

# Regional Differences and Similarities in the Personality of New Zealanders

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The current study contributes to an emerging literature on regional differences in personality. We analyse data from a national probability sample of New Zealanders ( $N = 6,518$ ) to examine differences and similarities in mean levels of Big-Six personality (Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience, and Honesty-Humility) across 63 geographical General Electorate Districts in New Zealand. Of these six core aspects of personality, only Honesty-Humility and Openness to Experience varied significantly across regions. Those from large cities (i.e., Auckland, Wellington, and Christchurch) were higher in Openness to Experience, whereas those from Palmerston North, and many regions of the South Island were higher in Honesty-Humility, relative to those living in other regions of New Zealand. However, regional differences explained only a trivial amount of variance in the two traits. This research speaks directly to anecdotes about regional differences across New Zealand, and shows that, for the most part, the strong regional similarities far outweigh alleged regional personality differences across the nation.

**Keywords:** Personality, Geography, Regional Differences, Big-Six, Mini-IPIP6

Any collocation of persons, no matter how numerous, how scant, how even their homogeneity, how firmly they profess common doctrine, will presently reveal themselves to consist of smaller groups espousing variant versions of the common creed; and these sub-groups will manifest sub-sub-groups, and so to the final limit of the single individual, and even in this single person conflicting tendencies will express themselves.

—Jack Vance, *The Languages of Pao* (1958)

Research on the extent to which nations have different ‘personalities’, or more accurately, whether the

citizens from some nations tend to differ from those in other nations in terms of core personality traits, have been comprehensively explored (e.g., Terracciano et al., 2005). By and large, this literature demonstrates that personality differences across nations tend to be fairly trivial (Terracciano et al., 2005). As such, the stereotypes ascribed to different nationalities tend to be greatly exaggerated. Nevertheless, stereotypes about the personalities of people from different regions within a country still exist. To offer a few examples from New Zealand, anecdotal evidence would suggest that New Zealanders tend to talk about North Islanders and South Islanders, Aucklanders versus everyone else; and within Auckland, Westies, again perhaps, versus everyone else. However, despite what would seem to be a lively and robust anecdotal

corpus of information documenting such differences, empirical research in the area is lacking.

In the current paper, we aim to document the differences (or the lack thereof) in personality across different regions of New Zealand. To do so, we draw upon data from the first wave of New Zealand’s own national longitudinal study, the New Zealand Attitudes and Values Study (NZAVS). In terms of regions, we focus on differences between people living in the 63 General Electorate Districts (GEDs) using the 2007 electoral boundaries. These area units provide a reasonably detailed level of differentiation between the regions of New Zealand and are also fundamentally important to the outcomes of elections in our nation.

We are unaware of any studies in New Zealand that have empirically tested whether there are regional differences in the personality of New Zealanders. Nevertheless, examining potential regional differences in personality is an important area of research for a number of reasons. First, empirical data can help refute laypeople’s erroneous beliefs about the existence (and/or magnitude) of regional differences in personality. Second, research on aggregate personality scores across regions provides important baseline information that can be linked to future research on regional diversity, differences in voting patterns across electorates, regional differences in health and wellbeing, and possible differences in migration patterns. Research on regional differences in other nations, for example, has tended to focus on differences between states in the US, and has explored how state-level differences

in personality correlate with support for the Republican versus Democratic parties (e.g., Rentfrow, 2010; Rentfrow, Jost, Gosling, & Potter, 2009).

### *A Big-Six Model of Personality*

Personality is generally defined as “relatively enduring styles of thinking, feeling and acting” (McCrae & Costa, 1997, p. 509). Personality traits can be thought of as conceptualisations of recurring characteristics across people and across cultures (McCrae & Costa, 1997). Contemporary personality research has largely focused on the Big Five model of personality (Goldberg, 1981, 1990, 1999). This model identifies personality through the following five distinct dimensions: (a) Openness to Experience, (b) Conscientiousness, (c) Extraversion, (d) Agreeableness, and (e) Neuroticism. Openness to Experience captures engagement in task-related endeavours and curiousness. Conscientiousness includes diligence, organisation, and motivation to carry out tasks. Friendliness and involvement in social activities are reflected in Extraversion, whereas Agreeableness covers tolerance and ingroup cooperation. The monitoring of inclusionary status through insecurity and anxiety is captured by Neuroticism. Recently, a sixth dimension of personality has been proposed, thereby rendering the Big-Six (or HEXACO) model of personality (Ashton & Lee, 2001, 2007, 2009). This sixth trait, Honesty-Humility, consists of reciprocal altruism, sincerity, and (the absence of) entitlement.

We examine regional differences in mean personality using this Big-Six framework that incorporates marker items assessing the Big-Five dimensions of personality, and also additional marker items indexing Honesty-Humility. We do so using the Mini-IPIP6 (Sibley et al., 2011). The Mini-IPIP6 is a public domain short-form personality instrument based on the original five-factor Mini-IPIP presented by Donnellan, Frederick, Oswald, and Lucas (2006) derived in turn from the broader item pool developed by Goldberg (1999). The Mini-IPIP6 provides four-item markers of six broad-bandwidth dimensions of personality: Extraversion, Agreeableness,

Conscientiousness, Neuroticism, Openness to Experience and Honesty-Humility (see also Sibley et al., 2011, for further details). The Mini-IPIP6 has been extensively validated for use in New Zealand, and shows a reliable factor structure and internal reliability (Sibley et al., 2011), good item response parameters and well-distributed test information functions (Sibley, 2012), well-documented and detailed norms for different demographic groups in New Zealand (Sibley & Pirie, 2013), extremely high levels of stability over a one-year test re-test period (Milojev, Osborne, Greaves, Barlow, & Sibley, 2013), and utility in predicting psychological outcomes associated with exposure to the Christchurch earthquakes (Osborne & Sibley, 2013).

### *Demographic differences in personality in New Zealand*

Sibley and Pirie (2013) previously documented standard demographic differences in Big-Six personality in New Zealand using Time 1 NZAVS data. Their analysis focused on factors such as gender, age, income, deprivation, ethnicity, and so forth, but did not examine broader regional differences. Thus, while we have detailed information on personality differences across these standard demographics, very little is known about broader regional differences. Sibley and Pirie (2013) reported standard gender and age differences in personality, but noted that there were remarkably few other systematic group-based differences in personality. Moreover, the demographic differences that were detected were trivial in size, being small enough that they were effectively meaningless in any practical sense. Indeed, Sibley and Pirie (2013, p. 28) concluded that “The story these data tell, in our view, is one of the rich variety of individual differences in personality across New Zealand, and the fact that very little of the differences between people can be accounted for by the demographics that we commonly examine.”

