

Package ‘lavacreg’

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Type Package

Title Latent Variable Count Regression Models

Version 0.1-1

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Description Estimation of a multi-group count regression models (i.e., Poisson, negative binomial) with latent covariates. This packages provides two extensions compared to ordinary count regression models based on a generalized linear model: First, measurement models for the predictors can be specified allowing to account for measurement error. Second, the count regression can be simultaneously estimated in multiple groups with stochastic group weights. The marginal maximum likelihood estimation is described in Kiefer & Mayer (2020) <doi:10.1080/00273171.2020.1751027>.

License GPL (>= 2)

URL <https://github.com/chkiefer/lavacreg>

BugReports <https://github.com/chkiefer/lavacreg/issues>

LazyData true

Depends R (>= 3.5.0)

Imports Rcpp (>= 1.0.5), fastGHQuad, pracma, methods, stats

LinkingTo Rcpp

RoxygenNote 7.1.1

Suggests knitr, rmarkdown, testthat

VignetteBuilder knitr

SystemRequirements C++11

NeedsCompilation yes

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countreg	<i>Fitting Count Regression Models with Latent Covariates</i>
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Description

This function is the main function of the package and can be used to estimate latent variable count regression models in one or multiple group(s).

Usage

```
countreg(
  form1,
  lv = NULL,
  group = NULL,
  data,
  family,
  silent = FALSE,
  se = TRUE
)
```

Arguments

form1	an object of class for formula (or one that can be coerced to that class): a symbolic description of the model to be fitted. The details of model specification are given under Details .
lv	Definition of the latent variables.
group	A group variable
data	a data frame
family	Poisson or negative binomial
silent	Should informations about the estimation process be suppressed?
se	Should standard errors be computed? (Can take a while for complex models)

Value

An object of type lavacreg. Use `summary(object)` to print results containing parameter estimates and their standard errors.

Examples

```
fit <- countreg(form1 = 'dv ~ z11', data = example01, family = 'poisson')
summary(fit)
```

```
fit <- countreg(form1 = 'dv ~ eta1 + z11 + z21',
                lv = list(eta1=c('z41', 'z42', 'z43')),
                group = 'treat',
                data = example01,
                family = 'poisson')
summary(fit)
```

example01

A first example dataset to illustrate the use of lavareg

Description

A dataset containing 9 variables: a dependent variable `dv`, a group variable `treat` and 7 indicators for 3 latent covariates.

Usage

```
example01
```

Format

A data frame with 871 rows and 9 variables:

dv Count of correctly-answered items (dependent variable)

treat Treatment group variable, where 0 is control and 2 is treatment

z11 First indicator of internal LoC

z12 Second indicator of internal LoC

z21 First indicator of external LoC

z22 Second indicator of external LoC

z41 First indicator of depression

z42 Second indicator of depression

z43 Third indicator of depression

is.count	<i>Check for count variable</i>
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Description

Checks if the variable is a count variable

Usage

```
is.count(x, tol = .Machine$double.eps^0.5)
```

Arguments

x	vector to be checked
tol	Tolerance

Value

Function returns logical value indicating whether x can be considered a count variable or not.

lavacreg	<i>lavacreg</i>
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Description

Latent Variable Count Regression Models

Author(s)

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summary,lavacreg-method	<i>Summary of a lavacreg object</i>
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Description

Exports the parameter table with parameter estimates and standard errors for an estimated latent variable count regression model.

Usage

```
## S4 method for signature 'lavacreg'
summary(object)
```

Arguments

object lavacreg object

Value

Function prints the parameter table of an estimated model, which includes the parameter estimates and standard errors.

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