Package ‘ggquickeda’

March 26, 2023

Title Quickly Explore Your Data Using 'ggplot2' and 'table1' Summary Tables

Version 0.3.0

Description Quickly and easily perform exploratory data analysis by uploading your data as a 'csv' file. Start generating insights using 'ggplot2' plots and 'table1' tables with descriptive stats, all using an easy-to-use point and click 'Shiny' interface.

URL https://github.com/smouksassi/ggquickeda

BugReports https://github.com/smouksassi/ggquickeda/issues

Depends R (>= 4.0.0)

Imports colourpicker, dplyr, DT, Formula, GGally (>= 2.1.0), ggbeswarm, ggplot2 (>= 3.3.4), ggpmisc, ggrepel (>= 0.7.0), ggpubr, gridExtra, Hmisc, markdown, methods, plotly, quantreg, rlang, scales, shiny (>= 1.0.4), shinyjs (>= 1.1), shinyjqui, stringr, survival, survminer, tidyr, table1 (>= 1.4.2), zoo, shinyFiles, RPostgres

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**geom_km**

*Add a Kaplan-Meier survival curve*

**Description**

Add a Kaplan-Meier survival curve

**Usage**

```r
geom_km(
  mapping = NULL,
  data = NULL,
  stat = "km",
  position = "identity",
  show.legend = NA,
  inherit.aes = TRUE,
  na.rm = TRUE,
  ...
)
```

**Arguments**

- **mapping** Set of aesthetic mappings created by `aes()`. If specified and `inherit.aes = TRUE` (the default), it is combined with the default mapping at the top level of the plot. You must supply `mapping` if there is no plot mapping.

- **data** The data to be displayed in this layer. There are three options:
  - If `NULL`, the default, the data is inherited from the plot data as specified in the call to `ggplot()`.
  - A `data.frame`, or other object, will override the plot data. All objects will be fortified to produce a data frame. See `fortify()` for which variables will be created.
  - A function will be called with a single argument, the plot data. The return value must be a `data.frame`, and will be used as the layer data. A function can be created from a formula (e.g. `~ head(.x, 10)`).
geom_km

stat
The statistical transformation to use on the data for this layer, either as a ggproto Geom subclass or as a string naming the stat stripped of the stat_ prefix (e.g. "count" rather than "stat_count")

position
Position adjustment, either as a string naming the adjustment (e.g. "jitter" to use position_jitter), or the result of a call to a position adjustment function. Use the latter if you need to change the settings of the adjustment.

show.legend
logical. Should this layer be included in the legends? NA, the default, includes if any aesthetics are mapped. FALSE never includes, and TRUE always includes. It can also be a named logical vector to finely select the aesthetics to display.

inherit.aes
If FALSE, overrides the default aesthetics, rather than combining with them. This is most useful for helper functions that define both data and aesthetics and shouldn’t inherit behaviour from the default plot specification, e.g. borders().

na.rm
If FALSE, the default, missing values are removed with a warning. If TRUE, missing values are silently removed.

...
Other arguments passed on to layer(). These are often aesthetics, used to set an aesthetic to a fixed value, like colour = "red" or size = 3. They may also be parameters to the paired geom/stat.

Aesthetics

geom_km understands the following aesthetics (required aesthetics are in bold):

• x The survival/censoring times. This is automatically mapped by stat_km

• y The survival probability estimates. This is automatically mapped by stat_km smallest level in sort order is assumed to be 0, with a warning

• alpha
• color
• linetype
• size

See Also

The default stat for this geom is stat_km see that documentation for more options to control the underlying statistical transformation.

Examples

library(ggplot2)
sex <- rbinom(250, 1, .5)
df <- data.frame(time = exp(rnorm(250, mean = sex)), status = rbinom(250, 1, .75), sex = sex)
ggplot(df, aes(time = time, status = status, color = factor(sex))) + geom_km()
geom_kmband

Add confidence bands to a Kaplan-Meier survival curve

Description

Add confidence bands to a Kaplan-Meier survival curve

Usage

geom_kmband(
  mapping = NULL,
  data = NULL,
  stat = "kmband",
  position = "identity",
  show.legend = NA,
  inherit.aes = TRUE,
  na.rm = TRUE,
  ...
)

Arguments

mapping Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (the default), it is combined with the default mapping at the top level of the plot. You must supply mapping if there is no plot mapping.

