Methods and procedures for International Social Survey Programme (ISSP) 2019 Social Inequality V New Zealand

Martin von Randow
Barry Milne
COMPASS Research Centre

November 2020

This report summarises the sampling procedures for the New Zealand ISSP survey for 2019 (social inequality), conducted early in 2020. We used results from the New Zealand ISSP survey for 2018 to estimate response numbers for ethnicity, gender and age, and inform our stratification methodology. The methods report for that survey is available at http://tinyurl.com/compass-issp, along with more information about our work on ISSP surveys.

We added an eldest age group (>75 years), as the age range for the 2018 survey was capped at age 75. Other than that, we used the same stratum divisions as in 2018. There were 40 strata: 4 'ethnic' (Māori descent, high Pacific geographical meshblocks, high Asian geographical meshblocks, remainder) × 2 gender (male, female) × 5 age (18–30, 31–45, 46–60, 61–75, 76+).

Sampling from the New Zealand Electoral Rolls, we had a direct Māori descent indicator, but nothing for any other ethnicity. We identified "high Pacific" and "high Asian" meshblocks using published ethnicity counts for each geographical meshblock, the smallest unit measured by Statistics NZ, as at the 2013 New Zealand Census of Population and Dwellings. Data from the 2018 Census were not available at the time of sampling.

In order to have sufficient numbers to sample in every stratum, we described "High Pacific" meshblocks as those where Pacific ethnicities made up at least 15% of the population, and "High Asian" meshblocks as those where Asian ethnicities made up at least 25%. In so doing we hoped to achieve good number of Pacific and Asian participants.

Names and addresses were obtained for everyone on the Electoral Roll. We removed 57,780 people reporting an overseas mailing address, and then randomly selected n = 320,000, ~10% of the remainder, aiming to:

(i) get sufficient responses from all 40 strata, assuming a response rate as low as 10% in some cases;
(ii) make the task of coding factors to test representativeness not too onerous. Two factors needed to be coded: deprivation, coded from electoral roll addresses, and occupation category, coded to the local standard, ANZSCO, from electoral roll occupation free-text.

Each of the n = 320,000 was categorised into the appropriate stratum, and a random sample from each stratum was selected to be mailed a questionnaire. The distribution of these strata is shown in Figure 1.

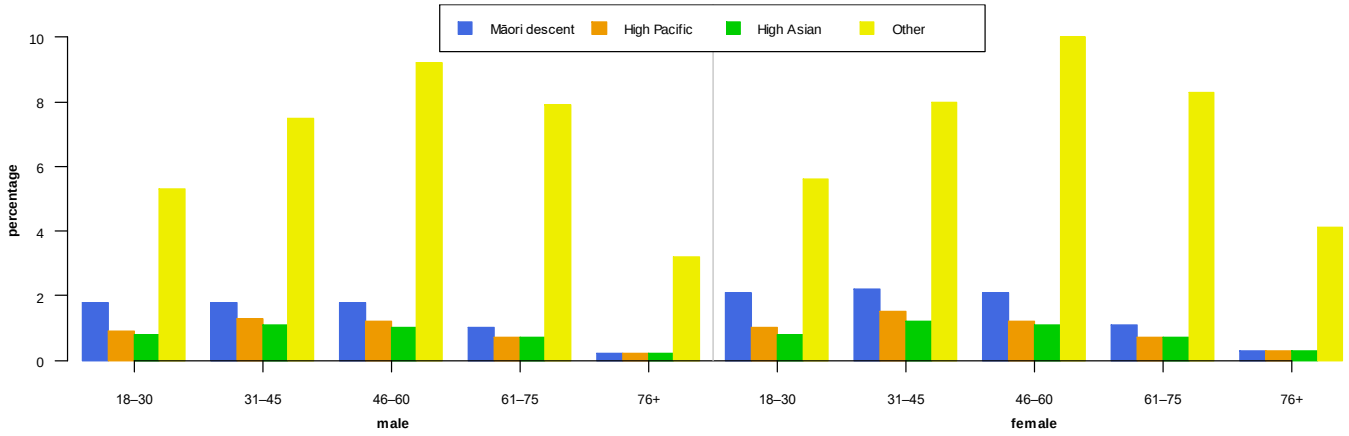

Figure 1: Demographic distributions in our sampling strata, from the random sample of n = 320,000 from the electoral roll

The number selected from each stratum is shown in Table 1. We did not expect to achieve a representative sample using this stratification, rather aiming to oversample groups that are typically underrepresented in surveys in New Zealand, specifically Pacific and Asian ethnic groups. In line with the requirements of the ISSP Secretariat, the final sample target was n ≥ 1200. The weighting procedure detailed in this report aims to produce results that are representative across key variables:

- Age
- Deprivation
- Gender
- Occupation
- Māori descent
- Urbanicity.
- Region

Table 1: Number selected to be mailed from each stratum

	Māori descent	High Pacific	High Asian	Other	Total
Male					*2,700*
18–30 years	160	180	160	210	**710**
31–45 years	160	180	160	210	**710**
46–60 years	120	120	120	200	**560**
61–75 years	80	60	80	140	**360**
76+ years	80	60	80	140	**360**
Female					*2,700*
18–30 years	170	180	150	260	**760**
31–45 years	130	120	150	220	**620**
46–60 years	120	120	100	160	**500**
61–75 years	90	90	100	130	**410**
76+ years	90	90	100	130	**410**
Total	**1,200**	**1,200**	**1,200**	**1,800**	**5,400**

