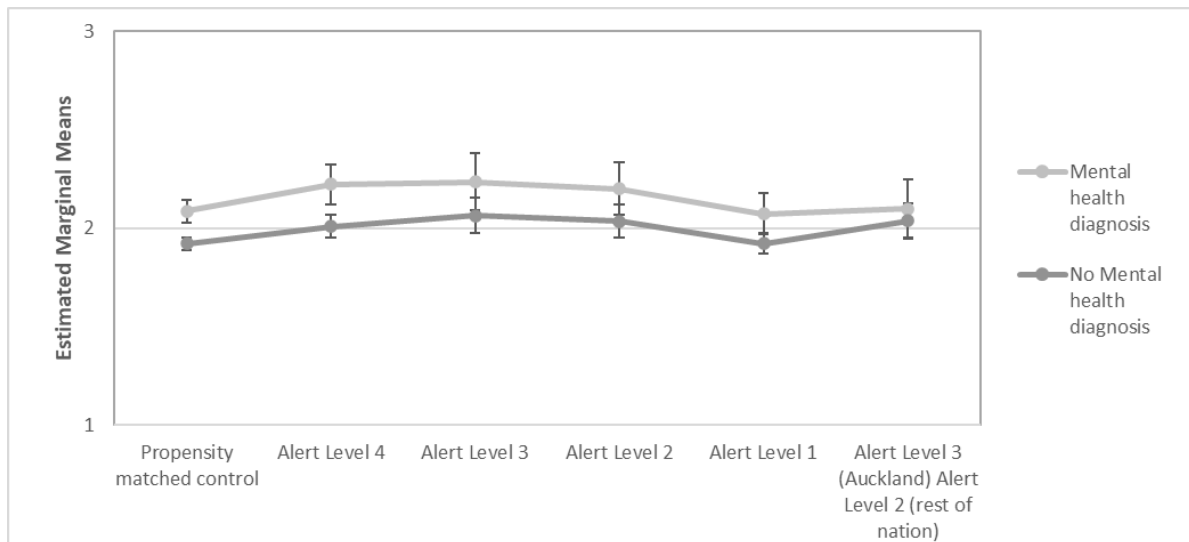
Summary of Differences across Mental Health Diagnosis. On average, those with a mental health diagnosis reported more gender-, ethnic-, and religious-based discrimination, but these differences were not exacerbated during the Alert Levels.

Differences across Age Groups

We present comparisons across three age groups: 18-29, 30-64 and 65+ years. See Appendix II for consistent patterns across 18-24, 25-34, 35-44, 45-54, 55-64 and 65+ years.

Gender-based Discrimination. Younger participants reported more discrimination, $F = 71.407$, $p < .001$, $\eta_p^2 = .006$, across Alert Levels, $F = 1.284$, $p = .233$, $\eta_p^2 = .001$.

Graph 124. Age Differences in Gender-based discrimination
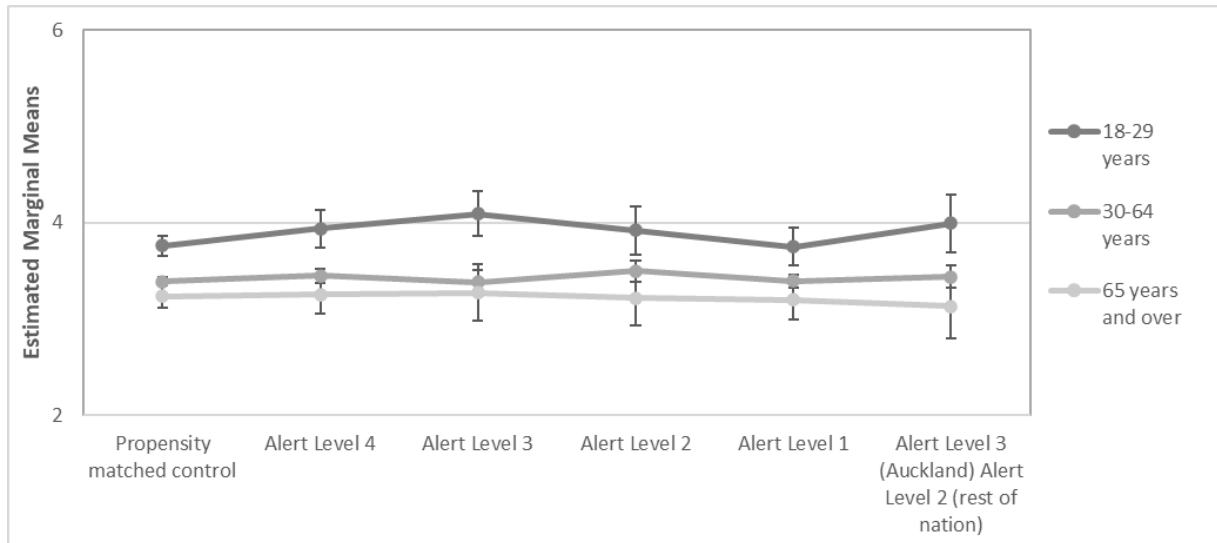
Ethnic-based Discrimination. Younger participants reported more discrimination, $F = 26.312$, $p < .001$, $\eta_p^2 = .002$, across Alert Levels, $F = .499$, $p = .892$, $\eta_p^2 = .000$.

Graph 125. Age Differences in Ethnic-based discrimination
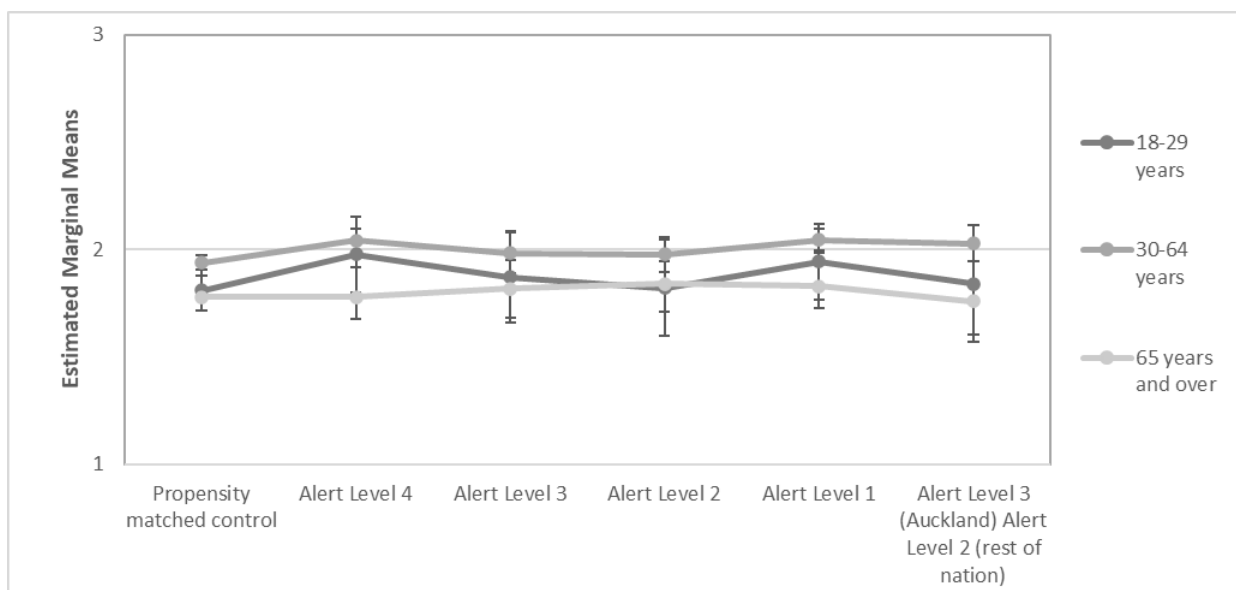
Religious-based Discrimination. Younger participants reported more discrimination, $F =$

10.542, $p < .001$, $\eta_p^2 = .001$, across Alert Levels, $F = 1.317$, $p = .214$, $\eta_p^2 = .001$.

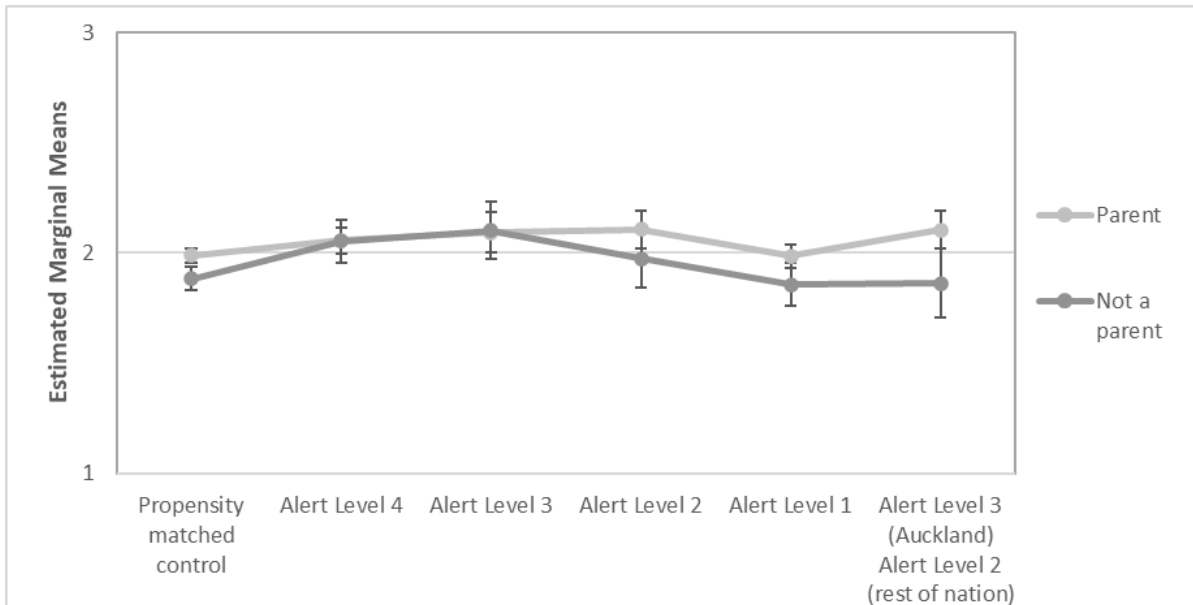*Graph 126. Age Differences in Religious-based discrimination*
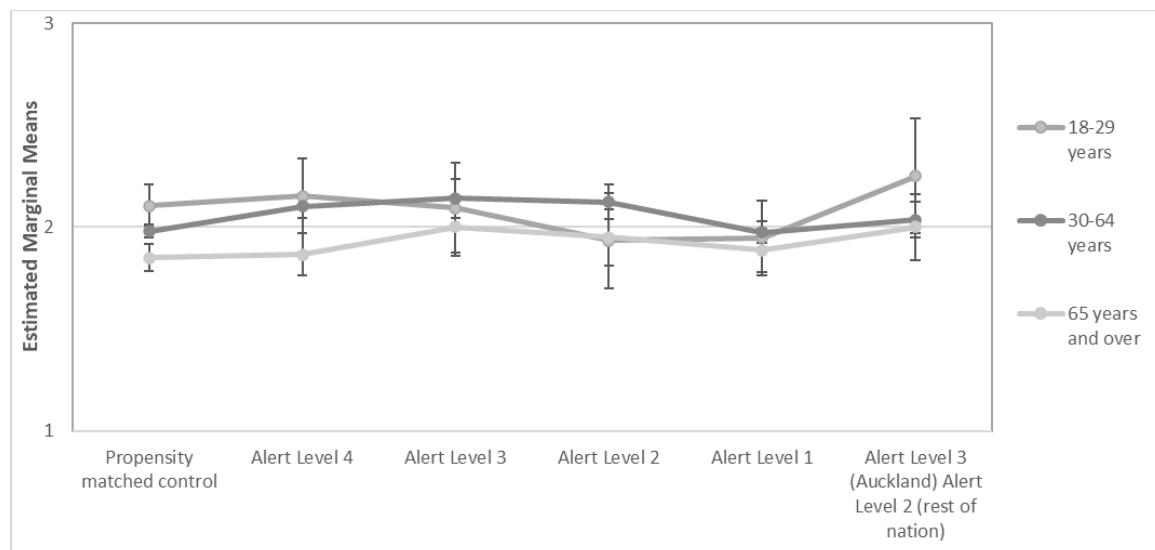
Summary of Differences across Age. Younger participants reported more gender-, ethnic-, and religious-based discrimination, but the Alert Levels did not increase younger people's experiences with discrimination.

Summary of Demographic Differences in Perceived Discrimination

Reports of gender-, ethnic-, and religious-based discrimination were higher among people who identified as Māori, Pacific, Asian, or another minority group; those who had a health condition, disability or mental health diagnosis; and those who were younger. Yet, reports of discrimination only varied across the Alert Levels according to gender and ethnic group. In terms of gender, women reported more gender-based discrimination during Alert Levels 4-2 and the second outbreak compared to before the pandemic, whereas men reported more ethnic-based discrimination, particularly across Alert Levels 4-2. These results indicate that differences in the division of paid versus domestic labour created distinct challenges for women and men. Women faced greater rates of unemployment (Stats NZ, 2020) and were likely shouldering the increased burden of domestic labour and parenting during lockdown (Waddell et al., 2020), which likely contributed to the increased gender-based discrimination women reported. Men's experiences, however, may intersect more closely with employment opportunities and other related social processes (e.g., health disparities, intergroup prejudice) outside the home that expose them to ethnic-based discrimination.

In terms of ethnic group differences, Māori and those who identified as Pacific, Asian, or another ethnicity generally reported more discrimination than did Europeans, but the Alert Levels only exacerbated differences in ethnic-based discrimination. This was particularly evident during the most restrictive lockdowns (especially for Pacific, Asian, or another non-Māori ethnicity) and during Alert Levels 2-1 and the second outbreak (especially for Māori) when broader social interactions and employment resumed. These results highlight the unique challenges Māori and those who identified as Pacific, Asian, or another minority group faced both entering and exiting the lockdowns, as the Alert Levels exacerbated existing ethnic group differences in ethnic-based discrimination.

Perceived Discrimination Conclusion

Together, these results reveal increases in perceived gender-, ethnic-, and religious-based discrimination across Alert Levels. However, closer inspection shows that the increases in discrimination identified during the pandemic were experienced by specific demographic groups. On average, gender-based discrimination showed the most consistent increases across the pandemic, but examination of gender differences revealed that women, and not men, reported more gender-based discrimination in Alert Level 4 relative to the matched control group, which stayed elevated in Alert Levels 3 and 2. By contrast, men, but not women, reported more ethnic-based discrimination, particularly across Alert Levels 4-2. This gender differentiated pattern may have arisen because differences in the division of paid vs domestic labour created distinct challenges for women and men during the pandemic. Women had more job losses (Stats NZ, 2020) and an increased burden of domestic labour and parenting (Waddell et al., 2020) during the lockdowns, which likely contributed to women's increased perceptions of gender-based discrimination identified here. Conversely, men's experiences may more closely align with employment opportunities and other social process (e.g., health disparities, intergroup prejudice) outside the home that expose them to ethnic-based discrimination. Thus, additional support for the disproportionate job loss and unpaid labour is needed to address the increases in gender-based discrimination experienced by women. Ethnic-based discrimination was also heightened during the Alert Levels, but only for Māori and those who identified as Pacific, Asian, or another non-Māori ethnicity (relative to Europeans). Moreover, such increases in ethnic-based discrimination were evident during the most restrictive lockdowns (especially for those who identified as Pacific, Asian, or another non-Māori ethnic minority), and during Alert Levels 2-1 and the second outbreak (especially for Māori) when broader social interactions and employment resumed. These results indicate

that the challenges of the pandemic across economic, financial, social, and family domains may have intensified and/or made salient existing disparities. Accordingly, ensuring that Māori, Pacific, Asian, or other ethnic minority groups do not bear the brunt of the economic, health and social costs of the pandemic and future Alert Levels should be a priority.

