Package 'greport'

September 3, 2023

Version 0.7-4

Date 2023-09-02

Title Graphical Reporting for Clinical Trials

Author Frank E Harrell Jr <fh@fharrell.com>

Maintainer Frank E Harrell Jr <fh@fharrell.com>

Depends Hmisc (>= 4.0-0),

Imports rms (>= 5.0-0), lattice, latticeExtra, ggplot2, Formula,
   survival, methods, data.table

Description Contains many functions useful for
   monitoring and reporting the results of clinical trials and other
   experiments in which treatments are compared. LaTeX is
   used to typeset the resulting reports, recommended to be in the
   context of 'knitr'. The 'Hmisc', 'ggplot2', and 'lattice' packages are used
   by 'greport' for high-level graphics.

License GPL (>= 2)

URL <http://hbiostat.org/R/greport/>,
   <https://github.com/harrelfe/greport/>

RoxygenNote 7.2.3

NeedsCompilation no

Repository CRAN

Date/Publication 2023-09-02 22:20:02 UTC

R topics documented:

accrualReport	*Accrual Report*

Description

Generate graphics and LaTeX to analyze subject accrual

Usage

```
accrualReport(
  formula,
  data = NULL,
  subset = NULL,
  na.action = na.retain,
  dateRange = NULL,
  zoom = NULL,
  targetN = NULL,
  targetDate = NULL,
  closeDate = NULL,
  enrollmax = NULL,
  studynos = TRUE,
  minrand = 10,
  panel = "accrual",
  h = 2.5,
  w = 3.75,
  hb = 5,
  wb = 5,
  hdot = 3.5
)
```

Arguments

formula	formula object, with time variables on the left (separated by +) and grouping variables on the right. Enrollment date, randomization date, region, country, and site when present must have the variables in parenthesis preceeded by the key words `enrollment`, `randomize`, `region`, `country`, `site`.
data	data frame.
subset	a subsetting epression for the entire analysis.
na.action	a NA handling function for data frames, default is `na.retain`.
dateRange	Date or character 2-vector formatted as `yyyy-mm-dd`. Provides the range on the x-axis (before any zooming).
zoom	Date or character 2-vector for an option zoomed-in look at accrual.
targetN	integer vector with target sample sizes over time, same length as `targetDate`
targetDate	Date or character vector corresponding to `targetN`
closeDate	Date or characterstring. Used for randomizations per month and per site-month - contains the dataset closing date to be able to compute the number of dates that a group (country, site, etc.) has been online since randomizating its first subject.
enrollmax	numeric specifying the upper y-axis limit for cumulative enrollment when not zoomed
studynos	logical. Set to `FALSE` to suppress summary study numbers table.
minrand	integer. Minimum number of randomized subjects a country must have before a box plot of time to randomization is included.
panel	character string. Name of panel, which goes into file base names and figure labels for cross-referencing.
h	numeric. Height of ordinary plots, in inches.
w	numeric. Width of ordinary plots.
hb	numeric. Height of extended box plots.
wb	numeric. Weight of extended box plots.
hdot	numeric. Height of dot charts in inches.

Details

Typically the left-hand-side variables of the formula, in order, are date of enrollment and date of randomization, with subjects enrolled but not randomized having missing date of randomization. Given such date variables, this function generates cumulative frequencies optionally with target enrollment/randomization numbers and with time-zooming. Makes a variety of dot charts by right-hand-side variables: number of subjects, number of sites, number of subjects per site, fraction of enrolled subjects randomized, number per month, number per site-month.

Examples

```
## Not run:
# See test.Rnw in tests directory


## End(Not run)
```

---

appsection   *Issue LaTeX section and/or subsection in appendix*

Description

This is useful for copying section and subsection titles in the main body of the report to the appendix, to help in navigating supporting tables. LaTeX backslash characters need to be doubled.

