Package ‘tidytlg’

June 23, 2023

Title Create TLGs using the ‘tidyverse’

Version 0.1.2

Description Generate tables, listings, and graphs (TLG) using 'tidyverse.'
Tables can be created functionally, using a standard TLG process, or by
specifying table and column metadata to create generic analysis summaries.
The 'envsetup' package can also be leveraged to create environments for table
creation.

License Apache License 2.0

URL https://github.com/pharmaverse/tidytlg

BugReports https://github.com/pharmaverse/tidytlg/issues

Encoding UTF-8

LazyData true

RoxygenNote 7.2.3

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VignetteBuilder knitr

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R topics documented:

add_format .................................................. 2
add_indent ................................................... 3
add_newrows .................................................. 4
bind_table .................................................... 6
cdisc adae ................................................... 8
cdisc adlb ................................................... 10
cdisc adsl ................................................... 12
cdisc advs ................................................... 14
char2factor ................................................... 15
column_metadata ............................................. 16
freq .......................................................... 17
generate_results ............................................ 20
gentlg ........................................................ 21
nested_freq ............................................... 25
replace_na_with_blank ................................... 29
rmdpsetTitle ................................................ 30
roundSAS .................................................... 31
spanning_headers .......................................... 32
statlist ....................................................... 33
table_metadata .............................................. 35
tidytlg ....................................................... 35
tidytlg_titles ............................................... 38
tlgsetup ...................................................... 38
univar ........................................................ 39

Index 43

add_format Add the formatting variables of indentme, newrows, newpage, and roworder to the results dataframe

Description
Add the formatting variables of indentme, newrows, newpage, and roworder to the results dataframe
**add_indent**

*Add indentation variable to the results dataframe*

**Description**

Add the **indentme** variable to your results data. This drives the number of indents for the row label text (e.g. 0, 1, 2, etc.).

**Usage**

```r
add_indent(df)
```

**Arguments**

- `df` : dataframe of results that contains `row_type` and `label` and the optional `nested_level` and `group_level` variables.
Details

The `group_level` variable, which is added to the results dataframe by `freq()` and `univar()` calls, is needed to define indentation when by variables are used for summary.

The `nested_level` variable, which is added to the results dataframe by `nested_freq()`, is needed to define indentation for each level of nesting.

Both of these are added to the default indentation which is driven by `row_type`.

<table>
<thead>
<tr>
<th><code>row_type</code></th>
<th>default indentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE_BY_HEADER</td>
<td>0</td>
</tr>
<tr>
<td>BY_HEADER[1-9]</td>
<td>0</td>
</tr>
<tr>
<td>HEADER</td>
<td>0</td>
</tr>
<tr>
<td>N</td>
<td>1</td>
</tr>
<tr>
<td>VALUE</td>
<td>2</td>
</tr>
<tr>
<td>NESTED</td>
<td>0</td>
</tr>
</tbody>
</table>

Value

dataframe with the `indentme` variable added.

Examples

```r
df <- tibble::tibble(row_type = c("TABLE_BY_HEADER", "HEADER", 
    "BY_HEADER[1-9]", "N", "VALUE", "COUNTS", "UNIVAR", "NESTED", "NESTED"), 
    nested_level = c(NA, NA, NA, NA, NA, NA, 1, 2), 
    group_level = c(0, 0, 0, 0, 0, 0, 0, 0), 
    label = c(NA, NA, NA, NA, NA, "N",NA, NA, NA), 
    by = c(NA, NA, NA, NA, NA, NA, NA, NA, NA), 
    tableby = c(NA, NA, NA, NA, NA, NA, NA, NA, NA))
add_indent(df)
```

Description

The `newrows` variable is used by `gentlg()` to define when to add a blank row to the output. Data will be grouped by `anbr` and the variables passed into the `tableby` and `groupby` parameters. `newrows` will be set to 1 for the first record in each group, except for the first row in the data. The first row will always be set to 0.

Usage

```r
add_newrows(df, tableby = NULL, groupby = NULL)
```
add_newrows

Arguments

df dataframe of results. must contain the anbr variable that is added by add_format()
tableby character vector containing table by variables used to generate the results
groupby character vector containing group by variables used to generate the results

Value

dataframe with the variable newrows and roworder added. newrows is used by gentlg to insert line breaks.

Examples

# Example showing how newrows is set to one for each new anbr except
# the first
tbl <-
structure(
  list(rowvar = c("RANDFL", "AGE", "AGE", "AGE", "AGE", "AGE"),
       anbr = c(1L, 2L, 2L, 2L, 2L, 2L),
       label = c("Analysis set: Subjects Randomized", "Age (Years)", "N",
                 "Mean (SD)", "Range", "IQ Range"),
       row_type = c("COUNT", "UNIVAR", "UNIVAR", "UNIVAR", "UNIVAR", "UNIVAR"),
       row.names = c(NA, -6L),
       class = c("tbl_df", "tbl", "data.frame")
  ),
  add_newrows(tbl)

# Example of use when you have results summarized by one or more variables
tbl2 <- tibble::tribble(~anbr, ~SEX, ~ETHNIC, ~label, ~row_type,
                        "01", "F", NA, "Sex : F", "TABLE_BY_HEADER",
                        "01", "F", "HISPANIC OR LATINO", "HISPANIC OR LATINO", "BY_HEADER1",
                        "01", "F", "HISPANIC OR LATINO", "HISPANIC OR LATINO", "BY_HEADER1",
                        "01", "F", "<65", "<65", "VALUE",
                        "01", "F", "65-80", "65-80", "VALUE",
                        "01", "F", ">80", ">80", "VALUE",
                        "01", "M", ">80", ">80", "VALUE"
)
add_newrows(tbl2, tableby = "SEX")

# Example of use when you have results summarized by one or more variables

tbl3 <- tibble::tribble(~anbr, ~SEX, ~ETHNIC, ~label, ~row_type,
                        "01", "F", NA, "Sex : F", "TABLE_BY_HEADER",
                        "01", "F", "<65", "<65", "VALUE",
                        "01", "F", "65-80", "65-80", "VALUE",
                        "01", "F", ">80", ">80", "VALUE",
                        "01", "F", "NOT HISPANIC OR LATINO", "NOT HISPANIC OR LATINO", "BY_HEADER1",
                        "01", "F", "HISPANIC OR LATINO", "HISPANIC OR LATINO", "BY_HEADER1",
                        "01", "F", "<65", "<65", "VALUE",
                        "01", "F", "65-80", "65-80", "VALUE",
                        "01", "F", ">80", ">80", "VALUE",
                        "01", "F", "NOT HISPANIC OR LATINO", "NOT HISPANIC OR LATINO", "BY_HEADER1")
add_newrows(tbl3, tableby = "SEX", groupby = "ETHNIC")

bind_table

Bind a set of tidytlg tables together with formatting variables

Description

bind_table combines analysis results with formatting variables (indentme, newrows, newpage) based on by variables (tablebyvar, rowbyvar), such that appropriate formatting (indentation, line break, page break) can be applied in creating the output. It can also attach the column metadata attribute, which will be automatically used in gentlg for creating output.

