

# An exploratory analysis of cultural distance between regions of New Zealand

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# Background

- Voluntary interactions between individuals tend to be homophilic
  - **Homophily** is the tendency for people to seek out or be attracted to those similar to themselves
- The concept of homophily can be extended to interactions between cultures, societies, or countries
  - That suggests that cultures, societies, or countries that are more similar tend to interact more often or to a greater extent
- The similarity or dissimilarity between cultures, societies, or countries can be referred to as **cultural distance**

# The importance of distance

- The importance of homophily in human behaviour is theoretically underpinned in economic geography by Tobler's 'first law of geography':
  - *“Everything is related to everything else, but near things are more related than distant things”*
- Conventionally, Tobler's first law is interpreted in terms of measures of geographical distance. However, 'closeness' need not only refer to geographical distance, but can be extended conceptually, theoretically and statistically to cultural distance

# Cultural distance in economics

- At the macro level, economists have used cultural distance, as well as related measures based on linguistic distance and genetic distance, to explore questions related to:
  - the development of nations (Spolaore & Wacziarg, 2009; Desmet et al., 2018; Spolaore & Wacziarg, 2018);
  - ethnic diversity and assimilation (Fearon, 2003; Chiswick, 2009; Desmet et al., 2017);
  - international trade (Melitz, 2008; Zhou, 2011; Melitz & Toubal, 2014; Harms & Shuvalova, 2020); and
  - subjective wellbeing (Proto & Oswald, 2016).
- However, all these previous studies are based on inter-country cultural distance, with few examples of studies looking at subnational (i.e. within-country) cultural distance

# Looking at cultural distance between regions within a country

- Cultural distance at the subnational level presents several issues, including:
  - At the national level, 'culture' is often seen as synonymous with country
  - Where there are no historical cultural distinctions between regions of a country, we may lack sufficient data to determine cultural distance
  - Cultural differences between regions may represent cultural differences between the native-born population of each region, or may arise from differences in the foreign-born populations (we will return to this point later)

# Our study

- We undertook an exploratory analysis of cultural distance between the 16 regions of New Zealand
  - The regions are diverse in terms of ethnic composition, socio-economic characteristics, and population size (ranging from ~1.6 million in Auckland to ~30,000 in West Coast)
- Our measure of cultural distance is essentially the average distance between the birth countries of a randomly selected person in region  $i$  and a randomly selected person in region  $j$ 
  - Where the distance between birth countries is the genetic distance (or linguistic distance) measure employed by Spolaore & Wacziarg (2018)
- Formally:



# Visualising and interpreting cultural distance between regions

- Our method gives a 16x16 matrix of distances between each region and every other region
  - By construction, the distance from  $i$  to  $j$  is equal to the distance from  $j$  to  $i$
  - Strictly speaking, the distance from  $j$  to  $j$  is non-zero, but we ignore that complication
- It is difficult to represent the distances on a single 2D plane, so we make use of multidimensional scaling
  - This reduces the matrix of distances down to two dimensions, allowing the 'position' of each region relative to other regions to be represented in 2D space

# Data

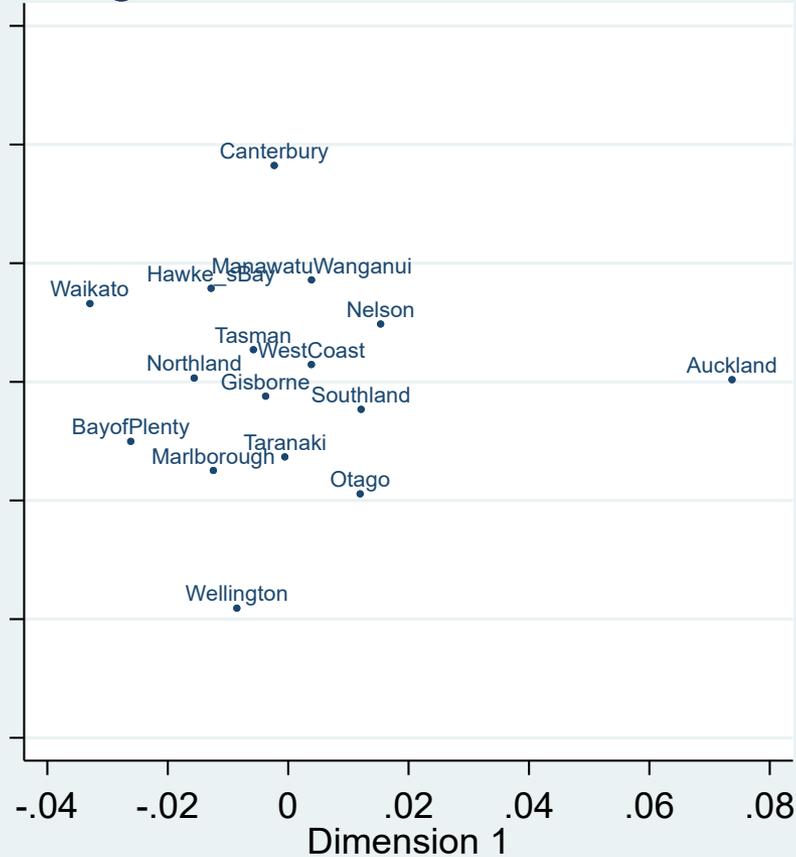
- All data come from the 2018 Census of Population and Dwellings, and are comprised of the raw counts of the population by place-of-birth at the regional level
  - 16 regions
  - 79 countries of birth
- Countries of birth were matched to countries from the Spolaore & Wacziarg (2018) dataset
  - For a few countries missing from the genetic distance data, we used a 'nearest neighbour' approach based on language trees
  - As a robustness check, we also calculate inter-regional cultural distance based on linguistic distance (which has many more missing observations for inter-country distance)