Usage

```
appsection(section = NULL, subsection = NULL, main = FALSE, panel = "")
```

Arguments

section	a character string that will cause a section command to be added to app.tex
subsection	a character string that will cause a subsection command to be added to app.tex
main	set to TRUE to also write a section or subsection command to the console to be used in building the main report body (graphical section), in which case you should also specify panel if option texdir is not an empty string
panel	panel string; must be given if main=TRUE and option texdir is not ""

---

dNeedle   *Draw Needles*

Description

Create a LaTeX picture to draw needles for current sample sizes. Uses colors set by call to setgreportOptions.

Usage

```
dNeedle(sf, name, file = "", append = TRUE)
```

Arguments

sf	output of sampleFrac
name	character string name of LaTeX variable to create
file	output file name (character string)
append	set to FALSE to start a new file

dReport   *Descriptive Statistics Report*

Description

Generate graphics and LaTeX with descriptive statistics

Usage

```
dReport(
  formula,
  groups = NULL,
  what = c("box", "proportions", "xy", "byx"),
  byx.type = c("violin", "quantiles"),
  violinbox = TRUE,
 violinbox.opts = list(col = adjustcolor("blue", alpha.f = 0.25), border = FALSE),
  summaryPsort = FALSE,
  exclude1 = TRUE,
  stable = TRUE,
  fun = NULL,
  data = NULL,
  subset = NULL,
  na.action = na.retain,
  panel = "desc",
  subpanel = NULL,
  head = NULL,
  tail = NULL,
  continuous = 10,
  h = 5.5,
  w = 5.5,
  outerlabels = TRUE,
  append = FALSE,
  sopts = NULL,
  popts = NULL,
  lattice = FALSE
)
```

Arguments

formula   a formula accepted by the bpplotM or summaryP functions. formula must have
               an id(subjectidvariable) term if there are repeated measures, in order to get
               correct subject counts as nobs.

groups   a superpositioning variable, usually treatment, for categorical charts. For contin-
               uous analysis variables, groups becomes the y-axis stratification variable. This
               is a single character string.

what	"box" (the default) or "xy" for continuous analysis variables, or "proportions" (or shorter) for categorical ones. Instead, specifying what="byx" results in an array of quantile intervals for continuous y, Wilson confidence intervals for proportions when y is binary, or means and parametric confidence limits when y is not continuous but is not binary. If what is omitted or what="byx", actions will be inferred from the most continuous variable listed in formula. When fun is given, different behavior results (see below).
byx.type	set to "quantiles" to show vertical quantile intervals of y at each x for when what="byx" and the y variable is continuous numeric, or set byx.type="violin" (the default) to plot half-violin plots at each x.
violinbox	set to TRUE to add violin plots to box plots
violinbox.opts	a list to pass to panel.violin
summaryPsort	set to TRUE to sort categories in descending order of frequencies
exclude1	logical used for latex methods when summaryM or summaryP are called by dReport, or for plot methods for summaryP. The default is TRUE to cause the most frequent level of any two-level categorical variable to not be used as a separate category in the graphic or table. See [summaryM]().
stable	set to FALSE to suppress creation of backup supplemental tables for graphics
fun	a function that takes individual response variables (which may be matrices, as in [Surv]() objects) and creates one or more summary statistics that will be computed while the resulting data frame is being collapsed to one row per condition. Dot charts are drawn when fun is given.
data	data frame
subset	a subsetting epression for the entire analysis
na.action	a NA handling function for data frames, default is na.retain
panel	character string. Name of panel, which goes into file base names and figure labels for cross-referencing
subpanel	If calling dReport more than once for the same type of chart (by different values of what), specify subpanel to distinguish the multiple calls. In that case, -subpanel will be appended to panel when creating figure labels and cross-references.
head	character string. Specifies initial text in the figure caption, otherwise a default is used
tail	optional character string. Specifies final text in the figure caption, e.g., what might have been put in a footnote in an ordinary text page. This appears just before any needles.
continuous	the minimum number of numeric values a variable must have in order to be considered continuous. Also passed to summaryM.
h	numeric. Height of plot, in inches
w	numeric. Width of plot
outerlabels	logical that if TRUE, pass lattice graphics through the latticeExtra package's useOuterStripsfunction if there are two conditioning (paneling) variables, to put panel labels in outer margins.

