

# Package ‘modelsummary’

November 5, 2021

**Type** Package

**Title** Summary Tables and Plots for Statistical Models and Data: Beautiful, Customizable, and Publication-Ready

**Description** Create beautiful and customizable tables to summarize several statistical models side-by-side. Draw coefficient plots, multi-level cross-tabs, dataset summaries, balance tables (a.k.a. ``Table 1s''), and correlation matrices. This package supports dozens of statistical models, and it can produce tables in HTML, LaTeX, Word, Markdown, PDF, PowerPoint, Excel, RTF, JPG, or PNG. Tables can easily be embedded in 'Rmarkdown' or 'knitr' dynamic documents.

**Version** 0.9.4

**URL** <https://vincentarelbundock.github.io/modelsummary/>

**BugReports** <https://github.com/vincentarelbundock/modelsummary/issues/>

**Depends** R (>= 3.5.0)

**Imports** broom,  
checkmate,  
generics,  
glue,  
insight,  
kableExtra (>= 1.2.1),  
parameters,  
performance,  
rlang,  
tables

**Suggests** betareg,  
bookdown,  
broom.mixed,  
covr,  
digest,  
DT,  
estimatr,  
fixest,  
flextable,

gamlss,  
ggplot2,  
gt (>= 0.3.0),  
huxtable,  
IRdisplay,  
knitr,  
lfe,  
lme4,  
lmtest,  
magick,  
officer,  
rmarkdown,  
sandwich,  
spelling,  
testthat,  
MASS,  
mice,  
nnet,  
pscl,  
vdiffr

**License** GPL-3

**Encoding** UTF-8

**Config/testthat/edition** 3

**LazyData** false

**Roxygen** list(markdown = TRUE)

**Language** en-US

**RoxygenNote** 7.1.2

**Collate** 'coef\_rename.R'  
'convenience.R'  
'datasummary.R'  
'datasummary\_balance.R'  
'datasummary\_correlation.R'  
'datasummary\_crosstab.R'  
'datasummary\_df.R'  
'datasummary\_extract.R'  
'datasummary\_functions.R'  
'datasummary\_skim.R'  
'dvnames.R'  
'escape.R'  
'factory.R'  
'factory\_dataframe.R'  
'factory\_flextable.R'  
'factory\_gt.R'  
'factory\_huxtable.R'  
'factory\_kableExtra.R'  
'format\_estimates.R'

'format\_gof.R'  
 'get\_estimates.R'  
 'get\_gof.R'  
 'get\_vcov.R'  
 'glance\_custom.R'  
 'gof\_map.R'  
 'methods\_did.R'  
 'methods\_estimatr.R'  
 'methods\_fixest.R'  
 'methods\_lfe.R'  
 'methods\_stats.R'  
 'modelplot.R'  
 'modelsummary.R'  
 'modelsummary\_list.R'  
 'modelsummary\_wide.R'  
 'poorman.R'  
 'reexport.R'  
 'sanitize\_gof\_map.R'  
 'sanitize\_group.R'  
 'sanitize\_models.R'  
 'sanitize\_output.R'  
 'sanitize\_vcov.R'  
 'sanity\_checks.R'  
 'settings.R'  
 'stars.R'  
 'supported\_models.R'  
 'themes.R'  
 'tidy\_custom.R'  
 'utils\_pad.R'  
 'utils\_print.R'  
 'utils\_replace.R'  
 'utils\_rounding.R'  
 'utils\_stats.R'

## R topics documented:

coef_rename . . . . .	4
datasummary . . . . .	5
datasummary_balance . . . . .	10
datasummary_correlation . . . . .	13
datasummary_correlation_format . . . . .	17
datasummary_crosstab . . . . .	18
datasummary_df . . . . .	22
datasummary_skim . . . . .	23
dvnames . . . . .	26
escape_html . . . . .	27
escape_latex . . . . .	28
get_estimates . . . . .	28

get_gof . . . . .	29
glance_custom . . . . .	30
gof_map . . . . .	30
Histogram . . . . .	31
Max . . . . .	31
Mean . . . . .	32
Median . . . . .	33
Min . . . . .	33
modelplot . . . . .	34
modelsummary . . . . .	37
modelsummary_wide . . . . .	44
N . . . . .	48
Ncol . . . . .	49
NPercent . . . . .	49
NUnique . . . . .	50
P0 . . . . .	50
P100 . . . . .	51
P25 . . . . .	52
P50 . . . . .	52
P75 . . . . .	53
PercentMissing . . . . .	54
SD . . . . .	54
supported_models . . . . .	55
tidy_custom . . . . .	55
Var . . . . .	56

<b>Index</b>	<b>57</b>
--------------	-----------

---

coef_rename	<i>Rename model terms</i>
-------------	---------------------------

---

## Description

A convenience function which can be passed to the `coef_rename` argument of the `modelsummary` function.

## Usage

```
coef_rename(
  x,
  factor = TRUE,
  factor_name = TRUE,
  backticks = TRUE,
  titlecase = TRUE,
  underscore = TRUE,
  asis = TRUE
)
```

**Arguments**

x	character vector of term names to transform
factor	boolean remove the "factor()" label
factor_name	boolean remove the "factor()" label and the name of the variable
backticks	boolean remove backticks
titlecase	boolean convert to title case
underscore	boolean replace underscores by spaces
asis	boolean remove the I from as-is formula calls

---

datasummary	<i>Summary tables using 2-sided formulae: crosstabs, frequencies, tables and more.</i>
-------------	--

---

**Description**

datasummary can use any summary function which produces one numeric or character value per variable. The examples section of this documentation shows how to define custom summary functions. The package also ships with several shortcut summary functions: Min, Max, Mean, Median, Var, SD, NPercent, NUnique, Ncol, P0, P25, P50, P75, P100.

**Usage**

```
datasummary(
  formula,
  data,
  output = "default",
  fmt = 2,
  title = NULL,
  notes = NULL,
  align = NULL,
  add_columns = NULL,
  add_rows = NULL,
  sparse_header = TRUE,
  escape = TRUE,
  ...
)
```

**Arguments**

formula	A two-sided formula to describe the table: rows ~ columns. See the Examples section for a mini-tutorial and the Details section for more resources.
data	A data.frame (or tibble)
output	filename or object type (character string) <ul style="list-style-type: none"> <li>Supported filename extensions: .html, .tex, .md, .txt, .png, .jpg.</li> </ul>

	<ul style="list-style-type: none"> <li>Supported object types: "default", "html", "markdown", "latex", "latex_tabular", "data.frame", "modelsummary_list", "gt", "kableExtra", "huxtable", "flextable", "jupyter".</li> <li>Warning: Users should not supply a file name to the output argument if they intend to customize the table with external packages. See the 'Details' section.</li> <li>LaTeX compilation requires the booktabs and siunitx packages, but siunitx can be disabled or replaced with global options. See the 'Details' section.</li> <li>The default output formats and table-making packages can be modified with global options. See the 'Details' section.</li> </ul>
fmt	<p>determines how to format numeric values</p> <ul style="list-style-type: none"> <li>integer: the number of digits to keep after the period format(<code>round(x, fmt)</code>, <code>nsmall=fmt</code>)</li> <li>character: passed to the <code>sprintf</code> function (e.g., <code>'%.3f'</code> keeps 3 digits with trailing zero). See <code>?sprintf</code></li> <li>function: returns a formatted character string.</li> <li>Note on LaTeX formatting: To ensure proper typography, all numeric entries are enclosed in the <code>\num{}</code> command from the <code>siunitx</code> LaTeX package by default. This behavior can be altered with global options. See the 'Details' section.</li> </ul>
title	string
notes	list or vector of notes to append to the bottom of the table.
align	<p>A string with a number of characters equal to the number of columns in the table (e.g., <code>align = "lcc"</code>). Valid characters: l, c, r, S.</p> <ul style="list-style-type: none"> <li>"l": left-aligned column</li> <li>"c": centered column</li> <li>"r": right-aligned column</li> <li>"d": dot-aligned column. Only supported for LaTeX/PDF tables produced by <code>kableExtra</code>. These commands must appear in the LaTeX preamble (they are added automatically when compiling Rmarkdown documents to PDF): <ul style="list-style-type: none"> <li><code>\usepackage{booktabs}</code></li> <li><code>\usepackage{siunitx}</code></li> <li><code>\newcolumntype{d}{S[input-symbols = ()]}</code></li> </ul> </li> </ul>
add_columns	a data.frame (or tibble) with the same number of rows as your main table.
add_rows	a data.frame (or tibble) with the same number of columns as your main table. By default, rows are appended to the bottom of the table. You can define a "position" attribute of integers to set the row positions. See Examples section below.
sparse_header	TRUE or FALSE. TRUE eliminates column headers which have a unique label across all columns, except for the row immediately above the data. FALSE keeps all headers. The order in which terms are entered in the formula determines the order in which headers appear. For example, <code>x~mean*z</code> will print the mean-related header above the z-related header.

escape	boolean TRUE escapes or substitutes LaTeX/HTML characters which could prevent the file from compiling/displaying. This setting does not affect captions or notes.
...	all other arguments are passed through to the table-making functions. This allows users to pass arguments directly to <code>datasummary</code> in order to affect the behavior of other functions behind the scenes, for instance: <ul style="list-style-type: none"> <li>• <code>kableExtra::kbl(escape=FALSE)</code> to avoid escaping math characters in <code>kableExtra</code> tables.</li> </ul>

## Details

Visit the 'modelsummary' website for more usage examples: <https://vincentarelbundock.github.io/modelsummary>

The 'datasummary' function is a thin wrapper around the 'tabular' function from the 'tables' package. More details about table-making formulas can be found in the 'tables' package documentation: `?tables::tabular`

Hierarchical or "nested" column labels are only available for these output formats: `kableExtra`, `gt`, `html`, `rtf`, and LaTeX. When saving tables to other formats, nested labels will be combined to a "flat" header.

## Global Options

The behavior of `modelsummary` can be affected by setting global options:

- `modelsummary_factory_default`
- `modelsummary_factory_latex`
- `modelsummary_factory_html`
- `modelsummary_factory_png`
- `modelsummary_get`
- `modelsummary_format_numeric_latex`
- `modelsummary_format_numeric_html`

### Table-making packages:

`modelsummary` supports 4 table-making packages: `kableExtra`, `gt`, `flextable`, and `huxtable`. Some of these packages have overlapping functionalities. For example, 3 of those packages can export to LaTeX. To change the default backend used for a specific file format, you can use the `options` function:

```
options(modelsummary_factory_html = 'kableExtra') options(modelsummary_factory_latex = 'gt') options(modelsummary_factory_word = 'huxtable') options(modelsummary_factory_png = 'gt')
```

### Model extraction functions:

`modelsummary` can use two sets of packages to extract information from statistical models: `broom` and the `easystats` family (performance and parameters). By default, it uses `broom` first and `easystats` as a fallback if `broom` fails. You can change the order of priorities or include goodness-of-fit extracted by *both* packages by setting:

```
options(modelsummary_get = "broom") options(modelsummary_get = "easystats") options(modelsummary_get = "all")
```

**Formatting numeric entries:**

By default, LaTeX tables enclose all numeric entries in the `\num{}` command from the `siunitx` package. To prevent this behavior, or to enclose numbers in dollar signs (for LaTeX math mode), users can call:

```
options(modelsummary_format_numeric_latex = "plain") options(modelsummary_format_numeric_latex = "mathmode")
```

A similar option can be used to display numerical entries using MathJax in HTML tables:

```
options(modelsummary_format_numeric_html = "mathjax")
```