INSTITUTIONAL TRUST AND NATIONAL IDENTIFICATION

The success of Alert Levels depended on New Zealanders' trust and adherence to advice from scientists, law enforcement, and politicians. Research from prior pandemics highlights the critical role of trust in eliciting voluntary compliance from the public. Prati et al. (2011) found that trust in the Ministry of Health was an important correlate of Italians' voluntary compliance to Italian health officials' recommendations for stopping the spread of H1N1 (but see Clark et al., 2020). However, the COVID-19 pandemic and Alert Levels to contain the virus may have also altered people's trust in institutions (Van Bavel et al., 2020). One possibility is that people facing a shared external threat might reflexively increase their trust in institutions as they tighten national ties (Greenaway & Cruwys, 2019). Indeed, panel data show that societal trust increases after natural disasters, perhaps due to the shared need to work together as a society to overcome the disaster (Toya & Skidmore, 2014). In contrast, people often respond to threatening events with suspicion and develop conspiracy theories about their nature and cause, including suspicion and distrust of government institutions (Dussaillant & Guzmán, 2014; van Prooijen & van Dijk, 2014; Wilson & Rose, 2014).

Work conducted during previous pandemics yields mixed findings. Research from the US during the H1N1 pandemic suggests that people largely trust public health officials (Paek et al., 2008; Quinn et al., 2013). Longitudinal data collected in Switzerland also showed that people displayed high levels of trust in government and industry during the initial stages of the H1N1 pandemic, but that trust declined over time (Bangerter et al., 2012; see also Quinn et al., 2013). To assess changes in institutional trust, we examined trust in science, trust in police, trust in politicians, and satisfaction with the Government—all of which are relevant to the COVID-19 Alert Levels. In New Zealand, scientists and politicians cooperated to plan a response and communicate the reasons behind these actions to the public, and the police were tasked with enforcing these Government mandates.

We also examined people's identification with the nation given that the sense of common fate instilled by national events such as the COVID-19 lockdown may increase focus on intragroup (vs. intergroup) considerations, including identification with, and positive feelings about, one's nation (Greenaway & Cruwys, 2019; Li & Brewer, 2004). For example, Americans responded to 9/11 with heightened feelings of patriotism and identification with fellow citizens (Skitka, 2005). Our initial examination of the effects of Alert Level 4 in New Zealand (Sibley et al., 2020) found that, compared to a matched control group assessed

before the pandemic, New Zealanders in the first 18 days of Alert Level 4 reported higher trust in science and politicians and increased satisfaction with the Government. Analyses also suggested that the sample demonstrated within-person increases in national identification. However, while satisfaction with the Government and national identification might increase during the early stages of the pandemic and Alert Levels, the financial ramifications of both (e.g., unemployment, recession; Meltzer et al., 1999; Smith et al., 2009) may have reversed this effect as the difficulties and costs of the pandemic accumulated across the Alert Levels.

Measures

Trust in Science. Respondents rated their agreement (1 = strongly disagree; 7 = strongly agree) to two items: "Our society places too much emphasis on science" (reverse-scored; Harman et al., 2017) and "I have a high degree of confidence in the scientific community" (Nisbet et al., 2015).

Trust in the Police. Respondents rated their agreement (1 = strongly disagree; 7 = strongly agree) to three items adapted from 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" (reverse-scored), and "The New Zealand Police care about the well-being of everyone they deal with".

Trust in Politicians. Respondents rated their agreement (1 = strongly disagree; 7 = strongly agree) with a single item: "Politicians in New Zealand can generally be trusted".

Satisfaction with the Government. Respondents rated their satisfaction (0 = completely dissatisfied; 10 = completely satisfied) with "the performance of the current New Zealand government" (adapted from Tiliouine et al., 2006).

National Identity. Respondents rated their agreement (1 = strongly disagree; 7 = strongly agree) with a single item: "I identify with New Zealand" (Postmes, et al., 2013).

Aim 1: General Effects Across Alert Levels

Trust in Science. Trust in science varied significantly across groups, $F = 22.513$, $p < .001$, $\eta_p^2 = .005$. Relative to the matched control group ($M = 5.407$, 95% CI [5.382, 5.431]), those in Alert Level 4 expressed more trust in science ($M = 5.616$, 95% CI [5.573, 5.659], $p < .001$). This increased trust in science continued throughout Alert Level 3 ($M = 5.602$, 95% CI [5.536, 5.669], $p < .001$) and Alert Level 2 ($M = 5.633$, 95% CI [5.571, 5.695], $p < .001$), but returned to baseline during Alert Level 1 ($M = 5.361$, 95% CI [5.322, 5.401], $p = .732$). Trust in science again increased significantly from the matched control group during second

community outbreak ($M = 5.602$, 95% CI [5.538, 5.667], $p < .001$).

Graph 127. General effects on trust in science

Trust in the Police. Trust in the police varied significantly across groups, $F = 8.533$, $p < .001$, $\eta_p^2 = .002$. Relative to the matched control group ($M = 4.511$, 95% CI [4.486, 4.536]), those in Alert Level 4 ($M = 4.673$, 95% CI [4.629, 4.717], $p < .001$) and Alert Level 1 ($M = 4.584$, 95% CI [4.544, 4.624], $p = .028$) expressed more trust in the police. Trust in the police was also higher in Alert Level 4 relative to Alert Level 3 ($M = 4.525$, 95% CI [4.457, 4.593]; $p = .003$) and Alert Level 2 ($M = 4.554$, 95% CI [4.491, 4.618]; $p = .023$).

Graph 128. General effects on trust in the Police
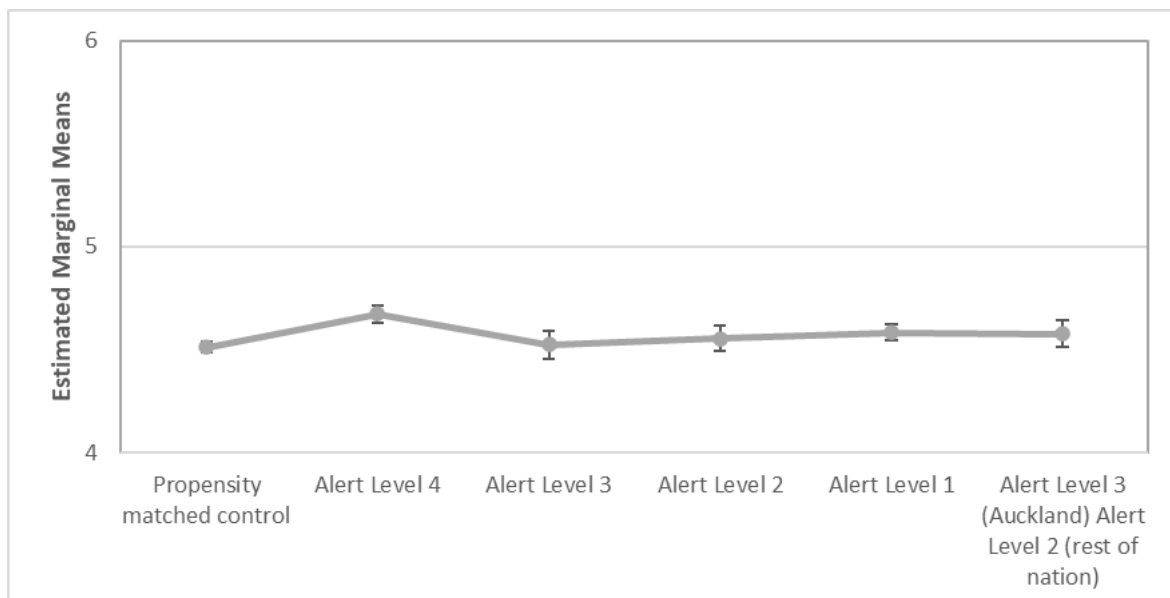
Trust in Politicians. Trust in politicians varied significantly across groups, $F = 27.719$, $p < .001$, $\eta_p^2 = .006$. Relative to the matched control group ($M = 3.681$, 95% CI [3.652, 3.710]), trust in politicians increased during Alert Level 4 ($M = 4.031$, 95% CI [3.980, 4.081], $p < .001$) and remained higher in Alert Level 3 ($M = 3.906$, 95% CI [3.828, 3.984], $p < .001$) and Alert Level 2 ($M = 3.933$, 95% CI [3.860, 4.006], $p < .001$). Those in Alert Level 4 also trusted politicians more than did those in Alert Level 1 ($M = 3.738$, 95% CI [3.692, 3.785], $p < .001$) and the second community outbreak ($M = 3.752$, 95% CI [3.676, 3.827], $p < .001$). Those in Alert Level 3 expressed more trust in politicians than did those in Alert Level 1 ($p = .006$). Those in Alert Level 2 trusted politicians more than did those in Alert Level 1 ($p < .001$) and during the second outbreak ($p = .005$).

Graph 129. General effects on trust in politicians
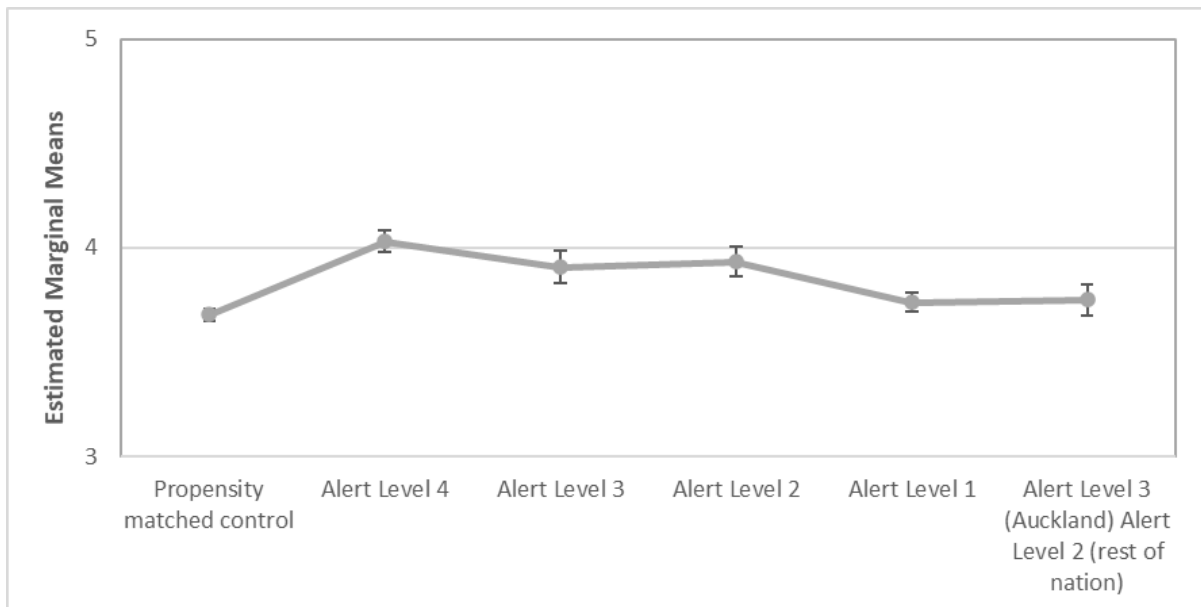
Satisfaction with the Government. Satisfaction with the government varied significantly across groups, $F = 251.948$, $p < .001$, $\eta_p^2 = .049$. Relative to the matched control group ($M = 5.291$, 95% CI [5.236, 5.345]), satisfaction with the Government increased in Alert Level 4 ($M = 7.036$, 95% CI [6.941, 7.132], $p < .001$) and remained higher throughout Alert Level 3 ($M = 7.018$, 95% CI [6.870, 7.166] , $p < .001$), Alert Level 2 ($M = 6.987$, 95% CI [6.849, 7.125] , $p < .001$), Alert Level 1 ($M = 6.400$, 95% CI [6.313, 6.487], $p < .001$), and the second community outbreak ($M = 6.566$, 95% CI [6.423, 6.709], $p < .001$). Satisfaction with the government did, however, drop during Alert Level 1 and the second community outbreak relative to during Alert Level 4, Alert Level 3, and Alert Level 2.

Graph 130. General effects on satisfaction with the Government
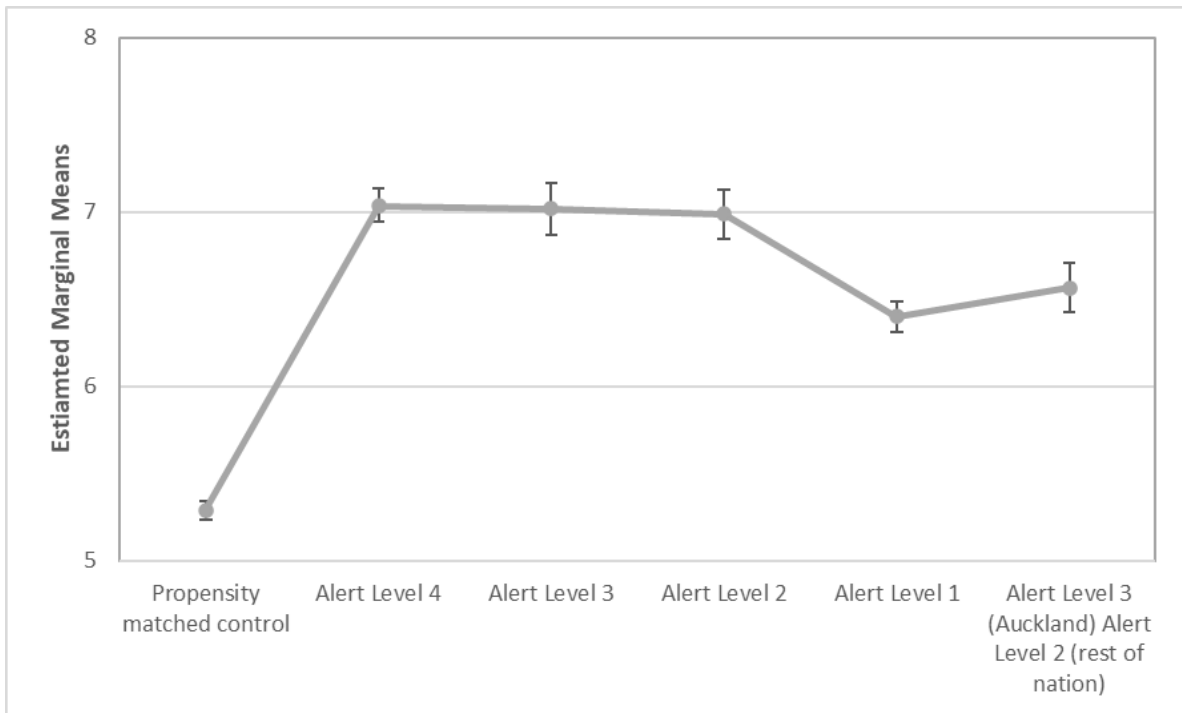
National Identity. Although national identity varied significantly across groups, $F = 2.636$, $p = .022$, $\eta_p^2 = .001$, none of the pairwise comparisons significantly differed from 0.

Graph 131. General effects on National Identity
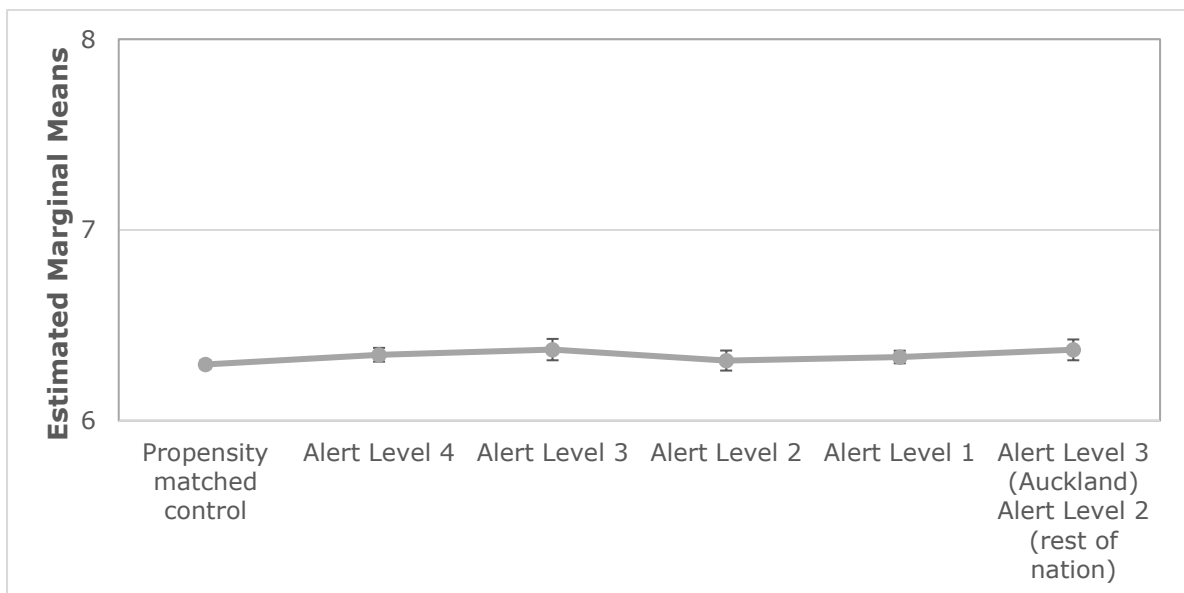
Summary of General Effects on Institutional Trust and National Identification Across Alert Levels

New Zealanders' institutional trust increased at the onset of the pandemic and stayed elevated throughout most of the Alert Levels. Although the largest increases occurred as New Zealand entered Alert Level 4, trust in science, police, and politicians was generally higher in Alert Level 3, Alert Level 2 and the second community outbreak than in the matched control group (save for a few exceptions). Most notably is the marked increase in satisfaction with the Government, which displayed the largest increase across our measures. This suggests that New Zealanders generally supported the Government's approach toward the pandemic and, coupled with the increases in institutional trust, helps to explain the high rates of compliance to the Alert Level restrictions seen across the country.

