Package 'anchors'

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Title Statistical analysis of surveys with anchoring vignettes

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Description Tools for analyzing survey responses with anchors.

Depends R (>= 2.10), rgenoud, MASS

License GPL (>= 2)

URL http://wand.stanford.edu/anchors

NeedsCompilation yes

Repository CRAN

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R topics documented:

`allequal.test` *all.equal with expected outcome test*

Description

Wrapper for all.equal, with ability to specify expected outcome.

Usage

```
allequal.test(target,current,expect=TRUE)
```

Arguments

`target`	R object
`current`	R object
`expect`	logical, expected result of all.equal(x,y)

Value

stop() if all.equal(x,y) != expect, else returns expect

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Examples

```
a <- c(1:5)
b <- a+1

allequal.test(a,a,expect=TRUE)
allequal.test(a,b,expect=FALSE)
## these throw stop() but here we wrap in try() for example usage
try(allequal.test(a,a,expect=FALSE))
try(allequal.test(a,b,expect=TRUE))
```

`anchors` *Non-parametric analysis of surveys with vignette anchors*

Description

Non-parametric analysis of surveys with vignette anchors.

Usage

```
anchors(formula, data, method = c("B","C"),
        options=anchors.options(),
        subset, combn = FALSE, na.action = na.omit)
```

Arguments

`formula`	A list of named formulas giving a symbolic description of the model to be fit. See Details below.
`data`	A data frame or matrix. See Details below.
`method`	Single string indicating method of analysis. See Details below.
`options`	A list of class 'anchors.options', produced by function `anchors.options`;
`subset`	Logical expression indicating elements or rows to keep: missing values are taken as false; equivalent to function `subset`.

combn	Logical (TRUE/FALSE). Calculate key statistics for all combinations of subsets of vignettes specified in formula=list(vign=cbind(...))
na.action	Specify the "NA action" which should be applied to 'data'. Default is R standard option 'na.omit'; can also be set to 'na.fail'.

Details

The formula syntax is designed to allow the same list of formulas to be used for both anchors and chopit. If a user would like to use exactly the same cases with chopit as with anchors (i.e., drop cases with any missing responses or missing cpolr values), and vise versa (i.e., also drop any case with missing values in the tau=, tau1= formulae), then the user should use the same list of formula for all methods and use the option anchors.options(delete="maximal"). See example below.

Only options relevant to anchors are discussed here.

The named list() of formulas may include

self: LHS self-response variable; RHS is simply 1 (needed to define a formula); actually anything can be put on the RHS, and it will not by default be used.

vign: vignette responses, bound together by cbind (as in glm binomial syntax), with ONLY '~ 1' as RHS of equation (formulas must have RHS).

cpolr: OPTIONAL. linear predictors used by the censored ordered probit, cpolr, model to break ties in rank based models, method="B" or "C". Default is cpolr = ~ 1 (i.e., an intercept only).

Example:

```
fo <- list(self = xsayself ~ 1,
           vign = cbind(xsay3,xsay1)    ~ 1,
  cpolr = ~ age )
```

NOTE: one can also use a single formula as a short hand: specifying

fo <- self ~ vign1 + vign2

is equivalent to

```
fo <- list(self = self ~ 1
           vign = cbind(vign1,vign2) ~ 1,
           cpolr= ~ 1)
```

All of the response variables must be in the form of consequetive non-negative numeric integers, i.e., 1, 2, ... K.

** anchors currently does not support factor responses.**

The method="B" and "C" requires that cases with any response that is missing be dropped. Any cases with missing values the covariates specified in the cpolr= formula are also dropped. BUT by default these methods ignore missing values in the covariates specified by tau=, tau1=, or the right hand side of self=.

Value

Specific values listed below are meant for programmers; data analysts should see the values produced by the `summary.anchors` function.

`rank` List object containing:

span A matrix with columns rows corresponding to the observations in the data for which both the self-assessment and the vignettes are observed.
The first column contains the lower bound of the rank interval, and the second column contains the upper bound. If a row has the same value in both columns, then the rank value is a scalar value, otherwise the rank lies somewhere in an interval.
The columns will be named `Cs` and `Ce` for type "C", `Bs` and `Be` for type "B".

weight matrix of weights, inverse proportion to span of interval values

max Maximum rank possible for non-parametric method
For "C" max is 2J+1, where J is the number of vignettes.
For "B" max is J+1.

n.interval Number of cases that have interval values of C

`summary` list of summary statistics about ranks

`minentropy` Matrix specifying how interval rank values would be allocated to scalar rank values to minimize entropy.