**Examples**

```
## Not run:

# The left-hand side of the formula describes rows, and the right-hand side
# describes columns. This table uses the "mpg" variable as a row and the "mean"
# function as a column:

datasummary(mpg ~ mean, data = mtcars)

# This table uses the "mean" function as a row and the "mpg" variable as a column:

datasummary(mean ~ mpg, data = mtcars)

# Display several variables or functions of the data using the "+"
# concatenation operator. This table has 2 rows and 2 columns:

datasummary(hp + mpg ~ mean + sd, data = mtcars)

# Nest variables or statistics inside a "factor" variable using the "*" nesting
# operator. This table shows the mean of "hp" and "mpg" for each value of
# "cyl":

mtcars$cyl <- as.factor(mtcars$cyl)
datasummary(hp + mpg ~ cyl * mean, data = mtcars)

# If you don't want to convert your original data
# to factors, you can use the 'Factor()'
# function inside 'datasummary' to obtain an identical result:

datasummary(hp + mpg ~ Factor(cyl) * mean, data = mtcars)

# You can nest several variables or statistics inside a factor by using
# parentheses. This table shows the mean and the standard deviation for each
# subset of "cyl":

datasummary(hp + mpg ~ cyl * (mean + sd), data = mtcars)

# Summarize all numeric variables with 'All()'
datasummary(All(mtcars) ~ mean + sd, data = mtcars)

# Define custom summary statistics. Your custom function should accept a vector
# of numeric values and return a single numeric or string value:
```



```

minmax <- function(x) sprintf("[%.2f, %.2f]", min(x), max(x))
mean_na <- function(x) mean(x, na.rm = TRUE)

datasummary(hp + mpg ~ minmax + mean_na, data = mtcars)

# To handle missing values, you can pass arguments to your functions using
# '*Arguments()'

datasummary(hp + mpg ~ mean * Arguments(na.rm = TRUE), data = mtcars)

# For convenience, 'modelsummary' supplies several convenience functions
# with the argument `na.rm=TRUE` by default: Mean, Median, Min, Max, SD, Var,
# P0, P25, P50, P75, P100, NUnique, Histogram

datasummary(hp + mpg ~ Mean + SD + Histogram, data = mtcars)

# These functions also accept a 'fmt' argument which allows you to
# round/format the results

datasummary(hp + mpg ~ Mean * Arguments(fmt = "%.3f") + SD * Arguments(fmt = "%.1f"), data = mtcars)

# Save your tables to a variety of output formats:
f <- hp + mpg ~ Mean + SD
datasummary(f, data = mtcars, output = 'table.html')
datasummary(f, data = mtcars, output = 'table.tex')
datasummary(f, data = mtcars, output = 'table.md')
datasummary(f, data = mtcars, output = 'table.docx')
datasummary(f, data = mtcars, output = 'table.pptx')
datasummary(f, data = mtcars, output = 'table.jpg')
datasummary(f, data = mtcars, output = 'table.png')

# Display human-readable code
datasummary(f, data = mtcars, output = 'html')
datasummary(f, data = mtcars, output = 'markdown')
datasummary(f, data = mtcars, output = 'latex')

# Return a table object to customize using a table-making package
datasummary(f, data = mtcars, output = 'gt')
datasummary(f, data = mtcars, output = 'kableExtra')
datasummary(f, data = mtcars, output = 'flextable')
datasummary(f, data = mtcars, output = 'huxtable')

# add_rows
new_rows <- data.frame(a = 1:2, b = 2:3, c = 4:5)
attr(new_rows, 'position') <- c(1, 3)
datasummary(mpg + hp ~ mean + sd, data = mtcars, add_rows = new_rows)

## End(Not run)

```

---

datasummary\_balance *Balance table: Summary statistics for different subsets of the data (e.g., control and treatment groups)*

---

## Description

Balance table: Summary statistics for different subsets of the data (e.g., control and treatment groups)

## Usage

```
datasummary_balance(
  formula,
  data,
  output = "default",
  fmt = 1,
  title = NULL,
  notes = NULL,
  align = NULL,
  add_columns = NULL,
  add_rows = NULL,
  dinm = TRUE,
  dinm_statistic = "std.error",
  escape = TRUE,
  ...
)
```

## Arguments

- |         |  |
|---------|--|
| formula | a one-sided formula with the "condition" or "column" variable on the right-hand side.  |
| data    | A data.frame (or tibble). If this data includes columns called "blocks", "clusters", and/or "weights", the "estimatr" package will consider them when calculating the difference in means. If there is a weights column, the reported mean and standard errors will also be weighted.  |
| output  | filename or object type (character string) <ul style="list-style-type: none"> <li>Supported filename extensions: .html, .tex, .md, .txt, .png, .jpg.</li> <li>Supported object types: "default", "html", "markdown", "latex", "latex_tabular", "data.frame", "modelssummary_list", "gt", "kableExtra", "huxtable", "flextable", "jupyter".</li> <li>Warning: Users should not supply a file name to the output argument if they intend to customize the table with external packages. See the 'Details' section.</li> <li>LaTeX compilation requires the booktabs and siunitx packages, but siunitx can be disabled or replaced with global options. See the 'Details' section.</li> </ul> |

- The default output formats and table-making packages can be modified with global options. See the 'Details' section.

fmt	<p>determines how to format numeric values</p> <ul style="list-style-type: none"> <li>• integer: the number of digits to keep after the period format(<code>round(x, fmt)</code>, <code>nsmall=fmt</code>)</li> <li>• character: passed to the <code>sprintf</code> function (e.g., <code>'%.3f'</code> keeps 3 digits with trailing zero). See <code>?sprintf</code></li> <li>• function: returns a formatted character string.</li> <li>• Note on LaTeX formatting: To ensure proper typography, all numeric entries are enclosed in the <code>\num{}</code> command from the <code>siunitx</code> LaTeX package by default. This behavior can be altered with global options. See the 'Details' section.</li> </ul>
title	string
notes	list or vector of notes to append to the bottom of the table.
align	<p>A string with a number of characters equal to the number of columns in the table (e.g., <code>align = "lcc"</code>). Valid characters: l, c, r, S.</p> <ul style="list-style-type: none"> <li>• "l": left-aligned column</li> <li>• "c": centered column</li> <li>• "r": right-aligned column</li> <li>• "d": dot-aligned column. Only supported for LaTeX/PDF tables produced by <code>kableExtra</code>. These commands must appear in the LaTeX preamble (they are added automatically when compiling Rmarkdown documents to PDF): <ul style="list-style-type: none"> <li>– <code>\usepackage{booktabs}</code></li> <li>– <code>\usepackage{siunitx}</code></li> <li>– <code>\newcolumntype{d}{S[input-symbols = ()]}</code></li> </ul> </li> </ul>
add_columns	a data.frame (or tibble) with the same number of rows as your main table.
add_rows	a data.frame (or tibble) with the same number of columns as your main table. By default, rows are appended to the bottom of the table. You can define a "position" attribute of integers to set the row positions. See Examples section below.
dinm	TRUE calculates a difference in means with uncertainty estimates. This option is only available if the <code>estimatr</code> package is installed. If data includes columns named "blocks", "clusters", or "weights", this information will be taken into account automatically by <code>estimatr::difference_in_means</code> .
dinm_statistic	string: "std.error" or "p.value"
escape	boolean TRUE escapes or substitutes LaTeX/HTML characters which could prevent the file from compiling/displaying. This setting does not affect captions or notes.
...	<p>all other arguments are passed through to the extractor and table-making functions. This allows users to pass arguments directly to <code>modelsummary</code> in order to affect the behavior of other functions behind the scenes. Examples include:</p> <ul style="list-style-type: none"> <li>• <code>broom::tidy(exponentiate=TRUE)</code> to exponentiate logistic regression. Please see the <code>modelsummary</code> vignette on the package website for important technical notes on this topic.</li> </ul>

- `performance::model_performance(metrics="RMSE")` to select goodness-of-fit statistics to extract using the performance package (must have set `options(modelsummary_get="easystats")` first).

## Global Options

The behavior of `modelsummary` can be affected by setting global options:

- `modelsummary_factory_default`
- `modelsummary_factory_latex`
- `modelsummary_factory_html`
- `modelsummary_factory_png`
- `modelsummary_get`
- `modelsummary_format_numeric_latex`
- `modelsummary_format_numeric_html`

### Table-making packages:

`modelsummary` supports 4 table-making packages: `kableExtra`, `gt`, `flextable`, and `huxtable`. Some of these packages have overlapping functionalities. For example, 3 of those packages can export to LaTeX. To change the default backend used for a specific file format, you can use the `options` function:

```
options(modelsummary_factory_html = 'kableExtra') options(modelsummary_factory_latex = 'gt') options(modelsummary_factory_word = 'huxtable') options(modelsummary_factory_png = 'gt')
```

### Model extraction functions:

`modelsummary` can use two sets of packages to extract information from statistical models: `broom` and the `easystats` family (`performance` and `parameters`). By default, it uses `broom` first and `easystats` as a fallback if `broom` fails. You can change the order of priorities or include goodness-of-fit extracted by *both* packages by setting:

```
options(modelsummary_get = "broom") options(modelsummary_get = "easystats") options(modelsummary_get = "all")
```

### Formatting numeric entries:

By default, LaTeX tables enclose all numeric entries in the `\num{}` command from the `siunitx` package. To prevent this behavior, or to enclose numbers in dollar signs (for LaTeX math mode), users can call:

```
options(modelsummary_format_numeric_latex = "plain") options(modelsummary_format_numeric_latex = "mathmode")
```

A similar option can be used to display numerical entries using MathJax in HTML tables:

```
options(modelsummary_format_numeric_html = "mathjax")
```

## Examples

```
## Not run:
datasummary_balance(~am, mtcars)
```

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

---

 datasummary\_correlation

*Generate a correlation table for all numeric variables in your dataset.*


---

### Description

The names of the variables displayed in the correlation table are the names of the columns in the data. You can rename those columns (with or without spaces) to produce a table of human-readable variables.

### Usage

```
datasummary_correlation(
  data,
  output = "default",
  method = "pearson",
  fmt = 2,
  align = NULL,
  add_rows = NULL,
  add_columns = NULL,
  title = NULL,
  notes = NULL,
  escape = TRUE,
  ...
)
```

### Arguments

data	A data.frame (or tibble)
output	filename or object type (character string) <ul style="list-style-type: none"> <li>Supported filename extensions: .html, .tex, .md, .txt, .png, .jpg.</li> <li>Supported object types: "default", "html", "markdown", "latex", "latex_tabular", "data.frame", "modelsummary_list", "gt", "kableExtra", "huxtable", "flextable", "jupyter".</li> <li>Warning: Users should not supply a file name to the output argument if they intend to customize the table with external packages. See the 'Details' section.</li> <li>LaTeX compilation requires the booktabs and siunitx packages, but siunitx can be disabled or replaced with global options. See the 'Details' section.</li> <li>The default output formats and table-making packages can be modified with global options. See the 'Details' section.</li> </ul>
method	character or function <ul style="list-style-type: none"> <li>character: "pearson", "kendall", "spearman", or "pearspear" (Pearson correlations above and Spearman correlations below the diagonal)</li> </ul>

