Package: phack (via r-universe)

August 21, 2024

Type Package

Title Detecting p-Hacking using Elliot et al. (2022)

Version 0.1.0

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Description Implements the tests from Elliot et al. (2022) for detecting p-Hacking. The package is essentially a simple wrapper to the code provided in the code and data supplement of the article, with some cosmetical changes. The original code can be found in the code and data supplement of the article. s References Elliott, G., Kudrin, N., & Wüthrich, K. (2022). Detecting p-Hacking. Econometrica, 90(2), 887-906.

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Depends fdrtool, pracma, gdata, spatstat, rddensity, ggplot2, NlcOptim

Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Repository https://skranz.r-universe.dev

RemoteUrl https://github.com/skranz/phack

RemoteRef main

RemoteSha 0a5f40587ee7e0376e5c95d99b541978e6861a5e

Contents

phack_test_binomial *Binomial test for p-hacking*

Description

Elliot et al. (2022) show that absent rounding errors, p-hacking and publication bias, the density of p-values across many different tests should be decreasing in the p-value.

Usage

```
phack_test_binomial(
  p,
  p_min = 0.04,
  p_max = 0.05,
  open_interval = FALSE,
  min_bunch = 3
)
```

Arguments

p	vector of p-values (should be derounded if there are rounding errors)
p_min	lower bound of the interval used for the test
p_max	upper bound of the interval used for the test
open_interval	if TRUE take p-values from open interval (p_min, p_max).
min_bunch	minimal number of elements of p that have exactly the same p-value in order to show a warning that there seems to be a rounding problem.

Details

This means if we split any interval [p_min, p_max] in the center, a significantly higher proportion in the right half than the left half suggests a violation of the no p-hacking and no publication bias assumption (if there are no rounding errors or p-values are approbriately de-rounded).

This function tests this via a Binomial test.

phack_test_cox_shi *Cox-Shi histogram test and more general test for K-monotonicity and bounds on [p_min, p_max] interval*

Description

For the defaults K=1 and use_bounds=FALSE we have a basic histogram test.

Usage

```
phack_test_cox_shi(
  p,
  article = NA,
  p_min = 0,
  p_max = 0.15,
  J = 30,
  K = 1,
  use_bounds = FALSE,
  min_bunch = 3
)
```

Arguments

p	vector of p-values (make sure rounding problems are dealt with)
article	vector of unique article ids for approbriate clustuering
J	number of subintervals
K	degree of K-monotonicity (see Section 4.3 in Elliot et al. 2022)
use_bounds	use bounds or test without bounds (see Appendix A in Elliot et al. 2022)
min_bunch	minimal number of elements of p that have exactly the same p-value in order to show a warning that there seems to be a rounding problem.

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phack_test_discontinuity

Discontinuity test

Description

Discontinuity test

Usage

```
phack_test_discontinuity(p, c, min_bunch = 3)
```

Arguments

p	vector of p-values
c	potential discontinuity point
min_bunch	minimal number of elements of p that have exactly the same p-value in order to show a warning that there seems to be a rounding problem.

phack_test_fisher *Fisher's test*

Description

Similar to phack_binomial_test but using Fisher's test instead of the binomial test.

Usage

```
phack_test_fisher(p, p_min, p_max, min_bunch = 3)
```

Arguments

p	vector of p-values (should be derounded if there are rounding errors)
p_min	lower bound of the interval used for the test
p_max	upper bound of the interval used for the test
min_bunch	minimal number of elements of p that have exactly the same p-value in order to show a warning that there seems to be a rounding problem.

Details

For this test the half-open interval [p_min, p_max) is used.

phack_test_lcm *LCM test on [p_min, p_max]*

Description

LCM test on [p_min, p_max]

Usage

```
phack_test_lcm(p, p_min, p_max, F_LCMsup = get.phack.F_LCMsup(), min_bunch = 3)
```

Arguments

p	– vector of p-values
p_min	lower bound of the interval used for the test
p_max	upper bound of the interval used for the test
F_LCMsup	cdf for LCM test
min_bunch	minimal number of elements of p that have exactly the same p-value in order to show a warning that there seems to be a rounding problem.

SimBB *Simulate Brownian Bridge (BB) and ||LCM(BB)-BB||*

Description

Simulate Brownian Bridge (BB) and ||LCM(BB)-BB||

Usage

```
SimBB(M)
```

Arguments

M	– number of repetitions

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