`cpolr` a `cpolr` model that was used to estimate how to allocate interval rank values to scalar rank values

`type` The type of nonparamtric analysis (B or C)

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand `http://wand.stanford.edu`

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) “Anchors: Software for Anchoring Vignettes”. *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan. (2007) "Credible Comparisons Using Interpersonally Incomparable Data: Ranking self-evaluations relative to anchoring vignettes or other common survey questions". copy at `http://wand.stanford.edu/anchors/wand_anchors.pdf`

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

King, Gary; Christopher J.L. Murray; Joshua A. Salomon; and Ajay Tandon. "Enhancing the Validity and Cross-cultural Comparability of Survey Research," American Political Science Review, Vol. 98, No. 1 (February, 2004): 191-207, copy at http://gking.harvard.edu/files/abs/vign-abs.shtml

See Also

anchors.order, anchors.options, chopit,

Examples

```
data(mexchn)

fo <- list(self = xsayself ~ age,
           vign = cbind(xsay3,xsay1)    ~ 1,
           tau  = ~ age + china,
           tau1 = ~ age + china + male,
           cpolr= ~ china + male
    )

a2 <- anchors(fo, data = mexchn, method="B")
summary(a2)

a3 <- anchors(fo, data = mexchn, method="C")
summary(a3)
```

---

anchors.chopit.check *Compound Hierarchical Ordered Probit (CHOPIT)*

Description

Check internal consistency of options to be used by chopit.

Usage

```
anchors.chopit.check(count, options )
```

Arguments

count	object of class anchors.data.count.
options	object of class anchors.options.

Details

This function is unlikely to be used directly by a user.

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

King, Gary; Christopher J.L. Murray; Joshua A. Salomon; and Ajay Tandon. "Enhancing the Validity and Cross-cultural Comparability of Survey Research," American Political Science Review, Vol. 98, No. 1 (February, 2004): 191-207, copy at http://gking.harvard.edu/files/abs/vign-abs.shtml

See Also

anchors,chopit

---

anchors.chopit.fit *Compound Hierarchical Ordered Probit (CHOPIT)*

Description

Fit function for pooled ordered probits

Usage

```
anchors.chopit.fit(data, parm, count, options )
```

Arguments

data	object of class anchors.data. See help(anchors.data) for requirements.
parm	object of class anchors.chopit.parm.
count	object of class anchors.data.count.
options	object of class anchors.options.

Details

This function is unlikely to be used directly by a user.

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

King, Gary; Christopher J.L. Murray; Joshua A. Salomon; and Ajay Tandon. "Enhancing the Validity and Cross-cultural Comparability of Survey Research," American Political Science Review, Vol. 98, No. 1 (February, 2004): 191-207, copy at http://gking.harvard.edu/files/abs/vign-abs.shtml

See Also

anchors,chopit

`anchors.chopit.parm` *Compound Hierarchical Ordered Probit (CHOPIT)*

Description

Create object for handling parameters used by chopit.

Usage

```
anchors.chopit.parm(data, count, options )
```

Arguments

`data`	object of class anchors.data. See help(anchors.data) for requirements.
`count`	object of class anchors.data.count.
`options`	object of class anchors.options.

Details

This function is unlikely to be used directly by a user.

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) “Anchors: Software for Anchoring Vignettes”. *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

King, Gary; Christopher J.L. Murray; Joshua A. Salomon; and Ajay Tandon. "Enhancing the Validity and Cross-cultural Comparability of Survey Research," American Political Science Review, Vol. 98, No. 1 (February, 2004): 191-207, copy at http://gking.harvard.edu/files/abs/vign-abs.shtml

See Also

anchors,chopit

`anchors.combn` *Calculate known minimum or estimated entropy for survey vignettes*

Description

Calculate known minimum or estimated entropy for survey vignettes

Usage

```
anchors.combn(adata, fdata, type, options)
```

Arguments

`adata`	object of class anchors.data
`fdata`	data frame from which adata was built
`type`	either "B" or "C", specifying nonparametric method
`options`	object of class anchors.options

Value

A list of class `anchors.combn`, containing elements

`vign.rank`	a matrix with columns corresponding to the vignette selection, the estimated entropy (if covar is specified), the known entropy, the number of cases with intervals for that particular vignette selection, and 2J+1 number of categories for the given vignettes.
`N`	the number of observations after list-wise deletion
`self`	a character string containing the variable name of the self-response question
`vign`	a character vector containing the variable names of the vignette questions. The first element of the vector corresponds to vignette 1, the second vignette 2, etc.