data The data to be displayed in this layer. There are three options:
If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().
A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.
A function will be called with a single argument, the plot data. The return value must be a data.frame, and will be used as the layer data. A function can be created from a formula (e.g. ~ head(.x, 10)).

stat The statistical transformation to use on the data for this layer, either as a ggprotoGeom subclass or as a string naming the stat stripped of the stat_ prefix (e.g. "count" rather than "stat_count")

position Position adjustment, either as a string naming the adjustment (e.g. "jitter" to use position_jitter), or the result of a call to a position adjustment function. Use the latter if you need to change the settings of the adjustment.

show.legend logical. Should this layer be included in the legends? NA, the default, includes if any aesthetics are mapped. FALSE never includes, and TRUE always includes. It can also be a named logical vector to finely select the aesthetics to display.

inherit.aes If FALSE, overrides the default aesthetics, rather than combining with them. This is most useful for helper functions that define both data and aesthetics and shouldn’t inherit behaviour from the default plot specification, e.g. borders().
geom_kmticks

If FALSE, the default, missing values are removed with a warning. If TRUE, missing values are silently removed.

Other arguments passed on to layer(). These are often aesthetics, used to set an aesthetic to a fixed value, like colour = "red" or size = 3. They may also be parameters to the paired geom/stat.

Aesthetics

gem_kmband understands the following aesthetics (required aesthetics are in bold):

- x The survival/censoring times. This is automatically mapped by stat_kmband
- y The survival probability estimates. This is automatically mapped by stat_kmband smallest level in sort order is assumed to be 0, with a warning
- alpha
- color
- linetype
- size

See Also

The default stat for this geom is stat_kmband see that documentation for more options to control the underlying statistical transformation.

Examples

library(ggplot2)
sex <- rbinom(250, 1, .5)
df <- data.frame(time = exp(rnorm(250, mean = sex)), status = rbinom(250, 1, .75), sex = sex)
ggplot(df, aes(time = time, status = status, color = factor(sex), fill =factor(sex))) +
  geom_km() + geom_kmband()

Description

Add tick marks to a Kaplan-Meier survival curve

Usage

gem_kmticks(
mapping = NULL,
data = NULL,
stat = "kmticks",
position = "identity",
show.legend = NA,
```
inherit.aes = TRUE,
na.rm = TRUE,
...)
```

**Arguments**

- **mapping**
  Set of aesthetic mappings created by `aes()`. If specified and `inherit.aes = TRUE` (the default), it is combined with the default mapping at the top level of the plot. You must supply `mapping` if there is no plot mapping.

- **data**
  The data to be displayed in this layer. There are three options:
  - If `NULL`, the default, the data is inherited from the plot data as specified in the call to `ggplot()`.
  - A `data.frame`, or other object, will override the plot data. All objects will be fortified to produce a data frame. See `fortify()` for which variables will be created.
  - A function will be called with a single argument, the plot data. The return value must be a `data.frame`, and will be used as the layer data. A function can be created from a formula (e.g. `~ head(.x, 10)`).

- **stat**
  The statistical transformation to use on the data for this layer, either as a `ggproto` Geom subclass or as a string naming the stat stripped of the `stat_` prefix (e.g. "count" rather than "stat_count")

- **position**
  Position adjustment, either as a string naming the adjustment (e.g. "jitter" to use `position_jitter`), or the result of a call to a position adjustment function. Use the latter if you need to change the settings of the adjustment.

- **show.legend**
  Logical. Should this layer be included in the legends? `NA`, the default, includes if any aesthetics are mapped. `FALSE` never includes, and `TRUE` always includes. It can also be a named logical vector to finely select the aesthetics to display.

- **inherit.aes**
  If `FALSE`, overrides the default aesthetics, rather than combining with them. This is most useful for helper functions that define both data and aesthetics and shouldn’t inherit behaviour from the default plot specification, e.g. `borders()`.

- **na.rm**
  If `FALSE`, the default, missing values are removed with a warning. If `TRUE`, missing values are silently removed.

- **...**
  Other arguments passed on to `layer()`. These are often aesthetics, used to set an aesthetic to a fixed value, like `colour = "red"` or `size = 3`. They may also be parameters to the paired geom/stat.

**Aesthetics**

`geom_kmticks` understands the following aesthetics (required aesthetics are in bold):

- **x** The survival/censoring times. This is automatically mapped by `stat_km`
- **y** The survival probability estimates. This is automatically mapped by `stat_km` smallest level in sort order is assumed to be 0, with a warning
  - **alpha**
  - **color**
Run the ggquickeda application

Description

Run the ggquickeda application.