As shown, n = 5,400 individuals were mailed our ISSP questionnaire, and a coversheet, which explained:

(i) what the survey was about, that participation was optional, confidentiality was guaranteed, and the survey was approved by the University of Auckland Human Participants Ethics Committee (ref. 021921);
(ii) that they could complete the survey either on the questionnaire provided or online via Qualtrics, and that either would put them in the draw to win one of four $100 gift cards ('Prezzy' cards);
(iii) how we selected participants, and how we obtained their names and addresses;
(iv) that the survey was being managed at the University of Auckland by the Centre of Methods and Policy Application in the Social Sciences (COMPASS);
(v) that after the data had been analysed, an anonymised data set would be permanently stored in both New Zealand and international data archives, as a historical record of the 2019 ISSP.

We sent the first mailout of 5,400 on Tuesday 28 January 2020. We sent out a reminder postcard to the 4,300 people that we still had not heard from, on Wednesday 4 March. Three weeks after that, New Zealand went into COVID-19 lockdown, so our final reminder, in the form of a second questionnaire mailout, was delayed. This meant that we saw a full trail off in responses before that last reminder, and the first mailout plus the reminder postcard ultimately drew 941 responses, 782 in hard copy and 159 online.

A second mailout of n = 4,037 questionnaires was sent during a break in lockdown, on Friday 22 May. This resulted in a further 269 responses, 194 in hard copy and 75 online, by the end of September 2020, for a total of n = 1,210, a raw response rate of 22.4% and a standardised response rate of 26.8% (that which would have been achieved had each stratum been sent questionnaires proportional to their share of the population).

Figure 2 shows the timing of the responses coming in. The upticks for the reminders and the trough during lockdown are clearly visible.

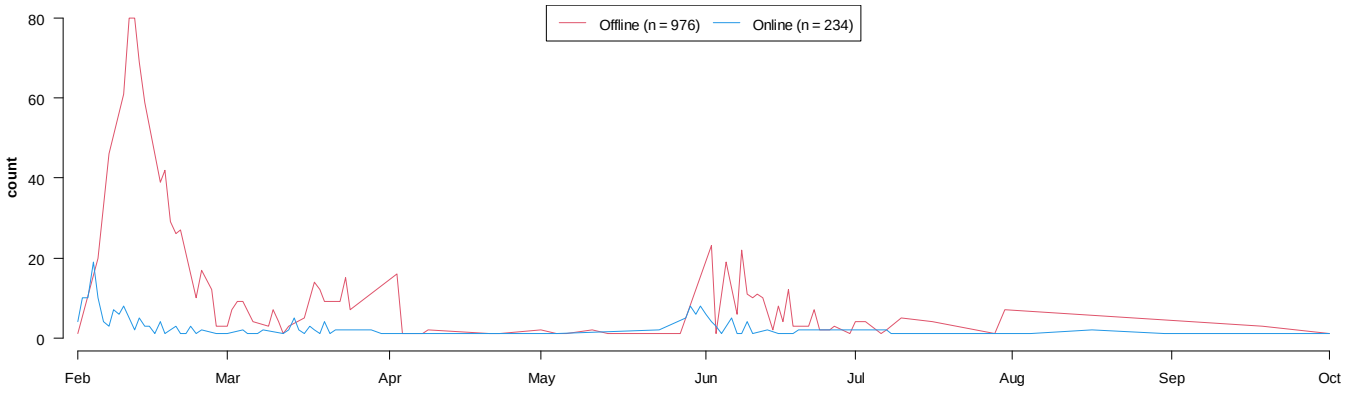

Figure 2: Questionnaires returned by date

Table 2 shows the number of respondents from each stratum, the percentages these represent of those mailed to and, in the shaded row and column, the percentages of responses they made up. The younger Māori descent and "High Pacific" strata had the lowest response rates, which is as expected. The raw numbers returned indicate that we successfully reached people of Pacific and Asian ethnic groups with our strategy of selecting meshblocks containing high proportions of these. Females had higher response rates in most strata, with just one large exception amongst the oldest "Other" respondents, where females responded at less than half the rate of males.

Table 2. Number of respondents within each stratum and percentage of those mailed to that responded