National identification was the one area that appeared unaffected by the Alert Levels. Although this may be surprising given that the international literature has shown national identification and patriotism tends to rise in response to national threats (see Skitka, 2005), ceiling effects likely played a role in this null finding. In general, New Zealanders strongly identify with their nation. Thus, identifying further increases in national identification is difficult. Except for this one null effect, the pattern of results shows that New Zealanders trusted, and were highly satisfied with, the Government's response to the pandemic.

Aim 2: Demographic Differences

This section reports analyses examining whether any effect of Alert Levels differed across six demographic groups: gender, ethnicity, parental status, health condition/disability status, mental health diagnosis, and age.

Differences across Gender

Trust in Science. Men reported more trust in science than did women, $F = 17.690$, $p < .001$, $\eta_p^2 = .001$, which varied marginally across Alert Levels, $F = 2.221$, $p = .049$, $\eta_p^2 = .000$.

Graph 132. Gender Differences in Trust in Science
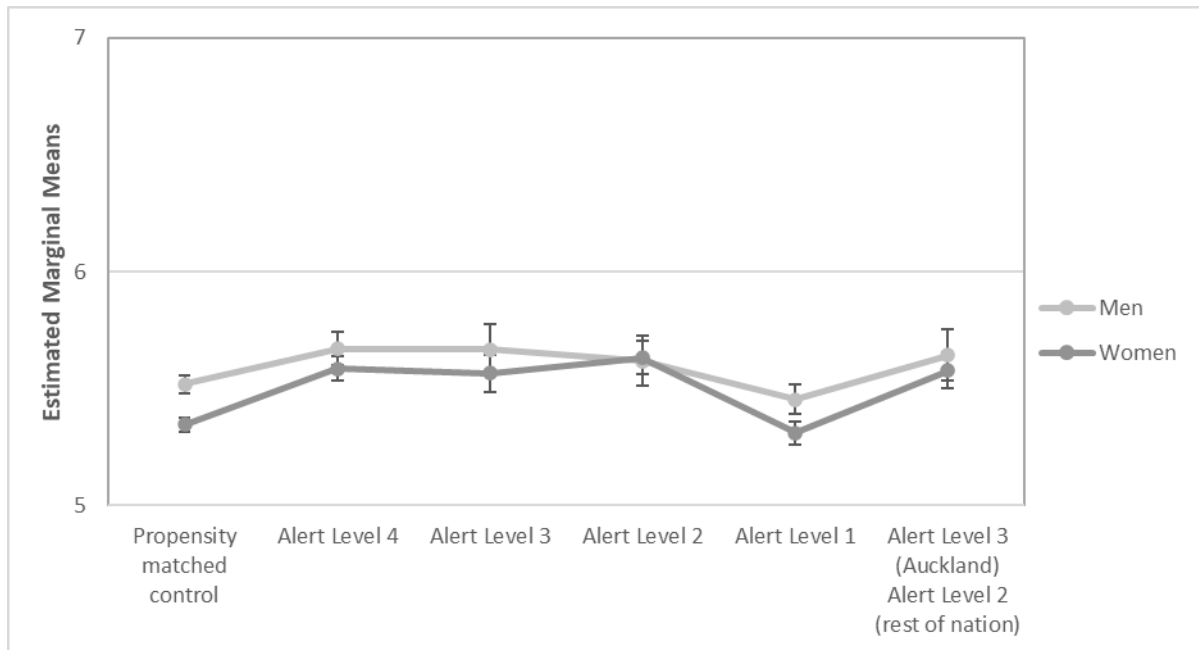
Trust in the Police. There were no gender differences in trust in the police, $F = 0.040$, $p = .842$, $\eta_p^2 = .000$, although there was marginal variation in differences across Alert Levels, $F = 2.513$, $p = .028$, $\eta_p^2 = .001$.

Graph 133. Gender Differences in Trust in the Police
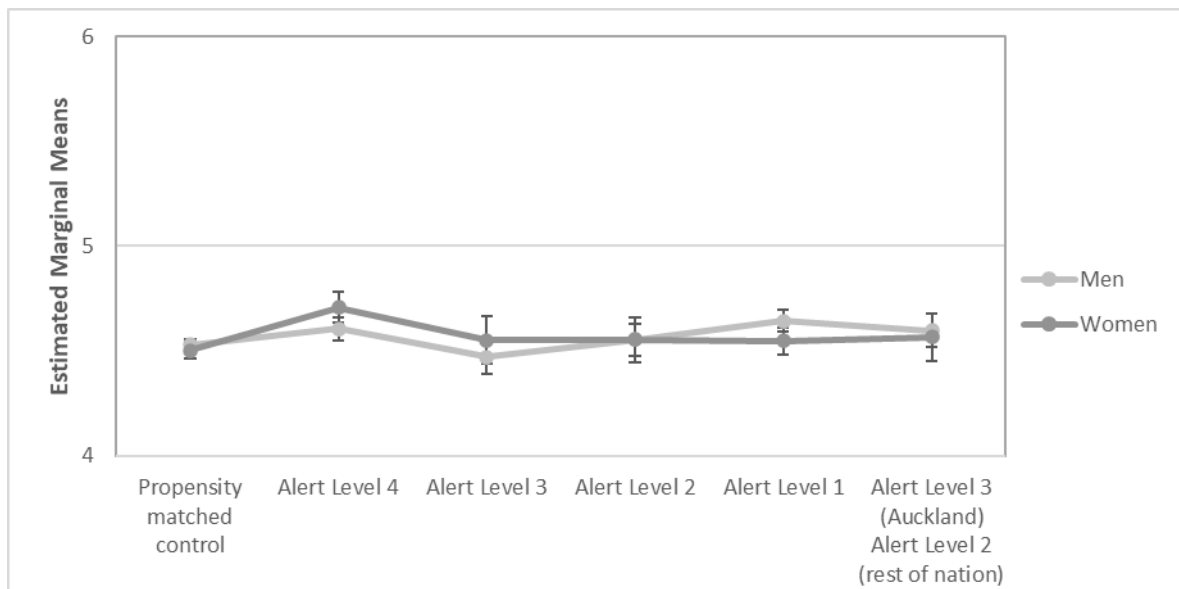
Trust in Politicians. Women trusted politicians more than did men, $F = 38.164$, $p < .001$, $\eta_p^2 = .002$, but this difference varied across Alert Levels, $F = 4.217$, $p = .001$, $\eta_p^2 = .001$. Although both men and women expressed increased trust in politicians at the start of the

pandemic relative to the matched control group, women's trust increased more than did men's during Alert Level 4, Alert Level 2, and the second outbreak.

Graph 134. Gender Differences in Trust in Politicians
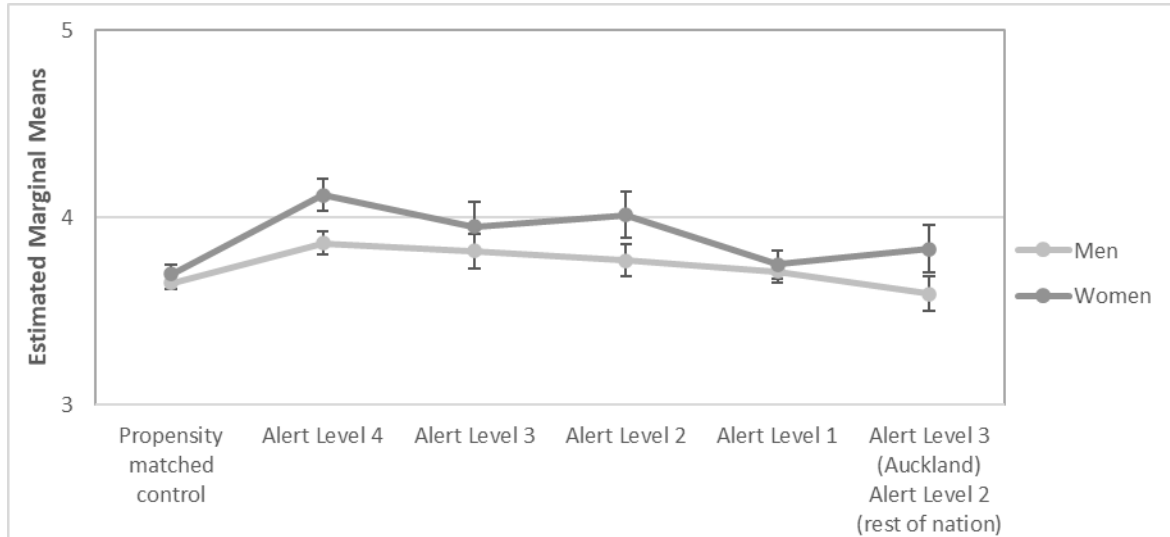
Satisfaction with the Government. Women were more satisfied with the government, $F = 446.470$, $p < .001$, $\eta_p^2 = .018$, but this difference varied by Alert Level, $F = 13.104$, $p < .001$, $\eta_p^2 = .003$. Although satisfaction with the government increased for both men and women during the Alert Levels and second outbreak, this was accentuated among women.

Graph 135. Gender Differences in Satisfaction with the Government
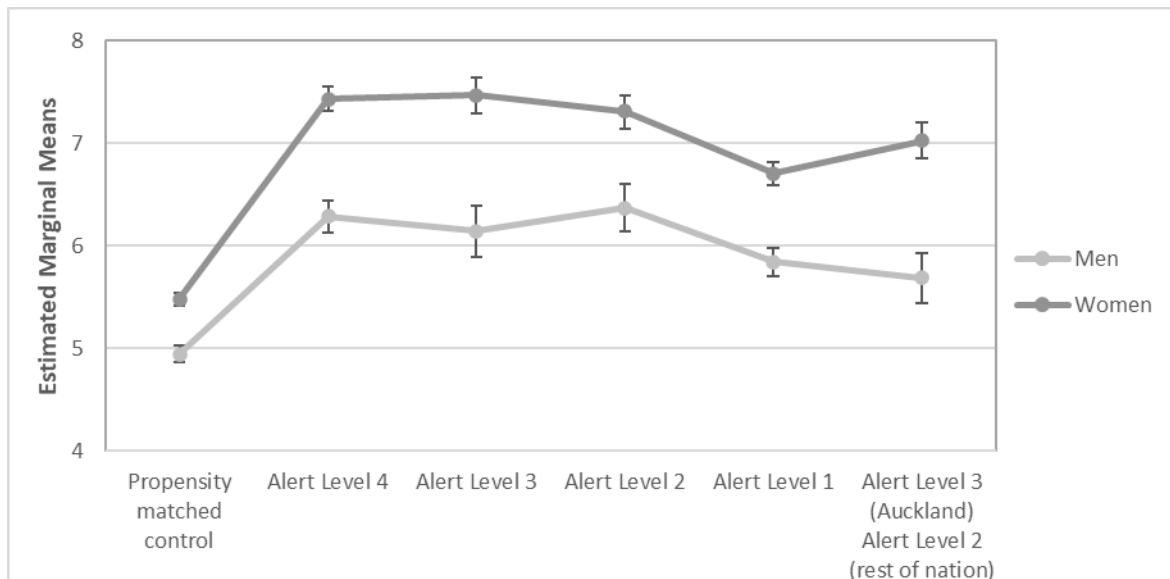
National Identity. Women identified with the nation more than did men, $F = 122.200$, $p <$ .001, $\eta_p^2 = .005$, across Alert Levels, $F = 0.302$, $p = .912$, $\eta_p^2 = .000$.

Graph 136. Gender Differences in National Identity
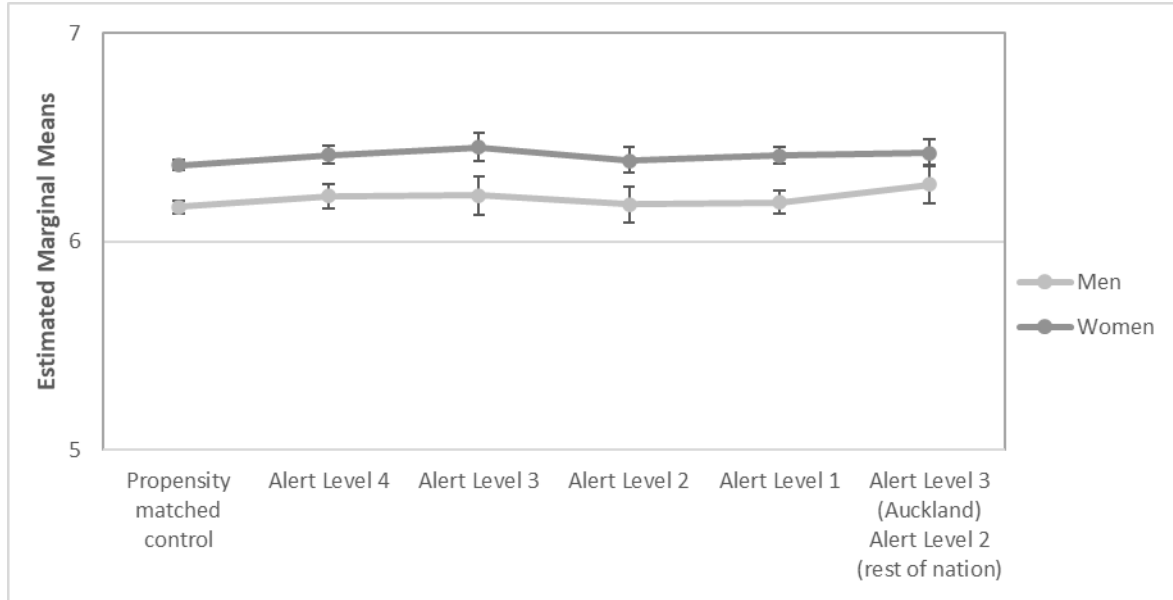
Summary of Differences across Gender. On average, women reported more trust in politicians, satisfaction with the government, and national identity than did men. With the exception of national identity, these gender differences became more pronounced during the Alert Levels, particularly in terms of satisfaction with the government. Conversely, men expressed more trust in science than did women, but this difference was attenuated during the Alert Levels 4-2 and the second outbreak as general increases in trust in science occurred.

Differences across Ethnic Groups

Comparisons were made across European, Māori, and Asian/Pacific Islander/Other (as a broad category) due to limited sample size when split across Alert Levels.

Trust in Science. There were significant differences in trust in science across ethnic groups, $F = 65.997$, $p < .001$, $\eta_p^2 = .005$, but these differences did not vary across Alert Levels, $F = 1.786$, $p = .057$, $\eta_p^2 = .001$.