Usage

bind_table(
  ..., 
  colvar = NULL, 
  tablebyvar = NULL, 
  rowbyvar = NULL, 
  prefix = NULL, 
  add_count = FALSE, 
  add_format = TRUE, 
  column_metadata_file = NULL, 
  column_metadata = NULL, 
  tbltype = NULL 
)

Arguments

... (required) a set of tidytlg tables to bind together

colvar (required) treatment variable within df to use to summarize. Required if add_count is TRUE.

tablebyvar (optional) repeat entire table by variable within df

rowbyvar (optional) any rowbyvar values used to create the table
**bind_table**

prefix (optional) text to prefix the values of tablebyvar with

add_count (optional) Should a count be included in the tablebyvar? (default = TRUE)

add_format (optional) Should format be added to the output table? This is done using the add_format function. (default = TRUE)

column_metadata_file (optional) An excel file for column_metadata. Does not change the behavior of the function binds the column metadata for gentlg. If a column_metadata dataframe is passed in too, this is ignored.

column_metadata (optional) A dataframe containing the column metadata. This will be used in place of column_metadata_file.

tbltype (optional) A value used to subset the column_metadata_file.

**Value**

The tidytlg tables bound together reflecting the tablebyvars used

**Examples**

```r
library(magrittr)

# bind tables together
t1 <- cdisc_adsl %>%
  freq(colvar = "TRT01PN",
  rowvar = "ITTFL",
  statlist = statlist("n"),
  subset = ITTFL == "Y",
  rowtext = "Analysis set: ITT")

t2 <- cdisc_adsl %>%
  univar(colvar = "TRT01PN",
  rowvar = "AGE",
  decimal = 0,
  row_header = "Age, years")

bind_table(t1, t2)

# bind tables together w/by groups
t1 <- cdisc_adsl %>%
  freq(colvar = "TRT01PN",
  rowvar = "ITTFL",
  rowbyvar = "SEX",
  statlist = statlist("n"),
  subset = ITTFL == "Y",
  rowtext = "Analysis set: ITT")

t2 <- cdisc_adsl %>%
  univar(colvar = "TRT01PN",
  rowvar = "AGE",
  rowbyvar = "SEX",
  ..
decimal = 0,
row_header = "Age, years")

bind_table(t1, t2, rowbyvar = "SEX")

# bind tables together w/table by groups

# w/prefix
bind_table(t1, t2, tablebyvar = "SEX", prefix = "Gender: ")

# w/counts
bind_table(t1, t2, tablebyvar = "SEX", add_count = TRUE, colvar = "TRT01PN")

---

cdisc adae

ADAE data created from subsetting the CDISC ADAE dataset

Description
ADAE data created from subsetting the CDISC ADAE dataset

Usage
cdisc_adae

Format
A data frame with 84 rows and 55 variables:

<table>
<thead>
<tr>
<th>STUDYID</th>
<th>Study Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITEID</td>
<td>Study Site Identifier</td>
</tr>
<tr>
<td>USUBJID</td>
<td>Unique Subject Identifier</td>
</tr>
<tr>
<td>SUBJID</td>
<td>Subject Identifier for the Study</td>
</tr>
<tr>
<td>TRTA</td>
<td>Actual Treatment</td>
</tr>
</tbody>
</table>
TRTAN  Actual Treatment (N)
AGE  Age
AGEGR1  Pooled Age Group 1
AGEGR1N  Pooled Age Group 1 (N)
RACE  Race
RACEN  Race (N)
SEX  Sex
SAFFL  Safety Population Flag
TRTSDT  Date of First Exposure to Treatment
TRTEDT  Date of Last Exposure to Treatment
ASTDT  Analysis Start Date
ASTDTF  Analysis Start Date Imputation Flag
ASTDY  Analysis Start Relative Day
AENDT  Analysis End Date
AENDY  Analysis End Relative Day
ADURN  AE Duration (N)
ADURU  AE Duration Units
AETERM  Reported Term for the Adverse Event
AELLT  Lowest Level Term
AELLTCD  Lowest Level Term Code
AEDECOD  Dictionary-Derived Term
AEPCTCD  Preferred Term Code
AEHLT  High Level Term
AEHLTCD  High Level Term Code
AEHLGT  High Level Group Term
AEHLGTCD  High Level Group Term Code
AEBODSYS  Body System or Organ Class
AESOC  Primary System Organ Class
AESOCCD  Primary System Organ Class Code
AESEV  Severity/Intensity
AESER  Serious Event
AESCAN  Involves Cancer
AESCONG  Congenital Anomaly or Birth Defect
AESDISAB  Persist or Signif Disability/Incapacity
AESDTH  Results in Death
AESHOSP  Requires or Prolongs Hospitalization
AESLIFE  Is Life Threatening
AESOD  Occurred with Overdose
AEREL  Causality
AEACN  Action Taken with Study Treatment
AEOOUT  Outcome of Adverse Event
AESEQ  Sequence Number
TRTEMFL  Treatment Emergent Analysis Flag
AOCCFL  1st Occurrence of Any AE Flag
AOCCSFL  1st Occurrence of SOC Flag
AOCCPFL  1st Occurrence of Preferred Term Flag
AOCC02FL  1st Occurrence 02 Flag for Serious
AOCC03FL  1st Occurrence 03 Flag for Serious SOC
AOCC04FL  1st Occurrence 04 Flag for Serious PT
CQ01NAM  Customized Query 01 Name
AOCC01FL  1st Occurrence 01 Flag for CQ01

Source
CDISC SDTM/ADAM Pilot Project.

Source
ADLB data created from subsetting the CDISC ADLB dataset

Usage
cdisc_adlb

Format
A data frame with 2154 rows and 46 variables:

STUDYID  Study Identifier
SUBJID  Subject Identifier for the Study
USUBJID  Unique Subject Identifier
TRTA  Actual Treatment
TRTAN  Actual Treatment (N)
TRTSDT  Date of First Exposure to Treatment
TRTEDIT  Date of Last Exposure to Treatment
AGE  Age
AGEGR1  Pooled Age Group 1
AGEGR1N  Pooled Age Group 1 (N)
RACE  Race
RACEN  Race (N)
SEX  Sex
COMP24FL  Completers of Week 24 Population Flag
DSRAEFL  Discontinued due to AE?
SAFFL  Safety Population Flag
AVISIT  Analysis Visit
AVISITN  Analysis Visit (N)
ADY  Analysis Relative Day
ADT  Analysis Date
VISIT  Visit Name
VISITNUM  Visit Number
PARAM  Parameter
PARAMCD  Parameter Code
PARAMN  Parameter (N)
PARCAT1  Parameter Category 1
AVAL  Analysis Value
BASE  Baseline Value
CHG  Change from Baseline
A1LO  Analysis Range 1 Lower Limit
A1HI  Analysis Range 1 Upper Limit
R2A1LO  Ratio to Analysis Range 1 Lower Limit
R2A1HI  Ratio to Analysis Range 1 Upper Limit
BR2A1LO  Base Ratio to Analysis Range 1 Lower Limit
BR2A1HI  Base Ratio to Analysis Range 1 Upper Limit
ANL01FL  Analysis 01 - Special Interest Flag
ALBTRVAL  Amount Threshold Range
ANRIND  Analysis Reference Range Indicator
BNRIND  Baseline Reference Range Indicator
ABLFL  Baseline Record Flag
AENTMTFL  Last value in treatment visit
LBSEQ  Sequence Number
LBNRIND  Reference Range Indicator
LBSTRESN  Numeric Result/Finding in Standard Units

Source
CDISC SDTM/ADAM Pilot Project.
cdisc adsl

**ADSL data created from subsetting the CDISC ADSL with 15 subjects (5 subjects in each arm)**

**Description**

ADSL data created from subsetting the CDISC ADSL with 15 subjects (5 subjects in each arm)

**Usage**

cdisc_adsl

**Format**

A data frame with 15 rows and 49 variables:

- **STUDYID** Study Identifier
- **USUBJID** Unique Subject Identifier
- **SUBJID** Subject Identifier for the Study
- **SITEID** Study Site Identifier
- **SITEGR1** Pooled Site Group 1
- **ARM** Description of Planned Arm
- **TRT01P** Planned Treatment for Period 01
- **TRT01PN** Planned Treatment for Period 01 (N)
- **TRT01A** Actual Treatment for Period 01
- **TRT01AN** Actual Treatment for Period 01 (N)
- **TRTSDT** Date of First Exposure to Treatment
- **TRTEDT** Date of Last Exposure to Treatment
- **TRTDUR** Duration of Treatment (days)
- **AVGDD** Avg Daily Dose (as planned)
- **CUMDOSE** Cumulative Dose (as planned)
- **AGE** Age
- **AGEGR1** Pooled Age Group 1
- **AGEGR1N** Pooled Age Group 1 (N)
- **AGEU** Age Units
- **RACE** Race
- **RACEN** Race (N)
- **SEX** Sex
- **ETHNIC** Ethnicity
- **SAFFL** Safety Population Flag
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITTFL</td>
<td>Intent-To-Treat Population Flag</td>
</tr>
<tr>
<td>EFFFL</td>
<td>Efficacy Population Flag</td>
</tr>
<tr>
<td>COMP8FL</td>
<td>Completers of Week 8 Population Flag</td>
</tr>
<tr>
<td>COMP16FL</td>
<td>Completers of Week 16 Population Flag</td>
</tr>
<tr>
<td>COMP24FL</td>
<td>Completers of Week 24 Population Flag</td>
</tr>
<tr>
<td>DISCONFL</td>
<td>Did the Subject Discontinue the Study?</td>
</tr>
<tr>
<td>DSRAEFL</td>
<td>Discontinued due to AE?</td>
</tr>
<tr>
<td>DTHFL</td>
<td>Subject Died?</td>
</tr>
<tr>
<td>BMIBL</td>
<td>Baseline BMI (kg/m²)</td>
</tr>
<tr>
<td>BMIBLGR1</td>
<td>Pooled Baseline BMI Group 1</td>
