Package: homals (via r-universe)

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Author Patrick Mair [aut, cre], Jan De Leeuw [aut]

Maintainer Patrick Mair <mair@fas.harvard.edu>

Description Performs a homogeneity analysis (multiple correspondence analysis) and various extensions. Rank restrictions on the category quantifications can be imposed (nonlinear PCA). The categories are transformed by means of optimal scaling with options for nominal, ordinal, and numerical scale levels (for rank-1 restrictions). Variables can be grouped into sets, in order to emulate regression analysis and canonical correlation analysis.

License GPL-3

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`galo` *GALO dataset*

Description

The objects (individuals) are 1290 school children in the sixth grade of elementary school in the city of Groningen (Netherlands) in 1959.

Usage

```
galo
```

Format

Data frame with the five variables Gender, IQ, Advice, SES and School. IQ (original range 60 to 144) has been categorized into 9 ordered categories and the schools are enumerated from 1 to 37. SES: LoWC = Lower white collar; MidWC = Middle white collar; Prof = Professional, Managers; Shop = Shopkeepers; Skil = Schooled labor; Unsk = Unskilled labor. Advice: Agr = Agricultural; Ext = Extended primary education; Gen = General; Grls = Secondary school for girls; Man = Manual, including housekeeping; None = No further education; Uni = Pre-University.

References

Peschar, J.L. (1975). School, Milieu, Beroep. Groningen: Tjeek Willink.

Examples

```
data(galo)
galo
```

gubell *Guttman-Bell dataset*

Description

This dataset deals with attitudes of social groups.

Usage

```
gubell
```

Format

The data frame consists of 7 objects and 5 variables with a total of 17 categories.

References

Guttman, L. (1968), A General Nonmetric Technique for Fitting the Smallest Coordinate Space for a Configuration of Points, Psychometrika, 33, 469-506.

Examples

```
data(gubell)
gubell
```

hartigan *Hartigan's Hardware*

Description

A number of bolts, nails, screws, and tacks are classified according to a number of criteria.

Usage

```
hartigan
```

Format

A data frame with the following variables and categories:

Thread: Y = Yes, N = No

Head: F = Flat, C = Cup, O = Cone, R = Round, Y = Cylinder

Head indentation: N = None, T = Star, L = Slit

Bottom: S = Sharp, F = Flat

Length: (in half inches)

Brass: Y = Yes, N = No

References

Hartigan, J.A. (1975). Clustering Algorithms. New York: Wiley.

Examples

```
data(hartigan)
hartigan
```

`homals` *Homogeneity Analysis*

Description

This function performs a homogeneity analysis, aka a multiple correspondence analysis, but with many additional options. Variables can be grouped into sets, in order to emulate regression analysis and canonical analysis. For each variable there are, in addition, rank constraints on the category quantifications (or transformations) and level constraints (which allows one to treat a variable as nominal, ordinal, or numerical).

Usage

```
homals(data, ndim = 2, rank = ndim, level = "nominal", sets = 0, active = TRUE,
       eps = 1e-06, itermax = 1000, verbose = 0)
```

Arguments

`data`	Data in data frame.
`ndim`	Number of dimensions to be extracted.
`rank`	Which quantification ranks. Default is number of dimensions `ndim`
`level`	Which quantification levels. Possible values are `"nominal"`, `"ordinal"`, `"numerical"`, and `"polynomial"` which can be defined as single character (if all variable are of the same level) or as vector which length corresponds to the number of variables.
`sets`	List of vectors of indices.
`active`	Which variables are active for computation (`TRUE` means all)
`eps`	Iteration precision eigenvalues.
`itermax`	Maximum number of iterations.
`verbose`	0 for no iteration output, 1 prints outer iterations, 2 prints outer and inner iterations, 3 prints outer and inner and innermost iterations.

Details

The general idea of homogeneity analysis is to make a joint plot in p-space of all objects (or individuals) and the categories of all variables. The technique, in its most simple form, makes the graph plot in such a way that the sum of squares of the length of the nm lines is a small as possible, subject to a normalization of the object scores (their n x p coordinate matrix must be orthonormal).

Rank constraints require the category quantifications of the categories of a variable to lie in a subspace of p-space. Requiring rank equal to one for all variables reduces homogeneity analysis to principal component analysis (with optimal scaling of the variables).

Sets of variables are incorporated by using additivity restrictions on the category quantifications (i.e. we code the variables within a set interactively, but then use quantifications based on main effects only).

By combining the various types of restrictions we obtain far-reaching generalizations of principal component analysis, canonical analysis, discriminant analysis and regression analysis.

Value

Returns an object of class `"homals"`.

`datname`	Name of the data file.
`catscores`	List of category scores for each variable.
`scoremat`	Array containing the reproduced data matrix based on category scores.
`objscores`	Matrix with object scores on each dimension.
`cat.centroids`	List of category centroids.
`ind.mat`	Dummy coded indicator matrix.
`loadings`	List of loadings of the variables on each dimension.
`low.rank`	List of lower rank quantifications.
`discrim`	Matrix with discrimination measures for each variable on each dimension.
`niter`	Number of iterations.
`eigenvalues`	Final eigenvalues.
`loss`	Value of the loss function.
`rank.vec`	Vector with ranks for each variable.
`active`	Vector with active/inactive variables.

Author(s)

Jan de Leeuw, Patrick Mair

References

de Leeuw, J., & Mair, P. (2009). Gifi methods for optimal scaling in R: The package homals. Journal of Statistical Software, 31(4), 1-20, https://www.jstatsoft.org/v31/i04/.

Gifi, A. (1990). Nonlinear Multivariate Analysis. New York: Wiley.

