Package 'ivdesc'

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Title Profiling Compliers and Non-Compliers for Instrumental Variable Analysis

Version 1.1.1

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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 (2020) <doi:10.1017/pan.2019.48> and Hangartner, Marbach, Henckel, Maathuis, Kelz and Keele (2021) <arXiv:2103.06328>.

Depends R (>= 3.4.0)

License GPL-3

URL https://github.com/sumtxt/ivdesc/

BugReports https://github.com/sumtxt/ivdesc/issues

Encoding UTF-8

RoxygenNote 7.2.1

Suggests icsw, haven

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

NeedsCompilation no

Repository CRAN

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R topics documented:

ivdesc *Profiling compliers and non-compliers for instrumental variable analysis*

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 droppped (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, standard errors based on asymptotic theory are estimated.

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

M. Marbach and D. Hangartner. 2020. Profiling Compliers and Non-compliers for Instrumental Variable Analysis. *Political Analysis*, 28(3), 435-444.

D. Hangartner, M. Marbach, L. Henckel, M. H. Maathuis, R. R. Kelz, and L. Keele. 2021. Profiling Compliers in Instrumental Variables Designs. Available at arXiv: https://arxiv.org/abs/2103.06328.

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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