

### **Midterm exam Demo2002 “Population Analysis”**

- i. On Wattle, students have access to the exam and data used at 9am.
- ii. Questions 1 and 2 are equivalent each to 25% of the exam, and Question 3 is equivalent to 50% of the exam.
- iii. Calculations will be needed to solve the exam and students can use any software for that (R, excel, any...). Please do NOT include excel files or R code in your answers, just the final output, either a Table or a Figure.
- iv. Once finished students should submit a PDF of their exam/answers in turnitin before noon (12pm). Late submission (5% rate).

**Name:**

- 1) Fertility: In Wattle you will find the age-specific fertility rates for the USA and Japan (asfrRR.txt from HFD). Calculate the TFR and the Mean Age at Childbearing and describe the fertility of the two populations (max 200 words).
- 2) Fertility: In Wattle you can find the fertility data from the Human Fertility Database on period (TFR, tfr.txt) and cohort (CCF, ccf.txt).
  - 2.a) Show the time trends of TFR and CCF for Sweden in one plot, and discuss those trends (max 200 words).
  - 2.b) Present in a Table the advantages and disadvantages of TFR and CCF. Which measures would you have included to complement the information seen in the TFR and CCF? (max 200 words).

3) Mortality and life tables: In Wattle you can find the data on deaths, mid-year population and life table “ax” for Taiwan (TWN.txt) and Japan (JPN.txt), obtained from the Human Mortality Database (POP\_Female = Female mid-year population; DEATH\_Female = Female Deaths; ax\_Female = life table ax for females). Similar for males.

3.a) Construct a life table for each of the populations. Present a combined population plot of the life table death distribution dx (in one Figure dx for Females from JPN and TWN, and another plot for males), from your calculated life tables, and describe them (max 200 words).

3.b) Calculate the crude death rate and life expectancy at birth by sex for each population and present the values in a Table and interpret them (max 200 words).

3.c) Did we gain anything on applying the life table technique as opposed to looking at the observed distribution of deaths and crude death rate? Explain your answer (max 200 words).