Package 'statease'

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Title Simplified Statistical Analysis with Plain-English Interpretation

Version 1.1.0

Description A toolkit for common statistical analyses including descriptive statistics, Student's t-tests (one-sample, independent, and paired), one-way and two-way Analysis of Variance (ANOVA), chi-square tests, correlation analysis, and simple linear regression. Each function automatically interprets results in plain English, reporting effect sizes (Cohen's d, eta-squared, Cramer's V, R-squared), confidence intervals, and p-value interpretations. Post-hoc Tukey Honestly Significant Difference (HSD) tests are automatically applied following significant ANOVA results. A master function automatically detects the appropriate test based on the structure of the input data. Methods are based on Cohen, J. (1988) <doi:10.4324/9780203771587>, Tukey, J. W. (1949) <doi:10.2307/3001913>, and Shapiro and Wilk (1965) <

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Contents

`analyze` *Master Analysis Function - Auto-detects and runs the right test*

Description

Master Analysis Function - Auto-detects and runs the right test

Usage

```
analyze(
  x = NULL,
  y = NULL,
  data = NULL,
  formula = NULL,
  mu = 0,
  paired = FALSE,
  conf.level = 0.95,
  var_name = "Variable",
  var1_name = "Variable 1",
  var2_name = "Variable 2",
  method = "pearson"
)
```

Arguments

`x`	A numeric vector (required always)
`y`	A numeric vector, factor, or character group variable (optional)
`data`	A data frame (required if using a formula)
`formula`	A formula of the form outcome ~ predictor or outcome ~ group1 * group2 (optional)
`mu`	Hypothesised mean for one-sample t-test. Default 0.
`paired`	Logical. TRUE for paired t-test. Default FALSE.
`conf.level`	Confidence level. Default 0.95.
`var_name`	Optional label for the report.
`var1_name`	Optional name for first variable in correlation.
`var2_name`	Optional name for second variable in correlation.
`method`	Correlation method: "pearson", "spearman", or "kendall". Default "pearson".

Value

A printed analysis report from the appropriate test

Examples

```
# Descriptive only
analyze(x = c(23, 45, 12, 67, 34))

# Auto t-test
analyze(x = c(23,45,12,67,34), y = c(19,38,22,51,29))

# Auto correlation
analyze(x = c(23,45,12,67,34), y = c(19,38,22,51,29),
        var1_name = "Scores", var2_name = "Hours")

# Auto One-Way ANOVA
df <- data.frame(
  score = c(23,45,12,67,34,89,56,43,78,90,11,34),
  group = rep(c("A","B","C"), each = 4)
)
analyze(formula = score ~ group, data = df)

# Auto Two-Way ANOVA
df2 <- data.frame(
  score  = c(23,45,12,67,34,89,56,43,78,90,11,34),
  method = rep(c("Online","Traditional"), each = 6),
  gender = rep(c("Male","Female"), times = 6)
)
analyze(formula = score ~ method * gender, data = df2)

# Auto Regression
df3 <- data.frame(
  exam_score  = c(23,45,12,67,34,89,56,43,78,90),
  study_hours = c(2,5,1,7,3,9,6,4,8,10)
)
analyze(formula = exam_score ~ study_hours, data = df3)

# Auto Chi-square
analyze(
  x = c("Yes","No","Yes","Yes","No"),
  y = c("Male","Female","Male","Female","Male")
)
```

---

anova2_interpret *Two-Way ANOVA with Plain-English Interpretation*

Description

Two-Way ANOVA with Plain-English Interpretation

Usage

```
anova2_interpret(formula, data, conf.level = 0.95)
```

Arguments

formula	A formula of the form outcome ~ group1 * group2
data	A data frame containing the variables
conf.level	Confidence level. Default 0.95.

Value

An object of class statease_anova2 containing two-way ANOVA results and interpretation. Use print() to display the formatted report.

Examples

```
df <- data.frame(
  score  = c(23,45,12,67,34,89,56,43,78,90,11,34),
  method = rep(c("Online","Traditional"), each = 6),
  gender = rep(c("Male","Female"), times = 6)
)
result <- anova2_interpret(score ~ method * gender, data = df)
print(result)
```

---

anova_interpret *One-Way ANOVA with Post-Hoc Tukey and Plain-English Interpretation*

Description

One-Way ANOVA with Post-Hoc Tukey and Plain-English Interpretation

Usage

```
anova_interpret(formula, data, conf.level = 0.95)
```

Arguments

formula	A formula of the form outcome ~ group
data	A data frame containing the variables
conf.level	Confidence level. Default 0.95

Value

An object of class statease_anova containing ANOVA results, effect size, and post-hoc comparisons. Use print() to display the formatted report.

Examples

```
df <- data.frame(
  score = c(23,45,12,67,34,89,56,43,78,90,11,34),
  group = rep(c("A","B","C"), each = 4)
)
result <- anova_interpret(score ~ group, data = df)
print(result)
```

`chisq_interpret` *Chi-Square Test with Plain-English Interpretation*

Description

Chi-Square Test with Plain-English Interpretation

Usage

```
chisq_interpret(x, y, correct = TRUE, conf.level = 0.95)
```

Arguments

`x`	A factor or character vector (first categorical variable)
`y`	A factor or character vector (second categorical variable)
`correct`	Logical. Apply Yates continuity correction. Default TRUE.
`conf.level`	Confidence level. Default 0.95.

