Cause of death decomposition of cohort survival comparisons: TCAL

Abstract

The Truncated Cross-average Length of Life, TCAL, is a period measure including all available cohort mortality information, irrespective of whether or not cohorts have complete data.[1] This demographic tool is particularly useful for comparing cohort mortality between populations, and in this project we extend it to comparisons by causes of death. The strength of the approach is that it will allow us to identify mortality differences in cohorts, which are currently alive, as well as at which ages and which causes of death contribute to mortality differentials between populations.

Figure 1 depicts years on the horizontal axis and ages on the vertical axis, also known as Lexis surface. This diagram facilitates comparisons of cohort survival between Japan and Australia. Diagonally, the Figure illustrates the mortality pattern of each cohort from birth (or the age when data is first available) to old age during the period between 1947 and 2011 (year-range when data coincide in both countries). During this period, a 1.3 years higher survival was noted for Japan than Australia. The Lexis surface illustrates how each cohort contributes over age to this mortality gap. For example, a long-lasting effect of lower mortality at younger ages for Australian cohorts from the 1950s and 1960s is seen as marked by the yellow colors. The low mortality during infancy and childhood remained in effect until 2011; visually this can be seen in the diagonals showing the higher survival for Australians. By contrast, Australians born in the 1920s and 1930s faced a particular disadvantage when mortality data from 1950 until 2011 (between ages 70 to 90) are taken into account (blue for Japanese survival advantage). Furthermore, those born after 1970s have lived in survival disadvantage compared to their Japanese counterparts. Research into Australian historical mortality shows that declines in non-communicable diseases (NCDs) have been an important contributor to survival advantages compared with other countries. This analysis will identify the extent of NCDs in cohort survival differences between Australia and Japan.

Reference

Canudas-Romo, V., M. Guillot. 2015. "A Measure for Comparing the Mortality History of Cohorts: TCAL." Population Studies 69:2, 147-159, doi: 10.1080/00324728.2015.1019955.

Figure 1. Lexis surface of cohort survival comparisons between Japan and Australia
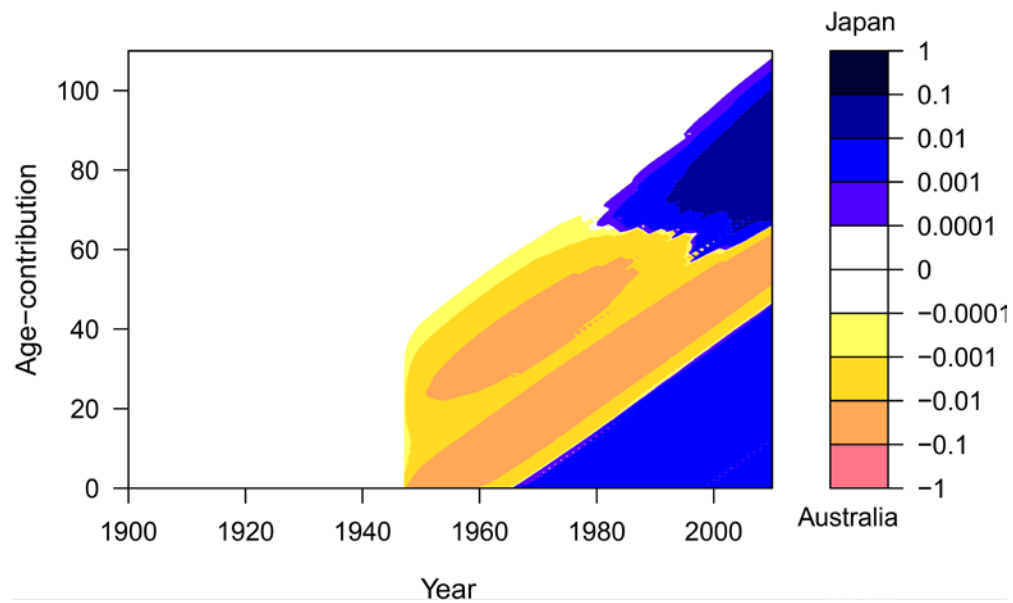
Source: Author's calculations from data from the Human Mortality Database (www.mortality.org).