Graph 137. Ethnic Group Differences in Trust in Science
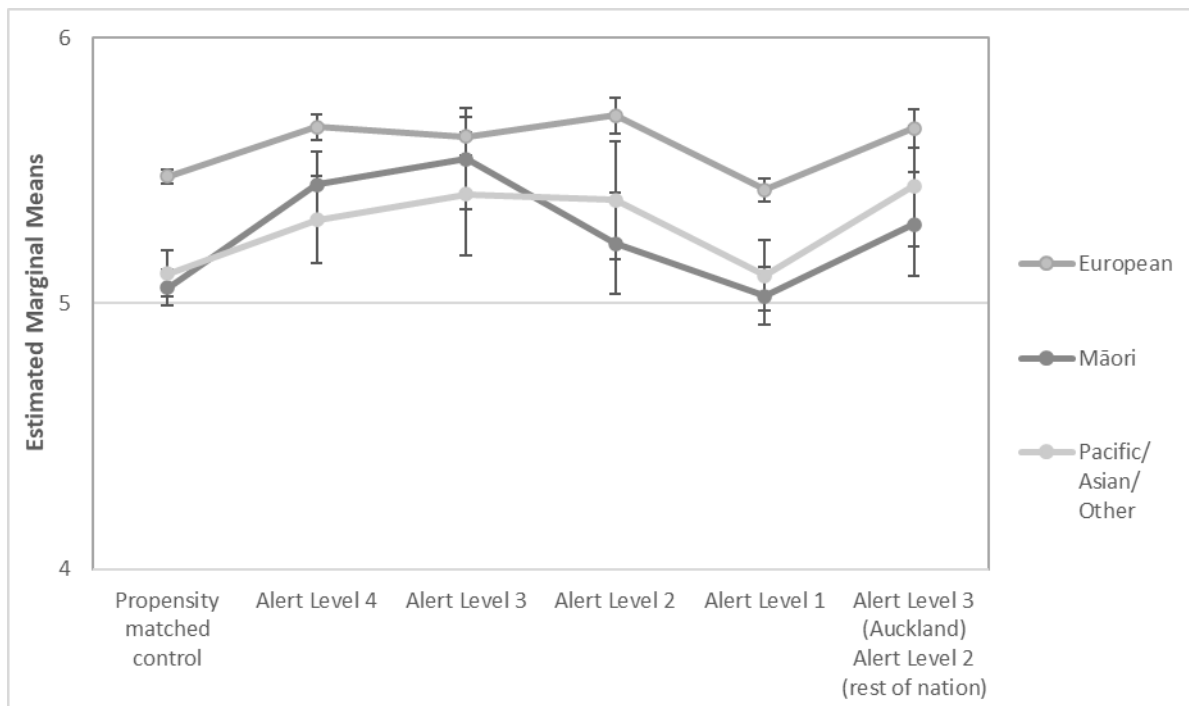
Trust in the Police. There were significant differences in trust in the police across ethnic groups, $F = 65.824$, $p < .001$, $\eta_p^2 = .005$, but these differences did not vary across Alert Levels, $F = 0.799$, $p = .630$, $\eta_p^2 = .000$.

Graph 138. Ethnic Group Differences in Trust in the Police
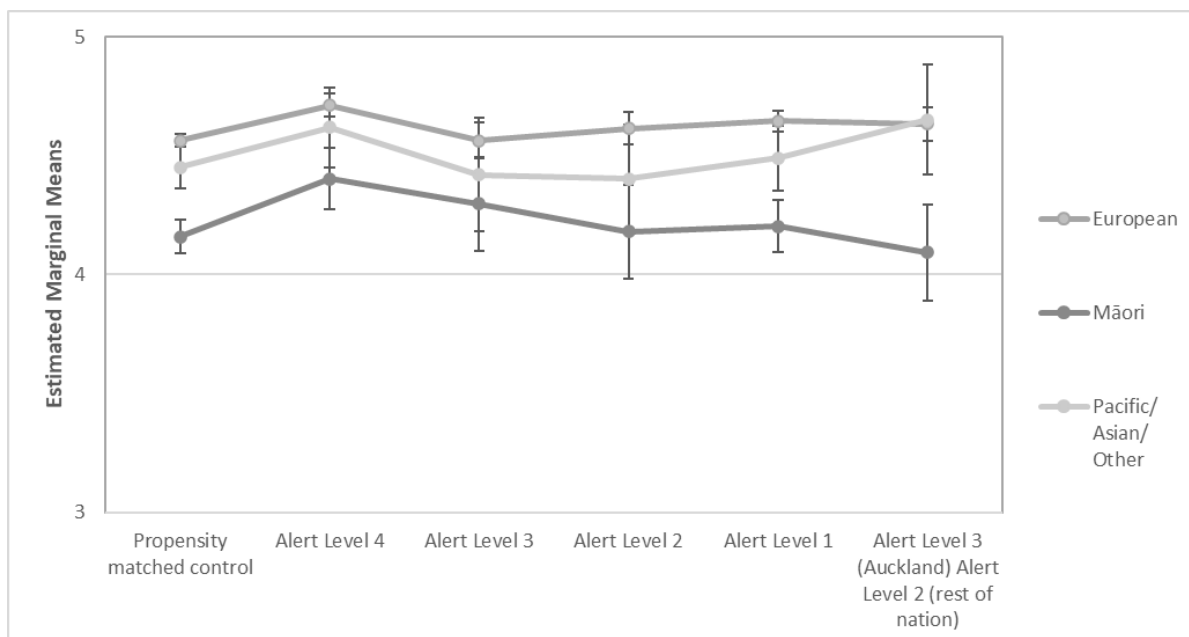
Trust in Politicians. There were significant differences in trust in politicians across ethnic groups, $F = 15.360$, $p < .001$, $\eta_p^2 = .001$, but these differences did not vary across Alert Levels, $F = 1.284$, $p = .233$, $\eta_p^2 = .001$.

Graph 139. Ethnic Group Differences in Trust in Politicians
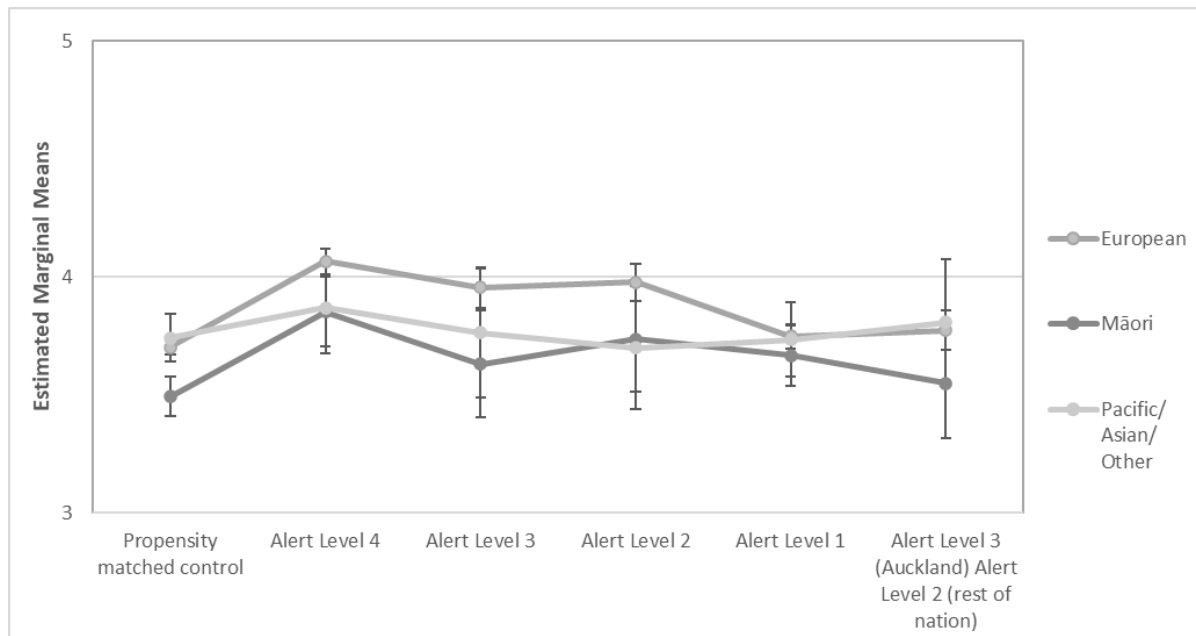
Satisfaction with the Government. There were significant differences in satisfaction with the government across ethnic groups, $F = 110.996$, $p < .001$, $\eta_p^2 = .022$, which varied by Alert Level, $F = 3.166$, $p < .001$, $\eta_p^2 = .001$. Although satisfaction with the government increased throughout the Alert Levels and the second outbreak relative to the matched control group, this was particularly evident among Māori and European respondents.

Graph 140. Ethnic Group Differences in Satisfaction with the Government
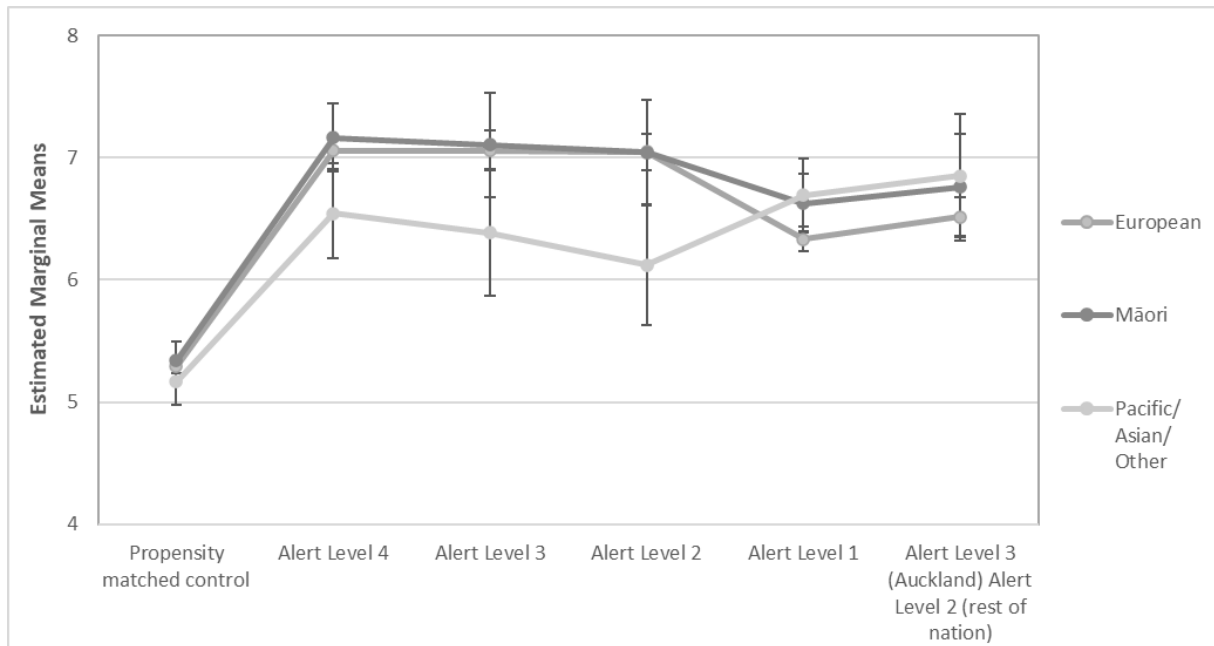
National Identity. There were significant differences in national identity across ethnic groups, $F = 52.951$, $p < .001$, $\eta_p^2 = .004$, but these differences did not vary across Alert Levels, $F = 0.726$, $p = .700$, $\eta_p^2 = .001$.

Graph 141. Ethnic Group Differences in National Identity
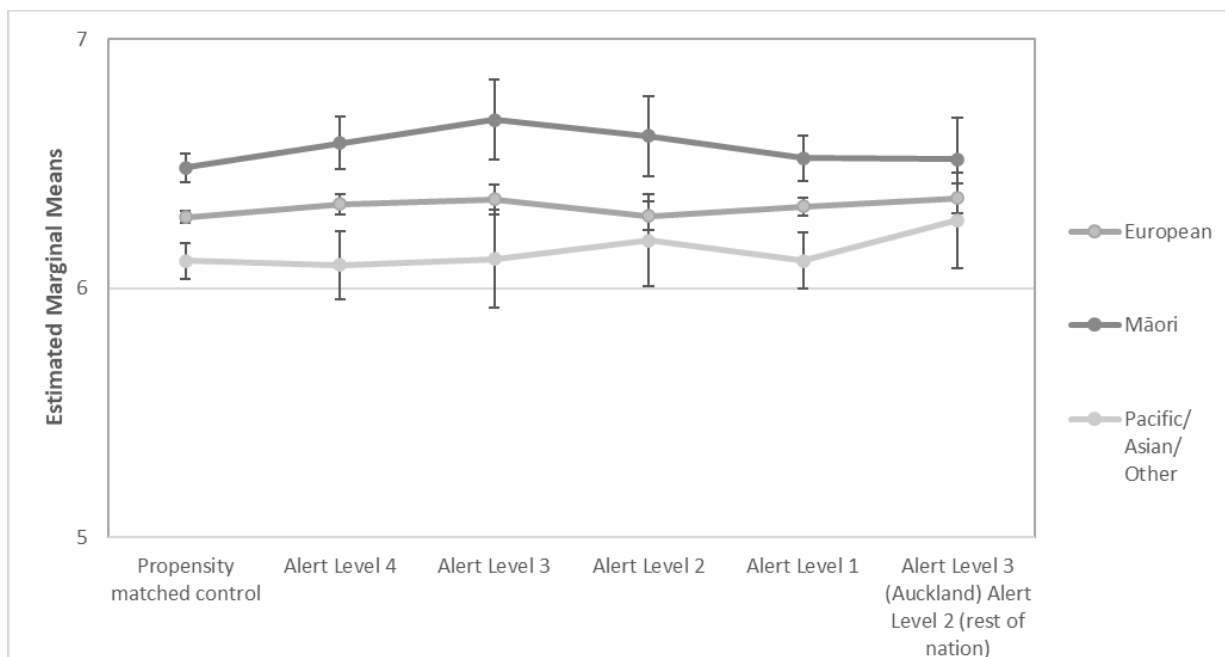
Summary of Differences across Ethnicity. Mean differences in institutional trust and national identification emerged across ethnic groups. These differences did not vary across Alert Levels, with one exception: The increase in satisfaction with the government beginning at Alert Level 4 and continuing through the second outbreak was particularly pronounced for Māori and European and less for those identifying as Pacific, Asian or another ethnic group.

Differences across Parental Status

Trust in Science. Those with no children reported more trust in science, $F = 36.469$, $p < .001$, $\eta_p^2 = .002$, and this did not vary across Alert Levels, $F = 1.404$, $p = .219$, $\eta_p^2 = .000$.

Graph 142. Parental Status Differences in Trust in Science
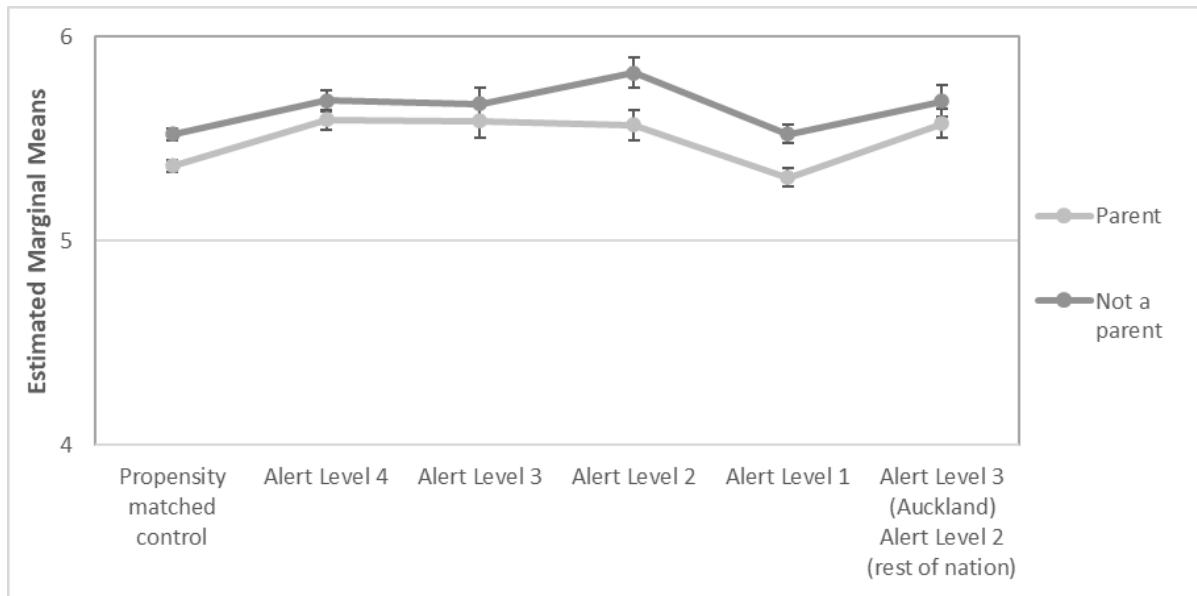
Trust in the Police. Parents reported more trust in the police, $F = 25.997$, $p < .001$, $\eta_p^2 = .001$, but there was a trend for this to vary across Alert Levels, $F = 2.254$, $p = .046$, $\eta_p^2 = .000$. Although trust in the police remained stable throughout Alert Levels for parents, trust declined slightly at Alert Level 3 for those without children.

