Package ‘roistats’

October 14, 2022

Title  Convenience Functions for Applying Basic Stats to Sub-Groups
Version  0.1.1
Description  Easily applying same t-tests/basic data description across several sub-
groups, with the output as a nice arranged data.frame. Multiple comparison and the signifi-
cance symbols are also provided.
License  MIT + file LICENSE
Depends  R (>= 3.5.0)
URL  https://github.com/Irisfee/roistats
BugReports  https://github.com/Irisfee/roistats/issues
Encoding  UTF-8
LazyData  true
RoxygenNote  7.1.1
Imports  dplyr, tidyr, magrittr, purrr, stats, rlang
Suggests  testthat (>= 3.0.0), covr, knitr, rmarkdown
Config/testthat/edition  3
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Description

The pre-processed data for identifying which brain regions is sensitive to the color memory of learned objects.

Usage

color_index

Format

A tibble with 232 rows and 3 variables with one group attribute:

- **subj_id** Subject identity number
- **roi_id** Brain sub-region that of interest for the analysis. Served as the grouping variable here.
- **color_index** A value we want to test if it is significantly different from 0 across subjects.

References


Examples

color_index

color_index_two_sample

Description

The pre-processed data for identifying which brain regions is sensitive to the color memory of learned objects.

Usage

color_index_two_sample
**df_sem**

**Format**

A tibble with 464 rows and 4 variables with one group attribute:

- **subj_id**  Subject identity number
- **roi_id**  Brain sub-region that of interest for the analysis. Served as the grouping variable here.
- **group**  A within-group variable for each subject. Indicating whether the color effect value is for the Paired or Control condition
- **color_effect**  A value we want to test between the two groups (Paired vs Control).

**References**


**Examples**

```r
color_index_two_sample
```

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**Description**

Generate standard error of mean

**Usage**

```r
df_sem(data, x)
```

**Arguments**

- **data**  A data frame, generally grouped by the intended sub-groups which you want to compare for the same t-test.
- **x**  A (bare) column name of the variable which you want to get the mean, sd, and standard error of the mean (SEM).

**Value**

A `data.frame` with consisting of characters. The columns that are always present are: `group variable(s)`, `mean`, `sd`, `n`, and `se(SEM)`.

**Examples**

```r
df_sem(color_index, color_index)
```

library(magrittr)
color_index %>%
df_sem(color_index)
### p_range

Create significant symbols for p-values

**Description**

Create significant symbols for p-values

**Usage**

```r
p_range(p)
```

**Arguments**

- `p` A numeric p value (usually yielded from a statistical test).

**Value**

A character significant symbol. * represents the p is within the range of (0.05, 0.01], ** for (0.01, 0.001], and *** for (0.001, +inf]

**Examples**

```r
p_range(0.02)
library(dplyr)
t_test_one_sample(color_index, "color_index", mu = 0) %>% mutate(sig = p_range(p))
```

---

### t_test_one_sample

Generate one-sample t-test results for multiple sub-groups

**Description**

This function produce one-sample t-test (two-tailed with confident interval at 0.95) results for multiple sub-groups and provides with a nice output in a table format. It can also add adjusted p values for multiple comparison issue.

**Usage**

```r
t_test_one_sample(data, x, mu = 0, p_adjust = "bonferroni")
```
**t_test_two_sample**

**Arguments**

- `data` A grouped data frame. It should be grouped by the intended sub-groups which you want to do the same t-test.
- `x` Column name of the variable which contains data values that you want to test (see `t.test` and details).
- `mu` A number indicating the true value of the mean (or difference in means if you are performing a two sample test).
- `p_adjust` character indicating which method should be used for adjusting multiple comparisons (see `p.adjust` and details). The default "bonferroni" corresponds to Bonferroni adjustment.

**Value**

A data.frame with the t-statistics table consisting of characters. The columns that are always present are: group variable(s), tvalue, df (degrees of freedom), p, and p_adjustmethod(s).

**Examples**

```r
# use bonferroni and fdr method for adjusted p values.
library(magrittr)
color_index %>%
t_test_one_sample("color_index", mu = 0, p_adjust = c("bonferroni","fdr"))
```

---

**t_test_two_sample** Generate two-sample t-test results for multiple sub-groups

**Description**

This function produce two-sample t-test (two-tailed with confident interval at 0.95) results for multiple sub-groups and provides with a nice output in a table format. It can also add adjusted p values for multiple comparison issue.

**Usage**

```r
t_test_two_sample(data, x, y, paired = FALSE, p_adjust = "bonferroni")
```

**Arguments**

- `data` A grouped data frame. It should be grouped by the intended sub-groups which you want to do the same t-test.
- `x` Column name of the variable which contains data values that you want to test (see `t.test` and details).
- `y` Column name of the variable which contains data values of group assignments for the test values (see `t.test` and details).
**paired**

A logical indicating whether you want a paired t-test.

**p_adjust**

A character indicating which method should be used for adjusting multiple comparisons (see `p.adjust` and details). The default "bonferroni" corresponds to Bonferroni adjustment.

**Value**

A `data.frame` with the t-statistics table consisting of characters. The columns that are always present are: `group` variable(s), `tvalue`, `df` (degrees of freedom), `p`, and `p_adjust` method(s).

**Examples**

```r
t_test_two_sample(color_index_two_sample, x = "color_effect", y = "group", paired = TRUE)
```

# use bonferroni and fdr method for adjusted p values.
library(magrittr)
color_index_two_sample %>%
t_test_two_sample(
  x = "color_effect", y = "group", paired = TRUE, p_adjust = c("bonferroni", "fdr")
)
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