Package 'peramo'

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Type Package

Title Permutation Tests for Randomization Model

Version 0.1.0

Description Perform permutation-based hypothesis testing for randomized
experiments, as described in Ernst (2004) <doi:10.1214/088342304000000396>.

Depends R (>= 4.2.0)

Imports magrittr (>= 2.0.3), dplyr (>= 1.0.9), stats

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R topics documented:

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peramo-package   *peramo: Permutation Tests for Randomization Model*

Description

Perform permutation-based hypothesis testing for randomized experiments, as described in Ernst (2004) doi:10.1214/088342304000000396.

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owl   *One-Way Layout Permutation Test*

Description

`owl` performs the global test and multiple comparisons for single factor experiments.

Usage

```
owl(df, rand = 9999, alpha.post = 0.05, type.post = "control", seed = 1)
```

Arguments

df	a data frame with the name of experimental groups as the first column and the measurement of responses as the remaining columns.
rand	an integer, the number of randomization samples. The default value is 9999.

alpha.post	a numeric, the Type I error rate for multiple comparisons. The default value is 0.05.
type.post	the way of multiple comparisons, "all" for pairwise comparisons or "control" for only comparisons with the control group.
seed	an integer, the seed for random number generation. Setting a seed ensures the reproducibility of the result. See set.seed for more details.

Details

The first name appearing in the first column will determine the control group. The other names will be treatment groups.

Value

owl returns a list with 9 components:

n.obs	the sample sizes.
avg.obs	the mean responses.
T.obs	the T statistic for global test.
pval	the p-value for global test.
pval.round	the reported form of p-value.
main.test	the strength of evidence against the null hypothesis.
d.multi.obs	the differences in means for multiple comparisons.
mad.cric	the critical value of maximum absolute differences in means.
post.test	TRUE if the differences are significant.

References

Ernst, M. D. (2004). Permutation Methods: A Basis for Exact Inference. Statistical Science, 19(4), 676–685. doi:10.1214/088342304000000396.

Muff, S., Nilsen, E. B., O'Hara, R. B., & Nater, C. R. (2022). Rewriting results sections in the language of evidence. Trends in Ecology & Evolution, 37(3), 203–210. doi:10.1016/j.tree.2021.10.009.

Examples

```
ernst2004 <- data.frame(group = rep(c("style1", "style2", "style3"), each = 5 ),
speed = c( 135,91,111,87, 122, 175,130,514,283, NA,105,147,159,107,194))
owl(ernst2004, type.post = "all")
```

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owlStat   *Test Statistics for One-Way Layout Permutation Test*

Description

`owlStat` computes statistics for `owl`. This is not meant to be called directly.

Usage

```
owlStat(lov, env = parent.frame())
```

Arguments

lov	a list of vectors, responses by experimental groups.
env	an environment, to access outer scope variables.

Value

`owlStat` returns a list with 5 components:

n	the sample sizes.
avg	the mean responses.
T	the T statistic for global test.
d.multi	the differences in means for multiple comparisons.
mad	the maximum absolute differences in means.
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References

Ernst, M. D. (2004). Permutation Methods: A Basis for Exact Inference. Statistical Science, 19(4), 676–685. doi:10.1214/088342304000000396.

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