

Does the Scale or Speed of Immigration Generate Nativism? Evidence from a Comparison of New Zealand Regions

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journals.sagepub.com/home/mhs**Chris Wilson***The University of Auckland***Sanjal Shastri***The University of Auckland***Henry Frear***The University of Auckland*

Executive Summary

Nativism, the belief that the rights of those who came first should be prioritized over immigrants, is an increasingly important driver of the rise of far-right populism. It is also leading to hate crimes and even terrorist attacks against immigrants. However, it remains unclear when and why local communities come to oppose immigration. One important set of questions concerns whether nativism is most likely to emerge in societies in which immigrants constitute a higher proportion of the total population or those where there is rapid growth in the immigrant population, even if absolute numbers or their proportion of society remain low.

This paper employs multivariate analysis to test these two hypotheses. We use data from a survey of nativist (and populist) sentiment in New Zealand conducted in 2020 along with population data from the national censuses of 2013 and 2018. We compare the results from all New Zealand regions. Our findings strongly support the second hypothesis regarding the importance of the rate of growth in the immigrant population. Those regions that have the highest rate of change in immigrant populations present the highest levels of nativist sentiment, despite their immigrant populations being both small in size and as a proportion of the local population. Conversely, those regions where immigrant numbers are high or they constitute a large proportion of the local population return low levels of nativist sentiment.

Keywords

nativism, New Zealand, immigration, local-immigrant tension, populism

Introduction

Nativism, the belief that the rights of those who came first should be prioritized over immigrants, is an

increasingly important driver of the rise of far-right populism. It is also leading to hate crimes and even terrorist attacks against immigrants or those seen as

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facilitating their arrival. It is therefore important that we seek to understand the conditions under which nativism emerges. Unfortunately, it remains unclear when and why local communities come to oppose immigration. Most of the literature on the emergence of nativism sees it as generated by a perceived threat to natives' economic position or culture. A further important series of questions concerns whether the size of the immigrant population, its proportion of the surrounding host community or the rate of growth in that population is most likely to generate nativist sentiment. Common sense might suggest that higher numbers of immigrants or situations in which they constitute a high proportion of the local population will generate greater nativism because of the increased competition they pose to self-defined native communities and the anxiety and hostility generated as a result. Yet these assumptions are confounded by cases around the world, with many areas of very high migration and diversity largely devoid of coordinated hostility toward migrants. A third potential explanation for rising nativism, therefore, focuses not on the absolute numbers of immigrants nor their proportion of society but instead on the rate of growth of that community.

This paper employs multivariate analysis to test hypotheses associated with each of these explanations of nativism. We use data from a survey of nativist (and populist) sentiment in New Zealand conducted in 2020 along with population data from the New Zealand censuses of 2013 and 2018. We compare the results from all New Zealand regions. Regarding the relative importance of size or rate of immigration, our findings strongly support the second hypothesis regarding the importance of the rate of growth in the immigrant population. Those regions which have the highest rate of change in immigrant populations between the two censuses present the highest levels of nativist sentiment, despite their immigrant populations being both small in size and as a proportion of the local population. Conversely, those regions where immigrant numbers are high or where they constitute a large proportion of the local population return low levels of nativist sentiment.

The next section discusses the definition of nativism. This is followed by a survey of existing explanations of nativism focused on the economic and cultural threat. The following section discusses

two explanations of nativism focused on the size/proportion and growth of immigrant populations. We present hypotheses from the literature on each of these explanations. We subsequently present our methodology and introduce our survey data on nativist sentiment for each region. We then introduce demographic data from the two censuses. In the following analytical section, we present the multivariate analysis by which we test the hypotheses and our conclusions regarding the importance of the growth of the immigrant population. We then discuss some potential explanations for the high prevalence of nativism in regions of small but rapidly growing immigrant communities.

Nativism

For several decades, opposition to immigration has been central to the rise of far-right populism in much of the Western world. More recently, the belief that immigrants threaten the interests and culture of the white race in its "homelands" (often settler states such as the United States and Australia) has motivated the perpetrators of mass casualty attacks against minorities in El Paso, Texas and Pittsburgh, Pennsylvania in the United States and in Christchurch, New Zealand. This opposition to immigration by members of a community who came first or for other reasons believe they are the rightful owners and residents of the land is known as nativism. Of American origin, the term is now central to the study of the far right as well as other forms of intergroup conflict around the world. Cas Mudde writes that "The key feature of the populist radical right ideology is *nativism*..." (Mudde 2010, 1173) Another scholar contends that populist movements are nativist in character, with anger over immigration driving frustration with mainstream political parties and the elite (Betz 2013, 170). Elsewhere, Betz (2017) demonstrates that the nature and extent of the role-played by nativism within populist movements varies depending on the nature of the targets and the native constituency at which nativist rhetoric is aimed.

In 1943, the anthropologist Ralph Linton defined nativism as "Any conscious, organized attempt on the part of a society's members to revive or perpetuate selected aspects of its culture" against perceived threats to its very existence from another (Linton

1943, 230). Several years later, Higham described that threat as stemming from “some influence originating abroad threatened the very life of the nation from within. Nativism, therefore, should be defined as intense opposition to an internal minority on the ground of its foreign (that is, ‘un-American’) connections” (Higham 2002, 4). In Myron Weiner’s study of migration and nativism in India, *Sons of the Soil*, he abandoned this notion of the immigrant as an agent of a foreign power. He defined nativism as “that form of ethnic identity that seeks to exclude those who are not members of the local or indigenous ethnic groups from residing and/or working in a territory because they are not native to the country or region: Nativism is anti-migrant” (Weiner 1978, 747). Mudde similarly defines the phenomenon as “an ideology, which holds that states should be inhabited exclusively by members of the native group (‘the nation’) and that non-native elements (persons and ideas) are fundamentally threatening to the homogenous nation-state” (Mudde 2010, 19). This study defines nativism as an ideology that perceives and depicts migration in general, or particular immigrant groups, as a serious threat to native communities. This threat can be cultural, demographic, political, economic, or physical but often combines several or all these forms.

Nativism is not the same as indigeneity (Jackson 2006, 96). Although nativism often emerges among the first inhabitants of the region, it also emerges in groups with different historical connections to the land. A belief in the autochthony (from the Greek meaning born from the soil) of one’s group need not be rooted in a belief that one’s group first occupied the land. It may instead turn on a sense of profound attachment and belief that you are its most rightful owners (Martinovic and Verkuyten 2013). In many postcolonial societies, descendants of European colonists have claimed such a status, perceiving a point in the past after which any arrivals are less legitimate. Recognizing this tendency among many settler communities, the Oxford Dictionary defines nativism as “The policy of protecting the interests of native-born or established inhabitants against those of immigrants” (Lexico, <https://www.lexico.com/definition/nativism>). Similarly, Guia (2016) writes that nativism is “a philosophical outlook and an eclectic collection of policies that redefines who the ‘real’ people of a political unit are and who ... should have more rights and decision-

making power to determine the characteristics of that society vis-à-vis a group considered exogenous and incapable of assimilating.” In the New Zealand context, many descendants of European settlers, known as *Pakeha*, now perceive themselves as justified in excluding those, particularly those of different cultures, who now seek to make New Zealand their home.

Nativism is not, by definition at least, racist. Many contemporary nativists deny that they believe their own culture or group is superior to others, only that they are trying to preserve their own society’s identity just as others around the world do (Higham 1988, 329). However, prejudice against other cultures and dissatisfaction with immigration often go hand in hand. Nativism tends to be nostalgic, positing an idealized past before society was altered by new arrivals. At the very least, nativists demand that immigrants assimilate into the host culture. At its most extreme, nativism demands the expulsion (or even elimination) of immigrant groups.

The Drivers of Nativism: Economic Versus Cultural Threat

Most research on natives’ attitudes toward immigration has emphasized two broad explanations, the first focused on economic concerns (often divided into personal and group interest perspectives) and the second focused on threats to national culture and identity.

Two models of attitudes toward immigration based on personal economic interest, the Labor Market Competition thesis and Fiscal Threat thesis predict that natives will oppose the immigration of people with skills similar to their own. The first contends that natives will oppose immigrants likely to compete for the same jobs, while the second predicts that high skilled natives will oppose low-skilled immigration more than their low-skilled coethnics) because of a perception it will lead to a higher taxation burden on them. But several studies have found little evidence to support this proposition. Some (Hainmueller and Hiscox 2010) find that workers of all skill levels support immigration of high-skilled workers and are more likely to oppose low skilled immigration.

Some studies find that people with higher levels of education are more likely to support immigration of both low- and high-skilled immigrants. They conclude that instead of education acting as an indication

of high skill, it affects attitudes toward immigration in other ways, such as through norms of political correctness and cultural attitudes about the benefits of immigration to society as a whole.

These studies find that a person's position in the labor market does not influence their attitudes on immigration, whether because of concerns over competition for jobs or the fiscal burden (that is, increased taxation) of immigration. There is therefore a lack of evidence that opposition to immigration can be explained by personal economic interest or competition (Citrin et al. 1997). Another strand of literature therefore examines the role of group-level considerations in driving opposition to immigration.