</tr>
<tr>
<td>HEIGHTBL</td>
<td>Baseline Height (cm)</td>
</tr>
<tr>
<td>WEIGHTBL</td>
<td>Baseline Weight (kg)</td>
</tr>
<tr>
<td>EDUCLVL</td>
<td>Years of Education</td>
</tr>
<tr>
<td>DISONSDT</td>
<td>Date of Onset of Disease</td>
</tr>
<tr>
<td>DURDIS</td>
<td>Duration of Disease (Months)</td>
</tr>
<tr>
<td>DURDSSGR1</td>
<td>Pooled Disease Duration Group 1</td>
</tr>
<tr>
<td>VISIT1DT</td>
<td>Date of Visit 1</td>
</tr>
<tr>
<td>RFSTDTC</td>
<td>Subject Reference Start Date/Time</td>
</tr>
<tr>
<td>RFENDTC</td>
<td>Subject Reference End Date/Time</td>
</tr>
<tr>
<td>VISNUMEN</td>
<td>End of Trt Visit (Vis 12 or Early Term.)</td>
</tr>
<tr>
<td>RFENDT</td>
<td>Date of Discontinuation/Completion</td>
</tr>
<tr>
<td>DCDECOD</td>
<td>Standardized Disposition Term</td>
</tr>
<tr>
<td>EOSSTT</td>
<td>End of Study Status</td>
</tr>
<tr>
<td>DCREASCD</td>
<td>Reason for Discontinuation</td>
</tr>
<tr>
<td>MMSETOT</td>
<td>MMSE Total</td>
</tr>
</tbody>
</table>

**Source**

CDISC SDTM/ADAM Pilot Project.
**Description**

ADVS data created from subsetting the CDISC ADVS dataset

**Usage**

cdisc_advs

**Format**

A data frame with 1938 rows and 35 variables:

- **STUDYID**: Study Identifier
- **SITEID**: Study Site Identifier
- **USUBJID**: Unique Subject Identifier
- **AGE**: Age
- **AGEGR1**: Pooled Age Group 1
- **AGEGR1N**: Pooled Age Group 1 (N)
- **RACE**: Race
- **RACEN**: Race (N)
- **SEX**: Sex
- **SAFFL**: Safety Population Flag
- **TRTDT**: Date of First Exposure to Treatment
- **TRTEDT**: Date of Last Exposure to Treatment
- **TRTP**: Planned Treatment
- **TRTPN**: Planned Treatment (N)
- **TRTA**: Actual Treatment
- **TRTAN**: Actual Treatment (N)
- **PARAMCD**: Parameter Code
- **PARAM**: Parameter
- **PARAMN**: Parameter (N)
- **ADT**: Analysis Date
- **ADY**: Analysis Relative Day
- **ATPTN**: Analysis Timepoint (N)
- **ATPT**: Analysis Timepoint
- **AVISIT**: Analysis Visit
- **AVISITN**: Analysis Visit (N)
char2factor

AVAL  Analysis Value
BASE  Baseline Value
 BASETYPE  Baseline Value
CHG   Change from Baseline
PCHG  Percent Change from Baseline
VISITNUM  Visit Number
VISIT  Visit Name
VSSEQ  Sequence Number
ANL01FL  Analysis 01 - Special Interest Flag
ABLFL  Baseline Record Flag

Source

CDISC SDTM/ADAM Pilot Project.

---

char2factor  Convert character variable to a factor based off it’s numeric variable counterpart.

Description

Convert character variable to a factor based off it’s numeric variable counterpart.

Usage

char2factor(df, c_var, n_var)

Arguments

df          data frame.
c_var       character variable within the data frame.
n_var       numeric variable counter part within the data frame to control the levels.

Value

A factor.
Examples

df <- tibble::tribble(
  ~TRT01P, ~TRT01PN,
  "Placebo", 1,
  "Low Dose", 2,
  "High Dose", 3
)

# alphabetical order
dplyr::arrange(df, TRT01P)

# change to factor with char2factor
df$TRT01P <- char2factor(df, "TRT01P", "TRT01PN")

# factor order
dplyr::arrange(df, TRT01P)

---

column_metadata

*Metadata describing table column layouts*

Description

This is used by tlgsetup to prepare your input data to support the desired column layout.

Usage

column_metadata

Format

A data frame with one row per column for each table type and 6 variables:

- **tbltype** identifier used to group a table column layout
- **coldef** distinct variable values used, typically numeric and typically a treatment/main effect variable, think TRT01PN
- **decode** decode of coldef that will display as a column header in the table
- **span1** spanning header to display across multiple columns
- **span2** spanning header to display across multiple columns, second level
- **span3** spanning header to display across multiple columns, third level
Description

Frequency counts and percentages for a variable by treatment and/or group.

Usage

freq(
  df,
  denom_df = df,
  colvar = NULL,
  tablebyvar = NULL,
  rowvar = NULL,
  rowbyvar = NULL,
  statlist = getOption("tidytlg.freq.statlist.default"),
  decimal = 1,
  nested = FALSE,
  cutoff = NULL,
  cutoff_stat = "pct",
  subset = TRUE,
  descending_by = NULL,
  display_missing = FALSE,
  rowtext = NULL,
  row_header = NULL,
  .keep = TRUE,
  .ord = FALSE,
  pad = TRUE,
  ...
)

Arguments

df (required) dataframe containing records to summarize by treatment
denom_df (optional) dataframe used for population based denominators (default = df)
colvar (required) treatment variable within df to use to summarize
tablebyvar (optional) repeat entire table by variable within df
rowvar (required) character vector of variables to summarize within the dataframe
rowbyvar (optional) repeat rowvar by variable within df
statlist (optional) statlist object of stats to keep of length 1 or 2 specifying list of statistics and format desired (e.g. statlist(c("N", "n \times x\backslash{} (x.x)")))
decimal (optional) decimal precision root level default (default = 1)
nested (optional) INTERNAL USE ONLY. The default should not be changed. Switch on when this function is called by nested_freq() so we will not include the by variables as part of the group denominators (default = FALSE)
cutoff (optional) percentage cutoff threshold. This can be passed as a numeric cutoff, in that case any rows with greater than or equal to that cutoff will be preserved, others will be dropped. To specify a single column to define the cutoff logic, pass a character value of the form "colName >= value" and only that column will be used.
cutoff_stat (optional) The value to cutoff by, n or pct. (default = 'pct'). Can be done with multiple columns by adding & or | ex. col1 >= val1 & col2 >= val2
subset (optional) An R expression that will be passed to a dplyr::filter() function to subset the data.frame. This is performed on the numerator before any other derivations. Denominators must be preprocessed and passed through using denom_df.
descending_by (optional) The column or columns to sort descending counts. Can also provide a named list to do ascending order ex. c("VarName1" = "asc", "VarName2" = "desc") would sort by VarName1 in ascending order and VarName2 in descending order. In case of a tie in count or descending_by not provided, the columns will be sorted alphabetically.
display_missing (optional) Should the "missing" values be displayed? If missing values are displayed, denominators will include missing values. (default = FALSE)
rowtext (optional) A character vector used to rename the label column. If named, names will give the new level and values will be the replaced value. If unnamed, and the table has only one row, the rowtext will rename the label of the row. If the rowtext is unnamed, the table has no rows, and there is a subset, the table will be populated with zeros and the label will be the only row.
row_header (optional) A character vector to be added to the table.
.keep (optional) Should the rowbyvar and tablebyvar be output in the table. If FALSE, rowbyvar will still be output in the label column. (default = TRUE)
.ord Should the ordering columns be output with the table? This is useful if a table needs to be merged or reordered in any way after build.
.pad (optional) A boolean that controls if levels with zero records should be included in the final table. (default = TRUE)
... (optional) Named arguments to be included as columns on the table.

Value

A dataframe of results

Sorting a 'freq' table

By default, a frequency table is sorted based on the factor level of the rowvar variable. If the rowvar variable isn’t a factor, it will be sorted alphabetically. This behavior can be modified in two ways, the first is the char2factor() function that offers a interface for releveling a variable based on a numeric variable, like VISITN. The second is based on the descending_by argument which will sort based on counts on a variable.
Examples

