Package ‘accrualPlot’

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Description Tracking accrual in clinical trials is important for trial success. If accrual is too slow, the trial will take too long and be too expensive. If accrual is much faster than expected, time sensitive tasks such as the writing of statistical analysis plans might need to be rushed. 'accrualPlot' provides functions to aid the tracking of accrual and predict when a trial will reach it's intended sample size.
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**accrualdemo**

*Demonstration data set*

Description

Simulated recruitment data from three sites. Each row represents one participant. Sites one and two started on 2020-07-01, site three on 2020-09-01.

Usage

```r
accrualdemo
```

Format

A data frame with two variables: *date* and *site*.

---

**accrual_create_df**

Description

Creates a data frame or a list of data frames that contains the absolute and cumulative number of participants recruited at each date from a vector with enrollment dates. Used as input for accrual plot functions.
accrual_create_df

Usage

accrual_create_df(
    enrollment_dates,
    by = NA,
    start_date = "site",
    current_date = "common",
    overall = TRUE,
    name_overall = "Overall",
    pos_overall = c("last", "first"),
    force_start0 = TRUE
)

Arguments

enrollment_dates

date vector with one entry per participants.

by

factor or character vector with sites, has to have the same length as enrollment
dates. If not NA, a list with an accrual data frame for each site is generated.

start_date

date when recruitment started. Single date (used for all sites in by), named date
vector (with length and names corresponding to the levels of by), "common"
(first date overall) or "site" (first date for each site, default).

current_date

date of the data export or database freeze. Single date, named date vector (with
length and names corresponding to the levels of by), "common" (last date over-
all, default) or "site" (first date for each site).

overall

logical indicates that accrual_df contains a summary with all sites (only if by is
not NA).

name_overall

name of the summary with all sites (if by is not NA and overall==TRUE).

pos_overall

overall as last or first element of the list (if by is not NA and overall==TRUE).

force_start0

logical, adds an extra 0 line to the accrual data frame in cases where a start date
is given and corresponds to the earliest enrollment date.

Value

Returns a data frame of class 'accrual_df' or a list of class 'accrual_list' with an 'accrual_df' for
each level of by (if by is not NA). The 'accrual_df' contains a row per accrual day and the following
three columns:

<table>
<thead>
<tr>
<th>Date</th>
<th>Freq</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>date of accrual</td>
<td>absolute number accrued at Date</td>
<td>cumulative number accrued up to Date</td>
</tr>
</tbody>
</table>

See Also

accrual_plot_cum(), accrual_plot_abs() and accrual_plot_predict() to generate cumulative,
absolute and prediction plots, and accrual_table() to generate an accrual table.
accrual_linear_model

Examples

```r
data(accrualdemo)
accrual_create_df(accrualdemo$date)
# different start and current date
accrual_create_df(accrualdemo$date, start_date=as.Date("2020-07-08"),
current_date=as.Date("2020-10-15"))

# by site
accrual_create_df(accrualdemo$date, by=accrualdemo$site)
```

Description

Creates a weighted linear regression model using an accrual data frame produced by `accrual_create_df`.

Usage

```r
accrual_linear_model(
  accrual_df,
  fill_up = TRUE,
  wfun = function(x) seq(1/nrow(x), 1, by = 1/nrow(x))
)
```

Arguments

- `accrual_df`: object of class `'accrual_df'` or `'accrual_list'` produced by `accrual_create_df`.
- `fill_up`: whether to fill up days where no recruitment was observed,
- `wfun`: function to calculate the weights with accrual data frame as argument, default is `wfun<-function(x) seq(1 / nrow(x), 1, by = 1/nrow(x))`.

Value

Returns an object of class `'lm'` with a weighted linear regression of cumulative accrual on dates.

Examples

```r
data(accrualdemo)
accrual_df<-accrual_create_df(accrualdemo$date)
accrual_linear_model(accrual_df)

# unweighted
accrual_linear_model(accrual_df, wfun=function(x) rep(1, nrow(x)))
```
#different start and current date
accrual_df<-accrual_create_df(accrualdemo$date, start_date=as.Date("2020-07-08"),
current_date=as.Date("2020-07-15"))
accrual_linear_model(accrual_df)

#accrual_df with by option
accrual_df<-accrual_create_df(accrualdemo$date, by=accrualdemo$site)
accrual_linear_model(accrual_df)

---

**accrual_plot_abs**

**Absolute accrual plots**

**Description**

Plot of absolute recruitment by time unit using an accrual data frame produced by `accrual_create_df`.

