Package 'spikes'

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Type Package

Title Detecting Election Fraud from Irregularities in Vote-Share Distributions

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Description Applies re-sampled kernel density method to detect vote fraud. It estimates the proportion of coarse vote-shares in the observed data relative to the null hypothesis of no fraud.

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NeedsCompilation no

Repository CRAN

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R topics documented:

confInt *Credible interval*

Description

Estimates credible interval by (1) taking a draw from the posterior density (2) implementing the RKD step. The procedure is repeated `boot` times.

Usage

```
confInt(object, boots = 100)
```

Arguments

`object`	object of class `out` returned by `spikes`
`boots`	number of samples from the posterior; defaul `100`

data *Example data*

Description

Synthetic dataset

Usage

```
data("data")
```

Format

Precinct-level election data from the 2011 Canadian parliamentary elections..

`N` number of registered voters

`t` turnout

`v` votes for the Conservative party

Examples

```
data(data)
```

output *Ouput object*

Description

An object of class out returned by spikes or confint.out.

Usage

```
data("output")
```

Examples

```
data(output)
plot(output)
```

plot.out *Plots output of* spikes

Description

Plots the observed kernel density of data and the upper envelope of the resampled densities.

Usage

```
## S3 method for class 'out'
plot(x, main = NULL, ...)
```

Arguments

x	Object of class out
main	Title, NULL by default
...	additional plotting arguments

Examples

```
data(output)
plot(output)
```

spikes *Fraud-detection from vote-share data*

Description

Implements the resampled kernel density method to detect the excess number of election results with coarse vote-shares (a coarse vote-share is a fraction with a low denominator).

Usage

```
spikes(data, resamples = 1000, bw = 1e-04, grid = 1001, out = NULL)
```

Arguments

data	Data frame with three columns with names N (number of votes), t (number who turned out to vote), and v (number who voted for the party the votes of which are being analyzed). Returns error if columns are named incorrectly.
resamples	Number of resamples; default 1000
bw	Bandwidth for kernel density; default 0.0001
grid	Number of points on which the density is estimated; default 1001
out	Object containing parameters of beta-mixture model. If spikes has been called earlier, then out = output$out will skip density estimation and proceed directly to resampling.

Value

spikes returns object of class out.

fraud	Estimated percentage of polling stations with fraud.
ymax	Upper envelope of kernel density samples.
w	Weights for each bin: the proportion of observations falling into a bin.
out	Maximum likelihood estimates of the mixture beta binomial parameters for turnout and votes.
data	Data used in estimation.

See Also

See Also plot.out, summary.out

Examples

```
data(data)
## Not run:
out <- spikes(data, resamples = 1000)

## End(Not run)
```

spikes-internal *Internal functions*

Description

Internal functions, should not be called by user

summary.out *Summarize*

Description

Extracts estimate of fraud and 95 percent credible interval (if such is estimated) for the object of class out returned by spikes or confint.out.

Usage

```
## S3 method for class 'out'
summary(object, ...)
```

Arguments

object	Object of class out
...	additional arguments

Note

If the argument is from spikes, then summary returns degenerate credible interval, as it was not estimated. To return a proper credible interval, confint.out must take as its argument object returned by confint.out.

Examples

```
data(output)
summary(output)
```

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