```r
adsl <- data.frame(
  USUBJID = c("DEMO-101", "DEMO-102", "DEMO-103"),
  RACE = c("WHITE", "BLACK", "ASIAN"),
  SEX = c("F", "M", "F"),
  colnbr = factor(c("Placebo", "Low", "High"))
)

# Unique subject count of a single variable
freq(adsl, colvar = "colnbr", rowvar = "RACE", statlist = statlist("n"))

# Unique subject count and percent of a single variable
freq(adsl, colvar = "colnbr", rowvar = "RACE", statlist = statlist(c("N", "n (x.x%)")))

# Unique subject count of a variable by another variable
freq(adsl, colvar = "colnbr", rowvar = "RACE", rowbyvar = "SEX", statlist = statlist("n"))

# Unique subject count of a variable by another variable using colvar and
# group to define the denominator
freq(adsl, colvar = "colnbr", rowvar = "RACE", rowbyvar = "SEX", statlist = statlist("n (x.x%)", denoms_by = c("colnbr", "SEX")))

# Cut records where count meets threshold for any column
freq(cdisc_adsl, rowvar = "ETHNIC", colvar = "TRT01P", statlist = statlist("n (x.x%)"), cutoff = "5", cutoff_stat = "n")

# Cut records where count meets threshold for a specific column
freq(cdisc_adsl, rowvar = "ETHNIC", colvar = "TRT01P", statlist = statlist("n (x.x%)"), cutoff = "Placebo >= 3", cutoff_stat = "n")