The exception to this general trend was in the fairly large and robust gender and age differences in personality. It seems that when it comes to differences in personality, gender and age have a more powerful effect than other

demographics. Sibley and Pirie (2013) reported that women were significantly higher than men in Extraversion, Agreeableness, Conscientiousness, Neuroticism and Honesty-Humility. Men were higher in Openness to Experience. With regard to age-based (cohort) differences, results indicated that Extraversion decreased over the 20-50 year old age range, and then tended to plateau. Agreeableness, in contrast, remained fairly similar across different cohorts. Conscientiousness increased over the 20-50 year old age range, and then plateaued. Neuroticism decreased continually across the age range, with the most pronounced reduction among middle to older age adults. Openness to Experience decreased in a relatively linear fashion across the age range. Finally, Honesty-Humility tended to be lower amongst younger cohorts, and was highest among older age groups.

### *The Geography of Personality*

Inspired by questions about national stereotypes and potential differences in child-rearing styles, there is a plethora of research on cross-national differences in personality. The introduction of the Big Five model has resulted in renewed interest in cross-national personality differences, with Terracciano, McCrae, and colleagues leading the research in this area (e.g., Hofstede & McCrae 2004; McCrae, 2001; McCrae et al., 2005; McCrae & Terracciano, 2007; Schmitt, Allik, McCrae, & Benet-Martinez, 2007). Contrary to popular opinion, similarities in mean levels of personality traits have been found across neighbouring nations. For example, neighbouring countries tend to be more similar in personality than those that are geographically separated (Allik & McCrae, 2004). In a study examining differences in the Five Factor Model of personality across 36 cultures, Allik and McCrae (2004) found high mean levels of Extraversion and Openness to Experience in European and American cultures, whereas Asian and African cultures tended to be more introverted. Additionally, Schmitt and colleagues (2007) used the Big Five Inventory to measure personality traits across 56 nations and found that East and Southeast Asian nations tended to be higher in Neuroticism and lower in

Openness to Experience. Some of their findings, however, contradicted widely held beliefs about the typical personality trait in a given nation (e.g., mean levels of Agreeableness were relatively low in Japan).

Stereotypes about how people's typical personality structure may be based on their nation of residence fail to correspond with actual mean-levels of personality, as corroborated by Terracciano et al. (2005). Specifically, Terracciano and colleagues found that there is a lack of correspondence between mean levels of the Big Five within a nation and personality-based stereotypes that the nation holds of itself. Though these findings contribute to the literature on cross-national personality differences and stereotypes, differences at the regional level within nations are under-researched.

Following the line of research examining cross-national differences in personality, Rentfrow and colleagues (Rentfrow, 2010; Rentfrow, Jost, Gosling, & Potter, 2009; Rentfrow, Gosling, & Potter, 2008) renewed interest in this area by reasoning that regional differences in personality should exist within nations. Nations are often geographically and demographically diverse and, as such, contain a multitude of subcultures. Indeed, early research on within-nation personality differences showed that different geographical groupings of states varied on traits corresponding to intelligence, creativity, and neuroticism (e.g., see Krug & Kulhavy, 1973; Plaut, Markus, & Lachman, 2002). This suggests that there can be meaningful variability in mean levels of personality across regions within the same country.

Additionally, researchers have used the Five Factor Model to predict a range of regional-level outcomes including cancer rates, life expectancy, substance abuse, and obesity (McCrae & Terracciano, 2007). For example, Rentfrow, Gosling, and Potter (2008) showed that regional differences in personality can be used to predict real-life outcomes like higher crime rates (low Agreeableness), and support for the legalisation of marijuana (high Openness to Experience). Rentfrow and colleagues (Rentfrow, 2010; Rentfrow, Jost, Gosling, & Potter, 2009) extended

this work into state-level voting patterns and found that states with higher levels of Openness to Experience tend to have higher rates of voting for left-wing/Democratic party candidates. Conversely, states with higher mean levels of Conscientiousness have higher rates of voting for right-wing/Republican party candidates. These studies provide a novel extension of the research on political preference and personality, while also highlighting the practical utility of investigating intra-national variation in personality.

Despite the utility of such an endeavour, we are unaware of any research within the New Zealand context that specifically examines regional differences in personality. There are, however, a few studies assessing regional differences in various other psychological variables that are informative. In a large national study of New Zealand, The Human Potential Centre (2013) found that there are differences between regions in a few critical outcome variables. Specifically, those from the West Coast of the South Island perceived themselves to be further from 'the top of society', whereas Northlanders, Aucklanders and those from the Bay of Plenty region rated themselves as closer to the top, than the rest of the country. The study also found that those from Taranaki reported a lower frequency of connecting with others, and that Aucklanders reported the lowest perceived social closeness, with West Coasters reporting the highest. All other differences across regions in the report were either non-significant or very small in magnitude.

Other research in New Zealand has found regional differences in stereotypes associated with psychological variables. As with many other nations, New Zealand regional stereotypes can be found throughout the media and historical texts (e.g., see Belich, 2002). These stereotypes have, however, never been subjected to empirical scrutiny with national-level data. Indeed, rather than assess actual levels of certain characteristics within distinct regions of New Zealand, most research in the area has used relatively small groups of New Zealanders to identify stereotypes associated with different regions of the country. For example, Nielsen and Hay

(2005) found that there were regional stereotypes associated with speech such that participants stereotyped people living in the Wellington, Canterbury and Nelson/Marlborough regions as being both pleasant and correct in their speech. In contrast, people living in Auckland were rated as considerably less pleasant, and people from Northland and Westland were seen as less correct. Finally, Greaves, Osborne, and Sibley (2014) found that there were higher rates of undecided voters in certain electorates across the country, although these did not geographically cluster into a meaningful pattern. Thus, while there have been some studies on regional variations in a few relevant variables across New Zealand, research has yet to examine the possibility that there is meaningful variability in personality traits across different regions of the country.

### *Aims and Hypotheses*

The current study uses data from Wave I of the New Zealand Attitudes and Values Study (NZAVS) to examine personality differences in Big-Six personality traits across different geographic regions of New Zealand. The NZAVS is a 20-year longitudinal national probability study of social attitudes, personality and health outcomes. To examine such regional differences, we compared differences across residents who were living within the boundaries of the general electoral districts based on the 2007 boundaries, using 2009 data. Note that this is not the same as examining differences across people based on the electorate they were registered to vote in, as those registered to vote on the Māori roll were included as part of their geographical electorate from the general roll. Rather, we used the general electoral boundaries as a way to classify broad regions of New Zealand.

We hypothesise that differences in personality between regions will be small or non-existent. Based on research from the US (namely Rentfrow, 2010) and the small amount of New Zealand research (The Human Potential Centre, 2013), we suggest that there may be small effects for Openness to Experience, Neuroticism, and Honesty-Humility across regions. Critically,

however, we suspect that any differences in aggregate personality across regions will be small-to-trivial in magnitude. Rather, we expect that across general electoral districts, the mean personality scores of New Zealand residents will be far more alike than they are different.

