Package ‘timelineS’
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Description An easy tool for plotting annotated timelines, grouped timelines, and exploratory graphics (boxplot/histogram/density plot/scatter plot/line plot). Filter, summarize date data by duration and convert to calendar units.

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Filter Dataset by Date Duration

durCalc

Description

Calculates the duration between two dates, use it as a filter to select rows that satisfy the length criteria. Returns the dataset with additional columns regarding the length of durations in different units.

Usage

durCalc(df = NULL, start, end, timeunit = "day", filterlength = NA, filterlonger = TRUE, year = 365.25, month = 30.42)

Arguments

df Data frame containing start and end dates.
start Column in df for start dates or a date to use as start date.
end Column in df for end dates or a date to use as an end date.
timeunit Unit of time to be used in plots. "day(s)", "week(s)", "month(s)", "quarter(s)", "semiannual", "halfyear", or "year(s)".
filterlength A time length to use as filter.
filterlonger If TRUE, the function gives rows with longer durations than specified in filterlength. If FALSE, gives rows with shorter durations.
year Number of days to use as a year. Default is 365.25.
month Number of days to use as a month. Default is 30.42.

Details

Additional columns returned with the filtered rows are: length of duration in days, in specified time unit, and in calendar units, and how much longer/shorter the durations are compared to filter length in calendar units.

If no filterlength is provided, then returns all rows with length of duration in days and calendar units.

You can use dates for start and end and provide no df to get the length of duration between the dates in calendar units. See example.

Value

A subset of original data frame with additional columns in specified time units and calendar units.

Author(s)

Dahee Lee
durPlot

See Also
durPlot, durSummary

Examples

### Filter people who lived longer than 85 years

durCalc(life_exp, start = "Birth", end = "Death", timeunit = "years", filterlength = 85)

### How old each person would be as of January 1, 2000 if they were alive

durCalc(life_exp, start = "Birth", end = as.Date("2000-1-1"), timeunit = "years")

### Use as unit-converter between two dates

durCalc(start = as.Date("2010-12-1"), end = as.Date("2015-4-26"), timeunit = "weeks")

---

durPlot Graphs and Summary for Date Durations

Description

Plots boxplot, histogram, density plot, scatter plot, line plot and prints summary statistics for date duration data.

Usage

durPlot(df, start, end, group = NA, timeunit = "days", plot_type = "all",
       facet = FALSE, facet.nrow = NULL, theme = NULL, other = NULL,
       fill_color = "black", line_color = "black", groupcolor = TRUE,
       point_size = 2, alpha = NA, binwidth = 0.5, show_legend = TRUE,
       title = "Boxplot", title_boxplot = "Boxplot", title_histogram = "Histogram",
       title_density = "Density Plot", title_scatter = "Scatter Plot",
       title_line = "Line Plot")

Arguments

df Data frame containing start dates, end dates and groups.
start Column in df for start dates.
end Column in df for end dates.
group Column in df for groups. Default is NA.
timeunit Unit of time to be used in plots. "day(s)", "week(s)" , "month(s)" , "quarter(s)",
            "semiannual", "halfyear", or "year(s)".
plot_type One of "all", "boxplot", "histogram", "density", "scatter", "line".
            Default is "all".
facet If TRUE, wraps plots in group facets
facet.nrow Number of rows for facet wrap
theme Add theme elements if needed.
other Add other elements if needed.
fill_color Fill color
line_color Line color
groupcolor If FALSE, fill_color and line_color used for all groups. Default is TRUE.
point_size Point size for scatterplot
alpha Color transparency [0,1]
binwidth Binwidth for histogram; default 0.5.
show_legend Default is TRUE
title If TRUE, puts main titles for each plot
title_boxplot Title for boxplot title
title_histogram Title for histogram
title_density Title for density plot
title_scatter Title for scatter plot
title_line Title for line plot

Details

The function also returns summary statistics for the specified date duration.

Author(s)

Dahee Lee

See Also

timelines, timelineG, durSummary, durCalc

Examples

durPlot(life_exp, start = "Birth", end = "Death", group = "Country",
timeunit = "years", facet = TRUE, binwidth = 3, alpha = 0.7, title = TRUE)

durPlot(life_exp, start = "Birth", end = "Death", group = "Country",
timeunit = "years", alpha = 0.5, title = TRUE)
**Summary for Date Duration Data**

**Description**

Returns summary statistics for date duration data (for each group if group is provided)

**Usage**

durSummary(df, start, end, group = NA, timeunit = "days")

**Arguments**

df: Data frame containing start and end dates.
start: Column in df for start dates.
end: Column in df for end dates.
group: Column in df for groups. Default NA.
timeunit: Unit of time to be used in plots. "day(s)", "week(s)", "month(s)", "quarter(s)", "semiannual", "halfyear", or "year(s)".