# Below illustrates how to make the same calls to freq() as above, using
```
# table and column metadata.

# Unique subject count of a single variable
```
table_metadata <- tibble::tribble(
  ~anbr, ~func, ~df, ~rowvar, ~statlist, ~colvar,
  1, "freq", "cdisc_adsl", "ETHNIC", statlist("n"), "TRT01PN"
)
```
generate_results(table_metadata,
                  column_metadata = column_metadata,
                  tbltype = "type1")

# Unique subject count and percent of a single variable
```
table_metadata <- tibble::tribble(
  ~anbr, ~func, ~df, ~rowvar, ~statlist, ~colvar,
  1, "freq", "cdisc_adsl", "ETHNIC", statlist(c("N", "n (x.x%)")), "TRT01PN"
)
```
generate_results(table_metadata,
                  column_metadata = column_metadata,
                  tbltype = "type1")

# Cut records where count meets threshold for any column
```
table_metadata <- tibble::tribble(
  ~anbr, ~func, ~df, ~rowvar, ~statlist, ~colvar,
  1, "freq", "cdisc_adsl", "ETHNIC", statlist("n (x.x%)"), "TRT01PN",
  cutoff = 5, cutoff_stat = "n"
)
```
generate_results(table_metadata,
                  column_metadata = column_metadata,
                  tbltype = "type1")

# Cut records where count meets threshold for a specific column
```
table_metadata <- tibble::tribble(
  ~anbr, ~func, ~df, ~rowvar, ~statlist, ~colvar,
  1, "freq", "cdisc_adsl", "ETHNIC", statlist("n (x.x%)"), "TRT01PN",
  cutoff = col1 >= 3, cutoff_stat = "n"
)
```
generate_results(table_metadata,
                  column Metadata = column_metadata,
                  tbltype = "type1")

---

**generate_results**

Generate Results using Table and Column Metadata

**Description**

Generate Results using Table and Column Metadata
Usage

generate_results(
  table_metadata,
  column_metadata_file = NULL,
  column_metadata = NULL,
  env = parent.frame(),
  tbltype = NULL,
  add_count = FALSE
)

Arguments

table_metadata  dataframe containing table metadata (see ?table_metadata for details)

column_metadata_file
  An excel file with the data for column_metadata. The file is read in with readxl::read_excel().
  Should not be used with column_metadata argument. Results in a dataframe containing the column metadata
  that is passed to tlgsetup (see tlgsetup() for details). If a column_metadata dataframe is passed in too, this
  is ignored.

column_metadata
  A dataframe containing the column metadata. This will be used in place of column_metadata_file.

env
  environment to find dataframe specified in the table metadata (defaults to parent environment)

tbltype
  If used, this will be used to subset the column_metadata based on the tbltype column.

add_count
  Passed to bind_table() should counts be added for tablebyvars?

Value

dataframe of results

---

gentlg

Output a tidytlg table

Description

Generate and output a huxtable with desired properties During this function call, the huxtable can be
written to an RTF or displayed in HTML.

Usage

gentlg(
  huxme = NULL,
  tlf = "Table",
  format = "rtf",
)
Arguments

**huxme** (optional) For tables and listings, An input dataframe containing all columns of interest. For graphs, either NULL or a ggplot object.

**tlf** (optional) String, representing the output choice. Choices are "Table" "Listing" "Figure". Abbreviations are allowed eg "T" for Table. Strings can be either upper- or lowercase. (Default = "Table")

**format** (optional) String, representing the output format. Choices are "rtf" and "html". Strings can be either upper- or lowercase. (Default = "rtf")

**colspan** (optional) A list of character vectors representing the spanning headers to be used for the table or listing. The first vector represents the top spanning header, etc. Each vector should have a length equal to the number of columns in the output data frame. A spanning header is identified through the use of the same column name in adjacent elements.

**idvars** (optional) Character vector defining the columns of a listing where repeated values should be removed recursively. If NULL then all column names are used in the algorithm. If NA, then the listing remains as is.

**plotnames** (optional) Character vector containing the names of the png files, with their extension to be incorporated for figure outputs. The png files need to be located in the path defined by the parameter opath.

**plotwidth** (optional) Numerical value that indicates the plot width in cm for figure outputs. (Default = 6)

**plotheight** (optional) Numerical value that indicates the plot height in cm for figure outputs. (Default = 5)

**wcol** (optional) Can be a single numerical value that represents the width of the first column or a vector, specifying the lengths of all columns in the final table or listing. When a single numerical value is used, this will be taken as the column width
for the first column. The other columns will be equally spaced across the remainder of the available space. Alternatively, a vector can be used to represent the widths of all columns in the final output. The order of the arguments needs to correspond to the order of the columns in the huxme dataset, that are not part of the formatting algorithms (eg anbr, roworder, newpage, newrow, indentme, boldme, by_value, by_order). The sum of the widths in the vector needs to be less or equal to one. When 'format="HTML"' wcol can take only one value, the width of the first column. (Default = 0.45)

orientation (optional) String: "portrait" or "landscape". (Default = "portrait")

opath (optional) File path pointing to the output files (including .png files for graphs). (Default = ".")

title_file An Excel file that will be read in with readxl::read_excel() to be used as the title and footers argument. The use of title or footers will override the values passed by this argument. The file should be either an xls or xlsx file with the columns 'TABLE ID', 'IDENTIFIER', and TEXT'. The file will be read in, subset to where the tblid matches the tlf argument, and identifiers with 'title' or 'footnote' will be used to populate the table.

file (required) String. Output identifier. File name will be adjusted to be lowercase and have - and _ removed, this will not affect table title.

title (required) String. Title of the output.

footers (optional) Character vector, containing strings of footnotes to be included.

print.hux (optional) Logical, indicating whether the output should be printed to RTF ('format = "rtf"') / displayed as HTML ('format = "HTML"'). (Default = TRUE) Note that RTF is written using quick_rtf_jnj() function and that the HTML is displayed via the huxtable::print_html function.

watermark (optional) String containing the desired watermark for RTF outputs.

colheader (optional) Character vector that contains the column labels for a table or listing. Default uses the column labels of huxme.

pagenum (optional) Logical. When true page numbers are added on the right side of the footer section in the format page x/y. (Default = FALSE)

Value

Formatted huxtable with desired properties for output to an RTF/HTML

Huxme Details

For tables and listings, formatting of the output can be dictated through the formatting columns (newrows, indentme, boldme, newpage), present in the input dataframe. The final huxtable will display all columns of the input dataframe, except any recognized formatting/sorting columns. For tables, the algorithm uses the column label as first column. The remaining columns are treated as summary columns. For graphs, you can pass a ggplot object directly into huxme and gentlg will save a png with with ggplot2::ggsave() and output an rtf.
Author(s)

Steven Haesendonckx shaesen2@its.jnj.com
Pelagia Alexandra Papadopoulou ppapadop@its.jnj.com

References

https://github.com/hughjonesd/huxtable

Examples

final <- data.frame(
  label = c(  
    "Overall", "Safety Analysis Set",  
    "Any Adverse event\(^{a}\)", "- Serious Adverse Event"  
  ),
  Drug_A = c("", "40", "10 (25\%)", "0"),
  Drug_B = c("", "40", "10 (25\%)", "0"),
  anbr = c(1, 2, 3, 4),
  roworder = c(1, 1, 1, 1),
  boldme = c(1, 0, 0, 0),
  newrows = c(0, 0, 1, 0),
  indentme = c(0, 0, 0, 1),
  newpage = c(0, 0, 0, 0)
)
# Produce output in rtf format
gentlg(huxme = final,
  wcol = c(0.70, 0.15, 0.15),
  file = "TSFAEX",
  title = "This is Amazing Demonstration 1",
  footers = c(  
    "Note: For demonstrative purposes only",
    "\(^{a}\) Subjects are counted once for any given event."  
  ))

# Pass in column headers instead of using variable name
gentlg(huxme = final,
  wcol = c(0.70, 0.15, 0.15),
  file = "TSFAEX",
  colheader = c("", "Drug A", "Drug B"),
  title = "This is Amazing Demonstration 1",
  footers = c(  
    "Note: For demonstrative purposes only",
    "\(^{a}\) Subjects are counted once for any given event."  
  ))

# Use a watermark
gentlg(
Generate nested count/percent for two or three levels

Description

This will call freq() multiple times and combine the levels together. This is useful for adverse event and concomitant mediations.

Usage

```
nested_freq(
  df,
  denom_df = df,
  colvar = NULL,
  tablebyvar = NULL,
  rowvar = NULL,
  rowbyvar = NULL,
)```
statlist = getOption("tidytlg.nested_freq.statlist.default"),
decimal = 1,
cutoff = NULL,
cutoff_stat = "pct",
subset = TRUE,
descending_by = NULL,
display_missing = FALSE,
rowtext = NULL,
row_header = NULL,
.keep = TRUE,
.ord = FALSE,
...
)

Arguments

df (required) dataframe containing the two levels to summarize
denom_df (optional) dataframe containing records to use as the denominator (default = df)
colvar (required) treatment variable within df to use to summarize
tablebyvar (optional) repeat entire table by variable within df.
rowvar (required) nested levels separated by a star, for example AEBODSYS*AEDECOD, this can handle up to three levels.
rowbyvar (optional) repeat rowvar by variable within df
statlist (optional) count/percent type to return (default = "n (x.x)")
decimal (optional) decimal precision root level (default = 1)
cutoff (optional) numeric value used to cut the data to a percentage threshold, if any column meets the threshold the entire record is kept.
cutoff_stat (optional) The value to cutoff by, n or pct. (default = 'pct')
subset (optional) An R expression that will be passed to a dplyr::filter() function to subset the data.frame
descending_by (optional) The column or columns to sort descending values by. Can also provide a named list to do ascending order. ex. c("VarName1" = "asc", "VarName2" = "desc") would sort by VarName1 in ascending order and VarName2 in descending order. If not provided, the columns will be sorted alphabetically.
display_missing (optional) Should the "missing" values be displayed? (default = FALSE)
rowtext (optional) A character vector used to rename the label column. If named, names will give the new level and values will be the replaced value. If unnamed, and the table has only one row, the rowtext will rename the label of the row.
row_header (optional) A character vector to be added to the table.
.keep (optional) Should the rowbyvar and tablebyvar be output in the table. If FALSE, rowbyvar will still be output in the label column. (default = TRUE)
.ord Should the ordering columns be output with the table? This is useful if a table needs to be merged or reordered in any way after build.
... (optional) Named arguments to be included as columns on the table.
**nested_freq**

**Value**

A dataframe of nested results by `colvar` and optional `tablebyvar`. There are a few additional variable sets added to support multiple requirements.

The level variables (level1_, level2_, level3_) will carry down the counts for each level to every record. This allows for easy sorting of nested groups.

The header variables (header1, header2, header3) will flag the header for each level to ensure each level header is sorted to the top of the level.

The n variables ("n_") provide a numeric variable containing frequency for each `colvar`. This can be used to sort and filter records.

