

Package ‘acro’

September 9, 2026

Title A Tool for Semi-Automating the Statistical Disclosure Control of Research Outputs

Version 1.0.0

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Description A Tool for Semi-Automating the Statistical Disclosure Control of Research Outputs.

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URL <https://github.com/AI-SDC/ACRO-R>

BugReports <https://github.com/AI-SDC/ACRO-R/issues>

Depends R (>= 2.10)

Imports admiraldev, dplyr, graphics, grid, png, purrr, reticulate, rlang, tibble, tidyselect, utils

Suggests knitr, rmarkdown, spelling, testthat (>= 3.0.0)

VignetteBuilder knitr

Config/roxygen2/version 8.1.0

Config/testthat/edition 3

Encoding UTF-8

Language en-US

LazyData true

SystemRequirements Python (>= 3.10)

NeedsCompilation no

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Repository CRAN

Date/Publication 2026-09-09 07:30:16 UTC

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acro_add_comments	<i>Add comments to outputs</i>
-------------------	--------------------------------

Description

Add comments to outputs

Usage

acro_add_comments(name, comment)

Arguments

- name The name of the output.
- comment The comment.

Value

No return value, called for side effects

acro_add_exception	<i>Adds an exception request to an output.</i>
--------------------	--

Description

Adds an exception request to an output.

Usage

```
acro_add_exception(name, reason)
```

Arguments

name	The name of the output.
reason	The comment.

Value

No return value, called for side effects

acro_crosstab	<i>Compute a simple cross tabulation of two (or more) factors.</i>
---------------	--

Description

Compute a simple cross tabulation of two (or more) factors.

Usage

```
acro_crosstab(
  index,
  columns,
  values = NULL,
  rownames = NULL,
  colnames = NULL,
  aggfunc = NULL,
  margins = FALSE,
  margins_name = "All",
  dropna = TRUE,
  normalize = FALSE,
  show_suppressed = FALSE
)
```

Arguments

index	Values to group by in the rows.
columns	Values to group by in the columns.
values	Array of values to aggregate according to the factors. Requires aggfunc be specified.
rownames	If passed, must match number of row arrays passed.
colnames	If passed, must match number of column arrays passed.
aggfunc	If specified, requires values be specified as well.
margins	dd row/column margins (subtotals).
margins_name	Name of the row/column that will contain the totals when margins is True.
dropna	Do not include columns whose entries are all NaN.
normalize	Normalize by dividing all values by the sum of values.
show_suppressed	how the totals are being calculated when the suppression is true

Value

Cross tabulation of the data

acro_custom_output	<i>Adds an unsupported output to the results dictionary</i>
--------------------	---

Description

Adds an unsupported output to the results dictionary

Usage

```
acro_custom_output(filename, comment = NULL)
```

Arguments

filename	The name of the file that will be added to the list of the outputs.
comment	An optional comment.

Value

No return value, called for side effects

acro_disable_rounding *Turns rounding off during a session*

Description

Turns rounding off during a session

Usage

```
acro_disable_rounding()
```

Value

No return value, called for side effects

acro_disable_suppression
 Turns suppression off during a session

Description

Turns suppression off during a session

Usage

```
acro_disable_suppression()
```

Value

No return value, called for side effects

acro_enable_rounding *Turns rounding on during a session*

Description

Turns rounding on during a session

Usage

```
acro_enable_rounding(base = NULL)
```

Arguments

base The base to round to

Value

No return value, called for side effects

acro_enable_suppression	<i>Turns suppression on during a session</i>
-------------------------	--

Description

Turns suppression on during a session

Usage

acro_enable_suppression()

Value

No return value, called for side effects

acro_finalise	<i>Creates a results file for checking.</i>
---------------	---

Description

Creates a results file for checking.

Usage

acro_finalise(path, ext)

Arguments

- | | |
|------|---|
| path | Name of a folder to save outputs. |
| ext | Extension of the results file. Valid extensions are json or xlsx. |

Value

No return value, called for side effects

acro_glm	<i>Fits Logit or Probit model.</i>
----------	------------------------------------

Description

Fits Logit or Probit model.

Usage

```
acro_glm(formula, data, family)
```

Arguments

formula	The formula specifying the model.
data	The data for the model.
family	Decide whether to fit a logit or probit model.