Although adverse individual economic circumstances may not directly lead to negative attitudes toward immigration, perceptions of immigration's effect on the national economy may have more impact. For example, Citrin et al. (1997) find that opposition to immigration is more likely generated by "unhappiness about the state of the national economy, anxiety about the prospect of rising taxes, and negative assessments about the economic and social costs of immigration." Although there is therefore some evidence that concerns over effects on the national economy drive opposition to immigration, other studies illustrate that perceptions of cultural threat are even more consequential for attitudes toward immigration.

Sniderman, Hagendoorn and Prior (2004, 46) show that concerns over national identity were more important than economic interest in driving opposition to immigration. Further, these concerns depended in large part upon the visual distinctiveness of immigrant groups through dress, skin color, and other phenomena, entitativity (defined as the perceived cohesiveness of the group), and salience afforded by media coverage (Sniderman, Hagendoorn and Prior 2004, 36). Card, Dustmann and Preston (2012) found that compositional concerns ("having neighbors and coworkers who share their language, ethnicity, culture, and religion") are two and a half times more important than concerns over wages and taxation in driving opposition to immigration in Europe. In addition, they found that 70 percent of the difference in attitudes on the level of immigration between the most and least educated can be attributed to compositional concerns (ibid. 110). The literature identifies a lack of assimilation as important in generating a perception of cultural threat.

Nativists perceive immigrants retaining national dress, language, and other visible signs of difference as a sign of their inability or refusal to assimilate (Heisler and Layton-Henry 1993).

The Scale and Speed of Immigration and the Emergence of Nativism: Three Hypotheses

The links between immigration and rising nativist opposition are therefore multilayered, involving economic, cultural, and even political fears and competition. According to the literature discussed above, nativism is most likely to emerge when immigrants pose or are depicted as posing, a wide-ranging number of threats to the jobs, welfare, homes, and culture of native communities. Yet it remains unclear what level of immigration triggers these fears and animosities. We identify three potential hypotheses from the literature and discuss each in the following section.

The Size of the Immigrant Population

Under one possible scenario, nativism may be associated with high numbers of immigrants. There are several reasons for this correlation, most notably the economic and political competition or even demographic or existential threat associated with higher numbers of immigrants. From a realistic group threat perspective, the more immigrants who have settled in an area the greater the challenge they are perceived to pose to the land, homes, employment, welfare, and power of natives. Rising immigrant populations are also sometimes associated with native anger at local and national politicians for allowing large-scale migration but failing to invest in the infrastructure and economy needed to maintain a large population.

Many studies of nativism have found a correlation between the scale of immigration and rising anti-immigration sentiment. Eric Kaufmann and Matthew Goodwin found that higher diversity predicted a greater threat response from natives in the smallest and largest geographic units but generated a lesser threat response in medium-sized towns and neighborhoods (2018, 124). Studies have also demonstrated a connection between the scale of immigration and inter-group threat in earlier historical periods and in

non-Western contexts. A study on the rise of nativism in nineteenth-century Massachusetts reported that for some Anglo Saxon Protestants, “the Irish were becoming disagreeably numerous” (Haynes 1897, 76). A study on the American cities of the late nineteenth century found that the greater the number of migrants entering an urban market the greater the intergroup competition (Olzak 1986, 5). Examining nativism in India, Bhavnani and Lacina write, “on average, greater population inflows prompt the rise of nativist politics and policies” (Bhavnani and Lacina 2015, 5). They argue that this is because greater immigration brings migrants into competition with locals, particularly in the labor market, which provides incentives to politicians to “pursue sons-of-the-soil policies” (ibid. 6).

Proportion of the Population

Under a second possible scenario, the number of immigrants should matter only as it relates to the size of the total host population. A smaller immigrant community, for example, will matter more in a medium-sized town or rural area than it will in a large city. Studies have found that negative attitudes toward immigration in European countries increase as the proportion of society comprised of migrants grows (Schlueter and Scheepers 2010). The rise of the nativist populist right in some areas of the West has followed an extensive change in the levels and nature of in-migration to the area. By the end of the twentieth century, much of Western Europe and the United States had seen much higher rates of immigration by visibly ethnically and religiously diverse communities than in the past (Eatwell and Goodwin 2018, 139). In Europe, negative attitudes toward immigrants have increased along with the proportion of society made up of migrants (Schlueter and Scheepers 2010). Pappas writes, for example, that nativism “flourishes where diversity sharply increases, and tails off in the presence of ethnic and racial homogeneity. It is no wonder, then, that nativism has historically been much stronger in the multiethnic United States than in Europe” (Pappas 2016, 27). Kerwin goes further pointing out that the shrinking of host populations coupled with rising immigration has led to fear of racial and cultural displacement” (Kerwin 2020, 113). These findings match those of studies of prejudice more generally. Studies of the United

States have found higher black proportions of the population to be associated with racial discrimination against those black communities, including resistance to school desegregation, electoral support for racist political candidates, and higher rates of lynching (Giles 1977, 412). This is the case in both the South and non-South (Fossett and Jill 1989, 833).

Rate of Change

Under a third scenario, neither the absolute numbers of immigrants nor their percentage of the total population may explain nativism. The rate of increase in the immigration population and its proportion of society might be more important. Many areas of high immigration avoid a nativist backlash. Examining far right parties in Europe—for whom opposition to immigration is a central policy—Pippa Norris found no correlation between diversity at the national level and support for such parties (Norris 2005, 260). Rafaela Dancygier similarly finds a lack of correlation between the proportion of Muslim immigrants and the success of far right nativist political parties in Great Britain. Some far right candidates foundered in electorates with high proportions of immigrants, leading her to conclude that “the relationship between the immigrant presence and the anti-immigrant electoral backlash is not particularly strong” (Dancygier 2010, 14). Citrin et al. (1997, 876) found that residents in states and counties in the United States with greater concentrations of recent immigrants were no more restrictionist than elsewhere in the country.

Indeed, some evidence points to larger proportions of immigrants in a society being associated with *lower* support for nativist movements and violence, often because of the benefits of increased contact (Pettigrew et al. 2011, 275; Money 1999; Wagner et al. 2003). The increasing contact between natives and immigrants leads to a process of social learning. “Familiarity defuses contempt and communities redefine their identity to include new members, the hostility that greeted the first significant group of newcomers gives way to acceptance or indifference...” (Green, McFalls and Smith 2001, 490). Similarly, Wagner et al. found that the rate of prejudice in West Germany was lower than in East Germany despite having five times the proportion of immigrant minorities (Wagner et al. 2003). They found that intergroup contact, in particular

friendship, with members of non-German ethnic communities, was a key explanation of different levels of prejudice in East and West Germany.

Conversely, nativist sentiment, even extreme tension and conflict, has occurred when migrants have constituted only a small proportion of the population and therefore exerted little strain on local resources or posed any meaningful competition or threat. Perpetrators of nativist violence have pointed to large-scale “invasions” of immigrants as a reason for their attacks in areas where numbers are in fact very small. The manifesto of the Christchurch terrorist decried Muslim “invaders” despite the group constituting less than 2 percent of the New Zealand population.

That nativism sometimes emerges in regions of low diversity—and conversely, some areas of high diversity have low levels of nativism—may be explained by the rate of demographic change. A rapid growth in the number of immigrants, or at least a perception of rapid change, may be more important than the proportion of society made up by immigrants (Goodwin and Milazzo 2017, 452). Two societies with the same proportion of migrants may have different local–migrant relations depending on the length of time the latter has lived in the area (Hopkins 2010, 42). Changing (although still low) levels of diversity often capture the attention of locals and generate anxiety in ways that high but static levels do not, particularly when “salient national rhetoric politicizes that demographic change” (ibid. 43). Exacerbating concerns over the rate of change are perceptions that those tasked with regulating migration are failing in their responsibility, either intentionally, or unintentionally. This sense of little control over the rate of immigration is both reflected in the metaphors used to describe incoming migrants; that is, a flood, swarm, a tide, or waves.

Huo et al. found that white populations in the United States responded more positively to state policies that were welcoming to immigrants so long as the rate of immigration was perceived to be constant (Huo et al. 2018, 275). Other studies have found that whites are more likely to have a negative reaction toward immigrants if they perceive immigration to be increasing rather than declining (Craig and Richeson 2014). Eatwell and Goodwin write that it was the rate of immigration into local areas in Britain, rather than absolute numbers of immigrants in those areas, which explained voters’ support for Brexit (Eatwell and

Goodwin 2018, 166). Many areas which supported Brexit had low non-white proportions of the population but many had recently seen very high rates of ethnic change. In Boston, United Kingdom, the proportion of people born outside the United Kingdom increased fivefold between 2001 and 2011. Three-quarters of voters in Boston voted for Brexit (Eatwell and Goodwin 2018, 166).