The pct variables ("pct_") provide a numeric variable containing percentages for each `colvar`. This can be used to sort and filter records.

**Examples**

```r
adae <- data.frame(  
  SITEID = c("100", "100", "100", "200", "200", "200"),  
  USUBJID = c("Demo1-101", "Demo1-102", "Demo1-103",  
               "Demo1-104", "Demo1-105", "Demo1-106"),  
  AEBODSYS = c("Cardiac disorders", "Cardiac disorders",  
                "Respiratory, thoracic and mediastinal disorders",  
                "Infections and infestations",  
                "Skin and subcutaneous tissue disorders",  
                "Infections and infestations"),  
  AEDECOD = c("Arrhythmia supraventricular", "Cardiac failure",  
              "Chronic obstructive pulmonary disease", "Pneumonia",  
              "Pustular psoriasis", "Upper respiratory tract infection"),  
  colnbr = structure(    
    c(1L, 2L, 3L, 1L, 2L, 3L),  
    .Label = c("Active", "Placebo", "Comparator"),  
    class = "factor"  
  )
)

# Frequency and percent for two levels of nesting
nested_freq(adae  
  ,colvar = "colnbr"  
  ,rowvar = "AEBODSYS*AEDECOD"  
  ,statlist = statlist("n (x.x%)"))

# Frequency and percent for three levels of nesting (for illustrative # purpose)
nested_freq(adae  
  ,colvar = "colnbr"  
  ,rowvar = "SITEID*AEBODSYS*AEDECOD"  
  ,statlist = statlist("n (x.x%)"))
```
# Cut records where pct meets threshold for a any column
nested_freq(cdisc_adae,
  colvar = "TRTA",
  rowvar = "AEBODSYS*AEDECOD",
  statlist = statlist("n (x.x%)", distinct = TRUE),
  cutoff = 2,
  cutoff_stat = "n")

# Cut records where pct meets threshold for a specific column
nested_freq(cdisc_adae,
  rowvar = "AEBODSYS*AEDECOD",
  colvar = "TRTAN",
  statlist = statlist("n (x.x%)", distinct = TRUE),
  cutoff = "54 >= 2",
  cutoff_stat = "n")

# Frequency and percent for two levels of nesting and sort by descending
# active
nested_freq(adae,
  colvar = "colnbr",
  rowvar = "AEBODSYS*AEDECOD",
  statlist = statlist("n (x.x%)"),
  descending = "Active")

# Below illustrates how make the same calls to nested_freq() as above, using
# table and # column metadata along with generate_results().

column_metadata <- tibble::tribble(
  ~tbltype, ~coldef, ~decode,
  "type1", "1", "Placebo",
  "type1", "2", "Low",
  "type1", "3", "High"
)

table_metadata <- tibble::tribble(
  ~anbr, ~func, ~df, ~rowvar, ~tbltype, ~colvar, ~statlist,
  ~1, "nested_freq", "cdisc_adae", "AEBODSYS*AEDECOD", "type1", "TRTP",
  statlist("n (x.x%)"))

#generate_results(table_metadata,
#column_metadata_file = tidytlg_metadata(path)

# Frequency and percent for three levels of nesting (for illustrative purpose)
table_metadata <- tibble::tribble(
  ~anbr, ~func, ~df, ~rowvar, ~tbltype, ~colvar, ~statlist,
  ~1, "nested_freq", "cdisc_adae", "SITEID*AEBODSYS*AEDECOD", "type1", "TRTP",
  statlist("n (x.x%)"))

# Commented out because it takes too long
replace_na_with_blank  

Description

Used to swap in "" for by variables so the headers sort correctly to the top

Usage

```
replace_na_with_blank(x)
```

Arguments

- `x` variable to check for NA and replace with "".
Value

x with NA's replaced with "". Factors will add "" as the first level.

Examples

replace_na_with_blank(c("a", "b", NA))

replace_na_with_blank(factor(c("a", "b", NA), levels = c("a", "b")))

**rmdpstitl**e

*Get Titles and Footnotes for all TLGs or one specific TLG*

Description

Get Titles and Footnotes for all TLGs or one specific TLG

Usage

```r
ermdpstitlue(
  df,
  tblid,
  idvar = "tblid",
  identifier = "identifier",
  text = "text"
)
```

Arguments

- **df**: dataframe with three variables; table name, row identifier (TITLE or FOOTNOTE), and title/footnote text to display
- **tblid**: character vector containing the table id, optional, used to subset df to a specific table (defaults to tblid)
- **idvar**: character vector containing the variable in df that contains your table id
- **identifier**: character vector containing the variable name in df that contains your record identifier (defaults to "identifier")
- **text**: character vector containing the variable name in df that contains your title and footnote text (defaults to "text")

Value

list of length two, the first element contains the titles as a tibble and the second contains the footnotes as a list
Examples

tblid <- "TSIDEM01"

titles <- tibble::tribble(
  ~tblid, ~identifier, ~text,
  "TSIDEM01", "TITLE", "Demographics Example",
  "TSIDEM01", "FOOTNOTE1", "Example footnote."
)

title_foot <- rmdpstitle(titles, tblid)
title_foot[[1]]
title_foot[[2]]

roundSAS

SAS rounding in R

Description

roundSAS is an alternative rounding function, ensuring that decimals equal or bigger than 5 are rounded upwards to the nearest number and returned as character vector.

Usage

roundSAS(x, digits = 0, as_char = FALSE, na_char = NULL)

Arguments

x Numeric vector.

digits An integer specifying the number of decimal places to be displayed after rounding. Default is 0.

as_char logical value indicating conversion of rounded numerical vector to character vector; default is FALSE

na_char A character string indicating missing value; if not specified, "NA" is created

Details

At the midpoint of a decimal place (e.g. 0.5, 1.5), the round function in R rounds to the nearest even number (i.e. 0.5 is rounded to 0; 1.5 is rounded to 2), whereas SAS rounds to the nearest number (i.e. 0.5 is rounded to 1; 1.5 is rounded to 2). The roundSAS function is an alternative rounding function for R that ensures rounding to the nearest number, as done in SAS. roundSAS comes from this Stack Overflow post https://stackoverflow.com/questions/12688717/round-up-from-5

Value

character vector of rounded values
Example

### input data vector with midpoint decimals
```r
x <- c(-2.5, -1.5, -0.5, 0.5, 1.5, 2.5)
```

### rounds to integer
```r
roundSAS(x, digits = 0)
```

### input data vector with a missing value
```r
y <- c(8.65, 8.75, NA, 9.85, 9.95)
```

### rounds to tenths and label the missing value with "NE"
```r
roundSAS(y, digits = 1, as_char = TRUE, na_char = "NE")
```

---

### spanning_headers

**Spanning headers for outputs**

**Description**

This will create the list object to be passed to gentlg() You can create as many spanning headers as you like, just add variables prefixed with span to the column metadata.

**Usage**

```r
spanning_headers(column_metadata)
```

**Arguments**

- `column_metadata`
  - dataframe containing the column metadata that is passed to tlgsetup() (see tlgsetup() for details)

**Value**

List of character vectors containing column headers for an output.

**Examples**

```r
column_metadata <-
tibble::tribble(
  ~tbltype, ~coldef, ~decode, ~span1,
  "type1", "0", "Placebo", "",
  "type1", "54", "Low Dose", "Xanomeline",
  "type1", "81", "High Dose", "Xanomeline",
  "type1", "54+81", "Total Xanomeline", ""
)

spanning_headers(column_metadata)
```
Create a statlist interface for a table

Description

The statlist is the interface for the presentation of data in a tidytlg table.

