

Package ‘tabulergm’

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Title Publication-Ready Tables and Summaries for Exponential-Family Random Graph Models

Version 0.1.0

Description Creates publication-ready tables documenting exponential-family random graph models (ERGMs), a class of statistical models for social networks (Robins et al., 2007, [doi:10.1016/j.socnet.2006.08.002](https://doi.org/10.1016/j.socnet.2006.08.002)). Tables describe model terms through their definitions, mathematical representations, and graphical representations, and can be generated from ERGM formulas or from models fitted with the 'ergm' package (Hunter et al., 2008, [doi:10.18637/jss.v024.i03](https://doi.org/10.18637/jss.v024.i03)). Resulting tables can be integrated into 'quarto' and 'rmarkdown' documents.

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Encoding UTF-8

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URL <https://gvegayon.github.io/tabulergm/>,
<https://github.com/gvegayon/tabulergm>

BugReports <https://github.com/gvegayon/tabulergm/issues>

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parse_ergm_formula	<i>Parse an ERGM Formula</i>
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Description

Extracts ERGM term names and attributes from a formula. No fitted model is required. Returns a standardized data frame with metadata from the ERGM term database where available.

Usage

```
parse_ergm_formula(  
  formula,  
  directed = NULL,  
  override = NULL,  
  override.title = NULL,  
  override.desc = NULL,  
  override.math = NULL,  
  override.figure = NULL,  
  override.citation = NULL  
)
```

Arguments

formula	An ERGM formula .
directed	Logical or NULL. Whether the network is directed, used to select the matching term metadata (math and figures). When NULL (the default), directedness is inferred from the network on the left-hand side of the formula if it can be evaluated; otherwise the lookup tries undirected metadata first, then directed.
override	A named list keyed by term name, each element a named list of fields to replace, e.g. <code>list(edges = list(title = "Density", citation = "doi:10.1234/x"))</code> . Valid fields are title, description (or desc), math, figure, and citation.
override.title, override.desc, override.math, override.figure	Named character vectors keyed by term name, e.g. <code>override.title = c(edges = "Density")</code> . These take precedence over <code>override</code> .

`override.citation`

A named list keyed by term name whose elements are citation specifications in the same form the YAML citation: field accepts: a bare key ("hunter2007"), a prefixed identifier ("doi:10.1016/j.socnet.2006.08.002"), a single entry list (list(key = "hunter2007", doi = "10.1016/j.socnet.2006.08.002")), or a list of such entries.

Details

Metadata is resolved from the same three sources, and with the same precedence, as `parse_ergm_model()`; see its “Metadata sources” section.

Value

A data frame with columns:

term Character. The canonical ERGM term name.

attribute Character or NA. The attribute(s) used in the term, comma-separated when multiple.

estimate Numeric. Always NA for formula-only parsing.

se Numeric. Always NA for formula-only parsing.

pvalue Numeric. Always NA for formula-only parsing.

title Character or NA. Short one-line label for the term.

description Character or NA. Prose description of the term.

math Character or NA. The LaTeX definition of the statistic.

figure Character or NA. Path to the rendered term figure.

citation Character or NA. Citation key(s) for the term, comma-separated when several. The corresponding bibliography is attached to the data frame as the "tabulergm_citations" attribute.

See Also

`parse_ergm_model()` for parsing fitted models, `ergm::search.ergmTerms()` for the underlying term database.

Examples

```
library(ergm)
parse_ergm_formula(network ~ edges + nodematch("gender"))

# Directedness can be stated explicitly when the formula has no
# network on its left-hand side
parse_ergm_formula(~ edges + mutual, directed = TRUE)

# Attach a citation to a term that has none in the term dictionary
parse_ergm_formula(
  ~ edges + kstar(2),
  directed = FALSE,
  override.citation = list(
    kstar = list(key = "frank1986", doi = "10.1080/0022250X.1986.9990013")
  )
)
```

parse_ergm_model	<i>Parse an ERGM Model Object</i>
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Description

Extracts terms, coefficients, standard errors, p-values, and term metadata from a fitted [ergm](#) object. Returns a standardized data frame for use in publication-ready tables.