Age	Māori descent	High Pacific	High Asian	Other	Total	% of responses
Male					*571 (21.1%)*	*47.19*
18–30 years	12 (7.5%)	10 (5.6%)	22 (13.8%)	34 (16.2%)	**78 (11.0%)**	**6.45**
31–45 years	17 (10.6%)	15 (8.3%)	27 (16.9%)	39 (18.6%)	**98 (13.8%)**	**8.10**
46–60 years	29 (24.2%)	22 (18.3%)	27 (22.5%)	45 (22.5%)	**123 (22.0%)**	**10.17**
61–75 years	23 (28.8%)	18 (30.0%)	26 (32.5%)	58 (41.4%)	**125 (34.7%)**	**10.33**
76+ years	31 (38.8%)	14 (23.3%)	28 (35.0%)	74 (52.9%)	**147 (40.8%)**	**12.15**
Female					*639 (23.7%)*	*52.81*
18–30 years	13 (7.6%)	16 (8.9%)	22 (14.7%)	51 (19.6%)	**102 (13.4%)**	**8.43**
31–45 years	18 (13.8%)	22 (18.3%)	36 (24.0%)	63 (28.6%)	**139 (22.4%)**	**11.49**
46–60 years	42 (35.0%)	25 (20.8%)	32 (32.0%)	56 (35.0%)	**155 (31.0%)**	**12.81**
61–75 years	23 (25.6%)	21 (23.3%)	39 (39.0%)	56 (43.1%)	**139 (33.9%)**	**11.49**
76+ years	22 (24.4%)	21 (23.3%)	28 (28.0%)	33 (25.4%)	**104 (25.4%)**	**8.60**
Total	**230 (19.2%)**	**184 (15.3%)**	**287 (23.9%)**	**509 (28.3%)**	**1,210 (22.4%)**	
% of responses	**19.00**	**15.21**	**23.72**	**42.07**		**1,210 (100%)**

Representativeness

1. *Was the oversampling of Māori, Pacific, and Asian groups successful?*

Figure 3 shows the percentage each stratum made up in the electoral roll and ISSP samples. A comparison of stratum percentages shows that the sampling strategy did result in oversampling of males and females of Māori descent aged 46 or over, all High Pacific groups except for the younger males, and all High Asian groups. All 'Other' strata ended up undersampled, except for the oldest males as described above.

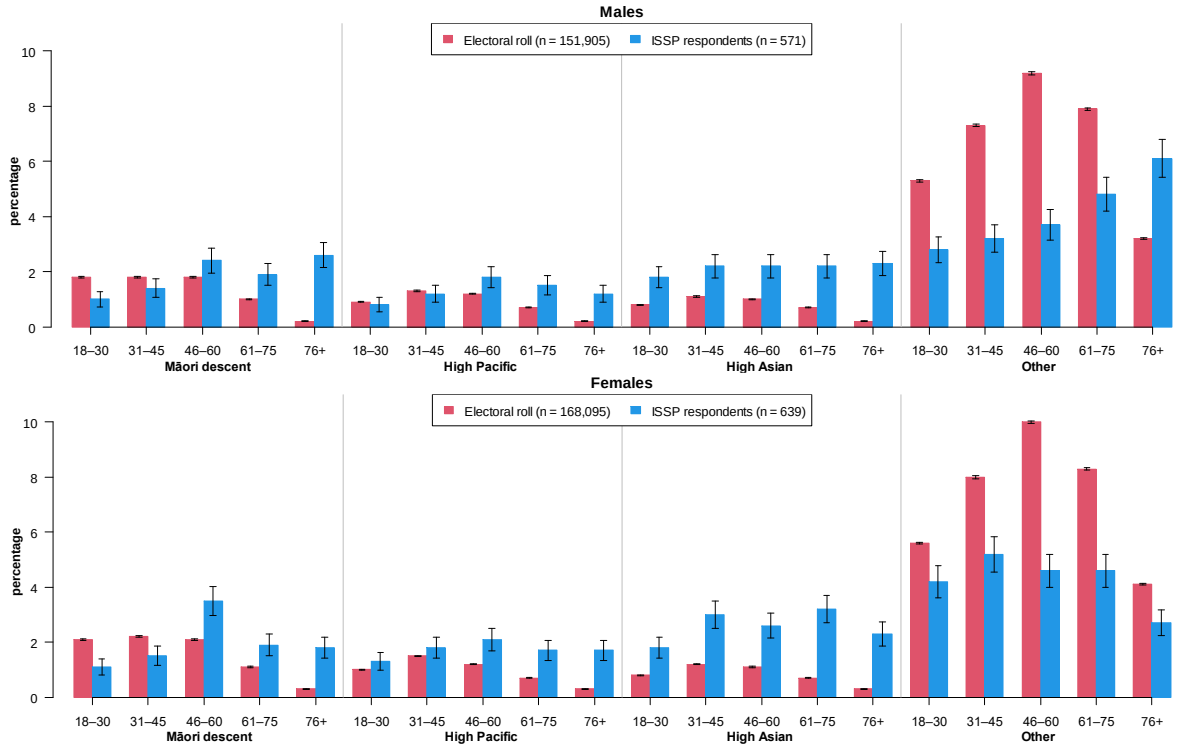

Figure 3: Percentage of each stratum in the electoral roll sample and among ISSP respondents

2. *What were the response rates by gender, ethnicity, and age group?*
   As indicated in Figure 4, response rates were higher for males and in the 'Other' ethnic grouping. They generally increased as age increased, with just slight dropoffs in the 31–45 and 76+ age groups. High Pacific groups and the younger age groups saw the lowest response rates among our stratification variables. These differences are also reflected in the stratum response rates presented in Figure 5. Males aged 18-30 years from High Pacific meshblocks had the lowest response rate (5.6%) while males aged 76+ years from the 'Other' ethnic grouping had by far the highest (52.9%).