## Method

### Sampling Procedure

Participants received a postal questionnaire with a personalised letter with their name and address visible in a windowed envelope. The envelope was printed using University of Auckland letterhead, as were both personalised letter (information sheet), and consent form/questionnaire. The questionnaire was eight pages in length. Participants were entered into a prize draw for a total prize pool of \$1000 worth of grocery vouchers for participation.

The Time 1 (2009) NZAVS contained responses from 6,518 participants sampled from the 2009 New Zealand electoral roll. The electoral roll is publicly available for scientific research and in 2009 contained 2,986,546 registered voters. This represented all citizens over 18 years of age who were eligible to vote regardless of whether they chose to vote, barring people who had their contact details removed due to specific case-by-case concerns about privacy. The sample frame was split into three parts. Sample Frame 1 constituted a random sample of 25,000 people from the electoral roll (4,060 respondents). Sample Frame 2 constituted a second random sample of a further 10,000 people from the electoral roll (1,609 respondents).

Sample Frame 3 constituted a booster sample of 5,500 people randomly selected from meshblock area units of the country with a high proportion of Māori, Pacific Nations, and Asian peoples (671 respondents). Statistics New Zealand (2013) define the meshblock as “the smallest geographic unit for which statistical data is collected and processed by Statistics New Zealand. A meshblock is a defined geographic area, varying in size from part of a city block to large areas of rural land. Each meshblock abuts against another to form a network covering all of New Zealand including

coasts and inlets, and extending out to the two hundred mile economic zone. Meshblocks are added together to ‘build up’ larger geographic areas such as area units and urban areas. They are also the principal unit used to draw-up and define electoral district and local authority boundaries.” Meshblocks were selected using ethnic group proportions based on 2006 national census data. A further 178 people responded but did not provide contact details and so could not be matched to a sample frame.

In sum, postal questionnaires were sent to 40,500 registered voters or roughly 1.36% of all registered voters in New Zealand. The overall response rate (adjusting for the address accuracy of the electoral roll and including anonymous responses) was 16.6%. We suspect that one reason for this relatively low response rate to the 2009 sample may be that our participants were explicitly signing up to a planned 20-year longitudinal study (of which the current data represent the first wave). They thus consented to being contacted for the next 19 years, and provided their name and full contact details.

The 2009 sample was reasonably representative of differences in the proportion of ethnic groups according to 2006 census figures (see Sibley, McPhee, & Greaves, 2014). However, Pacific and Asian respondents were underrepresented in the 2011 wave: people who identified with these groups were slightly more likely to drop out of the sample. The NZAVS also oversampled women relative to men; however, as we noted earlier, differential changes across regions in religious affiliation were consistent when examining men and women separately. These caveats should nevertheless be kept in mind when generalising from our sample to the New Zealand population.

### Participant details

Complete responses to all of the relevant items analyzed here, including address details so that we could determine electoral district, were provided by 5,487 participants (84% of the total sample; 3,267 women, 2,220 men). Of those providing complete data, 72.4% were New Zealand European ( $n = 3,970$ ), 17.3% were Māori ( $n = 950$ ), 3.3% were of Pacific Nations ancestry ( $n$

$= 180$ ), 4.4% were of Asian ancestry ( $n = 244$ ), and 2.6% were coded as ‘other’ ( $n = 143$ ). Participants’ mean age was 47.01 ( $SD = 15.53$ ).

With regard to other demographics, 42.3% ( $n = 2,319$ ) identified as religious, with the majority (79.0%) of participants having been born in New Zealand ( $n = 4,333$ ). Most participants were in some form of romantic relationship (69.9%,  $n = 3,837$ ) and 74.0% had at least one child ( $n = 4,060$ ). The majority of participants were in paid employment (74.5%;  $n = 4,087$ ). In terms of education, 21.5% had no qualification (or failed to report their highest qualification;  $n = 1,178$ ), 29.6% completed at least some high school ( $n = 1,626$ ), 16.3% studied towards a diploma or certificate ( $n = 896$ ), 23.2% studied at the undergraduate level ( $n = 1,171$ ) and 9.4% pursued post-graduate study ( $n = 515$ ).

### Regional differences

Participants provided their residential address, and we used this information to identify the regions in which they were living when completing their 2009 NZAVS data. We identified the General Electoral District in which each participant was living at the time of data collection based on the 2007 General Electoral boundaries. These General Electoral boundaries separated New Zealand into 63 distinct regions, and have the advantage that they are designed to be relatively comparable in population size. Our sample contained on average 100.9 people per general electoral region. The distribution of our sample, based on the density of people in different meshblock centroids is presented in Figure 1.

### Materials

The 24-item Mini-IPIP6 personality scales (Sibley et al., 2011) were administered using the following instructions: “This part of the questionnaire measures your personality. Please circle the number that best represents how accurately each statement describes you.” Items were rated from 1 (Very Inaccurate) to 7 (Very Accurate). The Mini-IPIP6 contained the 20-items developed by Goldberg (1999) as part of the International Personality Item Pool and included by Donnellan et al. (2006) in the original

Mini-IPIP. The Mini-IPIP6 also included four additional items used to index Honesty-Humility (see Sibley et al., 2011). Two of these items were adapted from the Narcissism scale developed by Campbell et al. (2004). The remaining two were adapted from Ashton and Lee's (2009) HEXACO measure of Honesty-Humility.

Extraversion was assessed by the following four items: "Am the life of the party"; "Don't talk a lot" (reverse scored); "Keep in the background" (reverse scored); "Talk to a lot of different people at parties" ( $\alpha = .709$ ). Agreeableness was assessed by the following four items: "Sympathize with others' feelings"; "Am not interested in other people's problems" (reverse scored); "Feel others' emotions"; "Am

ideas" (reverse scored); "Do not have a good imagination" (reverse scored); "Am not interested in abstract ideas" (reverse scored;  $\alpha = .669$ ). Finally, Honesty-Humility was assessed by the following four items: "Would like to be seen driving around in a very expensive car" (reverse scored); "Would get a lot of pleasure from owning expensive luxury goods" (reverse scored); "Feel entitled to more of everything" (reverse scored); "Deserve more things in life" (reverse scored;  $\alpha = .776$ ).

The Mini-IPIP6 has been extensively validated in New Zealand with Exploratory and Confirmatory Factor Analytic assessments showing that the 24 items reliably fit a six factor solution, with each item set reliably loading on their hypothesised factor (Sibley et al., 2011). Sibley et al. (2011) also showed that the Mini-IPIP6 predicted variation in hours spent performing activities, religious affiliation, belief in climate change, and political orientation. Furthermore, Sibley (2012) validated the precision of the Mini IPIP6 through the use of Item Response Analysis and showed that the scale is reasonably precise given its brevity. Importantly, the scale was also shown to be extremely stable across a one year assessment period (Milojev, Osborne, Greaves, Barlow, & Sibley, 2013).

## Results

Table 1 shows the means and standard deviations for each of the six personality traits across New Zealand's 63 GEDs. Analysis of Variance (ANOVA) were conducted assessing mean differences in scores on each of the Big-Six personality dimensions across New Zealand's 63 GEDs to assess mean differences in personality. Given our extremely large sample size, and caution about detecting spurious effects, we adopt  $p < .01$  as our criterion for statistical significance.

