Atlas of Healthcare Variation
Methodology | Demography

Standard deviation
Standard deviation is a statistical measure of variation from a mean. Assuming that recorded instances are normally distributed (i.e. they are in the usual 'bell-shaped curve') 95% of all recorded instances would be expected to be within 2 standard deviations either side of the mean. The two 'middle' shades will be within one standard deviation of the mean.

Indicator #1:	Life expectancy
Data source	Statistics New Zealand Abridged Life Tables 2007-09, 2008-10, 2009-11, 2010-2011, 2011-2013.
Data owner	Statistics New Zealand
Comments	Life expectancy was measured as the number of deaths registered (not deaths occurring) in the 3 year period. The estimated resident population of each area at 30 June for each year of each period was averaged and used as the denominator to calculate death rates[1]. In order to minimise annual fluctuations in mortality rates, the mortality measures were calculated for a three-year period. Statistics New Zealand states that all subnational mortality and longevity trends should be interpreted with caution. Death and population numbers can fluctuate from period to period. In addition, the stated residence of the deceased may not reflect the geographic area(s) where that person spent most of their life.

Indicator #2:	Age profile of District Health Boards
Data source	Statistics New Zealand 2014 Population Projections
Data owner	Statistics New Zealand
Comments	Statistics New Zealand used a 'cohort component' method to calculate the population projections. New birth cohorts were generated by applying specified fertility assumptions to the female population of childbearing age. Statistics New Zealand used a 'cohort component' method in which the base population was projected forward by calculating the effects of deaths and migration within each age-sex group according to specified mortality and migration assumptions.

---

[1] For more information about the estimated resident population, refer to "Information about the population estimates" on the Statistics New Zealand website (www.stats.govt.nz).

Indicator #3:	Ethnic composition of District Health Boards
Data source	Statistics New Zealand 2014 Population Projections, using 2013 Census as the base year.
Data owner	Statistics New Zealand
Comments	Statistics New Zealand applied a special 'cohort component' method to develop these subnational ethnic population projections. New birth cohorts were generated by applying specified fertility assumptions to the female population of childbearing age, and specified paternity assumptions to the male population[2]. Statistics New Zealand used a 'cohort component' method in which the base population was projected forward by calculating the effect of deaths, migration, and inter-ethnic mobility within each age-sex group, according to specified mortality, migration, and inter-ethnic mobility assumptions. Statistics NZ population projections included four groups: Maori, Asian, Pacific and European and other. European and other included those identifying as New Zealander. MELAA (Middle Eastern, Latin American and African) population projections were not derived for New Zealand or subnational areas and are therefore not part of this presentation.

Indicator #4:	Deprivation by Territorial Authority
Calculation	The mean deprivation score is the weighted sum of deprivation score for small areas in a Territorial Authority whereby each small area deprivation score is weighted by the proportion of the Territorial Authority population in that area. The distribution of deprivations scores shows the proportion of the total Territorial Authority population living in areas grouped according to quintiles of deprivation.
Data source	Based on 2013 Census data, NZDep2013.
Data owner	University of Otago, http://www.otago.ac.nz/wellington/research/hirp/otago020194.html#overview
Comments	Deprivation data employed the NZ Index of Deprivation 2013 (NZDep2006) which calculates deprivation using a weighted sum of nine variables. The resulting scale from 1 to 10 divides New Zealand into tenths, with 1 representing the least deprived and 10 the most deprived. The data presented in the Atlas groups weighted deprivation scores into five quintiles, with quintile 1 representing the least deprived and quintile 5 representing the most deprived.

---

[2] The method differs from the conventional cohort component method in two respects:
1. For each ethnic group, births are projected separately for women, and for men where the mother is not of that ethnic group.
2. The projections allow for population change due to inter-ethnic mobility (ie people changing their ethnic identification over time).