append	logical. Set to FALSE to start a new panel
sopts	list specifying extra arguments to pass to bpplotM, summaryP, or summaryS
popts	list specifying extra arguments to pass to a plot method. One example is text.at to specify some number beyond xlim[2] to leave extra space for numerators and denominators when using summaryP for categorical analysis variables. Another common use is for example popts=list(layout=c(columns,rows)) to be used in rendering lattice plots. key and panel are also frequently used.
lattice	set to TRUE to use lattice instead of ggplot2 for proportions. When this option is in effect, numerators and denominators are shown.

Details

dReport generates multi-panel charts, separately for categorical analysis variables and continuous ones. The Hmisc summaryP function and its plot method are used for categorical variables, and bpplotM is used to make extended box plots for continuous ones unless what='byx'. Stratification is by treatment or other variables. The user must have defined a LaTeX macro \eboxpopup (which may be defined to do nothing) with one argument. This macro is called with argument extended box plot whenever that phrase appears in the legend, so that a PDF popup may be generated to show the prototype. See the example in report.Rnw in the tests directory. Similarly a popup macro \qintpopup must be defined, which generates a tooltip for the phrase quantile intervals.

Examples

```
# See test.Rnw in tests directory
```

---

eReport	*Event Report*

Description

Generates graphics for binary event proportions

Usage

```
eReport(
  formula,
  data = NULL,
  subset = NULL,
  na.action = na.retain,
  minincidence = 0,
  conf.int = 0.95,
  etype = "adverse events",
  panel = "events",
  subpanel = NULL,
  head = NULL,
  tail = NULL,
  h = 6,
```

```
   w = 7,
   append = FALSE,
   popts = NULL
)
```

Arguments

`formula`	a formula with one or two left hand variables (the first representing major categorization and the second minor), and 1-2 right hand variables. One of these may be enclosed in `id()` to indicate the presence of a unique subject ID, and the other is treatment.
`data`	input data frame
`subset`	subsetting criteria
`na.action`	function for handling NAs when creating analysis frame
`minincidence`	a number between 0 and 1 specifying the minimum incidence in any stratum that must hold before an event is included in the summary
`conf.int`	confidence level for difference in proportions
`etype`	a character string describing the nature of the events, for example `"adverse events"`, `"serious adverse events"`. Used in figure captions.
`panel`	panel string
`subpanel`	a subpanel designation to add to `panel`
`head`	character string. Specifies initial text in the figure caption, otherwise a default is used.
`tail`	a character string to add to end of automatic caption
`h`	height of graph
`w`	width of graph
`append`	set to `TRUE` if adding to an existing sub-report
`popts`	a list of options to pass to graphing functions

Details

Generates dot charts showing proportions on left and risk difference with confidence intervals on the right, if there is only one level of event categorization. Input data must contain one record per event, with this record containing the event name. If there is more than one event of a given type per subject, unique subject ID must be provided. Denominators come from `greport` options and it is assumed that only randomized subjects have records. Some of the graphics functions are modifications of those found in the HH package. The data are expected to have one record per event, and non-events are inferred from `setgreportOption('denom')`. It is also assumed that only randomized subjects are included in the dataset.

