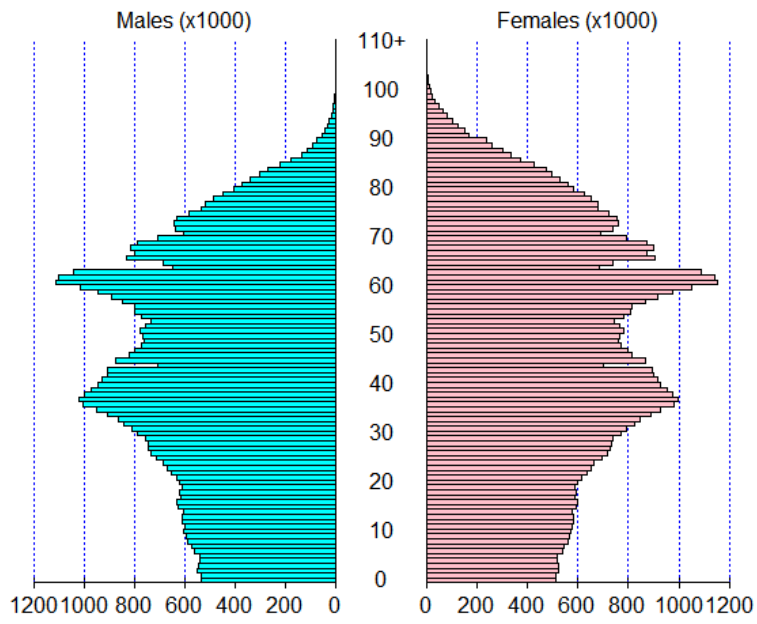


Supplementary materials for Demography (25th April 2013) by minato-nakazawa@umin.net

1. How to install R (or EZR) with fmsb and pyramid packages: If you would like to install the newest version of R system, download R from the nearest CRAN mirror site (in Kobe, <http://essrc.hyogo-u.ac.jp/cran/> is recommended).
 1. Click one of the three OS versions (Linux, MacOS X, or Windows).
 2. Select "base"
 3. Click "Download R-3.0.0 for ...", the download will start.
 4. After the completion of downloading, double-click (execute) the downloaded file.
 5. Follow the instruction.
 6. After the completion, you will find R icon in your desktop.
 7. Double-click R icon, R console will start.
 8. Type `install.packages("fmsb")` for the prompt to install fmsb package.
 9. Type `library(fmsb)` to load the functions and data in fmsb package. The data include Jpopl (The census data of national population for each age, males and females separately, from 1888 to 2010) to be used today.
 10. Type `install.packages("pyramid")` to install pyramid package.
 11. Type `library(pyramid)` to load the function to draw population pyramid.
2. How to calculate Whipple's Index for Japanese data
 1. The definition of Whipple's Index is, the sum of the populations of ages 25, 30, 35, 40, 45, 50, 55, and 60 divided by the sum of the populations of ages from 23 to 62, multiplied by 500 (5 x 100). It should be 100 if there is no preference of reporting ages ending at 0 or 5, and 500 at maximum if all ages reported are ended at 0 or 5.
 2. In the fmsb package, you can see the explanation of Jpopl by typing `?Jpopl`.
 3. After loading fmsb library, you can see the age 0 males population in 2010 by typing `Jpopl[1, "M2010"]` or `Jpopl$M2010[1]`.
 4. To calculate the sum of the males' populations of ages 25, 30, 35, 40, 45, 50, 55 and 60 in 2010 Japan, type `sum(Jpopl[26+0:7*5, "M2010"])`, which means `sum(Jpopl[c(26, 31, 36, 41, 46, 51, 56, 61), "M2010"])`.
 5. Thus, to get the Whipple's Index for Japanese males in 2010, type as follows.
`sum(Jpopl[26+0:7*5, "M2010"])/sum(Jpopl[24:63, "M2010"])*100*5`
 6. The result is `100.9381`.
 7. Similarly, Whipple's Index for Japanese females in 2010, type as follows.
`sum(Jpopl[26+0:7*5, "F2010"])/sum(Jpopl[24:63, "F2010"])*100*5`
 8. The result is `100.8595`.
 9. Both results are very close to 100, so that we can judge almost no preference of reporting ages ending at 0 or 5 in recent Japan. For earlier years (for example, "M1888" can be used instead of "M2010"), the results are similar.
3. Make pyramids for Japanese data
 1. The simplest way to draw the population pyramid for Japanese population in 2010 is, `pyramids(Left=Jpopl$M2010, Right=Jpopl$F2010, Center=Jpopl$Age)`
 2. It will generate an ugly graph. To improve this, at first, type only selected ages in center. `pyramids(Left=Jpopl$M2010, Right=Jpopl$F2010, Center=Jpopl$Age, Cstep=10)`
 3. Next, set the details of population axis. In this case, maximum values of age-specific males population in Japan in 2010 is `max(Jpopl$M2010)`, which is a little more than 100000. Probably the labels for population axis are to be 0, 200000, 400000, 600000, 800000, 1000000, 1200000. However, such too many zeros are difficult to see. Instead, the population can be divided by 1000, then the labels for population axis can be 0, 2000, 4000, 6000, 8000, 10000, 12000 (unit of population: 1000). To do so, type as follows (Caution! type in one line. no carriage-return.)
`pyramids(Left=Jpopl$M2010/1000, Laxis=0:6*200, Right=Jpopl$F2010/1000, Center=Jpopl$Age, Cstep=10, Llab="Males (x1000)", Rlab="Females (x1000)", Clab="", main="Population pyramid for Japan in 2010")`
 4. When you type `windows()`, you can see a new graphic window. And type as follows:
`pyramids(Left=Jpopl$M1950/1000, Laxis=0:6*200, Right=Jpopl$F1950/1000, Center=Jpopl$Age, Cstep=10, Llab="Males (x1000)", Rlab="Females (x1000)", Clab="", main="Population pyramid for Japan in 1950")`
 5. You can compare the two population structures by moving two windows by mouse.

Population pyramid for Japan in 2010



Population pyramid for Japan in 1950