See Also

plot.homals

Examples

```
data(galo)

##simple homals 2D-homals solution (School not active)
res <- homals(galo, active = c(rep(TRUE, 4), FALSE))

##predict IQ
res <- homals(galo, active = c(rep(TRUE, 4), FALSE), sets = list(c(1,3,4),2,5))

##Single ranks for each variable (non-linear PCA)
res <- homals(galo, active = c(rep(TRUE, 4), FALSE), sets = list(c(1,3,4),2,5))

##Nonlinear canonical correlation (2 sets of variables)
res <- homals(galo, active = c(rep(TRUE, 4), FALSE), sets = list(c(1,2),c(3,4),5))

##regression (linear)
data(neumann)
res <- homals(neumann, sets = list(3, 1:2), level = "numerical", rank = 1)

##regression (monotone)
res <- homals(neumann, sets = list(3, 1:2), level = "ordinal", rank = 1)

##3-dimensional senate solution
data(senate)
res <- homals(senate, active = c(FALSE, rep(TRUE, 20)), ndim = 3)

##Predicting Species in iris dataset (polynomial level constraints for predictors)
data(iris)
res <- homals(iris, sets = list(1:4,5), level = c(rep("polynomial",4),"nominal"),
rank = 2, itermax = 1000)
```

---

house *House*

Description

The votes selected cover a full spectrum of domestic, foreign, economic, military, environmental and social issues. We tried to select votes which display sharp liberal/conservative contrasts. In many instances we have chosen procedural votes: amendments, motions to table, or votes on rules for debate. Often these votes reveal true attitudes frequently obscured in the final votes.

Usage

```
house
```

Format

A data frame with the following variables:

Party: R = Republican, D = Democrat, I = Independent.

V1: HR 333. Bankruptcy Overhaul. Jackson-Lee (D-TX) amendment to allow debtors to deduct additional medical and child-care expenses before determining their eligibility for Chapter 7 bankruptcy status. The amendment also expands the definition of family farmer, changes the standards for calculating median income, and includes debtor privacy provisions. Rejected 160-258. March 1, 2001. A yes vote is a +.

V2: SJ Res 6. Ergonomics Rule Disapproval. Passage of the joint resolution to reverse the ergonomics workplace safety rule submitted by the Clinton Administration's Labor Department. Passed 223-206. March 7, 2001. A no vote is a +.

V3: HR 3. Income Tax Reduction. Passage of the White House's bill to lower federal income taxes by restructuring the five existing tax brackets into four - 10 percent, 15 percent, 25 percent and 33 percent. The benefits of this tax cut go disproportionately to the wealthy and to major corporations. The large cost of the legislation would jeopardize domestic spending programs aimed at middle- and low-income Americans. Passed 230-198. March 8, 2001. A no vote is a +.

V4: HR 6. Marriage Tax Reduction. Rangel (D-NY) substitute amendment to reduce taxes by $585.5 billion through 2011. This tax cut would be considerably less regressive and more equitable than the Republican version. The Rangel plan would create a new 12 percent bracket for the first $20,000 of a couple's taxable income and $10,000 for single taxpayers. It also would increase the standard deduction for married couples filing jointly to twice that of individuals filing singly. Additionally, the amendment would simplify and expand the earned-income tax credit for low-income earners. Rejected 196-231. March 29, 2001. A yes vote is a +.

V5: HR 8. Estate Tax Relief. Rangel (D-NY) substitute amendment to increase the estate tax exemption from $675,000 to $2 million ($4 million for married couples) in 2002, rising to $2.5 million by 2010. This legislation serves as an alternative to the drastic Republican abolition of the progressive estate tax. The Rangel tax cut would lower federal revenue by $39.2 billion over ten years. The amendment would retain current-law step-up basis provisions, and replace the credit for estate taxes paid to a state with a deduction. Rejected 201-227. April 4, 2001. A yes vote is a +.

V6: HR 503. Fetal Protection. Passage of the bill to make it a criminal offense to injure or kill a fetus during the commission of a violent federal crime. The measure would establish criminal penalties equal to those that would apply if the injury or death occurred to a pregnant woman, regardless of the perpetrator's knowledge of the pregnancy or intent to harm the fetus. The bill states that its provisions should not be interpreted to apply to consensual abortion or to a woman's actions with respect to her pregnancy. The death penalty could not be imposed under this bill. Passed 252-172. April 26, 2001. A no vote is a +.

V7: HR 1. School Vouchers. Armey (R-TX) amendment to provide federal funding for students to attend private schools, including religious schools, if they are currently enrolled in schools that are dangerous or have been low-performing for three years. Crime victims also would be provided with funding to attend alternative private schools. Rejected 155-273. May 23, 2001. A no vote is a +.

V8: HR 1836. Tax Cut Reconciliation Bill. Adoption of the conference report on the bill to reduce taxes by $1.35 trillion through fiscal 2011 via income tax rate cuts, relief of the marriage penalty, phaseout of the federal estate tax, doubling of the child tax credit, and new incentives for retirement savings. A new 10 percent tax rate would be created retroactive to January 1. The bill would: double the $500-per-child tax credit by 2010 and make it refundable; raise the estate tax exemption to $1

million in 2002 and repeal the tax in 2010; increase the standard deduction for married couples to double that of singles over five years, beginning in 2005; and increase annual contributions limits for Individual Retirement Accounts. The bill's provisions would expire December 31, 2010. Adopted 240-154. May 26, 2001. A no vote is a +.