**Usage**

```r
accrual_plot_abs(
  accrual_df,
  unit = c("month", "year", "week", "day"),
  target = NULL,
  overall = TRUE,
  name_overall = attr(accrual_df, "name_overall"),
  ylim = NULL,
  xlim = NULL,
  ylab = "Recruited patients",
  xlabformat = NULL,
  xlabsel = NA,
  xlabpos = NULL,
  xlabsrt = 45,
  xlabadj = c(1, 1),
  xlabcex = 1,
  col = NULL,
  legend.list = NULL,
  ...
)
```

```r
gg_accrual_plot_abs(
  accrual_df,
  unit = c("month", "year", "week", "day"),
  xlabformat = NULL
)
```

Arguments

accrual_df  object of class 'accrual_df' or 'accrual_list' produced by accrual_create_df.
unit        time unit for which the bars should be plotted, one of "month", "year", "week" or "day".
target      adds horizontal line for target recruitment per time unit.
overall     logical, indicates that accrual_df contains a summary with all sites that should
            be removed from stacked barplot (only if by is not NA).
name_overall name of the summary with all sites (if by is not NA and overall==TRUE).
ylim        limits for y-axis.
xlim        limits for x-axis.
ylab        y-axis label.
xlabformat  format of date on x-axis.
xlabsel     selection of x-labels if not all should be shown, by default all are shown up to
            15 bars, with more an automated selection is done, either NA (default), NULL
            (show all), or a numeric vector.
xlabpos     position of the x-label.
xlabrt      rotation of x-axis labels in degrees.
xlabadj     adjustment of x-label, numeric vector with length 1 or 2 for different adjustment
            in x- and y-direction.
xlabcex     size of x-axis label.
col         colors of bars in barplot, can be a vector if accrual_df is a list, default is grayscale.
legend.list named list with options passed to legend().
...         further arguments passed to barplot() and axis.

Details

When the accrual_df includes multiple sites, the dataframe passed to ggplot includes a site variable which can be used for facetting

Value

accrual_plot_abs returns a barplot of absolute accrual by time unit (stacked if accrual_df is a list).

Examples

set.seed(2020)
enrollment_dates <- as.Date("2018-01-01") + sort(sample(1:100, 50, replace=TRUE))
accrual_df<-accrual_create_df(enrollment_dates)
accrual_plot_abs(accrual_df,unit="week")

#time unit
accrual_plot_abs(accrual_df,unit="day")
# accrual_plot_cum

**Cumulative accrual plots**

**Description**

Plot of cumulative recruitment using an accrual data frame produced by `accrual_create_df`.

**Usage**

```r
accrual_plot_cum(
  accrual_df,
  ylim = NA,
  xlim = NA,
  ylab = "Recruited patients",
  xlab = 5,
  xlabminn = xlabn%%2,
  xlabformat = "%d%%Y",
```
Arguments

- **accrual_df**: object of class 'accrual_df' or 'accrual_list' produced by accrual_create_df.
- **ylim**: limits for y-axis.
- **xlim**: limits for x-axis.
- **ylab**: y-axis label.
- **xlabn**: integer giving the desired number of intervals for the xlabel, default=5.
- **xlabminn**: negative integer giving the minimal number of intervals.
- **xlabformat**: format of date on x-axis.
- **xlabpos**: position of the x-label.
- **xlabsrt**: rotation of x-axis labels in degrees.
- **xlabadj**: adjustment of x-label, numeric vector with length 1 or 2 for different adjustment in x- and y-direction.
- **xlabcex**: size of x-axis label.
- **col**: color for line(s) in plot
- **lty**: line type(s) in plot
- **legend.list**: named list with options passed to legend().
- **...**: further options passed to plot() and axis().

Details

When the accrual_df includes multiple sites, the dataframe passed to ggplot includes a site variable which can be used for faceting.