Value

Regression Results Wrapper

acro_hist	<i>Histogram</i>
-----------	------------------

Description

Histogram

Usage

```
acro_hist(  
  data,  
  column,  
  breaks = "sturges",  
  freq = TRUE,  
  col = NULL,  
  filename = "histogram.png"  
)
```

Arguments

data	The object holding the data.
column	The column that will be used to plot the histogram.
breaks	Number of histogram bins to be used.
freq	If True, the result will contain the number of samples in each bin. If False, the result is the value of the probability density function at the bin.
col	The color of the plot.
filename	The name of the file where the plot will be saved.

Value

The histogram.

acro_init	<i>Initialise an ACRO object</i>
-----------	----------------------------------

Description

Initialise an ACRO object

Usage

```
acro_init(
    config = "default",
    suppress = FALSE,
    mitigation = NULL,
    round_base = NULL,
    federated = NULL,
    envname = acro_venv,
    use_conda = NULL
)
```

Arguments

config	Name of a yaml configuration file with safe parameters.
suppress	Whether to automatically apply suppression.
mitigation	The disclosure-control strategy applied to outputs, one of "none","suppress", "round".
round_base	The base to round to when mitigation == "round".
federated	Whether to run in federated mode.
envname	Name of the Python environment to use.
use_conda	Whether to use a Conda environment. If NULL, looks for environment variable ACRO_USE_CONDA, defaults to FALSE if unset.

Value

Invisibly returns the ACRO object, which is used internally.

acro_lm	<i>Fits Ordinary Least Squares Regression</i>
---------	---

Description

Fits Ordinary Least Squares Regression

Usage

```
acro_lm(formula, data)
```

Arguments

formula	The formula specifying the model.
data	The data for the model.

Value

Regression Results Wrapper.

acro_pie	<i>Pie chart</i>
----------	------------------

Description

Pie chart

Usage

```
acro_pie(  
  data,  
  column,  
  radius = 0.8,  
  clockwise = FALSE,  
  init.angle = if (clockwise) 90 else 0,  
  col = NULL,  
  border = NULL,  
  lty = NULL,  
  filename = "pie.png",  
  ...  
)
```

Arguments

data	The object holding the data.
column	The name of the column that will be used to plot the pie chart.
radius	The radius of the pie chart.
clockwise	logical indicating if slices are drawn clockwise or counter clockwise.
init.angle	number specifying the starting angle (in degrees) for the slices. Defaults to 0 (i.e., '3 o'clock') unless clockwise is true where init.angle defaults to 90 (degrees), (i.e., '12 o'clock').
col	colors to be used in filling or shading the slices
border	The color to draw the border.
lty	The line style.
filename	The name of the file where the pie chart will be saved.
...	Any other parameters.

Value

The pie chart

acro_pivot_table	<i>Pivot table</i>
------------------	--------------------

Description

Pivot table

Usage

```
acro_pivot_table(  
  data,  
  values = NULL,  
  index = NULL,  
  columns = NULL,  
  aggfunc = "mean"  
)
```

Arguments

data	The data to operate on.
values	Column to aggregate, optional.
index	If an array is passed, it must be the same length as the data. The list can contain any of the other types (except list). Keys to group by on the pivot table index. If an array is passed, it is being used as the same manner as column values.

columns	If an array is passed, it must be the same length as the data. The list can contain any of the other types (except list). Keys to group by on the pivot table column. If an array is passed, it is being used as the same manner as column values.
aggfunc	If list of strings passed, the resulting pivot table will have hierarchical columns whose top level are the function names

Value

Cross tabulation of the data.

acro_print_outputs	<i>Prints the current results dictionary.</i>
--------------------	---

Description

Prints the current results dictionary.

Usage

```
acro_print_outputs()
```

Value

No return value, called for side effects

acro_remove_output	<i>Remove outputs</i>
--------------------	-----------------------

Description

Remove outputs

Usage

```
acro_remove_output(name)
```

Arguments

name	Key specifying which output to remove, e.g., 'output_0'.
------	--

Value

No return value, called for side effects

acro_rename_output	<i>Rename outputs</i>
--------------------	-----------------------

Description

Rename outputs

Usage

```
acro_rename_output(old, new)
```

Arguments

old	The old name of the output.
new	The new name of the output.