	<ul style="list-style-type: none"> <li>function: takes a <code>data.frame</code> with numeric columns and returns a square matrix or <code>data.frame</code> with unique <code>row.names</code> and <code>colnames</code> corresponding to variable names. Note that the <code>datasummary_correlation_format</code> can often be useful for formatting the output of custom correlation functions.</li> </ul>
<code>fmt</code>	<p>determines how to format numeric values</p> <ul style="list-style-type: none"> <li>integer: the number of digits to keep after the period format(<code>round(x, fmt)</code>, <code>nsmall=fmt</code>)</li> <li>character: passed to the <code>sprintf</code> function (e.g., <code>'%.3f'</code> keeps 3 digits with trailing zero). See <code>?sprintf</code></li> <li>function: returns a formatted character string.</li> <li>Note on LaTeX formatting: To ensure proper typography, all numeric entries are enclosed in the <code>\num{}</code> command from the <code>siunitx</code> LaTeX package by default. This behavior can be altered with global options. See the 'Details' section.</li> </ul>
<code>align</code>	<p>A string with a number of characters equal to the number of columns in the table (e.g., <code>align = "lcc"</code>). Valid characters: l, c, r, S.</p> <ul style="list-style-type: none"> <li>"l": left-aligned column</li> <li>"c": centered column</li> <li>"r": right-aligned column</li> <li>"d": dot-aligned column. Only supported for LaTeX/PDF tables produced by <code>kableExtra</code>. These commands must appear in the LaTeX preamble (they are added automatically when compiling Rmarkdown documents to PDF): <ul style="list-style-type: none"> <li><code>\usepackage{booktabs}</code></li> <li><code>\usepackage{siunitx}</code></li> <li><code>\newcolumntype{d}{S[input-symbols = ()]}</code></li> </ul> </li> </ul>
<code>add_rows</code>	<p>a <code>data.frame</code> (or <code>tibble</code>) with the same number of columns as your main table. By default, rows are appended to the bottom of the table. You can define a "position" attribute of integers to set the row positions. See Examples section below.</p>
<code>add_columns</code>	<p>a <code>data.frame</code> (or <code>tibble</code>) with the same number of rows as your main table.</p>
<code>title</code>	<p>string</p>
<code>notes</code>	<p>list or vector of notes to append to the bottom of the table.</p>
<code>escape</code>	<p>boolean TRUE escapes or substitutes LaTeX/HTML characters which could prevent the file from compiling/displaying. This setting does not affect captions or notes.</p>
<code>...</code>	<p>other parameters are passed through to the table-making packages.</p>

### Global Options

The behavior of `modelsummary` can be affected by setting global options:

- `modelsummary_factory_default`
- `modelsummary_factory_latex`
- `modelsummary_factory_html`

- modelsummary\_factory\_png
- modelsummary\_get
- modelsummary\_format\_numeric\_latex
- modelsummary\_format\_numeric\_html

#### Table-making packages:

modelsummary supports 4 table-making packages: kableExtra, gt, flextable, and huxtable. Some of these packages have overlapping functionalities. For example, 3 of those packages can export to LaTeX. To change the default backend used for a specific file format, you can use the options function:

```
options(modelsummary_factory_html = 'kableExtra') options(modelsummary_factory_latex = 'gt') options(modelsummary_factory_word = 'huxtable') options(modelsummary_factory_png = 'gt')
```

#### Model extraction functions:

modelsummary can use two sets of packages to extract information from statistical models: broom and the easystats family (performance and parameters). By default, it uses broom first and easystats as a fallback if broom fails. You can change the order of priorities or include goodness-of-fit extracted by *both* packages by setting:

```
options(modelsummary_get = "broom") options(modelsummary_get = "easystats") options(modelsummary_get = "all")
```

#### Formatting numeric entries:

By default, LaTeX tables enclose all numeric entries in the `\num{}` command from the `siunitx` package. To prevent this behavior, or to enclose numbers in dollar signs (for LaTeX math mode), users can call:

```
options(modelsummary_format_numeric_latex = "plain") options(modelsummary_format_numeric_latex = "mathmode")
```

A similar option can be used to display numerical entries using MathJax in HTML tables:

```
options(modelsummary_format_numeric_html = "mathjax")
```

### Examples

```
## Not run:
library(modelsummary)

# clean variable names (base R)
dat <- mtcars[, c("mpg", "hp")]
colnames(dat) <- c("Miles / Gallon", "Horse Power")
datasummary_correlation(dat)

# clean variable names (tidyverse)
library(tidyverse)
dat <- mtcars %>%
  select(`Miles / Gallon` = mpg,
         `Horse Power` = hp)
datasummary_correlation(dat)
```

```

# alternative methods
datasummary_correlation(dat, method = "pearspear")

# custom function
cor_fun <- function(x) cor(x, method = "kendall")
datasummary_correlation(dat, method = cor_fun)

# rename columns alphabetically and include a footnote for reference
note <- sprintf("(%s) %s", letters[1:ncol(dat)], colnames(dat))
note <- paste(note, collapse = "; ")

colnames(dat) <- sprintf("(%s)", letters[1:ncol(dat)])

datasummary_correlation(dat, notes = note)

# `datasummary_correlation_format`: custom function with formatting
dat <- mtcars[, c("mpg", "hp", "disp")]

cor_fun <- function(x) {
  out <- cor(x, method = "kendall")
  datasummary_correlation_format(
    out,
    fmt = 2,
    upper_triangle = "x",
    diagonal = ".")
}

datasummary_correlation(dat, method = cor_fun)

# use kableExtra and psych to color significant cells
library(psych)
library(kableExtra)

dat <- mtcars[, c("vs", "hp", "gear")]

cor_fun <- function(dat) {
  # compute correlations and format them
  correlations <- data.frame(cor(dat))
  correlations <- datasummary_correlation_format(correlations, fmt = 2)

  # calculate pvalues using the `psych` package
  pvalues <- psych::corr.test(dat)$p

  # use `kableExtra::cell_spec` to color significant cells
  for (i in 1:nrow(correlations)) {
    for (j in 1:ncol(correlations)) {
      if (pvalues[i, j] < 0.05 && i != j) {
        correlations[i, j] <- cell_spec(correlations[i, j], background = "pink")
      }
    }
  }
  return(correlations)
}

```



```
# The `escape=FALSE` is important here!
datasummary_correlation(dat, method = cor_fun, escape = FALSE)

## End(Not run)
```

---

```
datasummary_correlation_format
```

*Format the content of a correlation table*

---

## Description

Mostly for internal use, but can be useful when users supply a function to the method argument of `datasummary_correlation`.

## Usage

```
datasummary_correlation_format(
  x,
  fmt,
  leading_zero = FALSE,
  diagonal = NULL,
  upper_triangle = NULL
)
```

## Arguments

<code>x</code>	square numeric matrix
<code>fmt</code>	determines how to format numeric values <ul style="list-style-type: none"> <li>integer: the number of digits to keep after the period <code>format(round(x, fmt), nsmall=fmt)</code></li> <li>character: passed to the <code>sprintf</code> function (e.g., <code>'%.3f'</code> keeps 3 digits with trailing zero). See <code>?sprintf</code></li> <li>function: returns a formatted character string.</li> <li>Note on LaTeX formatting: To ensure proper typography, all numeric entries are enclosed in the <code>\num{}</code> command from the <code>siunitx</code> LaTeX package by default. This behavior can be altered with global options. See the 'Details' section.</li> </ul>
<code>leading_zero</code>	boolean. If <code>FALSE</code> , leading zeros are removed
<code>diagonal</code>	character or <code>NULL</code> . If character, all elements of the diagonal are replaced by the same character (e.g., <code>"1"</code> ).
<code>upper_triangle</code>	character or <code>NULL</code> . If character, all elements of the upper triangle are replaced by the same character (e.g., <code>""</code> or <code>","</code> ).

## Examples

```
## Not run:
library(modelsummary)

dat <- mtcars[, c("mpg", "hp", "disp")]

cor_fun <- function(x) {
  out <- cor(x, method = "kendall")
  datasummary_correlation_format(
    out,
    fmt = 2,
    upper_triangle = "x",
    diagonal = ".")
}

datasummary_correlation(dat, method = cor_fun)

## End(Not run)
```

---

datasummary\_crosstab *Cross tabulations for categorical variables*

---

## Description

Convenience function to tabulate counts, cell percentages, and row/column percentages for categorical variables. See the Details section for a description of the internal design. For more complex cross tabulations, use [datasummary](#) directly.

## Usage

```
datasummary_crosstab(
  formula,
  statistic = 1 ~ 1 + N + Percent("row"),
  data,
  output = "default",
  fmt = 1,
  title = NULL,
  notes = NULL,
  align = NULL,
  add_columns = NULL,
  add_rows = NULL,
  sparse_header = TRUE,
  escape = TRUE,
  ...
)
```

**Arguments**

formula	A two-sided formula to describe the table: rows ~ columns, where rows and columns are variables in the data. Rows and columns may contain interactions, e.g., var1 * var2 ~ var3.
statistic	A formula of the form 1 ~ 1 + N + Percent("row"). The left-hand side may only be empty or contain a 1 to include row totals. The right-hand side may contain: 1 for column totals, N for counts, Percent() for cell percentages, Percent("row") for row percentages, Percent("col") for column percentages.
data	A data.frame (or tibble)
output	filename or object type (character string) <ul style="list-style-type: none"> <li>Supported filename extensions: .html, .tex, .md, .txt, .png, .jpg.</li> <li>Supported object types: "default", "html", "markdown", "latex", "latex_tabular", "data.frame", "modelsummary_list", "gt", "kableExtra", "huxtable", "flextable", "jupyter".</li> <li>Warning: Users should not supply a file name to the output argument if they intend to customize the table with external packages. See the 'Details' section.</li> <li>LaTeX compilation requires the booktabs and siunitx packages, but siunitx can be disabled or replaced with global options. See the 'Details' section.</li> <li>The default output formats and table-making packages can be modified with global options. See the 'Details' section.</li> </ul>
fmt	determines how to format numeric values <ul style="list-style-type: none"> <li>integer: the number of digits to keep after the period format(round(x, fmt), nsmall=fmt)</li> <li>character: passed to the sprintf function (e.g., '%.3f' keeps 3 digits with trailing zero). See ?sprintf</li> <li>function: returns a formatted character string.</li> <li>Note on LaTeX formatting: To ensure proper typography, all numeric entries are enclosed in the \num{} command from the siunitx LaTeX package by default. This behavior can be altered with global options. See the 'Details' section.</li> </ul>
title	string
notes	list or vector of notes to append to the bottom of the table.
align	A string with a number of characters equal to the number of columns in the table (e.g., align = "lcc"). Valid characters: l, c, r, S. <ul style="list-style-type: none"> <li>"l": left-aligned column</li> <li>"c": centered column</li> <li>"r": right-aligned column</li> <li>"d": dot-aligned column. Only supported for LaTeX/PDF tables produced by kableExtra. These commands must appear in the LaTeX preamble (they are added automatically when compiling Rmarkdown documents to PDF): <ul style="list-style-type: none"> <li>– \usepackage{booktabs}</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>- <code>\usepackage{siunitx}</code></li> <li>- <code>\newcolumnmtype{d}{S[input-symbols = ()]}</code></li> </ul>
<code>add_columns</code>	a data.frame (or tibble) with the same number of rows as your main table.
<code>add_rows</code>	a data.frame (or tibble) with the same number of columns as your main table. By default, rows are appended to the bottom of the table. You can define a "position" attribute of integers to set the row positions. See Examples section below.
<code>sparse_header</code>	TRUE or FALSE. TRUE eliminates column headers which have a unique label across all columns, except for the row immediately above the data. FALSE keeps all headers. The order in which terms are entered in the formula determines the order in which headers appear. For example, <code>x~mean*z</code> will print the mean-related header above the z-related header. <sup>4</sup>
<code>escape</code>	boolean TRUE escapes or substitutes LaTeX/HTML characters which could prevent the file from compiling/displaying. This setting does not affect captions or notes.
<code>...</code>	all other arguments are passed through to the table-making functions. This allows users to pass arguments directly to <code>datasummary</code> in order to affect the behavior of other functions behind the scenes, for instance: <ul style="list-style-type: none"> <li>• <code>kableExtra::kbl(escape=FALSE)</code> to avoid escaping math characters in <code>kableExtra</code> tables.</li> </ul>

## Details

`datasummary_crosstab` is a wrapper around the `datasummary` function. This wrapper works by creating a customized formula and by feeding it to `datasummary`. The customized formula comes in two parts.

First, we take a two-sided formula supplied by the `formula` argument. All variables of that formula are wrapped in a `Factor()` call to ensure that the variables are treated as categorical.

Second, the `statistic` argument gives a two-sided formula which specifies the statistics to include in the table. `datasummary_crosstab` modifies this formula automatically to include "clean" labels.

Finally, the `formula` and `statistic` formulas are combined into a single formula which is fed directly to the `datasummary` function to produce the table.

