

Package: robvis (via r-universe)

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Title Visualize the Results of Risk-of-Bias (ROB) Assessments

Version 0.3.0.900

Description Helps users in quickly visualizing risk-of-bias assessments performed as part of a systematic review. It allows users to create weighted bar-plots of the distribution of risk-of-bias judgments within each bias domain, in addition to traffic-light plots of the specific domain-level judgments for each study. The resulting figures are of publication quality and are formatted according the risk-of-bias assessment tool use to perform the assessments. Currently, the supported tools are ROB2.0 (for randomized controlled trials; Sterne et al (2019) <[doi:10.1136/bmj.i4898](https://doi.org/10.1136/bmj.i4898)>), ROBINS-I (for non-randomised studies of interventions; Sterne (2016) <[doi:10.1136/bmj.i4919](https://doi.org/10.1136/bmj.i4919)>), and Quality & Applicability of Diagnostic Accuracy Studies V2 (Whiting et al (2011) <[doi:10.7326/0003-4819-155-8-201110180-00009](https://doi.org/10.7326/0003-4819-155-8-201110180-00009)>), and QUIPS (Hayden et al (2013) <[doi:10.7326/0003-4819-158-4-201302190-00009](https://doi.org/10.7326/0003-4819-158-4-201302190-00009)>).

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LazyData true

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Imports ggplot2 (>= 3.3.0), tidyr (>= 1.0.0), scales (>= 1.1.0), metafor (>= 2.4), dplyr (>= 1.0.2), stringr (>= 1.4.0), grDevices, magrittr, purrr

Suggests metadat, knitr (>= 1.28), rmarkdown (>= 2.3), covr (>= 3.5.1), testthat (>= 2.3.0), triangulate (>= 0.0.1), spelling (>= 2.2)

VignetteBuilder knitr, rmarkdown

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BugReports <https://github.com/mcguinlu/robvis>

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Remotes mcguinlu/triangulate

Repository <https://mcguinlu.r-universe.dev>

RemoteUrl <https://github.com/mcguinlu/robvis>

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rob_append_weights	<i>Extract weights from metafor results object and append to risk-of-bias data.</i>
--------------------	---

Description

Used to prepare a risk-of-bias dataset to be passed to the weighted barplot function: `rob_summary(..., weighted = TRUE)`

Usage

```
rob_append_weights(data, res)
```

Arguments

data	Risk of bias dataset (without a weight column)
res	metafor results object

See Also

Other helper: [rob_dummy\(\)](#), [rob_save\(\)](#), [rob_tools\(\)](#)

Examples

```
dat.bcg <- metadat::dat.bcg[c(1:9),]

dat <-
  metafor::escalc(
    measure = "RR",
    ai = tpos,
    bi = tneg,
    ci = cpos,
    di = cneg,
    data = dat.bcg,
    slab = paste(author, year)
  )

res <- metafor::rma(yi, vi, data = dat)

data_rob2$Study <- paste(dat$author, dat$year)

rob_weighted_data <- rob_append_weights(data_rob2[,1:7], res)

rob_summary(rob_weighted_data, tool = "ROB2", weighted = TRUE)
```

rob_dummy

Create "realistic" dummy risk of bias assessment data

Description

This function returns N example risk of bias assessments for the tool specified, where N is set by the user. Assessments are "realistic" in that the judgment in the overall column is set to the highest judgement across the domains for a given study, reflecting the recommendations of the tool creators.

Usage

```
rob_dummy(n, tool = "ROB2", study = TRUE)
```

Arguments

n	Number of assessments to create
tool	Tool used for assessment (see <code>rob_tools()</code>). Default is "ROB2".
study	Should the returned dataframe contain a "Study" column. Default is true.

See Also

Other helper: [rob_append_weights\(\)](#), [rob_save\(\)](#), [rob_tools\(\)](#)

 rob_forest

Append a risk-of-bias traffic-light plot to a forest plot

Description

A wrapper for `metafor::forest` function, which adds a risk of bias traffic-light plot to the right-hand side of the forest plot. The heavy lifting for this function is done by `metafor`. Note that if not specified as additional arguments, this functions sets the header argument of `metafor::forest()` to `TRUE`.

Usage

```
rob_forest(
  res,
  rob_tool = "ROB2",
  rob_me = NULL,
  rob_levels = NULL,
  title = NULL,
  rob_legend = TRUE,
  rob_legend_cex = 0.9,
  ...
)
```

Arguments

<code>res</code>	Output from <code>metafor</code> meta-analysis function
<code>rob_tool</code>	The risk-of-bias assessment tool used to perform the assessments
<code>rob_me</code>	Optional value defining the result of the Risk-Of-Bias due to Missing Evidence (ROB-ME) assessment for this synthesis. By default (<code>rob_me = NULL</code>), this is omitted from the plot.
<code>rob_levels</code>	Vector of judgments [e.g. <code>c("Low","Some concerns","High","Critical")</code>] that controls the ordering of subgroups within the plot
<code>title</code>	Text to use for plot title
<code>rob_legend</code>	Logical specifying whether a legend for the risk-of-bias plot should be shown. Default is <code>TRUE</code> .
<code>rob_legend_cex</code>	Expansion factor for the risk-of-bias legend
<code>...</code>	Additional arguments to be passed to the <code>metafor::forest()</code> function

See Also

Other main: [rob_summary\(\)](#), [rob_traffic_light\(\)](#)

rob_save	<i>Save risk-of-bias plots to a file using sensible parameters</i>
----------	--

Description

Save risk-of-bias plots to a file using sensible parameters

Usage

```
rob_save(  
  rob_object,  
  file = "rob_figure.png",  
  height = "default",  
  width = "default",  
  dpi = 800  
)
```

Arguments

rob_object	Object created using either <code>rob_summary()</code> or <code>rob_traffic_light()</code>
file	Destination file, with extension (e.g. "rob_figure.png")
height	Height of resulting image, in inches. Defaults to "default" which uses recommended values based on the number of studies included.
width	Width of resulting image, in inches. Defaults to "default" which uses recommended values based on the number of characters in the Study and Domain names. dpi
dpi	Plot resolution.

