Package 'gmethods'

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Type Package

Title An implementation of g-methods

Version 0.1.0

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Depends R (>= 4.0.2)

Description This package facilitates causal inference by implementing g-methods: g-formula, inverse probability weighting (IPW), and g-estimation. These methods are comprehensively described in Causal Inference: What If book by Hernán and Robins using 1 of 4 NHEFS datasets described in this book (https://www.hsph.harvard.edu/miguel-hernan/causal-inference-book/). This package only provides nhefs table, a cleaned version of NHEFS data, for example data. The remaining datasets from that book could be retrieved from cidata R package (https://github.com/malcolmbarrett/cidata) for more information.

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Encoding UTF-8

LazyData true

Roxygen list(markdown = TRUE)

RoxygenNote 7.1.1

Imports tidyverse,
pbapply,
geepack

Suggests BiocStyle,
knitr,
rmarkdown,
kableExtra,
testthat

URL https://github.com/herdiantrisufriyana/gmethods

BugReports https://github.com/herdiantrisufriyana/gmethods/issues

VignetteBuilder knitr

R topics documented:

`gestimation` *Causal inference by g-estimation*

Description

This function conduct causal inference by implementing g-estimation. Please read (https://www.hsph.harvard.edu/miguel hernan/causal-inference-book/) before applying this test.

Usage

```
gestimation(formula, data, bootstrap = 30, state = 33, verbose = F)
```

Arguments

`formula`	An object of class "formula": a symbolic description of the model to be fitted. The exposure of interest should be plugged-in as the first covariate at the left-hand size of the formula.
`data`	A data frame containing the variables in the model.
`bootstrap`	An integer determining how many times this procedure being repeated by re-sampling with replacement.
`state`	An integer to set random seed for reproducible results.
`verbose`	A logical determining whether a progress bar is shown.

Value

output A list containing the formula, exposure of interest, marginal effect, 95% confidence interval (CI), significance by p-value obtained from the CI (https://doi.org/10.1136/bmj.d2304), data, bootstrapping times, random seed, and index for each bootstrap set.

Examples

```
# Load example data for formula and data
input=input_example()
formula=input$formula
data=input$data

# Conduct g-formula
gestimation(formula,data)
```

gformula *Causal inference by g-formula*

Description

This function conduct causal inference by implementing g-formula. Please read (https://www.hsph.harvard.edu/miguel-hernan/causal-inference-book/) before applying this test.

Usage

```
gformula(formula, data, bootstrap = 30, state = 33, verbose = F)
```

Arguments

formula	An object of class "formula": a symbolic description of the model to be fitted. The exposure of interest should be plugged-in as the first covariate at the left-hand size of the formula.
data	A data frame containing the variables in the model.
bootstrap	An integer determining how many times this procedure being repeated by re-sampling with replacement.
state	An integer to set random seed for reproducible results.
verbose	A logical determining whether a progress bar is shown.

Value

output A list containing the formula, exposure of interest, marginal effect, 95% confidence interval (CI), significance by p-value obtained from the CI (https://doi.org/10.1136/bmj.d2304), data, bootstrapping times, random seed, and index for each bootstrap set.

Examples

```
# Load example data for formula and data
input=input_example()
formula=input$formula
data=input$data

# Conduct g-formula
gformula(formula,data)
```

input_example *Make an input example for gmethods package*

Description

This function load a causal model as formula object and a data frame of nhefs table, a cleaned version of NHEFS data. In Causal Inference: What If book by Hernán and Robins, four NHEFS datasets are described in this book (https://www.hsph.harvard.edu/miguel-hernan/causal-inference-book/). The remaining datasets from that book could be retrieve from cidata R package (https://github.com/malcolmbarret
for more information.

Usage

```
input_example()
```

Value

output A list of a formula and a data frame with dimension of 1629 rows and 10 columns.

Examples

```
# Load example data for formula and data
input=input_example()
formula=input$formula
data=input$data
```

`ipw` *Causal inference by Inverse Probability Weighting (IPW)*

Description

This function conduct causal inference by implementing inverse probability weighting (IPW). Please read (https://www.hsph.harvard.edu/miguel-hernan/causal-inference-book/) before applying this test.

Usage

```
ipw(formula, data, bootstrap = 30, state = 33, verbose = F)
```

Arguments

`formula`	An object of class "formula": a symbolic description of the model to be fitted. The exposure of interest should be plugged-in as the first covariate at the left-hand size of the formula.
`data`	A data frame containing the variables in the model.
`bootstrap`	An integer determining how many times this procedure being repeated by re-sampling with replacement.
`state`	An integer to set random seed for reproducible results.
`verbose`	A logical determining whether a progress bar is shown.

Value

output A list containing the formula, exposure of interest, marginal effect, 95% confidence interval (CI), significance by p-value obtained from the CI (https://doi.org/10.1136/bmj.d2304), data, bootstrapping times, random seed, and index for each bootstrap set.

Examples

```
# Load example data for formula and data
input=input_example()
formula=input$formula
data=input$data

# Conduct g-formula
ipw(formula,data)
```

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