Usage

statlist(stats, ...)

Arguments

stats  (required) A character vector of statistics to display in the table.
...
(optional) Additional configuration for stats. See sections below for allowable arguments.

Value

A statlist object that can be passed in the 'statlist' argument of freq, nested_freq, or univar.

Statlists for freq() and nested_freq()

freq() statlists can be composed of n(count), N(denominator), and x.x(percentage, formatted with or without a percent sign). Denominators will include missing values if the 'display_missing' argument is TRUE, otherwise they will be excluded. They can be arranged in the following ways:

• n
• n/N
• n (x.x)
• n (x.x%)  
• n/N (x.x)
• n/N (x.x%)

The following other configurations are supported:

• denoms_by - Controls what groupings of variables should define the denominator. Variables should be passed as a quoted vector
• distinct - A boolean value. Should the numerator reflect distinct USUBJIDs or event counts. Defaults to TRUE which captures distinct subjects.
• distinct_by - A character value used to select the variable that should be used to "distinct" the freq tables. Defaults to USUBJID.
• zero_denom - The string to display when there are no records found in an entire denominator group. Defaults to "-".
• zero_n - The string to display when there are no records found for a numerator. Defaults to "0".
Statlists for univar statlists

- N
- SUM
- MEAN
- GeoMEAN
- SD
- SE
- CV
- GSD
- GSE
- MEANSD
- MEANSE
- MEDIAN
- MIN
- MAX
- RANGE
- Q1
- Q3
- IQRANGE
- MEDRANGE
- MEDIQRANGE
- MEAN_CI
- GeoMEAN_CI

where GeoMEAN: Geometric Mean, CV: Coefficient of Variation, GSD: Geometric Std. Dev., GSE: Geometric Std. Error, MEAN_CI: Mean (95% C.I.), GeoMEAN_CI: Geometric Mean (95% C.I.). In calculating geometric statistics, if there are zero values in the inputs, zero values will be excluded before calculating geometric statistics.

Examples

freq(
  mtcars,
  colvar = "gear",
  rowvar = "cyl",
  rowbyvar = "am",
  statlist = statlist("n/N (x.x)",
    distinct = FALSE,
    denoms_by = c("gear", "am"),
    zero_denom = "_0_"
  )
)


**table_metadata**

Metadata describing the data, functions and arguments needed to produce your results.

**Description**

Metadata describing the data, functions and arguments needed to produce your results.

**Usage**

`table_metadata`

**Format**

A data frame with one row per function call and 16 variables:

- **func**: name of the function you wish to call
- **df**: data frame to pass to the function call
- **subset**: filter df records, this is passed directly to filter, ex. "AESER == 'Y'"
- **rowvar**: variable being summarized that will pass to the function call
- **rowtext**: row label text to display in the table
- **row_header**: header text to display above row summary
- **statlist**: list of statistics in the analysis, see individual functions for what is available per function (eg. "N, n (x.x)")
- **colvar**: variable used to determine the columns of the table
- **decimal**: decimal precision
- **rowbyvar**: repeat rowvar summary by this variable/s, comma separated for multiple (eg. "ETHNIC, AGEGR1")
- **tablebyvar**: repeat the entire table summary by this variable/s, comma separated for multiple (eg. "ETHNIC, AGEGR1")
- **denom_df**: used to set denominators if df does not contain all required records

**tidytlg**

*tidytlg: A package for producing tables, listings, and graphs (TLGs) using tidyverse packages.*

**Description**

The tidytlg package provide a set of function allowing you to produce TLGs using table metadata.
tidytlg Options

- tidytlg.row_type.levels - The values of row_type and their respective levels. Default: c("TABLE_BY_HEADER", "BY_HEADER1", "BY_HEADER2", "BY_HEADER3", "BY_HEADER4", "BY_HEADER5", "HEADER", "N", "VALUE", "NESTED")
- tidytlg.fontsize.title - Font size for titles in points. Default: 10
- tidytlg.fontsize.table.footnote - Font size for footnotes in points. For tables. Default: 9
- tidytlg.fontsize.listing.footnote - Font size for footnotes in points. For listings. Default: 8
- tidytlg.fontsize.graph.footnote - Font size for footnotes in points. For graphs. Default: 8
- tidytlg.fontsize.table - Font size for tables in points. Default: 9
- tidytlg.fontsize.graph - Font size for graphs in points. Default: 10
- tidytlg.fontsize.listing - Font size for listings in points. Default: 8
- tidytlg.right.padding - Amount of right padding for cells in points. Default: 1
- tidytlg.left.padding - Amount of left padding for cells in points. Default: 1
- tidytlg.stat_labels - Labels to be used for each summary statistic in the output table. Will need to have all available statistics if this option is changed!
- tidytlg.precision.extra - Value to be added on for each summary statistic when calculating precision. This will be used to make different statistics have different precision as needed
- tidytlg.nested_freq.statlist.default - Default statlist object for nested_freq tables. Default: statlist("n (x.x)")
- tidytlg.univar.statlist.default - Default statlist object for univar tables. Default: statlist(c("N", "MEANSD", "MEDIAN", "RANGE", "IQRANGE"))
- tidytlg.freq.statlist.default - Default statlist object for freq tables. Default: statlist("n (x.x)")
- tidytlg.stat_labels - A data.frame controlling how the stats are labeled in a univar table. See 'Default Stat Labels' section for defaults.
- tidytlg.denoms.message - A boolean, should a message print detailing what the denominators are?

Default Stat Labels

<table>
<thead>
<tr>
<th>stat</th>
<th>label</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>SUM</td>
<td>Sum</td>
</tr>
<tr>
<td>MEAN</td>
<td>Mean</td>
</tr>
<tr>
<td>GeoMEAN</td>
<td>Geometric Mean</td>
</tr>
<tr>
<td>SD</td>
<td>Std. Dev.</td>
</tr>
<tr>
<td>SE</td>
<td>Std. Error</td>
</tr>
<tr>
<td>GSD</td>
<td>Geometric Std. Dev.</td>
</tr>
<tr>
<td>GSE</td>
<td>Geometric Std. Error</td>
</tr>
<tr>
<td>CV</td>
<td>CV</td>
</tr>
<tr>
<td>MEANSD</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>MEANSE</td>
<td>Mean (SE)</td>
</tr>
<tr>
<td>MEDIAN</td>
<td>Median</td>
</tr>
<tr>
<td>MIN</td>
<td>Minimum</td>
</tr>
</tbody>
</table>
MAX       Maximum
RANGE     Range
Q1        First quartile
Q3        Third quartile
IQRANGE   IQ range
MEDRANGE  Median (Range)
MEDIQRANGE Median (Q1; Q3)
MEAN_CI   Mean (95% C.I.)
GeoMEAN_CI Geometric Mean (95% C.I.)