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu with Dan Hopkins and Olivia Lau

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

See Also

anchors

Examples

```
## ra <- anchors( fo, data, method="C", combn=TRUE)
## summary( ra , combn = "Minimum" )
## plot( ra, type="xy" , xy =  c("minimum","intervals") )
```

---

anchors.data *Organized data from surveys with anchoring vignettes*

Description

Create data object that will be used by anchors().

Usage

```
anchors.data(formula,
             data,
             method,
             subset,
             na.action   = na.omit,
             na.response = c(NA, 0),
             min.response = 1,
             delete = c("minimal","maximal"), debug=0)
```

Arguments

formula	A list of named formulas giving a symbolic description of the model to be fit. See help(anchors) for details.
data	A data frame or matrix
method	Single string indicating method of analysis. See help(anchors) for details.
subset	Logical statement as used by function subset.
na.action	a function which indicates what should happen when the data contain 'NA's. Note also details of 'delete' in anchors.options.
na.response	vector of numeric values that should also be considered missing in self or vignette responses. Default is c(0,NA).
min.response	Default=1. This is a sanity check value. The code is designed to make sure that the user has not passed in values that are less than 1 and not included in na.response list.
delete	"minimal" deletes only cases with missing values that affect component of model "maximal" forces listwise deletion on the basis of ALL variables in the entire formula list EVEN if vars not used by method
debug	Default: 0

Details

All of the response variables must be in the form of consequetive non-negative numeric integers, i.e., 1, 2, ... K.

** anchors currently does not support factor responses.**

The method="chopit" model does *not* require that every respondent answer all vignette or the self questions to be included in the model; only answers that are non-missing are used in the likelihood function.

The method="B", "C", and "order" requires that cases with any response that is missing be dropped.

By default, anchors only deletes those cases with missing values that affect the method of analysis requested. For example,

If a user would like to use exactly the same cases with method="chopit" as "B", "C" and "order" (i.e., drop cases with any missing responses), and vise versa (i.e., also drop any case with missing values in the tau=, tau1=, or self= formula), then the user should use the same list of formula for all methods and use the option anchors.options(delete="maximal").

Value

Return function will be of class 'anchors.data'.

anchors() and anchors.options()

Specifying no options is equivalent to

```
anchors(..., anchors.options(delete = "minimal"))
```

Alternative values include,

`delete` Choose one from:

"minimal": delete only cases with missing values in components needed for current anchors analysis

"maximal": forces listwise deletion on the basis of any missing value in ALL variables in the formula list EVEN if not vars not used by method. Also deletes cases with ANY missing values in any responses (self or vignettes). This enables method="chopit" to use the same data as used by method="B" or "C", and vice versa.

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors

Examples

```
## load data and make a copy
data(mexchn)
dta <- mexchn

## insert missing values into covariates for the purpose of this demonstration
dta <- replace.value( dta, "educyrs", from=1:9  , to = NA)
dta <- replace.value( dta, "age"    , from=30:40, to = NA)

## formula that will be used throughout
fo <- list(self = xsayself ~ male + educyrs,
           vign = cbind(xsay3, xsay1) ~ 1,
           tau  = ~ educyrs)

## 'C' uses only cases with no missing responses (self, vign)
a1 <- anchors( fo, dta, method="C")
## number of cases used:
##  y0 = number of cases with self-responses
##  z0 = number of cases with all vignette responses
unlist(lapply(a1$data, NROW))[1:2]

## 'chopit' keeps case with some missing responses
##  but drops others with missing covariates
a2 <- chopit( fo, dta)
## number of cases used:
##  y0 = number of cases with self-responses
```

```
##       AND no missing covariates
##  z0 = number of cases with AT LEAST ONE vignette response
##       and no missing covariates
unlist(lapply(a2$data, NROW))[1:2]

## with ' delete = "maximal" '
## both procedures use the exact same cases
## (IF the same formula is used for both methods)

## y0 and z0 here
a3 <- anchors( fo, dta, method="C", anchors.options(delete="maximal"))
unlist(lapply(a3$data, NROW))[1:2]

## is the same as y0 and z0 for chopit:
a4 <- chopit( fo, dta, options=anchors.options(delete="maximal"))
unlist(lapply(a4$data, NROW))[1:2]
```

`anchors.options` *Set or query anchors() parameters*

Description

'anchors.options' can be used to set or query parameters passed to anchors functions. Parameters can be set by specifying them as arguments to 'anchors.options' in 'tag = value' form, and will return an updated list of parameters.

Usage

```
anchors.options(...)
```

Arguments

...	arguments in 'tag = value' form. The tags must come from the anchors parameters described below.

anchors.options()

Options specific to each method are described in their respective help pages.