Variables in `formula` are automatically wrapped in `Factor()`.

## Global Options

The behavior of `modelsummary` can be affected by setting global options:

- `modelsummary_factory_default`
- `modelsummary_factory_latex`
- `modelsummary_factory_html`
- `modelsummary_factory_png`
- `modelsummary_get`
- `modelsummary_format_numeric_latex`

- modelsummary\_format\_numeric\_html

### Table-making packages:

modelsummary supports 4 table-making packages: kableExtra, gt, flextable, and huxtable. Some of these packages have overlapping functionalities. For example, 3 of those packages can export to LaTeX. To change the default backend used for a specific file format, you can use the options function:

```
options(modelsummary_factory_html = 'kableExtra') options(modelsummary_factory_latex
= 'gt') options(modelsummary_factory_word = 'huxtable') options(modelsummary_factory_png
= 'gt')
```

### Model extraction functions:

modelsummary can use two sets of packages to extract information from statistical models: broom and the easystats family (performance and parameters). By default, it uses broom first and easystats as a fallback if broom fails. You can change the order of priorities or include goodness-of-fit extracted by *both* packages by setting:

```
options(modelsummary_get = "broom") options(modelsummary_get = "easystats") options(modelsummary_get
= "all")
```

### Formatting numeric entries:

By default, LaTeX tables enclose all numeric entries in the `\num{}` command from the siunitx package. To prevent this behavior, or to enclose numbers in dollar signs (for LaTeX math mode), users can call:

```
options(modelsummary_format_numeric_latex = "plain") options(modelsummary_format_numeric_latex
= "mathmode")
```

A similar option can be used to display numerical entries using MathJax in HTML tables:

```
options(modelsummary_format_numeric_html = "mathjax")
```

## Examples

```
## Not run:
# crosstab of two variables, showing counts, row percentages, and row/column totals
datasummary_crosstab(cyl ~ gear, data = mtcars)

# crosstab of two variables, showing counts only and no totals
datasummary_crosstab(cyl ~ gear, statistic = ~ N, data = mtcars)

# crosstab of three variables
datasummary_crosstab(am * cyl ~ gear, data = mtcars)

# crosstab with two variables and column percentages
datasummary_crosstab(am ~ gear, statistic = ~ Percentage("col"), data = mtcars)

## End(Not run)
```

---

datasummary_df	<i>Draw a table from a data.frame</i>
----------------	---------------------------------------

---

## Description

Draw a table from a data.frame

## Usage

```
datasummary_df(
  data,
  output = "default",
  fmt = 2,
  align = NULL,
  hrule = NULL,
  title = NULL,
  notes = NULL,
  add_rows = NULL,
  add_columns = NULL,
  escape = TRUE,
  ...
)
```

## Arguments

data	A data.frame (or tibble)
output	filename or object type (character string) <ul style="list-style-type: none"> <li>• Supported filename extensions: .html, .tex, .md, .txt, .png, .jpg.</li> <li>• Supported object types: "default", "html", "markdown", "latex", "latex_tabular", "data.frame", "modelssummary_list", "gt", "kableExtra", "huxtable", "flextable", "jupyter".</li> <li>• Warning: Users should not supply a file name to the output argument if they intend to customize the table with external packages. See the 'Details' section.</li> <li>• LaTeX compilation requires the booktabs and siunitx packages, but siunitx can be disabled or replaced with global options. See the 'Details' section.</li> <li>• The default output formats and table-making packages can be modified with global options. See the 'Details' section.</li> </ul>
fmt	determines how to format numeric values <ul style="list-style-type: none"> <li>• integer: the number of digits to keep after the period format(round(x, fmt), nsmall=fmt)</li> <li>• character: passed to the sprintf function (e.g., '%.3f' keeps 3 digits with trailing zero). See ?sprintf</li> <li>• function: returns a formatted character string.</li> </ul>

	<ul style="list-style-type: none"> <li>• Note on LaTeX formatting: To ensure proper typography, all numeric entries are enclosed in the <code>\num{}</code> command from the <code>siunitx</code> LaTeX package by default. This behavior can be altered with global options. See the 'Details' section.</li> </ul>
<code>align</code>	<p>A string with a number of characters equal to the number of columns in the table (e.g., <code>align = "lcc"</code>). Valid characters: l, c, r, S.</p> <ul style="list-style-type: none"> <li>• "l": left-aligned column</li> <li>• "c": centered column</li> <li>• "r": right-aligned column</li> <li>• "d": dot-aligned column. Only supported for LaTeX/PDF tables produced by <code>kableExtra</code>. These commands must appear in the LaTeX preamble (they are added automatically when compiling Rmarkdown documents to PDF): <ul style="list-style-type: none"> <li>– <code>\usepackage{booktabs}</code></li> <li>– <code>\usepackage{siunitx}</code></li> <li>– <code>\newcolumnntype{d}{S[input-symbols = ()]}</code></li> </ul> </li> </ul>
<code>hrule</code>	position of horizontal rules (integer vector)
<code>title</code>	string
<code>notes</code>	list or vector of notes to append to the bottom of the table.
<code>add_rows</code>	a data.frame (or tibble) with the same number of columns as your main table. By default, rows are appended to the bottom of the table. You can define a "position" attribute of integers to set the row positions. See Examples section below.
<code>add_columns</code>	a data.frame (or tibble) with the same number of rows as your main table.
<code>escape</code>	boolean TRUE escapes or substitutes LaTeX/HTML characters which could prevent the file from compiling/displaying. This setting does not affect captions or notes.
<code>...</code>	<p>all other arguments are passed through to the extractor and table-making functions. This allows users to pass arguments directly to <code>modelsummary</code> in order to affect the behavior of other functions behind the scenes. Examples include:</p> <ul style="list-style-type: none"> <li>• <code>broom::tidy(exponentiate=TRUE)</code> to exponentiate logistic regression. Please see the <code>modelsummary</code> vignette on the package website for important technical notes on this topic.</li> <li>• <code>performance::model_performance(metrics="RMSE")</code> to select goodness-of-fit statistics to extract using the <code>performance</code> package (must have set <code>options(modelsummary_get="easystats")</code> first).</li> </ul>

---

 datasummary\_skim

*Quick overview of numeric or categorical variables*


---

## Description

This function was inspired by the excellent `skimr` package for R.

**Usage**

```

datasummary_skim(
  data,
  type = "numeric",
  output = "default",
  fmt = "%.1f",
  histogram = TRUE,
  title = NULL,
  notes = NULL,
  align = NULL,
  escape = TRUE,
  ...
)

```

**Arguments**

<code>data</code>	A <code>data.frame</code> (or <code>tibble</code> )
<code>type</code>	of variables to summarize: "numeric" or "categorical" (character)
<code>output</code>	filename or object type (character string) <ul style="list-style-type: none"> <li>Supported filename extensions: <code>.html</code>, <code>.tex</code>, <code>.md</code>, <code>.txt</code>, <code>.png</code>, <code>.jpg</code>.</li> <li>Supported object types: "default", "html", "markdown", "latex", "latex_tabular", "data.frame", "modelsummary_list", "gt", "kableExtra", "huxtable", "flextable", "jupyter".</li> <li>Warning: Users should not supply a file name to the output argument if they intend to customize the table with external packages. See the 'Details' section.</li> <li>LaTeX compilation requires the <code>booktabs</code> and <code>siunitx</code> packages, but <code>siunitx</code> can be disabled or replaced with global options. See the 'Details' section.</li> <li>The default output formats and table-making packages can be modified with global options. See the 'Details' section.</li> </ul>
<code>fmt</code>	determines how to format numeric values <ul style="list-style-type: none"> <li>integer: the number of digits to keep after the period <code>format(round(x, fmt), nsmall=fmt)</code></li> <li>character: passed to the <code>sprintf</code> function (e.g., <code>'%.3f'</code> keeps 3 digits with trailing zero). See <code>?sprintf</code></li> <li>function: returns a formatted character string.</li> <li>Note on LaTeX formatting: To ensure proper typography, all numeric entries are enclosed in the <code>\num{}</code> command from the <code>siunitx</code> LaTeX package by default. This behavior can be altered with global options. See the 'Details' section.</li> </ul>
<code>histogram</code>	include a histogram (TRUE/FALSE). Supported for: <ul style="list-style-type: none"> <li><code>type = "numeric"</code></li> <li>output is "html", "default", "jpg", "png", or "kableExtra"</li> <li>PDF and HTML documents compiled via <code>Rmarkdown</code> or <code>knitr</code></li> <li>See the examples section below for an example of how to use <code>datasummary</code> to include histograms in other formats such as <code>markdown</code>.</li> </ul>



title	string
notes	list or vector of notes to append to the bottom of the table.
align	A string with a number of characters equal to the number of columns in the table (e.g., align = "lcc"). Valid characters: l, c, r, S. <ul style="list-style-type: none"> <li>• "l": left-aligned column</li> <li>• "c": centered column</li> <li>• "r": right-aligned column</li> <li>• "d": dot-aligned column. Only supported for LaTeX/PDF tables produced by kableExtra. These commands must appear in the LaTeX preamble (they are added automatically when compiling Rmarkdown documents to PDF): <ul style="list-style-type: none"> <li>– \usepackage{booktabs}</li> <li>– \usepackage{siunitx}</li> <li>– \newcolumntype{d}{S[input-symbols = ()]}</li> </ul> </li> </ul>
escape	boolean TRUE escapes or substitutes LaTeX/HTML characters which could prevent the file from compiling/displaying. This setting does not affect captions or notes.
...	all other arguments are passed through to the table-making functions. This allows users to pass arguments directly to datasummary in order to affect the behavior of other functions behind the scenes, for instance: <ul style="list-style-type: none"> <li>• kableExtra::kbl(escape=FALSE) to avoid escaping math characters in kableExtra tables.</li> </ul>

## Global Options

The behavior of modelsummary can be affected by setting global options:

- modelsummary\_factory\_default
- modelsummary\_factory\_latex
- modelsummary\_factory\_html
- modelsummary\_factory\_png
- modelsummary\_get
- modelsummary\_format\_numeric\_latex
- modelsummary\_format\_numeric\_html

### Table-making packages:

modelsummary supports 4 table-making packages: kableExtra, gt, flextable, and huxtable. Some of these packages have overlapping functionalities. For example, 3 of those packages can export to LaTeX. To change the default backend used for a specific file format, you can use the options function:

```
options(modelsummary_factory_html = 'kableExtra') options(modelsummary_factory_latex
= 'gt') options(modelsummary_factory_word = 'huxtable') options(modelsummary_factory_png
= 'gt')
```

**Model extraction functions:**

modelsummary can use two sets of packages to extract information from statistical models: broom and the easystats family (performance and parameters). By default, it uses broom first and easystats as a fallback if broom fails. You can change the order of priorities or include goodness-of-fit extracted by *both* packages by setting:

```
options(modelsummary_get = "broom") options(modelsummary_get = "easystats") options(modelsummary_get = "all")
```

**Formatting numeric entries:**

By default, LaTeX tables enclose all numeric entries in the `\num{}` command from the siunitx package. To prevent this behavior, or to enclose numbers in dollar signs (for LaTeX math mode), users can call:

```
options(modelsummary_format_numeric_latex = "plain") options(modelsummary_format_numeric_latex = "mathmode")
```

A similar option can be used to display numerical entries using MathJax in HTML tables:

```
options(modelsummary_format_numeric_html = "mathjax")
```

**Examples**

```
## Not run:
dat <- mtcars
dat$vs <- as.logical(dat$vs)
dat$cyl <- as.factor(dat$cyl)
datasummary_skim(dat)
datasummary_skim(dat, "categorical")

# You can use `datasummary` to produce a similar table in different formats.
# Note that the `Histogram` function relies on unicode characters. These
# characters will only display correctly in some operating systems, under some
# locales, using some fonts. Displaying such histograms on Windows computers
# is notoriously tricky. The `modelsummary` authors cannot provide support to
# display these unicode histograms.

f <- All(mtcars) ~ Mean + SD + Min + Median + Max + Histogram
datasummary(f, mtcars, output="markdown")

## End(Not run)
```

---

 dvnames

*Title models with their dependent variables*


---

**Description**

A convenience function for use with a regression model or list of regression models. Returns a named list of models, where the names are the models' respective dependent variables. Pass your list of models to `dvnames` before sending to `modelsummary` to automatically get dependent variable-titled columns.

