

# Package ‘summarytools’

February 22, 2019

**Type** Package

**Title** Tools to Quickly and Neatly Summarize Data

**Version** 0.9.2

**Description** Data frame summaries, cross-tabulations, weight-enabled frequency tables and common univariate statistics in concise tables available in a variety of formats (plain ASCII, Markdown and HTML). A good point-of-entry for exploring data, both for experienced and new R users.

**Imports** checkmate, dplyr, grDevices, htmltools, lubridate, magick, matrixStats, methods, pander, pryr, rapportools, RCurl, stats, tidy, utils

**Suggests** rstudioapi, knitr, rmarkdown

**Depends** R (>= 2.10)

**VignetteBuilder** knitr

**LazyData** true

**License** GPL-2

**URL** <https://github.com/dcomtois/summarytools>

**BugReports** <https://github.com/dcomtois/summarytools/issues>

**Encoding** UTF-8

**RoxygenNote** 6.1.1

**NeedsCompilation** no

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summarytools-package *Extensive Summarizing Tools With Flexible Output*

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### Description

**summarytools** provides users with functions to neatly and quickly summarize numerical and categorical data. Data frame summaries, frequency tables and cross-tabulations, as well as common univariate statistics can be produced in a straightforward manner. Users with little to no prior R programming experience but who are familiar with the concepts (and maybe with some procedures coming from other software packages) should find their way easily.

### Details

These are the four core functions:

**dfSummary** Extensive yet legible data frame summaries.

**freq** Frequency tables supporting weights and displaying proportions of valid and of total data, including cumulative proportions.

**descr** All common univariate descriptive stats for single vectors or for all numerical vectors in a data frame.

**ctable** Cross-tabulations for two categorical vectors or factors. Choose between *Total*, *Columns* or *Rows* proportions.

**Output formats** are:

**plain ascii** Ideal when looking at results in the console.

**rmarkdown** Ideal when writing short papers or presentations.

**html** This format is well integrated in RStudio (but will work with any browser). Use the `view()` function to see results appear directly in RStudio's Viewer or in your default Web Browser.

### Author(s)

**Maintainer:** Dominic Comtois <dominic.comtois@gmail.com>

### See Also

Useful links:

- <https://github.com/dcomtois/summarytools>
- Report bugs at <https://github.com/dcomtois/summarytools/issues>

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cleartmp

*Delete Temporary Html Files*

---

### Description

Delete temporary files created when using generic print method with `method='browser'` or `method='viewer'`, or when calling `view()` function.

### Usage

```
cleartmp(all = TRUE, silent = FALSE, verbose = FALSE)
```

### Arguments

<code>all</code>	Logical. When TRUE (default), all temporary summarytools files are deleted. When FALSE, only the latest file is.
<code>silent</code>	Logical. Hide confirmation messages (FALSE by default).
<code>verbose</code>	Logical. Display a message for every file that is deleted. FALSE by default.

### Details

All temporary files are deleted automatically when R session is ended. This function is thus an overkill in most circumstances.

### Author(s)

Dominic Comtois, <dominic.comtois@gmail.com>>

ctable

*Cross-Tabulation***Description**

Cross-tabulation for a pair of categorical variables (or factors) with either row, column, or total proportions, as well as marginal sums.

**Usage**

```
ctable(x, y, prop = st_options("ctable.prop"), useNA = "ifany",
       totals = st_options("ctable.totals"), style = st_options("style"),
       round.digits = 1, justify = "right",
       plain.ascii = st_options("plain.ascii"),
       headings = st_options("headings"),
       display.labels = st_options("display.labels"), split.tables = Inf,
       dnn = c(substitute(x), substitute(y)), ...)
```

**Arguments**

x	First categorical variable - values will appear as row names.
y	Second categorical variable - values will appear in as column names.
prop	Proportions to display; “r” for <i>rows</i> (default), “c” for <i>columns</i> , “t” for <i>total</i> , or “n” for <i>none</i> . This option can be set globally; see <a href="#">st_options</a> .
useNA	Argument passed on to <a href="#">table</a> ; One of “ifany” (default), “no”, or “always”.
totals	Logical. Should row and column totals be displayed? Defaults to TRUE. To change this default value globally, see <a href="#">st_options</a> .
style	Style to be used by <a href="#">pander</a> when rendering output table; One of “simple” (default), “grid”, or “rmarkdown”. This option can be set globally; see <a href="#">st_options</a> .
round.digits	Number of significant digits to display. Defaults to 1. To change this default value globally, see <a href="#">st_options</a> .
justify	String indicating alignment of columns; one of “l” (left) “c” (center), or “r” (right). Defaults to “r”.
plain.ascii	Logical. <a href="#">pander</a> argument; when TRUE, no markup characters will be used (useful when printing to console). Defaults to TRUE unless style = 'rmarkdown', in which case it will be set to FALSE automatically. To change the default value globally, use <a href="#">st_options</a> .
headings	Logical. Set to FALSE to omit heading section. Can be set globally via <a href="#">st_options</a> .
display.labels	Logical. Should variable / data frame label be displayed in the title section? Default is TRUE. To change this default value globally, use <a href="#">st_options</a> .
split.tables	<a href="#">Pander</a> argument that specifies how many characters wide a table can be. Inf by default.
dnn	Names to be used in output table. Vector of two strings; By default, the character values for arguments x and y are used.
...	Additional arguments passed to <a href="#">pander</a> .

## Details

Rmarkdown does not, to this day, support multi-header tables. Therefore, until such support is available, the recommended way to display cross-tables in .Rmd documents is to use ‘method=render’ with the ‘print()’ or ‘view()’ functions. See package vignettes for examples.

## Value

A frequency table of classes `matrix` and `summarytools` with added attributes used by `print` method.