As expected, the ANOVAs for Extraversion ( $F(62,6285) = 1.19, p = .15, \text{partial } \eta^2 = .012$ ), Agreeableness ( $F(62,6285) = 1.26, p = .08, \text{partial } \eta^2 = .012$ ), Conscientiousness ( $F(62,6285) = 1.29, p = .61, \text{partial } \eta^2 = .013$ ), and Neuroticism ( $F(62,6285) = 1.30, p = .06, \text{partial } \eta^2 = .013$ ) were non-significant. These findings indicate that there were no significant personality differences

between regions for these traits. In contrast, our analyses indicated that mean levels of Openness to Experience differed across regions ( $F(62,6285) = 2.84, p < .001, \text{partial } \eta^2 = .027$ ). Mean levels of Honesty-Humility also differed significantly across regions ( $F(62,6285) = 2.43, p < .001, \text{partial } \eta^2 = .023$ ). Nevertheless, while reliable, geographical differences explained only a very small proportion of the variance in Openness and Honesty-Humility (2.8% and 2.3%, respectively).

To examine these differences in detail, we mapped mean differences in personality across GEDs. For presentation purposes, we rescaled the mean scores for each of the Big-Six personality scale to range from 0 (lowest possible value) to 1 (highest possible value). These scores were then centered so that the midpoint value of .50 represents the rescaled mean value for each personality scale (see Equation 1). Such an approach provides a standard metric for graphing personality differences across regions and facilitates visual comparisons across GEDs.

Figures 2-7 display mean level variation in personality across New Zealand using the following six gradients of our rescaled range: (a) 0.00-.47, (b) .47-49, (c) .49-.51, (d) .51-.53, (e) .53-.55, and (f) .55-1.00. These gradients were chosen to best differentiate between the observed variations in personality, although it should be noted that these differences are rather small in magnitude—they cover an effective range from .47 to .53, which represents only 6% of the total possible variation in each personality scale. As with the results produced from our formal ANOVAs, these differences across regions are fine-grained and small in size.

$$y = ((x - 1)/7) - (0 - (\bar{x} - .50))$$

[Equation 1.0]

Figures 2 through 7 show the mean levels of Extraversion, Agreeableness, Conscientiousness, and Neuroticism (respectively) across New Zealand. The darker the region is shaded on the map, the higher the mean level of the trait in that region. Because the differences in these personality traits between regions were not significant, little variation is observed on the four corresponding maps. Figure 6, however, shows the mean levels of Openness to Experience



Figure 1. Distribution of the Time 1 NZAVS sample across New Zealand. Dots represent at least one participant responding from a given meshblock, and are based on meshblock centroids (thus individual responses are anonymized in this figure; from Milfont, Evans, Sibley, Ries and Cunningham, 2014, p. 4).

not really interested in others" (reverse scored) ( $\alpha = .661$ ). Conscientiousness was assessed by the following four items: "Get chores done right away"; "Like order"; "Make a mess of things" (reverse scored); "Often forget to put things back in their proper place" (reverse scored;  $\alpha = .649$ ). The Neuroticism scale included the following four items: "Have frequent mood swings"; "Am relaxed most of the time" (reverse scored); "Get upset easily"; "Seldom feel blue" (reverse scored;  $\alpha = .639$ ). Openness to Experience was assessed by the following four items: "Have a vivid imagination"; "Have difficulty understanding abstract

Table 1.

*Mean Levels of Each Big-Six Personality Trait by General Electorate District*

GED	Extraversion		Agreeableness		Conscientiousness		Neuroticism		Openness		Honesty-Humility	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Auckland Central	4.26	1.22	5.22	0.88	4.96	1.09	3.62	1.03	5.18	1.12	5.05	1.21
Bay of Plenty	3.89	1.00	5.44	0.89	5.37	0.98	3.64	1.14	4.70	1.05	4.95	1.28
Botany	4.15	1.10	5.29	1.00	5.27	1.03	3.44	1.07	4.76	1.05	4.76	1.34
Christchurch Central	4.35	1.09	5.27	1.00	5.25	1.04	3.41	1.02	5.16	1.13	4.96	1.37
Christchurch East	4.18	1.23	5.18	1.14	4.91	1.05	3.29	1.06	4.91	0.98	5.01	1.41
Clutha-Southland	4.08	1.22	5.15	1.09	5.03	1.04	3.35	0.95	4.73	1.04	5.33	1.24
Coromandel	4.03	1.09	5.35	1.00	4.97	0.89	3.54	1.13	4.80	1.06	5.18	1.24
Dunedin North	3.93	1.37	5.36	1.01	4.97	1.06	3.25	1.18	4.91	1.21	5.48	1.31
Dunedin South	4.08	1.09	5.26	1.02	5.12	1.18	3.50	1.21	4.66	1.04	5.08	1.41
East Coast	4.11	1.20	5.35	0.93	5.11	1.10	3.37	1.13	4.89	1.14	5.03	1.44
East Coast Bays	4.38	1.27	5.19	1.16	5.14	1.14	3.21	1.18	4.90	1.15	5.09	1.40
Epsom	3.98	1.33	5.43	0.86	5.14	1.14	3.47	1.15	5.03	1.12	4.83	1.46
Hamilton East	4.15	1.11	5.21	1.02	5.05	0.96	3.56	1.09	4.79	1.13	5.17	1.35
Hamilton West	3.84	1.30	5.03	1.09	5.11	1.17	3.54	1.12	4.51	1.22	5.06	1.33
Helensville	4.06	1.00	5.11	1.01	5.10	0.96	3.47	1.08	4.91	1.00	5.17	1.16
Hunua	3.99	1.20	5.13	0.92	5.28	1.02	3.39	1.04	4.61	1.20	5.13	1.32
Hutt South	4.15	1.13	5.22	1.05	4.84	1.06	3.59	1.22	5.21	1.04	5.03	1.26
Ilam	4.18	1.26	5.50	0.99	5.13	1.00	3.38	1.14	4.88	1.10	5.10	1.31
Invercargill	4.08	1.25	5.24	0.97	5.21	1.03	3.35	1.08	4.57	1.19	5.14	1.34
Kaikoura	4.23	0.96	5.50	0.92	5.00	1.13	3.25	1.11	4.77	1.13	5.34	1.41
Mana	4.18	1.10	5.53	0.85	5.17	1.10	3.33	1.12	4.96	1.04	5.21	1.36
Mangere	4.03	1.16	5.05	1.02	5.29	0.95	3.60	1.02	4.64	1.08	4.96	1.40
Manukau East	3.98	1.16	4.99	1.24	4.93	1.12	3.54	1.13	4.76	1.07	4.73	1.45
Manurewa	4.06	1.13	5.18	1.01	5.05	0.98	3.74	1.04	4.81	1.08	4.55	1.49
Maungakiekie	4.15	1.06	5.24	1.06	5.01	1.10	3.48	0.98	5.05	0.97	4.72	1.25
Mt Albert	4.24	1.24	5.35	0.97	4.84	1.26	3.48	1.20	5.23	1.19	4.79	1.52
Mt Roskill	3.86	1.18	5.16	0.97	4.95	1.02	3.59	0.98	4.86	1.03	4.84	1.48
Napier	3.94	1.27	5.22	0.92	5.02	1.09	3.57	1.11	4.78	1.14	5.04	1.41
Nelson	3.97	1.15	5.47	0.95	5.26	1.06	3.43	1.10	4.83	1.14	5.49	1.15
New Lynn	4.17	1.22	5.39	0.93	5.25	1.00	3.48	1.02	4.73	1.11	4.73	1.51
New Plymouth	3.92	1.22	5.10	0.97	5.15	1.05	3.34	1.11	4.63	1.02	4.97	1.25
North Shore	4.11	1.36	5.48	0.85	5.35	1.03	3.24	1.17	5.10	1.02	5.10	1.20
Northcote	4.01	1.13	5.21	0.98	5.10	1.13	3.74	1.06	4.98	1.08	4.98	1.43
Northland	4.01	1.12	5.24	0.96	5.07	1.00	3.40	0.96	4.71	1.01	5.19	1.31
Ohariu	4.13	1.11	5.32	0.91	5.05	1.09	3.25	1.01	5.01	1.06	5.12	1.25
Otaki	3.66	1.23	5.15	1.10	5.19	1.03	3.51	1.05	4.73	1.13	4.82	1.29
Pakuranga	4.10	1.13	5.38	0.98	5.18	1.04	3.44	1.13	4.76	1.03	4.80	1.33
Palmerston North	4.04	1.07	5.38	0.84	5.19	0.88	3.49	1.11	4.66	1.19	5.32	1.22
Papakura	3.95	1.14	5.26	0.89	5.27	1.08	3.44	1.09	4.59	1.13	4.55	1.50
Port Hills	4.17	1.25	5.36	1.01	4.92	1.13	3.34	1.12	5.11	1.14	5.40	1.12
Rangitata	4.07	1.07	5.33	0.89	5.14	1.07	3.49	1.07	4.47	1.10	4.99	1.43
Rangitikei	4.08	1.22	5.18	1.01	5.12	1.07	3.24	1.04	4.61	1.07	5.19	1.28
Rimutaka	4.05	1.17	5.27	0.88	4.97	1.13	3.44	1.08	4.89	1.19	5.26	1.31