Value

An object of class `statease_chisq` containing test results and interpretation. Use `print()` to display the formatted report.

Examples

```
x <- c("Yes","No","Yes","Yes","No","Yes","No","No","Yes","Yes")
y <- c("Male","Female","Male","Female","Male","Female","Male","Female","Male","Female")
result <- chisq_interpret(x, y)
print(result)
```

`cor_interpret` *Correlation Analysis with Plain-English Interpretation*

Description

Correlation Analysis with Plain-English Interpretation

Usage

```
cor_interpret(
  x,
  y,
  method = "pearson",
  conf.level = 0.95,
  var1_name = "Variable 1",
  var2_name = "Variable 2"
)
```

Arguments

`x`	A numeric vector
`y`	A numeric vector
`method`	Correlation method: "pearson", "spearman", or "kendall". Default "pearson".
`conf.level`	Confidence level. Default 0.95.
`var1_name`	Optional name for first variable. Default "Variable 1"
`var2_name`	Optional name for second variable. Default "Variable 2"

Value

An object of class `statease_cor` containing correlation results and interpretation. Use `print()` to display the formatted report.

Examples

```
x <- c(23, 45, 12, 67, 34, 89, 56, 43, 78, 90)
y <- c(19, 42, 15, 70, 30, 85, 52, 48, 80, 88)
result <- cor_interpret(x, y)
print(result)
```

describe *Descriptive Statistics with Interpretation*

Description

Descriptive Statistics with Interpretation

Usage

```
describe(x, var_name = "Variable")
```

Arguments

x	A numeric vector
var_name	Optional name for the variable (used in the report)

Value

An object of class `statease_describe` containing descriptive statistics and interpretation. Use `print()` to display the formatted report.

Examples

```
result <- describe(c(23, 45, 12, 67, 34, 89, 56))
print(result)
```

interpret_p *Standalone P-Value Interpreter*

Description

Standalone P-Value Interpreter

Usage

```
interpret_p(p, alpha = 0.05, context = NULL)
```

Arguments

p	A numeric p-value between 0 and 1
alpha	Significance level. Default 0.05
context	Optional string describing the test context

Value

An object of class `statease_pvalue` containing the p-value interpretation. Use `print()` to display the report.

Examples

```
result <- interpret_p(0.03)
print(result)

result2 <- interpret_p(0.12, alpha = 0.05, context = "treatment vs control")
print(result2)
```

---

reg_interpret *Simple Linear Regression with Plain-English Interpretation*

Description

Simple Linear Regression with Plain-English Interpretation

Usage

```
reg_interpret(formula, data, conf.level = 0.95)
```

Arguments

`formula`	A formula of the form outcome ~ predictor
`data`	A data frame containing the variables
`conf.level`	Confidence level. Default 0.95.

Value

An object of class `statease_reg` containing regression results and interpretation. Use `print()` to display the formatted report.

Examples

```
df <- data.frame(
  exam_score = c(23,45,12,67,34,89,56,43,78,90),
  study_hours = c(2,5,1,7,3,9,6,4,8,10)
)
result <- reg_interpret(exam_score ~ study_hours, data = df)
print(result)
```

statease *statease: Simplified Statistical Analysis with Plain-English Interpretation*

Description

statease provides a suite of functions for performing common statistical analyses and automatically interpreting the results in plain English. It is designed for students, researchers, and educators who want fast, readable statistical output without sacrificing rigour.

Main Functions

`analyze` Master function — auto-detects and runs the right test

`describe` Descriptive statistics with interpretation

`ttest_interpret` T-tests (one-sample, independent, paired) with Cohen's d

`anova_interpret` One-way ANOVA with Tukey post-hoc and eta squared

`interpret_p` Standalone p-value interpreter

Typical Workflow

The simplest way to use statease is through the master `analyze()` function, which automatically detects what test to run based on your input:

```
# Descriptive statistics
analyze(x = my_vector, var_name = "My Variable")

# Independent samples t-test
analyze(x = group1, y = group2, var_name = "Scores")

# One-way ANOVA
analyze(formula = score ~ group, data = my_df)

# Interpret a p-value
interpret_p(0.03, context = "treatment vs control")
```

Author(s)

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See Also

Useful links:

- https://github.com/DevWebWacky/statease
- Report bugs at https://github.com/DevWebWacky/statease/issues

`ttest_interpret` *T-Test with Plain-English Interpretation*

Description

T-Test with Plain-English Interpretation

Usage

```
ttest_interpret(
  x,
  y = NULL,
  mu = 0,
  paired = FALSE,
  conf.level = 0.95,
  var_name = "Variable"
)
```

Arguments

`x`	A numeric vector (group 1, or the only group for one-sample)
`y`	A numeric vector (group 2, for independent samples). Default NULL.
`mu`	Hypothesised mean for one-sample t-test. Default 0.
`paired`	Logical. TRUE for paired t-test. Default FALSE.
`conf.level`	Confidence level. Default 0.95.
`var_name`	Optional label for the report. Default "Variable"

Value

An object of class `statease_ttest` containing test results and interpretation. Use `print()` to display the formatted report.

Examples

```
result <- ttest_interpret(c(23,45,12,67,34), c(19,38,22,51,29))
print(result)
```

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