Package 'LexisPlotR'

October 12, 2022

Type Package

Title Plot Lexis Diagrams for Demographic Purposes

Version 0.4.0

Maintainer Philipp Ottolinger <philipp@ottolinger.de>

Description Plots empty Lexis grids, adds lifelines and highlights certain areas of the grid, like cohorts and age groups.

Imports ggplot2, dplyr, tidyr

Suggests knitr, HMDHFDplus

Depends R (>= 2.10)

Encoding UTF-8

LazyData true

License GPL-2

URL https://github.com/ottlngr/LexisPlotR

RoxygenNote 6.1.1

NeedsCompilation no

Author Philipp Ottolinger [cre, aut],
Marieke Smilde-Becker [ctb]

Repository CRAN

Date/Publication 2020-01-12 13:30:03 UTC

R topics documented:

`lexis.age` *Deprecated. Emphasize a certain age in Lexis grid*

Description

Add a coloured rectangle to an existing Lexis grid to highlight a certain age in that Lexis grid.

Usage

```
lexis.age(lg, age, fill = lpr_colours()[2], alpha = 0.7, d = 1)
```

Arguments

`lg,`	an existing object originally created with `lexis.grid()`.
`age`	numeric, set the age to highlight.
`fill`	character, set colour to fill the rectangle. Default is `"yellow"`.
`alpha`	numeric, set alpha, the level of transparency for `fill`. Default is `0.5`.
`d`	numeric, set the size of the age groups. Default is 1.

Details

Takes an existing Lexis grid and adds a coloured rectangle that highlights all triangles belonging to a certain age.

Value

A ggplot2 object.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
library(LexisPlotR)
lexis <- lexis.grid2(year.start = 1900, year.end = 1905, age.start = 0, age.end = 5)
lexis <- lexis.age(lg = lexis, age = 3)

## End(Not run)
```

`lexis.cohort` *Deprecated. Emphasize a certain cohort in a Lexis grid*

Description

Takes an existing Lexis grid and adds a coloured rectangle to highlight a certain cohort.

Usage

```
lexis.cohort(lg, cohort, fill = lpr_colours()[4], alpha = 0.7, d = 1)
```

Arguments

`lg,`	an existing object originally created with `lexis.grid()`.
`cohort`	numeric, set the cohort to highlight.
`fill`	character, set the colour of the rectangle. Default is `"green"`.
`alpha`	numeric, set the level of transparency of the rectangle. Default is `0.5`.
`d`	numeric, set the size of the age groups. Default is 1.

Details

Takes an existing Lexis grid and adds a coloured rectangle to the plot. The rectangle will highlight a certain cohort in the Lexis grid.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
library(LexisPlotR)
lg <- lexis.grid(year.start = 1900, year.end = 1905, age.start = 0, age.end = 5)
lexis.cohort(lg = lg, cohort = 1901)

## End(Not run)
```

`lexis.grid` *Deprecated. Plot a Lexis grid*

Description

lexis.grid() plots the basic Lexis grid.

Usage

```
lexis.grid(year.start, year.end, age.start, age.end, lwd = 0.3,
  force.equal = T)
```

Arguments

`year.start`	integer, set the year the Lexis Diagram starts with.
`year.end`	integer, set the year the Lexis Diagram ends with.
`age.start`	integer, set the age the Lexis Diagram starts with.
`age.end`	integer, set the age the Lexis Diagram ends with.
`lwd`	numeric, set the linewidth of the grid.
`force.equal`	logical, by default `lexis.grid` uses `ggplot2::coord_fixed()` to ensure isosceles trianlges. Set `FALSE` to allow for a non-isosceles appearance.

Details

The function determines the aspect ratio of the x- and y-axis to enforce isosceles triangles. The aspect ratio will not be effected by defining `width` and `height` in `pdf()` or other graphic devices.

Because the returned object is a ggplot2 graph, the overall appearence of the graph can be edited by adding `themes()` to the plot.