<i>GED</i>	<i>Extraversion</i>		<i>Agreeableness</i>		<i>Conscientiousness</i>		<i>Neuroticism</i>		<i>Openness</i>		<i>Honesty-Humility</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Rodney	3.98	1.10	5.22	1.01	5.36	1.06	3.43	1.05	4.76	1.15	5.11	1.23
Rongotai	3.97	1.21	5.32	0.81	5.01	1.09	3.59	1.19	5.26	1.08	4.94	1.47
Rotorua	3.97	1.27	5.24	1.00	5.27	0.98	3.34	1.04	4.74	1.07	5.32	1.29
Selwyn	3.94	1.15	5.23	1.02	5.09	1.16	3.39	1.03	4.55	1.07	5.23	1.26
Tamaki	4.24	1.15	5.06	0.86	5.19	0.93	3.06	0.97	4.98	1.16	4.90	1.32
Taranaki-King Country	4.02	1.14	5.25	1.01	5.30	0.97	3.32	1.08	4.71	1.07	4.90	1.24
Taupo	3.90	1.11	5.03	1.22	5.11	1.04	3.37	1.08	4.52	1.11	5.20	1.25
Tauranga	4.01	1.16	5.34	0.95	5.10	1.18	3.44	1.01	4.75	1.09	5.09	1.24
Te Atatu	3.95	1.27	5.11	1.01	5.02	1.19	3.84	1.23	4.71	1.11	4.78	1.38
Tukituki	4.15	1.15	5.20	0.84	5.22	1.01	3.27	1.02	4.58	1.14	4.87	1.40
Waikato	3.94	1.15	5.12	1.00	5.07	0.98	3.46	1.13	4.49	1.10	5.06	1.30
Waimakariri	3.80	1.10	5.32	1.07	5.04	1.20	3.62	1.05	4.68	1.03	4.91	1.51
Wairarapa	4.15	1.03	5.16	0.98	4.97	1.06	3.41	1.19	4.63	1.10	5.13	1.31
Waitakere	4.01	0.98	5.26	0.94	5.14	1.25	3.69	1.07	4.78	1.11	4.60	1.45
Waitaki	3.86	1.13	5.31	1.00	4.95	1.12	3.36	1.00	4.85	1.09	5.38	1.39
Wellington Central	4.12	1.07	5.13	1.00	4.96	1.05	3.52	1.06	5.33	1.06	4.87	1.36
West Coast-Tasman	3.70	1.03	5.30	1.00	5.09	1.15	3.23	1.17	4.67	1.09	5.27	1.12
Whanganui	3.94	1.21	5.07	0.89	5.11	1.00	3.54	1.12	4.57	1.24	4.96	1.30
Whangarei	4.14	1.08	5.20	1.04	5.19	1.03	3.21	1.09	4.67	1.18	5.27	1.23
Wigram	4.16	1.32	5.38	1.07	5.23	1.15	3.44	1.25	4.84	1.15	4.87	1.39