## Author(s)

Dominic Comtois, <dominic.comtois@gmail.com>

## See Also

[table](#), [xtabs](#)

## Examples

```
data("tobacco")
ctable(tobacco$gender, tobacco$smoker)

# Use with() to simplify syntax
with(tobacco, ctable(smoker, diseased))

# Show column proportions, without totals
with(tobacco, ctable(smoker, diseased, prop = "c", totals = FALSE))

# Simple 2 x 2 table
with(tobacco, ctable(gender, smoker, totals = FALSE, headings = FALSE, prop = "n"))

# Grouped cross-tabulations
with(tobacco, stby(list(x = smoker, y = diseased), gender, ctable))

## Not run:
ct <- ctable(tobacco$gender, tobacco$smoker)

# Show html results in browser
print(ct, method = "browser")

# Save results to html file
print(ct, file = "ct_gender_smoker.html")

# Save results to text file
print(ct, file = "ct_gender_smoker.txt")

## End(Not run)
```

descr

*Univariate Statistics for Numerical Data***Description**

Calculates mean, sd, min, Q1\*, median, Q3\*, max, MAD, IQR\*, CV, skewness\*, SE.skewness\*, and kurtosis\* on numerical vectors. (\*) Not available when using sampling weights.

**Usage**

```
descr(x, stats = st_options("descr.stats"), na.rm = TRUE,
      round.digits = st_options("round.digits"),
      transpose = st_options("descr.transpose"),
      style = st_options("style"), plain.ascii = st_options("plain.ascii"),
      justify = "right", headings = st_options("headings"),
      display.labels = st_options("display.labels"), split.tables = 100,
      weights = NA, rescale.weights = FALSE, ...)
```

**Arguments**

x	A numerical vector or a data frame.
stats	Which stats to produce. Either “all” (default), “fivenum”, “common” (see Details), or a selection of: “mean”, “sd”, “min”, “q1”, “med”, “q3”, “max”, “mad”, “iqr”, “cv”, “skewness”, “se.skewness”, “kurtosis”, “n.valid”, and “pct.valid”. This can be set globally via <a href="#">st_options</a> (“descr.stats”).
na.rm	Argument to be passed to statistical functions. Defaults to TRUE. Can be set globally; see <a href="#">st_options</a> .
round.digits	Number of significant digits to display. Defaults to 2, and can be set globally (see <a href="#">st_options</a> ).
transpose	Logical. Makes variables appears as columns, and stats as rows. Defaults to FALSE. To change this default value, see <a href="#">st_options</a> (option “descr.transpose”).
style	Style to be used by <a href="#">pander</a> when rendering output table; One of “simple” (default), “grid”, or “rmarkdown” This option can be set globally; see <a href="#">st_options</a> .
plain.ascii	Logical. <a href="#">pander</a> argument; when TRUE, no markup characters will be used (useful when printing to console). Defaults to TRUE unless style = 'rmarkdown', in which case it will be set to FALSE automatically. To change the default value globally, see <a href="#">st_options</a> .
justify	Alignment of numbers in cells; “l” for left, “c” for center, or “r” for right (default). Has no effect on <i>html</i> tables.
headings	Logical. Set to FALSE to omit heading section. Can be set globally via <a href="#">st_options</a> . TRUE by default.
display.labels	Logical. Should variable / data frame labels be displayed in the title section? Default is TRUE. To change this default value globally, see <a href="#">st_options</a> .

<code>split.tables</code>	Pander argument that specifies how many characters wide a table can be. 100 by default.
<code>weights</code>	Vector of weights having same length as <code>x</code> . NA (default) indicates that no weights are used.
<code>rescale.weights</code>	Logical. When set to TRUE, the total count will be the same as the unweighted <code>x</code> . FALSE by default.
<code>...</code>	Additional arguments passed to <a href="#">pander</a> .

**Value**

An object having classes `matrix` and `summarytools` containing the statistics, with extra attributes used by [print](#) method.

**Author(s)**

Dominic Comtois, <[dominic.comtois@gmail.com](mailto:dominic.comtois@gmail.com)>

**Examples**

```
data("exams")

# All stats for all numerical variables
descr(exams)

# Only common statistics
descr(exams, stats = "common")

# Arbitrary selection of statistics, transposed
descr(exams, stats = c("mean", "sd", "min", "max"), transpose = TRUE)

# Rmarkdown-ready
descr(exams, plain.ascii = FALSE, style = "rmarkdown")

# Grouped statistics
data("tobacco")
with(tobacco, stby(BMI, gender, descr))

# Grouped statistics, transposed
with(tobacco, stby(BMI, age.gr, descr, stats = "common", transpose = TRUE))

## Not run:
# Show in Viewer (or browser if not in RStudio)
view(descr(exams))

# Save to html file with title
print(descr(exams),
      file = "descr_exams.html",
      report.title = "BMI by Age Group",
      footnote = "<b>Schoolyear:</b> 2018-2019<br/><b>Semester:</b> Fall")
```

```
## End(Not run)
```

---

dfSummary

*Data frame Summary*


---

## Description

Summary of a data frame consisting of: variable names, labels if any, factor levels, frequencies and/or numerical summary statistics, and valid/missing observation counts.

## Usage

```
dfSummary(x, round.digits = st_options("round.digits"),
  varnumbers = st_options("dfSummary.varnumbers"),
  labels.col = st_options("dfSummary.labels.col"),
  valid.col = st_options("dfSummary.valid.col"),
  na.col = st_options("dfSummary.na.col"),
  graph.col = st_options("dfSummary.graph.col"),
  graph.magnif = st_options("dfSummary.graph.magnif"),
  style = st_options("dfSummary.style"),
  plain.ascii = st_options("plain.ascii"), justify = "left",
  col.widths = NA, headings = st_options("headings"),
  display.labels = st_options("display.labels"),
  max.distinct.values = 10, trim.strings = FALSE,
  max.string.width = 25, split.cells = 40, split.tables = Inf,
  tmp.img.dir = st_options("tmp.img.dir"),
  silent = st_options("dfSummary.silent"), ...)
```

## Arguments

x	A data frame.
round.digits	Number of significant digits to display. Defaults to 2 and can be set globally; see <a href="#">st_options</a> .
varnumbers	Logical. Should the first column contain variable number? Defaults to TRUE. Can be set globally; see <a href="#">st_options</a> , option “dfSummary.varnumbers”.
labels.col	Logical. If TRUE, variable labels (as defined with <b>rappor</b> tools, <b>Hmisc</b> or <b>summarytools</b> ’ label functions) will be displayed. TRUE by default, but the <i>labels</i> column is only shown if at least one column has a defined label. This option can also be set globally; see <a href="#">st_options</a> , option “dfSummary.labels.col”.
valid.col	Logical. Include column indicating count and proportion of valid (non-missing) values. TRUE by default, but can be set globally; see <a href="#">st_options</a> , option “dfSummary.valid.col”.
na.col	Logical. Include column indicating count and proportion of missing (NA) values. TRUE by default, but can be set globally; see <a href="#">st_options</a> , option “dfSummary.na.col”.