Graph 143. Parental Status Differences in Trust in the Police
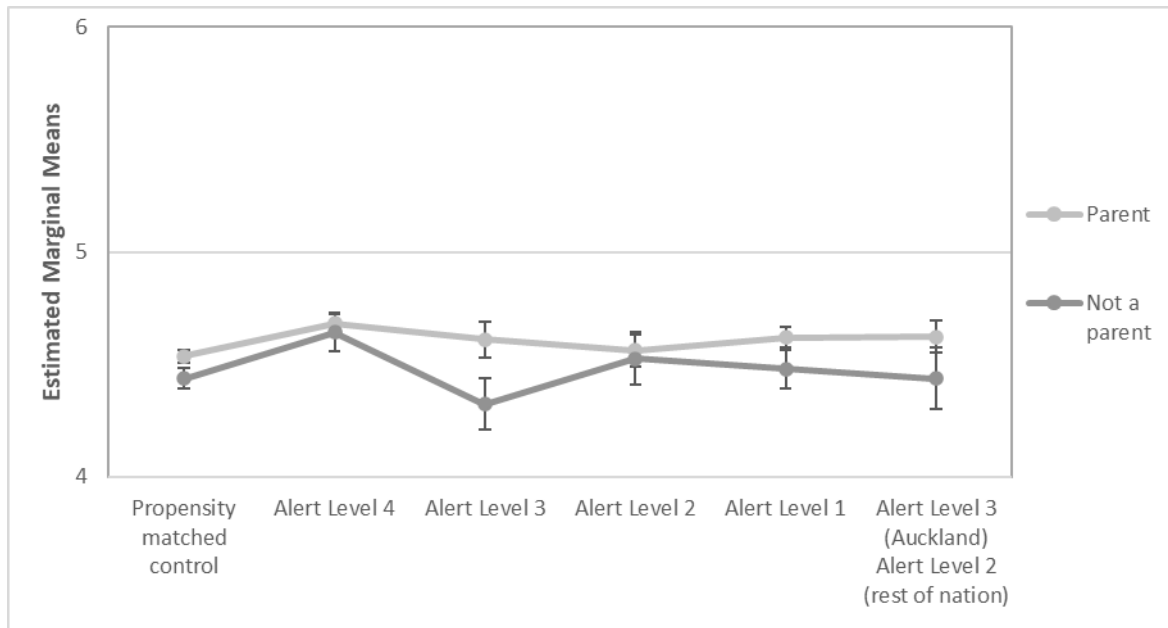
Trust in Politicians. Parents reported more trust in politicians, $F = 16.106$, $p < .001$, $\eta_p^2 = .001$, but this difference varied across Alert Levels, $F = 3.847$, $p = .002$, $\eta_p^2 = .001$. Although trust in politicians increased for both groups beginning at Alert Level 4, those with no children expressed more trust than did parents at both Alert Level 4 and Alert Level 2.

Graph 144. Parental Status Differences in Trust in Politicians
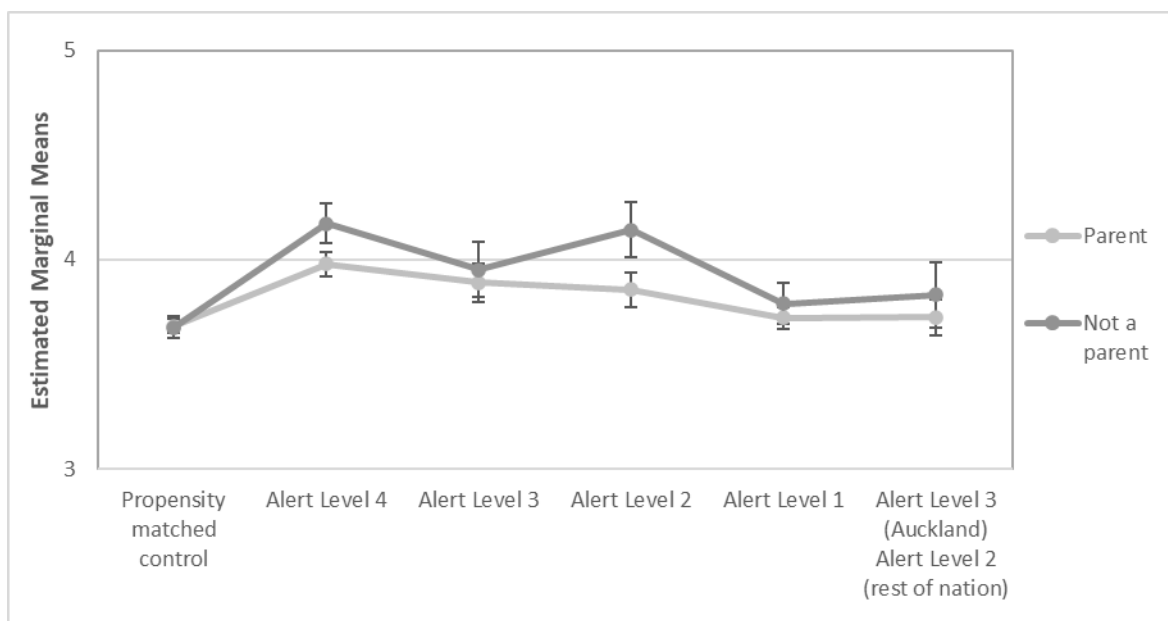
Satisfaction with the Government. Those with no children reported more satisfaction with the government, $F = 19.208$, $p < .001$, $\eta_p^2 = .001$, and this did not vary across Alert Levels, $F = 1.538$, $p = .174$, $\eta_p^2 = .000$.

Graph 145. Parental Status Differences in Satisfaction with the Government
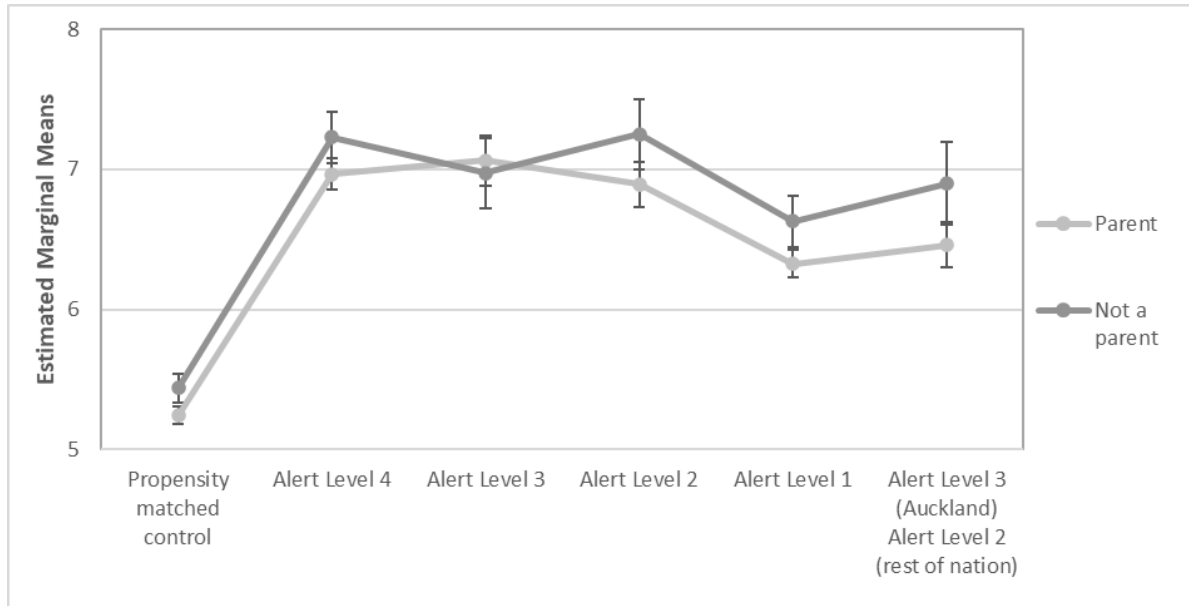
National Identity. Parents identified more with the nation, $F = 44.160$, $p < .001$, $\eta_p^2 = .002$, but this varied slightly across Alert Levels, $F = 2.423$, $p = .033$, $\eta_p^2 = .001$. Although national identity remained stable throughout Alert Levels for those with no children, national identity increased slightly for parents at Alert Level 3.

Graph 146. Parental Status Differences in National Identity
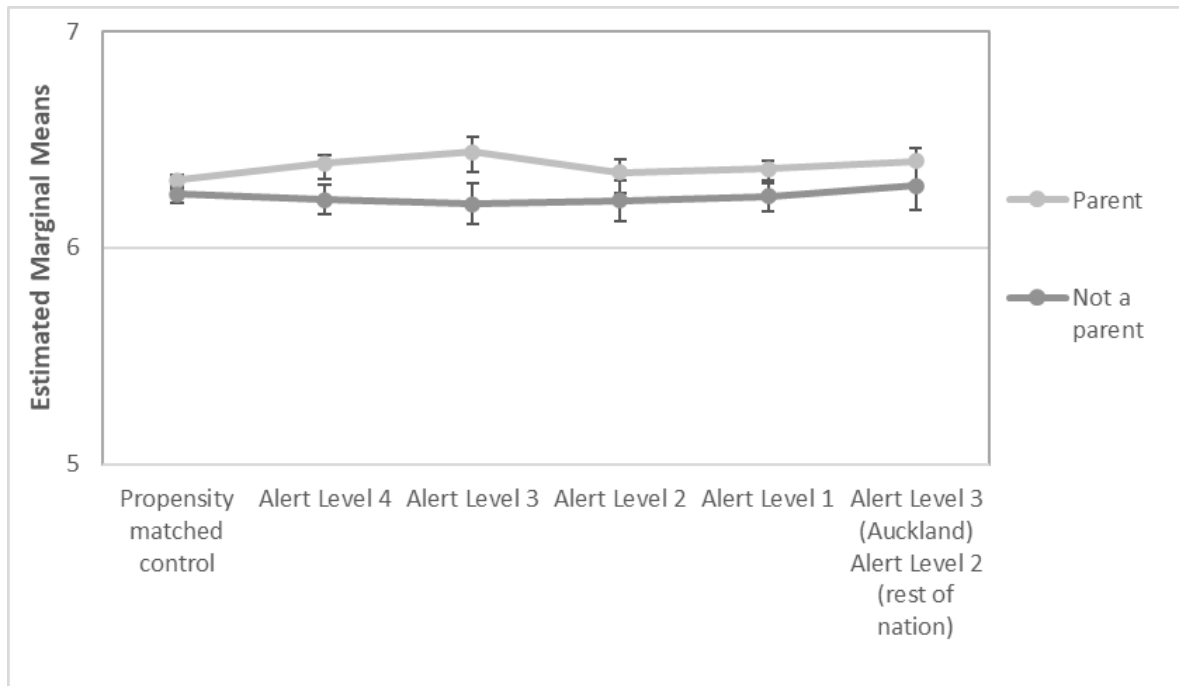
Summary of Differences across Parental Status. Parents identified more with the nation and expressed more trust in the police and politicians, but less trust in science and satisfaction with the Government. For the most part, these differences were stable across Alert Levels. The increased trust in politicians that occurred across groups at Alert Level 4 and Alert Level 2 was, however, more apparent for those with no children.

Differences across Health Condition/Disability Status

Trust in Science. Participants with a health condition or disability reported less trust in science, $F = 12.992$, $p = .001$, $\eta_p^2 = .001$, which did not vary across Alert Levels, $F = 2.024$, $p = .072$, $\eta_p^2 = .000$.

Graph 147. Health Condition/Disability Status Differences in Trust in Science
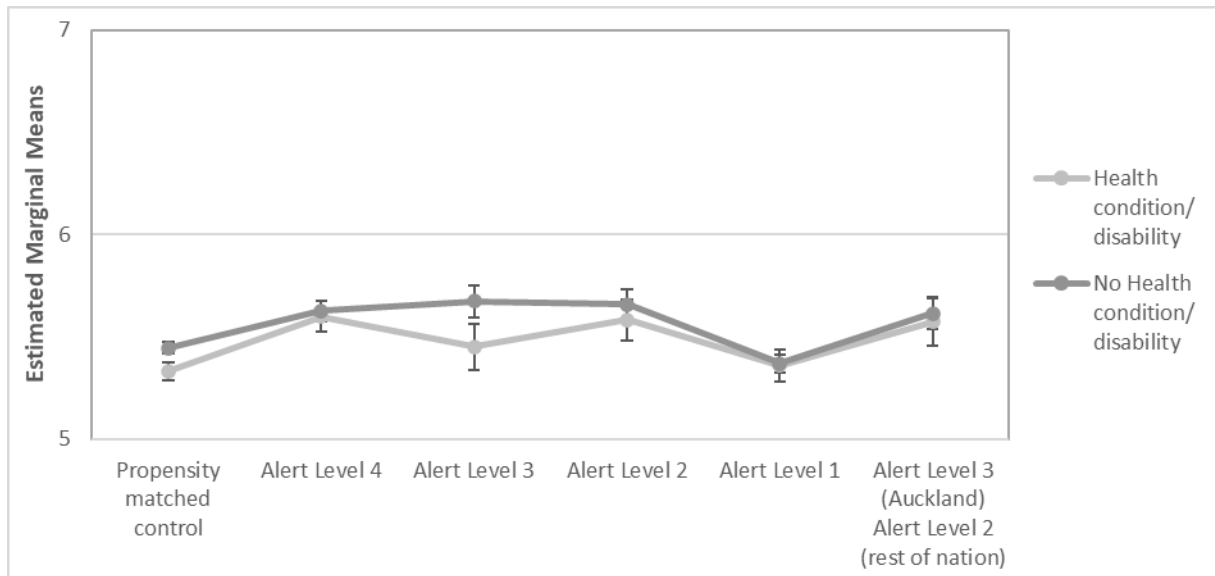
Trust in the Police. Participants with a health condition or disability reported less trust in the police, $F = 140.388$, $p < .001$, $\eta_p^2 = .006$, which did not vary across Alert Levels, $F = 0.288$, $p = .920$, $\eta_p^2 = .000$.