Author(s)

Frank Harrell

Examples

```
# See test.Rnw in tests directory
```

---

exReport   *Exclusion Report*

Description

Generates graphics for sequential exclusion criteria

Usage

```
exReport(
  formula,
  data = NULL,
  subset = NULL,
  na.action = na.retain,
  ignoreExcl = NULL,
  ignoreRand = NULL,
  plotExRemain = TRUE,
  autoother = FALSE,
  sort = TRUE,
  whenapp = NULL,
  erdata = NULL,
  panel = "excl",
  subpanel = NULL,
  head = NULL,
  tail = NULL,
  apptail = NULL,
  h = 5.5,
  w = 6.5,
  hc = 4.5,
  wc = 5,
  adjustwidth = "-0.75in",
  append = FALSE,
  popts = NULL,
  app = TRUE
)
```

Arguments

formula   a formula with only a right-hand side, possibly containing a term of the form
                 pending(x) to inform the function of which subjects have incomplete random-
                 ization ("randomization pending"). The pending variable is ignored if a subject
                 has an exclusion marked. A randomized variable is an optional logical vec-
                 tor specifying which subjects are considered to have been randomized. The
                 presence of this variable causes consistency checking against exclusions. One
                 or more cond variables provide binary/logical vectors used to define subsets of
                 subjects for which denominators are used to compute additional fractions of ex-
                 clusions that are reported in a detailed table. The arguments of the cond function

	are the name of the original variable (assumed to be provided as a regular variable in `formula`, a single character string giving the label for the condition, and the vector of essentially binary values that specify the condition.
data	input data frame
subset	subsetting criteria
na.action	function for handling NAs when creating analysis frame
ignoreExcl	a formula with only a right-hand side, specifying the names of exclusion variable names that are to be ignored when counting exclusions (screen failures)
ignoreRand	a formula with only a right-hand side, specifying the names of exclusion variable names that are to be ignored when counting randomized subjects marked as exclusions
plotExRemain	set to `FALSE` to suppress plotting a 2-panel dot plot showing the number of subjects excluded and the fraction of enrolled subjects remaining
autoother	set to `TRUE` to add another exclusion `Unspecified` that is set to `TRUE` for non-pending subjects that have no other exclusions
sort	set to `FALSE` to not sort variables by descending exclusion frequency
whenapp	a named character vector (with names equal to names of variables in `formula`). For each variable that is only assessed (i.e., is not NA) under certain conditions, add an element to this vector naming the condition
erdata	a data frame that is subsetted on the combination of id variables when `randomized` is present, to print auxiliary information about randomized subjects who have exclusion criteria
panel	panel string
subpanel	If calling `exReport` more than once (e.g., for different values of `sort`), specify `subpanel` to distinguish the multiple calls. In that case, `-subpanel` will be appended to `panel` when creating figure labels and cross-references.
head	character string. Specifies initial text in the figure caption, otherwise a default is used.
tail	a character string to add to end of automatic caption
apptail	a character string to add to end of automatic caption for appendix table with listing of subject IDs
h	height of 2-panel graph
w	width of 2-panel graph
hc	height of cumulative exclusion 1-panel graph
wc	width of this 1-panel graph
adjustwidth	used to allow wide detailed exclusion table to go into left margin in order to be centered on the physical page. The default is `'-0.75in'`, which works well when using article document class with default page width. To use the geometry package in LaTeX with margin=.45in specify `adjustwidth='+.90in'`.
append	set to `TRUE` if adding to an existing sub-report
popts	a list of options to pass to graphing functions
app	set to `FALSE` to prevent writing appendix information

Details

With input being a series of essentially binary variables with positive indicating that a subject is excluded for a specific reason, orders the reasons so that the first excludes the highest number of subjects, the second excludes the highest number of remaining subjects, and so on. If a randomization status variable is present, actually randomized (properly or not) subjects are excluded from counts of exclusions. First draws a single vertical axis graph showing cumulative exclusions, then creates a 2-panel dot chart with the first panel showing that information, along with the marginal frequencies of exclusions and the second showing the number of subjects remaining in the study after the sequential exclusions. A pop-up table is created showing those quantities plus fractions. There is an option to not sort by descending exclusion frequencies but instead to use the original variable order. Assumes that any factor variable exclusions that have only one level and that level indicates a positive finding, that variable has a denominator equal to the overall number of subjects.