In their study of hate crimes against migrants in US neighborhoods, Green et al. found that attacks were highest in the early stages of in-migration into traditionally homogenous white areas (Green, Strolovich and Wong 1998). Hate crimes were most common when the immigrant population was small, becoming less frequent as it grew and became less vulnerable and whites moved out of the area. The key finding of their “Defended Neighborhoods” theory was that, given the small numbers involved, nativism was not driven by economic competition or resource strain, but instead, by an “admixture of outright racism, nostalgia and self-interest” and the fact that native social networks crucial for collective action were not yet affected by migration. Newman (2013) reached similar conclusions in his study of Hispanic immigration in the United States. He finds that an influx of immigrants to be far more likely to generate a perception of cultural threat among natives in areas with previously low numbers of immigrants. In areas where large numbers of immigrants already reside, a similar influx is less likely to generate a sense of threat. This is because individuals are more likely to experience “culture shock or stress” when their local environment undergoes drastic and unprecedented change. A transition from homogeneity to moderate diversity therefore will generate greater shock than one from moderate to even greater diversity (ibid. 378). As Hainmueller and Hopkins (2014, 237) writes, “longtime residents’ sense of threat is not a deterministic function of the out-group population but depends instead on prior expectations about community composition.”

Hypotheses

Based on the above discussion we can discern two hypotheses regarding the levels and rates of immigrant.

H1: “Nativist sentiment is strongest in areas where immigrants make up a higher proportion of the

population, holding all demographic features constant.”

H2: “Nativist sentiment is strongest in areas with high increases in the migrant proportion in relation to the overall population, holding all demographic features constant.”

Methodology

To assess the level of nativism (among other sentiments) in New Zealand, the authors and postgraduate students conducted a nationwide anonymous online survey. We disseminated the survey through social media, primarily Facebook, between March and June 2020. For much of this period, New Zealand was in Covid-19 lockdown. Recognizing the tendency of urban, liberal, and female to be overrepresented in survey data, the research team sought to obtain a representative sample from rural, politically conservative males. This was achieved by approaching Facebook groups for sports, hunting, farming, and other communities. Overall, the survey gathered 7,216 responses.

The authors also sought to obtain representative samples from all New Zealand regions. As Figure 1 demonstrates, this was largely achieved. New Zealand’s two largest regions, Auckland and Canterbury, dominated by the large cities of Auckland and Christchurch, were slightly overrepresented in the sample, but the difference was within a 5 percent margin. Wellington and Manawatu-Wanganui (Figure 1) were underrepresented,

but again within a 5 percent margin. Additionally, the sample was also representative when it came to gender, education, and income levels.

Participants chose their answers from a seven response Likert scale—strongly agree (coded as 1), agree (coded as 2), somewhat agree (coded as 3), neither agree nor disagree (coded as 4), somewhat disagree (coded as 5), disagree (coded as 6), and strongly disagree (coded as 7). Since the data has been coded from 1 to 7, regions with a mean score closer to 1 demonstrate a stronger degree of nativism, while regions with mean score closer to 7 demonstrate a low level of nativism.

Survey Questions

The theoretical discussion on nativism highlighted three key forms of threat—cultural, demographic, and economic—posed by immigration considered to drive nativist responses on the part of local communities. Questions were framed keeping these in mind. To assess the level of nativism in each region, five questions addressing each of these themes have been chosen:

1. Cultural
 - (a) “Immigration from societies culturally similar to New Zealand should be prioritised over that from societies with different cultures” (Q52)

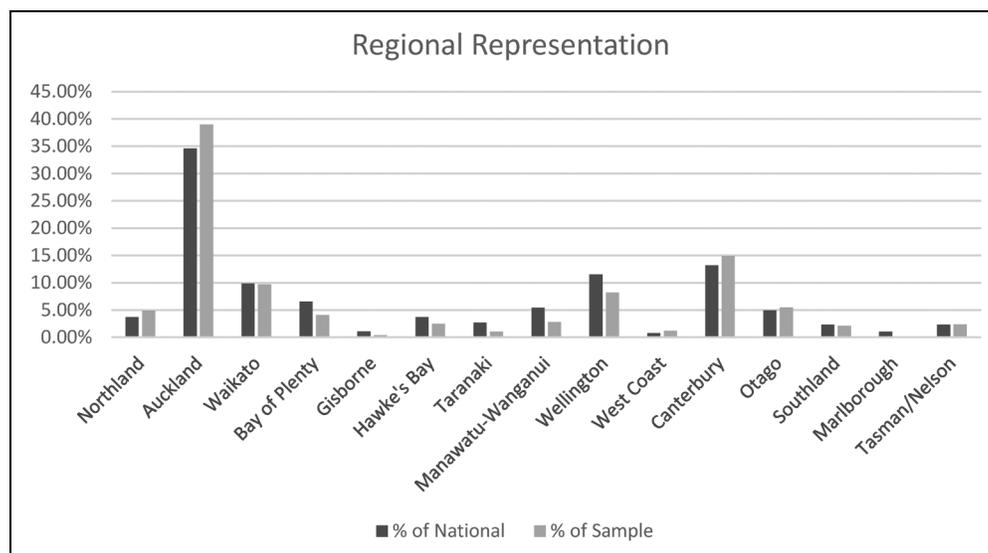


Figure 1. Regional Representation.

- (b) “Accommodating different ethnic and religious groups in New Zealand risks changing our national character” (Q48)
 - (c) “Immigrants should strive to integrate into New Zealand culture” (Q55)
2. Economic
 - (a) “Immigrants pose a threat to the economic welfare of New Zealanders” (Q58)
 3. Demographic
 - (a) “Immigration levels are too high” (Q47)

Given the diverse definition of nativism, using these five questions, covering its economic, demographic, and cultural aspects puts us in a good position to assess the regional variation of nativism. We utilize these five questions when conducting our regression analysis. For reasons given later, we employ the full set of questions when testing our regression results through canonical correlation analysis (CCA).

With regard to the population data, we have used the New Zealand Census, 2018. The Census includes the following ethnic categories: Pakeha, NZ Māori, Pacific Peoples, Other European, Asian, Middle Eastern/African/Latin American, and Other Ethnicity. When analyzing nativism on the national level, we include all respondents. When assessing nativism in regions, we include only the responses of Maori and Pakeha, those groups (theoretically) most prone to nativist opposition, and we omit the responses of foreign-born respondents. To test the three hypotheses, we conduct a regional comparison, assessing the responses in each region to the five questions along with demographic data from the past two censuses (2013 and 2018). These latter data include the total regional population as well as the size, proportion, and rate of change of the foreign-born population. Because the New Zealand census allows people to choose up to three ethnicities, there is some duplication of responses under the ethnicity category.

Multivariate Analysis

In this section, we describe how we undertook a multivariate analysis to identify any salient factors behind a higher nativist response. The value of undertaking multivariate analysis is we control for all demographic and other explanatory factors in parallel.

For the purposes of multivariate analysis, data are broadly divided into two subgroups: predictors and response variables. Predictor variables are independent variables that represent the factors that explain a given social response. Our predictors were the survey demographic data which contained: gender, ethnicity, religion, education level, annual incomes, political view, 2017 election vote, likely 2020 election vote, and region. Gender, ethnicity, and region were collected using the standardized StatsNZ census schema. Response variables are the dependent variables that represent a given social response. The response variable is each question.

We employed three types of multivariate analysis on our dataset: multiple linear regression (MLR), CCA, and linear discriminant analysis. These models were selected as our dataset satisfied the techniques various assumptions and we thought they best answered our research question. Ultimately, linear discriminant analysis was unable to produce useful results and consequently, we have not included it in this paper. The following two sections will describe first the methodology, and secondly the results from our multiple linear regression and canonical correlation analyses.

Multiple Linear Regression Model

We employed a multivariate technique, multiple linear regression, to model all predictor variables together in order to ascertain which features drive a higher propensity to exhibit nativism. The form of the linear regression was:

$$\begin{aligned} \text{Nativism}_i = & \beta_0 + \beta_1 \text{gender}_{i1} + \beta_2 \text{ethnicity}_{i2} \\ & + \beta_3 \text{religion}_{i3} + \beta_4 \text{education level}_{i4} \\ & + \beta_5 \text{annual income}_{i5} \\ & + \beta_6 \text{political view}_{i6} + \beta_7 \text{region}_{i7} \\ & + \beta_8 \text{region growth rate}_{i8} + \varepsilon_i \end{aligned}$$

We then created an average factor model to focus our analysis on the subset of questions. We created a subset of five questions (Q’s 52, 48, 55, 58 and 57), identified earlier in the article as highly suggestive of underlying nativist sentiment. We undertook explanatory analysis using QQ and Pairs plots to confirm there was appropriate distribution and correlation in the dataset.

Table 1. P-Values of Regression Coefficients.