Value

The functions returns a ggplot2-plot.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
library(LexisPlotR)
lexis.grid(year.start = 1900, year.end = 1905, age.start = 0, age.end = 5)

## End(Not run)
```

`lexis.grid2` *Deprecated. Plot a Lexis grid*

Description

lexis.grid() plots the basic Lexis grid.

Usage

```
lexis.grid2(year.start, year.end, age.start, age.end, lwd = 0.3,
  force.equal = T, d = 1)
```

Arguments

`year.start`	integer, set the year the Lexis Diagram starts with.
`year.end`	integer, set the year the Lexis Diagram ends with.
`age.start`	integer, set the age the Lexis Diagram starts with.
`age.end`	integer, set the age the Lexis Diagram ends with.
`lwd`	numeric, set the linewidth of the grid.
`force.equal`	logical, by default `lexis.grid` uses `ggplot2::coord_fixed()` to ensure isosceles trianlges. Set `FALSE` to allow for a non-isosceles appearance.
`d`	numeric, set the size of the age groups. Default is 1.

Details

The function determines the aspect ratio of the x- and y-axis to enforce isosceles triangles. The aspect ratio will not be effected by defining `width` and `height` in `pdf()` or other graphic devices.

Because the returned object is a ggplot2 graph, the overall appearence of the graph can be edited by adding `themes()` to the plot.

Value

The functions returns a ggplot2-plot.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
library(LexisPlotR)
lexis.grid(year.start = 1900, year.end = 1905, age.start = 0, age.end = 5)

## End(Not run)
```

`lexis.hmd` *Deprecated. Fill Lexis triangles by HMD data*

Description

The function opens an existing Lexis grid and fill the triangles according to data from the Human Mortality Database.

Usage

```
lexis.hmd(lg, hmd.data, column)
```

Arguments

`lg,`	an existing object originally created with `lexis.grid()`.
`hmd.data,`	a data.frame created with `prepare.hmd()`.
`column`	character, the name of the column of `hmd.data` the triangles shall be filled with.

Details

The function creates a subset of `hmd.data` that fits in the dimensions of the existing Lexis grid. The triangles will be filled according to the data in `column`.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
library(LexisPlotR)
lg <- lexis.grid(year.start = 1980, year.end = 1985, age.start = 0, age.end = 5)
# Load sample data
path <- system.file("extdata", "Deaths_lexis_sample.txt", package = "LexisPlotR")
deaths.triangles <- prepare.hmd(path)
lexis.hmd(lg = lg, hmd.data = deaths.triangles, column = "Total")

### Plot data not explicitly present in HMD data
deaths.triangles$RatioMale <- deaths.triangles$Male / deaths.triangles$Total
lexis.hmd(lg, deaths.triangles, "RatioMale")

## End(Not run)
```

`lexis.lifeline` *Deprecated. Plot lifelines into a Lexis grid*

Description

Add lifelines to an existing Lexis grid.

Usage

```
lexis.lifeline(lg, entry, exit = NA, lineends = F,
  colour = lpr_colours()[7], alpha = 1, lwd = 0.5)
```

Arguments

`lg,`	an existing object originally created with `lexis.grid()`.
`entry`	character, set the entry or birth date of an individual in format `"YYYY-MM-DD"`.
`exit`	character, set the exit or death date of an individual in format `"YYYY-MM-DD"`. Default is `NA` (no exit or death observed).
`lineends`	logical, if `TRUE` lineends will be marked. Default is `FALSE`.
`colour`	character, set the colour of the lifelines. Default is `"red"`.
`alpha`	numeric, set the transparency of the lifelines. Default is `1` (no transparency).
`lwd`	numeric, set the linewidth of the lifelines. Default is `0.5`.

Details

Takes an existing Lexis grid and adds lifelines to the grid. Input can be a single dates or dates from a vector.

Value

A ggplot2 object.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
lg <- lexis.grid(year.start = 1900, year.end = 1905, age.start = 0, age.end = 5)
lexis.lifeline(lg = lg, entry = "1901-09-23")
lexis.lifeline(lg = lg, entry = "1901-09-23", exit = "1904-03-03")

## End(Not run)
```

`lexis.survey` *Deprecated. Emphasize a survey range in a Lexis grid Takes an existing Lexis grid and adds a coloured parallelogram to highlight a survey range.*

Description

Deprecated. Emphasize a survey range in a Lexis grid Takes an existing Lexis grid and adds a coloured parallelogram to highlight a survey range.

