

# Using Cohort Change Ratios to Estimate Life Expectancy in Populations Closed to Migration: A New Approach

by

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As noted in the UN Manual, Methods for Estimating Adult Mortality from Census Data (United Nations (2002: 5), "Census survival methods are the oldest and most widely applicable methods of estimating adult mortality ... (and can) provide excellent results (for) populations that experience negligible migration ... " The general approach can be used only for populations that are closed to migration, or approximately so. but there populations meeting these requirement that are of interest. The world as a whole meets this requirement, for example. Countries with populations closed to migration include North Korea and Burma, among others. Other such populations are found in the historical record - the former Soviet Union, Albania from 1950 to 1980, and the Peoples Republic of China from 1950 through 1970, for example. Still others may be defined by race and ethnicity or other 'rules' of membership (e. g., Indigenous Populations in Australia and Canada, Native Hawaiians).

The same UN manual shows a procedure for developing life expectancy at age  $x$  (where  $x > 0$ ). In our presentation, we propose an alternative procedure to the one shown by the UN that allows one to calculate  $e_x$  (including  $e_0$ ) in a more direct manner from cohort change ratios. We discuss the benefits and limitations of our approach and compare life expectancy estimates derived from our approach to those derived from the approach of the UN and others, where available.

As well as some nuances and cautions, we discuss benefits in using this approach to estimating life expectancy, including the ability to develop estimates of average remaining life at any age. We find that the technique appears to be worthy of consideration for use.