/home/bendix/teach/APC/EDSD.2018/pracs/assign.tex   Wednesday 13th June, 2018, 18:44

APC assignment

The following is an assignment that each student should complete and mail to Bendix Carstensen, `b@bxc.dk`.

1. Load mortality data (1 × 1 tiles of the Lexis diagram, *both* for men and women) from the HMD. Before you start should choose:

   - Country
   - Age-range
   - Period-range

   One possibility is to use Tim Riffe's `HMDHFDplus` package, but presumanbly there are other too.

   ```
   > library(HMDHFDplus)
   > getHMDcountries()

    [1] "AUS"     "AUT"     "BEL"     "BGR"     "BLR"     "CAN"     "CHL"     "HRV"
    [9] "CHE"     "CZE"     "DEUTNP"  "DEUTE"   "DEUTW"   "DNK"     "ESP"     "EST"
   [17] "FIN"     "FRATNP"  "FRACNP"  "GRC"     "HUN"     "IRL"     "ISL"     "ISR"
   [25] "ITA"     "JPN"     "LTU"     "LUX"     "LVA"     "NLD"     "NOR"     "NZL_NP"
   [33] "NZL_MA"  "NZL_NM"  "POL"     "PRT"     "RUS"     "SVK"     "SVN"     "SWE"
   [41] "TWN"     "UKR"     "GBR_NP"  "GBRTENW" "GBRCENW" "GBR_SCO" "GBR_NIR" "USA"

   > DK.D <- readHMDweb( CNTRY = "DNK", item="Deaths_1x1",
   +                     username = .HMDusr, password = .HMDpwd )
   > DK.Y <- readHMDweb( CNTRY = "DNK", item="Exposures_1x1",
   +                     username = .HMDusr, password = .HMDpwd )
   > head( DK.D)

     Year Age  Female    Male   Total OpenInterval
   1 1835   0 3315.00 4376.00 7691.00        FALSE
   2 1835   1  865.94  963.70 1829.64        FALSE
   3 1835   2  582.06  657.30 1239.36        FALSE
   4 1835   3  366.21  387.87  754.08        FALSE
   5 1835   4  242.79  236.13  478.92        FALSE
   6 1835   5  202.00  199.12  401.12        FALSE

   > head( DK.Y)

     Year Age   Female     Male    Total OpenInterval
   1 1835   0 17789.32 18477.69 36267.01        FALSE
   2 1835   1 15431.99 15730.77 31162.75        FALSE
   3 1835   2 14136.94 14373.96 28510.90        FALSE
   4 1835   3 13247.14 13446.53 26693.67        FALSE
   5 1835   4 12985.10 13186.90 26172.00        FALSE
   6 1835   5 12973.28 13199.79 26173.07        FALSE
   ```

   If you call `readHMDweb` omitting the `item` argument you will be prompted with a list of available items.

2. Do an age-period-cohort analysis of male and female mortality rates separately, and show the results as curves in the same display.

   Remember to clearly state what assumptions you are making, and how you choose your parametrization(s).

3. Provide a verbal description of mortality patterns separately for men and women.

4. Graph the M/F mortality rate-ratio in an `apc.frame`. You may want to consult the function `ci.ratio` from the `Epi` package.

5. Provide a verbal description of patterns of the M/F rate ratios.

The assignment is due on 22nd June 2018 by mail to `b@bxc.dk`.

It should be submitted as a PDF document with at least 12pt font and a maximum of 10 pages, including figures and complete code documentation (`Sweave` or `Rmarkdown` are preferable).