Value

accrual_plot_cum returns a plot of the cumulative accrual (per site if accrual_df is a list).

ggplot2 object
Examples

```r
set.seed(2020)
enrollment_dates <- as.Date("2018-01-01") + sort(sample(1:30, 50, replace=TRUE))
accrual_df<-accrual_create_df(enrollment_dates)
accrual_plot_cum(accrual_df)
accrual_plot_cum(accrual_df,cex.lab=1.2,cex.axis=1.1,xlabcex=1.1)

#several sites
set.seed(1)
centers<-sample(c("Site 1","Site 2","Site 3"),length(enrollment_dates),replace=TRUE)
accrual_df<-accrual_create_df(enrollment_dates,by=centers)
accrual_plot_cum(accrual_df)

#assuming a common start and current date
accrual_df<-accrual_create_df(enrollment_dates,by=centers,start_date="common",current_date="common")
accrual_plot_cum(accrual_df)

#plot and legend options
accrual_plot_cum(accrual_df,col=c("red",rep(1,3)),lty=c(1,1:3),cex.lab=1.2,cex.axis=1.1,xlabcex=1.1)
accrual_plot_cum(accrual_df,legend.list=list(ncol=2,bty=TRUE,cex=0.8))

#without overall
accrual_df<-accrual_create_df(enrollment_dates,by=centers,overall=FALSE)
accrual_plot_cum(accrual_df)

### ggplot2 approach
data(accrualdemo)
accrual_df<-accrual_create_df(accrualdemo$date)
gg_accrual_plot_cum(accrual_df)
gg_accrual_plot_cum(accrual_df) +
  ggplot2::theme_classic()

#several sites
accrual_df <- accrual_create_df(accrualdemo$date, by = accrualdemo$site)
gg_accrual_plot_cum(accrual_df)

#assuming a common start and current date
accrual_df <-
  accrual_create_df(
    accrualdemo$date,
    by = accrualdemo$site,
    start_date = "common",
    current_date = "common"
  )
gg_accrual_plot_cum(accrual_df)

#without overall
accrual_df <-
  accrual_create_df(accrualdemo$date, by = accrualdemo$site, overall = FALSE)
gg_accrual_plot_cum(accrual_df)
```
Description

Generates an accrual prediction plot using an accrual data frame produced by `accrual_create_df` and a target sample size. Prediction is based on a weighted linear regression. If the accrual data frame is a list (i.e. using the by option in `accrual_create_df`), or if center start dates are given, the number of enrolled and targeted sites is included.