V9: HR 2356. Campaign Finance Reform. Adoption of the rule to allow the House to consider a ban on soft money donations to national political parties. This rule was crafted by campaign finance reform foes to disallow amendments which fine-tune the bill and, thus, keep reform advocates from gathering more votes in support of final passage. Beyond banning soft money, the original reform legislation would allow up to $10,000 in soft-money donations to state and local parties for voter registration and get-out-the vote activity. The reform bill would prevent issue ads from targeting specific candidates within 60 days of a general election or 30 days of a primary. Additionally, the legislation would maintain the current individual contribution limit of $1,000 per election for House candidates but raise it to $2,000 for Senate candidates, both of which would be indexed for inflation. Rejected 203-228. July 12, 2001. A no vote is a +.

V10: HJ Res 36. Flag Desecration. Passage of the joint resolution proposing a Constitutional amendment to prohibit physical desecration of the U. S. flag. Passed 298-125. (A two-thirds majority vote of those present and voting - 282 in this case - is required to pass a joint resolution proposing an amendment to the Constitution.) July 17, 2001. A no vote is a +.

V11: HR 7. Faith-Based Initiative. Conyers (D-MI) motion to recommit the bill to the Judiciary Committee with instructions to add language stating that federally-funded religious service providers cannot discriminate based on religion and that no provision supercedes state or local civil rights laws. Motion rejected 195-234. July 19, 2001. A yes vote is a +.

V12: HJ Res 50. China Normalized Trade Relations. Passage of a joint resolution to deny the President's request to provide normal trade relations (formerly known as most-favored-nation trade status) for items produced in China from July 2001 through July 2002. Rejected 169-259. July 19, 2001. A yes vote is a +.

V13: HR 4. ANWR Drilling Ban. Markey (D-MA) amendment to maintain the current prohibition on oil drilling in the Arctic National Wildlife Refuge. Rejected 206-223. August 1, 2001. A yes vote is a +.

V14: HR 2563. Patients' Rights/HMO Liability. Norwood (R-GA) amendment to limit liability and damage awards when a patient is harmed by denial of health care. This amendment was offered after patients' rights opponents in the White House exerted pressure on Rep. Norwood to abandon a stronger bill. The legislation would allow a patient to sue a health maintenance organization (HMO) in state court but with federal, not state, law governing. An employer could remove cases to federal court. The bill would limit non-economic damages to $1.5 million. Punitive damages would be limited to the same amount and only allowed when a decisionmaker fails to abide by a grant of benefits by an independent medical reviewer. Adopted 218-213. August 2, 1001. A no vote is a +.

V15: HR 2563. Patients' Bill of Rights. Passage of the bill to provide federal health care protections, such as access to specialty and emergency room care, and require that health maintenance organizations (HMOs) have an appeals process for patients who are denied care. This weakened legislation was offered to head off consideration of a stronger version. A patient denied care could sue an HMO in state and federal court but first must exhaust internal and external appeals processes. Passed 226-203. August 2, 2001. A no vote is a +.

V16: HR 2944. Domestic Partner Benefits. Weldon (R-FL) amendment to the FY 2002 District of Columbia Appropriations Bill that would prohibit the use of local, as well as federal, funds to extend

city employees' health benefits to unmarried domestic partners. Rejected 194-226. September 25, 2001. A no vote is a +.

V17: HR 2586. U.S. Military Personnel Overseas/Abortions. Sanchez (DCA) amendment to the FY 2002 Defense Authorization Bill which allows female military personnel stationed at U.S. bases overseas to undergo an abortion at medical facilities there provided they pay for it themselves and a doctor consents to perform the operation. Rejected 199-217. September 25, 2001. A yes vote is a +.

V18: HR 2975. Anti-Terrorism Authority. Adoption of the rule to provide for House consideration of the bill that would expand law enforcement's power to investigate suspected terrorists and beef up domestic surveillance. The legislation threatens the civil liberties, civil rights, and due process protections guaranteed individuals in the United States. Adopted 214-208. October 12, 2001. A no vote is a +.

V19: HR 3090. Economic Stimulus. Passage of the Republican version of the post- September 11 economic stimulus package. The bill would grant businesses and individuals $99.5 billion in federal tax cuts in fiscal 2002, and a total of $159.4 billion in reductions over 10 years. Additionally, the bill would allow more individuals to receive tax rebates for 2000, accelerate a reduction of the 27 percent tax bracket to 25 percent, lower the capital gains tax rate from 20 percent to 18 percent and eliminate the corporate alternative minimum tax. Also, the legislation would provide $3 billion to states for health insurance for the unemployed. Passed 216-214. October 24, 2001. A no vote is a +.

V20: HR 3000. Trade Promotion Authority/Fast Track. Passage of the bill to allow expedited negotiation and implementation of trade agreements between the executive branch and foreign countries. The bill includes provisions requiring increased consultations with Congress on any proposed changes of tariffs for imports of sensitive agriculture products and on trade disparities for textile products. Passed 215-214. December 6, 2001. A no is a +.

References

Ada (2002). 2001 Voting Record: Shattered Promise of Liberal Progress. ADA Today, 57(1), 1-17.

Examples

```
data(house)
house
```

`mammals` *Mammals dataset*

Description

Dentition of mammals.

Usage

```
mammals
```

Format

A data frame with the tooth pattern, the number of top incisors, bottom incisors, top canines, bottom canines, top premolars, bottom premolars, top molars, and bottom molars.

- top incisors: (1) zero incisors; (2) one incisor; (3) two incisors; (4) three or more incisors.

- bottom incisors: (1) zero incisors; (2) one incisor; (3) two incisors; (4) three incisors; (5) four incisors.

- top canine: (1) zero canines; (2) one canine.

- bottom canine: (1) zero canines; (2) one canine.

- top premolar (1) zero premolars; (2) one premolar; (3) two premolars; (3) two premolars; (4) three premolars; (5) four premolars.

- bottom premolar: (1) zero premolars; (2) one premolar; (3) two premolars; (3) two premolars; (4) three premolars; (5) four premolars.