Usage

run_ggquickeda(data = NULL, ...)

Arguments

data The initial data.frame to load into the application.

... Additional arguments for bookmarking

Examples

if (interactive()) {
  run_ggquickeda()
}

See Also

The default stat for this geom is `stat_kmticks` see that documentation for more options to control the underlying statistical transformation.

Examples

library(ggplot2)
sex <- rbinom(250, 1, .5)
df <- data.frame(time = exp(rnorm(250, mean = sex)), status = rbinom(250, 1, .75), sex = sex)
ggplot(df, aes(time = time, status = status, color = factor(sex), group = factor(sex))) +
ggplot(df, aes(time = time, status = status, color = factor(sex), group = factor(sex))) +
geom_km() + geom_kmticks(col="black")
Sample Data

*Simulated Pharmacokinetic Concentration Data*

**Description**

A dataset containing concentration-time data with the given dose and some subject characteristics to help in the app exploration.

**Usage**

`sample_data`

**Format**

A data frame with 600 rows and 10 variables

- **ID** Subject Identifier, an integer from 1 to 150
- **Time** Time of dose given or drug sample measured, in hours
- **Amt** dose given at the corresponding Time, in milligrams
- **Conc** drug concentrations in the plasma sample, in mg/L
- **Age** age of the subject, in years
- **Weight** weight of the subject, in kg
- **Gender** Sex of the subject, a factor with Female and Male levels
- **Race** Race of the subject, a factor with Asian, Black, Caucasian, Hispanic and Other levels
- **Dose** dose group of the subject, in milligrams
- **AGECAT** age category of the subject, a variable cutting Age into two values 0/1

**Source**

"sd_oral_richpk" from 'PKPDmisc' R package with an additional AGECAT variable

---

**stat_km**

*Adds a Kaplan Meier Estimate of Survival*

**Description**

Adds a Kaplan Meier Estimate of Survival
stat_km

Usage

stat_km(
  mapping = NULL,
  data = NULL,
  geom = "km",
  position = "identity",
  show.legend = NA,
  inherit.aes = TRUE,
  trans = scales::identity_trans(),
  firstx = 0,
  firsty = 1,
  type = "kaplan-meier",
  start.time = 0,
  ...
)

Arguments

mapping Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (the default), it is combined with the default mapping at the top level of the plot. You must supply mapping if there is no plot mapping.

data The data to be displayed in this layer. There are three options:
If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().
A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.
A function will be called with a single argument, the plot data. The return value must be a data.frame, and will be used as the layer data. A function can be created from a formula (e.g. ~ head(.x, 10)).

geom The geometric object to use to display the data, either as a ggproto Geom subclass or as a string naming the geom stripped of the geom_ prefix (e.g. "point" rather than "geom_point")

position Position adjustment, either as a string naming the adjustment (e.g. "jitter" to use position_jitter), or the result of a call to a position adjustment function. Use the latter if you need to change the settings of the adjustment.

show.legend logical. Should this layer be included in the legends? NA, the default, includes if any aesthetics are mapped. FALSE never includes, and TRUE always includes. It can also be a named logical vector to finely select the aesthetics to display.

inherit.aes If FALSE, overrides the default aesthetics, rather than combining with them. This is most useful for helper functions that define both data and aesthetics and shouldn’t inherit behaviour from the default plot specification, e.g. borders().

trans Transformation to apply to the survival probabilities. Defaults to "identity". Other options include "event", "cumhaz", "cloglog", or define your own using trans_new.
firstx, firsty  the starting point for the survival curves. By default, the plot program obeys tradition by having the plot start at (0,1).

type  an older argument that combined stype and ctype, now deprecated. Legal values were "kaplan-meier" which is equivalent to stype=1, ctype=1, "fleming-harrington" which is equivalent to stype=2, ctype=1, and "fh2" which is equivalent to stype=2, ctype=2.

start.time  numeric value specifying a time to start calculating survival information. The resulting curve is the survival conditional on surviving to start.time.

...  Other arguments passed to survfit.formula

Details

This stat is for computing the confidence intervals for the Kaplan-Meier survival estimate for right-censored data. It requires the aesthetic mapping x for the observation times and status which indicates the event status, 0=alive, 1=dead or 1/2 (2=death). Logical status is not supported.