Variable	P-Value	Variable	P-Value
Q62 – Gender	2×10^{-16}	Q63_13 – Korean	0.016060
Q63_4 – NZ Maori	0.031762	Q63_14 – Filipino	0.000246
Q63_5 – Pakeha	2×10^{-16}	Q63_15 – Other	2×10^{-16}
Q63_6 – Other European	1.9×10^{-15}	Q64 – Religion	0.052974
Q63_7 – Samoan	9.56×10^{-8}	Q65 – Education Level	2×10^{-16}
Q63_8 – Cook Island Maori	0.868519	Q66 – Annual Income	8.58×10^{-13}
Q63_9 – Tongan	0.409256	Q67 – Political Views	2×10^{-16}
Q63_10 – Niuean	1.94×10^{-5}	Q68 – Electoral Vote in 2017	0.019993
Q63_11 – Chinese	1.30×10^{-11}	Q69 – Likely Electoral Vote in 2020	8.33×10^{-11}
Q63_12 – Indian	2.39×10^{-13}	VAR00001 – Region	0.599960
		Growth.Rate – Rate of Change in Immigrant Population	2×10^{-16}

We then established a new object: *nativismAVE*, which is the mean response of each observation (each respondent) across these five questions were taken. Na's were transformed to 0. The model therefore represents a skew toward 0 (as will be seen in the resulting regression plots) but we can interpret around this limitation.

The data were then regressed onto the data using the standard regressor (equation 1) with *nativismAVE* as the predictor representing Nativism_{*i*}. Table 1 summarizes the p-values of the regression coefficients. Highlighted are significant P values, those less than 0.05.

The results returned for Samoan, Niuean, Indian, and Other ethnicities are unlikely to be significant as the sample size for these groups is relatively low. Therefore, our initial analysis suggests gender, identifying as of European ethnicity, education level, annual income, political views, likely 2020 vote, and Growth.Rate are significant predictors of underlying nativist sentiment.

We then tested our model, using test statistics, to see whether it was making a good fit. Firstly, there is moderate variability of the residuals, with the median residual value being -0.1650 .¹ Residuals describe the distance between the regression line and a particular observation. A medium residual value of -0.16 is reasonable given the spread of our data. Figure 2 shows the fit of the residuals to the regressor line, including Cook's distance (which visualizes the impact of a particular residual data point on the overall regression). Cook's distances help

identify areas where data are lacking or the regression is not adequately predicting responses. Our results together show no significant regions that the regression is failing to predict, and together with a reasonable residual value indicates the linear regression model fits to the data well.

Finally, the R^2 , which measures the proportion of total variability explained by the regression model. An R^2 of 1 means the model explains 100 percent of the variability, of 0 means the model explains 0 percent of the variability. The adjusted R^2 is most relevant in our model, as it measures the effect of multiple variables together (Table 2).

To improve the predictive power of our model, we experimented with a range of transformations of the response variable to produce a normalized distribution. We found a square-root transformation best transformed the data onto a normalized distribution. Figure 3 shows histograms of the data's distribution across the seven-point Likert-scale pre and post transformation. 0's can be excluded given they represent nonresponses to a given question.

As a result of the transformation, the predictive value of the model increased, with the adjusted R-squared increasing from 50 percent of the variance explained by the model to 66.46 percent of variance explained by the model. According to Cohen (1992) an R-squared effect of greater than 50 percent indicates a strong relationship, although of course this is context-dependent and should not be taken literally. Given the field, an R-squared of 66 percent is strongly suggestive of an accurate model. Overall, our model suggests a strong degree of fit (Table 3).

¹1st quartile = -0.08469 and 3rd quartile = 0.9366

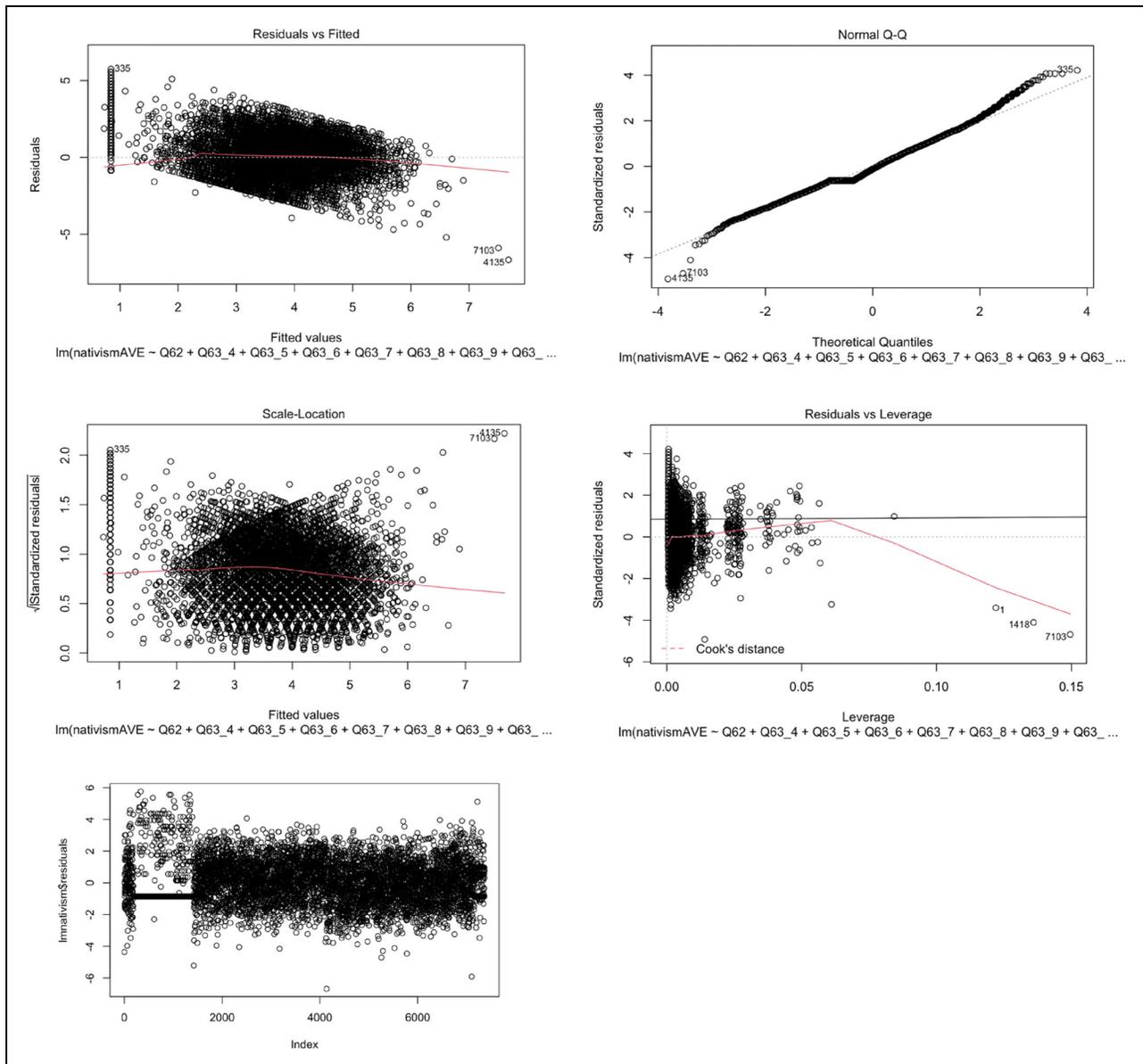


Figure 2. Output Graphs for MLR Model.

Given the improved fit of the square-root transformed model, we analyze results from this model in more detail. The resulting P-values for each variable in the square root transformed model are given in Table 4.

The highlighted values are those that appear to be statistically significant in the model. The results broadly align with the literature that ethnicity, education, income, and political view, and the regional

Table 2. Test Statistics for MLR Model.

Test statistics for MLR model

Multiple R-squared	0.5113
Adjusted R-squared	0.5099
Residual Standard Error	1.365 on 7347 degrees of freedom
F-test Statistic	366 on 21 and 7347 DF, p-value $<2.2 \times 10^{-16}$

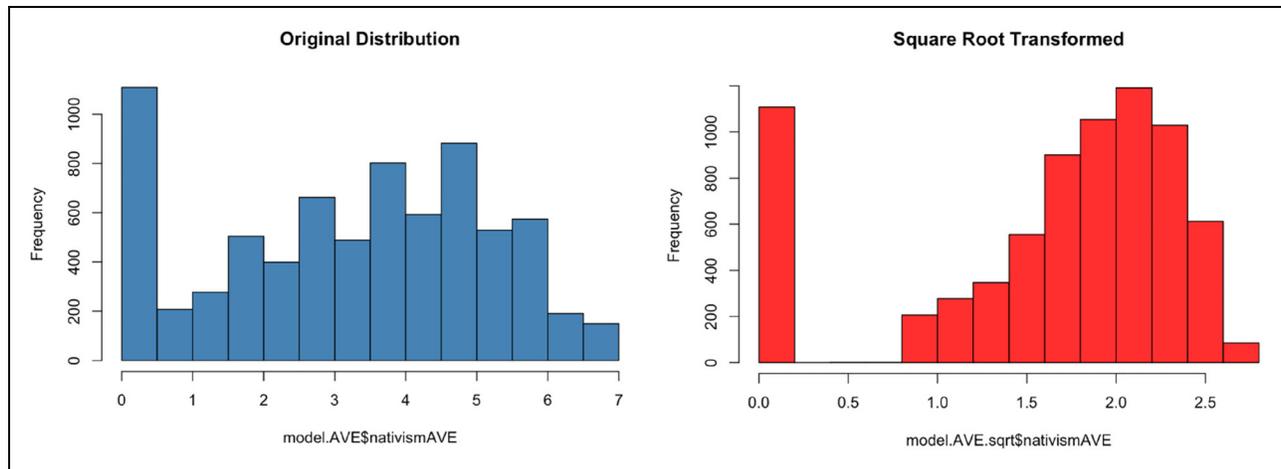


Figure 3. Original and Square-Root Transformed Response Distributions.

growth rate of the immigrant population is significant in predicting a respondent's nativist sentiment. Significantly, it is worth noting the presence of significant P-values for ethnicities, income, education, and political views are not necessarily reasons to reject our hypothesis. Rather, they indicate that other features are relevant to predicting nativism. We would expect this result, as our theory discussion illustrates nativism is seen as a multi-causal phenomenon. Further analysis of the model results will be contained in the following section.

