Package 'ROMIplot'

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Title Plots Surfaces of Rates of Mortality Improvement

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Depends MortalitySmooth, RCurl

Description Provides the possibility to plot Lexis surface maps (heat maps) of rates of mortality improvement. Raw data to be plotted can be read from the Human Mortality Database using code originally written by Tim Riffe. The European Research Council has provided financial support under the European Community's Seventh Framework Programme (FP7/2007-2013) / ERC grant agreement no. 263744.

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ROMIplot-package   *Plots Surfaces of Rates of Mortality Improvement*

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Details

This package should facilitate the creation of Lexis surface maps that depict rates of mortality improvement, which the first author has shown at several demographic conferences. See references.

Author(s)

Roland Rau, Tim Riffe

Maintainer: Roland Rau

References

Roland Rau et al. (2013): Rates of Mortality Improvement on the Lexis Surface. Visualizing Age-, Period- and Cohort-Effects. See: http://paa2013.princeton.edu/abstracts/130485

Examples

```
## Not run:
AUTdata <- readHMDformat(CNTRY = "AUT", username=HMDusername, password=HMDpassword)

Dth.matrix <- create.Lexis.matrix(AUTdata[["deaths"]], Sex="Female", minage=50,
                                  maxage=100, minyear=1950,
                                    maxyear=2011)
Expo.matrix <- create.Lexis.matrix(AUTdata[["exposures"]], Sex="Female", minage=50,
                                  maxage=100, minyear=1950,
                                    maxyear=2011)
AUT.1950.2011 <- ROMI.plot(Dx=Dth.matrix, Nx=Expo.matrix, smooth=TRUE)

## End(Not run)
```

---

create.Lexis.matrix   *Creates a Lexis surface matrix.*

Description

Creates a matrix (age by year) based on data formatted in the Human Mortality Database format.

Usage

```
create.Lexis.matrix(HMD.dataset, Sex = "Female", minage = 50, maxage = 100,
minyear = 1950, maxyear = 2011)
```

Arguments

HMD.dataset	A dataset as formatted in the Human Mortality Database, i.e. a data frame with the columns "Year", "Age", "Female", "Male", "Total"
Sex	For which sex should the matrix be created? Default setting is "Female". Other options are "Male" and "Total".
minage	HMD data cover ages 0 to 100. Please select here a value for the lower bound to be included. Default is 50.
maxage	HMD data cover ages 0 to 100. Please select here a value for the upper bound to be included. Default is 100.
minyear	Please select the first year to be included in the matrix. Default is 1950.
maxyear	Please select the last year to be included in the matrix. Default is 2011.

Details

It is expected that age is an integer.

Value

A matrix with the dimensions: length(minage:maxage) x length(minyear:maxyear) Rows represent ages, columns represent years.

Author(s)

Roland Rau

Examples

```
theyears <- 1900:2012
theages <- 0:110
n <- length(theyears) * length(theages)

# 'Simulating' a data frame in the HMD format
HMD.formatted.data <- data.frame(Year=sort(rep(theyears, length(theages))),
```

```
                                    Age = rep(theages, length(theyears)),
                                    Female = runif(n=n),
                                    Male = runif(n=n),
                                    Total = runif(n=n))

a.Lexis.matrix <- create.Lexis.matrix(HMD.dataset=HMD.formatted.data,
                                      Sex="Total", minage=30, maxage=105,
                                      minyear=1905, maxyear=2010)
```

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readHMDformat   *A function to read data from the Human Mortality Database ("HMD")*

Description

This function to read HMD data uses code from Tim Riffe's package HMDHFDplus, which has not been published on CRAN (yet), but is available at the webpage of the Max Planck Institute for Demographic Research. Please see "References" for more details.

Usage

```
readHMDformat(CNTRY = NULL, username = NULL, password = NULL, fixup = TRUE)
```

Arguments

CNTRY   Data for which country do you want?

username   Please supply your HMD username. Typically your email address.

password   Please supply your HMD password.

fixup   Logical. Should columns be made more user-friendly, e.g., forcing Age to be
               integer?

Details

You need to register first at the Human Mortality Database at www.mortality.org to use this function.

Value

deaths   A data frame containing death counts from the Human Mortality Database for
               country CNTRY in 1x1 (age x year) resolution

exposures   A data frame containing exposure to risk information from the Human Mortality
               Database for country CNTRY in 1x1 (age x year) resolution

Author(s)

Roland Rau, Tim Riffe

References

Riffe, T (2015): Reading Human Fertility Database and Human Mortality Database data into R. MPIDR Technical Report TR-2015-004, 5 pages (June 2015), includes R package HMDHFDplus. Available online at: http://goo.gl/qFC4JA

Examples

```
## Not run: readHMDformat(CNTRY='USA', username=your@HMD.username,
                          password=yourHMDpassword)
## End(Not run)
```

| ROMI.plot | *Creates a Lexis Surface Map of Rates of Mortality Improvement* |

Description

Based on deaths counts and exposures OR on death rates, this function plots rates of mortality improvement

Usage

```
ROMI.plot(Dx = NULL, Nx = NULL, mx = NULL, smooth = TRUE)
```

Arguments

Dx	Lexis matrix of death counts. Rows represent age. Columns represent year.
Nx	Lexis matrix of exposure to risk information. Rows represent age. Columns represent year. Same dimensions required as for Dx
mx	If you do not have Dx and Nx available, you can provide death rates here. Smoothing is not available in the current version of the package since the smoothing routine requires deaths counts and exposures.
smooth	Logical. If TRUE, data will be smoothed using Giancarlo Camarda's package "MortalitySmooth"

Details

The main purpose of this function is to plot rates of mortality improvement. A matrix of those rates will be returned, nevertheless.

Value

A matrix of rates of mortality improvement. The main purpose, however, is to plot the data.

Author(s)

Roland Rau

Examples

```
## Not run: ROMI.plot(Dx=Dx.matrix, Nx=Nx.matrix, smooth=TRUE)
```

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