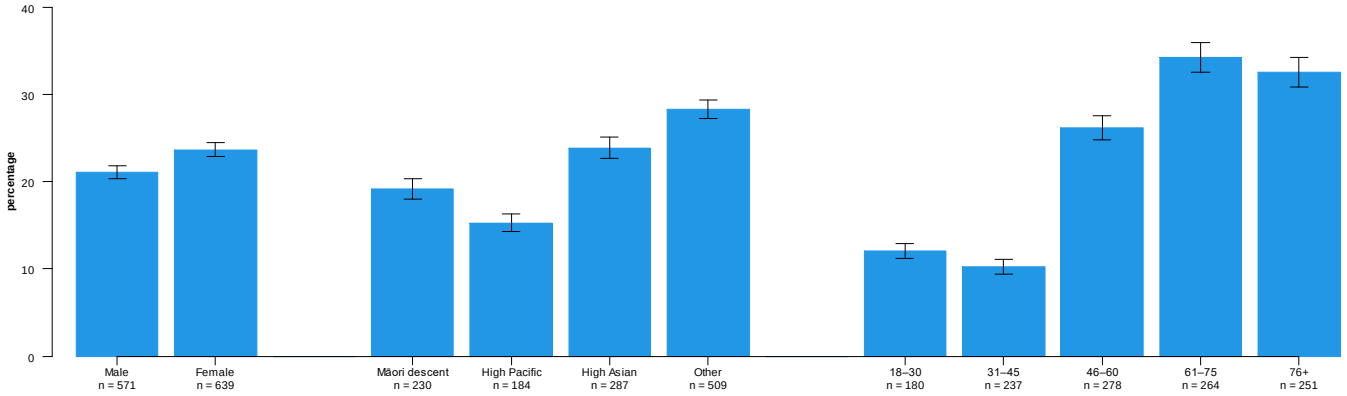

Figure 4: Response rates for stratification variables

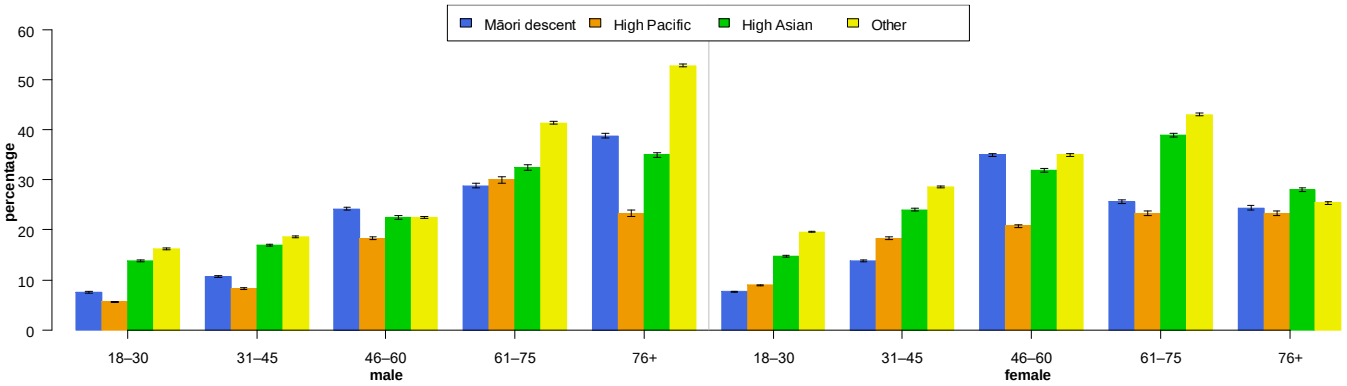

Figure 5: Response rates for all sampling strata

3. *What was the distribution of responses like relative to the electoral roll?*
   Key demographic variables were obtained for the electoral roll sample:
   - We had to impute gender for ~10% of people, where 'title' was not given.
   - Age group was given by 5-year bands.
   - Māori descent was given directly.
   - Region was coded to the ISSP standard list for New Zealand.
   - Occupation was given in free text and we coded it to the 1-digit level of ANZSCO.
   - New Zealand Deprivation Index (NZDep) quintile and urbanicity were mapped from meshblock.

   The comparisons in Figure 6 show that the percentage distribution of all variables except for gender differed slightly from those in the electoral roll. Those in the oldest age groups were overrepresented, while the rest were underrepresented. People of Māori descent were overrepresented, as were those from Auckland and (as such) people in major urban areas, and retirees, to a great extent. Similarly, students were very underrepresented. Among the employed, Managers, and Technicians & Trades Workers were the most underrepresented, followed by Labourers. Only Professionals were significantly overrepresented.