- top molar: (1) zero, one or two molars; (2) more than two molars.

- bottom molar: (1) zero, one or two molars; (2) more than two molars.

References

Hartigan, J.A. (1975). Clustering Algorithms. New York: Wiley.

Examples

```
data(mammals)
mammals
```

---

neumann *Neumann dataset*

Description

Willard Gibbs discovered a theoretical formula connecting the density, the pressure, and the absolute temperature of a mixture of gases with convertible components. He applied this formula and the estimated constants to 65 experiments of Neumann, and he discusses the systematic and accidental divergences (residuals).

Usage

```
neumann
```

Format

A data frame with temperature, pressure, and density on 65 experiments.

References

Gifi, A. (1990). Nonlinear multivariate analysis. New York: Wiley. Wilson, E.B. (1926). Empiricism and rationalism. Science, 64, 47-57

Examples

```
data(neumann)
neumann
```

`plot.homals` *Plot methods for homals*

Description

These methods provide various 2D and 3D plots for objects of class `"homals"`.

Usage

```
## S3 method for class 'homals'
plot(x, plot.dim = c(1, 2), plot.type = "loadplot", var.subset, main,
type, xlab, ylab, xlim, ylim, leg.pos = "topright", identify = FALSE, ...)

## S3 method for class 'homals'
plot3dstatic(x, plot.dim = c(1, 2, 3), plot.type = "jointplot", var.subset, main, type,
xlab, ylab, zlab, xlim, ylim, zlim, ...)
```

Arguments

`x`	Object of class `"homals"`
`plot.dim`	Vector with dimensions to be plotted against.
`plot.type`	String indicating which type of plot to be produced: `"jointplot"`, `"catplot"` `"labplot"`, `"objplot"`, `"starplot"`, `"graphplot"`, `"hullplot"`, `"lossplot"`, `"prjplot"`, `"spanplot"`, , `"trfplot"`, `"vecplot"`, `"vorplot"`, `"loadplot"`, `"screeplot"`, `"dmplot"` (Not all of these are provided as 3d-plots, see below).
`var.subset`	Numeric vector for subsetting variables to be plotted. If missing, all variables are taken into account. Ignored for non separate variable plots.
`main`	Plot title.
`type`	Type of points/lines to be plotted.
`xlab`	Label of x-axis.
`ylab`	Label of y-axis.
`zlab`	Label of z-axis.
`xlim`	Limits for x-axis.
`ylim`	Limits for y-axis.
`zlim`	Limits for z-axis.
`leg.pos`	Position of the legend (for `"trfplot"` and `"spanplot"` only) as provided in `legend`.
`identify`	If `TRUE`, interactive plots are provided.
`...`	Further plot arguments passed: see `plot`, `plot3d` in package `rgl`, and `scatterplot3d` in package `scatterplot3d` for detailed information.

Details

Plot description:

- Object plot (`plot.type = "objplot"`): Plots the scores of the objects (rows in data set) on two or three dimensions.

- Category plot (`plot.type = "catplot"`): Plots the rank-restricted category quantifications for each variable separately. Three-dimensional plot is available.

- Voronoi plot (`plot.type = "vorplot"`): Produces a category plot with Voronoi regions.

- Joint plot (`plot.type = "jointplot"`): Plots the object scores and the category quantifications in 1 device. Three-dimensional version is available.

- Graph plot (`plot.type = "graphplot"`): Joint plot with connections between scores/quantifications.

- Hull plot (`plot.type = "hullplot"`): For each single variable the object scores are mapped onto two dimensions and the convex hull for each response category is drawn.

- Label plot (`plot.type = "labplot"`): Similar to object plot, the object scores are plotted but for each variable separately with the corresponding category labels. A three-dimensional version is provided.

- Span plot (`plot.type = "spanplot"`): As label plot, it maps the object scores for each variable and span plot connects them by the shortest path within each response category.

- Star plot (`plot.type = "starplot"`): Again, the object scores are mapped. In addition these points are connected with the category centroid. Three-dimensional version is provided.

- Loss plot (`plot.type = "lossplot"`): Plots the rank-restricted category quantifications against the unrestricted for each variable separately.

- Projection plot (`plot.type = "prjplot"`): For variables of rank 1 the object scores (two-dimensional) are projected onto a straight line determined by the rank restricted category quantifications.

- Vector plot (`plot.type = "vecplot"`): For variable of rank 1 the object scores (two-dimensional) are projected onto a straight line determined by the rank restricted category quantifications.

- Transformation plot (`plot.type = "trfplot"`): Plots the original (categorical) scale against the transformed (metric) scale on each dimension over the categories of each variable separately.

- Loadings plot (`plot.type = "loadplot"`): Plots the loadings of the variables and connects them with the origin. Three-dimensional version is available.

- Scree plot (`plot.type = "screeplot"`): Produces a scree plot based on the eigenvalues.

- Discrimination measures (`plot.type = "dmplot"`): Plots the discrimination measures for each variable.

See Also

`homals`

Examples

```
##Graphplot for Hartigan solution: 3 dimensions extracted, dimension 1 plotted
##against dimension 3.
data(hartigan)
res <- homals(hartigan, ndim = 3)
plot(res, plot.dim = c(1,3), plot.type = "graphplot")
```

predict.homals *Classification tables for homals solutions*

Description

Given a multiple homals solution we can reconstruct the indicator matrix by assigning each object to the closest category point of the variable. We can then find out how well we have reconstructed the original data in terms of a classification table.

Usage

```
## S3 method for class 'homals'
predict(object, ...)
```

Arguments

object	Object of class "homals"
...	Further arguments ignored

Details

For variables with rank restrictions we first project the objects on the hyperplane spanned by the category quantifications, and then compute distances in that plane. If there are sets of variables, the percentage correctly classified for a variable is usually not the best thing to look at; except in some special cases, in which some sets consist of a single variable (such as regression and discriminant analysis). In any case a square table with observed vs. predicted values is computed.