Default Precision Extra

<table>
<thead>
<tr>
<th>stat</th>
<th>extra</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>SUM</td>
<td>0</td>
</tr>
<tr>
<td>MEAN</td>
<td>1</td>
</tr>
<tr>
<td>GeoMEAN</td>
<td>1</td>
</tr>
<tr>
<td>SD</td>
<td>2</td>
</tr>
<tr>
<td>SE</td>
<td>2</td>
</tr>
<tr>
<td>GSD</td>
<td>2</td>
</tr>
<tr>
<td>GSE</td>
<td>2</td>
</tr>
<tr>
<td>CV</td>
<td>1</td>
</tr>
<tr>
<td>MEDIAN</td>
<td>1</td>
</tr>
<tr>
<td>MIN</td>
<td>0</td>
</tr>
<tr>
<td>MAX</td>
<td>0</td>
</tr>
<tr>
<td>Q1</td>
<td>1</td>
</tr>
<tr>
<td>Q3</td>
<td>1</td>
</tr>
<tr>
<td>LCL_MEAN</td>
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</tr>
<tr>
<td>UCL_MEAN</td>
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</tr>
<tr>
<td>LCL_GeoMEAN</td>
<td>2</td>
</tr>
<tr>
<td>UCL_GeoMEAN</td>
<td>2</td>
</tr>
</tbody>
</table>

Updating Options

- For a single session, an option can be changed by `option(<optionToChange> = <NewValue>)`
- To change an option for a single projects across sessions in that projects, place the options update in the `.Rprofile` in that project directory.
- To change an option for a user across all sessions, place the options update in the `.Rprofile` file in the users home directory.
- To change an option for all users in an R environment, place the options update in the `.Rprofile.site` file in the R home directory.
### tidytlg_titles

*Helper functions for returning files used in gentlg*

**Description**

Helper functions for returning files used in gentlg

**Usage**

```r
tidytlg_titles(path)
tidytlg_metadata(path)
```

**Arguments**

- `path`  
  Working directory of the project

**Value**

A character vector to the requested file.

### tlgsetup

*Setup data to support the specified column type*

**Description**

tlgsetup is useful for pre-processing total columns and columns composed of other columns. tlgsetup is called internally by `generate_results()` and can be run manually for custom tables.

**Usage**

```r
tlgsetup(
  df,
  var,
  column_metadata_file = NULL,
  column_metadata = NULL,
  tbltype = NULL
)
```
Arguments

- `df`: dataframe of records for analysis
- `var`: character vector that identifies the numeric column/treatment variable
- `column_metadata_file`: A file containing the column metadata. Read in with `readxl::read_excel()`. If a `column_metadata` dataframe is passed in too, this is ignored.
- `column_metadata`: A dataframe containing the column metadata. This will be used in place of `column_metadata_file`.
- `tbltype`: A value used to subset the `column_metadata`, both this and the file requirements are needed to bind the data to the table.

Value

dataframe with observations added to support the column type as well as the factor variable `colnbr` which is used as our new column summary variable. Regardless of if a `coldef` exists in data, the column will exist in the table.

Examples

def <-
tibble::tribble(
  ~TRT01AN, ~USUBJID,
  0,     "A",
  54,    "B",
  81,    "C"
)

tlgsetup(df, "TRT01AN", column_metadata = column_metadata)

# Using a dataframe of column metadata
column_metadata <-
tibble::tribble(
  ~tbltype, ~coldef, ~decode, ~span1,
  "type1", "0", "Placebo", "",
  "type1", "54", "Low Dose", "Xanomeline",
  "type1", "81", "High Dose", "Xanomeline",
  "type1", "54+81", "Total Xanomeline", ""
)

tlgsetup(df, "TRT01AN", column_metadata = column_metadata)

---

**univar**

*Descriptive statistics*

**Description**

Univariate statistics for a variables by treatment and/or group.
Usage

univar(
  df,
  colvar = NULL,
  tablebyvar = NULL,
  rowvar = NULL,
  rowbyvar = NULL,
  statlist = getOption("tidytlg.univar.statlist.default"),
  decimal = 1,
  precisionby = NULL,
  precisionon = NULL,
  wide = FALSE,
  alpha = 0.05,
  rowtext = NULL,
  row_header = NULL,
  .keep = TRUE,
  .ord = FALSE,
  ...
)

Arguments

df (required) dataframe containing records to summarize by treatment

colvar (required) character vector of the treatment variable within the dataframe

tablebyvar (optional) repeat entire table by variable within df

rowvar (required) character vector of variable to summarize within the dataframe

rowbyvar (optional) repeat rowvar by variable within df

statlist (optional) statlist object of stats to keep (default = statlist(c("N", "MEANSD",
"MEDIAN", "RANGE", "IQRANGE")))

decimal (optional) decimal precision root level, when using precisionby this will be used as the base decimal cap (default = 1)

precisionby (optional) vector of by variable(s) to use when calculating parameter based precision

precisionon (optional) variable to use when calculating parameter based precision. If precisionby is specified but not precisionon this will default to rowvar

wide (optional) logical indicating to convert labels to column and columns to labels (default = FALSE)

alpha (optional) alpha level for 2-sided confidence interval (default = 0.05)

rowtext (optional) A text string to replace the label value on the table. Useful for tables with a single row.

row_header (optional) A row to add as a header for the table.

.keep (optional) Should the rowbyvar and tablebyvar be output in the table. If FALSE, rowbyvar will still be output in the label column. (default = TRUE)

.ord Should the ordering columns be output with the table? This is useful if a table needs to be merged or reordered in any way after build.

... (optional) Named arguments to be included as columns on the table.
Value
dataframe of results

Examples

adsl <-
  structure(
    list(
      USUBJID = c("DEMO-101", "DEMO-102", "DEMO-103", "DEMO-104",
                  "DEMO-105", "DEMO-106"),
      AGE = c(59, 51, 57, 65, 21, 80),
      SEX = c("F", "M", "F", "M", "F", "M"),
      WEIGHTBL = c(83.6, 75, 84, 90, 65, 70),
      colnbr = structure(
        c(1L, 3L, 2L, 2L, 3L, 1L),
        .Label = c("Placebo", "Low", "High"),
        class = "factor"
      )
    ),
    row.names = c(NA, 6L),
    class = "data.frame"
  )

# N, Mean(SD), Median, Range, IQ Range for a rowvar by colvar
univar(adsl
  ,colvar = "colnbr"
  ,rowvar = "AGE")

# N and Mean for a rowvar by colvar
univar(adsl
  ,colvar = "colnbr"
  ,rowvar = "AGE"
  ,statlist = statlist(c("N", "MEAN")))

# N and Mean for a rowvar by colvar and a by variable
univar(adsl
  ,colvar = "colnbr"
  ,rowvar = "AGE"
  ,rowbyvar = "SEX"
  ,statlist = statlist(c("N", "MEAN")))

# Below illustrates how make the same calls to univar() as above, using table # and column metadata # along with generate_results().

column_metadata <- tibble::tribble(
  ~tbltype, ~coldef, ~decode,
  "type1", "0", "Placebo",
  "type1", "54", "Low",
  "type1", "81", "High"
)

# N, Mean(SD), Median, Range, IQ Range for a rowvar by colvar
univar

```r
table_metadata <- tibble::tribble(
  ~anbr, ~func, ~df, ~rowvar, ~tbltype, ~colvar, 
  "1", "univar", "cdisc_adae", "AGE", "type1", "TRTA"
)

generate_results(table_metadata, column_metadata = column_metadata, 
  tbltype = "type1")

# N and Mean for a rowvar by colvar

generate_results(table_metadata, column_metadata = column_metadata, 
  tbltype = "type1")

# N and Mean for a rowvar by colvar and a by variable

generate_results(table_metadata, column_metadata = column_metadata, 
  tbltype = "type1")
```

Index

* CDISC
  cdisc adae, 8
  cdisc adlb, 10
  cdisc adsl, 12
  cdisc advs, 14
* adae
  cdisc adae, 8
* adlb
  cdisc adlb, 10
* adsl
  cdisc adsl, 12
* advs
  cdisc advs, 14
* datasets
  cdisc adae, 8
  cdisc adlb, 10
  cdisc adsl, 12
  cdisc advs, 14
column_metadata, 16
table_metadata, 35

add_format, 2
add_indent, 3
add_newrows, 4

bind_table, 6

43