

Package ‘pglm’

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Title panel generalized linear model

Depends R (>= 2.10), maxLik, plm

Imports statmod

Suggests lmtree, car

Description Estimation of panel models for glm-like models: this includes binomial models (logit and probit) count models (poisson and negbin) and ordered models (logit and probit)

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Fairness

Perceived Fairness of Different Rules for Allocating Seats in Trains and Parking Spaces

Description

401 individuals who answer 14 questions

number of observations : 5614

observation : Individuals

country : France

Usage

`data(Fairness)`

Format

A dataframe containing :

id the individual index,

answer a factor with levels 0 (very unfair), 1 (essentially unfair), 2 (essentially fair) and 3 (very fair),

good one of ' tgv ' (French fast train) and 'Parking',

rule the allocation rule, a factor with levels 'peak', 'admin', 'lottery', 'addsupply', 'queuing', 'moral' and 'compensation',

driving does the individual has the driving license ?

education does the individual has a diploma ?

recurring does the allocation problem is recurring ?

Source

Raux C., Souche S. and Croissant Y., 2009, How fair is pricing to be? An empirical study, *Public Choice*, vol. 139, 1, pp.227-240.

References

Raux C., Souche S. and Croissant Y., 2009, How fair is pricing to be? An empirical study, *Public Choice*, vol. 139, 1, pp.227-240.

HealthIns

Health Insurance and Doctor Visits

Description

an unbalanced panel of 5908 individuals for 1 to 5 years

number of observations : 20186

observation : Individuals

country : United States

Usage

```
data(HealthIns)
```

Format

A dataframe containing :

id the individual index,

year the year,

med medical expenses,

mdu number of face-to face medical visits,

coins coinsurance rate,

disease count of chronic diseases,

sex a factor with level 'male' and 'female',

age the age,

size the size of the family,

child a factor with levels 'no' and 'yes'.

Source

Rand Health Insurance Experiment

References

Manning W. G., Newhouse J. P., Duan N., Keeler E. B. and Leibowitz A. (1987) : “Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment”, *American Economic Review*, 77(3), pp. 251-277.

Deb P. and P. K. Trivedi (2002) : “The structure of demand for medical care: latent class versus two-part models”, *Journal of Health Economics*, 21, pp. 601-625.

Cameron C. and P. K. Trivedi (2008) : *Microeconometrics Using Stata*, Stata Press.

PatsRD

Dynamic Relation Between Patents and R\&D

Description

a panel of 346 observations from 1970 to 1979

number of observations : 3460

observation : production units

country : United States

Usage

data(PatsRD)

Format

A dataframe containing :

cusip Compustat's identifying number for the firm (Committee on Uniform Security Identification Procedures number)

year year

ardsic a two-digit code for the applied R&D industrial classification (roughly that in Bound, Cummins, Griliches, Hall, and Jaffe, in the Griliches R&D, Patents, and Productivity volume)

scisect is the firm in the scientific sector ?

logk the logarithm of the book value of capital in 1972.

sumpat the sum of patents applied for between 1972-1979.

logr the logarithm of R&D spending during the year (in 1972 dollars)

pat the number of patents applied for during the year that were eventually granted

Source

Hall, Bronwyn , Zvi Griliches and Jerry Hausman (1986) "Patents and R&D: Is There a Lag?", *International Economic Review*, **27**, 265-283.

References

Cameron, A.C. and Trivedi P.K. (1998) *Regression analysis of count data*, Cambridge University Press, <http://cameron.econ.ucdavis.edu/racd/racddata.html>, chapter 9.

Cameron, A.C. and P.K. Trivedi (2005) *Microeconometrics : methods and applications*, Cambridge, pp. 792-5.