Value

cl.table	List of classification tables for each variable.
cr.vec	Vector with classification rates.

See Also

homals

Examples

```
data(galo)
res <- homals(galo, active=c(TRUE, TRUE,TRUE, TRUE, FALSE))
pr.res <- predict(res)
pr.res
summary(pr.res)
```

print.homals *S3 methods for homals objects*

Description

Print and summary method for objects of class "homals"

Usage

```
## S3 method for class 'homals'
print(x, ...)
## S3 method for class 'homals'
summary(object, ...)
```

Arguments

x	Object of class "homals".
object	Object of class "homals".
...	Further arguments are ignored

Details

The print methods provides the eigenvalues and the rank-restricted category quantifications for each variable. The summary method gives the caterogy loadings, category centroids, rank-restricted category quantifications, and lower rank quantifications for each variable separately.

Examples

```
data(hartigan)
res <- homals(hartigan)
res
summary(res)
```

roskam *Roskam dataset*

Description

The Department of Psychology at the University of Nijmegen had 9 different areas of research and teaching. Each of the 39 psychologists working in the department ranked all 9 areas in order of relevance for their work.

Usage

```
roskam
```

Format

A data frame with the following 9 areas:

SOC: Social Psychology

EDU: Educational and Developmental Psychology

CLI: Clinical Psychology

MAT: Mathematical Psychology and Psychological Statistics

EXP: Experimental Psychology

CUL: Cultural Psychology and Psychology of Religion

IND: Industrial Psychology

TST: Test Construction and Validation

PHY: Physiological and Animal Psychology

References

Roskam, E (1968). Metric Analysis of Ordinal Data in Psychology. PhD thesis, University of Leiden.

Examples

```
data(roskam)
roskam
```

`senate` *Senate votes*

Description

2001 senate votes on 20 issues selected by Americans for Democratic Action. The votes selected cover a full spectrum of domestic, foreign, economic, military, environmental and social issues. We tried to select votes which display sharp liberal/conservative contrasts. In many instances we have chosen procedural votes: amendments, motions to table, or votes on rules for debate. Often these votes reveal true attitudes frequently obscured in the final votes.

Usage

```
senate
```

Format

A data frame with the following variables:

Party: R = Republican, D = Democrat, I = Independent.

V1: Ashcroft Attorney General Confirmation. Confirmation of President Bush's nomination of John Ashcroft of Missouri to serve as U.S. Attorney General. Confirmed 58-42. Feb. 1, 2001. A no vote is a +.

V2: SJ Res 6. Ergonomics Rule Disapproval. Passage of a joint resolution to reverse the ergonomics workplace safety rule submitted by the Clinton Administration's Labor Department. Passed 56-44. March 6, 2001. A no vote is a +.

V3: S 420. Social Security Lockbox. Domenici (R-NM) motion to waive the Budget Act in order to ensure that the Social Security surplus is used only to pay down the public debt until Social Security reform legislation is enacted. The bill would also ensure that the surplus in the Medicare Hospital Insurance Trust Fund is used only to pay down the public debt until Medicare reform legislation is enacted. Motion rejected 52-48 (a threefifths majority vote - 60 - is required to waive the Budget Act.) March 13, 2001. A no vote is a +.

V4: S 27. Campaign Finance Reform. McCain (R-AZ) motion to kill the Hatch (R-UT) amendment requiring unions and corporations to obtain permission from individual dues-paying workers or shareholders before spending money on political activities. The Hatch amendment was intended as a poison pill that, if passed and attached to the campaign finance reform bill, would destroy any chances the full reform bill had of passage. The Hatch amendment would also require corporations and unions to disclose information regarding the funds spent on political activities. Motion agreed to 69-31. March 21, 2001. A yes vote is a +.

V5: S 27. Soft Money Cap. McCain (R-AZ) motion to kill a Hagel (R-NE) amendment to limit at $60,000 per year soft money contributions by individuals, political action committees, corporations and unions to national and state political party committees. The Hagel amendment would render the underlying reform bill's ban on soft money ineffective. Motion agreed to 60-40. March 27. 2001. A yes vote is a +.

V6: H Con Res 83. Prescription Drug Benefit/Tax Cuts. Grassley (R-IA) amendment to reserve $300 billion over 10 years to create a Medicare prescription drug benefit and overhaul the program. This amendment was a response to Democratic legislation which would have allocated $311 billion for the benefit and not allowed the benefit's funding to come from the Medicare Hospital Trust Fund Surplus. Adopted 51-50, with Vice President Cheney casting a yea vote. April 3, 2001. A no vote is a +.

V7: H Con Res 83. Fiscal 2002 Budget Reconciliation. Domenici (R-NM) amendment to instruct the Senate Finance Committee to report two reconciliation bills to the Senate that would reduce revenue levels by not more than the President's proposed $1.6 trillion tax cut, and include a $60 billion economic stimulus package for fiscal 2001. Adopted 51-49. April 5, 2001. A no vote is a +.

V8: H Con Res 83. Funding for Environmental Programs. Corzine (DNJ) amendment to increase funding for a wide variety of environmental programs by $50 billion and set aside $50 billion for debt reduction. The increases would be offset by reductions in the proposed tax cut. Rejected 46-54. April 5, 2001. A yes vote is a +.

V9: H Con Res 83. Marriage Penalty Tax. Hutchison (R-TX) amendment to increase the proposed tax cut by $69 billion for fiscal 2002-2011 in an effort to eliminate the co-called marriage penalty. Adopted 51-50, with Vice President Cheney casting a yea vote. April 5, 2001. A no vote is a +.

