Package 'iptw'

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Type Package

Title Inverse Probability of Treatment Weighting

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Author Ehsan Karim <ehsan@alumni.ubc.ca>

Maintainer Ehsan Karim <ehsan@alumni.ubc.ca>

Description This package calculates various measures of association and helps understand and visualize the link between causal models such as Marginal Structural Models and Standerdized measures.

Suggests survey, boot

License GPL 2 or newer

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`iptw-package` *Inverse Probability of Treatment Weighting*

Description

This package calculates various measures of association and helps understand and visualize the link between causal models such as Marginal Structural Models and Standerdized measures.

Details

Package:	iptw
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License:	GPL 2 or newer

Author(s)

Ehsan Karim <ehsan@alumni.ubc.ca>

Maintainer: Ehsan Karim <ehsan@alumni.ubc.ca>

`associational` *Measures of Association*

Description

Calculates measures of associations

Usage

```
associational(form.table.object)
```

Arguments

`form.table.object`
: An object created from form.table function

Details

Calculates measures of associations, such as, risk difference, risk ratio, risk ratio

Author(s)

Ehsan Karim ehsan@alumni.ubc.ca

See Also

`measures.calc`,`standardization`,`iptw`

Examples

```
form.table.object <- form.table(Y1A1L1=150, Y1A0L1=45, Y1A1L0=20, Y1A0L0=5, Y0A1L1=300, Y0A0L1=10, Y0A1L0=4
form.table.object
associational(form.table.object)
```

form.table *Forming Basic Tables*

Description

Forms the crude, stratified tables suitable for using in other functions of this package.

Usage

```
form.table(Y1A1L1, Y1A0L1, Y1A1L0, Y1A0L0, Y0A1L1, Y0A0L1, Y0A1L0, Y0A0L0)
```

Arguments

Y1A1L1	Frequency of subjects who are treated (A=1), exposed to confounder (L=1) and developed the outcome (Y=1).
Y1A0L1	Frequency of subjects who are not treated (A=0), but exposed to confounder (L=1) and developed the outcome (Y=1).
Y1A1L0	Frequency of subjects who are treated (A=1), unexposed to confounder (L=0) and developed the outcome (Y=1).
Y1A0L0	Frequency of subjects who are not treated (A=0), unexposed to confounder (L=0) and developed the outcome (Y=1).
Y0A1L1	Frequency of subjects who are treated (A=1), exposed to confounder (L=1) but did not developed the outcome (Y=0).
Y0A0L1	Frequency of subjects who are not treated (A=0), but exposed to confounder (L=1) and did not developed the outcome (Y=0).
Y0A1L0	Frequency of subjects who are treated (A=1), unexposed to confounder (L=0) and did not developed the outcome (Y=0).
Y0A0L0	Frequency of subjects who are untreated (A=0), unexposed to confounder (L=0) and did not developed the outcome (Y=0).

Details

Frequency of all possible subject combination is required to insert in this function. This function eventually generates tables suitable for using in all other functions in this package.

Value

data	List frequencies
crude.data	Combines all the frequencies in a 2x2 table of treatment vs. outcome
stratified.table	Crude table is stratified by condounder exposure
condounder.exposed.data	2x2 table only containing subjects exposed to confounder
condounder.unexposed.data	2x2 table only containing subjects unexposed to confounder

Author(s)

Ehsan Karim ehsan@alumni.ubc.ca

Examples

```
form.table.object <- form.table(Y1A1L1=150, Y1A0L1=45, Y1A1L0=20, Y1A0L0=5, Y0A1L1=300, Y0A0L1=10, Y0A1L0=4
form.table.object
```

`graph` *Causal diagram*

Description

Maps probabilities and frequesncies

Usage

```
graph(form.table.object, type = "w")
```

Arguments

`form.table.object`	An object created from form.table function
`type`	Type of weighting scheme to be used

Details

Supported weighting types are "0" (no weighting), "w" (unstabilized weights), "sw" (stabilized weights), "wn" (normalized unstabilied weights), "swn" (normalized stabilied weights), "swn2" (experimental).

