

# Package ‘LexisPlotR’

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**Type** Package

**Title** Plot Lexis Diagrams for Demographic Purposes

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**Description** Functions to plot Lexis Diagrams for Demographic purposes.

**Depends** R (>= 3.0.0), ggplot2 (>= 1.0.1)

**Suggests** knitr

**VignetteBuilder** knitr

**LazyData** true

**License** GPL-2

**URL** <https://github.com/ottlIngr/LexisPlotR>

**RoxygenNote** 5.0.1

**NeedsCompilation** no

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`how.old`*Determine numeric age*

---

**Description**

Determines the numeric age in years from a date range.

**Usage**

```
how.old(from, to)
```

**Arguments**

`from` character, beginning of the date range in YYYY-MM-DD format.  
`to` character, end of the date range in YYYY-MM-DD format.

**Details**

Helper for LexisPlotR. The numeric age gets rounded to 5 digits.

**Value**

Numeric age in years.

**Author(s)**

Philipp Ottolinger

**Examples**

```
library(LexisPlotR)
how.old(from = "1900-01-01", to = "1905-01-01")
```

---

`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, fill = "yellow", alpha = 0.5)
```

**Arguments**

lg,	an existing object originally created with <code>lexis.grid()</code> .
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.

**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, fill = "green", alpha = 0.5)
```

**Arguments**

lg,	an existing object originally created with <code>lexis.grid()</code> .
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.

**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)
```

**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.

**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 appearance of the graph can be edited by adding themes() to the plot.

**Value**

The functions returns a ggplot2-plot.

**Author(s)**

Philipp Ottolinger

**Examples**

```
library(LexisPlotR)
lexis.grid(year.start = 1900, year.end = 1905, age.start = 0, age.end = 5)
```

---

lexis.hmd	<i>Fill Lexis triangles by HMD data</i>
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---

### 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 <code>lexis.grid()</code> .
hmd.data,	a data.frame created with <code>prepare.hmd()</code> .
column	character, the name of the column of <code>hmd.data</code> 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

```
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")
```

---

lexis.lifeline      *Plot lifelines into a Lexis grid*

---

**Description**

Add lifelines to an existing Lexis grid.

**Usage**

```
lexis.lifeline(lg, entry, exit = NA, lineends = F, colour = "red",  
              alpha = 1, lwd = 0.5)
```

**Arguments**

lg,	an existing object originally created with <code>lexis.grid()</code> .
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**

```
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")
```

---

lexis.year	<i>Emphasize a certain year in Lexis grid.</i>
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---

## Description

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

## Usage

```
lexis.year(lg, year, fill = "blue", alpha = 0.5)
```

## Arguments

lg,	an existing object originally created with <code>lexis.grid()</code> .
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.

## 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	<i>Data for 300 random lifelines</i>
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---

**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	<i>Prepare HMD data for lexis.hmd()</i>
-------------	---

---

**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**

```
library(LexisPlotR)
# Load sample data
path <- system.file("extdata", "Deaths_lexis_sample.txt", package = "LexisPlotR")
deaths.triangles <- prepare.hmd(path)
```

---

what.date	<i>Determine the date a certain age is reached</i>
-----------	--

---

**Description**

Determines the date a certain age is reached given an earlier date.

**Usage**

```
what.date(date, age)
```

**Arguments**

date	character, set the reference date in YYYY-MM-DD format.
age	numeric, set an age to be reached.

**Details**

Helper for LexisPlotR.

**Value**

The date age is reached when counting from date.

**Author(s)**

Philipp Ottolinger

**Examples**

```
library(LexisPlotR)
what.date(date = "1900-01-01", age = 3)
```

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