Usage

```r
accrual_plot_predict(
  accrual_df,
  target,
  overall = TRUE,
  name_overall = attr(accrual_df, "name_overall"),
  fill_up = TRUE,
  wfun = function(x) seq(1/nrow(x), 1, by = 1/nrow(x)),
  col.obs = NULL,
  lty.obs = 1,
  col.pred = "red",
  lty.pred = 2,
  pch.pred = 8,
  pos_prediction = c("out", "in", "none"),
  label_prediction = NULL,
  cex_prediction = 1,
  format_prediction = "%B %d, %Y",
  show_center = TRUE,
  design = 1,
  center_label = "Centers",
  center_legend = c("number", "strip"),
  targetc = NA,
  center_colors = NULL,
  center_legend_text_size = 0.7,
  ylim = NA,
  xlim = NA,
  ylab = "Recruited patients",
  xlabformat = "%d%b%Y",
  xlabn = 5,
  xlabminn = xlabn/%2,
  xlabpos = NA,
  xlabsrt = 45,
  xlabadj = c(1, 1),
  xlabcex = 1,
  mar = NA,
  legend.list = NULL,
)
...,
    center_start_dates = NULL
)

gg_accrual_plot_predict(
    accrual_df,
    target,
    overall = TRUE,
    name_overall = attr(accrual_df, "name_overall"),
    col.pred = "red",
    lty.pred = 2,
    pch.pred = 8,
    fill_up = TRUE,
    wfun = function(x) seq(1/nrow(x), 1, by = 1/nrow(x)),
    pos_prediction = c("out", "in", "none"),
    label_prediction = NULL,
    format_prediction = "%B %d, %Y",
    xlabformat = "%d%b%Y"
)

Arguments

accrual_df object of class 'accrual_df' or 'accrual_list' produced by accrual_create_df.
target target sample size or date to predict end date or expected sample size, respectively. A single number or date, or a named vector with the same length as accrual_df. For the latter, center-specific predictions are shown.
overall logical, indicates that accrual_df contains a summary with all sites (only if by is not NA).
name_overall name of the summary with all sites (if by is not NA and overall==TRUE).
fill_up whether to fill up days where no recruitment was observed, otherwise these points do not contribute to the regression.
wfun function to calculate the weights with accrual data frame as argument, default is wfun<-function(x) seq(1/nrow(x), 1, by = 1/nrow(x)).
col.obs line color of cumulative recruitment, can be a vector with the same length as accrual_df.
lty.obs line type of cumulative recruitment, can be a vector with the same length as accrual_df.
col.pred line color of prediction, can be a vector with the same length as accrual_df.
lty.pred line color of prediction, can be a vector with the same length as accrual_df.
pch.pred point symbol for end of prediction, can be a vector with the same length as accrual_df.
pos_prediction position of text with predicted end date or sample size, either "out", "in" or "none".
label_prediction label for predicted end date or sample size.
cex_prediction  text size for predicted end date or sample size.
format_prediction  date format for predicted end date (only if target is a sample size)
show_center  logical, whether the center info should be shown (if accrual_df is a list or if center_start_dates are given).
design  design options for the center info 1 (default): below plot, 2: within plot, top, 3: within plot, bottom.
center_label  label for the center info.
center_legend  either "number" to plot numbers in the center strip or "strip" to add a legend strip, requires specification of center_colors.
targetc  target number of centers, to scale the legend if it is "strip".
center_colors  colors to be used for the strip with the centers, a vector of length targetc.
center_legend_text_size  size of the text of the center or legend strip, only has a function
ylim  limits for y-axis.
xlim  limits for x-axis.
ylab  y-axis label.
xlabformat  format of date on x-axis.
xlabn  integer giving the desired number of intervals for the xlabel, default=5.
xlabminn  integer giving the minimal number of intervals.
xlabpos  position of the x-label.
xlabsrt  rotation of x-axis labels in degrees.
xlabadj  adjustment of x-label, numeric vector with length 1 or 2 for different adjustment in x- and y-direction.
xlabcex  size of x-axis label.
mar  vector of length 4 (bottom, left, top, right margins), overwrite default margins.
legend.list  named list with options passed to legend(), only if accrual data frame is a list.
...  further options passed to plot() and axis().
center_start_dates  alternative way to add center info, vector with dates on which centers are enrolled.

Details

When the accrual_df includes multiple sites, the dataframe passed to ggplot includes a site variable which can be used for facetting

Value

accrual_plot_predict returns a plot with the accrual prediction.
Examples

```r
data(accrualdemo)
accrual_df<-accrual_create_df(accrualdemo$date)
##Predict end date
accrual_plot_predict(accrual_df=accrual_df,target=300)
##Predict sample size
accrual_plot_predict(accrual_df=accrual_df,as.Date("2020-11-01"))

#Include site
accrual_df<-accrual_create_df(accrualdemo$date,by=accrualdemo$site)
accrual_plot_predict(accrual_df=accrual_df,target=300,center_label="Site")
## with strip and target
accrual_plot_predict(accrual_df=accrual_df,target=300,center_label="Site", targetc=5,center_colors=heat.colors(5),center_legend="strip")

#Design for site
accrual_plot_predict(accrual_df=accrual_df,target=300,design=2)

##Format prediction end date
accrual_plot_predict(accrual_df=accrual_df,target=300, pos_prediction="in",label_prediction="End of accrual: ",cex_prediction=1.2, format_prediction="%Y-%m-%d",ylim=c(0,150))

##Format plot
accrual_plot_predict(accrual_df=accrual_df,target=300, ylab="No of recruited patients",ylim=c(0,150), xlabcex=1.2,xlabsrt=30,xlabn=5,xlabmin=5, mgp=c(3,0.5,0),cex.lab=1.2,cex.axis=1.2)

##predictions for all sites
accrual_plot_predict(accrual_df=accrual_df, target=c("Site 1"=160,"Site 2"=100,"Site 3"=40,"Overall"=300))
## different colors
accrual_plot_predict(accrual_df=accrual_df, target=c("Site 1"=160,"Site 2"=100,"Site 3"=40,"Overall"=300), col.obs=topo.colors(length(accrual_df)))
##not showing center info
accrual_plot_predict(accrual_df=accrual_df, target=c("Site 1"=160,"Site 2"=100,"Site 3"=40,"Overall"=300), show_center=FALSE)