Value

No return value, called for side effects

acro_summarise	<i>Creates a new data frame. It returns one row for each combination of grouping variables; if there are no grouping variables, the output will have a single row summarising all observations in the input</i>
----------------	---

Description

Creates a new data frame. It returns one row for each combination of grouping variables; if there are no grouping variables, the output will have a single row summarising all observations in the input

Usage

```
acro_summarise(.data, ..., .groups = NULL, .by = NULL)
```

Arguments

.data	A data frame or a data frame extension
...	Name-value pairs of summary functions. The name will be the name of the variable in the result
.groups	Grouping structure of the result
.by	Optionally, a selection of columns to group by for just this operation, functioning as an alternative to group_by()

Value

Summary of the data

acro_surv_func	<i>Survival analysis</i>
----------------	--------------------------

Description

Survival analysis

Usage

```
acro_surv_func(time, status, output, filename = "kaplan-meier.png")
```

Arguments

time	An array of times (censoring times or event times).
status	Status at the event time.
output	A string determine the type of output. Available options are table or plot.
filename	The name of the file where the plot will be saved.

Value

The survival table or plot.

acro_table	<i>Compute a simple cross tabulation of two (or more) factors.</i>
------------	--

Description

Compute a simple cross tabulation of two (or more) factors.

Usage

```
acro_table(
  index,
  columns,
  dnn = NULL,
  deparse.level = 0,
  useNA = "no",
  exclude = NULL,
  ...
)
```

Arguments

index	Values to group by in the rows.
columns	Values to group by in the columns.
dnn	The names to be given to the dimensions in the result
deparse.level	Controls how the default dnn is constructed.
useNA	whether to include NA values in the table
exclude	levels to remove for all factors in index/columns
...	Any other parameters.

Value

Cross tabulation of the data

create_factors	<i>Convert data to factors and manage NA levels</i>
----------------	---

Description

Convert data to factors and manage NA levels

Usage

```
create_factors(Values, useNA)
```

Arguments

Values	to create factors on
useNA	whether to include NA values in the table

Value

R vector factor

is_excluded	<i>Identify values to be excluded from an object</i>
-------------	--

Description

Identify values to be excluded from an object

Usage

```
is_excluded(Values, exclude_list)
```

Arguments

Values	to exclude from
exclude_list	Items to exclude from the values

Value

logical vector that shows the places of the items that needs to be excluded

is_invalid	<i>Identify empty values; NA or NaN in an object</i>
------------	--

Description

Identify empty values; NA or NaN in an object

Usage

```
is_invalid(Values)
```

Arguments

Values	to check for empty values in it
--------	---------------------------------

Value

logical vector that shows the places of the empty values

lung	<i>Lung Cancer Survival Data</i>
------	----------------------------------

Description

The lung dataset contains information about lung cancer survival.

Usage

```
lung
```

Format

A data frame with columns:

inst institutional identification

time Survival time in months.

status Survival status (1 = death, 0 = censored).

age Age of the patient at the start of the study.

sex Gender of the patient.

ph.ecog Performance status (Eastern Cooperative Oncology Group).

ph.karno 'Karnofsky' performance status.

pat.karno 'Karnofsky' performance status as assessed by the patient.

meal.cal Daily caloric intake at the start of the study.

wt.loss Weight loss in the last six months.

Examples

```
data(lung)
```

nursery_data	<i>Nursery Database</i>
--------------	-------------------------

Description

This dataset is originated from a hierarchical decision model created to evaluate applications for nursery schools.

Usage

```
nursery_data
```

Format

A data frame with columns: A data frame with 12960 rows and 9 columns:

parents Parents' occupation

has_nurs Child's nursery

form Form of the family

children Number of children

housing Housing conditions

finance Financial standing of the family

social Social conditions

health Health conditions

recommend The ranking of applications for nursery schools

Source

<https://www.openml.org/search?type=data&status=active&id=26&sort=runs>

Examples

```
data(nursery_data)
```

to_pandas_categorical *Convert an R factor to a Pandas Categorical*

Description

Convert an R factor to a Pandas Categorical

Usage

```
to_pandas_categorical(Values, pd)
```

Arguments

Values	R factor vector to be converted
pd	Reference to the Python pandas module

Value

A Python `pandas.Categorical` object

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