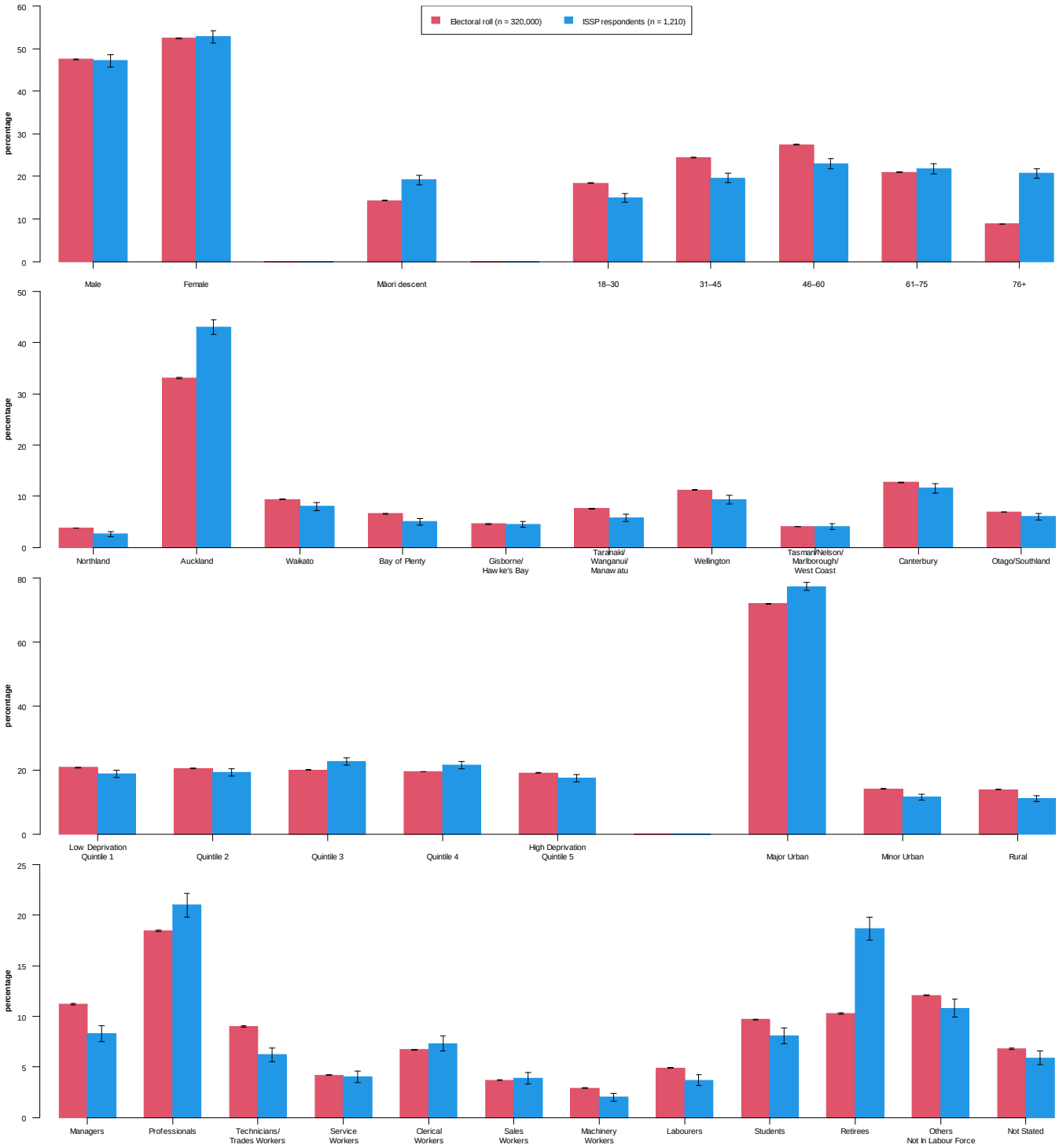

Figure 6: Percentages of demographic variables in the electoral roll sample and in our ISSP data set

Weighting

To account for these differences, we constructed weights based on the inverse probability of responding. We conducted a logistic regression with responded (Yes/No) as the outcome, and age group, Māori descent, region, occupation, NZDep quintile, and urbanicity as predictors. Gender was not included, based on its non-significant chi-square test result. A main effects model was computed and then all two-way interactions were tested in separate models. Six of these were found to be significant: age group × Māori descent, age group × NZDep quintile, Māori descent × region, Māori descent × urbanicity, Māori descent × occupation, and region × urbanicity. These interactions and all of the main effects were included in the final model, and the odds ratios associated are presented in the Appendix to this report, in Table A1.

A predicted probability of response was generated for each respondent based on their covariates in the final model. This probability was then inverted and standardised to have mean = 1 to form a response weight. The final weights ranged 0.04–6.46 across the n = 1,210 respondents. Figure 7 shows the effects of weighting the sample in this way. The distributions of all variables are now very similar between the electoral roll and the ISSP sample, suggesting that the weighted sample is representative of the electoral roll, at least for the variables measured in that database.