Value

a data.frame with additional columns:

x  x in data
y  Kaplan-Meier Survival Estimate at x

Aesthetics

stat_km understands the following aesthetics (required aesthetics are in bold):

• time The survival times
• status The censoring indicator, see Surv for more information.
• alpha
• color
• linetype
• size

Examples

library(ggplot2)
sex <- rbinom(250, 1, .5)
df <- data.frame(time = exp(rnorm(250, mean = sex)), status = rbinom(250, 1, .75), sex = sex)
ggplot(df, aes(time = time, status = status, color = factor(sex))) +
stat_km()

## Examples illustrating the options passed to survfit.formula

p1 <- ggplot(df, aes(time = time, status = status))
p1 + stat_km()
p1 + stat_km(trans = "cumhaz")
# for cloglog plots also log transform the time axis
stat_kmband

p1 + stat_km(trans = "cloglog") + scale_x_log10()
p1 + stat_km(type = "fleming-harrington")
p1 + stat_km(start.time = 5)

stat_kmband

Adds confidence bands to a Kaplan Meier Estimate of Survival

Description

Adds confidence bands to a Kaplan Meier Estimate of Survival

Usage

stat_kmband(
    mapping = NULL,
    data = NULL,
    geom = "kmband",
    position = "identity",
    show.legend = NA,
    inherit.aes = TRUE,
    trans = "identity",
    firstx = 0,
    firsty = 1,
    type = "kaplan-meier",
    error = "greenwood",
    conf.type = "log",
    conf.lower = "usual",
    start.time = 0,
    conf.int = 0.95,
    ...
)

Arguments

mapping  Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (the default), it is combined with the default mapping at the top level of the plot. You must supply mapping if there is no plot mapping.
data  The data to be displayed in this layer. There are three options:
    If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().
    A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.
    A function will be called with a single argument, the plot data. The return value must be a data.frame, and will be used as the layer data. A function can be created from a formula (e.g. ~ head(.x, 10)).
stat_kmband

geom
The geometric object to use to display the data, either as a ggproto Geom sub-class or as a string naming the geom stripped of the geom_ prefix (e.g. "point" rather than "geom_point")

position
Position adjustment, either as a string naming the adjustment (e.g. "jitter" to use position_jitter), or the result of a call to a position adjustment function. Use the latter if you need to change the settings of the adjustment.

show.legend
logical. Should this layer be included in the legends? NA, the default, includes if any aesthetics are mapped. FALSE never includes, and TRUE always includes. It can also be a named logical vector to finely select the aesthetics to display.

inherit.aes
If FALSE, overrides the default aesthetics, rather than combining with them. This is most useful for helper functions that define both data and aesthetics and shouldn’t inherit behaviour from the default plot specification, e.g. borders().

trans
Transformation to apply to the survival probabilities. Defaults to "identity". Other options include "event", "cumhaz", "cloglog", or define your own using trans_new.

firstx, firsty
the starting point for the survival curves. By default, the plot program obeys tradition by having the plot start at (0,1).

type
an older argument that combined stype and ctype, now deprecated. Legal values were "kaplan-meier" which is equivalent to stype=1, ctype=1, "fleming-harrington" which is equivalent to stype=2, ctype=1, and "fh2" which is equivalent to stype=2, ctype=2.

error
either the string "greenwood" for the Greenwood formula or "tsiatis" for the Tsiatis formula, (only the first character is necessary). The default is "greenwood".

conf.type
One of "none", "plain", "log" (the default), "log-log" or "logit".

conf.lower
a character string to specify modified lower limits to the curve, the upper limit remains unchanged. Possible values are "usual" (unmodified), "peto", and "modified". The modified lower limit is based on an "effective n" argument. The confidence bands will agree with the usual calculation at each death time, but unlike the usual bands the confidence interval becomes wider at each censored observation. The extra width is obtained by multiplying the usual variance by a factor n/n, where n is the number currently at risk and m is the number at risk at the last death time. (The bands thus agree with the un-modified bands at each death time.) This is especially useful for survival curves with a long flat tail. The Peto lower limit is based on the same "effective n" argument as the modified limit, but also replaces the usual Greenwood variance term with a simple approximation. It is known to be conservative.

start.time
numeric value specifying a time to start calculating survival information. The resulting curve is the survival conditional on surviving to start.time.

conf.int
the level for a two-sided confidence interval on the survival curve(s). Default is 0.95.