Usage

```
lexis.survey(lg, from_date, to_date, from_age, to_age,
  fill = lpr_colours()[6], alpha = 0.7)
```

Arguments

`lg,`	an existing object originally created with `lexis.grid()`.
`from_date`	character, set the beginning of the survey in format `"YYYY-MM-DD"`.
`to_date`	character, set the end of the survey in format `"YYYY-MM-DD"`.
`from_age`	numeric, set the starting age of the survey.
`to_age`	numeric, set the ending age of the survey.
`fill`	character, set the colour to fill the parallelogram. Default is `"orange"`.
`alpha`	numeric, set the transparency of the fill colour. Default is `0.5`.

Details

The function can be used to plot the time and age range of a survey. Use `from_date` and `to_date` to specify the time range the survey took place and `from_age` and `to_age` to define the considered ages of participants/observations.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
library(LexisPlotR)
lg <- lexis.grid(year.start = 1980, year.end = 1990, age.start = 30, age.end = 40)
lexis.survey(lg, from_date = "1982-09-01", to_date = "1986-03-01", from_age = 32, to_age = 36)

## End(Not run)
```

`lexis.year` *Deprecated. Emphasize a certain year in Lexis grid.*

Description

Takes an existing Lexis grid and adds a coloured rectangle to highlight a certain age.

Usage

```
lexis.year(lg, year, fill = lpr_colours()[3], alpha = 0.7, d = 1)
```

Arguments

`lg,`	an existing object originally created with `lexis.grid()`.
`year`	numeric, set the year to highlight.
`fill`	character, set the colour of the rectangle. Default is `"blue"`.
`alpha`	numeric, set the transparency of the rectangle. Default is `0.5`.
`d`	numeric, set the size of the age groups. Default is 1.

Details

Takes an existing Lexis grid and adds a coloured rectangle to the plot. The rectangle will highlight a certain year in the grid.

Value

A ggplot2 object.

Author(s)

Philipp Ottoliner

Examples

```
## Not run:
lg <- lexis.grid(year.start = 1900, year.end = 1905, age.start = 0, age.end = 5)
lexis.year(lg = lg, year = 1902)

## End(Not run)
```

`lexis_age` *Emphasize a certain age in Lexis grid*

Description

Add a coloured rectangle to an existing Lexis grid to highlight a certain age in that Lexis grid.

Usage

```
lexis_age(lg, age, delta = 1, fill = lexisplotr_colours()[1],
  alpha = 0.7)
```

Arguments

`lg,`	an existing object originally created with `lexis_grid()`.
`age`	numeric, set the age to highlight.
`delta`	numeric, set the size of the age groups. Default is 1.
`fill`	character, set colour to fill the rectangle.
`alpha`	numeric, set alpha, the level of transparency for `fill`. Default is `0.5`.

Details

Takes an existing Lexis grid and adds a coloured rectangle that highlights all triangles belonging to a certain age.

Value

A ggplot2 object.

Author(s)

Philipp Ottolinger

Examples

```
library(LexisPlotR)
lexis <- lexis_grid(year_start = 1900, year_end = 1905, age_start = 0, age_end = 5)
lexis <- lexis_age(lg = lexis, age = 3)
```

`lexis_cohort` *Emphasize a certain cohort in a Lexis grid*

Description

Takes an existing Lexis grid and adds a coloured rectangle to highlight a certain cohort.

Usage