**Usage**

```
dvnames(models, number = FALSE, fill = "Model")
```

**Arguments**

models	A regression model or list of regression models
number	Should the models be numbered (1), (2), etc., in addition to their dependent variable names?
fill	If <code>insight::find_response()</code> cannot find a response, the column title to use in its place. Set to ' ' to leave blank.

**Examples**

```
m1 <- lm(mpg ~ hp, data = mtcars)
m2 <- lm(mpg ~ hp + wt, data = mtcars)

# Without dvnames, column names are Model 1 and Model 2
modelsummary(list(m1, m2))

# With dvnames, they are "mpg" and "mpg"
modelsummary(dvnames(list(m1,m2)))
```

---

escape\_html

*Escape problematic characters to allow display in HTML*

---

**Description**

Copied from `knitr` for internal use because it is unexported and CRAN rejects :::

**Usage**

```
escape_html(x)
```

**Arguments**

x	a character string to escape
---	------------------------------

---

escape_latex	<i>Escape problematic characters to allow compilation in LaTeX</i>
--------------	--

---

**Description**

Copied from knitr for internal use because it is unexported and CRAN rejects :::

**Usage**

```
escape_latex(x, newlines = FALSE, spaces = FALSE)
```

**Arguments**

x	a character string to escape
newlines	boolean
spaces	boolean

---

get_estimates	<i>Extract model estimates. A mostly internal function with some potential uses outside.</i>
---------------	--

---

**Description**

Extract model estimates. A mostly internal function with some potential uses outside.

**Usage**

```
get_estimates(model, conf_level = 0.95, vcov = NULL, ...)
```

**Arguments**

model	a single model object
conf_level	confidence level to use for confidence intervals
vcov	robust standard errors and other manual statistics. The vcov argument accepts six types of input (see the 'Details' and 'Examples' sections below): <ul style="list-style-type: none"> <li>• NULL returns the default uncertainty estimates of the model object</li> <li>• string, vector, or (named) list of strings. Omitting or specifying vcov = NULL will return the model's default uncertainty estimates, e.g. IID errors for standard models. Alternatively, use the string "iid" (aliases: "classical" or "constant") to present IID errors explicitly. The strings "HC", "HC0", "HC1" (alias: "stata"), "HC2", "HC3" (alias: "robust"), "HC4", "HC4m", "HC5", "HAC", "NeweyWest", "Andrews", "panel-corrected", "outer-product", and "weave" use variance-covariance matrices computed</li> </ul>

using functions from the `sandwich` package, or equivalent method. The behavior of those functions can (and sometimes *must*) be altered by passing arguments to `sandwich` directly from `modelsummary` through the ellipsis (`...`), but it is safer to define your own custom functions as described in the next bullet.

- function or (named) list of functions which return variance-covariance matrices with row and column names equal to the names of your coefficient estimates (e.g., `stats::vcov`, `sandwich::vcovHC`, `function(x) vcovPC(x, cluster="country")`).
- formula or (named) list of formulas with the cluster variable(s) on the right-hand side (e.g., `~clusterid`).
- (named) list of `length(models)` variance-covariance matrices with row and column names equal to the names of your coefficient estimates.
- a (named) list of `length(models)` vectors with names equal to the names of your coefficient estimates. See 'Examples' section below. Warning: since this list of vectors can include arbitrary strings or numbers, `modelsummary` cannot automatically calculate p values. The `stars` argument may thus use incorrect significance thresholds when `vcov` is a list of vectors.

...

all other arguments are passed through to the extractor and table-making functions. This allows users to pass arguments directly to `modelsummary` in order to affect the behavior of other functions behind the scenes. Examples include:

- `broom::tidy(exponentiate=TRUE)` to exponentiate logistic regression. Please see the `modelsummary` vignette on the package website for important technical notes on this topic.
- `performance::model_performance(metrics="RMSE")` to select goodness-of-fit statistics to extract using the `performance` package (must have set `options(modelsummary_get="easystats")` first).

---

get\_gof

*Extract model gof A mostly internal function with some potential uses outside.*

---

### Description

Extract model gof A mostly internal function with some potential uses outside.

### Usage

```
get_gof(model, vcov_type = NULL, ...)
```

### Arguments

<code>model</code>	a single model object
<code>vcov_type</code>	string <code>vcov</code> type to add at the bottom of the table
...	all other arguments are passed through to the extractor and table-making functions. This allows users to pass arguments directly to <code>modelsummary</code> in order to affect the behavior of other functions behind the scenes. Examples include:

- `broom::tidy(exponentiate=TRUE)` to exponentiate logistic regression. Please see the `modelsummary` vignette on the package website for important technical notes on this topic.
- `performance::model_performance(metrics="RMSE")` to select goodness-of-fit statistics to extract using the `performance` package (must have set `options(modelsummary_get="easystats")` first).

---

<code>glance_custom</code>	<i>Extract custom information from a model object and turn it into a tidy data.frame or tibble with a single row.</i>
----------------------------	---

---

### Description

To customize the output of a model of class `lm`, you can define a new method called `glance_custom.lm` which returns a one-row data.frame.

### Usage

```
glance_custom(x, ...)
```

### Arguments

<code>x</code>	model or other R object to convert to single-row data frame
<code>...</code>	ellipsis

### Methods

No methods found in currently loaded packages.

---

<code>gof_map</code>	<i>Data.frame used to clean up and format goodness-of-fit statistics</i>
----------------------	--

---

### Description

By default, this data frame is passed to the `'gof_map'` argument of the `'modelsummary'` function. Users can modify this data frame to customize the list of statistics to display and their format. See example below.

### Usage

```
gof_map
```

### Format

data.frame with 4 columns of character data: raw, clean, fmt, omit

**Examples**

```
## Not run:

library(modelsummary)
mod <- lm(wt ~ drat, data = mtcars)
gm <- modelsummary::gof_map
gm$omit[gm$raw == 'deviance'] <- FALSE
gm$fmt[gm$raw == 'r.squared'] <- "%.5f"
modelsummary(mod, gof_map = gm)

## End(Not run)
```

---

Histogram	<i>datasummary statistic shortcut</i>
-----------	---------------------------------------

---

**Description**

This function uses Unicode characters to create a histogram. This can sometimes be useful, but is generally discouraged. Unicode characters can only display a limited number of heights for bars, and the accuracy of output is highly dependent on the platform (typeface, output type, windows vs. mac, etc.). We recommend you use the `kableExtra::spec_hist` function instead.

**Usage**

```
Histogram(x, bins = 10)
```

**Arguments**

<code>x</code>	variable to summarize
<code>bins</code>	number of histogram bars

---

Max	<i>datasummary statistic shortcut</i>
-----	---------------------------------------

---

**Description**

`datasummary statistic shortcut`

**Usage**

```
Max(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

x	variable to summarize
fmt	passed to the <code>modelsummary::rounding</code> function
na.rm	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
...	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +
            Min + Max + SD + Var,
            data = mtcars)

## End(Not run)
```

---

Mean	<i>datasummary statistic shortcut</i>
------	---------------------------------------

---

**Description**

datasummary statistic shortcut

**Usage**

```
Mean(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

x	variable to summarize
fmt	passed to the <code>modelsummary::rounding</code> function
na.rm	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
...	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + P0 + P25 + P50 + P75 + P100 +
            Min + Max + SD + Var,
            data = mtcars)

## End(Not run)
```



---

Median *datasummary statistic shortcut*

---

**Description**

datasummary statistic shortcut

**Usage**

```
Median(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

x	variable to summarize
fmt	passed to the <code>modelsummary::rounding</code> function
na.rm	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
...	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +
             Min + Max + SD + Var,
             data = mtcars)

## End(Not run)
```

---

Min *datasummary statistic shortcut*

---

**Description**

datasummary statistic shortcut

**Usage**

```
Min(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

x	variable to summarize
fmt	passed to the <code>modelsummary::rounding</code> function
na.rm	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
...	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +
            Min + Max + SD + Var,
            data = mtcars)

## End(Not run)
```

---

modelplot

---

*Model Summary Plots with Estimates and Confidence Intervals*


---

**Description**

Model Summary Plots with Estimates and Confidence Intervals

**Usage**

```
modelplot(
  models,
  conf_level = 0.95,
  coef_map = NULL,
  coef_omit = NULL,
  coef_rename = NULL,
  vcov = NULL,
  add_rows = NULL,
  facet = FALSE,
  draw = TRUE,
  background = NULL,
  ...
)
```

**Arguments**

<code>models</code>	a model or (optionally named) list of models
<code>conf_level</code>	confidence level to use for confidence intervals
<code>coef_map</code>	character vector. Subset, rename, and reorder coefficients. Coefficients omitted from this vector are omitted from the table. The order of the vector determines the order of the table. <code>coef_map</code> can be a named or an unnamed character vector (see the Examples section below). If <code>coef_map</code> is a named vector, its values define the labels that must appear in the table, and its names identify the original term names stored in the model object: <code>c("hp:mpg"="HPxM/G")</code> .
<code>coef_omit</code>	string regular expression. Omits all matching coefficients from the table using <code>grep1(perl=TRUE)</code> . This argument uses perl-compatible regular expressions, which allows expressions such as <code>"Int ABC"</code> which omits coefficients matching either <code>"Int"</code> or <code>"ABC"</code> , and <code>"^(?!.*Intercept)"</code> which omits every term except the intercept.

coef_rename	named character vector or function which returns a named vector. Values of the vector refer to the variable names that will appear in the table. Names refer to the original term names stored in the model object, e.g. <code>c("hp:mpg"="hp X mpg")</code> for an interaction term.
vcov	robust standard errors and other manual statistics. The <code>vcov</code> argument accepts six types of input (see the 'Details' and 'Examples' sections below): <ul style="list-style-type: none"> <li>• <code>NULL</code> returns the default uncertainty estimates of the model object</li> <li>• string, vector, or (named) list of strings. Omitting or specifying <code>vcov = NULL</code> will return the model's default uncertainty estimates, e.g. IID errors for standard models. Alternatively, use the string <code>"iid"</code> (aliases: <code>"classical"</code> or <code>"constant"</code>) to present IID errors explicitly. The strings <code>"HC"</code>, <code>"HC0"</code>, <code>"HC1"</code> (alias: <code>"stata"</code>), <code>"HC2"</code>, <code>"HC3"</code> (alias: <code>"robust"</code>), <code>"HC4"</code>, <code>"HC4m"</code>, <code>"HC5"</code>, <code>"HAC"</code>, <code>"NeweyWest"</code>, <code>"Andrews"</code>, <code>"panel-corrected"</code>, <code>"outer-product"</code>, and <code>"weave"</code> use variance-covariance matrices computed using functions from the <code>sandwich</code> package, or equivalent method. The behavior of those functions can (and sometimes <i>must</i>) be altered by passing arguments to <code>sandwich</code> directly from <code>modelsummary</code> through the ellipsis (<code>...</code>), but it is safer to define your own custom functions as described in the next bullet.</li> <li>• function or (named) list of functions which return variance-covariance matrices with row and column names equal to the names of your coefficient estimates (e.g., <code>stats::vcov</code>, <code>sandwich::vcovHC</code>, <code>function(x) vcovPC(x, cluster="country")</code>).</li> <li>• formula or (named) list of formulas with the cluster variable(s) on the right-hand side (e.g., <code>~clusterid</code>).</li> <li>• (named) list of <code>length(models)</code> variance-covariance matrices with row and column names equal to the names of your coefficient estimates.</li> <li>• a (named) list of <code>length(models)</code> vectors with names equal to the names of your coefficient estimates. See 'Examples' section below. Warning: since this list of vectors can include arbitrary strings or numbers, <code>modelsummary</code> cannot automatically calculate p values. The <code>stars</code> argument may thus use incorrect significance thresholds when <code>vcov</code> is a list of vectors.</li> </ul>
add_rows	a <code>data.frame</code> (or <code>tibble</code> ) with the same number of columns as your main table. By default, rows are appended to the bottom of the table. You can define a "position" attribute of integers to set the row positions. See Examples section below.
facet	<code>TRUE</code> or <code>FALSE</code> . When the 'models' argument includes several model objects, <code>TRUE</code> draws terms in separate facets, and <code>FALSE</code> draws terms side-by-side ( <code>dodged</code> ).
draw	<code>TRUE</code> returns a 'ggplot2' object, <code>FALSE</code> returns the <code>data.frame</code> used to draw the plot.
background	A list of 'ggplot2' geoms to add to the background of the plot. This is especially useful to display annotations "behind" the 'geom_pointrange' that 'modelplot' draws.
...	all other arguments are passed through to the extractor and table-making functions. This allows users to pass arguments directly to <code>modelsummary</code> in order to affect the behavior of other functions behind the scenes. Examples include:

- `broom::tidy(exponentiate=TRUE)` to exponentiate logistic regression. Please see the `modelsummary` vignette on the package website for important technical notes on this topic.
- `performance::model_performance(metrics="RMSE")` to select goodness-of-fit statistics to extract using the `performance` package (must have set `options(modelsummary_get="easystats")` first).