Usage

```
parse_ergm_model(
  object,
  override = NULL,
  override.title = NULL,
  override.desc = NULL,
  override.math = NULL,
  override.figure = NULL,
  override.citation = NULL
)
```

Arguments

<code>object</code>	A fitted ergm object.
<code>override</code>	A named list keyed by term name, each element a named list of fields to replace, e.g. <code>list(edges = list(title = "Density", citation = "doi:10.1234/x"))</code> . Valid fields are title, description (or desc), math, figure, and citation.
<code>override.title</code> , <code>override.desc</code> , <code>override.math</code> , <code>override.figure</code>	Named character vectors keyed by term name, e.g. <code>override.title = c(edges = "Density")</code> . These take precedence over <code>override</code> .
<code>override.citation</code>	A named list keyed by term name whose elements are citation specifications in the same form the <code>YAML citation:</code> field accepts: a bare key (<code>"hunter2007"</code>), a prefixed identifier (<code>"doi:10.1016/j.socnet.2006.08.002"</code>), a single entry list (<code>list(key = "hunter2007", doi = "10.1016/j.socnet.2006.08.002")</code>), or a list of such entries.

Details

The coefficient names produced by `ergm` (which may expand terms into multiple rows, e.g., `nodefactor.race.Black`) are mapped back to the canonical term names from the formula.

Value

A data frame with columns:

term Character. The canonical ERGM term name.

coef_name Character. The full coefficient name from the model.

attribute Character or NA. The attribute(s) used in the term, comma-separated when multiple.

estimate Numeric. The coefficient estimate.

se Numeric. The standard error.

pvalue Numeric. The p-value.

title Character or NA. Short one-line label for the term.

description Character or NA. Prose description of the term.

math Character or NA. The LaTeX definition of the statistic.

figure Character or NA. Path to the rendered term figure.

citation Character or NA. Citation key(s) for the term, comma-separated when several. The corresponding bibliography is attached to the data frame as the "tabulergm_citations" attribute.

Metadata sources

Each metadata field is resolved from three sources, in increasing order of precedence: the ergm term database (via `ergm::search.ergmTerms()`, which supplies title and description), the YAML term database shipped in `inst/terms/` (which may supply title, description, math, figure, and citation), and the `override*` arguments documented below.

Override names are matched against the term column first and against `coef_name` second, so an expanded coefficient such as `nodefactor.race.Black` can be targeted individually. Names matching no row produce a warning.

See Also

`parse_ergm_formula()` for formula-only parsing, `ergm::search.ergmTerms()` for the underlying term database.

Examples

```
library(ergm)
fit <- readRDS(system.file("fits", "fit_nodematch.rds", package = "tabulergm"))
parse_ergm_model(fit)

# Replace the title and description of a single term
parse_ergm_model(
  fit,
  override.title = c(edges = "Density"),
  override.desc = c(edges = "Baseline propensity to form ties.")
)
```

tabulergm_default_plotfun

Default Plot Function for Term Figures

Description

Draws a network figure using `netplot::nplot()`. This is the default plot function used by `tabulergm` when generating term figures.

Usage

```
tabulergm_default_plotfun(
  netobj,
  layout,
  vcolor,
  vshape,
  vrotation,
  ecolor,
  directed,
  vsize,
  elinetype,
  ...
)
```

Arguments

<code>netobj</code>	A <code>network::network</code> object.
<code>layout</code>	A two-column numeric matrix of node coordinates (x, y).
<code>vcolor</code>	Character vector of vertex colors.
<code>vshape</code>	Character or numeric vector of vertex shapes, such as "circle"/"square" or polygon side counts.
<code>vrotation</code>	Numeric vector of vertex rotations (in degrees).
<code>ecolor</code>	Character vector of edge colors.
<code>directed</code>	Logical. Whether the network is directed.
<code>vsize</code>	Numeric vector of vertex sizes.
<code>elinetype</code>	Numeric or character vector of edge line types.
<code>...</code>	Additional arguments (currently unused).

Details

A plot function must accept the arguments `netobj`, `layout`, `vcolor`, `ecolor`, `directed`, and `...`, and draw on the current graphics device.

Value

Called for its side-effect of drawing a plot on the current graphics device. Returns invisibly.

See Also

[tabulergm_set_plotfun\(\)](#), [tabulergm_get_plotfun\(\)](#)

Examples

```
# See the default implementation
tabulergm_default_plotfun

# Use a custom plot function
my_plotfun <- function(netobj, layout, vcolor, ecol, directed, vshape, vrotation, vsize, ...) {
  netplot::nplot(netobj, vertex.color = vcolor, edge.color = ecol,
    layout = layout)
}
old <- tabulergm_get_plotfun()
tabulergm_set_plotfun(my_plotfun)
# Restore the previous plot function
tabulergm_set_plotfun(old)
```

`tabulergm_get_plotfun` *Get the Current Plot Function*

Description

Returns the function currently used to draw term figures. If no custom function has been set, returns [tabulergm_default_plotfun\(\)](#).

Usage

```
tabulergm_get_plotfun()
```

Value

A function (the active plot function).

