Package ‘ivdesc’

October 14, 2019

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

Date/Publication 2019-10-14 15:50:02 UTC

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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 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**


**See Also**

*ivreg*

**Examples**

```r
# 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) )
```

```r
# 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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