## Examples

```
## Not run:

library(modelsummary)

# single model
mod <- lm(hp ~ vs + drat, mtcars)
modelplot(mod)

# omit terms with string matches or regexes
modelplot(mod, coef_omit = 'Interc')

# rename, reorder and subset with 'coef_map'
cm <- c('vs' = 'V-shape engine',
        'drat' = 'Rear axle ratio')
modelplot(mod, coef_map = cm)

# several models
models <- list()
models[['Small model']] <- lm(hp ~ vs, mtcars)
models[['Medium model']] <- lm(hp ~ vs + factor(cyl), mtcars)
models[['Large model']] <- lm(hp ~ vs + drat + factor(cyl), mtcars)
modelplot(models)

# add_rows: add an empty reference category

mod <- lm(hp ~ factor(cyl), mtcars)

add_rows = data.frame(
  term = "factory(cyl)4",
  model = "Model 1",
  estimate = NA)
attr(add_rows, "position") = 3
modelplot(mod, add_rows = add_rows)

# customize your plots with 'ggplot2' functions
library(ggplot2)

modelplot(models) +
  scale_color_brewer(type = 'qual') +
  theme_classic()

# pass arguments to 'geom_pointrange' through the ... ellipsis
```

```

modelplot(mod, color = 'red', size = 1, fatten = .5)

# add geoms to the background, behind geom_pointrange
b <- list(geom_vline(xintercept = 0, color = 'orange'),
  annotate("rect", alpha = .1,
    xmin = -.5, xmax = .5,
    ymin = -Inf, ymax = Inf),
  geom_point(aes(y = term, x = estimate), alpha = .3,
    size = 10, color = 'red', shape = 'square'))
modelplot(mod, background = b)

## End(Not run)

```

---

modelsummary

*Model Summary Tables*


---

## Description

The content of the tables can be altered with the function's arguments, or by calling options, as described in the *Details* section below. The look of the tables can be customized by specifying the output argument, and by using functions from one of the supported table customization packages: `kableExtra`, `gt`, `flextable`, `huxtable`.

The `modelsummary_list` output type is a lightweight representation of the model results. The `modelsummary` function can export to this format by setting the output argument, and it can accept objects of this format as input models to create a table. This can be useful to save raw results, in order to print a table later, without having to save and extract from the entire model object. Note that the confidence intervals are only stored in a `modelsummary_list` if explicitly requested:

## Usage

```

modelsummary(
  models,
  output = "default",
  fmt = 3,
  estimate = "estimate",
  statistic = "std.error",
  vcov = NULL,
  conf_level = 0.95,
  stars = FALSE,
  coef_map = NULL,
  coef_omit = NULL,
  coef_rename = NULL,
  gof_map = NULL,
  gof_omit = NULL,
  group = term ~ model,
  group_map = NULL,
  add_rows = NULL,

```

```

align = NULL,
notes = NULL,
title = NULL,
escape = TRUE,
...
)

```

## Arguments

<code>models</code>	a model or (optionally named) list of models
<code>output</code>	filename or object type (character string) <ul style="list-style-type: none"> <li>• Supported filename extensions: <code>.html</code>, <code>.tex</code>, <code>.md</code>, <code>.txt</code>, <code>.png</code>, <code>.jpg</code>.</li> <li>• Supported object types: <code>"default"</code>, <code>"html"</code>, <code>"markdown"</code>, <code>"latex"</code>, <code>"latex_tabular"</code>, <code>"data.frame"</code>, <code>"modelsummary_list"</code>, <code>"gt"</code>, <code>"kableExtra"</code>, <code>"huxtable"</code>, <code>"flextable"</code>, <code>"jupyter"</code>.</li> <li>• Warning: Users should not supply a file name to the output argument if they intend to customize the table with external packages. See the 'Details' section.</li> <li>• LaTeX compilation requires the <code>booktabs</code> and <code>siunitx</code> packages, but <code>siunitx</code> can be disabled or replaced with global options. See the 'Details' section.</li> <li>• The default output formats and table-making packages can be modified with global options. See the 'Details' section.</li> </ul>
<code>fmt</code>	determines how to format numeric values <ul style="list-style-type: none"> <li>• integer: the number of digits to keep after the period format(<code>round(x, fmt)</code>, <code>nsmall=fmt</code>)</li> <li>• character: passed to the <code>sprintf</code> function (e.g., <code>'%.3f'</code> keeps 3 digits with trailing zero). See <code>?sprintf</code></li> <li>• function: returns a formatted character string.</li> <li>• Note on LaTeX formatting: To ensure proper typography, all numeric entries are enclosed in the <code>\num{}</code> command from the <code>siunitx</code> LaTeX package by default. This behavior can be altered with global options. See the 'Details' section.</li> </ul>
<code>estimate</code>	string or glue string of the estimate to display (or a vector with one string per model). Valid entries include any column name of the data.frame produced by <code>get_estimates(model)</code> . Examples: <ul style="list-style-type: none"> <li>• <code>"estimate"</code></li> <li>• <code>"{estimate} ({std.error}){stars}"</code></li> <li>• <code>"{estimate} [{conf.low},{conf.high}]"</code></li> </ul>
<code>statistic</code>	vector of strings or glue strings which select uncertainty statistics to report vertically below the estimate. NULL omits all uncertainty statistics. <ul style="list-style-type: none"> <li>• <code>"conf.int"</code>, <code>"std.error"</code>, <code>"statistic"</code>, <code>"p.value"</code>, <code>"conf.low"</code>, <code>"conf.high"</code>, or any column name produced by: <code>get_estimates(model)</code></li> <li>• glue package strings with braces, such as: <ul style="list-style-type: none"> <li>– <code>"{p.value} [{conf.low},{conf.high}]"</code></li> <li>– <code>"Std.Error: {std.error}"</code></li> </ul> </li> </ul>

- Note: Parentheses are added automatically unless the string includes glue curly braces {}.
- Note: To report uncertainty statistics *next* to coefficients, you can #' supply a glue string to the estimate argument.

vcov

robust standard errors and other manual statistics. The vcov argument accepts six types of input (see the 'Details' and 'Examples' sections below):

- NULL returns the default uncertainty estimates of the model object
- string, vector, or (named) list of strings. Omitting or specifying vcov = NULL will return the model's default uncertainty estimates, e.g. IID errors for standard models. Alternatively, use the string "iid" (aliases: "classical" or "constant") to present IID errors explicitly. The strings "HC", "HC0", "HC1" (alias: "stata"), "HC2", "HC3" (alias: "robust"), "HC4", "HC4m", "HC5", "HAC", "NeweyWest", "Andrews", "panel-corrected", "outer-product", and "weave" use variance-covariance matrices computed using functions from the sandwich package, or equivalent method. The behavior of those functions can (and sometimes *must*) be altered by passing arguments to sandwich directly from modelssummary through the ellipsis (...), but it is safer to define your own custom functions as described in the next bullet.
- function or (named) list of functions which return variance-covariance matrices with row and column names equal to the names of your coefficient estimates (e.g., stats::vcov, sandwich::vcovHC, function(x) vcovPC(x, cluster="country")).
- formula or (named) list of formulas with the cluster variable(s) on the right-hand side (e.g., ~clusterid).
- (named) list of length(models) variance-covariance matrices with row and column names equal to the names of your coefficient estimates.
- a (named) list of length(models) vectors with names equal to the names of your coefficient estimates. See 'Examples' section below. Warning: since this list of vectors can include arbitrary strings or numbers, modelssummary cannot automatically calculate p values. The stars argument may thus use incorrect significance thresholds when vcov is a list of vectors.

conf\_level

confidence level to use for confidence intervals

stars

to indicate statistical significance

- FALSE (default): no significance stars.
- TRUE: +=.1, \*=.05, \*\*=.01, \*\*\*=0.001
- Named numeric vector for custom stars such as c('\*' = .1, '+' = .05)
- Note: a legend will not be inserted at the bottom of the table when the estimate or statistic arguments use "glue strings" with {stars}.

coef\_map

character vector. Subset, rename, and reorder coefficients. Coefficients omitted from this vector are omitted from the table. The order of the vector determines the order of the table. coef\_map can be a named or an unnamed character vector (see the Examples section below). If coef\_map is a named vector, its values define the labels that must appear in the table, and its names identify the original term names stored in the model object: c("hp:mpg"="HPxM/G").

<code>coef_omit</code>	string regular expression. Omits all matching coefficients from the table using <code>grep1(perl=TRUE)</code> . This argument uses perl-compatible regular expressions, which allows expressions such as <code>"Int!ABC"</code> which omits coefficients matching either <code>"Int"</code> or <code>"ABC"</code> , and <code>"^(?!.*Intercept)"</code> which omits every term except the intercept.
<code>coef_rename</code>	named character vector or function which returns a named vector. Values of the vector refer to the variable names that will appear in the table. Names refer to the original term names stored in the model object, e.g. <code>c("hp:mpg"="hp X mpg")</code> for an interaction term.
<code>gof_map</code>	rename, reorder, and omit goodness-of-fit statistics and other model information. This argument accepts 3 types of values: <ul style="list-style-type: none"> <li>• <code>NULL</code> (default): the <code>modelsummary::gof_map</code> dictionary is used for formatting, and all unknown statistic are included.</li> <li>• <code>data.frame</code> with 3 columns named <code>"raw"</code>, <code>"clean"</code>, <code>"fmt"</code>. Unknown statistics are omitted. See the 'Examples' section below.</li> <li>• list of lists, each of which includes 3 elements named <code>"raw"</code>, <code>"clean"</code>, <code>"fmt"</code>. Unknown statistics are omitted. See the 'Examples section below'.</li> </ul>
<code>gof_omit</code>	string regular expression. Omits all matching gof statistics from the table. This argument uses perl-compatible regular expressions ( <code>grep1(perl=TRUE)</code> ), which allows expressions such as <code>".*"</code> which omits everything, and <code>"^(?!R2 Num)"</code> which omits every term except those that start with <code>"R2"</code> or <code>"Num"</code> .
<code>group</code>	a two-sided formula with two or three components which describes how groups of parameters should be displayed. The formula must include both a <code>"term"</code> and a <code>"model"</code> component. In addition, a component can be used to identify groups of parameters (e.g., outcome levels of a multinomial logit model). This group identifier must be the name of a column in the <code>data.frame</code> produced by <code>get_estimates(model)</code> . <ul style="list-style-type: none"> <li>• <code>term ~ model</code> displays coefficients as rows and models as columns</li> <li>• <code>model ~ term</code> displays models as rows and coefficients as columns</li> <li>• <code>response + term ~ model</code> displays response levels and coefficients as rows and models as columns.</li> </ul>
<code>group_map</code>	named or unnamed character vector. Subset, rename, and reorder coefficient groups specified in the <code>group</code> argument. See <code>coef_map</code> .
<code>add_rows</code>	a <code>data.frame</code> (or <code>tibble</code> ) with the same number of columns as your main table. By default, rows are appended to the bottom of the table. You can define a <code>"position"</code> attribute of integers to set the row positions. See Examples section below.
<code>align</code>	A string with a number of characters equal to the number of columns in the table (e.g., <code>align = "lcc"</code> ). Valid characters: <code>l</code> , <code>c</code> , <code>r</code> , <code>S</code> . <ul style="list-style-type: none"> <li>• <code>"l"</code>: left-aligned column</li> <li>• <code>"c"</code>: centered column</li> <li>• <code>"r"</code>: right-aligned column</li> <li>• <code>"d"</code>: dot-aligned column. Only supported for LaTeX/PDF tables produced by <code>kableExtra</code>. These commands must appear in the LaTeX preamble (they are added automatically when compiling Rmarkdown documents to PDF):</li> </ul>