Description

Estimation by maximum likelihood of glm (binomial and Poisson) and 'glm-like' models (Negbin and ordered) on longitudinal data

Usage

```
pglm(formula, data, subset, na.action,
      effect = c("individual", "time", "twoways"),
      model = c("random", "pooling", "within", "between"),
      family, other = NULL, index = NULL, start = NULL, R = 20, ...)
```

Arguments

formula	a symbolic description of the model to be estimated,
data	the data: a pdata.frame object or an ordinary data.frame,
subset	an optional vector specifying a subset of observations,
na.action	a function which indicates what should happen when the data contains 'NA's,
effect	the effects introduced in the model, one of "individual", "time" or "twoways",
model	one of "pooling", "within", "between", "random",,
family	the distribution to be used,
other	for developer's use only,
index	the index,
start	a vector of starting values,
R	the number of function evaluation for the gaussian quadrature method used,
...	further arguments.

Value

An object of class "pglm", a list with elements:

coefficients	the named vector of coefficients,
logLik	the value of the log-likelihood,
hessian	the hessian of the log-likelihood at convergence,
gradient	the gradient of the log-likelihood at convergence,
call	the matched call,
est.stat	some information about the estimation (time used, optimisation method),
freq	the frequency of choice,
residuals	the residuals,

fitted.values the fitted values,
 formula the formula (a mFormula object),
 expanded.formula
 the formula (a formula object),
 model the model frame used,
 index the index of the choice and of the alternatives.

Author(s)

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Examples

```
## an ordered probit example
data('Fairness', package = 'pglm')
Parking <- subset(Fairness, good == 'parking')
op <- pglm(as.numeric(answer) ~ education + rule,
           Parking[1:105, ],
           family = ordinal('probit'), R = 5, print.level = 3,
           method = 'bfgs', index = 'id', model = "random")

## a binomial (logit) example
data('Unions', package = 'pglm')
anb <- pglm(union ~ wage + exper + rural, Unions, family = binomial('probit'),
           model = "pooling", method = "bfgs", print.level = 3, R = 5)

## a gaussian example on unbalanced panel data
data(Hedonic, package = "plm")
ra <- pglm(mv ~ crim + zn + indus + nox + age + rm, Hedonic, family = gaussian,
           model = "random", print.level = 3, method = "nr", index = "townid")

## some count data models
data("PatsRD", package="pglm")
la <- pglm(pat ~ lag(logr, 0:5) + scisect + logk + factor(year), PatsRD,
           family = negbin, model = "within", print.level=3, method="nr",
           index=c('cusip', 'year'))
la <- pglm(pat ~ lag(logr, 0:5) + scisect + logk + factor(year), PatsRD,
           family = poisson, model = "pooling", index = c("cusip", "year"),
           print.level = 0, method="nr")

## a tobit example
data("HealthIns", package="pglm")
HealthIns$med2 <- HealthIns$med / 1000
HealthIns2 <- HealthIns[-2209, ]
set.seed(2)
subs <- sample(1:20186, 200, replace = FALSE)
HealthIns2 <- HealthIns2[subs, ]
la <- pglm(med ~ mdu + disease + age, HealthIns2,
           model = 'random', family = 'tobit', print.level = 0,
           method = 'nr', R = 5)
```

Unions	<i>Unions and Wages</i>
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Description

a balanced panel of 545 individuals for 8 years 1980 to 1987

number of observations : 4360

observation : Individuals

country : United States

Usage

data(Unions)

Format

A dataframe containing :

id the individual index,

year the year,

age the age,

exper the experience, computed as age - 6 - schooling,

union does the wage is set by collective bargaining,

married is the individual married ?

ethn one of 'black', 'hisp' and 'other',

disability does the individual has health disability ?

rural does the individual lives in a rural area ?

region the region, one of 'NorthEast', 'NothernCentral', 'South' and 'other',

wage hourly wage in US dollars,

sector one of 'agricultural', 'mining', 'construction', 'trade', 'transportation', 'finance', 'businessrepair', 'personalservice', 'entertainment', 'manufacturing', 'pro.rel.service', 'pub.admin',

occ one of 'proftech', 'manoffpro', 'sales', 'clerical', 'craftfor', 'operative', 'laborfarm', 'farmlabor', 'service'.

Source

National Longitudinal Survey (Youth Sample)

References

Vella F. and Verbeek M. (1998) Whose wages do unions raise ? A dynamic model of unionism and wage rate determination for young men, *Journal of Applied Economics*, 13, pp.163-183.

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