Graph 148. Health Condition/Disability Status Differences in Trust in the Police
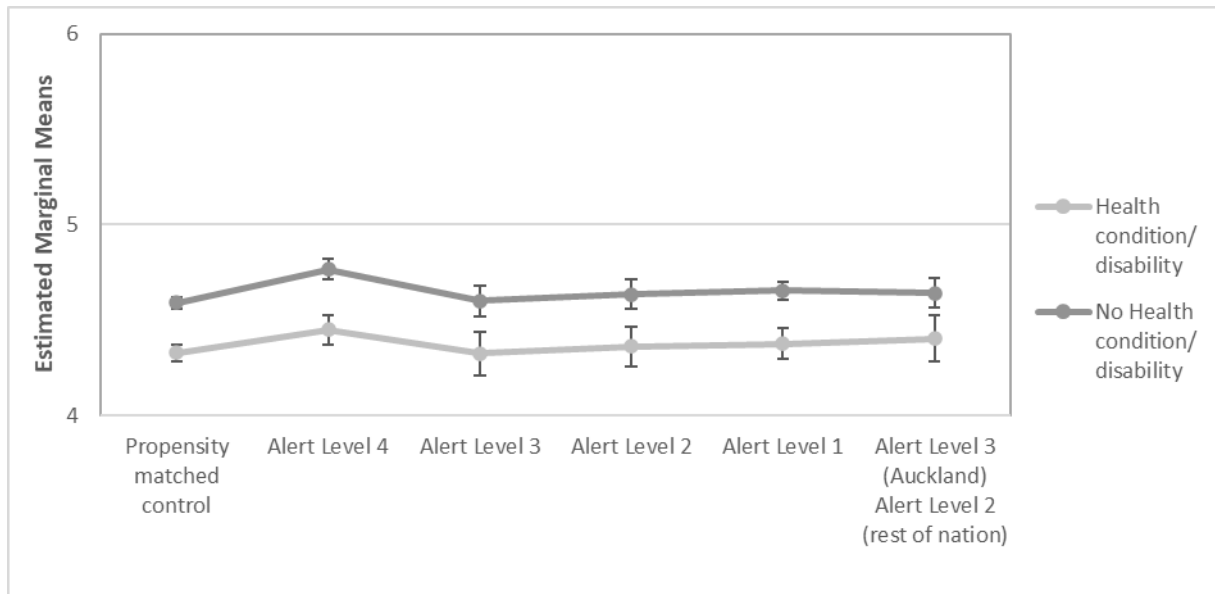
Trust in Politicians. Participants with a health condition or disability reported less trust in politicians, $F = 64.667$, $p < .001$, $\eta_p^2 = .003$, which did not vary across Alert Levels, $F = 1.710$, $p = .129$, $\eta_p^2 = .000$.

Graph 149. Health Condition/Disability Status Differences in Trust in Politicians
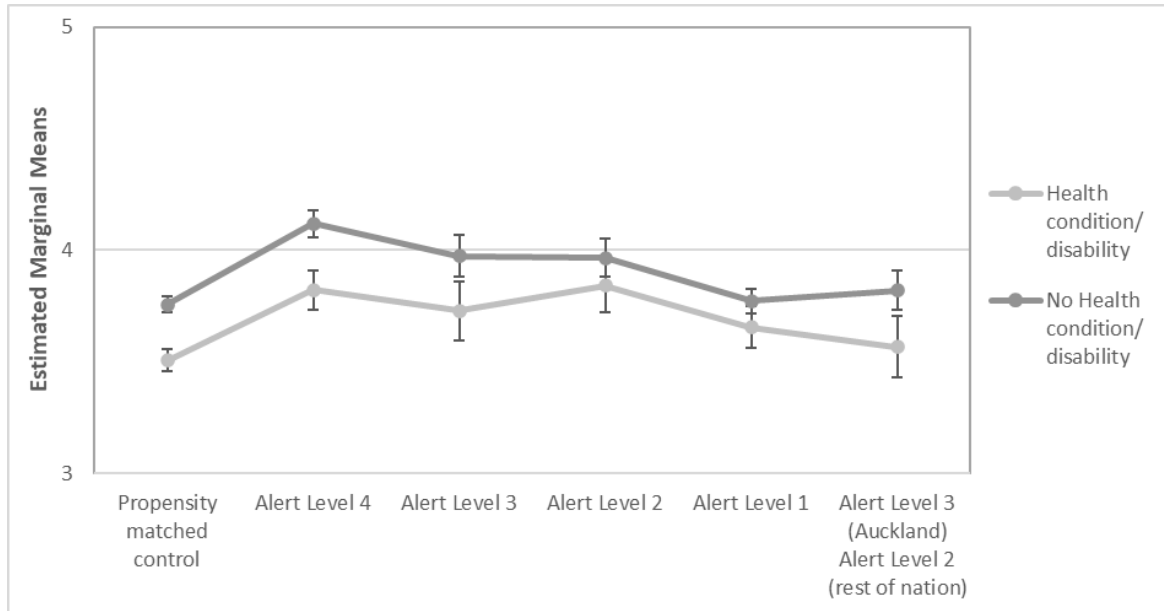
Satisfaction with the Government. There were no differences in satisfaction with the government, $F = 1.710$, $p = .191$, $\eta_p^2 = .000$, and this did not vary across Alert Levels, $F = 1.434$, $p = .208$, $\eta_p^2 = .000$.

Graph 150. Health Condition/Disability Status Differences in Satisfaction with the Government
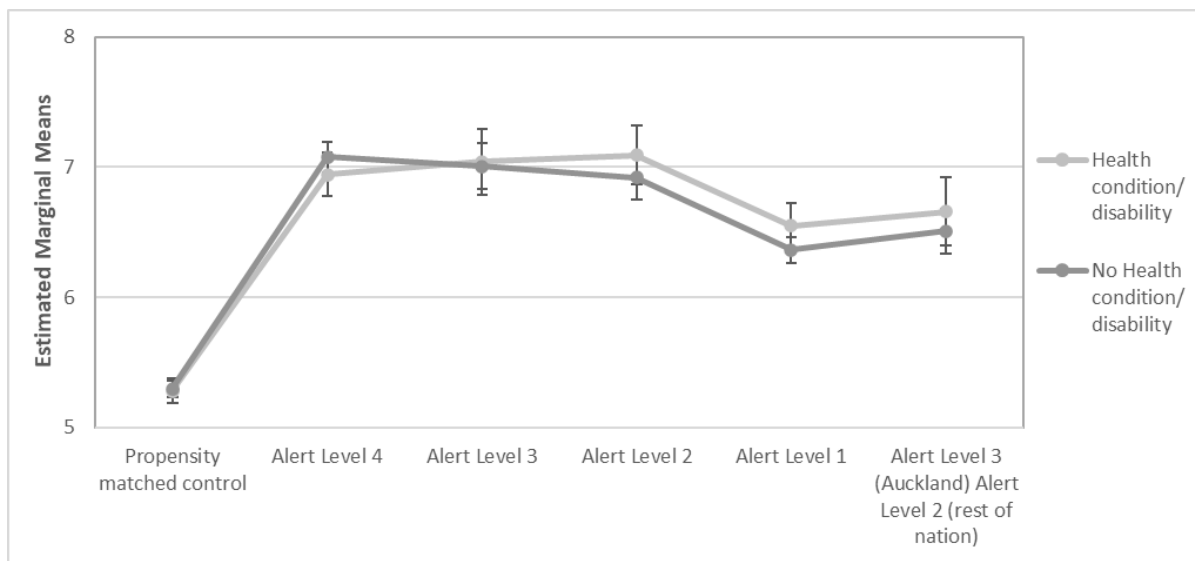
National Identity. There were small differences in national identity, $F = 5.210$, $p = .022$, $\eta_p^2 = .000$, but this did not vary across Alert Levels, $F = 0.708$, $p = .618$, $\eta_p^2 = .000$.

Graph 151. Health Condition/Disability Status Differences in National Identity
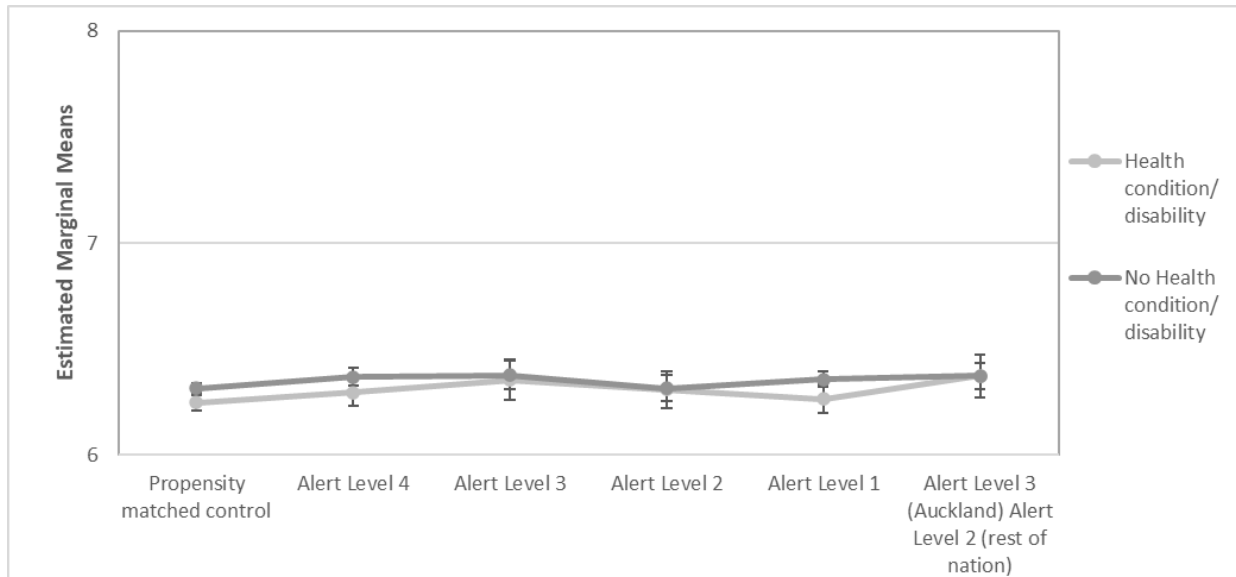
Summary of Differences across Health Condition/Disability Status. Participants with a health condition or disability reported greater institutional trust in general, but the Alert Levels did not exacerbate these differences.

Differences across Mental Health Diagnosis

Trust in Science. There were no differences in trust in science, $F = 0.243$, $p = .622$, $\eta_p^2 = .000$, and this did not vary across Alert Levels, $F = 1.733$, $p = .123$, $\eta_p^2 = .000$.

Graph 152. Mental Health Diagnosis Status Differences in Trust in Science
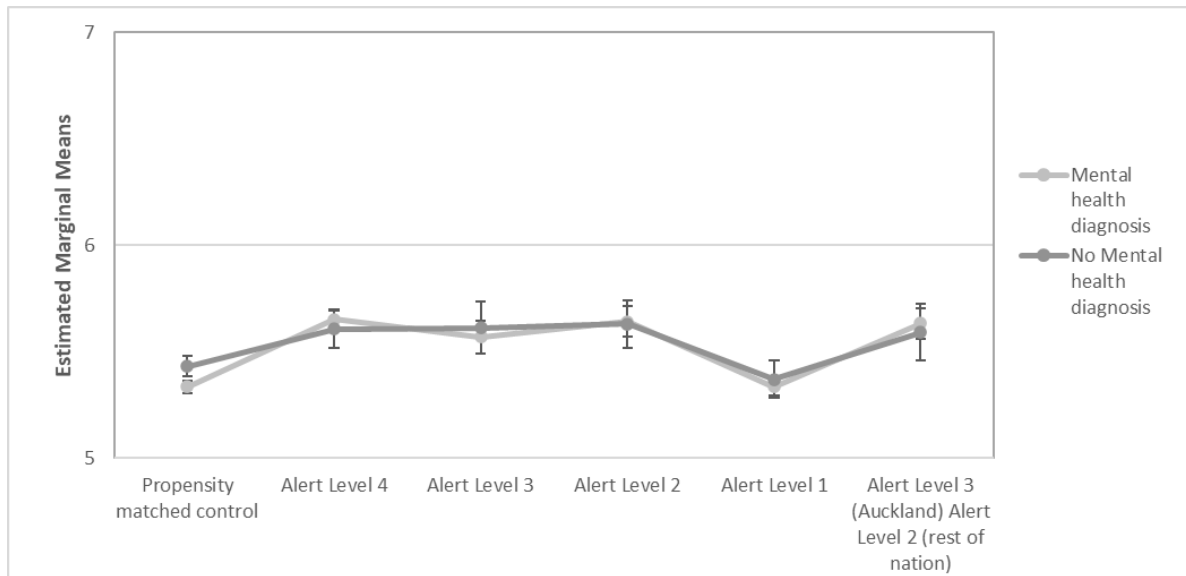
Trust in the Police. Participants with a diagnosis reported less trust, $F = 99.306$, $p < .001$, $\eta_p^2 = .004$, but this did not vary across Alert Levels, $F = 0.587$, $p = .710$, $\eta_p^2 = .000$.

Graph 153. Mental Health Diagnosis Status Differences in Trust in the Police
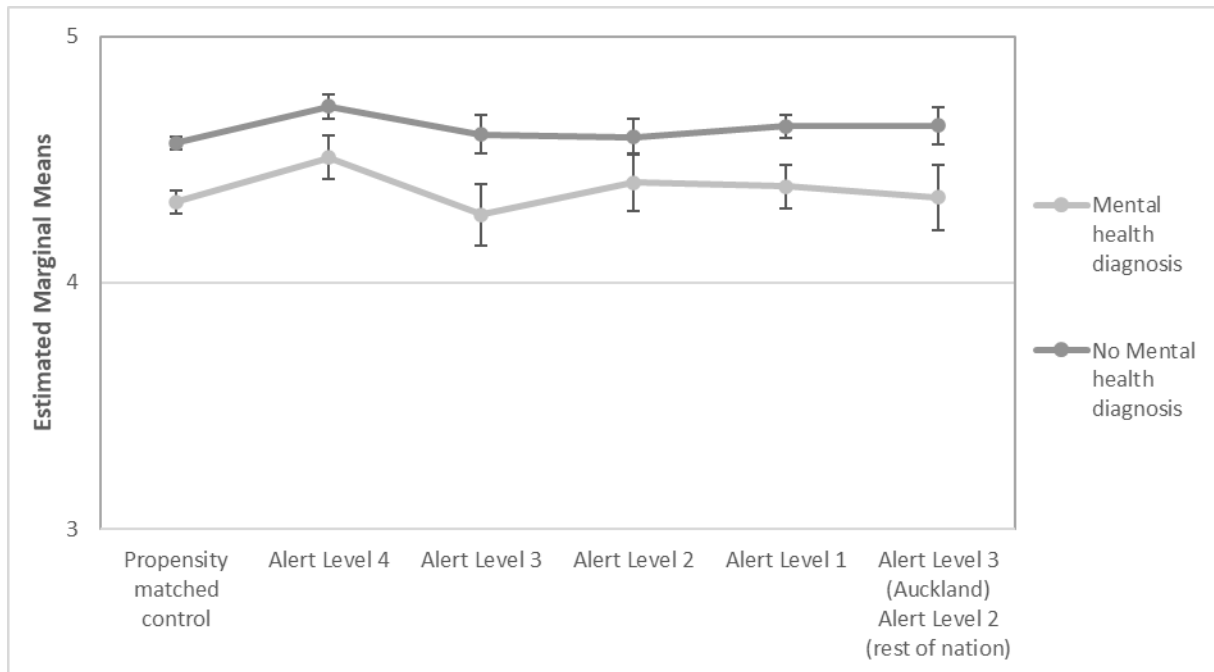
Trust in Politicians. Participants with a mental health diagnosis reported less trust, $F = 35.871$, $p < .001$, $\eta_p^2 = .002$, across Alert Levels, $F = 0.705$, $p = .620$, $\eta_p^2 = .000$.

Graph 154. Mental Health Diagnosis Status Differences in Trust in Politicians
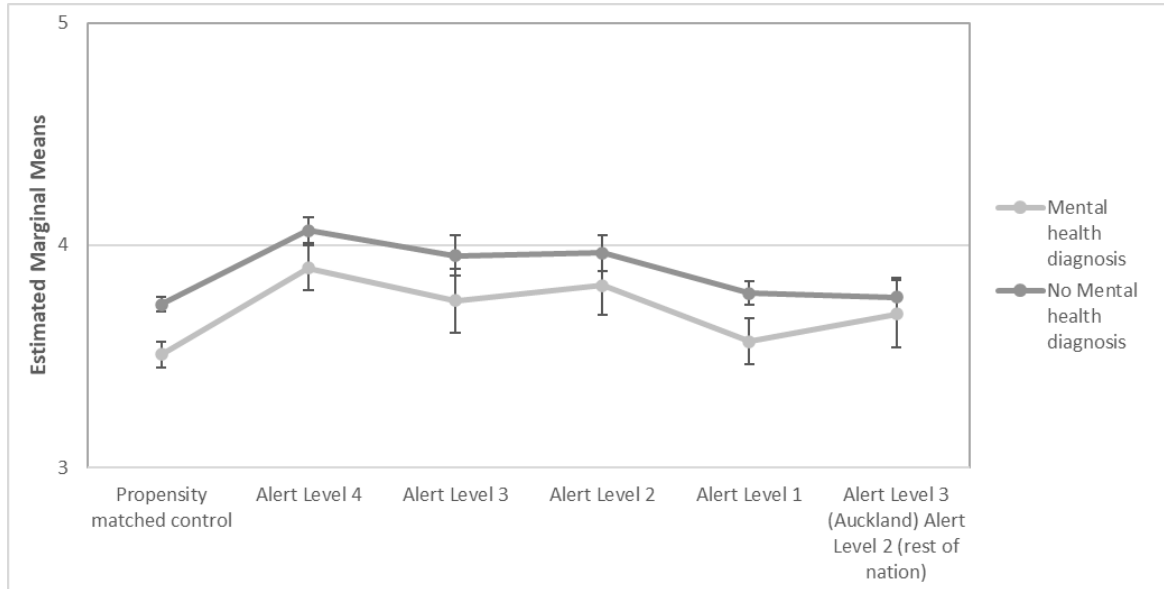
Satisfaction with the Government. Participants with a mental health diagnosis reported less satisfaction with the government, $F = 60.803$, $p < .001$, $\eta_p^2 = .003$, across Alert Levels, $F = 1.525$, $p = .178$, $\eta_p^2 = .000$.