```
lexis_cohort(lg, cohort, delta = 1, fill = lexisplotr_colours()[3],
  alpha = 0.7)
```

Arguments

`lg,`	an existing object originally created with `lexis_grid()`.
`cohort`	numeric, set the cohort to highlight.
`delta`	numeric, set the size of the age groups. Default is 1.
`fill`	character, set the colour of the rectangle.
`alpha`	numeric, set the level of transparency of the rectangle. Default is `0.5`.

Details

Takes an existing Lexis grid and adds a coloured rectangle to the plot. The rectangle will highlight a certain cohort in the Lexis grid.

Author(s)

Philipp Ottolinger

Examples

```
library(LexisPlotR)
lg <- lexis_grid(year_start = 1900, year_end = 1905, age_start = 0, age_end = 5)
lexis_cohort(lg = lg, cohort = 1901)
```

`lexis_grid` *Plot a Lexis grid*

Description

lexis_grid() plots the basic Lexis grid.

Usage

```
lexis_grid(year_start, year_end, age_start, age_end, delta = 1,
  lwd = 0.3, force_equal = TRUE)
```

Arguments

`year_start`	integer, set the year the Lexis Diagram starts with.
`year_end`	integer, set the year the Lexis Diagram ends with.
`age_start`	integer, set the age the Lexis Diagram starts with.
`age_end`	integer, set the age the Lexis Diagram ends with.
`delta`	numeric, set the size of the age groups. Default is 1.
`lwd`	numeric, set the linewidth of the grid.
`force_equal`	logical, by default `lexis.grid` uses `ggplot2::coord_fixed()` to ensure isosceles trianlges. Set `FALSE` to allow for a non-isosceles appearance.

Details

The function determines the aspect ratio of the x- and y-axis to enforce isosceles triangles. The aspect ratio will not be effected by defining `width` and `height` in `pdf()` or other graphic devices.

Because the returned object is a ggplot2 graph, the overall appearence of the graph can be edited by adding `themes()` to the plot.

Value

A ggplot object.

Author(s)

Philipp Ottolinger

Examples

```
library(LexisPlotR)
lexis_grid(year_start = 1900, year_end = 1905, age_start = 0, age_end = 5)
```

`lexis_lifeline` *Plot lifelines into a Lexis grid*

Description

Add lifelines to an existing Lexis grid.

Usage

```
lexis_lifeline(lg, birth, entry = NA, exit = NA, lineends = FALSE,
  colour = lexisplotr_colours()[5], alpha = 1, lwd = 0.5)
```

Arguments

`lg,`	an existing object originally created with `lexis_grid()`.
`birth`	character, set the birth date of an individual in format `"YYYY-MM-DD"`.
`entry`	character, set the entry of an individual in format `"YYYY-MM-DD"`. Optional.
`exit`	character, set the exit or death date of an individual in format `"YYYY-MM-DD"`. Optional.
`lineends`	logical, if `TRUE` lineends will be marked. Default is `FALSE`.
`colour`	character, set the colour of the lifelines.
`alpha`	numeric, set the transparency of the lifelines. Default is `1` (no transparency).
`lwd`	numeric, set the linewidth of the lifelines. Default is `0.5`.

Details

Takes an existing Lexis grid and adds lifelines to the grid. Input can be a single dates or dates from a vector.

Value

A ggplot2 object.

Author(s)

Philipp Ottolinger

Examples

```
lg <- lexis_grid(year_start = 1900, year_end = 1905, age_start = 0, age_end = 5)
lexis_lifeline(lg = lg, birth = "1901-09-23")
lexis_lifeline(lg = lg, birth = "1901-09-23", entry = "1902-04-01")
lexis_lifeline(lg = lg, birth = "1901-09-23", exit = "1904-10-31")
```

`lexis_polygon` *Plot a polygon inside a Lexis grid Takes an existing Lexis grid and adds a polygon.*

Description

Plot a polygon inside a Lexis grid Takes an existing Lexis grid and adds a polygon.

Usage