See Also

Other helper: [rob_append_weights\(\)](#), [rob_dummy\(\)](#), [rob_tools\(\)](#)

rob_summary	<i>Produce summary weighted barplots of risk-of-bias assessments.</i>
-------------	---

Description

A function to convert standard risk-of-bias output to tidy data and plot a summary barplot.

Usage

```
rob_summary(
  data,
  tool,
  overall = TRUE,
  weighted = FALSE,
  colour = "cochrane",
  ...
)
```

Arguments

data	A dataframe containing summary (domain) level risk-of-bias assessments, with the first column containing the study details, the second column containing the first domain of your assessments, and the final column containing a weight to assign to each study. The function assumes that the data includes a column for overall risk-of-bias. For example, a ROB2.0 dataset would have 7 columns (1 for study details, 5 for domain level judgments, 1 for overall judgements, in that order).
tool	The risk of bias assessment tool used. RoB2.0 (tool='ROB2'), ROBINS-I (tool='ROBINS-I'), and QUADAS-2 (tool='QUADAS-2') are currently supported.
overall	An option to include a bar for overall risk-of-bias in the figure. Default is TRUE
weighted	An option to specify whether weights should be used in the barplot. Default is FALSE.
colour	An argument to specify the colour scheme for the plot. Default is 'cochrane' which used the ubiquitous Cochrane colours, while a preset option for a colour-blind friendly palette is also available (colour = 'colourblind').
...	Arguments to be passed to the tool specific functions.

Value

Risk of bias assessment barplot figure.

See Also

Other main: [rob_forest\(\)](#), [rob_traffic_light\(\)](#)

Examples

```
data <- data.frame(
  stringsAsFactors = FALSE,
  Study = c("Study 1", "Study 2"),
  D1 = c("Low", "Some concerns"),
  D2 = c("Low", "Low"),
  D3 = c("Low", "Low"),
  D4 = c("Low", "Low"),
  D5 = c("Low", "Low"),
  Overall = c("Low", "Low"),
```

```

  Weight = c(33.33333333, 33.33333333)
)

rob_summary(data, "ROB2")

```

rob_tools	<i>List the risk-of-bias tools for which templates are available within the package.</i>
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Description

rob_tools() will list the risk-of-bias assessment tools for which templates already exist within the robvis package. If the assessment tool you used does not appear in the list, use the "Generic" template.

Usage

```
rob_tools(forest = FALSE)
```

Arguments

forest Show the tools supported by the forest/lobbogram functions

See Also

Other helper: [rob_append_weights\(\)](#), [rob_dummy\(\)](#), [rob_save\(\)](#)

Examples

```
rob_tools()
```

rob_traffic_light	<i>Produce traffic-light plots of risk-of-bias assessments.</i>
-------------------	---

Description

A function to take a summary table of risk of bias assessments and produce a traffic light plot from it.

Usage

```

rob_traffic_light(
  data,
  tool,
  colour = "cochrane",
  psize = 10,
  overall = TRUE,
  ...
)

```

Arguments

data	A dataframe containing summary (domain) level risk-of-bias assessments, with the first column containing the study details, the second column containing the first domain of your assessments, and the final column containing a weight to assign to each study. The function assumes that the data includes a column for overall risk-of-bias. For example, a ROB2.0 dataset would have 7 columns (1 for study details, 5 for domain level judgments, and 1 for overall judgement, in that order). See
tool	The risk of bias assessment tool used. RoB2.0 (tool='ROB2'), ROBINS-I (tool='ROBINS-I'), and QUADAS-2 (tool='QUADAS-2') are currently supported.
colour	An argument to specify the colour scheme for the plot. Default is 'cochrane' which used the ubiquitous Cochrane colours, while a preset option for a colour-blind friendly palette is also available (colour = 'colourblind').
psize	Control the size of the traffic lights. Default is 10.
overall	Logical, specifying whether to include an "Overall" risk of bias column in the resulting plot
...	Arguments to be passed to the tool specific functions.

Value

Risk-of-bias assessment traffic light plot (ggplot2 object)

See Also

Other main: [rob_forest\(\)](#), [rob_summary\(\)](#)

Examples

```
data <- data.frame(
  stringsAsFactors = FALSE,
  Study = c("Study 1", "Study 2"),
  D1 = c("Low", "Some concerns"),
  D2 = c("Low", "Low"),
  D3 = c("Low", "Low"),
  D4 = c("Low", "Low"),
  D5 = c("Low", "Low"),
  Overall = c("Low", "Low")
)

rob_traffic_light(data, "ROB2")
```


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