Author(s)

Frank Harrell

Examples

```
# See test.Rnw in tests directory
```

---

 getgreportOption   *Get greport Options*

Description

Get greport options, assigning default values of unspecified optios.

Usage

```
getgreportOption(opts = NULL)
```

Arguments

opts   character vector containing list of option names to retrieve. If only one element, the result is a scalar, otherwise a list. If `opts` is not specified, a list with all current option settings is returned.

---

greport   *Graphical Reporting for Clinical Trials*

Description

Graphical clinical trial reporting based on Rmarkdown, LaTeX, and pdf

Usage

```
.noGenerics
```

Format

An object of class `logical` of length 1.

Author(s)

Frank E Harrell Jr <fh@fharrell.com>

---

latticeInit   *Setup lattice plots using greport options*

Description

Initializes colors and other graphical attributes based on what is stored in system option `greport`.

Usage

```
latticeInit()
```

---

maskDframe   *Mask Variables in a Data Frame*

Description

Given a list of applicable variable names in a formula, runs `maskVal` on any variables in a data frame x whose name is found in `formula`.

Usage

```
maskDframe(x, formula, ...)
```

Arguments

x	an input data frame or data table
formula	a formula specifying the variables to perturb
...	parameters to pass to `maskVal`

---

maskVal   *Mask Values of a Vector*

Description

Modifies the value of a vector so as to mask the information by generating random data subject to constraints and keeping the length, type, label, and units attributes of the original variable. For a binary numeric or logical variable a random vector with prevalence (by default) of 0.5 replaces the original. For a factor variable, a random multinomial sample is drawn, with equal expected frequencies of all levels. For a numeric variable, the range is preserved but the distribution is uniform over that range, and generated values are rounded by an amount equal to the minimum spacing between distinct values. Character variables are just randomly reordered. In the special case where the input vector contains only one unique non-NA value, the variable is assumed to be the type of variable where NA represents FALSE or "no", and the variable is replaced by a logical vector with the specified prevalence.

Usage

```
maskVal(x, prev = 0.5, NAs = TRUE)
```

Arguments

x	an input vector
prev	a numeric scalar specifying the prevalence for binary variables
NAs	if the variable contains NAs, keep the same expected proportion of NAs but distribute them randomly. Otherwise, the new vector will have no missing values.

Merge   *Merge Multiple Data Frames or Data Tables*

Description

Merges an arbitrarily large series of data frames or data tables containing common id variables (keys for data tables). Information about number of observations and number of unique ids in individual and final merged datasets is printed. The first data frame has special meaning in that all of its observations are kept whether they match ids in other data frames or not. For all other data frames, by default non-matching observations are dropped. The first data frame is also the one against which counts of unique ids are compared. Sometimes merge drops variable attributes such as labels and units. These are restored by Merge. If all objects are of class data.table, faster merging will be done using the data.table package's join operation. This assumes that all objects have identical key variables and those of the variables on which to merge.

Usage

```
Merge(..., id, all = TRUE, verbose = TRUE)
```

Arguments

`...`	two or more dataframes or data tables
`id`	a formula containing all the identification variables such that the combination of these variables uniquely identifies subjects or records of interest. May be omitted for data tables; in that case the key function retrieves the id variables.
`all`	set to FALSE to drop observations not found in second and later data frames (only applies if not using `data.table`)
`verbose`	set to FALSE to not print information about observations

Examples

```
a <- data.frame(sid=1:3, age=c(20,30,40))
b <- data.frame(sid=c(1,2,2), bp=c(120,130,140))
d <- data.frame(sid=c(1,3,4), wt=c(170,180,190))
all <- Merge(a, b, d, id = ~ sid)
# For data.table, first file must be the master file and must
# contain all ids that ever occur.  ids not in the master will
# not be merged from other datasets.
require(data.table)
a <- data.table(a); setkey(a, sid)
# data.table also does not allow duplicates without allow.cartesian=TRUE
b <- data.table(sid=1:2, bp=c(120,130)); setkey(b, sid)
d <- data.table(d); setkey(d, sid)
all <- Merge(a, b, d)
```

---

mfrowSuggest	*Compute mfrow Parameter*

Description

Compute a good `par("mfrow")` given the number of figures to plot.