```
lexis_polygon(lg, x, y, group = 1, fill = lexisplotr_colours()[4],
  alpha = 0.7)
```

Arguments

`lg,`	an existing object originally created with `lexis_grid()`.
`x,`	vector describing the x coordinates of the polygon. Format: YYYY-MM-DD.
`y,`	vector describing the y coordinates of the polygon
`group,`	vector describing the groups of coordinates.
`fill`	character, fill colour of the polygon.
`alpha`	numeric, transparency of the fill colour. Default: 0.7.

Details

The function can be used to plot a polygon inside a Lexis grid.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
library(LexisPlotR)
lg <- lexis_grid(year_start = 1900, year_end = 1905, age_start = 0, age_end = 5)
lexis_polygon(lg, x = c("1901-06-30", "1904-06-30", "1904-06-30", "1901-06-30"), y = c(2,2,4,4))

## End(Not run)
```

`lexis_year` *Emphasize a certain year in Lexis grid.*

Description

Takes an existing Lexis grid and adds a coloured rectangle to highlight a certain age.

Usage

```
lexis_year(lg, year, delta = 1, fill = lexisplotr_colours()[2],
  alpha = 0.7)
```

Arguments

`lg,`	an existing object originally created with `lexis_grid()`.
`year`	numeric, set the year to highlight.
`delta`	numeric, set the size of the age groups. Default is 1.
`fill`	character, set the colour of the rectangle.
`alpha`	numeric, set the transparency of the rectangle. Default is `0.5`.

Details

Takes an existing Lexis grid and adds a coloured rectangle to the plot. The rectangle will highlight a certain year in the grid.

Value

A ggplot2 object.

Author(s)

Philipp Ottoliner

Examples

```
lg <- lexis_grid(year_start = 1900, year_end = 1905, age_start = 0, age_end = 5)
lexis_year(lg = lg, year = 1902)
```

lifelines_sample *Data for 300 random lifelines*

Description

This dataset contains 300 random entry dates and 150 exit dates for demonstration purposes.

Usage

```
lifelines_sample
```

Format

A data frame with 300 rows and 2 variables:

entry entry or birth dates.

exit exit or death dates, NA if not observed.

prepare.hmd *Deprecated. Prepare HMD data for* lexis.hmd()

Description

prepare.hmd() prepares the raw 'Deaths by Lexis triangles' HMD data for further use by lexis.hmd.

Usage

```
prepare.hmd(file)
```

Arguments

file,	the name of the 'Deaths by Lexis triangles' file downloaded from the Human Mortality Database.

Details

This function reads the raw data into R and transforms data to numeric and Date. Furthermore seven columns (upper, x1, x2, x3, y1, y2, y3) that contain the coordinates of the triangles will be added. The age group 110+ will be removed from the data.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
library(LexisPlotR)
# Load sample data
path <- system.file("extdata", "Deaths_lexis_sample.txt", package = "LexisPlotR")
deaths.triangles <- prepare.hmd(path)

## End(Not run)
```

`tidy_triangle_data` *Tidy triangular data (Lexis triangles)*

Description

Take raw data from a data source (e.g. Human Mortality Database) and make it 'tidy'.

Usage

```
tidy_triangle_data(triangle_data, source = "HMD")
```

Arguments

`triangle_data`	data.frame, A data.frame containing raw triangle data.
`source`	character, The source of the raw data. Supported sources: HMD.

Details

When using raw triangular data from HMD or other sources, the data is not well prepared for further use. `tidy_triangular_data` does some transformations to prepare the data, mainly for visualization using `ggplot2`.

Value

A data.frame.

Author(s)

Philipp Ottolinger

Examples

```
## Not run:
triangles <- readHMDweb("RUS", "Deaths_lexis", "your@email.com", "your_password")

## End(Not run)
```

Index