Author(s)

Ehsan Karim ehsan@alumni.ubc.ca

Examples

```
form.table.object <- form.table(Y1A1L1=150, Y1A0L1=45, Y1A1L0=20, Y1A0L0=5, Y0A1L1=300, Y0A0L1=10, Y0A1L0=4
form.table.object
graph(form.table.object, type = "w")
```

`iptw` *Standardized measures*

Description

Standardized measures are calculated by this function using inverse probability of treatment weights (IPTW).

Usage

```
iptw(form.table.object, type = "w")
```

Arguments

form.table.object	An object created from form.table function
type	Type of weighting scheme to be used

Details

Supported weighting types are "0" (no weighting), "w" (unstabilized weights), "sw" (stabilized weights), "wn" (normalized unstabilied weights), "swn" (normalized stabilied weights), "swn2" (experimental).

Value

IPTW.measures	IPTW measures are listed
pseudo.data	pseudo frequency data are taulated
crude.data	unstratified or Crude pseudo frequency data
stratified.table	stratified or Crude pseudo frequency data

Author(s)

Ehsan Karim ehsan@alumni.ubc.ca

See Also

measures.calc,standardization,iptw

Examples

```
form.table.object <- form.table(Y1A1L1=150, Y1A0L1=45, Y1A1L0=20, Y1A0L0=5, Y0A1L1=300, Y0A0L1=10, Y0A1L0=4
form.table.object
iptw(form.table.object, type = "sw")
```

---

iptw.regression *IPTW estimates from regression*

Description

Calculates IPTW estimates from regression

Usage

```
iptw.regression(form.table.object, type = "w")
```

Arguments

form.table.object	An object created from form.table function
type	Type of weighting scheme to be used

Details

Supported weighting types are "0" (no weighting), "w" (unstabilized weights), "sw" (stabilized weights), "wn" (normalized unstabilied weights), "swn" (normalized stabilied weights), "swn2" (experimental).

Author(s)

Ehsan Karim ehsan@alumni.ubc.ca

Examples

```
form.table.object <- form.table(Y1A1L1=150, Y1A0L1=45, Y1A1L0=20, Y1A0L0=5, Y0A1L1=300, Y0A0L1=10, Y0A1L0=4
form.table.object
iptw.regression(form.table.object, type = "w")
```

---

measures.calc *Risk measures*

Description

Calculates risk measures

Usage

```
measures.calc(r1, r0)
```

Arguments

r1	Risk of the treated subjects
r0	Risk of the untreated subjects

Details

Calculates risk difference, risk ratio and odds ratio

Author(s)

Ehsan Karim ehsan@alumni.ubc.ca

Examples

```
r1 <- .9
r0 <- .5
measures.calc(r1,r0)
```

standardization *Standardized measures*

Description

Calculates Standardized measures

Usage

```
standardization(form.table.object)
```

Arguments

form.table.object	An object created from form.table function

Details

Standardized measures from total population, direct and indirect measures can be calculated.

Author(s)

Ehsan Karim ehsan@alumni.ubc.ca

Examples

```
form.table.object <- form.table(Y1A1L1=150, Y1A0L1=45, Y1A1L0=20, Y1A0L0=5, Y0A1L1=300, Y0A0L1=10, Y0A1L0=4
form.table.object
standardization(form.table.object)
```

ungrouped.data *Extends to ungrouped data*

Description

Creates ungrouped data suitable for performing regression on it

Usage

```
ungrouped.data(form.table.object)
```

Arguments

form.table.object	An object created from form.table function

Author(s)

Ehsan Karim ehsan@alumni.ubc.ca

Examples

```
form.table.object <- form.table(Y1A1L1=150, Y1A0L1=45, Y1A1L0=20, Y1A0L0=5, Y0A1L1=300, Y0A0L1=10, Y0A1L0=4
form.table.object
ungrouped.data.object <- ungrouped.data(form.table.object)
```

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