	<ul style="list-style-type: none"> <li>- \usepackage{booktabs}</li> <li>- \usepackage{siunitx}</li> <li>- \newcolumntype{d}{S[input-symbols = ()]}</li> </ul>
notes	list or vector of notes to append to the bottom of the table.
title	string
escape	boolean TRUE escapes or substitutes LaTeX/HTML characters which could prevent the file from compiling/displaying. This setting does not affect captions or notes.
...	<p>all other arguments are passed through to the extractor and table-making functions. This allows users to pass arguments directly to modelsummary in order to affect the behavior of other functions behind the scenes. Examples include:</p> <ul style="list-style-type: none"> <li>• broom::tidy(exponentiate=TRUE) to exponentiate logistic regression. Please see the modelsummary vignette on the package website for important technical notes on this topic.</li> <li>• performance::model_performance(metrics="RMSE") to select goodness-of-fit statistics to extract using the performance package (must have set options(modelsummary_get="easystats") first).</li> </ul>

### Details

```
backup <- modelsummary(models, output = "modelsummary_list"          statistic = "conf.int")
modelsummary(backup)
```

When a file name with a valid extension is supplied to the output argument, the table is written immediately to file. If you want to customize your table by post-processing it with an external package, you need to choose a different output format and saving mechanism. Unfortunately, the approach differs from package to package:

- gt: set output="gt", post-process your table, and use the gt::gtsave function.
- kableExtra: set output to your destination format (e.g., "latex", "html", "markdown"), post-process your table, and use kableExtra::save\_kable function.

#### vcov:

To use a string such as "robust" or "HC0", your model must be supported by the sandwich package. This includes objects such as: lm, glm, survreg, coxph, mlogit, polr, hurdle, zeroinfl, and more.

NULL, "classical", "iid", and "constant" are aliases which do not modify uncertainty estimates and simply report the default standard errors stored in the model object.

One-sided formulas such as ~clusterid are passed to the sandwich::vcovCL function.

Matrices and functions producing variance-covariance matrices are first passed to lmtest. If this does not work, modelsummary attempts to take the square root of the diagonal to adjust "std.error", but the other uncertainty estimates are not be adjusted.

Numeric vectors are formatted according to fmt and placed in brackets. Character vectors printed as given, without parentheses.

If your model type is supported by the lmtest package, the vcov argument will try to use that package to adjust all the uncertainty estimates, including "std.error", "statistic", "p.value", and "conf.int". If your model is not supported by lmtest, only the "std.error" will be adjusted by, for example, taking the square root of the matrix's diagonal.

**Value**

a regression table in a format determined by the output argument.

**Global Options**

The behavior of modelssummary can be affected by setting global options:

- modelssummary\_factory\_default
- modelssummary\_factory\_latex
- modelssummary\_factory\_html
- modelssummary\_factory\_png
- modelssummary\_get
- modelssummary\_format\_numeric\_latex
- modelssummary\_format\_numeric\_html

**Table-making packages:**

modelssummary supports 4 table-making packages: kableExtra, gt, flextable, and huxtable. Some of these packages have overlapping functionalities. For example, 3 of those packages can export to LaTeX. To change the default backend used for a specific file format, you can use the options function:

```
options(modelssummary_factory_html = 'kableExtra') options(modelssummary_factory_latex
= 'gt') options(modelssummary_factory_word = 'huxtable') options(modelssummary_factory_png
= 'gt')
```

**Model extraction functions:**

modelssummary can use two sets of packages to extract information from statistical models: broom and the easystats family (performance and parameters). By default, it uses broom first and easystats as a fallback if broom fails. You can change the order of priorities or include goodness-of-fit extracted by *both* packages by setting:

```
options(modelssummary_get = "broom") options(modelssummary_get = "easystats") options(modelssummary_get
= "all")
```

**Formatting numeric entries:**

By default, LaTeX tables enclose all numeric entries in the `\num{}` command from the siunitx package. To prevent this behavior, or to enclose numbers in dollar signs (for LaTeX math mode), users can call:

```
options(modelssummary_format_numeric_latex = "plain") options(modelssummary_format_numeric_latex
= "mathmode")
```

A similar option can be used to display numerical entries using MathJax in HTML tables:

```
options(modelssummary_format_numeric_html = "mathjax")
```

**Examples**

```
## Not run:

# The `modelssummary` website includes \emph{many} examples and tutorials:
# https://vincentarelbundock.github.io/modelssummary
```

```

library(modelsummary)

# load data and estimate models
data(trees)
models <- list()
models[['Bivariate']] <- lm(Girth ~ Height, data = trees)
models[['Multivariate']] <- lm(Girth ~ Height + Volume, data = trees)

# simple table
modelsummary(models)

# statistic
modelsummary(models, statistic = NULL)
modelsummary(models, statistic = 'p.value')
modelsummary(models, statistic = 'statistic')
modelsummary(models, statistic = 'conf.int', conf_level = 0.99)
modelsummary(models, statistic = c("t = {statistic}",
                                   "se = {std.error}",
                                   "conf.int"))

# estimate
modelsummary(models,
  statistic = NULL,
  estimate = "{estimate} [{conf.low}, {conf.high}]")
modelsummary(models,
  estimate = c("{estimate}{stars}",
              "{estimate} ({std.error})"))

# vcov
modelsummary(models, vcov = "robust")
modelsummary(models, vcov = list("classical", "stata"))
modelsummary(models, vcov = sandwich::vcovHC)
modelsummary(models,
  vcov = list(stats::vcov, sandwich::vcovHC))
modelsummary(models,
  vcov = list(c("(Intercept)=", "Height="!),
             c("(Intercept)=", "Height="!, "Volume="!)))

# vcov with custom names
modelsummary(
  models,
  vcov = list("Stata Corp" = "stata",
             "Newey Lewis & the News" = "NeweyWest"))

# coef_rename
modelsummary(models, coef_map = c('Volume' = 'Large', 'Height' = 'Tall'))

# coef_map
modelsummary(models, coef_map = c('Volume' = 'Large', 'Height' = 'Tall'))
modelsummary(models, coef_map = c('Volume', 'Height'))

# title

```

```

modelsummary(models, title = 'This is the title')

# title with LaTeX label (for numbering and referencing)
modelsummary(models, title = 'This is the title \\label{tab:description}')

# add_rows
rows <- tibble::tribble(~term, ~Bivariate, ~Multivariate,
  'Empty row', '-', '-',
  'Another empty row', '?', '?')
attr(rows, 'position') <- c(1, 3)
modelsummary(models, add_rows = rows)

# notes
modelsummary(models, notes = list('A first note', 'A second note'))

# gof_map: data.frame
gm <- modelsummary::gof_map
gof_custom$omit[gof_custom$raw == 'deviance'] <- FALSE
gof_custom$fmt[gof_custom$raw == 'r.squared'] <- "%.5f"
modelsummary(models, gof_map = gof_custom)

# gof_map: list of lists
f1 <- function(x) format(round(x, 3), big.mark=",")
f2 <- function(x) format(round(x, 0), big.mark=",")
gm <- list(
  list("raw" = "nobs", "clean" = "N", "fmt" = f2),
  list("raw" = "AIC", "clean" = "aic", "fmt" = f1))
modelsummary(models,
  fmt = f1,
  gof_map = gm)

## End(Not run)

```

---

modelsummary\_wide

*Superseded function*

---

## Description

This function is superseded by the group argument of the modelsummary function.

## Usage

```

modelsummary_wide(
  models,
  output = "default",
  fmt = 3,
  estimate = "estimate",
  statistic = "std.error",

```

```

vcov = NULL,
conf_level = 0.95,
stars = FALSE,
coef_group = NULL,
coef_map = NULL,
coef_omit = NULL,
coef_rename = NULL,
gof_map = NULL,
gof_omit = NULL,
add_rows = NULL,
align = NULL,
notes = NULL,
title = NULL,
stacking = "horizontal",
...
)

```

## Arguments

models	a model or (optionally named) list of models
output	filename or object type (character string) <ul style="list-style-type: none"> <li>Supported filename extensions: .html, .tex, .md, .txt, .png, .jpg.</li> <li>Supported object types: "default", "html", "markdown", "latex", "latex_tabular", "data.frame", "modelsummary_list", "gt", "kableExtra", "huxtable", "flextable", "jupyter".</li> <li>Warning: Users should not supply a file name to the output argument if they intend to customize the table with external packages. See the 'Details' section.</li> <li>LaTeX compilation requires the booktabs and siunitx packages, but siunitx can be disabled or replaced with global options. See the 'Details' section.</li> <li>The default output formats and table-making packages can be modified with global options. See the 'Details' section.</li> </ul>
fmt	determines how to format numeric values <ul style="list-style-type: none"> <li>integer: the number of digits to keep after the period <code>format(round(x, fmt), nsmall=fmt)</code></li> <li>character: passed to the <code>sprintf</code> function (e.g., <code>'%.3f'</code> keeps 3 digits with trailing zero). See <code>?sprintf</code></li> <li>function: returns a formatted character string.</li> <li>Note on LaTeX formatting: To ensure proper typography, all numeric entries are enclosed in the <code>\num{}</code> command from the <code>siunitx</code> LaTeX package by default. This behavior can be altered with global options. See the 'Details' section.</li> </ul>
estimate	string or glue string of the estimate to display (or a vector with one string per model). Valid entries include any column name of the data.frame produced by <code>get_estimates(model)</code> . Examples: <ul style="list-style-type: none"> <li>"estimate"</li> <li>"{estimate} ({std.error}){stars}"</li> </ul>