... Other arguments passed to survfit.formula

Details
This stat is for computing the confidence intervals for the Kaplan-Meier survival estimate for right-censored data. It requires the aesthetic mapping x for the observation times and status which indicates the event status, 0=alive, 1=dead or 1/2 (2=death). Logical status is not supported.
stat_kmticks

Value

a data.frame with additional columns:

- x  x in data
- ymin Lower confidence limit of KM curve
- ymax Upper confidence limit of KM curve

Aesthetics

stat_kmband understands the following aesthetics (required aesthetics are in bold):

- time The survival times
- status The censoring indicator, see Surv for more information.
- alpha
- color
- linetype
- size

Examples

library(ggplot2)
sex <- rbinom(250, 1, .5)
df <- data.frame(time = exp(rnorm(250, mean = sex)), status = rbinom(250, 1, .75), sex = sex)
ggplot(df, aes(time = time, status = status, color = factor(sex))) +
  stat_km()

## Examples illustrating the options passed to survfit.formula

pl <- ggplot(df, aes(time = time, status = status))
pl + stat_km() + stat_kmband(conf.int = .99)
pl + stat_kmband(error = "greenwood", fill="red", alpha=0.2) +
  stat_kmband(error = "tsiatis", fill="blue", alpha=0.2) +
  stat_km()
pl + stat_km() + stat_kmband(conf.type = "log-log") +
  stat_kmband(conf.type = "log")

stat_kmticks  Adds tick marks to a Kaplan Meier Estimate of Survival

Description

Adds tick marks to a Kaplan Meier Estimate of Survival
stat_kmticks

Usage

stat_kmticks(
  mapping = NULL,
  data = NULL,
  geom = "kmticks",
  position = "identity",
  show.legend = NA,
  inherit.aes = TRUE,
  trans,
  ...
)

Arguments

mapping

Set of aesthetic mappings created by aes(). If specified and inherit.aes = TRUE (the default), it is combined with the default mapping at the top level of the plot. You must supply mapping if there is no plot mapping.

data

The data to be displayed in this layer. There are three options:
If NULL, the default, the data is inherited from the plot data as specified in the call to ggplot().
A data.frame, or other object, will override the plot data. All objects will be fortified to produce a data frame. See fortify() for which variables will be created.
A function will be called with a single argument, the plot data. The return value must be a data.frame, and will be used as the layer data. A function can be created from a formula (e.g. ~ head(.x, 10)).

geom

The geometric object to use to display the data, either as a ggproto Geom subclass or as a string naming the geom stripped of the geom_ prefix (e.g. "point" rather than "geom_point")

position

Position adjustment, either as a string naming the adjustment (e.g. "jitter" to use position_jitter), or the result of a call to a position adjustment function. Use the latter if you need to change the settings of the adjustment.

show.legend

logical. Should this layer be included in the legends? NA, the default, includes if any aesthetics are mapped. FALSE never includes, and TRUE always includes. It can also be a named logical vector to finely select the aesthetics to display.

inherit.aes

If FALSE, overrides the default aesthetics, rather than combining with them. This is most useful for helper functions that define both data and aesthetics and shouldn’t inherit behaviour from the default plot specification, e.g. borders().

trans

Transformation to apply to the survival probabilities. Defaults to "identity". Other options include "event", "cumhaz", "cloglog", or define your own using trans_new.

... Other arguments passed to survfit.formula

Details

This stat is for computing the tick marks for a Kaplan-Meier survival estimate for right-censored data. The tick marks will appear at each censoring time which is also not a death time, which is the
default for `plot.survfit`. It requires the aesthetic mapping `x` for the observation times and `status` which indicates the event status, normally 0=alive, 1=dead. Other choices are TRUE/FALSE (TRUE = death) or 1/2 (2=death).

**Value**

a data.frame with additional columns:

- **x** x in data
- **y** Kaplan-Meier Survival Estimate at x

**Aesthetics**

`stat_kmticks` understands the following aesthetics (required aesthetics are in bold):

- **time** The survival times
- **status** The censoring indicator, see `Surv` for more information.
- **alpha**
- **color**
- **linetype**
- **size**

**See Also**

`stat_km`; `stat_kmband`

**Examples**

```r
library(ggplot2)
sex <- rbinom(250, 1, .5)
df <- data.frame(time = exp(rnorm(250, mean = sex)), status = rbinom(250, 1, .75), sex = sex)
ggplot(df, aes(time = time, status = status, color = factor(sex))) +
stat_km() + stat_kmticks()
```
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