Package 'sate'

October 14, 2022

Type Package

Title Scientific Analysis of Trial Errors (SATE)

Version 1.1.0

Author Barry Edwards, J.D., Ph.D.

Maintainer Barry Edwards <barry.edwards@ucf.edu>

Description Bundles functions used to analyze the harmfulness of trial errors in criminal trials. Functions in the Scientific Analysis of Trial Errors ('SATE') package help users estimate the probability that a jury will find a defendant guilty given jurors' preferences for a guilty verdict and the uncertainty of that estimate. Users can also compare actual and hypothetical trial conditions to conduct harmful error analysis. The relationship between individual jurors' verdict preferences and the probability that a jury returns a guilty verdict has been studied by Davis (1973) <doi:10.1037/h0033951>; MacCoun & Kerr (1988) <doi:10.1037/0022-3514.54.1.21>,
and Devine et el. (2001) <doi:10.1037/1076-8971.7.3.622>, among others.

License CC0

Encoding UTF-8

LazyData true

Depends R (>= 3.0)

Imports MASS, stats

RoxygenNote 7.1.0

NeedsCompilation no

Repository CRAN

Date/Publication 2020-03-24 16:20:02 UTC

R topics documented:

as.jury.point *Calculates probability jury finds defendant guilty based on juror preferences*

Description

Calculates probability jury finds defendant guilty based on juror preferences. Does not estimate uncertainty.

Usage

```
as.jury.point(pg)
```

Arguments

pg	The proportion of jurors who favor a guilty verdict.

Value

Returns the probability jury finds defendant guilty.

Examples

```
as.jury.point(pg=.50)

as.jury.point(pg=10/12)
```

as.jury.stat *Calculates jury-level statistics*

Description

Calculates jury-level statistics based on user-defined inputs.

Usage

```
as.jury.stat(pg, n, seed = NULL, ndraw = 1e+05)
```

Arguments

pg	The proportion of jurors who favor a guilty verdict.
n	The size of the sample used to estimate pg.
seed	Set seed for random number generation for replication, default is NULL (optional).
ndraw	The number of simulations used to generate results. Should be very large number (default = 100000).

Value

Returns a list of jury-level statistics

Examples

```
as.jury.stat(pg=.50, n=500)

as.jury.stat(pg=10/12, n=1200, seed=123, ndraw=10000)
```

CI90 *Calculates the 90 percent confidence interval of a proportion.*

Description

Calculates the 90 percent confidence interval of a proportion. 90 percent confidence interval used to test one-sided hypothesis at .05 level.

Usage

```
CI90(p, se)
```

Arguments

p	The sample proportion (of jurors who favor a guilty verdict).
se	The standard error of the sample proportion, p.

Value

Returns the 90 percent confidence interval as a list.

Examples

```
CI90(p=.5, se=.04)

CI90(p=10/12, se=.02)
```

`compare.jury.stats` *Estimates jury-level differences based on juror-level statistics*

Description

Calculates jury-level differences based on juror-level statistics supplied by user.

Usage

```
compare.jury.stats(
  pg_actual,
  n_actual,
  pg_hypo,
  n_hypo,
  seed = NULL,
  ndraw = 1e+06
)
```

Arguments

`pg_actual`	The proportion of jurors who favor a guilty verdict in the actual trial condition (the trial with error).
`n_actual`	The size of the sample used to estimate pg_actual.
`pg_hypo`	The proportion of jurors who favor a guilty verdict in the hypothetical trial condition (the fair trial without error).
`n_hypo`	The size of the sample used to estimate pg_hypo.
`seed`	Set seed for random number generation for replication, default is NULL (optional).
`ndraw`	The number of simulations used to generate results. Should be very large number (default = 1000000).

Value

Returns a list of jury-level statistics to assess effect of a trial error.

Examples

```
compare.jury.stats(pg_actual=.70, n_actual=400, pg_hypo=.60, n_hypo=450)

compare.jury.stats(pg_actual=.75, n_actual=450, pg_hypo=.65, n_hypo=350,
                   seed=12345, ndraw=100000)
```

`se.prop` *Calculates the standard error of proportion.*

Description

Calculates the standard error of proportion.

Usage

```
se.prop(p, n)
```

Arguments

`p`	The proportion (of jurors who favor a guilty verdict).
`n`	The size of the sample used to estimate p.

Value

Returns the standard error of a sample proportion.

Examples

```
se.prop(p=.50, n=500)

se.prop(p=10/12, n=400)
```

Index