V10: H Con Res 83. Disabilities Education Act Funding. Breaux (D-LA) amendment to redirect $70 billion from the proposed tax cut to funding for the Individuals with Disabilities Education Act (IDEA) over 10 years. Adopted 54-46. April 5, 2001. A yes vote is a +.

V11: S I. School Renovation and Construction. Harkin (D-IA) amendment to authorize $1.6 billion for fiscal 2002 and such sums as necessary for each fiscal year between 2003 and 2006 for the construction and renovation of public elementary and secondary school buildings. Rejected 49-50. May 16, 2001. A yes vote is a +.

V12: HR 1836. Estate Tax. Dorgan (D-ND) amendment to strike the estatetax repeal provision and repeal the estate tax in 2003 for only all qualified family-owned farms and businesses. It also would reduce the top estate-tax rate bracket to 45 percent. Rejected 43-56. May 21, 2001. A yes vote is a +.

V13: HR 1836. Head Start. Kennedy (D-MA) amendment to condition the reductions in the marginal income-tax rate on full funding for Head Start programs. Motion rejected 45-54. May 22, 2001. A yes vote is a +.

V14: HR 1836. Tax Cut Reconciliation Bill. Adoption of the conference report on the bill to reduce taxes by $1.35 trillion through fiscal 2011 through income tax rate cuts, relief of the marriage penalty, phase-out of the federal estate tax, doubling of the child tax credit, and new incentives for retirement savings. A new 10 percent tax rate would be created retroactive to January 1. The bill would double the $5000-per-child tax credit by 2010 and make it refundable, raise the estate tax exemption to $1 million in 2002 and repeal the tax in 2010, increase the standard deduction for married couples to double that of singles over five years, beginning in 2005, and increase annual contributions limits for Individual Retirement Accounts. The bill's provisions would expire December 31, 2010. Adopted 58-33. May 26, 2001. A no vote is a +.

V15: S I. School Vouchers. Gregg (R-NH) amendment to create a demonstration program in 10 school districts to provide public school children with federal funds (vouchers) to transfer to another public school or a private school, including religious schools. The amendment would authorize $50 million for fiscal 2002 and subsequent necessary sums for the next six fiscal years. Rejected 41-58. June 12, 2001. A no vote is a +.

V16: S I. Boy Scouts/Anti-Discrimination. Helms (R-NC) amendment to withhold federal education funds from public elementary and secondary schools that bar the Boy Scouts of America from using school facilities. The targeted schools bar the Boy Scouts because the organization discriminates against gay men. Adopted 51-49. June 14, 2001. A no vote is a +.

V17: S 1052. Patients' Bill of Rights. Passage of the bill to provide federal patient protections and allow patients to appeal a health maintenance organization's (HMO) decision on coverage and treatment. It also would allow patients to sue health insurers in state courts over quality-of-care claims and, at the federal level, over administrative or non-medical coverage disputes. Passed 59-36. June 29, 2001. A yes vote is a +.

V18: HR 2299. NAFTA/Mexican Trucks. Shelby (R-AL) motion to uphold a border truck inspection program which allows Mexican trucks to receive three-month permits if they pass safety inspections. The motion also upholds a grant of $60 billion to the Transportation Department and various agencies. Motion agreed to 65-30. July 27, 2001. A yes vote is a +.

V19: S 1438. Military Base Closures. Warner (R-VA) motion to authorize an additional round of U.S. military base realignment and closures in 2003. Motion agreed to 53-47. September 25, 2001. A yes vote is a +.

V20: HR 2944. Fiscal 2002 District of Columbia Appropriations. Passage of the bill to provide $408 million for the District of Columbia in fiscal 2002, including funds for the city's courts and

corrections system and $16.1 million for an emergency response plan following the September 11 attacks. The bill also would approve a $7.2 billion budget for the District. Passed 75-24. November 7, 2001. A yes is a +.

References

Ada (2002). 2001 Voting Record: Shattered Promise of Liberal Progress. ADA Today, 57(1), 1-17.

Examples

```
data(senate)
senate
```

`senate07` *Senate votes 2007*

Description

2007 senate votes on 20 issues selected by Americans for Democratic Action. The votes selected cover a full spectrum of domestic, foreign, economic, military, environmental and social issues. We tried to select votes which display sharp liberal/conservative contrasts. In many instances we have chosen procedural votes: amendments, motions to table, or votes on rules for debate. Often these votes reveal true attitudes frequently obscured in the final votes.

Usage

```
senate
```

Format

A data frame (98 senators) with the following variables:

Party: R = Republican, D = Democrat, I = Independent.

I1. S 1. Ethics and Lobbying Overhaul: Grass-Roots Lobbying Bennett (R-UT) amendment to Reid (D-NV) ethics reform legislation. Reid's legislation would overhaul Congressional lobbying and ethics rules for Senators and their staffs, restrict use of more broadly defi ned earmarks, prohibit Senators and staff from accepting gifts and free meals, extend the period before former Senators can become lobbyists, prohibit lobbyist-funded travel, and require trips funded by private entities to be vetted by the Select Ethics Committee. The Bennett amendment, permitting the travel of Members of Congress hosted by 501 (c) (3), or 'grass-roots lobbying' organizations, was adopted 51-46. Jan. 17, 2007. A no vote is a +.

I2. HR 2. Minimum Wage Increase: Motion to invoke cloture (thus limiting debate) on a Baucus (D-MT) substitute amendment to raise the minimum wage to $7.25 per hour over two years and provide $8.3 billion in small-business tax incentives. The tax provisions would be offset with revenue increases, including a $1 million cap on the amount of executive compensation that can be tax-deferred in any year and extend certain restrictions on certain sale-in-leaseout deals. (Three-fifths of the total Senate, 60 votes, is required to invoke cloture.) Motion agreed to 87-10. Jan 30, 2007. A yes vote is a +.