	<ul style="list-style-type: none"> <li>• "{estimate} [{conf.low},{conf.high}]"</li> </ul>
statistic	<p>vector of strings or glue strings which select uncertainty statistics to report vertically below the estimate. NULL omits all uncertainty statistics.</p> <ul style="list-style-type: none"> <li>• "conf.int", "std.error", "statistic", "p.value", "conf.low", "conf.high", or any column name produced by: <code>get_estimates(model)</code></li> <li>• glue package strings with braces, such as: <ul style="list-style-type: none"> <li>– "{p.value} [{conf.low},{conf.high}]"</li> <li>– "Std.Error: {std.error}"</li> </ul> </li> <li>• Note: Parentheses are added automatically unless the string includes glue curly braces {}.</li> <li>• Note: To report uncertainty statistics <i>next</i> to coefficients, you can #' supply a glue string to the estimate argument.</li> </ul>
vcov	<p>robust standard errors and other manual statistics. The <code>vcov</code> argument accepts six types of input (see the 'Details' and 'Examples' sections below):</p> <ul style="list-style-type: none"> <li>• NULL returns the default uncertainty estimates of the model object</li> <li>• string, vector, or (named) list of strings. Omitting or specifying <code>vcov = NULL</code> will return the model's default uncertainty estimates, e.g. IID errors for standard models. Alternatively, use the string "iid" (aliases: "classical" or "constant") to present IID errors explicitly. The strings "HC", "HC0", "HC1" (alias: "stata"), "HC2", "HC3" (alias: "robust"), "HC4", "HC4m", "HC5", "HAC", "NeweyWest", "Andrews", "panel-corrected", "outer-product", and "weave" use variance-covariance matrices computed using functions from the <code>sandwich</code> package, or equivalent method. The behavior of those functions can (and sometimes <i>must</i>) be altered by passing arguments to <code>sandwich</code> directly from <code>modelsummary</code> through the ellipsis (...), but it is safer to define your own custom functions as described in the next bullet.</li> <li>• function or (named) list of functions which return variance-covariance matrices with row and column names equal to the names of your coefficient estimates (e.g., <code>stats::vcov</code>, <code>sandwich::vcovHC</code>, <code>function(x) vcovPC(x, cluster="country")</code>).</li> <li>• formula or (named) list of formulas with the cluster variable(s) on the right-hand side (e.g., <code>~clusterid</code>).</li> <li>• (named) list of <code>length(models)</code> variance-covariance matrices with row and column names equal to the names of your coefficient estimates.</li> <li>• a (named) list of <code>length(models)</code> vectors with names equal to the names of your coefficient estimates. See 'Examples' section below. Warning: since this list of vectors can include arbitrary strings or numbers, <code>modelsummary</code> cannot automatically calculate p values. The <code>stars</code> argument may thus use incorrect significance thresholds when <code>vcov</code> is a list of vectors.</li> </ul>
conf_level	confidence level to use for confidence intervals
stars	<p>to indicate statistical significance</p> <ul style="list-style-type: none"> <li>• FALSE (default): no significance stars.</li> <li>• TRUE: +=.1, *=.05, **=.01, ***=0.001</li> <li>• Named numeric vector for custom stars such as <code>c('*' = .1, '+' = .05)</code></li> </ul>

- Note: a legend will not be inserted at the bottom of the table when the estimate or statistic arguments use "glue strings" with {stars}.

coef_group	the name of the coefficient groups to use as columns (NULL or character). If coef_group is NULL, modelsummary tries to guess the correct coefficient group identifier. To be valid, this identifier must be a column in the data.frame produced by get_estimates(model).
coef_map	character vector. Subset, rename, and reorder coefficients. Coefficients omitted from this vector are omitted from the table. The order of the vector determines the order of the table. coef_map can be a named or an unnamed character vector (see the Examples section below). If coef_map is a named vector, its values define the labels that must appear in the table, and its names identify the original term names stored in the model object: c("hp:mpg"="HPxM/G").
coef_omit	string regular expression. Omits all matching coefficients from the table using grepl(perl=TRUE). This argument uses perl-compatible regular expressions, which allows expressions such as "Int!ABC" which omits coefficients matching either "Int" or "ABC", and "^(?!.*Intercept)" which omits every term except the intercept.
coef_rename	named character vector or function which returns a named vector. Values of the vector refer to the variable names that will appear in the table. Names refer to the original term names stored in the model object, e.g. c("hp:mpg"="hp X mpg") for an interaction term.
gof_map	rename, reorder, and omit goodness-of-fit statistics and other model information. This argument accepts 3 types of values: <ul style="list-style-type: none"> <li>• NULL (default): the modelsummary::gof_map dictionary is used for formatting, and all unknown statistic are included.</li> <li>• data.frame with 3 columns named "raw", "clean", "fmt". Unknown statistics are omitted. See the 'Examples' section below.</li> <li>• list of lists, each of which includes 3 elements named "raw", "clean", "fmt". Unknown statistics are omitted. See the 'Examples section below'.</li> </ul>
gof_omit	string regular expression. Omits all matching gof statistics from the table. This argument uses perl-compatible regular expressions (grepl(perl=TRUE)), which allows expressions such as ".*" which omits everything, and "^(?!R2 Num)" which omits every term except those that start with "R2" or "Num".
add_rows	a data.frame (or tibble) with the same number of columns as your main table. By default, rows are appended to the bottom of the table. You can define a "position" attribute of integers to set the row positions. See Examples section below.
align	A string with a number of characters equal to the number of columns in the table (e.g., align = "lcc"). Valid characters: l, c, r, S. <ul style="list-style-type: none"> <li>• "l": left-aligned column</li> <li>• "c": centered column</li> <li>• "r": right-aligned column</li> <li>• "d": dot-aligned column. Only supported for LaTeX/PDF tables produced by kableExtra. These commands must appear in the LaTeX preamble (they are added automatically when compiling Rmarkdown documents to PDF):</li> </ul>

	<ul style="list-style-type: none"> <li>– <code>\usepackage{booktabs}</code></li> <li>– <code>\usepackage{siunitx}</code></li> <li>– <code>\newcolumnntype{d}{S[input-symbols = ()]}</code></li> </ul>
<code>notes</code>	list or vector of notes to append to the bottom of the table.
<code>title</code>	string
<code>stacking</code>	direction in which models are stacked: "horizontal" or "vertical"
<code>...</code>	<p>all other arguments are passed through to the extractor and table-making functions. This allows users to pass arguments directly to <code>modelsummary</code> in order to affect the behavior of other functions behind the scenes. Examples include:</p> <ul style="list-style-type: none"> <li>• <code>broom::tidy(exponentiate=TRUE)</code> to exponentiate logistic regression. Please see the <code>modelsummary</code> vignette on the package website for important technical notes on this topic.</li> <li>• <code>performance::model_performance(metrics="RMSE")</code> to select goodness-of-fit statistics to extract using the <code>performance</code> package (must have set <code>options(modelsummary_get="easystats")</code> first).</li> </ul>

**Value**

a regression table in a format determined by the output argument.

---

N	<i>datasummary statistic shortcut</i>
---	---------------------------------------

---

**Description**

`datasummary statistic shortcut`

**Usage**

`N(x)`

**Arguments**

`x` variable to summarize

**Examples**

```
## Not run:
datasummary(Factor(cyl) ~ N, data = mtcars)

## End(Not run)
```



---

Ncol	<i>datasummary statistic shortcut</i>
------	---------------------------------------

---

**Description**

datasummary statistic shortcut

**Usage**

Ncol(x, ...)

**Arguments**

x	variable to summarize
...	unused

---

NPercent	<i>datasummary statistic shortcut</i>
----------	---------------------------------------

---

**Description**

datasummary statistic shortcut

**Usage**

NPercent(x, y)

**Arguments**

x	variable to summarize
y	denominator variable

---

NUnique	<i>datasummary statistic shortcut</i>
---------	---------------------------------------

---

**Description**

datasummary statistic shortcut

**Usage**

```
NUnique(x, ...)
```

**Arguments**

x	variable to summarize
...	unused

**Examples**

```
## Not run:
datasummary(cyl + hp ~ NUnique, data = mtcars)

## End(Not run)
```

---

P0	<i>datasummary statistic shortcut</i>
----	---------------------------------------

---

**Description**

datasummary statistic shortcut

**Usage**

```
P0(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

x	variable to summarize
fmt	passed to the <code>modelsummary::rounding</code> function
na.rm	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
...	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +
            Min + Max + SD + Var,
            data = mtcars)

## End(Not run)
```

---

P100 *datasummary statistic shortcut*

---

**Description**

datasummary statistic shortcut

**Usage**

```
P100(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

x	variable to summarize
fmt	passed to the <code>modelsummary::rounding</code> function
na.rm	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
...	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +
            Min + Max + SD + Var,
            data = mtcars)

## End(Not run)
```

---

P25 *datasummary statistic shortcut*

---

**Description**

`datasummary statistic shortcut`

**Usage**

```
P25(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

<code>x</code>	variable to summarize
<code>fmt</code>	passed to the <code>modelsummary::rounding</code> function
<code>na.rm</code>	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
<code>...</code>	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +
             Min + Max + SD + Var,
             data = mtcars)

## End(Not run)
```

---

P50 *datasummary statistic shortcut*

---

**Description**

`datasummary statistic shortcut`

**Usage**

```
P50(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

<code>x</code>	variable to summarize
<code>fmt</code>	passed to the <code>modelsummary::rounding</code> function
<code>na.rm</code>	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
<code>...</code>	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +
            Min + Max + SD + Var,
            data = mtcars)

## End(Not run)
```

---

P75

*datasummary statistic shortcut*


---

**Description**

datasummary statistic shortcut

**Usage**

```
P75(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

x	variable to summarize
fmt	passed to the <code>modelsummary::rounding</code> function
na.rm	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
...	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +
            Min + Max + SD + Var,
            data = mtcars)

## End(Not run)
```

---

PercentMissing	<i>datasummary statistic shortcut</i>
----------------	---------------------------------------

---

**Description**

datasummary statistic shortcut

**Usage**

PercentMissing(x)

**Arguments**

x	variable to summarize
---	-----------------------

---

SD	<i>datasummary statistic shortcut</i>
----	---------------------------------------

---

**Description**

datasummary statistic shortcut

**Usage**

SD(x, fmt = NULL, na.rm = TRUE, ...)

**Arguments**

x	variable to summarize
fmt	passed to the <code>modelsummary::rounding</code> function
na.rm	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
...	unused

**Examples**

```
## Not run:
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +
            Min + Max + SD + Var,
            data = mtcars)

## End(Not run)
```

---

supported_models	<i>List of model objects from which modelsummary can extract estimates and statistics</i>
------------------	---

---

**Description**

List of model objects from which modelsummary can extract estimates and statistics

**Usage**

```
supported_models()
```

---

tidy_custom	<i>Extract custom information from a model object and turn it into a tidy data.frame or tibble</i>
-------------	--

---

**Description**

To customize the output of a model of class `lm`, you can define a method called `tidy_custom.lm` which returns a `data.frame` with a column called "term", and the other columns you want to use as "estimate" or "statistic" in your `modelsummary()` call. The output of this method must be similar to the result of `tidy(model)`.

**Usage**

```
tidy_custom(x)
```

**Arguments**

`x` An object to be converted into a tidy `data.frame` or `tibble`.

**Value**

A `data.frame` or `tibble` with information about model components.

---

Var	<i>datasummary statistic shortcut</i>
-----	---------------------------------------

---

**Description**

datasummary statistic shortcut

**Usage**

```
Var(x, fmt = NULL, na.rm = TRUE, ...)
```

**Arguments**

x	variable to summarize
fmt	passed to the <code>modelsummary::rounding</code> function
na.rm	a logical value indicating whether 'NA' values should be stripped before the computation proceeds.
...	unused

**Examples**

```
## Not run:  
datasummary(mpg + hp ~ Mean + Median + P0 + P25 + P50 + P75 + P100 +  
            Min + Max + SD + Var,  
            data = mtcars)  
  
## End(Not run)
```



# Index

## \* datasets

gof\_map, 30

coef\_rename, 4

datasummary, 5, 18, 20

datasummary\_balance, 10

datasummary\_correlation, 13

datasummary\_correlation\_format, 17

datasummary\_crosstab, 18

datasummary\_df, 22

datasummary\_skim, 23

dvnames, 26

escape\_html, 27

escape\_latex, 28

get\_estimates, 28

get\_gof, 29

glance\_custom, 30

gof\_map, 30

Histogram, 31

Max, 31

Mean, 32

Median, 33

Min, 33

modelplot, 34

modelsummary, 37

modelsummary\_wide, 44

N, 48

Ncol, 49

NPercent, 49

NUnique, 50

P0, 50

P100, 51

P25, 52

P50, 52

P75, 53

PercentMissing, 54

SD, 54

supported\_models, 55

tidy\_custom, 55

Var, 56