Package 'statdecideR'

May 1, 2025

Title Automated Statistical Analysis and Plotting with CLD

Version 0.1.6

Description A lightweight tool that provides a reproducible workflow for selecting and executing appropriate statistical analysis in one-way or two-way experimental designs. The package automatically checks for data normality, conducts parametric (ANOVA) or non-parametric (Kruskal-Wallis) tests, performs post-hoc comparisons with Compact Letter Displays (CLD), and generates publication-ready boxplots, faceted plots, and heatmaps. It is designed for researchers seeking fast, automated statistical summaries and visualization. Based on established statistical methods including Shapiro and Wilk (1965) <doi:10.2307/2333709>, Kruskal and Wallis (1952) <doi:10.1080/01621459.1952.10483441>, Tukey (1949) <doi:10.2307/3001913>, Fisher (1925) <ISBN:0050021 ham (2016) <ISBN:978-3-319-24277-4>.

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RoxygenNote 7.3.2

Depends R (>= 4.1)

Imports ggplot2, dplyr, agricolae, effectsize, stringr, stats

NeedsCompilation no

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`df_nonparam` *Example Data for Non-parametric test*

Description

An example dataset of pollen collection by honeybee at different times and different months.

Usage

```
df_nonparam
```

Format

An object of class `data.frame` with 132 rows and 3 columns.

`run_statdecide` *Run Statistical Decision Workflow*

Description

Automatically checks normality, selects appropriate test (ANOVA or Kruskal-Wallis), performs post-hoc, and visualizes results with compact letter display (CLD). Returns all results as an object with optional console output.

Usage

```
run_statdecide(data, dep_var, group_vars, cld_offset = 5, verbose = TRUE)
```

Arguments

`data`	A data frame.
`dep_var`	Character. Name of the dependent variable.
`group_vars`	Character vector. One or two grouping variables.
`cld_offset`	Numeric. Vertical offset to place CLD labels above the boxplot (default: 5).
`verbose`	Logical. Whether to print progress messages and results (default: TRUE).

Value

A list containing:

normality_test Results of Shapiro-Wilk test

main_effects Results for each main effect

interaction Interaction results (if 2 group_vars)

plots List of ggplot objects

facet_plot Faceted ggplot (if 2 group_vars)

heatmap Heatmap ggplot (if 2 group_vars)

Examples

```
# Silent operation
results <- run_statdecide(data = df_nonparam, dep_var = "Pollen",
                          group_vars = c("Month","Time"), verbose = FALSE)

# With console output
run_statdecide(data = df_nonparam, dep_var = "Pollen", group_vars = "Month")
```

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