I3. S 574. Iraq War 'Surge': Motion to invoke cloture and proceed to a bill that would express the sense of Congress in support of U.S. military serving in Iraq, while disapproving of President Bush's 'surge' decision to deploy more than 20000 additional U.S. combat troops to that country and requiring the President to submit a report to Congress every 30 days on military progress in Iraq. Motion rejected 56-34. Feb. 17, 2007. A yes vote is a +.

I4. S J Res 9. Iraq Mission: Passage of a joint resolution to limit the mission of U.S. forces in Iraq, within 120 days of enactment, to counter-terrorism efforts, training Iraqi forces and protecting U.S. assets. It would set a binding goal of withdrawing most combat troops by March 31, 2008. (By unanimous consent, the Senate agreed to require 60 votes to pass the joint resolution.) Rejected 48-50. March 15, 2007. A yes vote is a +.

I5. S 3. Medicare Prescription Drug Price Negotiation: Motion to invoke cloture and proceed to a bill allowing the Health and Human Services Department to negotiate the prices drug companies charge under the Medicare Part D prescription drug program. Motion rejected 55-42. April 18, 2007. A yes vote is a +.

I6. HR 1495. Water Resources Development Act Reauthorization - Climate Change: Kerry (D-MA) amendment to Boxer (D-CA) legislation authorizing about $14 billion for Army Corps of Engineers water resources development projects, including initiatives for storm protection in Louisiana, fl ood control, and ecosystem restoration. The Kerry amendment would require the Army Corps of Engineers to include the impact on global climate change in any relevant study of water resource projects.(By unanimous consent, the Senate agreed to require 60 votes to adopt the amendment.) Rejected 51-42. May 15, 2007. A yes vote is a +.

I7. S 1348. Immigration Overhaul: Motion to invoke cloture on Kennedy (D-MA) legislation to overhaul U.S. immigration policies and institute new border security measures, including an electronic verification system. It would allocate some green cards on a 'merit-based' system based on certain criteria, including a highdemand occupation, profi ciency in English, and higher education degrees. Half of the green cards would be allocated based on family relations. It also would provide for a temporary guest worker program that would allow workers to remain in the United States for up to six years, provided that they return to their home country for a year after every two years they remain in the United States. A 'yea' was a vote in support of Kennedy's and the President's position. Motion rejected 45-50. June 7, 2007. A yes vote is a +.

I8. HR 800. EFCA: Motion to invoke cloture on the Reid (D-NV) motion to proceed to a bill that would allow union organizers to bypass an NLRB-sponsored election if a majority of eligible employees sign a petition in support of a union. Motion rejected 51-48. June 26, 2007. A yes vote is a +.

I9. HR 1585. Fiscal 2008 Defense Authorization: Motion to invoke cloture on a Levin (D-MI) amendment mandating a drawdown and redeployment of U.S. forces in Iraq by the end of April 2008, except to protect U.S. personnel, train Iraqi security forces, and conduct counter terrorism operations against al Qaeda and other international terrorist organizations. Redeployment would begin within 120 days of enactment. The bill would authorize $648.3 billion for defense programs in fiscal 2008, including $127.5 billion for the wars in Iraq and Afghanistan. It also would authorize $143.5 billion for operations and maintenance; $109.9 billion for procurement; $122.9 billion for military personnel, and $74.7 billion for research, development, testing and evaluation. Motion rejected 52-47. July 18, 2007. A yes vote is a +.

I10. S 2011. FISA: Passage of a bill to amend the Foreign Intelligence Surveillance Act of 1978 (FISA) to expand the authority of the Attorney General and the Director of National Intelligence to conduct surveillance of communication between one suspected foreign terrorist and another without

a court warrant. Communications companies would be compelled to comply with the government's conduct of such surveillance. Within 10 days of initiating the electronic surveillance, the Administration would be required to describe to the FISA court the procedures they used to determine whether the intelligence acquisition being conducted without a warrant is directed at foreign targets overseas. The FISA court would then rule on the procedures. The bill would sunset after six months. (By unanimous consent, the Senate agreed to require 60 votes to pass the bill.) Rejected 43-45. Aug. 3, 2007. A yes vote is a +.

I11. S 1257. District of Columbia Voting Rights Motion to invoke cloture on a Reid (D-NV) motion to proceed to a bill to increase the membership of the House of Representatives to 437, by granting a seat to the District of Columbia and an additional seat to Utah. Motion rejected 57-42. Sept. 19, 2007. A yes vote is a +.

I12.HR 1585. Fiscal 2008 Defense Authorization: Motion to invoke cloture on the Kennedy (D-MA) amendment to Levin (D-MI) legislation (see vote No. 9, above). The Kennedy amendment would make violent crimes that cause bodily harm based on the victim's race, color, religion or national origin punishable by a fi ne and up to 10 years in prison, and punishable by a life sentence if the victim dies, is kidnapped or subjected to aggravated sexual abuse. It also would create the same penalties for crimes motivated by gender, sexual orientation, gender identity, or disability. (Subsequently, the Kennedy amendment was adopted by voice vote.) Motion agreed to 60-39. Sept. 2007. A yes vote is a +.

I13. HR 976. SCHIP: Motion to invoke cloture on the Reid (D-NV) motion to agree to the House bill reauthorizing the State Children's Health Insurance Program (SCHIP) at nearly $60 billion over five years, expanding the program by $35 billion. To offset the cost of the expansion, the bill would increase the tax on cigarettes by 61 cents to $1 per pack and raise taxes on other tobacco products. Motion agreed to 69-30. Sept. 27, 2007. A yes vote is a +.