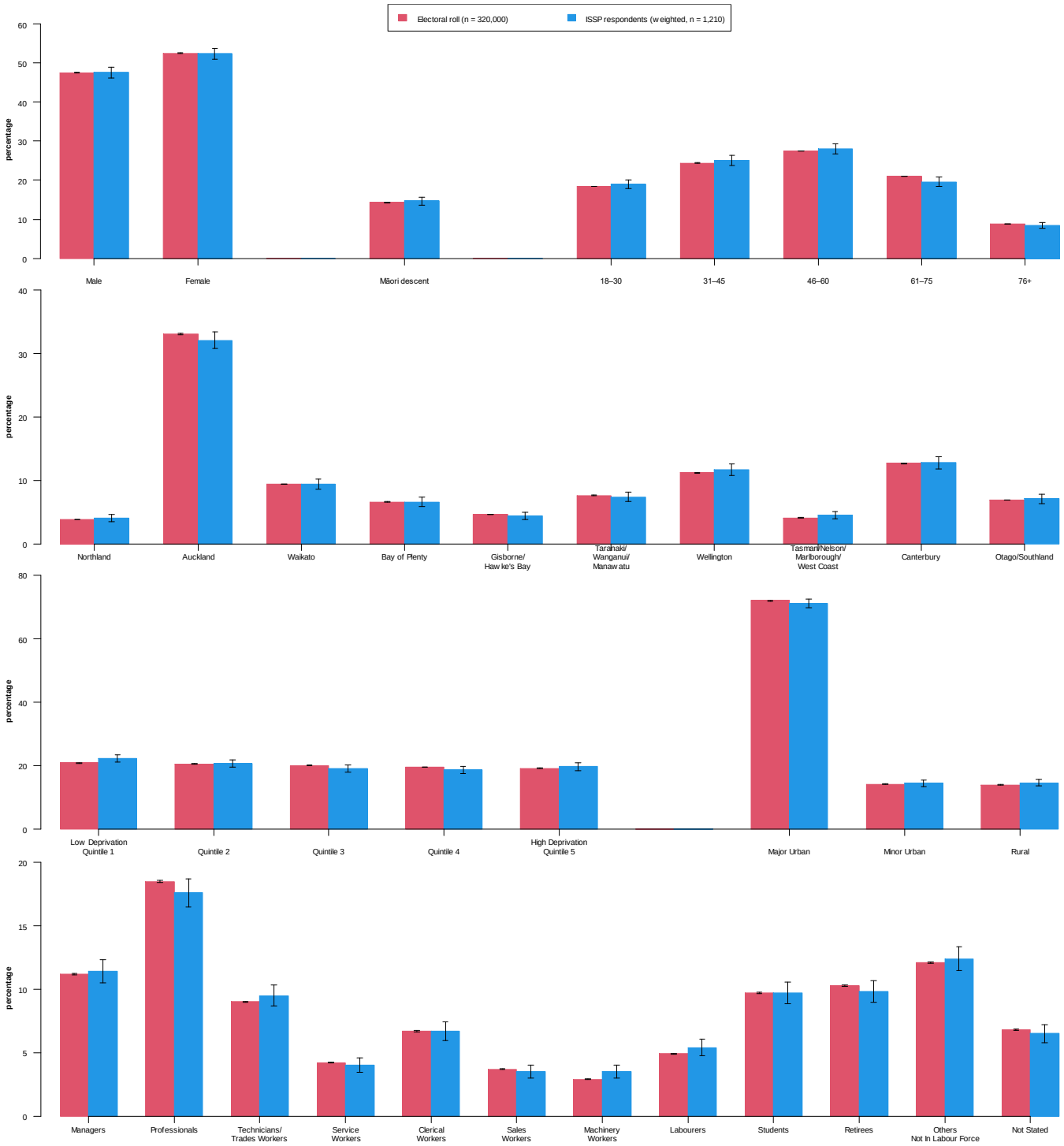

Figure 7: Percentages of demographic variables in the electoral roll sample and in our weighted ISSP data set

External validation

We compared responses to two survey questions to the official figures for these items:

- Which party did you give your party vote to at the 2017 General Election;
- To which of the following ethnic groups do you belong (multiple response).

Figure 8 compares our weighted party vote distribution to confirmed results from the 2017 General Election. This shows that we slightly overrepresented Labour and Green voters, far underrepresented National voters, and slightly underrepresented NZ First voters – very much a left–right split.

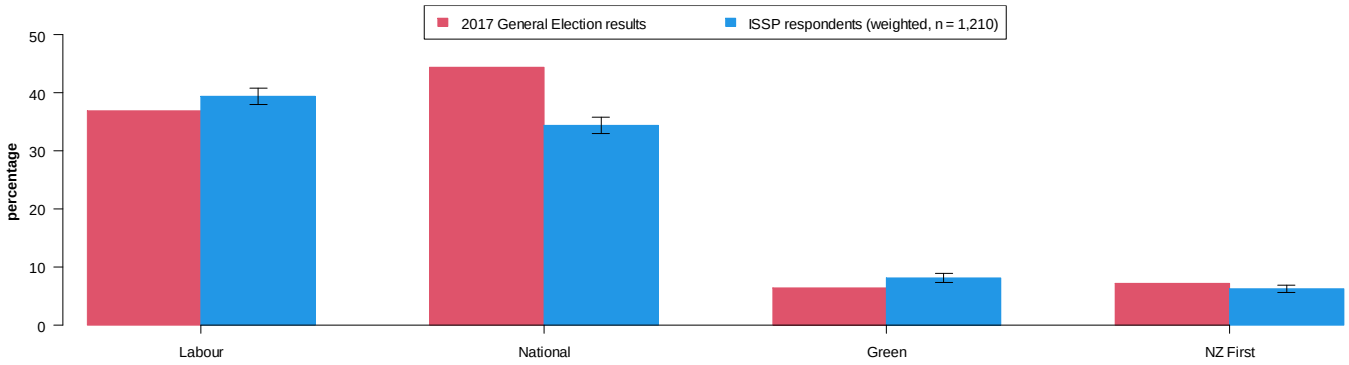

Figure 8: Percentages of main parties that people gave their party vote at the 2017 New Zealand General Election, official results compared to our weighted ISSP data set

Figure 9 compares our ethnic group distribution (percentage of respondents) against the 2018 New Zealand Census of Population and Dwellings. This shows that we overrepresented European groups, underrepresented Asian groups, and did pretty well achieving representative percentages of Māori and Pacific groups.

