

Package ‘ivdesc’

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Title Profiling Compliers and Non-Compliers for Instrumental Variable Analysis

Version 1.0.0

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Description Estimating the mean and variance of a covariate for the complier, never-taker and always-taker subpopulation in the context of instrumental variable estimation. This package implements the method described in Marbach and Hangartner (2019) <doi:10.2139/ssrn.3380247>.

Depends R (>= 3.4.0)

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 6.1.1

Suggests icsw, haven

Imports knitr (>= 1.20.8), purrr (>= 0.2.5), rsample (>= 0.0.3)

NeedsCompilation no

Repository CRAN

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Description

Estimates the mean and variance of a covariate for the complier, never-taker and always-taker subpopulation.

Usage

```
ivdesc(X, D, Z, variance = FALSE, boot = TRUE, bootn = 1000,
       balance = TRUE, ...)
```

Arguments

X	vector with numeric covariate
D	vector with binary treatment
Z	vector with binary instrument
variance	Calculate the variance of the covariate for each subgroup?
boot	Replace all standard errors with bootstrap standard errors?
bootn	number of bootstraps (ignored if boot=FALSE)
balance	Run balance test?
...	additional arguments to be passed to ivdesc_all

Details

This function estimates the mean and the associated standard error of X for the complier, never-taker and always-taker subpopulation within a sample where some, but not all, units are encouraged by instrument Z to take the treatment D. Observations with missing values in either X, D, or Z are dropped (listwise deletion).

One-sided noncompliance is supported. The mean for the always-/never-taker subpopulation will only be computed if there are at least two observed units in these subpopulations.

If boot=FALSE, analytical standard errors are calculated for the mean of the whole sample as well as the never-taker and always-taker subpopulation. For the complier subpopulation no analytical estimator for the standard error is available.

The balance test is a t-test allowing for unequal variances.

Value

Returns a object ivdesc with estimates for each subgroup (co: complier, nt: never-taker, at : always-taker) and the full sample:

- mu and mu_se : Mean of X and standard error

- pi and pi_se: Proportion of each subgroup in the sample and standard error
- var: Variance of X (if variance=TRUE)

Can be coerced to a proper `data.frame` using `as.data.frame`.

References

Moritz Marbach and Dominik Hangartner. (2019). Profiling Compliers and Non-compliers for Instrumental Variable Analysis. *Political Analysis* (forthcoming).

See Also

[ivreg](#)

Examples

```
# Example 1: Albertson/Lawrence (2009)
# see Marbach/Hangartner (2019) for details/discussion

library(icsw)
data(FoxDebate)

with(FoxDebate, ivdesc(X=readnews,D=watchpro,Z=conditn) )

# Example 2: JTPA Data

library(haven)
jtpa <- read_dta("http://fmwww.bc.edu/repec/bocode/j/jtpa.dta")

with(jtpa, ivdesc(age, training, assignmt, bootn=500))
with(jtpa, ivdesc(hispanic, training, assignmt, boot=FALSE))
```

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