graph.col	Logical. Display barplots / histograms column in <i>html</i> reports. TRUE by default, but can be set globally; see <a href="#">st_options</a> , option “dfSummary.graph.col”.
graph.magnif	Numeric. Magnification factor, useful if the graphs show up too large (then use a value < 1) or too small (use a value > 1). Must be positive. Default to 1. Can be set globally; see <a href="#">st_options</a> , option “dfSummary.graph.magnif”.
style	Style to be used by <a href="#">pander</a> when rendering output table. Defaults to “multiline”. The only other valid option is “grid”. Style “simple” is not supported for this particular function, and “rmarkdown” will fallback to “multiline”.
plain.ascii	Logical. <a href="#">pander</a> argument; when TRUE, no markup characters will be used (useful when printing to console). Defaults to TRUE. Set to FALSE when in context of markdown rendering. To change the default value globally, see <a href="#">st_options</a> .
justify	String indicating alignment of columns; one of “l” (left) “c” (center), or “r” (right). Defaults to “l”.
col.widths	Numeric or character. Vector of column widths. If numeric, values are assumed to be numbers of pixels. Otherwise, any CSS-supported units can be used. NA by default, meaning widths are calculated automatically.
headings	Logical. Set to FALSE to omit headings. To change this default value globally, see <a href="#">st_options</a> .
display.labels	Logical. Should data frame label be displayed in the title section? Default is TRUE. To change this default value globally, see <a href="#">st_options</a> .
max.distinct.values	The maximum number of values to display frequencies for. If variable has more distinct values than this number, the remaining frequencies will be reported as a whole, along with the number of additional distinct values. Defaults to 10.
trim.strings	Logical; for character variables, should leading and trailing white space be removed? Defaults to FALSE. See <i>details</i> section.
max.string.width	Limits the number of characters to display in the frequency tables. Defaults to 25.
split.cells	A numeric argument passed to <a href="#">pander</a> . It is the number of characters allowed on a line before splitting the cell. Defaults to 40.
split.tables	<b>pander</b> argument which determines the maximum width of a table. Keeping the default value (Inf) is recommended.
tmp.img.dir	Character. Directory used to store temporary images when rendering dfSummary() with ‘method = “pander”’, ‘plain.ascii = TRUE’ and ‘style = “grid”’. See <i>Details</i> .
silent	Logical. Hide console messages. FALSE by default. To change this value globally, see <a href="#">st_options</a> .
...	Additional arguments passed to <a href="#">pander</a> .

## Details

The default `plain.ascii = TRUE` option is there to make results appear cleaner in the console. When used in a context of *rmarkdown* rendering, set this option to FALSE.

When the `trim.strings` is set to `TRUE`, trimming is done *before* calculating frequencies, so those will be impacted accordingly.

Specifying `tmp.img.dir` allows producing results consistent with pandoc styling while also showing *png* graphs. Due to the fact that in Pandoc, column widths are determined by the length of cell contents **even if said content is merely a link to an image**, we cannot use the standard R temporary directory to store the images. We need a shorter path; on Mac OS and Linux, using `"/tmp"` is a sensible choice, since this directory is cleaned up automatically on a regular basis. On Windows however, there is no such convenient directory and the user will have to choose a directory and cleanup the temporary images manually after the document has been rendered. Providing a relative path such as `"img"` is recommended. The maximum length for this parameter is set to 5 characters. It can be set globally using `st_options`; for example: `st_options(tmp.img.dir = ".")`.

## Value

A data frame with additional class `summarytools` containing as many rows as there are columns in `x`, with attributes to inform `print` method. Columns in the output data frame are:

**No** Number indicating the order in which column appears in the data frame.

**Variable** Name of the variable, along with its class(es).

**Label** Label of the variable (if applicable).

**Stats / Values** For factors, a list of their values, limited by the `max.distinct.values` parameter. For character variables, the most common values (in descending frequency order), also limited by `max.distinct.values`. For numerical variables, common univariate statistics (mean, std. deviation, min, med, max, IQR and CV).

**Freqs (% of Valid)** For factors and character variables, the frequencies and proportions of the values listed in the previous column. For numerical vectors, number of distinct values, or frequency of distinct values if their number is not greater than `max.distinct.values`.

**Text Graph** An ascii histogram for numerical variables, and ascii barplot for factors and character variables.

**Valid** Number and proportion of valid values.

**Missing** Number and proportion of missing (NA and NAN) values.

## Author(s)

Dominic Comtois, <dominic.comtois@gmail.com>

## Examples

```
data("tobacco")
dfSummary(tobacco)

# Exclude some columns
dfSummary(tobacco, varnumbers = FALSE, valid.col = FALSE)

# Limit number of categories to be displayed for factors / categorical data
dfSummary(tobacco, max.distinct.values = 5, style = "grid")

## Not run:
```

```
# Show in Viewer or browser (view: no capital V!)
view(dfSummary(iris))

# Rmarkdown-ready
dfSummary(tobacco, style = "rmarkdown", plain.ascii = TRUE,
           varnumbers = FALSE, valid.col = FALSE, tmp.img.dir = "./img")

## End(Not run)
```

---

examens

*Bulletin de Notes (Donne simulees)*

---

## Description

Jeu de donnees simulees contenant les notes de 30 etudiants, avec les colonnes suivantes:

- etudiant Nom de l'etudiant.
- sexe Variable categorielle (facteur). Deux niveaux: "Fille", "Garcon".
- francais Note en francais (numerique).
- math Note en maths (numerique).
- geographie Note en geographie (numerique).
- histoire Note en histoire (numerique).
- economie Note en economie (numerique).
- anglais Note en anglais (numerique).

## Usage

```
data(examens)
```

## Format

Un data frame de 30 rangees et 8 colonnes

## Details

Donnees simulees. Les notes de chaque etudiant sont centrees autour d'une moyenne personnelle et ecart-type randomises.

A copy of this dataset is **available in English** under the name "exams".