Graph 155. Mental Health Diagnosis Status Differences in Satisfaction with the Government
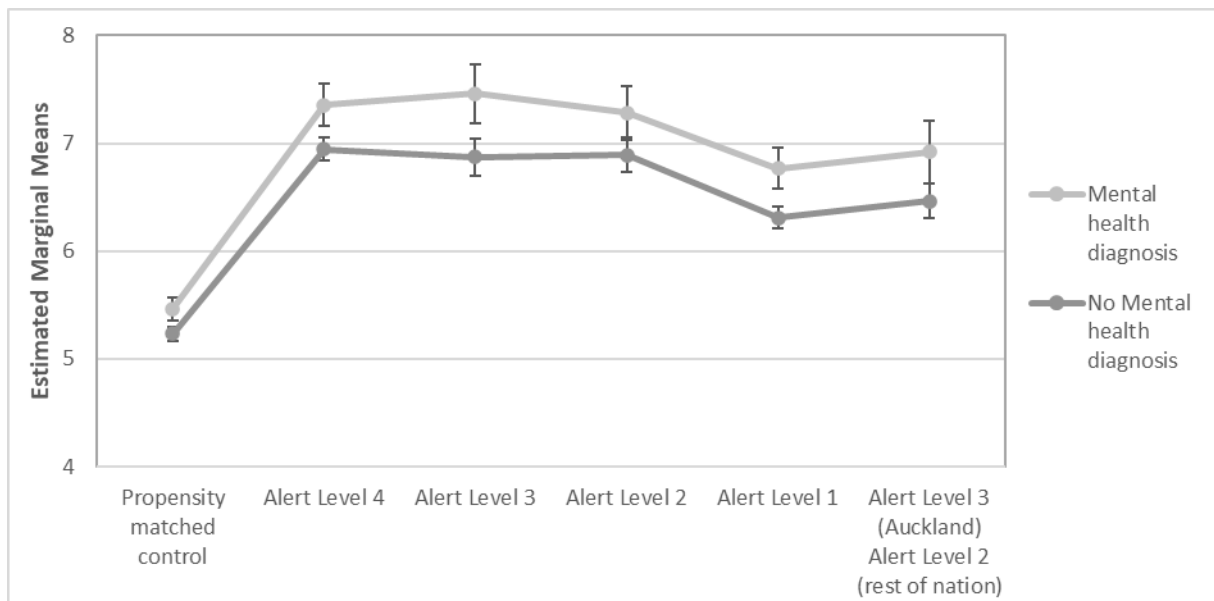
National Identity. Participants with a mental health diagnosis identified less with the nation, $F = 25.393$, $p < .001$, $\eta_p^2 = .001$, across Alert Levels, $F = 1.784$, $p = .112$, $\eta_p^2 = .000$.

Graph 156. Mental Health Diagnosis Status Differences in National Identity
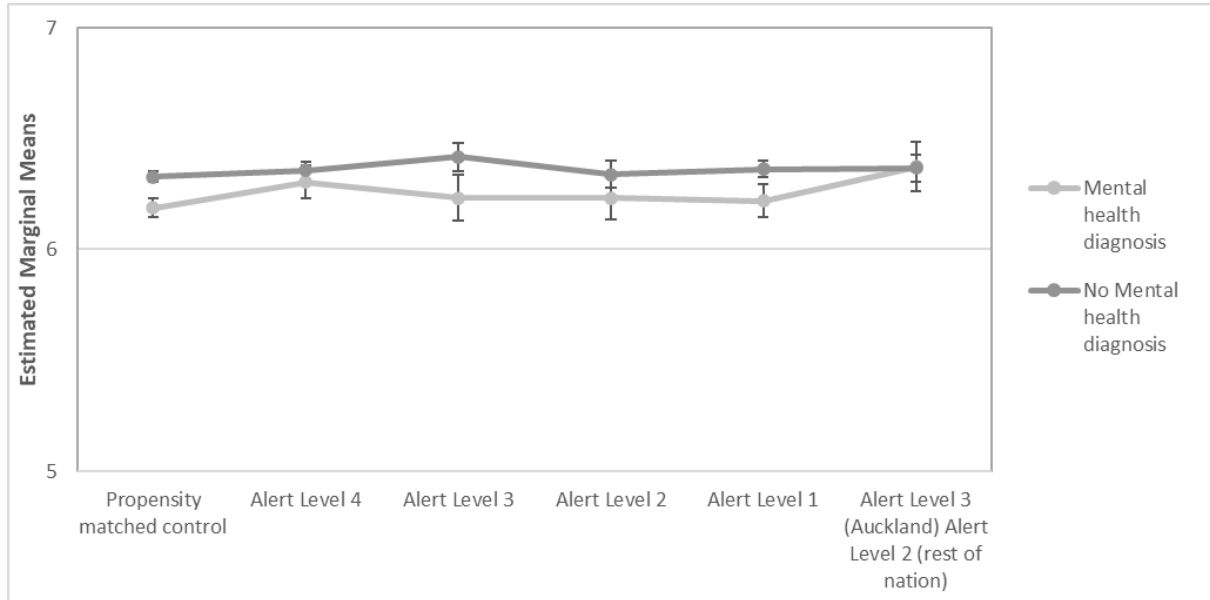
Summary of Differences across Mental Health Diagnosis. Although participants with a mental health diagnosis expressed less institutional trust and identified with the nation less, the Alert Levels did not exacerbate these differences.

Differences across Age

We present comparisons across three age groups: 18-29, 30-64 and 65+ years. Appendix II presents comparisons across six age groups: 18-24, 25-34, 35-44, 45-54, 55-64 and 65+ years. Consistent patterns emerged across both analytic strategies, although there were a few subtle nuances detected when focusing on the six age groups.

Trust in Science. There were no age differences in trust in science, $F = 2.976$, $p = .051$, $\eta_p^2 = .000$, nor did this vary across Alert Levels, $F = 1.439$, $p = .156$, $\eta_p^2 = .001$.

Graph 157. Age Differences in Trust in Science
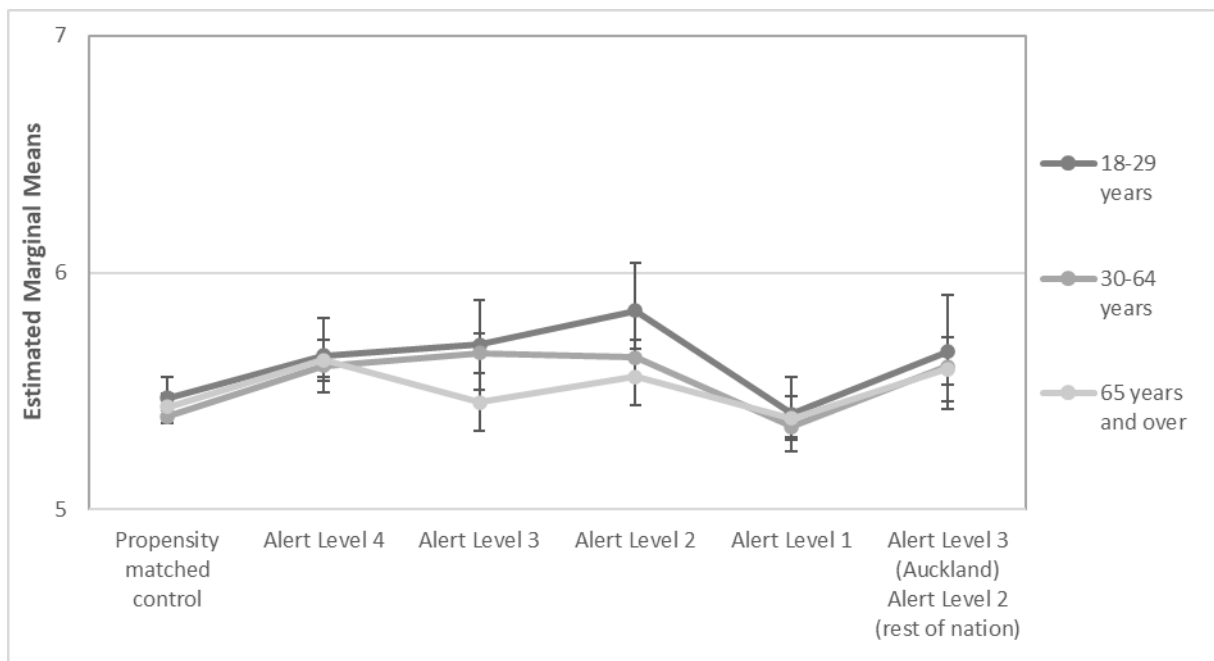
Trust in the Police. Older participants (65+) trusted the police more, $F = 41.899$, $p < .001$, $\eta_p^2 = .003$, but this difference varied across Alert Levels, $F = 2.603$, $p = .004$, $\eta_p^2 = .001$. Beginning at Alert Level 3, 18-29 year olds' trust in the police began to drop relative to the matched control group, whereas trust levels remained stable for the those 30-64 years old, and increased slightly at the second outbreak for those 65 and older.

Graph 158. Age Differences in Trust in the Police
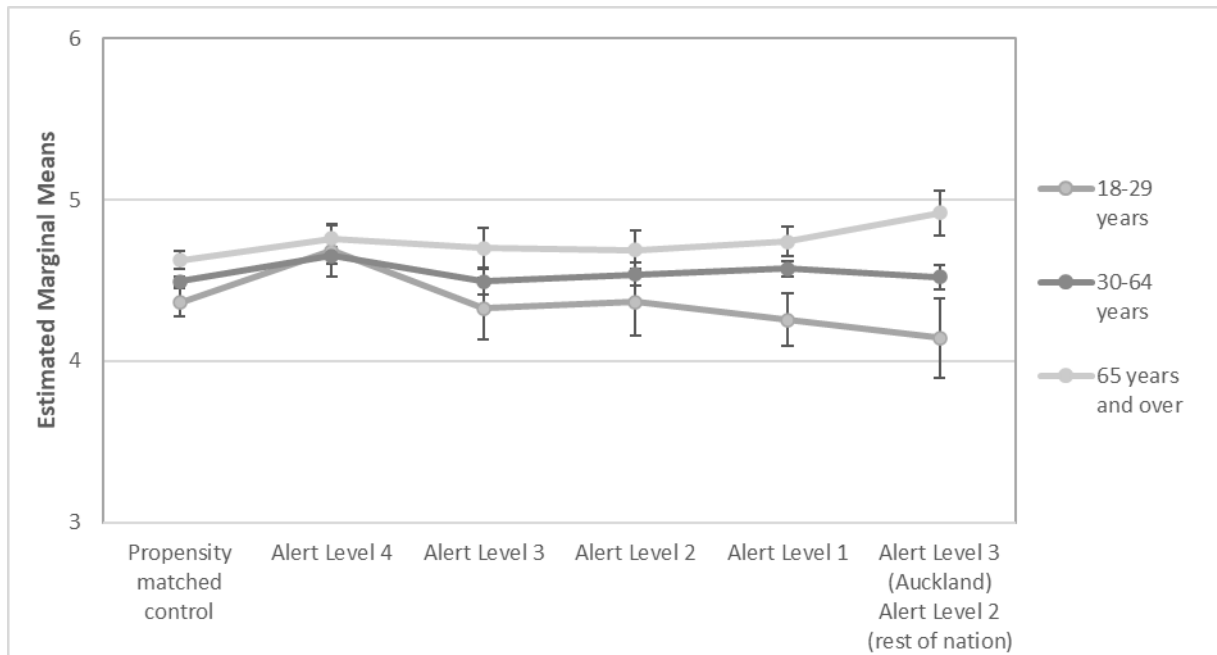
Trust in Politicians. Older participants (65+) trusted politicians more, $F = 47.803$, $p < .001$, $\eta_p^2 = .004$, but these differences varied across Alert Levels, $F = 3.003$, $p = .001$, $\eta_p^2 = .001$. Although all three age groups reported more trust in politicians beginning at Alert Level 4, 18-29 year olds' trust returned to the level of the matched control at Alert Level 1.

Graph 159. Age Differences in Trust in Politicians
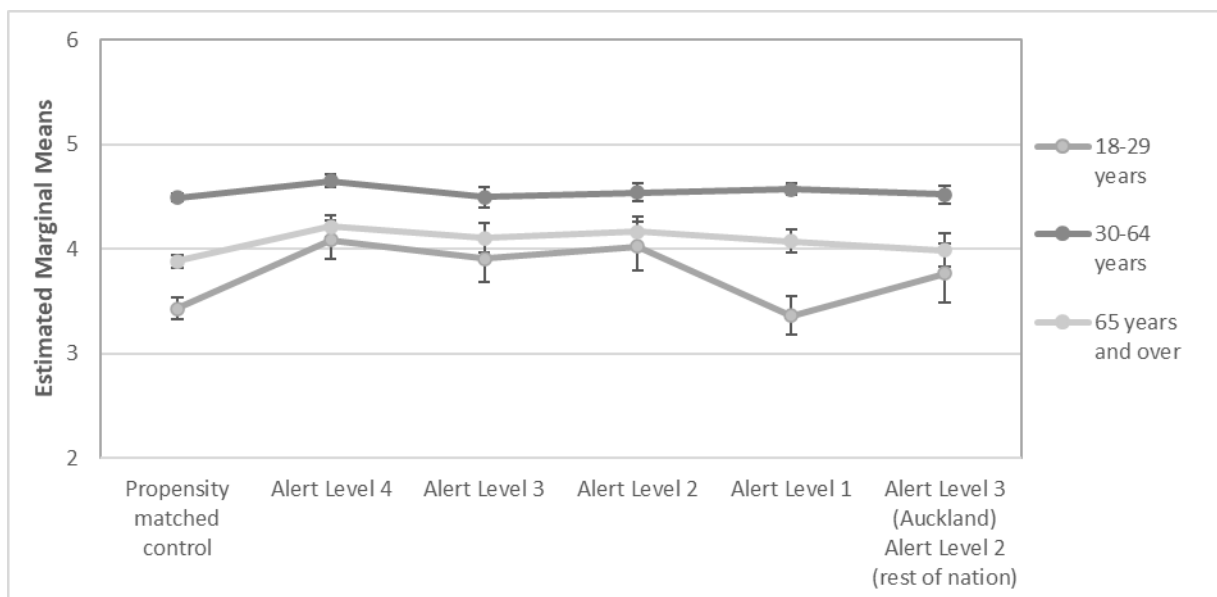
Satisfaction with the Government. There were no age differences in satisfaction with the government, $F = 2.271$, $p = .103$, $\eta_p^2 = .000$, but this varied across Alert Levels, $F = 1.944$, p

$= .035$, $\eta_p^2 = .001$. Whereas younger participants' increased satisfaction began to wane at Alert Level 2, older participants (65+) became more satisfied with the Government.