##predictions of sample size for all sites
target<-rep(as.Date("2020-11-01"),4)
names(target)<-c("Site 1","Site 2","Site 3","Overall")
accrual_plot_predict(accrual_df=accrual_df,target=target,col.obs=topo.colors(length(accrual_df)))
### ggplot2 approach
data(accrualdemo)
accrual_df<-accrual_create_df(accrualdemo$date)
gg_accrual_plot_predict(accrual_df = accrual_df, target = 300)
gg_accrual_plot_predict(accrual_df = accrual_df, target = 300) +
ggplot2::theme_classic()
```
#Include site
```r
accrual_df<-accrual_create_df(accrualdemo$date, by=accrualdemo$site)
gg_accrual_plot_predict(accrual_df=accrual_df, target=300)
```

#Format prediction end date
```r
gg_accrual_plot_predict(accrual_df = accrual_df, 
 target=300, 
pos_prediction="in", 
format_prediction="%Y-%m-%d")
```

#predictions for all sites
```r
gg_accrual_plot_predict(accrual_df = accrual_df, 
 target=c("Site 1"=160,"Site 2"=100,"Site 3"=40,"Overall"=300))
gg_accrual_plot_predict(accrual_df = accrual_df, 
 target=c("Site 1"=100,"Site 2"=100,"Site 3"=40,"Overall"=300)) + 
ggplot2::theme(legend.position = c(0.15,.9)) + 
ggplot2::labs(col = "Site")
```

---

### accrual_predict

#### Description

accrual_predict

#### Usage

`accrual_predict(accrual_df, accrual_fit, target)`

#### Arguments

- **accrual_df**: accrual data frame produced by `accrual_create_df` (optionally with by option as a list)
- **accrual_fit**: linear model produced by `accrual_linear_model`, can be a list with the same length as `accrual_df`
- **target**: target sample size or date to predict end date or expected sample size, respectively. A single number or date, or a named vector with the same length as `accrual_df` (to add site-specific targets).

#### Details

Prediction of end date based on an accrual data frame produced by `accrual_create_df`, a fitted regression model produced by `accrual_linear_model` and a target sample size.

#### Value

Returns the predicted end date(s) or the predicted sample size(s).
**accrual_table**

**Examples**

```r
data(accrualdemo)
accrual_df<-accrual_create_df(accrualdemo$date)
accrual_model<-accrual_linear_model(accrual_df)
#predict date for a specific n
accrual_predict(accrual_df,accrual_model,target=300)
#predict n at a specific date
accrual_predict(accrual_df,accrual_model,target=as.Date("2020-11-01"))

#different start and current date
accrual_df<-accrual_create_df(accrualdemo$date,start_date=as.Date("2020-07-09"),
current_date=as.Date("2020-10-15"))
accrual_model<-accrual_linear_model(accrual_df)
accrual_predict(accrual_df,accrual_model,target=300)

#accrual_df with by option
accrual_df<-accrual_create_df(accrualdemo$date,by=accrualdemo$site)
accrual_model<-accrual_linear_model(accrual_df)
accrual_predict(accrual_df,accrual_model,
target=c("Site 1"=160,"Site 2"=100,"Site 3"=40,"Overall"=300))
accrual_predict(accrual_df,accrual_model,target=as.Date("2020-11-01"))
```

**Description**

Table of recruitment overview by site, rate of recruitment

**Usage**

