Package 'PSpower'

January 20, 2025

Type Package

Title Sample Size Calculation for Propensity Score Analysis

Version 0.1.0

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Description Sample size calculations in causal inference with observational data are increasingly desired. This package is a tool to calculate sample size under prespecified power with minimal summary quantities needed.

Depends ggplot2

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Encoding UTF-8

RoxygenNote 7.3.2

NeedsCompilation no

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Repository CRAN

Date/Publication 2025-01-15 19:00:08 UTC

Contents

plot.PSpower *Plots PSpower object*

Description

Plots PSpower object

Usage

```
## S3 method for class 'PSpower'
plot(x, power = seq(0.6, 0.99, length.out = 100), ...)
```

Arguments

x	PSpower object
power	a range of powers to plot the power curve
...	ignored

Value

an object (class ggplot) containing a figure

Examples

```
obj <- PSpower(1, 0.05, 0.956, 0.5, 0.99, -1.74, -2.74, 19.86, 20.12, 0.14, 0.14)
plot(obj)
```

plot_overlap *Plot density of propensity scores given treatment probability and overlap coefficient*

Description

Plot density of propensity scores given treatment probability and overlap coefficient

Usage

```
plot_overlap(r, phi)
```

Arguments

r	treatment probability
phi	overlap coefficient

Value

a ggplot of the density of propensity scores in two treatment arms

Examples

```
plot_overlap(0.6, 0.9)
```

`print.PSpower` *Prints PSpower object*

Description

Prints PSpower object

Usage

```
## S3 method for class 'PSpower'
print(x, ...)
```

Arguments

`x`	PSpower object
`...`	ignored

Value

no return value; called for side effect to output a string

`PSpower` *Calculate sample size needed to achieve a prespecified power*

Description

Calculate sample size needed to achieve a prespecified power

Usage

```
PSpower(
  tau,
  sig.level,
  power = NULL,
  r,
  phi,
  E1,
  E0,
```

```
  S1,
  S0,
  R1,
  R0,
  sample.size = NULL,
  test = "two-sided",
  estimand = "ATE"
)
```

Arguments

tau	the estimated treatment effect $E[Y(1) - Y(0)]$
sig.level	the significance level
power	the power to achieve; if left NULL and sample.size is not NULL, will return the corresponding power given sample.size
r	the proportion of treated units
phi	the overlap coefficients
E1, E0, S1, S0, R1, R0	the summary quantities
sample.size	sample size to calculate power; ignored when power is not NULL
test	whether one-sided or two-sided test is considered
estimand	the estimand (ATE, ATT, ATC or ATO), or a customized tilting function

Value

an object with the calculated sample size

Examples

```
PSpower(1, 0.05, 0.956, 0.5, 0.99, -1.74, -2.74, 19.86, 20.12, 0.14, 0.14)
```

Index