# Limitations

- Ignores cultural differences *within* countries of birth
  - This is most relevant for those born within New Zealand (the largest group), where Māori are treated as culturally the same as New Zealand European or Pākehā
- Country of birth for second-generation migrants likely fails to adequately capture their cultural difference from other New Zealand born populations
- Genetic distance between many Western ‘Anglo’ countries (US, Canada, Australia, NZ, UK) is zero
  - This fails to captures differences between indigenous populations, as well as migrant populations

# Results – inter-regional cultural distance based on genetic distance

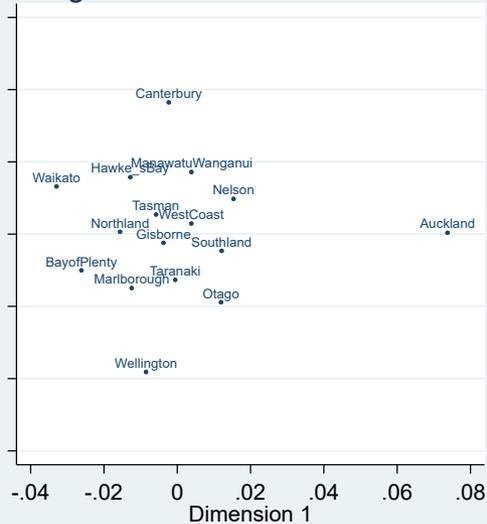
Inter-regional cultural distance in NZ



Modern MDS (loss=stress; transform=identity)

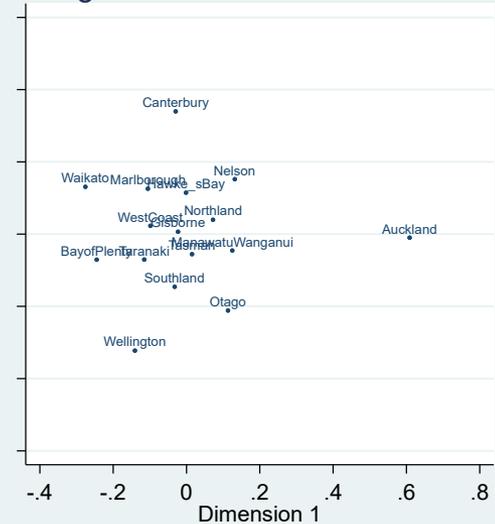
# Results – inter-regional cultural distance based on genetic and linguistic distance

Inter-regional cultural distance in NZ



Modern MDS (loss=stress; transform=identity)

Inter-regional cultural distance in NZ



Modern MDS (loss=stress; transform=identity)

# Results – key points

- First and most importantly, cultural distance is very distinct from geographical distance
- Despite being the closest geographically, Waikato is the region that is furthest culturally from Auckland (similarly Northland and Bay of Plenty)
- Auckland City is a large outlier – relatively distant from all other regions
- Wellington and Canterbury are also outliers, but in difference ‘directions’ from Auckland, on an axis that is orthogonal to the axis between Auckland and the mass of smaller regions

# Next steps

- The next obvious step is to look at the sources of cultural distance based on our measure
  - To what extent is it driven by: (1) the proportion of overseas-born population in each region; (2) the differences in the source countries for overseas-born population in each region; and (3) cultural distance between the source countries of overseas-born population in each region
- We can also compare our distance measures to survey-based measures of inter-regional cultural distance derived from responses to questions in the General Social Survey or Te Kupenga
- We can then begin to use the measures and see if they can explain important socio-economic or population changes, such as migration flows between regions

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