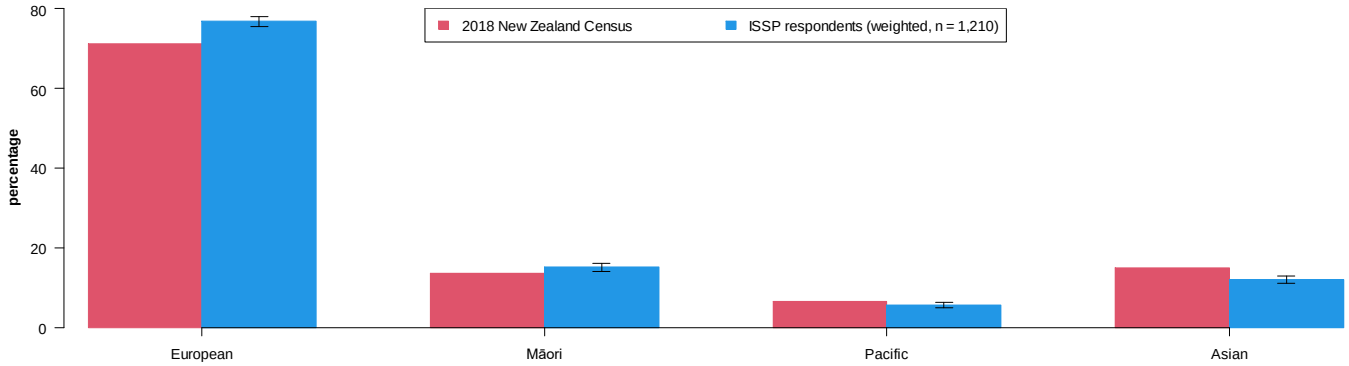

Figure 9: Percentages of major ethnic groups reported (multiple response), 2018 New Zealand Census of Population and Dwellings compared to our weighted ISSP data set

Conclusion

Weighting our 2019 ISSP data set on characteristics that predict response enabled an explicitly representative sample across age, Māori descent, region, occupation, deprivation, and urbanicity. Responses were already representative by gender, and with our sampling strategy, the weighting also made them representative for Pacific and Asian ethnic groups per external validation. However, that exercise indicated that our weighting did not achieve accurate representation of people belonging to European or Asian ethnic groups across the entire population, or of the left–right political spectrum.

Weighting allows respondents from underrepresented groups act as ‘spokespeople’ for others like them in the population, e.g. the respondent with the lowest weight ‘speaks’ for 0.04 of a person who shares their demographic characteristics, while the one with the highest weight ‘speaks’ for 6.46 people who share theirs. We cannot know if their views are actually typical of people with those demographics in the population, but our weights explain *some* of the variation in survey responses, based on the variables in our models, and weighted responses provide descriptive and analytic results *closer* to those of the whole population.

Appendix

Table A1. Logistic regression model predicting response for those who responded to the ISSP survey (n = 1,210 of n = 320,000 individuals from the electoral roll)

Parameter	Odds Ratio (95% Confidence Interval)
Age group	
18–30 years	*Reference*
31–45 years	0.705 (0.453 – 1.096)
46–60 years	0.682 (0.447 – 1.041)
61–75 years	0.757 (0.482 – 1.188)
76+ years	1.896 (1.157 – 3.107)
Māori descent	
Yes	*Reference*
No	0.522 (0.180 – 1.513)
Region	
Northland	*Reference*
Auckland	3.064 (1.457 – 6.440)
Waikato	1.564 (0.706 – 3.461)
Bay of Plenty	1.412 (0.628 – 3.173)
Hawke's Bay / Gisborne	1.358 (0.592 – 3.116)
Taranaki / Wanganui / Manawatu	1.322 (0.586 – 2.983)
Wellington	1.595 (0.740 – 3.439)
Tasman / Nelson / Marlborough / West Coast	1.683 (0.727 – 3.893)
Canterbury	1.752 (0.814 – 3.769)
Otago / Southland	1.736 (0.780 – 3.866)
NZ Deprivation Index	
Q1 – Low	*Reference*
Q2	0.752 (0.475 – 1.190)
Q3	1.042 (0.681 – 1.594)
Q4	0.889 (0.567 – 1.392)
Q5 – High	0.542 (0.325 – 0.906)
Urban/Rural	
Major urban	*Reference*
Minor urban	2.305 (0.912 – 5.826)
Rural	0.795 (0.317 – 1.997)
Occupation	
Not Stated	*Reference*
Managers	0.835 (0.592 – 1.178)
Professionals	1.447 (1.083 – 1.934)
Technicians / Trades Workers	0.831 (0.577 – 1.195)
Service Workers	1.294 (0.861 – 1.944)
Clerical Workers	1.368 (0.969 – 1.932)
Sales Workers	1.211 (0.801 – 1.831)
Machinery Operators / Drivers	0.943 (0.566 – 1.571)
Labourers	0.745 (0.462 – 1.201)
Students	1.020 (0.714 – 1.457)
Retirees	1.152 (0.830 – 1.599)
Others Not In Labour Force	0.816 (0.583 – 1.142)

