Package 'gmethods'

November 26, 2020

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.
`data`	An 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.
data	An 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
```

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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.
data	An 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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