---

 exams

*Report Cards - Simulated Data*


---

### Description

A simulated dataset with grades for hypothetical 30 students, with the following variables:

- student Student's name.
- gender Factor with 2 levels: "Girl", "Boy".
- french French Grade (numerical).
- math Math Grade (numerical).
- geography Geography Grade (numerical).
- history History Grade (numerical).
- economics Economics Grade (numerical).
- english English Grade (numerical).

### Usage

```
data(exams)
```

### Format

A data frame with 30 rows and 8 variables

### Details

All names and grades are simulated. Grades for each student are centered around a personal randomized average and standard deviation.

A copy of this dataset is also **available in French** under the name "examens".

---

 freq

*Frequency Tables for Factors and Other Discrete Data*


---

### Description

Displays weighted or unweighted frequencies, including <NA> counts and proportions.

### Usage

```
freq(x, round.digits = st_options("round.digits"), order = "default",
     style = st_options("style"), plain.ascii = st_options("plain.ascii"),
     justify = "default", totals = st_options("freq.totals"),
     report.nas = st_options("freq.report.nas"), missing = "",
     display.type = TRUE, display.labels = st_options("display.labels"),
     headings = st_options("headings"), weights = NA,
     rescale.weights = FALSE, ...)
```

**Arguments**

<code>x</code>	Factor or vector
<code>round.digits</code>	Number of significant digits to display. Defaults to 2 and can be set globally; see <a href="#">st_options</a> .
<code>order</code>	Ordering of rows in frequency table; “names” (default for non-factors), “levels” (default for factors), or “freq” (from most frequent to less frequent).
<code>style</code>	Style to be used by <a href="#">pander</a> when rendering output table; One of “simple” (default), “grid”, or “rmarkdown” This option can be set globally; see <a href="#">st_options</a> .
<code>plain.ascii</code>	Logical. <a href="#">pander</a> argument; when TRUE, no markup characters will be used (useful when printing to console). Defaults to TRUE unless <code>style = 'rmarkdown'</code> , in which case it will be set to FALSE automatically. To change the default value globally, see <a href="#">st_options</a> .
<code>justify</code>	String indicating alignment of columns. By default (“default”), “right” is used for text tables and “center” is used for <i>html</i> tables. You can force it to one of “left”, “center”, or “right”.
<code>totals</code>	Logical. Set to FALSE to hide totals from results. To change this value globally, see <a href="#">st_options</a> .
<code>report.nas</code>	Logical. Set to FALSE to turn off reporting of missing values. To change this default value globally, see <a href="#">st_options</a> .
<code>missing</code>	Characters to display in NA cells. Defaults to “”.
<code>display.type</code>	Logical. Should variable type be displayed? Default is TRUE.
<code>display.labels</code>	Logical. Should variable / data frame labels be displayed? Default is TRUE. To change this default value globally, see <a href="#">st_options</a> .
<code>headings</code>	Logical. Set to FALSE to omit heading section. Can be set globally via <a href="#">st_options</a> .
<code>weights</code>	Vector of weights; must be of the same length as <code>x</code> .
<code>rescale.weights</code>	Logical parameter. When set to TRUE, the total count will be the same as the unweighted <code>x</code> . FALSE by default.
<code>...</code>	Additional arguments passed to <a href="#">pander</a> .

**Details**

The default `plain.ascii = TRUE` option is there to make results appear cleaner in the console. To avoid `rmarkdown` rendering problems, this option is automatically set to FALSE whenever `style = "rmarkdown"` (unless `plain.ascii = TRUE` is made explicit in the function call).

**Value**

A frequency table of class `matrix` and `summarytools` with added attributes used by `print` method.

**Author(s)**

Dominic Comtois, <[dominic.comtois@gmail.com](mailto:dominic.comtois@gmail.com)>

**See Also**[table](#)**Examples**

```

data(tobacco)
freq(tobacco$gender)
freq(tobacco$gender, totals = FALSE)

# Ignore NA's, don't show totals, omit headings
freq(tobacco$gender, report.nas = FALSE, totals = FALSE, headings = FALSE)

# In .Rmd documents, use the two following arguments, minimally
freq(tobacco$gender, style="rmarkdown", plain.ascii = FALSE)

# Grouped Frequencies
with(tobacco, stby(diseased, smoker, freq))
(fr_smoker_by_gender <- with(tobacco, stby(smoker, gender, freq)))

# Print html Source
print(fr_smoker_by_gender, method = "render", footnote = NA)

## Not run:
# Display rendered html results in RStudio's Viewer
# notice 'view()' is NOT written with capital V
# If working outside RStudio, Web browser is used instead
# A temporary file is stored in temp dir
view(fr_smoker_by_gender)

# Display rendered html results in default Web browser
# A temporary file is stored in temp dir here too
print(fr_smoker_by_gender, method = "browser")

# Write results to text file (.txt, .md, .Rmd) or html file (.html)
print(fr_smoker_by_gender, method = "render", file = "fr_smoker_by_gender.md")
print(fr_smoker_by_gender, method = "render", file = "fr_smoker_by_gender.html")

## End(Not run)

```

---

**label***Get or Set Variable or Data Frame Labels*

---

**Description**

Assign a label to a vector or data frame, or returns value previously stored in the object's label attribute (or NA if none found).

**Usage**

```
label(x, all = FALSE, fallback = FALSE, simplify = FALSE)
label(x) <- value
```

**Arguments**

x	An R object to extract labels from.
all	Logical. When x is a data frame, setting this argument to TRUE will make the function return all variable labels. By default, its value is FALSE, so that if x is a data frame, it is the data frame's label that will be returned.
fallback	a logical value indicating if labels should fallback to object name(s). Defaults to FALSE.
simplify	When x is a data frame and all = TRUE, coerce results to a vector when TRUE, otherwise (default) return a named list containing only non-NULL/non-NA elements.
value	String to be used as label.

**Note**

Loosely based on Gergely Daróczy's [label](#) function.

**Author(s)**

Dominic Comtois, <dominic.comtois@gmail.com>.

---

print.list	<i>Print Method for Objects of Class "list"</i>
------------	---

---

**Description**

Displays a list comprised of summarytools objects created with lapply.