**Details**

1 year = 365.25 days, 1 month = 30.42 days, 1 year = 52.14 weeks

**Author(s)**

Dahee Lee

**See Also**

durPlot, durCalc

**Examples**

durSummary(life_exp, start = "Birth", end = "Death", group = "Country", timeunit = "years")

---

**life_country**

Data for timelineGroup function example in timelineS package

**Description**

Dates of birth and death, gender and phases

**Format**

dataframe of name(character), country(character), gender(character), phase(character) and dates(date)

---
life_exp  
Data for examples in timelineS package

Description

Dates of birth and death, country, gender and names

Format

dataframe of name(character), country(character), gender(character), and dates(date)

mj_life  
Data for timelineS function example in timelineS package

Description

Events and dates of Michael Jackson’s life

Format

dataframe of events(character) and dates(date)

timelineG  
Faceted Timelines for Grouped Data

Description

Plots faceted timelines for grouped data.

Usage

timelineG(df, start, end, names, phase = NA, group1 = NA, group2 = NA, width = 2, color = "grey", theme = NULL, other = NULL)
Arguments

- **df**: Data frame containing start dates, end dates, groups, phases, and names for each timeline.
- **start**: Column in df for start dates.
- **end**: Column in df for end dates.
- **names**: Column in df for names of each timeline
- **phase**: Column in df for phases.
- **group1**: Column in df for groups to be used as the rows of the tabular display. Default is NA.
- **group2**: Column in df for groups to be used as the columns of the tabular display. Default is NA.
- **width**: Width of each timeline. Default is 2.
- **color**: Color of timelines, only used when phase is not provided.
- **theme**: Add theme elements if needed.
- **other**: Add other elements if needed.

Author(s)

- Dahee Lee

See Also

- `timelineG`

Examples

```r
### Plot timelines row grouped by "Country"
timelineG(df = life_country, start = "Start", end = "End", names = "Name",
          phase = "Phase", group1 = "Country")

### Plot timelines row grouped by "Country" and column grouped by "Gender"
timelineG(df = life_country, start = "Start", end = "End", names = "Name",
          phase = "Phase", group1 = "Country", group2 = "Gender")

### Plot timelines, no group
timelineG(df = life_country, start = "Start", end = "End", names = "Name", color = "grey")
```
### Timeline with Event Labels

**Description**

Plots a horizontal timeline with event descriptions at corresponding dates.

**Usage**

```r
timelineS(df, main = NA, xlab = NA, buffer.days = 600,
    line.width = 5, line.color = "gray44",
    scale = "year", scale.format = "%Y", scale.font = 2, scale.orient = 1,
    scale.above = FALSE, scale.cex = 1, scale.tickwidth = 2,
    labels = paste(df[,1], df[,2]), label.direction = "downup",
    label.length = c(0.5, 0.5, 0.8, 0.8), label.position = c(1,3),
    label.color = "gray44", label.cex = 0.8, label.font = 1, label.angle = 0,
    pch = 20, point.cex = 1, point.color = "gray44")
```

**Arguments**

- `df`  
  Data frame for events and dates. First column for event names and second column for dates in Date class.

- `main`  
  Title of the plot.

- `xlab`  
  X axis label.

- `buffer.days`  
  Additional days to add before and after the event dates on the timeline. Default is 600 days.

- `line.width`  
  Timeline width; default 5

- `line.color`  
  Timeline color.

- `scale`  
  Scale on timeline. One of "year", "quarter", "month", "week" or "day". See `seq.Date`.

- `scale.format`  
  Scale format; default "%Y".

- `scale.font`  

- `scale.orient`  
  Orientation of scale; default 1(upright)

- `scale.above`  
  If TRUE, the scale shows above the line.

- `scale.cex`  
  Scale font size relative to cex.

- `scale.tickwidth`  
  Width of scale tick; default 2.

- `labels`  
  Event labels. Events and corresponding dates as default.

- `label.direction`  
  Direction of labels from timeline. "downup", "updown", "up", or "down". default is "downup". See details.
label.length  Distance of event label from the timeline. Could be a single value or a vector of lengths. Default is c(0.5, 0.5, 0.8, 0.8). See details.

label.position  Integer specifying label positions; default c(1,3). See details.

label.color  Label color(s).

label.cex  Font size(s) of event labels; default 0.8.

label.font  Integer specifying label font; default 1.

label.angle  Angle of text in the label.

pch  End point symbol(s).

point.cex  End points size(s).

point.color  End points color(s).

Details

label.direction indicates the direction of event labels from timeline. "downup" and "updown" plots alternating labels; "up" puts all the labels above and "down" below the timeline.

label.length could be a single number or a numeric vector. For label directions "downup" and "updown", use between 0 and 0.9, and for "up" and "down", use between 0 and 1.6. For example, label.length = 0.5 produces all the labels at equal lengths, and label.length = c(0.5, 0.5, 0.8, 0.8) repeats the sequence of lengths.

The positions for label.position are 1: below 2: left 3: above 4: right.

Author(s)

Dahee Lee

See Also

axis.Date, timelineG, durCalc, durPlot

Examples

### Default down-up labels
timelineS(mj_life, main = "Life of Michael Jackson")

### Labels above timeline and other change in aesthetics
timelineS(mj_life, main = "Life of Michael Jackson",
label.direction = "up", label.length = c(0.2,0.8,0.4,1.2), label.position = 3,
line.color = "blue", label.color = "blue", point.color = "blue", pch = "-")
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