Graph 160. Age Differences in Satisfaction with the Government
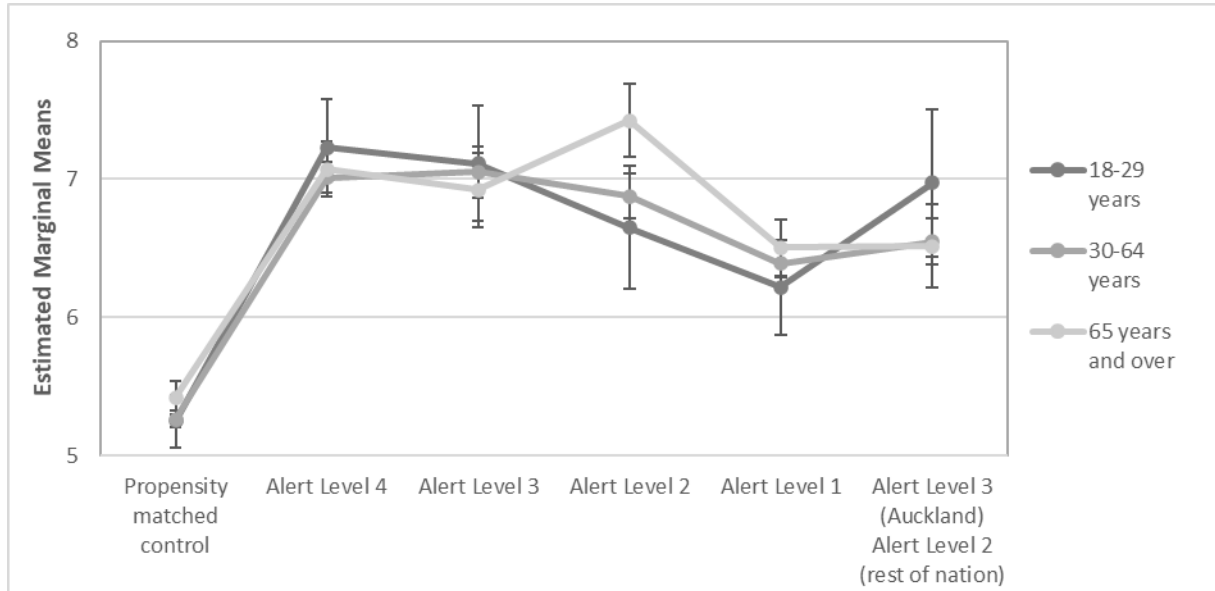
National Identity. Older participants identified more with the nation, $F = 95.992$, $p < .001$, $\eta_p^2 = .008$, but this did not vary across Alert Levels, $F = 0.793$, $p = .636$, $\eta_p^2 = .000$.

Graph 161. Age Differences in National Identity
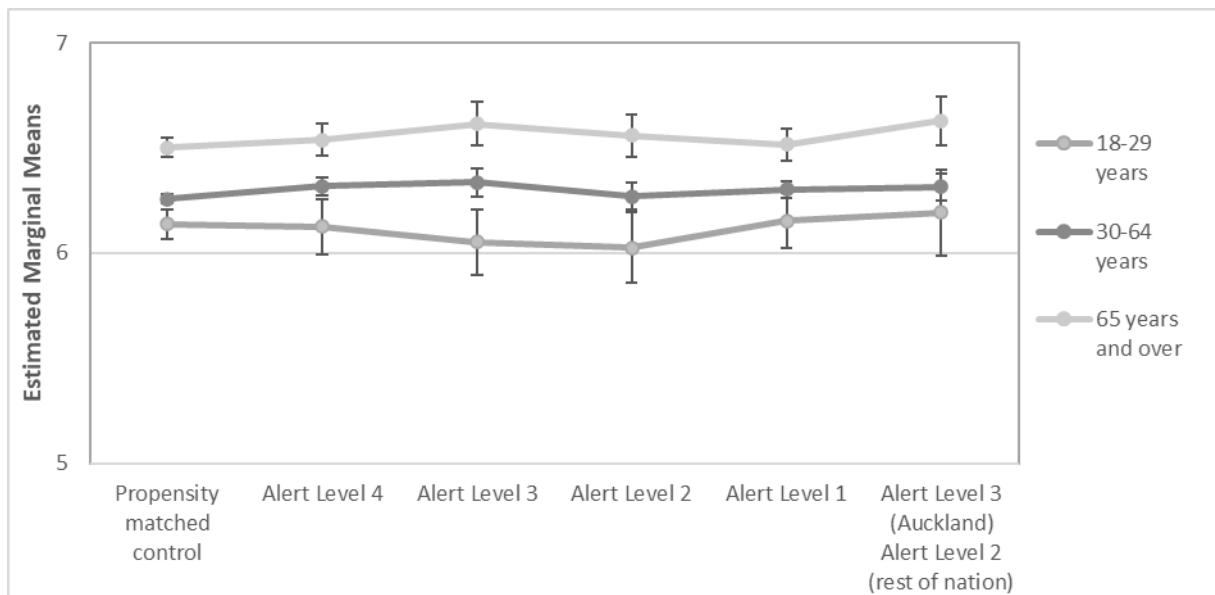
Summary of Differences across Age. With the exception of trust in science and satisfaction

with the Government, general age differences emerged across our measures such that older participants expressed more trust in institutions and identified more with the nation than did younger participants. Although these patterns were generally consistent across Alert Levels, 18-29 year olds' trust in the police began to drop at Alert Level 3 relative to the matched control group, whereas trust levels remained stable for the 30-64 years olds, and increased for those 65 and older. Similarly, 18-29 year olds' trust in science dropped to the level of the matched control at Alert Level 1 after initial increases at Alert Level 4.

Summary of Demographic Differences in Institutional Trust and National Identification

Women reported more trust in politicians and satisfaction with the Government than men, and this became more pronounced during the Alert Levels. Men, in contrast, expressed more trust in since, but this difference was attenuated during the Alert Levels 4-2 and the second outbreak as general increases in trust in science occurred. This pattern indicates that women were particularly likely to show increased trust in institutions as the nation was led across the Alert Levels. Similarly, the increase in satisfaction with the Government beginning at Alert Level 4 and continuing through the second outbreak was particularly pronounced for respondents identifying as Māori and European, and less for those identifying as Pacific, Asian or another ethnic group. Although the other demographic factors were associated with general differences in institutional trust, these were not altered by the Alert Levels. The exceptions involved the increased trust in politicians at Alert Level 4 and Alert Level 2 being more apparent for respondents without children and the increased trust in police and science becoming weaker for younger respondents (18-29) at later Alert Levels.

Institutional Trust and National Identification Conclusion

Examination of institutional trust and national identification revealed a general increase in trust in, and satisfaction with, New Zealand's institutions. This pattern was most notable for satisfaction with the New Zealand Government, showing substantial increases at Alert Level 4 compared to prior to the pandemic, which continued throughout Alert Levels and the second community outbreak. Trust in science, trust in politicians, and trust in the police all increased relative to the matched control group at Alert Level 4 and, in many cases, remained elevated at one or more of the following Alert Levels. Trust in politicians did, however, revert to baseline levels at Alert Level 1, but once again increased upon the second community outbreak. Only national identification remained unchanged during the pandemic, probably due to ceiling effects. This exception aside, the results reflect a general increase in

trust in, and satisfaction with, the key institutions responsible for developing, implementing, and enforcing New Zealand's 4-tier Alert Level system. Finally, these increases were broadly evident across demographic groups in New Zealand with consistent patterns indicating they became stronger for women with respect to trust in science and politicians, as well as with satisfaction with the Government. For Māori and Europeans, these increases occurred with respect to satisfaction with the Government, and were weaker for those identifying as Pacific, Asian or another ethnic group.

That New Zealanders expressed increased trust in, and satisfaction with, institutions from the outset of the pandemic may help to explain New Zealand's success at eliminating COVID-19 from the community. Considerable social psychological research demonstrates the critical role of trust in eliciting compliance from the public (see Braithwaite & Makkai, 1994; Marien & Hooghe, 2011; Murphy, 2004). Analyses of compliance rates to public health measures in Switzerland reveal that lack of trust in the Government's response to the COVID-19 outbreak fostered non-compliance (Nivette et al., 2021). The increased trust in science, politicians and the police identified in this report likely elicited voluntary compliance to the mandates associated with each Alert Level.

SUMMARY AND CONCLUSIONS

In response to the rapid and expected exponential spread of COVID-19, the New Zealand Government developed, implemented, and enforced a 4-tier Alert Level system. The unprecedented restrictions posed many challenges that may have had unintended impacts on New Zealanders' health and well-being, social connections, employment outcomes, and attitudes toward others and government institutions.

In this report, we analysed data from the NZAVS to assess the effects of the COVID-19 Alert Levels on (1) health and well-being, (2) personal relationships and social connections, (3) employment and financial outcomes, (4) perceived discrimination, and (5) institutional trust and national identification. Over 1,500 people completed the survey at each of the Alert Levels providing data from over 12,000 New Zealanders to assess changes in outcomes across the staged restrictions used to contain COVID-19. We also compared the responses of participants at each Alert Level to a matched control group of over 12,000 New Zealanders surveyed before the pandemic, and examined whether the effects of the Alert Levels varied across demographic groups. Below, we summarize the pattern of results across outcomes for the different Alert Levels to provide a picture of the key challenges at each stage of the pandemic.

Alert Level 4. The Level 4 lockdown created a major shift in the daily lives and freedoms of New Zealanders, who needed to manage confinement, employment and family demands, social isolation, and anxiety regarding their health and future security. New Zealanders were thrust into lockdown suddenly at the mandate of the Government based on advice from scientists and enforcement by police. Our analyses indicate that New Zealanders generally coped with these unprecedented demands, but also experienced specific challenges that should be central to decision making if New Zealand must return to Alert Level 4. Despite the risk that Alert Level 4 could undermine health, well-being and institutional trust, the overall results show that New Zealanders were generally resilient, as no detrimental effects on health and well-being emerged on average. Such resilience may have been achieved by a high degree of trust in the national response and thus support of the lockdown measure to contain COVID-19. On average, respondents within Alert Level 4 reported greater trust in science, police, and politicians, as well as increases in satisfaction with the New Zealand Government, compared to the matched control group assessed before the pandemic. The rise in institutional trust was accompanied by increases in a sense of community in the local neighbourhood. Together, these results provide an overall picture that

the Government's swift, strong and clear response to the pandemic fostered a collective trust and attachment across the nation.

Yet, the challenges of Alert Level 4 were felt by New Zealanders. Despite sustaining greater trust and connectedness at the broader level, the difficulties of home confinement were evident in New Zealanders' personal relationships, as shown by greater relationship conflict and lower relationship satisfaction compared to the matched control group assessed prior to the pandemic. Although these poor outcomes did not persist beyond Alert Level 4, they show the danger restricted lockdowns can have for family dynamics, which may be exacerbated if families enter future Alert 4 lockdowns with even greater financial challenges and depleted resources. Policies to help sustain the quality of personal relationships, including reducing domestic conflict, should be a main objective of future Alert 4 planning.

Given changes to working conditions and employment stability, job security also decreased compared to pre-pandemic levels. Moreover, perceived discrimination increased on average, but the specific discrimination experienced varied by gender. Women reported more gender-based discrimination, whereas men reported more ethnic-based discrimination, likely because differences in the division of paid vs domestic labour created distinct challenges for women and men. Other data indicate that women faced greater rates of unemployment and had an increased burden of domestic labour and parenting during the lockdown, which likely contributed to women's increased perceptions of gender-based discrimination identified here. Conversely, men's experiences may more closely align with employment opportunities and associated concerns regarding ethnic-based discrimination.

Finally, compared to European respondents, those who identified as Pacific, Asian or another non-Māori ethnicity were more likely to report increases in ethnic-based discrimination, and less likely to show the increases in satisfaction with the Government that were seen across the larger sample. These initial patterns forecasted a pattern of different experiences at Alert Levels 3-2 that indicate future responses need to consider the gender- and ethnic-related inequities in the economic, social, and family demands of the pandemic.

Alert Levels 3 and 2. At Alert Levels 3 and 2, restrictions were eased to allow more opportunities to resume employment and social interactions outside the home. The initial increases in institutional trust, satisfaction with government and sense of community were retained throughout Alert Levels 3 and 2, revealing that New Zealanders continued to support the implementation and enforcement of the national pandemic response. Job security continued to be lower given the continued restrictions on employment and increases in job

losses, but the economic instability tended to affect some groups more than others. For example, younger people (aged 18-29) reported lower job satisfaction and greater psychological distress, whereas older participants (65+) reported greater personal wellbeing and satisfaction with life, likely due to less employment opportunities and the restrictions limiting the exploration and personal development goals central to younger age groups. The most consistent patterns at Alert Levels 2 and 3, however, revealed that the main challenges of the pandemic were disproportionately felt by women and ethnic minorities. Relative to before the pandemic, women continued to note more gender-based discrimination and women also reported greater psychological distress than prior to the pandemic, showing that the greater employment and domestic costs of the Alert Levels for women were taking a toll. Conversely, Māori and those who identified as Pacific, Asian, or another ethnic minority reported the highest increases in ethnic-based discrimination (compared to Europeans). The increase in perceived discrimination for ethnic minority groups likely arises from variations in employment opportunities and losses, as well as the salience of other social processes (e.g., health disparities, intergroup prejudice), as some groups were able to more easily recover. These results show that future responses to the pandemic must consider the persistent gender-based inequities in job loss and unpaid labour that women faced during the Alert Levels, while ensuring that the economic, health, and social burdens of the pandemic do not fall disproportionately on Māori, Pacific, Asian, or other ethnic minority groups.

Alert Level 1. As New Zealanders emerged from the restrictions and threat of the COVID-19 pandemic, the pattern indicated a sense of relief and appreciation. The increases in sense of community occurring across Alert Levels 4-2 remained, and levels of job security rebounded. Moreover, compared to pre-pandemic levels, people generally reported greater personal well-being, along with higher job satisfaction and feeling valued by their organisation. However, as family, employment and broader social interactions returned to normal, reports of ethnic-based discrimination were greater than prior to the pandemic, primarily for Māori and those who identified as Pacific, Asian, or another non-Māori ethnicity. This pattern again highlights that the pandemic may have exacerbated the inequities and discrimination perceived by both women and ethnic minorities.

Second Outbreak. The second outbreak tested the resolve of New Zealanders to continue to trust and support the Government response to the pandemic. Despite the pattern of relief and appreciation shown at Alert Level 1, the social and economic costs of the prior lockdowns

may have left New Zealanders with fewer resources to be as resilient. After reverting to pre-pandemic levels at Alert Level 1, trust in science, police, and politicians along with satisfaction with government again increased at the second outbreak compared to pre-pandemic levels. Moreover, there were no drops in health and well-being, economic or financial outcomes, or the quality of social connections. However, women's reports of gender-based discrimination again increased from pre-pandemic levels, as women were more likely to bear the brunt of balancing family and work life. Māori also reported more ethnic-based discrimination than pre-pandemic levels, highlighting again that the employment, health and social challenges of the Alert Levels are likely more difficult. The re-emergence of these patterns emphasizes the importance of acknowledging and addressing gender- and ethnic- differences in the costs of the pandemic and Alert Levels.

Overall Conclusion. Comparing reports from over 12,000 New Zealanders taken prior to the pandemic to those of over 12,000 New Zealanders provided during the Alert Levels and second outbreak reveal reasons to be confident in New Zealand's Alert Level system. New Zealanders reported a stronger sense of community connection, along with an increased sense of trust in, and satisfaction with, the institutions responsible for developing, implementing, and enforcing the Alert Levels. This increased institutional trust, satisfaction with the Government, and sense of community likely facilitated the success of New Zealand's elimination strategy, and may help explain the general pattern of resilience in health and well-being shown across many of the outcomes assessed.

Yet, our analyses also identify the need to address specific challenges, including those disproportionately felt by women and ethnic minorities. Increases in conflict and dissatisfaction in personal relationships during Alert Level 4 highlight the need to alleviate domestic conflict when mandating home confinement. Moreover, some groups showed specific vulnerabilities that need to be attended to in policies that address the economic, health and social costs of the Alert Levels and pandemic. Women reported more gender-based discrimination, particularly during the most restrictive Alert Levels, highlighting the need to address women's greater rates of job loss and increased burden of domestic labour and parenting. Māori, Pacific, Asian, and other ethnic minority groups also reported more ethnic-based discrimination across the Alert Levels, even during Alert Level 1 when COVID-19 was eliminated from the community and New Zealanders were generally showing increases in well-being and job appreciation. These patterns emphasize the importance of identifying and addressing the unique challenges faced by Māori, Pacific, Asian, and other

ethnic minority groups who face additional obstacles to recovering from the diverse and accumulating effects of the pandemic.

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