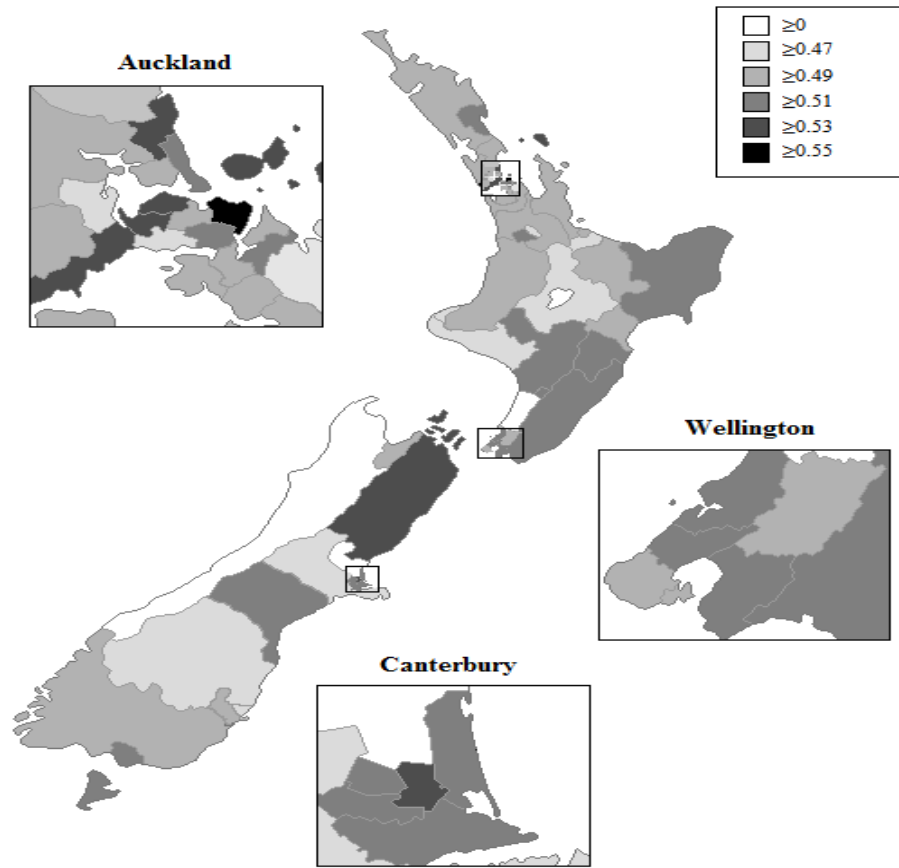


Figure 2. Mean levels of Extraversion over New Zealand's 63 General Electorate Districts

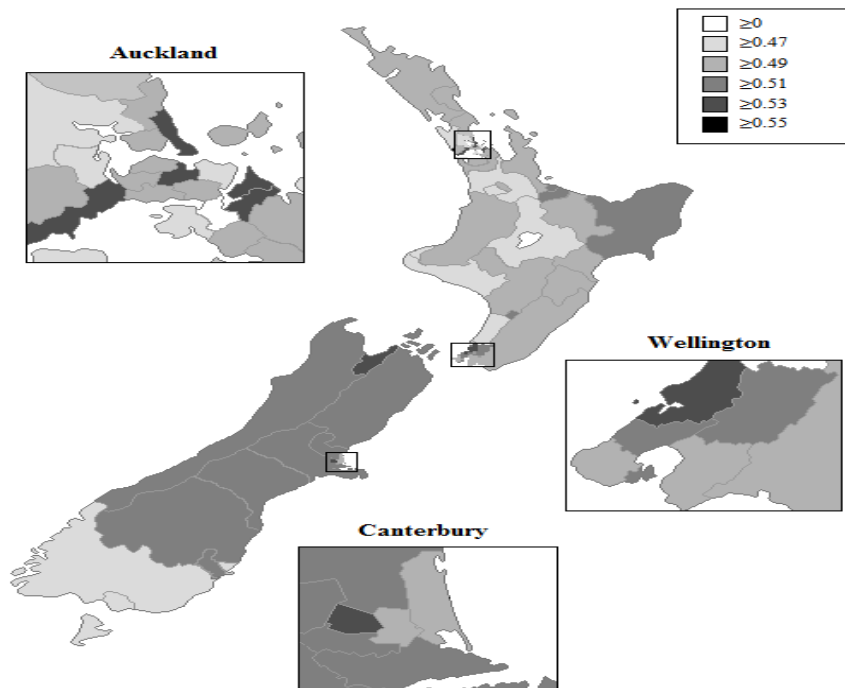


Figure 3. Mean levels of Agreeableness over New Zealand's 63 General Electorate Districts



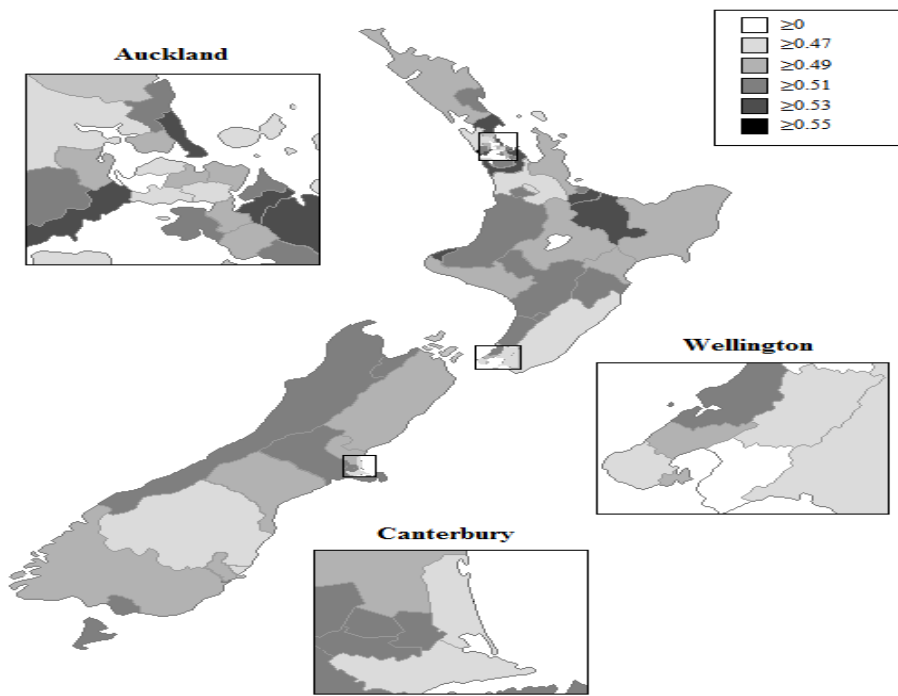


Figure 4. Mean levels of Conscientiousness over New Zealand's 63 General Electorate Districts.

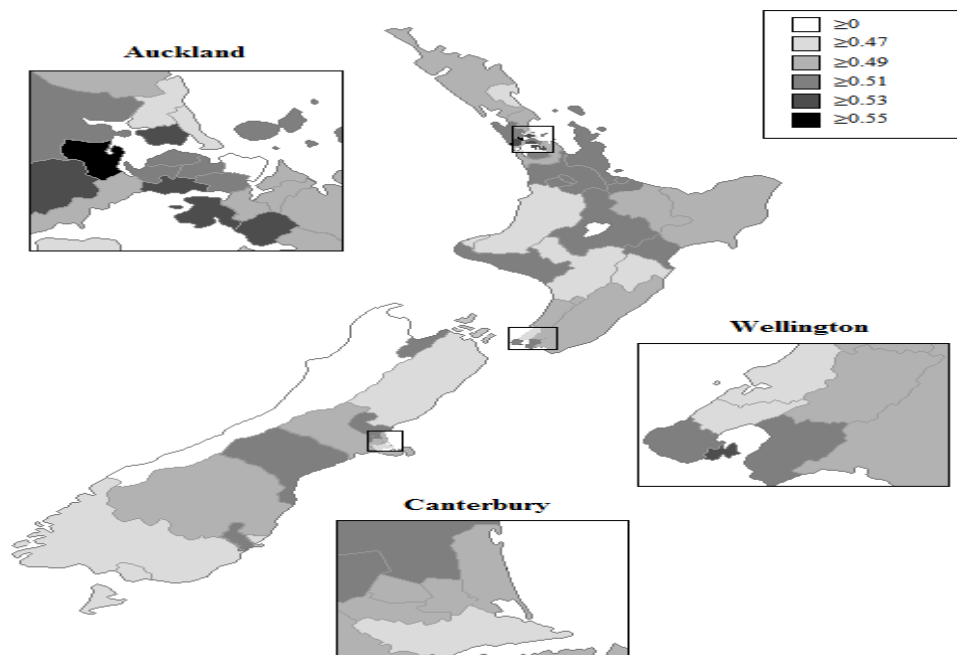


Figure 5. Mean levels of Neuroticism over New Zealand's 63 General Electorate Districts.