I14. HR 3043. Fiscal 2008 Labor - HHS-Education Appropriations - Limiting Abortion Funding: Vitter (R-LA) amendment to Harkin (D-IA) legislation. The Vitter amendment would prohibit the distribution of Title X family planning funds to abortion providers except when a woman suffers from a physical disorder, injury, or illness that would risk the life of the mother unless an abortion is provided. The amendment would not apply to hospitals. Harkin's legislation would appropriate $605.5 billion in fiscal 2008, including $149.9 billion in discretionary spending, for the departments of Labor, Health and Human Services (HHS), and Education, and for related agencies. It would provide $63 billion for the Education Department, $14.9 billion for the Labor Department and $479.1 billion for HHS. Rejected 41-52. Oct. 18, 2007. A no vote is a +.

I15. Southwick Nomination: Motion to invoke cloture on the nomination of Leslie Southwick of Mississippi to be a judge for the 5th Circuit Court of Appeals. Opponents argued that, in his positions related to African Americans, workers, gays, and women, Mr. Southwick was unsuited to a lifetime appointment to the federal judiciary. Motion agreed to 62-35. Oct. 24, 2007. A no vote is a +.

I16. HR 1495. Water Resources Development - Veto Override: Passage, over President Bush's Nov. 2, 2007, veto, of a bill authorizing $23.2 billion for more than 900 water resource development projects and studies by the Army Corps of Engineers for flood control, navigation, beach erosion control, and environmental restoration. The bill would require independent peer review for certain projects that exceed $40 million. It would authorize $3.9 billion for a system of new locks and dams and environmental restoration for the Upper Mississippi River and Illinois waterway system. It also would authorize hurricane recovery activities along the Gulf Coast. (A two-thirds majority of those present and voting of both chambers - 62 senators in this instance - is required to override a veto.) Passed, thus enacted into law, 79-14. Nov. 8, 2007. A yes vote is a +.

I17.HR 3688. U.S.-Peru Trade Agreement: Passage of a bill that would implement a NAFTA/CAFTA model trade agreement between the United States and Peru. The agreement would reduce most tariffs and duties currently affecting trade between the two countries, increase protections for intellectual property and would require Peru to take steps to strengthen its labor and environmental-enforcement standards. Passed, thus cleared for the President, 77-18. Dec. 4, 2007. A no vote is a +.

I18. HR 3996. AMT Adjustment: Motion to invoke cloture on a Reid (D-NV) motion to proceed to the bill that would provide a one-year adjustment to the alternative minimum tax (AMT) on 2007 income, exempt an additional 21 million taxpayers from paying the AMT, extend several expiring tax provisions for one year, and expand eligibility in 2008 for the refundable child tax credit. To offset the cost, the bill includes revenue raisers, such as increasing the tax on the carried interest of private equity managers, venture capitalists and some real estate investors. Motion rejected 46-48. Dec. 6, 2007. A yes vote is a +.

I19. HR 6. Energy Policy: Motion to invoke cloture on the Reid (D-NV) motion to concur in the House bill with an additional amendment to require new Corporate Average Fuel Economy standards of 35 miles per gallon for cars and light trucks, and require the production and use of 36 billion gallons of biofuels by 2022. It would direct the Energy Department to set new energy efficiency standards. The additional amendment would strike a provision requiring utilities to produce 15 percent of their electricity from alternative sources by 2020. It also would increase to $21.8 billion a package of tax incentives that would be offset in part by eliminating or reducing $13 billion in subsidies for major oil and gas companies. Motion rejected 59-40. Dec. 13, 2007. A yes vote is a +.

I20. HR 2419. Farm Bill Reauthorization Passage of a bill to authorize $286 billion from fiscal 2008 through fiscal 2012 for federal farm, nutrition assistance, rural development, and agricultural trade programs. Producers would not be eligible if the average of their three-year adjusted gross income is more than $1 million in 2009, and more than $750,000 in 2010 and subsequent years, unless at least two-thirds of that income is derived from agriculture. The bill also would limit the amount that farms could receive during any crop year under specific programs to $40,000 for direct and fi xed payments, and $60,000 for counter-cyclical and average crop revenue payments. It would create a new optional subsidy called the Average Crop Revenue program, which would tie payments to state based farm revenue figures. Country-of-origin labels for all meat would be required by September 2008. The bill would extend the Milk Income Loss Contract program through fiscal 2012. It would increase, from $134 to $140 per month, the amount households could deduct from gross income in determining their level of food stamp benefits. It also would authorize $1.1 billion to promote farm-based renewable energy and effi ciency. (Before passage, the Senate adopted a Harkin (D-IA) substitute amendment by voice vote.) Passed 79-14. Dec. 14, 2007. A yes vote is a +.

References

Ada (2002). 2001 Voting Record: Shattered Promise of Liberal Progress. ADA Today, 57(1), 1-17.

Examples

```
data(senate07)
senate07
```

sleeping *Sleeping Bags*

Description

This data set provides 4 variables measured on 21 sleeping bags. The variables are temperature, weight, price, and material.

Usage

```
sleeping
```

Format

A data frame of dimenson 21 times 4.

References

Prediger, S. (1997). Symbolic objects in formal concept analysis. In G. Mineau, and A. Fall (eds.), Proceedings of the 2nd International Symposium on Knowledge, Retrieval, Use, and Storage for Efficiency.

Examples

```
data(sleeping)
sleeping
```

small *Small dataset*

Description

A small artifical dataset.

Usage

```
small
```

Format

A data frame with 3 variables each of them has 3 categories.

References

Gifi, A. (1990). Nonlinear Multivariate Analysis: Wiley.

Examples

```
data(small)
small
```

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