**Usage**

```
## S3 method for class 'list'
print(x, method = "pander", file = "",
      append = FALSE, report.title = NA, table.classes = NA,
      bootstrap.css = st_options('bootstrap.css'),
      custom.css = st_options('custom.css'), silent = FALSE,
      footnote = st_options('footnote'),
      escape.pipe = st_options('escape.pipe'), ...)
```

**Arguments**

x	A summarytools object that was generated with <a href="#">freq</a> , <a href="#">descr</a> , <a href="#">ctable</a> or <a href="#">dfSummary</a> .
method	One of “pander”, “viewer”, “browser”, or “render”. For <code>print()</code> , default is “pander”; for <code>view()</code> , default is “viewer”. If “viewer” is used outside <i>RStudio</i> , “browser” will be used instead. Use “render” if function is called from an Rmd document.
file	File name to write output to. Defaults to “”.
append	Logical. When file argument is supplied, this indicates whether to append output to existing file. FALSE by default.
report.title	For <i>html</i> reports, this goes into the <title> tag. Defaults to NA, in which case <title> will be generic.
table.classes	Character. Additional classes to assign to output tables. All <i>Bootstrap css</i> classes can be used. It also allows user-defined classes (see <code>custom.css</code> parameter). See <i>details</i> section. NA by default.
bootstrap.css	Logical. Set to FALSE to omit <i>Bootstrap css</i> . TRUE by default. To change this default value globally, see <a href="#">st_options</a> .
custom.css	Path to a user-defined <i>.css</i> file. Classes defined in this file can be used in the <code>table.classes</code> parameter. NA by default. To change this default value globally, see <a href="#">st_options</a> .
silent	Hide console messages (such as ignored variables or NaN to NA transformations).
footnote	footnote in <i>html</i> output. When set to “default”, this is the package name and version, R version, and current date). Has no effect when method is “pander”. Set to “default”, provide your own text, or set to NA to omit. To change this default value globally, see <a href="#">st_options</a> .
escape.pipe	Logical. Set to TRUE when using <code>style='grid'</code> and file argument is supplied if the intent is to generate a text file that can be converted to other formats using <i>Pandoc</i> . To change this default value globally, see <a href="#">st_options</a> .
...	Additional arguments can be used to override parameters stored as attributes in the object being printed. See <i>Details</i> section.

---

print.stby

---

*Print Method for Objects of Class “stby”*


---

**Description**

Displays a list comprised of summarytools objects created with `stby`.

**Usage**

```
## S3 method for class 'stby'
print(x, method = "pander", file = "",
      append = FALSE, report.title = NA, table.classes = NA,
      bootstrap.css = st_options('bootstrap.css'),
      custom.css = st_options('custom.css'), silent = FALSE,
      footnote = st_options('footnote'),
      escape.pipe = st_options('escape.pipe'), ...)
```

**Arguments**

x	A summarytools object that was generated with <a href="#">freq</a> , <a href="#">descr</a> , <a href="#">ctable</a> or <a href="#">dfSummary</a> .
method	One of “pander”, “viewer”, “browser”, or “render”. For <code>print()</code> , default is “pander”; for <code>view()</code> , default is “viewer”. If “viewer” is used outside <i>RStudio</i> , “browser” will be used instead. Use “render” if function is called from an Rmd document.
file	File name to write output to. Defaults to “”.
append	Logical. When file argument is supplied, this indicates whether to append output to existing file. FALSE by default.
report.title	For <i>html</i> reports, this goes into the <title> tag. Defaults to NA, in which case <title> will be generic.
table.classes	Character. Additional classes to assign to output tables. All <i>Bootstrap css</i> classes can be used. It also allows user-defined classes (see <code>custom.css</code> parameter). See <i>details</i> section. NA by default.
bootstrap.css	Logical. Set to FALSE to omit <i>Bootstrap css</i> . TRUE by default. To change this default value globally, see <a href="#">st_options</a> .
custom.css	Path to a user-defined <i>.css</i> file. Classes defined in this file can be used in the <code>table.classes</code> parameter. NA by default. To change this default value globally, see <a href="#">st_options</a> .
silent	Hide console messages (such as ignored variables or NaN to NA transformations).
footnote	footnote in <i>html</i> output. When set to “default”, this is the package name and version, R version, and current date). Has no effect when method is “pander”. Set to “default”, provide your own text, or set to NA to omit. To change this default value globally, see <a href="#">st_options</a> .
escape.pipe	Logical. Set to TRUE when using <code>style='grid'</code> and file argument is supplied if the intent is to generate a text file that can be converted to other formats using <i>Pandoc</i> . To change this default value globally, see <a href="#">st_options</a> .
...	Additional arguments can be used to override parameters stored as attributes in the object being printed. See <i>Details</i> section.

---

print.summarytools     *print.summarytools*

---

**Description**

Display summarytools objects in the console, in Web Browser or in *RStudio*'s Viewer, or write content to file.

**Usage**

```
## S3 method for class 'summarytools'
print(x, method = "pander", file = "",
      append = FALSE, report.title = NA, table.classes = NA,
      bootstrap.css = st_options('bootstrap.css'),
      custom.css = st_options('custom.css'), silent = FALSE,
      footnote = st_options('footnote'), max.tbl.height = Inf,
      escape.pipe = st_options('escape.pipe'), ...)
```

**Arguments**

x	A summarytools object that was generated with <a href="#">freq</a> , <a href="#">descr</a> , <a href="#">ctable</a> or <a href="#">dfSummary</a> .
method	One of “pander”, “viewer”, “browser”, or “render”. For <code>print()</code> , default is “pander”; for <code>view()</code> , default is “viewer”. If “viewer” is used outside <i>RStudio</i> , “browser” will be used instead. Use “render” if function is called from an Rmd document.
file	File name to write output to. Defaults to “”.
append	Logical. When file argument is supplied, this indicates whether to append output to existing file. FALSE by default.
report.title	For <i>html</i> reports, this goes into the <title> tag. Defaults to NA, in which case <title> will be generic.
table.classes	Character. Additional classes to assign to output tables. All <i>Bootstrap css</i> classes can be used. It also allows user-defined classes (see <code>custom.css</code> parameter). See <i>details</i> section. NA by default.
bootstrap.css	Logical. Set to FALSE to omit <i>Bootstrap css</i> . TRUE by default. To change this default value globally, see <a href="#">st_options</a> .
custom.css	Path to a user-defined <i>.css</i> file. Classes defined in this file can be used in the <code>table.classes</code> parameter. NA by default. To change this default value globally, see <a href="#">st_options</a> .
silent	Hide console messages (such as ignored variables or NaN to NA transformations).
footnote	footnote in <i>html</i> output. When set to “default”, this is the package name and version, R version, and current date). Has no effect when method is “pander”. Set to “default”, provide your own text, or set to NA to omit. To change this default value globally, see <a href="#">st_options</a> .
max.tbl.height	Maximum table height (in pixels) allowed in rendered <code>dfSummary()</code> tables. When this argument is used, results will show up in a <div> with the specified height and a scroll bar. Intended to be used in <i>Rmd</i> documents. Has no effect when method is “pander”. Inf by default.
escape.pipe	Logical. Set to TRUE when using <code>style='grid'</code> and file argument is supplied if the intent is to generate a text file that can be converted to other formats using <i>Pandoc</i> . To change this default value globally, see <a href="#">st_options</a> .
...	Additional arguments can be used to override parameters stored as attributes in the object being printed. See <i>Details</i> section.