Parameter	Odds Ratio (95% Confidence Interval)
Age group × Māori descent	
18–30 years × Yes	*Reference*
31–45 years × No	1.492 (0.816 – 2.729)
46–60 years × No	3.096 (1.748 – 5.486)
61–75 years × No	2.475 (1.340 – 4.568)
76+ years × No	4.730 (2.406 – 9.300)
Age group × NZ Deprivation Index	
18–30 years × Q1	*Reference*
31–45 years × Q2	1.271 (0.686 – 2.355)
31–45 years × Q3	1.221 (0.687 – 2.169)
31–45 years × Q4	1.312 (0.718 – 2.398)
31–45 years × Q5	1.590 (0.809 – 3.125)
46–60 years × Q2	1.322 (0.734 – 2.380)
46–60 years × Q3	1.113 (0.638 – 1.943)
46–60 years × Q4	1.241 (0.692 – 2.226)
46–60 years × Q5	1.871 (0.986 – 3.551)
61–75 years × Q2	1.617 (0.879 – 2.973)
61–75 years × Q3	1.522 (0.858 – 2.700)
61–75 years × Q4	1.955 (1.082 – 3.533)
61–75 years × Q5	2.129 (1.087 – 4.169)
76+ years × Q2	1.434 (0.763 – 2.696)
76+ years × Q3	1.002 (0.546 – 1.839)
76+ years × Q4	1.341 (0.726 – 2.477)
76+ years × Q5	2.444 (1.253 – 4.769)
Māori descent × Region	
Yes × Northland	*Reference*
No × Auckland	0.493 (0.210 – 1.155)
No × Waikato	1.541 (0.655 – 3.626)
No × Bay of Plenty	1.345 (0.535 – 3.379)
No × Hawke’s Bay / Gisborne	1.496 (0.590 – 3.797)
No × Taranaki / Wanganui / Manawatu	1.722 (0.701 – 4.231)
No × Wellington	1.917 (0.785 – 4.678)
No × Tasman / Nelson / Marlborough / West Coast	1.872 (0.686 – 5.106)
No × Canterbury	2.455 (1.043 – 5.779)
No × Otago / Southland	1.980 (0.779 – 5.031)
Māori descent × Urban/Rural	
Yes × Major Urban	*Reference*
No × Minor Urban	0.879 (0.553 – 1.396)
No × Rural	1.669 (1.070 – 2.603)
Māori descent × Occupation	
Yes × Not Stated	*Reference*
No × Managers	1.729 (0.795 – 3.761)
No × Professionals	0.843 (0.403 – 1.761)
No × Technicians / Trades Workers	1.420 (0.624 – 3.233)
No × Service Workers	0.772 (0.306 – 1.947)
No × Clerical Workers	1.002 (0.434 – 2.315)
No × Sales Workers	1.600 (0.633 – 4.045)
No × Machinery Operators / Drivers	0.500 (0.145 – 1.725)
No × Labourers	1.704 (0.727 – 3.995)
No × Students	1.211 (0.503 – 2.915)
No × Retirees	1.571 (0.730 – 3.381)
No × Others Not In Labour Force	1.510 (0.736 – 3.098)

Parameter	Odds Ratio (95% Confidence Interval)
Region × *Urban/Rural*	
Northland × Major urban	*Reference*
Auckland × Minor urban	0.217 (0.072 – 0.653)
Auckland × Rural	0.691 (0.238 – 2.010)
Waikato × Minor urban	0.416 (0.149 – 1.160)
Waikato × Rural	1.005 (0.353 – 2.862)
Bay of Plenty × Minor urban	0.145 (0.037 – 0.576)
Bay of Plenty × Rural	1.221 (0.410 – 3.639)
Hawke's Bay/Gisborne × Minor urban	1.156 (0.338 – 3.958)
Hawke's Bay/Gisborne × Rural	1.458 (0.464 – 4.582)
Taranaki/Wanganui/Manawatu × Minor urban	0.451 (0.156 – 1.301)
Taranaki/Wanganui/Manawatu × Rural	0.965 (0.315 – 2.955)
Wellington × Minor urban	0.178 (0.049 – 0.643)
Wellington × Rural	0.780 (0.180 – 3.374)
Tasman/Nelson/Marlborough/West Coast × Minor urban	0.431 (0.134 – 1.395)
Tasman/Nelson/Marlborough/West Coast × Rural	1.485 (0.486 – 4.544)
Canterbury × Minor urban	0.357 (0.129 – 0.988)
Canterbury × Rural	0.968 (0.345 – 2.719)
Otago/Southland × Minor urban	0.334 (0.111 – 1.002)
Otago/Southland × Rural	1.062 (0.362 – 3.113)