The resulting graphs from the square-root transformed model are given in Figure 4.

Canonical Correlation Analysis

CCA is a form of dimensionality reduction that seeks to describe correlations between two sets of variables (X set and Y set). Our CCA analysis was again conducted in R using the `vegan` package.² We ran a permuted analysis of 5000 permutations. The Y data table is all question responses. The X data table is

Table 3. Test Statistics for Square-Root Transformed MLR Model.

Test statistics for square-root transformed MLR model	
Multiple R-squared	0.6656
Adjusted R-squared	0.6646
Residual Standard Error	0.4533 on 7347 degrees of freedom
F-test Statistic	696.3 on 21 and 7347 DF, p-value $<2.2 \times 10^{-16}$

all demographic responses. Our Y data table is analogous to the response variable in the MLR analysis, as they both contain the responses to our survey questions. We have analyzed all question responses in our CCA analysis rather than the factorized subset of five questions we selected for our MLR analysis. The reason for this is to take a high-level view that checks to see whether any other significant themes are correlated with our hypotheses.

We conducted CCA analysis at the national level and subsequently using a region-by-region subset. Table 5 lists key descriptive and test statistics for each model.

Wilks' Lambda tests the null hypothesis that the given canonical correlation and all smaller ones are equal to zero in the population. A low number confirms the null hypothesis. The higher values reflect the dataset is likely too small in those regions to perform a meaningful CCA analysis. Therefore, we have not focused on regional effects in Hawke's Bay, Taranaki, Southland, West Coast, Gisborne, or Marlborough as the datasets are too small.

Pillai's trace is a test statistic ranging from 0:1, where larger values suggest the effect is contributing more to the model and the null hypothesis should be rejected. Here, the null hypothesis is that the canonical correlation is zero, which means there is no linear relationship between the two variable groups (Y and X). The very low Pillai's trace indicates a low

²<https://cran.r-project.org/web/packages/vegan/index.html>.

Table 4. P-values in the Square Root Transformed Model.

Variable	P-Value	Variable	P-Value
Q62 – Gender	2×10^{-16}	Q63_13 – Korean	0.117328
Q63_4 – NZ Maori	0.003327	Q63_14 – Filipino	0.013999
Q63_5 – Pakeha	2.48×10^{-5}	Q63_15 – Other	5.16×10^{-8}
Q63_6 – Other European	2.27×10^{-5}	Q64 – Religion	0.002658
Q63_7 – Samoan	0.000151	Q65 – Education Level	2×10^{-16}
Q63_8 – Cook Island Maori	0.895763	Q66 – Annual Income	2.43×10^{-12}
Q63_9 – Tongan	0.611106	Q67 – Political Views	2×10^{-16}
Q63_10 – Niuean	0.000325	Q68 – Electoral Vote in 2017	0.756850
Q63_11 – Chinese	5.24×10^{-6}	Q69 – Likely Electoral Vote in 2020	0.010369
Q63_12 – Indian	7.24×10^{-6}	VAR00001 – Region	0.618555
		Growth.Rate – Rate of Change in Immigrant Population	2×10^{-16}

relationship between the two variable sets. It is for this reason we factorized the response variable group (Y) when performing our MLR analysis.

We take the adjusted R-square value rather than the R-square value as we are dealing with multivariate models which cause the unadjusted R-square to simply increase as more variables are added to the model. The adjusted R-square values describe, independent of the number of variables in the model, the percentage of the variance of opposing data table that the modeled data table accommodates. For example, in the national level mode, the Y Data Table explains 42.39 percent of variance in the X Data Table. Following Cohen (1992) high-level categorization of the effect size of R-squared values, the effects range from small (R-squared >0.1) to medium (R-squared = 0.3). These results are weaker than the R-squared values for the linear regression model. Further suggesting that CCA is only capable of identifying the general direction of a relationship between variables.

Overall, the model's predictive power is low. However, the model is sufficient to indicate directionality in the relationship between certain variables. Figure 5 shows the CCA results for the regions which the Wilks' Lambda test indicated were sufficient to study. As previously mentioned, a combination of the relatively low Pillai's trace and adjusted R-squared values mean that CCA can only indicate the directionality of relationships between variables.

To interpret the CCA plots one looks to the arrows in the Y and X tables. The arrows represent the canonical coordinates for each variable Y and X sets. When an arrow reaches the outer circle, the corresponding

variable can be perfectly reconstructed by the first two canonical axes (CanAxis 1 and CanAxis 2). We interpret the CCA plots by looking at the direction of the arrows across the Y and X sets. If the arrows point in the same direction it indicates those two variables are correlated. For example, in the national level model Q67 (Political Views) is strongly correlated to Q50 ("New Zealand society improves as it becomes more diverse and multicultural").

At the regional level, correlations are much more variable. There does appear to be a general correlation the Growth.Rate predictor and nativist question responses—but there is no clear pattern in the questions where this correlation occurs across regions. Consequently, we have chosen to focus our analysis on the national-level model. There is room for further research as dataset sizes within each region increase as we continue collecting data from this survey.

The strengths of correlations between variable pairs in the national-level model are given by the CCA loadings. The loadings are represented in respect of two canonical axes, two variables are strongly correlated if they are similar. Table 6 summarizes the correlation loadings for the national-level model. Highlighted questions from the Y data set are those which are correlated with the Growth.Rate variable in the X data set.

Table 6 shows that Growth.Rate is related to questions that cover two primary themes: nativism and population. The correlation of Growth.Rate to questions covering nativism further supports H2. The correlation of Growth.Rate to questions covering populism does not necessarily give reason to reject