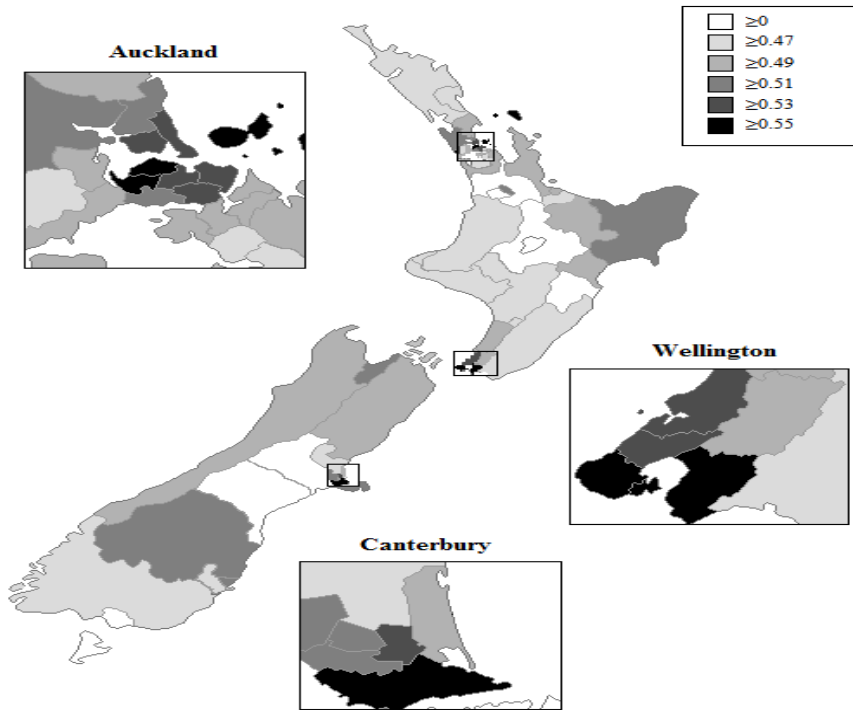


Figure 6. Mean levels of Openness to Experience over New Zealand's 63 General Electorate Districts.

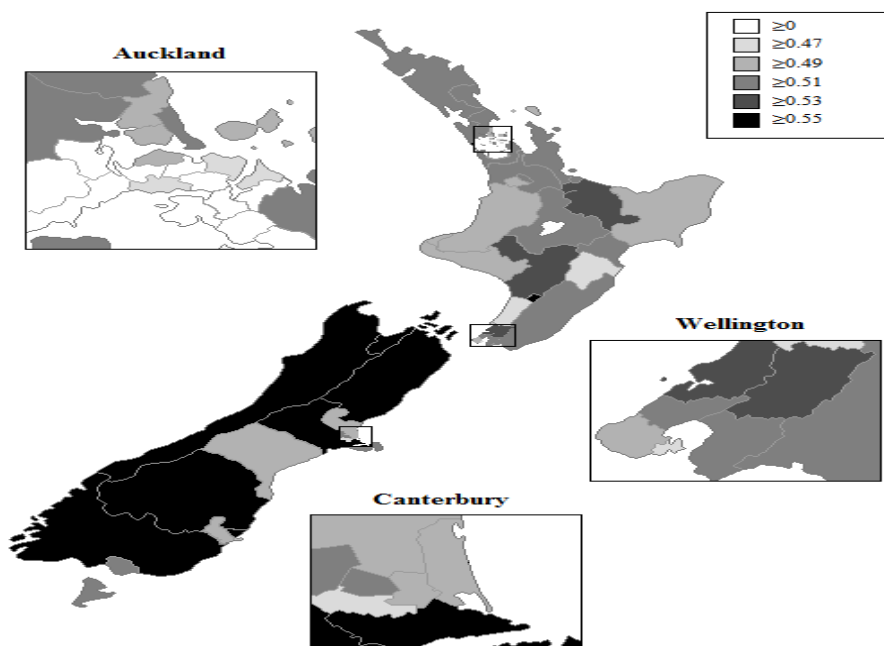


Figure 7. Mean levels of Honesty-Humility over New Zealand's 63 General Electorate Districts.

for each region. This map clearly shows that the regions containing New Zealand's three largest city centres (i.e., Auckland, Wellington, and Christchurch) tended to have the highest mean levels of Openness. Likewise, Figure 7 shows the mean levels of Honesty-Humility over these 63 regions. As can be seen, regions in the South Island and Palmerston North had the highest mean levels of Honesty-Humility, whereas the Auckland region tended to have the lowest level of this trait relative to the rest of the country.

### *Additional analysis of urban versus rural differences*

The small but significant differences between regions in Honesty-Humility and Openness to Experience raise the possibility of a more general difference between those living in urban versus rural regions of New Zealand. To explore this possibility we conducted additional analyses assessing mean differences in Big-Six personality between urban versus rural regions of New Zealand. We determined whether each participant lived in an urban versus rural region by identifying the territorial authority within which each participant resided. Territorial authorities are defined as either districts (rural) or city (urban) units by the Local Government Act 2002 (Statistics New Zealand, 2014), and we used this information to thus assign an urban versus rural code to each participant.

There were no significant differences in Extraversion ( $F(1,6347) = 6.55$ ,  $p = .01$ ,  $\eta^2 = .001$ ), Agreeableness ( $F(1,6347) = 2.87$ ,  $p = .09$ ,  $\eta^2 > .001$ ), Conscientiousness ( $F(1,6347) = 1.61$ ,  $p = .21$ ,  $\eta^2 > .001$ ), and Neuroticism ( $F(1,6347) = 4.03$ ,  $p = .05$ ,  $\eta^2 = .001$ ) across urban versus rural regions of New Zealand. However, there were very small but significant effects indicating that those living in urban areas tended to be slightly higher in Openness to Experience relative to those living in rural regions ( $F(1,6347) = 50.73$ ,  $p < .001$ ,  $\eta^2 = .008$ ). In contrast, those living in rural regions tended to be slightly but significantly higher in Honesty-Humility relative to those living in urban regions ( $F(1,6347) = 9.54$ ,  $p = .002$ ,  $\eta^2 = .002$ ). Again, while significant, these differences were exceedingly small, and only explained 0.08% and 0.02% of the

variation in Openness to Experience and Honesty-Humility, respectively. This suggests that the difference we detected across electoral regions may reflect a more general difference across urban versus rural regions in particular.