Usage

```
mfrowSuggest(n, small = FALSE)
```

Arguments

`n`	numeric. Total number of figures to place in layout.
`small`	logical. Set to 'TRUE' if the plot area should be smaller to accomodate many plots.

Value

return numeric vector. oldmfrow <- mfrowSet(8)

---

nriskReport   *Number at Risk Report*

Description

Graph number of subjects at risk

Usage

```
nriskReport(
  formula,
  groups = NULL,
  time0 = "randomization",
  data = NULL,
  subset = NULL,
  na.action = na.retain,
  ylab = "Number Followed",
  panel = "nrisk",
  head = NULL,
  tail = NULL,
  h = 5.5,
  w = 5.5,
  outerlabels = TRUE,
  append = FALSE,
  popts = NULL
)
```

Arguments

formula	a formula with time and the left hand side, and with variables on the right side being possible stratification variables. If no stratification put 1 as the right hand side. Specify unique subject IDs by including a term id() if subjects have more than one observation.
groups	a character string naming a superpositioning variable. Must also be included in formula.
time0	a character string defining the meaning of time zero in follow-up. Default is "randomization".
data	data frame
subset	a subsetting epression for the entire analysis
na.action	a NA handling function for data frames, default is na.retain
ylab	character string if you want to override "Number Followed"
panel	character string. Name of panel, which goes into file base names and figure labels for cross-referencing. The default is 'nrisk'.
head	character string. Specifies initial text in the figure caption, otherwise a default is used

tail	optional character string. Specifies final text in the figure caption, e.g., what might have been put in a footnote in an ordinary text page. This appears just before any needles.
h	numeric. Height of plot, in inches
w	numeric. Width of plot
outerlabels	logical that if TRUE, pass `lattice` graphics through the `latticeExtra` package's `useOuterStrips`function if there are two conditioning (paneling) variables, to put panel labels in outer margins.
append	logical. Set to FALSE to start a new panel
popts	list specifying extra arguments to pass to Ecdf. A common use is for example `popts=list(layout=c(columns,rows))` to be used in rendering `lattice` plots. `key` and `panel` are also frequently used.

Details

`nriskReport` generates multi-panel charts, separately for categorical analysis variables. Each panel depicts the number at risk as a function of follow-up time. The Hmisc `Ecdf` function is used. Stratification is by treatment or other variables. It is assumed that this function is only run on randomized subjects. If an `id` variable is present but `groups` and stratification variables are not, other plots are also produced: a histogram of the number of visits per subject, a histogram of times at which subjects have visits, the average number of contacts as a function of elapsed time, and a histogram showing the distribution of the longest gap between visits over subjects.

Examples

```
# See test.Rnw in tests directory
```

---

putFig	*Put Figure*

Description

Included a generated figure within LaTex document. `tcaption` and `tlongcaption` only apply if `setgreportOption(tablelink="hyperref")`.

Usage

```
putFig(
  panel,
  name,
  caption = NULL,
  longcaption = NULL,
  tcaption = caption,
  tlongcaption = NULL,
  poptable = NULL,
  popfull = FALSE,
```

```
    sidecap = FALSE,
    outtable = FALSE,
    append = TRUE
)
```

Arguments

`panel`	character. Panel name.
`name`	character. Name for figure.
`caption`	character. Short caption for figure.
`longcaption`	character. Long caption for figure.
`tcaption`	character. Short caption for supporting table.
`tlongcaption`	character. Long caption for supporting table.
`poptable`	an optional character string containing LaTeX code that will be used as a pop-up tool tip for the figure (typically a tabular). Set to `NULL` to suppress supplemental tables that back up figures.
`popfull`	set to `TRUE` to make the pop-up be full-page
`sidecap`	set to `TRUE` (only applies if `greportOption(figenv="SCfigure")`) to assume the figure is narrow and to use side captions
`outtable`	set to `TRUE` to only have the caption and hyperlink to graphics in a LaTeX table environment and to leave the tabulars to free-standing LaTeX markup. This is useful when the table is long, to prevent hyperlinking from making the table run outside the visable area. Instead of the hyperlink area being the whole table, it will be the caption. A `clearpage` is issued after the tabular.
`append`	logical. If 'TRUE' output will be appended instead of overwritten.