See Also

[tabulergm_default_plotfun\(\)](#), [tabulergm_set_plotfun\(\)](#)

tabulergm_save	<i>Save a tabulergm Table and Figure Assets</i>
----------------	---

Description

Saves the table code produced by tabulergm and copies the generated term figures out of the temporary cache into a user-controlled directory. The exported table references the copied image files with relative paths, making the result easier to reuse in another document or project.

Usage

```
tabulergm_save(object, path, ...)

## S3 method for class 'ergm'
tabulergm_save(
  object,
  path,
  format = c("markdown", "latex"),
  filename = "tabulergm-table",
  images_dir = "figures",
  overwrite = TRUE,
  latex_image_width = "0.7in",
  ...
)

## S3 method for class 'formula'
tabulergm_save(
  object,
  path,
  format = c("markdown", "latex"),
  filename = "tabulergm-table",
  images_dir = "figures",
  overwrite = TRUE,
  latex_image_width = "0.7in",
  ...
)

## S3 method for class 'data.frame'
tabulergm_save(
  object,
  path,
  format = c("markdown", "latex"),
  filename = "tabulergm-table",
  images_dir = "figures",
  overwrite = TRUE,
  latex_image_width = "0.7in",
  ...
)
```

)

Arguments

object	A fitted ergm object, an ERGM formula , or a <code>data.frame</code> returned by tabulergm_table() .
path	Target directory. It is created recursively when needed.
...	For <code>ergm</code> and <code>formula</code> methods, additional arguments passed to tabulergm_table() . For the <code>data.frame</code> method, additional arguments are ignored.
format	Character vector of output formats to write. Supported values are "markdown" and "latex". By default both are written.
filename	File name stem for the table code files, without extension. Defaults to "tabulergm-table".
images_dir	Directory, relative to path, where copied images should be stored. Use "." to place images directly in path.
overwrite	Logical. Overwrite existing table code and image files? Default TRUE.
latex_image_width	Character width passed to <code>\includegraphics</code> in LaTeX output. Default "0.7in".

Value

Invisibly returns a list with:

path The normalized export directory.

files Named character vector of written table code files.

figures Named character vector of copied figure files, where names are the relative paths used in the table.

table The data frame used for export, with figure paths rewritten to the copied relative paths.

Methods (by class)

- `tabulergm_save(ergm)`: Method for fitted `ergm` objects.
- `tabulergm_save(formula)`: Method for `formula` objects.
- `tabulergm_save(data.frame)`: Method for data frames returned by [tabulergm_table\(\)](#).

See Also

[tabulergm_table\(\)](#)

Examples

```
if (requireNamespace("knitr", quietly = TRUE)) {
  fit <- readRDS(system.file("fits", "fit_edges.rds", package = "tabulergm"))
  out_dir <- tempfile("tabulergm-export-")
  tabulergm_save(fit, out_dir, include_math = TRUE)
}
```

tabulergm_set_plotfun	<i>Set the Plot Function for Term Figures</i>
-----------------------	---

Description

Replaces the current plot function used when drawing term figures. The function must accept `netobj`, `layout`, `vcolor`, `ecolor`, `directed`, and `...`. Setting a plot function invalidates previously cached term figures, so subsequent renders use the new function.

Usage

```
tabulergm_set_plotfun(plotfun)
```

Arguments

<code>plotfun</code>	A function with signature <code>function(netobj, layout, vcolor, ecolor, directed, ...)</code> .
----------------------	--

Value

Invisibly returns the previous plot function.

See Also

`tabulergm_default_plotfun()`, `tabulergm_get_plotfun()`

Examples

```
my_plotfun <- function(netobj, layout, vcolor, ecolor, directed, ...) {
  netplot::nplot(netobj, vertex.color = vcolor, edge.color = ecolor,
    layout = layout)
}
old <- tabulergm_get_plotfun()
tabulergm_set_plotfun(my_plotfun)
# Restore the previous plot function
tabulergm_set_plotfun(old)
```

tabulergm_table	<i>Generate a Publication-Ready Table from an ERGM Object</i>
-----------------	---

Description

S3 generic that dispatches to methods for fitted [ergm](#) objects or plain [formula](#) objects, calling the internal parsing engine and returning a formatted table.