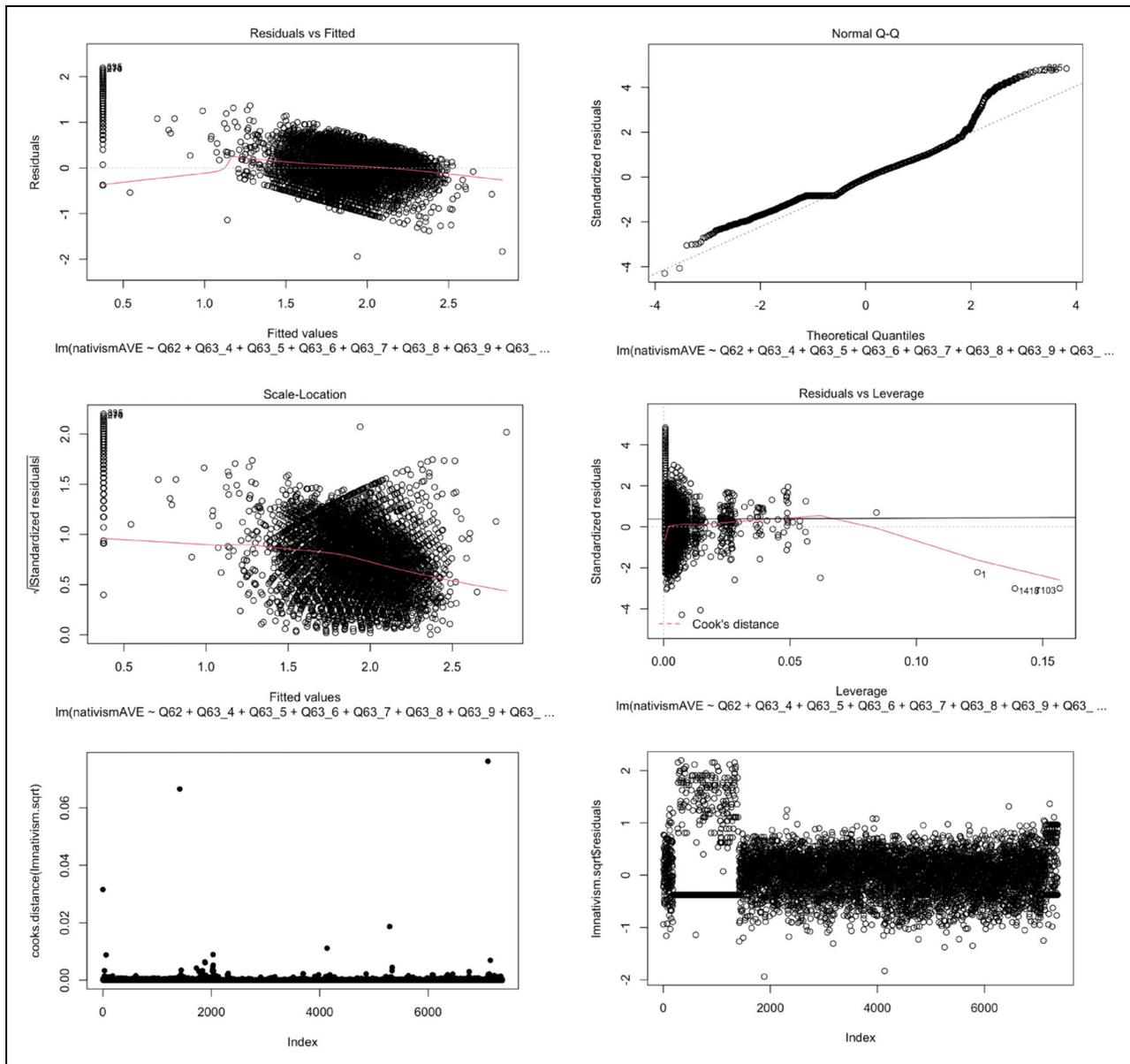


Figure 4. Output Graphs for Square-Root Transformed MLR Model.

H2, as there can be multiple themes that Growth.Rate is correlated too. As will be discussed, we suggest future research into the apparent relationship between populist and nativist sentiments in respect to immigrant population growth rates.

Proportion and Rate of Growth of the Immigrant Population: Hypothesis Testing

The following section uses the above multivariate models to test the two hypotheses on the size and

proportion of the immigrant population and the rate of immigration. We do so by comparing the strength of the predictor variables computed in our MLR model and the correlations from CCA to the hypotheses.

Hypothesis 1: Migrant Population as a Proportion of the Regional Population

The first hypothesis suggests that it is not the absolute number of immigrants in a region but rather the proportion of immigrants to the overall

Table 5. CCA Model Test Statistics.

Model	Wilks' Lambda	Pillai's Trace	Adjusted R-square Values	
			Y Data Table	X Data Table
National	0.00019996	0	0.4239838	0.2633706
Auckland	0.00019996	$2.025293 \times 10^{-212}$	0.12409676	0.06379952
Wellington	0.00019996	1.4878×10^{-22}	0.18665299	0.07812359
Canterbury	0.00019996	6.19085×10^{-55}	0.164015890	0.07182997
Otago	0.00019996	6.23695×10^{-20}	0.2313883	0.1145462
Waikato	0.00019996	2.189×10^{-32}	0.11826918	0.06794806
Bay of Plenty	0.00019996	7.3635×10^{-14}	0.1508171	0.1150611
Northland	0.00019996	3.0692×10^{-13}	0.12916152	0.08336353
Hawke's Bay	0.00639872	0.002602724	0.09939232	0.04405789
Taranaki	0.00179964	0.002992797	0.24319	0.1155201
Southland	0.00079984	0.000472767	0.1805015	0.1218183
West Coast	0.214757	0.2180626	0.15578	-0.02915403
Manawatu-Wanganui	0.00019996	3.5584×10^{-9}	0.1738384	0.1005562
Gisborne	0.6224755	0.05950254	0.0167010	-0.32991133
Marlborough	0.2071586	0.2402679	0.16108744	0.05227371
Tasman	0.00019996	4.245×10^{-5}	0.1758841	0.1302314

CCA, canonical correlation analysis.

population that matters. Even more than absolute numbers of immigrants, their proportion of society can generate a perception of economic and political competition or threat and the potential to alter the cultural character of the area. Table 7 presents the percentage of immigrants of the overall regional population listed from lowest to highest proportion. We divide the regions into three categories: low, medium, and high.

The table above indicates that regions with a higher proportion of the immigrant population do tend to be more nativist (Table 8). However, given that the gap between medium and high regions is just 0.1, definitive conclusions cannot be drawn (Table 8).

Furthermore, the results of our multivariate analysis suggest that a high proportion of an immigrant population is less relevant to determining nativism. The MLR model looked for differences in responses across regions and found a P-value of 0.618555. Such a high P-value indicates reasons to reject the null hypothesis H1 that the proportion of immigrants is a predictor for nativist sentiment. Finally, the CCA analysis does not indicate any clear relationship that may support or reject H1. Therefore, the evidence supports rejecting H1. Neither of the two multivariate techniques employed suggest a high proportion of an

immigrant population is a robust predictor for underlying nativist sentiment.

Hypothesis 2: Growth Rate of the Immigrant Population

The second hypothesis argues that it is neither the size of the immigrant population nor the proportion of society it represents, but instead rapid growth in the immigrant population that generates nativism. This hypothesis suggests that sudden changes in a traditionally homogenous (or bicultural) society are more likely to trigger a backlash. The table below lists regions from lowest to highest in terms of the growth in the immigrant population between the 2013 and 2018 censuses. We again divide the regions into low, medium, and high growth rates (Table 9).

Table 10 calculates the average nativism score for regions classified low, medium, and high, based on the growth rate of the immigrant population. The regions with low immigrant population growth rates tend to have lower levels of nativism. Although the difference between regions classified as medium and high is just 0.4, the results do indicate that regions with high levels of immigrant population growth are

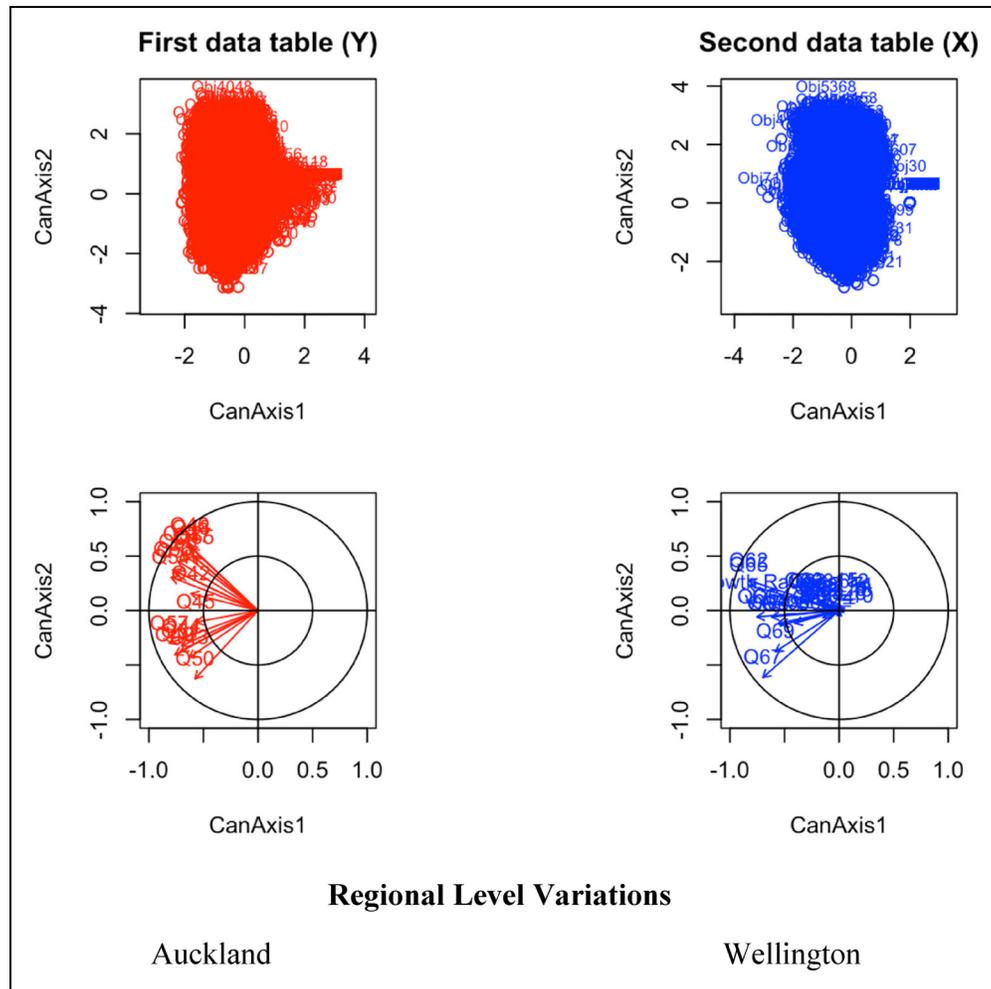


Figure 5. Canonical Correlation Analysis (CCA) Graphical Results.

(continued)

marginally more nativist when compared with those with moderate levels of growth.