---

sampleFrac	*Compute Sample Fractions*

Description

Uses denominators stored with `setgreportOption` along with counts specified to `SampleFrac` to compute fractions of subjects in current analysis

Usage

```
sampleFrac(n, nobsY = NULL, table = TRUE)
```

Arguments

n	integer vector, named with "enrolled","randomized" and optionally also including treatment levels.
nobsY	a result of the the nobsY Hmisc function
table	set to TRUE to return as an attribute "table" a character string containing a LaTeX tabular showing the pertinent frequencies created from n and the denom option, and if nobsY is present, adding another table with response variable-specific counts.

---

setgreportOption *Set greport Options*

Description

Set greport Options

Usage

```
setgreportOption(...)
```

Arguments

...   a series of options for which non-default values are desired:

- tx.pch:symbols corresponding to treatments
- tx.col:colors corresponding to treatments
- tx.linecol:colors for lines in line plots
- nontx.col:colors for categories other than treatments
- tx.lty:line types corresponding to treatments
- tx.lwd:line widths corresponding to treatments
- tx.var:character string name of treatment variable
- er.col:2-vector with names "enrolled","randomized" containing colors to use for enrolled and randomized in needle displays
- alpha.f:single numeric specifying alpha adjustment to be applied to all colors. Default is 0.7
- denom:named vector with overall sample sizes
- tablelink:a character string, either "tooltip" or "hyperref" (the default); use the latter to make supporting data tables be hyperlinked to tables in the appendix rather than using a pop-up tooltip
- figenv:LaTeX figure environment to use, default is "figure". Use figenv="SCfigure" if using the LaTeX sidecap package. SCfigure is only used for narrow images, by calling putFig with sidecap=TRUE.
- codefigpos:LaTeX figure environment position; default is "htb!"
- gtype:graphics type, "pdf" or "interactive"

- pdfdir:name of subdirectory in which to write pdf graphics
- texdir:name of subdirectory in which to write LaTeX code
- texwhere:default is "texdir" to use location specified by texdir. Set to "" to write generated non-appendix LaTeX code to the console as expected by knitr
- defs:fully qualified file name to which to write LaTeX macro definitions such as poptables

---

startPlot	*Plot Initialization*

Description

Toggle plotting. Sets options by examining setgreportOption(gtype=).

Usage

```
startPlot(file, h = 7, w = 7, lattice = TRUE, ...)

endPlot()
```

Arguments

file	character. Character string specifying file prefix.
h	numeric. Height of plot in inches, default=7.
w	numeric. Width of plot in inches, default=7.
lattice	logical. Set to FALSE to prevent latticeInit from being called.
...	Arguments to be passed to spar.

---

survReport	*Survival Report*

Description

Generate a Survival Report with Kaplan-Meier Estimates

Usage

```
survReport(
  formula,
  data = NULL,
  subset = NULL,
  na.action = na.retain,
  ylab = NULL,
  what = c("S", "1-S"),
  conf = c("diffbands", "bands", "bars", "none"),
  cause = NULL,
  panel = "surv",
  subpanel = NULL,
  head = NULL,
  tail = NULL,
  h = 3,
  w = 4.5,
  multi = FALSE,
  markevent = TRUE,
  mfrow = NULL,
  y.n.risk = 0,
  mylim = NULL,
  bot = 2,
  aehaz = TRUE,
  times = NULL,
  append = FALSE,
  opts = NULL,
  ...
)
```

