Package: robvis (via r-universe)

June 4, 2026

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.l4898>), ROBINS-I (for non-randomised studies of interventions; Sterne (2016) <doi: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>), and QUIPS (Hayden et al (2013) <doi:10.7326/0003-4819-158-4-201302190-00009>.

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Encoding UTF-8

LazyData true

RoxygenNote 7.3.2

Depends R (>= 3.6)

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), spelling (>= 2.2)

VignetteBuilder knitr, rmarkdown

Config/testthat/edition 3

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

URL https://github.com/mcguinlu/robvis

Language en-US

Config/pak/sysreqs libicu-dev

Repository https://mrcieu.r-universe.dev

Date/Publication 2025-07-09 05:28:49 UTC

RemoteUrl https://github.com/remlapmot/robvis

RemoteRef suggestions

RemoteSha 1ad2e27d5d59e719330c194fc0c8c016e21e06ee

Contents

`data_bias_direction` *Example directional risk-of-bias dataset*

Description

This dataset is include to support experimental aspects of the package.

Usage

```
data_bias_direction
```

Format

A data frame with 20 rows and 27 variables:

`result_id` integer COLUMN_DESCRIPTION

`study` character COLUMN_DESCRIPTION

`type` character COLUMN_DESCRIPTION

`yi` double COLUMN_DESCRIPTION

`vi` double COLUMN_DESCRIPTION

`d1j` character COLUMN_DESCRIPTION

`d1t` character COLUMN_DESCRIPTION

`d1d` character COLUMN_DESCRIPTION

`d2j` character COLUMN_DESCRIPTION

`d2t` character COLUMN_DESCRIPTION

`d2d` character COLUMN_DESCRIPTION

`d3j` character COLUMN_DESCRIPTION

`d3t` character COLUMN_DESCRIPTION

`d3d` character COLUMN_DESCRIPTION

`d4j` character COLUMN_DESCRIPTION

`d4t` character COLUMN_DESCRIPTION

`d4d` character COLUMN_DESCRIPTION

`d5j` character COLUMN_DESCRIPTION

`d5t` character COLUMN_DESCRIPTION

`d5d` character COLUMN_DESCRIPTION

`d6j` character COLUMN_DESCRIPTION

`d6t` character COLUMN_DESCRIPTION

`d6d` character COLUMN_DESCRIPTION

`d7j` character COLUMN_DESCRIPTION

`d7t` character COLUMN_DESCRIPTION

`d7d` character COLUMN_DESCRIPTION

`overall` character COLUMN_DESCRIPTION

Source

Created for this package

data_quadas *Example QUADAS-2 assessment dataset*

Description

A data frame containing 12 example assessments performed using the risk-of-bias portion of the QUADAS-2 tool for the assessment of diagnostic accuracy studies.

Usage

```
data_quadas
```

Format

A data frame with the following 6 columns:

Study Study identifier

D1 Domain 1 - Patient Selection

D2 Domain 2 - Index Test

D3 Domain 3 - Reference Standard

D4 Domain 4 - Flow & Timing

Overall Overall risk of bias

Source

Created for this package

data_quips *Example QUIPS assessment dataset*

Description

A data frame containing 12 example assessments performed using the QUIPS (Quality In Prognosis Studies) tool.

Usage

```
data_quips
```

Format

A data frame with the following 8 columns:

Study Study identifier

D1 Domain 1 - Bias due to participation

D2 Domain 2 - Bias due to attrition

D3 Domain 3 - Bias due to prognostic factor measurement

D4 Domain 4 - Bias due to outcome measurement

D5 Domain 5 - Bias due to confounding

D6 Domain 6 - Bias in statistical analysis and reporting

Overall Overall risk of bias

Source

Created for this package

---

data_rob1 *Example ROB1 assessment dataset*

Description

A data frame containing 9 example assessments performed using the RoB1 assessment tool. Note that this dataset is distinct from other example datasets included in this package, in that the column names are the full domain names, rather than domain shortcodes (e.g. D1, D2, etc.). This is because the "Generic" (formerly "RoB1") template offered by `robvis` allows users to create custom risk-of-bias plots, and uses the column names of the provided dataset to define the domain names for these custom plots.

