Package ‘pglm’

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Title Panel Generalized Linear Models
Depends R (>= 2.10), maxLik, plm
Imports statmod, Formula
Suggests lmtest, 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), as described in:
Hsiao (2014) Analysis of Panel Data <doi:10.1017/CBO9781139839327> and
License GPL (>= 2)
URL https://cran.r-project.org/package=pglm
NeedsCompilation no
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Fairness

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

Description

observations of 401 individuals

number of observations : 5614
country : France
economic topic : public economics
econometrics topic : ordered response

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

provided by the authors.

References

Description

observations of 401 individuals

*number of observations:* 20186

*country:* United States

*economic topic:* Health Economics

*econometrics topic:* censored dependent variable

Usage

`data(HealthIns)`

Format

A time serie 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


References

Description

annual observations of 181 firms from 1983 to 1991

number of observations: 1629

country: world

economic topic: producer behavior

econometrics topic: count data

Usage

data(PatentsRD)

Format

A dataframe containing:

firm firm’s id
year year
sector firm’s main industry sector, one of aero (aerospace), chem (chemistry), comput (computer),
drugs, elec (electricity), food, fuel (fuel and mining), glass, instr (instruments), machin (machinery),
metals, other, paper, soft (software), motor (motor vehicles)
geo geographic area, one of eu (European Union), japan, usa, rotw (rest of the world)
patent numbers of European patent applications
rdexp log of R and D expenditures
spil log of spillovers

Source

Cincer, Michele (1997) “Patents, R & D and technological spillovers at the firm level: some
evidence from econometric count models for panel data”, Journal of Applied Econometrics, 12(3),
may–june, 265–280.

References

**Description**

yearly observations of 346 production units  
number of observations : 3460  
country : United States  
economic topic : industrial economics  
econometrics topic : count data

**Usage**

data(PatentsRDUS)

**Format**

A dataframe containing :

cusip  compustat’s identifying number for the firm  
year  year  
ardssic  a two-digit code for the applied R&D industrial classification  
escisect  is the firm in the scientific sector ?  
capital72  book value of capital in 1972  
sumpat  the sum of patents applied for between 1972-1979  
rd  R&D spending during the year (in 1972 dollars)  
patents  the number of patents applied for during the year that were eventually granted

**Source**

Hall, Browyn, Zvi Griliches and Jerry Hausman (1986) “Patents and R and D: Is there a Lag?”,  

**References**

Panel Estimators for Generalized Linear Models

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.

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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 (probit) example
data('UnionWage', package = 'pglm')
anb <- pglm(union ~ wage + exper + rural, UnionWage, 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("PatentsRDUS", package="pglm")
la <- pglm(patents ~ lag(log(rd), 0:5) + scisect + log(capital72) + factor(year), PatentsRDUS,
          family = negbin, model = "within", print.level = 3, method = "nr",
          index = c('cusip', 'year'))
la <- pglm(patents ~ lag(log(rd), 0:5) + scisect + log(capital72) + factor(year), PatentsRDUS,
          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, ]
lm <- pglm(med ~ mdu + disease + age, HealthIns2,
           model = 'random', family = 'tobit', print.level = 0,
           method = 'nr', R = 5)
UnionWage

Unionism and Wage Rate Determination

Description

yearly observations of 545 individuals from 1980 to 1987

number of observations: 4360

country: United States

economic topic: labor economics

econometrics topic: endogeneity

Usage

data(UnionWage)

Format

A dataframe containing:

id the individual index

year the year

exper the experience, computed as age - 6 - schooling

health does the individual has health disability?

hours the number of hours worked

married is the individual married?

rural does the individual lives in a rural area?

school years of schooling

union does the wage is set by collective bargaining

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

com one of black, hisp and other

region the region, one of NorthEast, NorthernCentral, South and other

Source


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