## Details

Plain ascii and *rmarkdown* tables are generated via [pander](#). See *References* section for a list of all available *pander* options.

The following additional arguments can be used to override formatting attributes stored in the object to be printed. Refer to the function's documentation for details on these arguments.

- style
- round.digits (except for [dfSummary](#) objects)
- plain.ascii
- justify
- headings
- display.labels
- varnumbers ([dfSummary](#) objects)
- labels.col ([dfSummary](#) objects)
- graph.col ([dfSummary](#) objects)
- valid.col ([dfSummary](#) objects)
- na.col ([dfSummary](#) objects)
- col.widths ([dfSummary](#) objects)
- split.tables
- report.nas ([freq](#) objects)
- display.type ([freq](#) objects)
- missing ([freq](#) objects)
- totals ([freq](#) and [ctable](#) objects)
- caption ([freq](#) and [ctable](#) objects)

The following additional arguments can be used to override heading elements to be printed:

- Data.frame
- Data.frame.label
- Variable
- Variable.label
- Group
- date
- Weights ([freq](#) & [descr](#) objects)
- Data.type ([freq](#) objects)
- Row.variable ([ctable](#) objects)
- Col.variable ([ctable](#) objects)

## Value

NULL when method="pander"; a file path (returned invisibly) when method="viewer" or method="browser". In the latter case, the file path is also passed to `shell.exec` so the document is opened in default Web Browser.

**Author(s)**

Dominic Comtois, <dominic.comtois@gmail.com>

**References**

[RStudio Summarytools on GitHub](#) [List of pander options on GitHub](#) [Bootstrap Cascading Stylesheets](#)

**See Also**

[pander](#)

**Examples**

```
## Not run:
data(tobacco)
view(dfSummary(tobacco), footnote = NA)

## End(Not run)
data(exams)
print(freq(exams$gender), style = 'rmarkdown')
print(descr(exams), headings = FALSE)
```

---

stby

*Obtain Grouped Statistics With summarytools*

---

**Description**

This is essentially the base [by](#) function, except for the class of the returned object.

**Usage**

```
stby(data, INDICES, FUN, ..., simplify = TRUE)
byst(data, INDICES, FUN, ..., simplify = TRUE)
```

**Arguments**

data	an R object, normally a data frame, possibly a matrix.
INDICES	a factor or a list of factors, each of length <code>nrow(data)</code> .
FUN	a function to be applied to (usually data-frame) subsets of data.
...	Further arguments to FUN.
simplify	Logical. Essentially a placeholder to maintain full compatibility with base <code>by</code> . For more details, see <a href="#">tapply</a> .

**Value**

An object having classes “list” and “summarytools”.

**See Also**

[by](#), [tapply](#)

**Examples**

```
data("tobacco")
stby(data = tobacco, INDICES = tobacco$gender, FUN = descr)
```

---

st\_css

*Include **summarytools**' css Into Active Document*


---

**Description**

Generates the *css* needed by **summarytools** in *Rmarkdown* documents.

**Usage**

```
st_css(main = TRUE, global = FALSE, bootstrap = FALSE,
       style.tag = TRUE, ...)
```

**Arguments**

main	Logical. Include <i>summarytools.css</i> file. TRUE by default. Affects only <b>summarytools</b> objects.
global	Logical. Include the additional <i>summarytools-global.css</i> file, which affects all content in the document. Provides control over objects that were not <i>html-rendered</i> ; in particular, table widths and vertical alignment are modified to improve layout. FALSE by default.
bootstrap	Logical. Include <i>bootstrap.min.css</i> . FALSE by default.
style.tag	Logical. Includes the opening and closing <code>&lt;style&gt;</code> tags. TRUE by default.
...	Character. Path to additional <i>css</i> file(s) to include.

**Details**

Typically the function is called in the first R chunk of an *Rmarkdown* document. For instance:

```
```{r, include=FALSE} library(knitr) opts_chunk$set(results = "asis")
library(summarytools) st_options(plain.ascii = FALSE, style = "rmarkdown")
st_css() ```
```

**Author(s)**

Dominic Comtois, <dominic.comtois@gmail.com>

st\_options

*Query and set summarytools global options***Description**

To list all summarytools global options, call without arguments. To display the value of one or several options, enter the name(s) of the option(s) in a character vector as sole argument. To **reset** all options, use single unnamed argument 'reset' or  $\emptyset$ .

**Usage**