## Discussion

The quote that opened this paper highlights a common human tendency to place people into groups on the basis of perceived shared characteristics. Anecdotal evidence also suggests that we often attribute different personality traits to people based on where they reside. Accordingly, previous research has shown that personality does differ substantively between both nations (Hofstede & McCrae, 2004; McCrae, 2001; McCrae et al., 2005; McCrae & Terracciano, 2007; Schmitt, Allik, McCrae, & Benet-Martinez, 2007) and states within the US (e.g., see Rentfrow, 2010). The extent to which personality varies across relatively smaller regional units, however, has never been assessed—certainly not in New Zealand.

The present study aimed to address this oversight by testing potential personality differences across regions of New Zealand. This is important because we need valid and reliable data assessing such differences if we want to demonstrate, as we have done, that any apparent regional variation is trivial and for the most part, non-significant. Our findings indicate that the stereotypes of regional differences across New Zealand, at least insofar as they refer to mean differences in personality, are for the most part unfounded, or at the least that the differences are far smaller than what might be thought. We found that regions do not significantly differ in their mean levels of Extraversion, Agreeableness, Conscientiousness or Neuroticism. There were, however, very small but significant regional differences in Openness to Experience and Honesty-Humility. Specifically, geographical clusters in the South Island had higher mean levels of Honesty-Humility, whereas the regions concentrated around New Zealand's largest cities had higher mean levels of Openness to Experience relative to the rest of the country. Nevertheless, these differences in personality were trivial and suggest that New Zealanders across

the country tend to have more similarities than differences in their core personality traits.

Although there are several theories for why regions may have these small differences in mean levels of personality, research identifying the causal direction of these relationships is lacking (Rentfrow, Gosling, & Potter, 2008). It may be that people tend to be attracted to certain regions because they have a unifying trait – the old adage that ‘birds of a feather flock together’. For example, those high on Openness to Experience may migrate to cities because they want to experience new opportunities and activities that are associated with large and diverse populations. On the other hand, residents of rural areas (such as those in the South Island) may become higher in Honesty-Humility due to environmental demands. Indeed, it is possible that sparse populations and hard-to-access resources facilitate cooperation, one of the primary adaptive benefits of Honesty-Humility (see Ashton & Lee, 2007). In the future, such questions might be addressed by the New Zealand Attitudes and Values Study as more time points in the longitudinal design are completed.

Although the longitudinal design of the NZAVS will eventually allow us to address questions about the direction of causation, the effects that we found were relatively small and speak to the lack of empirical support for regional stereotypes within New Zealand. We mentioned in the introduction that there are common beliefs about what a South Islander is like relative to a North Islander, or how a person from rural New Zealand compares to a city dweller. Contrary to these beliefs, we have shown that regional differences in personality only exist for Honesty-Humility and Openness to Experience. Moreover, these differences are very small in magnitude. As such, one would be hard-pressed to build a distinct personality profile of a region given such small differences in only two of the six broad personality dimensions.

It should be emphasised that we did not examine what people's perceptions are about those from different/other regions of New Zealand. That is, our interest was not in examining the nature or content of regional stereotypes in

New Zealand (e.g., see Terracciano et al., 2005). Rather, our results indicate that any such stereotypes are most likely unfounded, given that variation in personality across regions in New Zealand was relatively trivial, and for the large part, unsystematic. Put another way, our data indicate that there is far more variation between people within regions, regardless of the region they live in, than there is variation systematically across different regions. This raises the interesting possibility that while separating a nation like America into distinct regions (and/or states) may help inform health and psychological research (e.g., McCrae & Terracciano, 2007), doing so in New Zealand appears to be less fruitful.

This is not to say that there may not be other reliable regional differences between people who live in different regions of New Zealand. Some very obvious ones are regional differences in the proportion of people working in different occupations (urban versus rural differences, for example). There are also well-documented regional differences in poverty (see Salmond & Crampton, 2012). Furthermore, the Human Potential Centre (2013) has also reported regional differences in factors such as belongingness. And of course, possibly the most widely discussed regional differences (at least in election years) are regional differences in support for different political parties. Greaves et al. (2014), for example, found that the proportion of Fence Sitting voters varies across electorates in New Zealand.

Critically, however, our results indicate that these other regional differences do not translate to core personality differences across people. In this regard, it seems that New Zealand may differ from the United States. Research into how personality varies across regions in the United States (e.g., Rentfrow, 2010; Rentfrow, Gosling, & Potter, 2008) attributes the differences across regions to migration patterns over varied ecologies, climate and the variability in genetics and culture. New Zealand, however, is a much smaller and relatively young nation. In fact, personality in New Zealand has shown remarkable consistency across time. Milojev, Osborne, and Sibley (2014) found that personality was stable in

New Zealand and the Canterbury region despite the traumatic Canterbury earthquakes of 2010/11. As such, regional distinctions appear to be less informative of a person's personality in relatively small nations like New Zealand.

Finally, it is worth discussing a possible caveat of our research. We cannot know if there may be systematic personality differences between those who completed the NZAVS questionnaire and those who did not. For instance, it is possible that those who opted to participate in our study may have been more conscientious than those who chose not to. Unfortunately, there is no census data on personality to compare our sample to. In fact, as far as we are aware, ours is the largest national probability sample of personality and values to be conducted in New Zealand in recent times. However, in prior analyses of the Time 1 NZAVS data, Sibley and Pirie (2013) examined the distributions of Big-Six personality scores, and showed that they were all reasonably normally distributed. Importantly, the distribution of Conscientiousness did not differ notably from the distribution of the other five core dimensions of personality, so it is unlikely that any such personality bias affected only Conscientiousness in particular. Regardless, we can reasonably assume that any systematic personality difference between respondents and non-respondents should be consistent across regions. Thus, to continue with our example, if people who are high on Conscientiousness are more likely to respond, then this should have been just as true of Aucklanders as people living in Kaikoura or Naenae. Thus, the relative comparison across regions should still be valid, as while it is possible that the overall level may be biased (although we think such bias unlikely), the estimate of relative differences across regions should be unaffected.

### Conclusion

It seems to us that people like to talk about regional stereotypes, as the discussion of 'what people in different regions are like' pops up fairly regularly in the media, and other social discourse. The current study speaks directly to anecdotes about regional variation in

personality in New Zealand. We show that, for the most part, similarities in personality far outweigh any supposed regional differences. Although the public may hold beliefs and stereotypes about what people from different regions of New Zealand are like, there are trivial, and in most cases, no reliable differences in the Big-Six across the country. These findings refute some long-held stereotypes about our fellow New Zealanders. When it comes to personality, people in the south are just as likely to be extraverted or introverted, agreeable or disagreeable, as are people in the north. And, to reiterate once again, the differences in Openness and Honesty-Humility that we did detect, while reliable, are extremely small to the point that they should have no noticeable impact on social interaction.

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