We then subjected these preliminary results to more rigorous analysis in our multivariate models. Looking first to the MLR model, the Growth.Rate predictor variable generated a P-value of 2×10^{-16} . Generally, P-values of less than 0.05 are regarded as significant in analyzing social attitudes. Therefore, the P-value for the immigrant growth rate variable suggests the variable has a significant effect on predicting nativist sentiment. As discussed above, the model has sufficient predictive power to provide confidence in these P-values.

We considered the direction of the relationship by looking at our national-level CCA model. Doing so we found a correlation between growth rate and half of the survey questions. Specifically, there was a strong correlation to questions (response variables)

42, 45, 51, 54, and 57. These questions cover two primary themes: populism and nativism. The convergence of nativist and populist sentiment is not necessarily unexpected, as discussed in an earlier section, with several scholars noting the central importance of nativism to populist movements (Mudde 2010: 1173 and Betz 2017: 348).

Neither does the presence of populist sentiment detract from confirming H2, rather it suggests there are potentially multiple effects Growth.Rate is correlated too. The CCA model still generated correlations to questions highly suggestive of nativism such as Questions 51 and 57. Therefore, we found a correlation between nativist sentiment and Growth.Rate that acts as confirmatory evidence in support of H2.

As previously discussed, we were unable to determine the strength of the effect, only the direction of

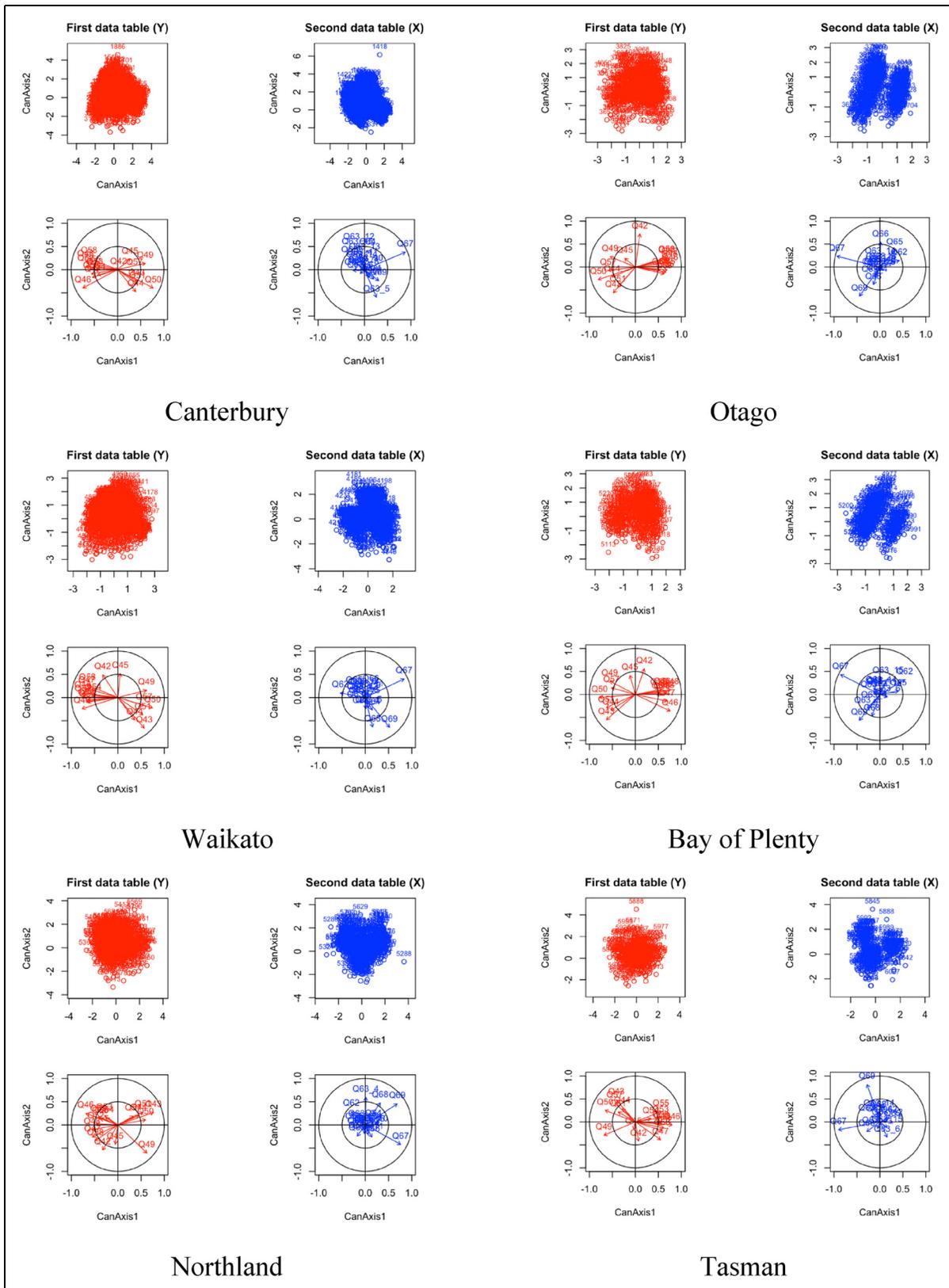


Figure 5. Continued.

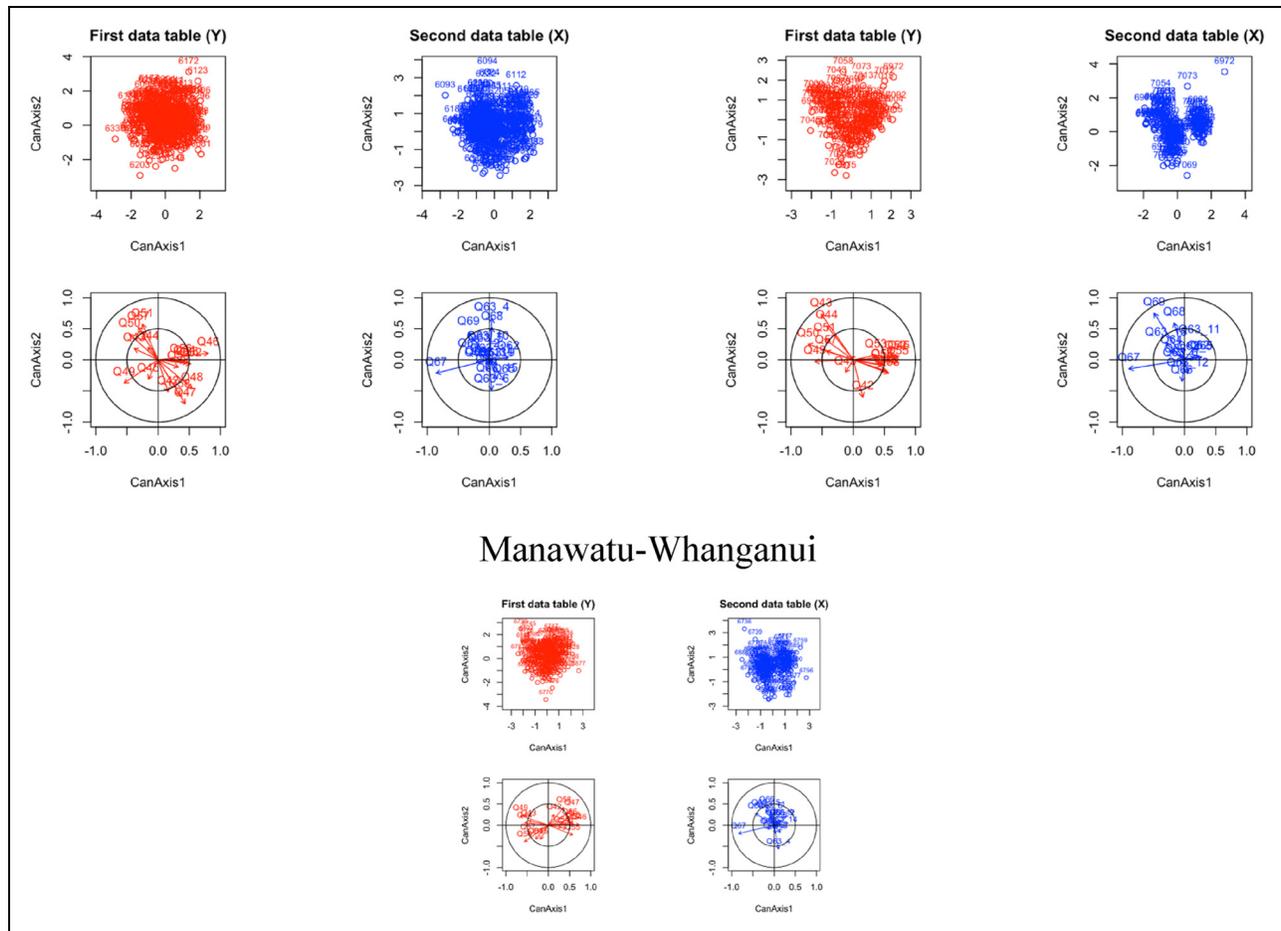


Figure 5. Continued.

effect through our CCA analysis. However, pairing our directional insights from our CCA analysis with the significance (P-values) insights from the MLR analysis we can infer strong support for H2. This is because we have found Growth.Rate is a significant predictor in determining nativism (MLR) that is highly correlated with strong responses to nativist questions (CCA). We therefore find that, holding all other features constant, the growth rate is a strong predictor of underlying nativism, confirming H2.