```
st_options(option = NULL, value = NULL, style = "simple",
  plain.ascii = TRUE, round.digits = 2, headings = TRUE,
  footnote = "default", display.labels = TRUE, bootstrap.css = TRUE,
  custom.css = NA, escape.pipe = FALSE, freq.totals = TRUE,
  freq.report.nas = TRUE, ctable.prop = "r", ctable.totals = TRUE,
  descr.stats = "all", descr.transpose = FALSE, descr.silent = FALSE,
  dfSummary.style = "multiline", dfSummary.varnumbers = TRUE,
  dfSummary.labels.col = TRUE, dfSummary.valid.col = TRUE,
  dfSummary.na.col = TRUE, dfSummary.graph.col = TRUE,
  dfSummary.graph.magnif = 1, dfSummary.silent = FALSE,
  tmp.img.dir = NA, subtitle.emphasis = TRUE, lang = "en",
  omit.headings = !headings)
```

**Arguments**

option	option(s) name(s) to query (optional). Can be a single string or a vector of strings to query multiple values.
value	The value you wish to assign to the option specified in the first argument. This is for backward-compatibility, as all options can now be set via their own parameter. That is, instead of <code>st_options('plain.ascii', FALSE)</code> , use <code>st_options(plain.ascii = FALSE)</code> .
style	Character. One of "simple" (default), "rmarkdown", or "grid". Does not apply to <a href="#">dfSummary</a> .
plain.ascii	Logical. TRUE by default. Set to FALSE when using summarytools with a rendering tool such as knitr or when creating rmarkdown output files to be converted with Pandoc. Note however that its value will automatically be set to FALSE whenever style is set to "rmarkdown".
round.digits	Numeric. Defaults to 2.
headings	Logical. Set to FALSE to remove all headings from outputs. Only the tables will be printed out, except when <a href="#">by</a> or <a href="#">lapply</a> are used. In that case, the variable or the group will still appear before the tables. FALSE by default.
footnote	Character. When the default value "default" is used, the package name & version, as well as the R version number are displayed below <i>html</i> outputs. Set to NA to omit the footnote, or provide a custom string. Applies only to <i>html</i> outputs.

display.labels	Logical. TRUE by default. Set to FALSE to omit data frame and variable labels in the headings section.
bootstrap.css	Logical. Specifies whether to Include <i>Bootstrap css</i> in <i>html</i> reports <i>head</i> section outputs. Defaults to TRUE. Set to FALSE when using the “render” method inside a shiny app to avoid interacting with the app’s layout.
custom.css	Character. Path to an additional, user-provided, CSS file. NA by default.
escape.pipe	Logical. Set to TRUE if Pandoc conversion is your goal and you have unsatisfying results with grid or multiline tables. FALSE by default.
freq.totals	Logical. Corresponds to the totals parameter of <a href="#">freq</a> . TRUE by default.
freq.report.nas	Logical. Corresponds to the display.nas parameter of <a href="#">freq()</a> . TRUE by default.
ctable.prop	Character. Corresponds to the prop parameter of <a href="#">ctable</a> . Defaults to “r” (row).
ctable.totals	Logical. Corresponds to the totals parameter of <a href="#">ctable</a> . TRUE by default.
descr.stats	Character. Corresponds to the stats parameter of <a href="#">descr</a> . Defaults to “all”.
descr.transpose	Logical. Corresponds to the transpose parameter of <a href="#">descr</a> . FALSE by default.
descr.silent	Logical. Hide console messages. FALSE by default.
dfSummary.style	Character. “multiline” by default. Set to “grid” for <i>Rmarkdown</i> documents.
dfSummary.varnumbers	Logical. In <a href="#">dfSummary</a> , display variable numbers in the first column. Defaults to TRUE.
dfSummary.labels.col	Logical. In <a href="#">dfSummary</a> , display variable labels Defaults to TRUE.
dfSummary.valid.col	Logical. In <a href="#">dfSummary</a> , include column indicating count and proportion of valid (non-missing). TRUE by default.
dfSummary.na.col	Logical. In <a href="#">dfSummary</a> , include column indicating count and proportion of missing (NA) values. TRUE by default.
dfSummary.graph.col	Logical. Display barplots / histograms column in <a href="#">dfSummary html</a> reports. TRUE by default.
dfSummary.graph.magnif	Numeric. Magnification factor, useful if <a href="#">dfSummary</a> graphs show up too large (then use a value between 0 and 1) or too small (use a value > 1). Must be positive. Default to 1.
dfSummary.silent	Logical. Hide console messages. FALSE by default.
tmp.img.dir	Character. Directory used to store temporary images. See <i>Details</i> section of <a href="#">dfSummary</a> . NA by default.

subtitle.emphasis	Logical. Controls the formatting of the “subtitle” (the <i>data frame</i> or <i>variable</i> name, depending on context. When TRUE (default), “h4” is used, while with FALSE, “bold” / “strong” is used. Hence the default value gives it stronger emphasis.
lang	Character. A 2-letter code for the language to use in the produced outputs. Currently available languages are: ‘en’, ‘fr’.
omit.headings	Logical. Deprecated. Use headings instead.

## Details

To learn more about summarytools options, see the [GitHub project’s page](#).

## Examples

```
## Not run:
# show all summarytools global options
st_options()

# show a specific option
st_options("round.digits")

# show two (or more) options
st_options(c("plain.ascii", "style", "footnote"))

# set one option
st_options(plain.ascii = FALSE)

# set one options, legacy way
st_options("plain.ascii", FALSE)

# set several options
st_options(plain.ascii = FALSE,
           style       = "rmarkdown",
           footnote    = NA)

# reset all
st_options('reset')
# ... or
st_options(0)

## End(Not run)
```

**Description**

Jeu de données simulées de 1000 sujets, avec les colonnes suivantes:

- sexe Variable catégorielle (facteur), 2 niveaux: “F” et “M”. Environ 500 chacun.
- age Numérique.
- age.gr Groupe d’âge - variable catégorielle, 4 niveaux.
- IMC Indice de masse corporelle (numérique).
- fumeur Variable catégorielle, 2 niveaux (“Oui” / “Non”).
- cigs.par.jour Nombre de cigarettes fumées par jour (numérique).
- malade Variable catégorielle, 2 niveaux (“Oui” / “Non”).
- maladie Champs texte.
- ponderation Poids échantillonnel (numérique).

**Usage**

```
data(tabagisme)
```

**Format**

Un data frame de 1000 rangées et 9 colonnes

**Details**

Note sur la simulation des données: la probabilité pour un sujet de tomber dans la catégorie “malade” est basée sur une fonction arbitraire faisant intervenir l’âge, l’IMC et le nombre de cigarettes fumées par jour.

A copy of this dataset is **available in English** under the name “tobacco”.

---

tobacco

*Tobacco Use and Health - Simulated Dataset*

---

**Description**

A simulated datasets of 1,000 subjects, with the following variables:

**Usage**