```r
accrual_table(
  accrual_df,
  overall = TRUE,
  name_overall = "Overall",
  pos_overall = c("last", "first"),
  unit = c("month", "year", "week", "day"),
  format_table_date = "%d%b%Y",
  format_time = "%1.0f",
  format_rrate = "%1.2f",
  header = TRUE
)
```

**Arguments**

- **accrual_df**: object of class 'accrual_df' or 'accrual_list' produced by accrual_create_df.
overall logical, indicates that accrual_df contains a summary with all sites (only if by is not NA).
name_overall name of the summary with all sites (if by is not NA and overall==TRUE).
pos_overall overall in last or first row (if by is not NA and overall==TRUE).
unit time unit for time recruiting and the rate, one of "month", "year", "week" or "day".
format_table_date format of start date in table.
format_time format of time recruiting in table.
format_rrate format of recruitment rate in table.
header include header, logical or character vector of length 4 or 5 (if accrual_df is a list).

Value

Returns data frame with a header, a row per site and overall and the following columns:

name name of the site (if accrual_df is a list)
start_date accrual start date
time time accruing
n number of patients accrued
rate accrual rate per time unit

Examples

data(accrualdemo)
accrual_df<-accrual_create_df(accrualdemo$date,by=accrualdemo$site)
accrual_table(accrual_df)

#format
accrual_table(accrual_df,format_time="%1.1f",format_rrate="%1.1f")

#unit
accrual_table(accrual_df,unit="day")

#common start and current dates
accrual_df<-accrual_create_df(accrualdemo$date,by=accrualdemo$site,start_date="common",
current_date="common")
accrual_table(accrual_df)
accrual_df<-accrual_create_df(accrualdemo$date,by=accrualdemo$site,start_date=as.Date("2020-07-09"),
current_date=as.Date("2020-10-15"))
accrual_table(accrual_df)
accrual_time_unit

Description
Generates summary of recruitment per time unit

Usage
accrual_time_unit(accrual_df, unit = c("month", "year", "week", "day"))

Arguments
accrual_df accrual data frame produced by accrual_create_df with by=NA.
unit time unit for which the bars should be plotted, one of "month", "year", "week" or "day".

Value
Returns a data frame with the number of patients accrued for each time unit.

Examples

data(accrualdemo)
accrual_df<-accrual_create_df(accrualdemo$date)
accrual_time_unit(accrual_df,"week")
accrual_time_unit(accrual_df,"day")

as.data.frame.accrual_list

as.data.frame method for accrual_list objects

Description
as.data.frame method for accrual_list objects

Usage
## S3 method for class 'accrual_list'
as.data.frame(x, ...)

Arguments

x     accrual_list
...   for consistency with other as.data.frame methods (not used)

Note

methods from within the package will not work on the output from this function.

Examples

data(accrualdemo)
x <- accrual_create_df(accrualdemo$date, accrualdemo$site)
as.data.frame(x)

plot.accrual_df

Plot method for accrual data frames produced by accrual_create_df

Description

Plot method for accrual data frames produced by accrual_create_df

Usage

## S3 method for class 'accrual_df'
plot(x, which = "cum", engine = c("base", "ggplot2"), ...)

Arguments

x     object of class 'accrual_df' or 'accrual_list' produced by accrual_create_df.
which  one of "cumulative", "absolute" or "predict". Abbreviations are allowed.
engine string to indicate the plotting engine (base/graphics or ggplot2)
...    options passed to other functions

Value

A plot with cumulative or absolute accrual, or accrual prediction.

See Also

accrual_plot_abs(), accrual_plot_cum() and accrual_plot_predict()
**print.accrual_df**

**Examples**

```r
data(accrualdemo)
accrual_df <- accrual_create_df(accrualdemo$date)
plot(accrual_df)
plot(accrual_df, "abs", unit="week")
plot(accrual_df, "pred", target = 300)
plot(accrual_df, "pred", target = 300, engine = "ggplot")
```

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**print.accrual_df**  
*Print methods for accrual objects*

**Description**

Print methods for accrual objects

**Usage**

```r
## S3 method for class 'accrual_df'
print(x, head = TRUE, ...)

## S3 method for class 'accrual_list'
print(x, ...)
```

**Arguments**

- `x`  
  object of class ‘accrual_df’ or ‘accrual_list’ produced by accrual_create_df.

- `head`  
  show header of the accrual data?

- `...`  
  arguments passed to `head`

**Value**

No return value

**Examples**

```r
data(accrualdemo)
accrual_df<-accrual_create_df(accrualdemo$date)
print(accrual_df)
# only show text
print(accrual_df, head = FALSE)
# show first 15 days
print(accrual_df, n = 15)
```
summary.accrual_df  Summary method for accrual_dfs (as created by accrual_create_df)

Description

Summary method for accrual_dfs (as created by accrual_create_df)

Usage

## S3 method for class 'accrual_df'
summary(object, ...)

Arguments

object  object of class 'accrual_df' or 'accrual_list' produced by accrual_create_df.
...
options passed to other functions

Value

Returns data frame with a header, a row per site and overall and the following columns:

name  name of the site (if accrual_df is a list)
start_date  accrual start date
time  time accruing
n  number of patients accrued
rate  accrual rate per time unit

Examples

data(accrualdemo)
accrual_df<-accrual_create_df(accrualdemo$date, accrualdemo$site)
summary(accrual_df)
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