Discussion

By comparing survey data that measured the level of nativism in the 15 regions of New Zealand against census data for 2013 and 2018, our study supports only one of our two hypotheses: H2. We demonstrated a strong association between nativism and the rates of growth in immigrant population between the two censuses.

In this section, we consider some potential explanations for this strong correlation between levels of nativism and rate of immigration. We propose that there are both local and national dynamics influencing nativist sentiment in the regions. High national levels of immigration and large immigrant populations in the country's largest cities can somewhat counterintuitively influence opposition to immigration in more remote regions with much lower levels of immigration. Those people in the regions who might previously have been expected to move to their country's most vibrant cities are now deterred by rising house prices, competition employment, and overpopulation.

Yet because our study demonstrates a close association between nativism and a rapidly rising immigrant population, it seems clear that local dynamics are important. People regularly overestimate the number of immigrants in their home region (Alesina, Miano and Stantcheva 2018), and those who do so are most likely to hold negative attitudes toward those

Table 6. National Level CCA Correlation Loadings.

X Data Set			Y Data Set		
Variable	CanAxis1	CanAxis2	Variable	CanAxis1	CanAxis2
Q62	-0.83	0.28	Q42	-0.61	0.16
Q63_4	-0.15	-0.06	Q43	-0.63	-0.43
Q63_5	-0.56	-0.12	Q44	-0.70	-0.32
Q63_6	-0.19	0.08	Q45	-0.57	-0.11
Q63_7	-0.06	0.05	Q46	-0.63	0.6
Q63_8	-0.03	0.02	Q47	-0.6	0.51
Q63_9	-0.03	0.01	Q48	-0.61	0.57
Q63_10	-0.02	-0.05	Q49	-0.76	-0.41
Q63_11	-0.07	0.02	Q50	-0.58	-0.63
Q63_12	-0.06	0.08	Q51	-0.71	-0.37
Q62_13	-0.03	0.01	Q52	-0.69	0.52
Q62_14	-0.03	0.05	Q53	-0.75	0.36
Q63_15	-0.16	0.10	Q54	-0.80	0.31
Q64	-0.62	-0.06	Q55	-0.58	0.49
Q65	-0.83	0.23	Q56	-0.78	0.37
Q66	-0.75	-0.06	Q57	-0.81	-0.30
Q67	-0.70	-0.61	Q58	-0.73	0.45
Q68	-0.53	-0.13			
Q69	-0.58	-0.38			
VAR0001	-0.41	-0.12			
Growth.Rate	-0.83	0.08			

Note. Questions (Y-Set predictors) strongly correlated with target X-Set variable Growth.Rate highlighted. CCA, canonical correlation analysis

groups (Alba, Rumbaut and Marotz 2005, 9). Perception of large numbers of immigrants in the main cities can lead to a sense that such change

Table 7. Regional Breakup, Immigrant Proportion of Local Population.

% Population Immigrant		
Gisborne	10.53%	Low
West Coast	10.62%	
Taranaki	11.66%	
Southland	12.42%	Medium
Northland	13.12%	
Marlborough	13.71%	
Tasman-Nelson	14.47%	
Manawatū-Whanganui	14.83%	
Hawke's Bay	15.19%	High
Bay of Plenty	15.70%	
Otago	18.76%	
Waikato	18.99%	
Canterbury	21.07%	
Wellington	28.14%	
Auckland	47.79%	

closer to home is almost inevitable. Studies have demonstrated that a perception that immigrants will in the future constitute a higher proportion of society generated a more negative response than did current levels (Outten et al. 2012). And while urban areas can provide sufficient housing and employment opportunities to incorporate large numbers of immigrants, more rural areas often have far fewer such resources.

As advanced by the Defended Neighborhoods thesis, ethnically homogenous societies (or bicultural societies as in the case of New Zealand) often possess social networks—clubs, sports, and other pastimes—which unintentionally reinforce a sentimental attachment to homogeneity (Green, Strolovich and Wong

Table 8. Immigrant Population Proportion and Nativism.

Immigrant Population Proportion	Average Nativism Score
Low	3.3
Medium	3.8
High	3.9

Table 9. Regional Breakup, Immigrant Population Rate of Growth.

Rate of Growth 2013–2018 (Census Periods)		
West Coast	17.03%	Low
Manawatū-Whanganui	23.78%	
Gisborne	23.90%	Medium
Wellington	27.02%	
Taranaki	30.24%	
Marlborough	31.63%	
Auckland	33.4%	
Southland	35.19%	High
Tasman-Nelson	35.25%	
Hawke's Bay	35.25%	
Waikato	35.48%	
Bay of Plenty	41.19%	
Northland	45.16%	
Canterbury	51.01%	
Otago	53.91%	

1998, 376). Natives' lack of association and familiarity with immigrants makes the sudden appearance of visibly different groups more psychologically confronting. And with less contact with immigrants, respondents in areas with smaller immigrant populations might feel more comfortable expressing nativist views than those in larger cities who work with and live near immigrants.

Explaining why nativism emerges in the early stages of immigration also helps understand why it is lower in those areas where immigrants constitute a much higher proportion of the population. Yet our study highlights the important effect that the rate of growth in the immigrant population has on the perceptions of native communities.

Future Research

This is our first paper utilizing our large-scale study of New Zealander's views on nativism, populism, hate speech, immigration, COVID-19, the role of the media, and trust in government. We are currently

Table 10. Immigrant Population Growth and Nativism.

Population Growth Rate	Average Nativism Score
Low	4.117357513
Medium	4.023502654
High	3.748646209

running the survey for a second year and are expecting to continue sampling to build up a longitudinal dataset. Notwithstanding future longitudinal studies, this paper has already identified key themes for future research.

For example, our findings indicate low levels of nativism in Māori communities. This finding goes against the prediction offered by the literature that nativism is most likely to be higher among 'native' ethnic groups (for Aotearoa New Zealand, this constitutes the indigenous Māori and colonizing Pākehā ethnic groups). This preliminary finding suggests that nativism may have unique dynamics among indigenous groups. Related to this, our findings indicate relatively high nativism among Chinese New Zealanders. Why Chinese New Zealanders (and not other immigrant groups) exhibit higher nativist sentiment seems worthy of further investigation. Finally, Pākehā (New Zealanders of European descent) exhibit the strongest response among ethnic groups. Further research is needed to understand drivers of sentiment within this group to see whether subgroups (potentially organized by income, education, or some other feature) exist.

Secondly, our results show an interesting trend in political polarization. Our results indicated that respondents' votes in the 2017 election were not strongly suggestive of nativism, whereas their likely 2020 votes were. This suggests that politics in New Zealand has potentially polarized over the issue of immigration in recent years. Such an inference is supported by anecdotal evidence of the immigration policies and public statements of the leaders of the main opposition parties: National and Act. As we gather longitudinal data, we hope to investigate the role of political affiliation and polarization in shaping New Zealanders nativist sentiments.

Finally, our results indicate a relationship within income and education. The two variables are highly colinear (as one expects, given education is typically correlated with income). However, there are quite a high number of outliers and the model fit is variable. Therefore, we are interested to see whether subgroups form within the education and income relationship that sheds more light into nativist views. We hope this paper will be a starting point from which further studies into nativism, populism, and polarization in Aotearoa New Zealand can be conducted.

Conclusion

In this paper, we have conducted a quantitative multivariate test to compare the levels of nativism with the proportion and change in immigrant population in New Zealand. To test our MLR analysis, we assessed the residual distributions and Cook's distances, applied a square-root transformation to improve the datasets distribution and analyzed the R-squared, Residual Standard Error and F-test test statistics—all of which were within acceptable ranges. We tested our CCA analysis against the R-squared, Wilks Lambda, and Pillai's Trace test statistics—again returning results within acceptable ranges. However, there were limitations in the sample size within some regions and issues of collinearity to explore in future research.

Despite the limitations in our multivariate analyses, the results of our hypothesis testing are compelling. The growth rate of the immigrant population, over the 2013–2018 census periods, is a strong predictor of nativist sentiment. Conversely, natives in those regions with very large immigrant populations, as a proportion of the total population, demonstrated much lower levels of nativism.

Following the “Defended Neighborhoods” thesis, this study finds that it is rapid demographic change rather than population share of immigrants (and the perceptions of intergroup competition which can follow) which influences the level of nativism. This finding allows us to identify the regions in which nativism might be expected to rise but also offers some assurance that such opposition to immigration might decline as the absolute numbers of those born outside New Zealand grows and becomes more distributed throughout the country.

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