```
data(tobacco)
```

**Format**

A data frame with 1000 rows and 9 variables

**Details**

- gender Factor with 2 levels: “F” and “M”, having roughly 500 of each.
- age Numerical.
- age.gr Factor with 4 age categories.
- BMI Body Mass Index (numerical).
- smoker Factor (“Yes” / “No”).
- cigs.per.day Number of cigarettes smoked per day (numerical).
- diseased Factor (“Yes” / “No”).
- disease Character.
- samp.wgts Sampling weights (numerical).

A note on simulation: probability for an individual to fall into category “diseased” is based on an arbitrary function involving age, BMI and number of cigarettes per day.

A copy of this dataset is also **available in French** under the name “tabagisme”.

---

unlabel

*Clear Variable and Data Frame Label(s)*

---

**Description**

Returns the object with all labels removed. Both the “label” attribute and **Hmisc**’s “labelled” class are removed.

**Usage**

```
unlabel(x)
```

**Arguments**

x                    An R object to remove labels from.

**Author(s)**

Dominic Comtois, <dominic.comtois@gmail.com>.

**See Also**

[label](#)

---

useTranslations	<i>Import and use a custom language</i>
-----------------	-----------------------------------------

---

### Description

If your language is not available or if you wish to customize the outputs' language to suit your preference, you can set up a translations file (see details) and import it with this function.

### Usage

```
useTranslations(file)
```

### Arguments

file	Character. The path to the translations file.
------	-----------------------------------------------

### Details

To build the translations file, download [this template](#), and fill out the 'custom' column, leaving 'custom' on the first line. The file must have *UTF-8* encoding.

---

view	<i>view</i>
------	-------------

---

### Description

Visualize results in RStudio's Viewer or in Web Browser

### Usage

```
view(x, method = "viewer", file = "", append = FALSE,
     report.title = NA, table.classes = NA,
     bootstrap.css = st_options("bootstrap.css"),
     custom.css = st_options("custom.css"), silent = FALSE,
     footnote = st_options("footnote"),
     max.tbl.height = Inf,
     escape.pipe = st_options("escape.pipe"), ...)
```

### Arguments

x	A summarytools object that was generated with <a href="#">freq</a> , <a href="#">descr</a> , <a href="#">ctable</a> or <a href="#">dfSummary</a> .
method	One of "pander", "viewer", "browser", or "render". For print(), default is "pander"; for view(), default is "viewer". If "viewer" is used outside <i>RStudio</i> , "browser" will be used instead. Use "render" if function is called from an Rmd document.

<code>file</code>	File name to write output to. Defaults to “”.
<code>append</code>	Logical. When <code>file</code> argument is supplied, this indicates whether to append output to existing file. FALSE by default.
<code>report.title</code>	For <i>html</i> reports, this goes into the <code>&lt;title&gt;</code> tag. Defaults to NA, in which case <code>&lt;title&gt;</code> will be generic.
<code>table.classes</code>	Character. Additional classes to assign to output tables. All <i>Bootstrap css</i> classes can be used. It also allows user-defined classes (see <code>custom.css</code> parameter). See <i>details</i> section. NA by default.
<code>bootstrap.css</code>	Logical. Set to FALSE to omit <i>Bootstrap css</i> . TRUE by default. To change this default value globally, see <code>st_options</code> .
<code>custom.css</code>	Path to a user-defined <code>.css</code> file. Classes defined in this file can be used in the <code>table.classes</code> parameter. NA by default. To change this default value globally, see <code>st_options</code> .
<code>silent</code>	Hide console messages (such as ignored variables or NaN to NA transformations).
<code>footnote</code>	footnote in <i>html</i> output. When set to “default”, this is the package name and version, R version, and current date). Has no effect when method is “pander”. Set to “default”, provide your own text, or set to NA to omit. To change this default value globally, see <code>st_options</code> .
<code>max.tbl.height</code>	Maximum table height (in pixels) allowed in rendered <code>dfSummary()</code> tables. When this argument is used, results will show up in a <code>&lt;div&gt;</code> with the specified height and a scroll bar. Intended to be used in <i>Rmd</i> documents. Has no effect when method is “pander”. Inf by default.
<code>escape.pipe</code>	Logical. Set to TRUE when using <code>style='grid'</code> and <code>file</code> argument is supplied if the intent is to generate a text file that can be converted to other formats using <i>Pandoc</i> . To change this default value globally, see <code>st_options</code> .
<code>...</code>	Additional arguments can be used to override parameters stored as attributes in the object being printed. See <i>Details</i> section.

## Details

Creates *html* outputs and opens them in the Viewer, in a browser or renders the *html* code appropriate for *Rmarkdown* documents.

For objects of class “summarytools”, this function is simply a wrapper around `link{print.summarytools}` with `method` set to “viewer”.

Objects of class “by” or “list” are dispatched to the present function, as it can manage multiple objects, whereas `print.summarytools` can only manage one object at a time.

---

what.is

*Obtain Extended Properties of Objects*

---

## Description

Combination of most common “macro-level” functions that describe an object.

## Usage

```
what.is(x, show.all = FALSE, ignore.size.warn = FALSE)
```

## Arguments

`x` Any object.

`show.all` Logical. When TRUE, all logical results from the “is.” *identifier functions* will be displayed, with a warning message when the result applies only to the first element in the structure. FALSE by default.

`ignore.size.warn` Set to TRUE to force execution of the function for large (> 20 K-bytes) objects. Defaults to FALSE.

## Details

An alternative to calling in turn `class`, `typeof`, `dim`, and so on. A call to this function will readily give all this information at once.

## Value

A list with following elements:

**properties** A data frame with the class(es), type, mode and storage mode of the object as well as the dim, length and object.size.

**attributes.lengths** A named character vector giving all attributes (*c.f.* “names”, “row.names”, “class”, “dim”, and so forth) along with their length.

**extensive.is** A character vector of all the *identifier functions*. (starting with “is.”) that yield TRUE when used with `x` as argument.

**function.type** When `x` is a function, results of `f.type` are added.

## Author(s)

Dominic Comtois, <dominic.comtois@gmail.com>

## See Also

[class](#), [typeof](#), [mode](#), [storage.mode](#), [dim](#), [length](#), [is.object](#), [otype](#), [object.size](#), [f.type](#)

## Examples

```
what.is(1)
what.is(NaN)
what.is(iris3)
what.is(print)
what.is(what.is)
```

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