Usage

```
data_rob1
```

Format

A data frame with the following 9 columns:

Study Study identifier

Random.sequence.generation Domain 1

Allocation.concealment Domain 2

Blinding.of.participants.and.personnel Domain 3

Blinding.of.outcome.assessment Domain 4

Incomplete.outcome.data Domain 5

Selective.reporting Domain 6

Other.sources.of.bias Domain 7

Overall Overall risk of bias

Source

Created for this package

`data_rob2` *Example ROB2.0 assessment dataset*

Description

A data frame containing 9 example assessments performed using the RoB 2.0 tool for randomised controlled trials.

Usage

```
data_rob2
```

Format

A data frame with the following 7 columns:

Study Study identifier

D1 Domain 1 - Bias arising from the randomization process

D2 Domain 2 - Bias due to deviations from intended intervention

D3 Domain 3 - Bias due to missing outcome data

D4 Domain 4 - Bias in measurement of the outcome

D5 Domain 5 - Bias in selection of the reported result

Overall Overall risk of bias

Source

Created for this package

`data_rob2_cluster` *Example ROB2.0 (cluster variant) assessment dataset*

Description

A data frame containing 9 example assessments performed using the cluster-randomised version of the RoB 2.0 tool.

Usage

```
data_rob2_cluster
```

Format

A data frame with the following 7 columns:

Study Study identifier

D1 Domain 1 - Bias arising from the randomization process

D1b Domain 1b - Bias arising from the timing of identification and recruitment of Individual participants in relation to timing of randomization

D2 Domain 2 - Bias due to deviations from intended intervention

D3 Domain 3 - Bias due to missing outcome data

D4 Domain 4 - Bias in measurement of the outcome

D5 Domain 5 - Bias in selection of the reported result

Overall Overall risk of bias

Source

Created for this package

`data_robins_e` *Example ROBINS-E assessment*

Description

A data frame containing 10 example assessments performed using the ROBINS-E (Risk Of Bias In Non-randomised Studies - of Exposures) tool.

Usage

```
data_robins_e
```

Format

A data frame with the following 9 columns:

Study Study identifier

D1 Domain 1 - Bias due to confounding

D2 Domain 2 - Bias arising from measurement of the exposure

D3 Domain 3 - Bias in selection of participants into the study (or into the analysis)

D4 Domain 4 - Bias due to post-exposure interventions

D5 Domain 5 - Bias due to missing data

D6 Domain 6 - Bias arising from measurement of the outcome

D7 Domain 7 - Bias in selection of the reported result

Overall Overall risk of bias

Source

Created for this package

data_robins_i *Example ROBINS-I assessment dataset*

Description

A data frame containing 10 example assessments performed using the ROBINS-I (Risk Of Bias In Non-randomised Studies - of Interventions) tool.

Usage

```
data_robins_i
```

Format

A data frame with the following 9 columns:

Study Study identifier

D1 Domain 1 - Bias due to confounding

D2 Domain 2 - Bias due to selection of participants

D3 Domain 3 - Bias in classification of interventions

D4 Domain 4 - Bias due to deviations from intended interventions

D5 Domain 5 - Bias due to missing data

D6 Domain 6 - Bias in measurement of outcomes

D7 Domain 7 - Bias in selection of the reported result

Overall Overall risk of bias

Source

Created for this package

rob_append_weights *Extract weights from metafor results object and append to risk-of-bias data.*

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 rob_tools()). 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()

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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

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

See Also

Other main: rob_summary(), rob_traffic_light()

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

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 rob_summary() or rob_traffic_light()
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 *Produce summary weighted barplots of risk-of-bias assessments.*

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` *List the risk-of-bias tools for which templates are available within the package.*

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/blobbogram functions

See Also

Other helper: `rob_append_weights()`, `rob_dummy()`, `rob_save()`

Examples

```
rob_tools()
```

`rob_traffic_light` *Produce traffic-light plots of risk-of-bias assessments.*

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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