Usage

```

tabulergm_table(object, ...)

## S3 method for class 'ergm'
tabulergm_table(
  object,
  include_description = FALSE,
  include_math = FALSE,
  include_attribute = FALSE,
  include_title = FALSE,
  format = c("data.frame", "html", "markdown"),
  figures_dir = NULL,
  override = NULL,
  override.title = NULL,
  override.desc = NULL,
  override.math = NULL,
  override.figure = NULL,
  override.citation = NULL,
  ...
)

## S3 method for class 'formula'
tabulergm_table(
  object,
  format = c("data.frame", "html", "markdown"),
  figures_dir = NULL,
  directed = NULL,
  include_title = FALSE,
  override = NULL,
  override.title = NULL,
  override.desc = NULL,
  override.math = NULL,
  override.figure = NULL,
  override.citation = NULL,
  ...
)

```

Arguments

<code>object</code>	A fitted ergm object or an ERGM formula .
<code>...</code>	Additional arguments passed to methods.
<code>include_description</code>	Logical. Include the term description column? Default FALSE.
<code>include_math</code>	Logical. Include the mathematical notation column? Default FALSE.
<code>include_attribute</code>	Logical. Include the attribute column? Default FALSE.
<code>include_title</code>	Logical. Include the short term-title column? Default FALSE.

format	Character. Output format: "data.frame" (default), "html", or "markdown". HTML and Markdown output require the knitr package.
figures_dir	Optional directory for figure assets when format = "markdown". When NULL, figures are copied automatically to the active knitr/Quarto/R Markdown figure path during non-interactive document rendering.
override	A named list keyed by term name, each element a named list of fields to replace, e.g. <code>list(edges = list(title = "Density", citation = "doi:10.1234/x"))</code> . Valid fields are title, description (or desc), math, figure, and citation.
override.title, override.desc, override.math, override.figure	Named character vectors keyed by term name, e.g. <code>override.title = c(edges = "Density")</code> . These take precedence over override.
override.citation	A named list keyed by term name whose elements are citation specifications in the same form the YAML citation: field accepts: a bare key ("hunter2007"), a prefixed identifier ("doi:10.1016/j.socnet.2006.08.002"), a single entry list (<code>list(key = "hunter2007", doi = "10.1016/j.socnet.2006.08.002")</code>), or a list of such entries.
directed	Logical or NULL. Whether the network is directed. Passed to <code>parse_ergm_formula()</code> ; when NULL (the default), directedness is inferred from the network on the left-hand side of the formula when possible.

Value

A data.frame (default), or a knitr_kable object when format is "html" or "markdown". When the term figures use drawing conventions (orange for focal attributes, orange/teal for mixing, squares/circles for bipartite modes), an explanatory note is appended below "html" and "markdown" tables. Terms carrying a citation get a (key) marker next to their description, and the matching [key] identifier lines are appended below the table.

Methods (by class)

- `tabulergm_table(ergm)`: Method for fitted ergm objects.
Calls `parse_ergm_model()` and returns a table with default columns term, figure, estimate, se, and pvalue. Optional columns (title, description, math, attribute) can be included via logical arguments. The title column, when included, is placed immediately after term.
- `tabulergm_table(formula)`: Method for formula objects.
Calls `parse_ergm_formula()` and returns a table with columns term, figure, math, and description. Coefficient statistics are excluded because no fitted model is available.

See Also

`tabulergm_table.ergm()`, `tabulergm_table.formula()`

Examples

```
library(ergm)
fit <- readRDS(system.file("fits", "fit_edges.rds", package = "tabulergm"))
tabulergm_table(fit)
```

```

tabulergm_table(fit, include_description = TRUE)
tabulergm_table(fit, format = "markdown")

# Replace the shipped title and description for one term
tabulergm_table(
  fit,
  include_title = TRUE,
  include_description = TRUE,
  override.title = c(edges = "Density"),
  override.desc = c(edges = "Baseline propensity to form ties.")
)
library(ergm)
tabulergm_table(network ~ edges + nodematch("gender"))

```

tabulergm_view

View an ERGM Table in the RStudio Viewer or System Browser

Description

Builds a self-contained HTML page containing the formatted ERGM table (with MathJax for LaTeX math rendering) and opens it in the RStudio viewer pane when available, falling back to `utils::browseURL()`.

Usage

```

tabulergm_view(object, ...)

## S3 method for class 'ergm'
tabulergm_view(object, ...)

## S3 method for class 'formula'
tabulergm_view(object, ...)

```

Arguments

<code>object</code>	A fitted ergm object or an ERGM formula .
<code>...</code>	Additional arguments passed to <code>tabulergm_table()</code> .

Value

Invisibly returns the path to the temporary HTML file.

Methods (by class)

- `tabulergm_view(ergm)`: Method for fitted `ergm` objects.
- `tabulergm_view(formula)`: Method for `formula` objects.

See Also[tabulergm_table\(\)](#)**Examples**

```
library(ergm)
fit <- readRDS(system.file("fits", "fit_edges.rds", package = "tabulergm"))
tabulergm_view(fit)

# Also works with a formula (shows term metadata only)
tabulergm_view(network ~ edges + triangle)
```

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