Arguments

formula	a formula with survival (Surv) objects on the left hand side and an optional stratification factor on the right (or 1 if none). The survival object component variables should be labeled; these labels are used for graph annotation. If any of the Surv objects are competing risk objects (see [Surv](#)), event labels come from the factor levels in the variable that was the second argument to Surv, and the first factor level must correspond to right-censored observations.
data	data.frame
subset	optional subsetting criteria
na.action	function for handling NAs while creating a data frame
ylab	character. Passed to [survplot.npsurv](#) as the ylab argument. Constructed by default.
what	"S" (the default) to plot survival functions or "1-S" to plot cumulative incidence functions. If any of the survival time objects on the left hand side are competing risk objects, the default is "1-S" and you may not change it.
conf	character. See [survplot.npsurv](#).

cause	character vector or list. If a vector, every Surv term on the left hand side of formula will have cumulative incidence plotted for all causes that appear in cause. If a list, the list elements must correspond to the Surv terms in order, and specify which causes to display from the corresponding Surv object. When cause is a list and one of its elements contains more than one character string, or when cause is a vector and for one Surv object it matches multiple causes, survReport produces more plots than there are Surv objects.
panel	character string. Name of panel, which goes into file base names and figure labels for cross-referencing.
subpanel	character string. If calling dReport more than once for the same type of chart (categorical or continuous), specify subpanel to distinguish the multiple calls. In that case, -subpanel will be appended to panel when creating figure labels and cross-references.
head	character string. Specifies initial text in the figure caption, otherwise a default is used.
tail	optional character string. Specifies final text in the figure caption, e.g., what might have been put in a footnote in an ordinary text page. This appears just before any needles.
h	numeric. Height of plots.
w	numeric. Width of plots in inches.
multi	logical. If TRUE, multiple figures are produced, otherwise a single figure with a matrix of survival plots is made.
markevent	logical. Applies only if multi=TRUE. Specify FALSE to not put the event label in the extreme upper left of the plot.
mfrow	numeric 2-vector, used if multi=FALSE. If not specified, default plot matrix layout will be figured.
y.n.risk	used if what="1-S", to specify y coordinate for putting numbers at risk, typically below the x-axis label
mylim	numeric 2-vector. Used to force expansion of computed y-axis limits. See survplot.
bot	number of spaces to reserve at bottom of plot for numbers at risk, if what="1-S"
aehaz	logical. Set to FALSE to not print number of events and hazard rate on plots.
times	numeric vector. If specified, prints cumulative incidence probabilities at those times on the plots.
append	logical. If TRUE output will be appended instead of overwritten.
opts	list. A list specifying arguments to survReport and startPlot that override any other arguments. This is useful when making a long series of survReport calls with the same options, as the options can be defined up front in a list.
...	ignored

Examples

```
## See tests directory test.Rnw for a live example
## Not run:
```

```
set.seed(1)
n <- 400
dat <- data.frame(t1=runif(n, 2, 5), t2=runif(n, 2, 5),
                  e1=rbinom(n, 1, .5), e2=rbinom(n, 1, .5),
                  treat=sample(c('a','b'), n, TRUE))
dat <- upData(dat,
              labels=c(t1='Time to operation',
                       t2='Time to rehospitalization',
                       e1='Operation', e2='Hospitalization',
                       treat='Treatment')
              units=c(t1='year', t2='year'))
survReport(Surv(t1, e1) + Surv(t2, e2) ~ treat, data=dat)

dat <- upData(dat, labels=c(t1='Follow-up Time', t2='Time'),
              cause=factor(sample(c('death','MI','censor'), n, TRUE),
                           c('censor', 'MI', 'death')))
survReport(Surv(t1, cause) ~ treat, cause='death', data=dat)
survReport(Surv(t1, cause) + Surv(t2, cause) ~ treat,
           cause=list(c('death', 'MI'), 'death'), data=dat)
# Two plots for t1, one plot for t2

## End(Not run)
```

Index