Options generic to all functions are:

verbose FALSE, if TRUE more detailed run-type printing

silence FALSE, if TRUE turns off even some standard printing

debug 0, if >0 show gory details for debugging. Caution: high numbers can produce very high volume output.

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors, chopit, anchors.data, anchors.order

Examples

```
data(mexchn)
fo <- list(self = xsayself ~ 1,
           vign = xsay3    ~ 1,
           tau  =           ~1 )
out1  <- chopit( fo, mexchn, options= anchors.options( vign.var = "hetero", normalize="hilo" ))
summary(out1)
```

---

anchors.order *Calculate frequency of vignette orderings*

Description

Calculate frequency of vignette orderings

Usage

```
anchors.order(formula, data, ties = c("set", "nominal", "random",
                "mset"), subset, na.action = na.omit)
```

Arguments

formula	A list of named formulas giving a symbolic description of the model to be fit. See Details below.
data	A data frame or matrix. See Details below.
ties	"set": Groups ties as sets "nominal": Breaks ties by order of vignettes given "random": Breaks ties randomly
subset	Logical expression indicating elements or rows to keep: missing values are taken as false; equivalent to function subset.
na.action	Specify the "NA action" which should be applied to 'data'. Default is R standard option 'na.omit'; can also be set to 'na.fail'.

Details

The formula syntax is designed to allow the same list of formulas to be used for both anchors and chopit and anchors.order. If a user would like to use exactly the same cases with `chopit` as with `anchors.order` (i.e., drop cases with any missing responses or missing `cpolr` values), and vise versa (i.e., also drop any case with missing values in the `tau=`, `tau1=` formulae), then the user should use the same list of formula for all methods and use the option `anchors.options(delete="maximal")`. See example below.

Only options relevant to `anchors.order` are discussed here.

The named list() of formulas may include

self: LHS self-response variable; RHS is simply 1 (needed to define a formula); actually anything can be put on the RHS, and it will not by default be used.

vign: vignette responses, bound together by cbind (as in glm binomial syntax), with ONLY '~ 1' as RHS of equation (formulas must have RHS).

Example:

```
fo <- list(self = xsayself ~ 1,
           vign = cbind(xsay3,xsay1)    ~ 1)
```

One can also use a single formula as a short hand: specifying

fo <- self ~ vign1 + vign2

is equivalent to

```
fo <- list(self = self ~ 1
            vign = cbind(vign1,vign2) ~ 1)
```

All of the response variables must be in the form of consequetive non-negative numeric integers, i.e., 1, 2, ... K.

** `anchors` currently does not support factor responses.**

The method="B" and "C" requires that cases with any response that is missing be dropped. Any cases with missing values the covariates specified in the `cpolr=` formula are also dropped. BUT by default these methods ignore missing values in the covariates specified by `tau=`, `tau1=`, or the right hand side of `self=`.

Value

Each vignette is represented by the integer indexing it's place as passed to the function. For example, let

fo <- list(vign = cbind(vign1,vign2,vign3))

then 1=vign1, 2=vign2, 3=vign3. In the case of an anchors.order object produced with the option ties="set", tied variables are represented by being included in brackets.

```
anchors.order( fo, data, ties="set")
```

then a row with "{1,3},2" indicates that vign1 and vign3 are tied, and vign2 has a higher value than both of them.

`labels`	Description of order of vignettes
`freq`	Frequency of order of vignettes

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand and Dan Hopkins

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

See Also

`anchors`,`barplot.anchors.order`

Examples

```
data(mexchn)
z <- anchors.order( ~ xsay1 + xsay2 + xsay3 + xsay4 + xsay5, mexchn, ties  = "set")
summary(z,top=10,digits=3)
barplot(z)

z <- anchors.order( ~ xsay5 + xsay4 + xsay3 + xsay2 + xsay1, mexchn, ties  = "set")
summary(z,top=10,digits=3)

## other option
z <- anchors.order( ~ xsay5 + xsay4 + xsay3 + xsay2 + xsay1, mexchn, ties  = "nominal")
summary(z,top=10,digits=3)
barplot(z)
```

`barplot.anchors.order` *Barplot of frequency of vignette orderings*

Description

Barplot of frequency of vignette orderings

Usage

```
  ## S3 method for class 'anchors.order'
barplot(height, ..., top=20)
```

Arguments

`height`	anchors.order object
`...`	arguments for `barplot`
`top`	Show 'top' most common combinations

Details

Each vignette is represented by the integer indexing it's place as passed to the function. For example, let

fo <- list(vign = cbind(vign1,vign2,vign3))

then 1=vign1, 2=vign2, 3=vign3. In the case of an anchors.order object produced with the option ties="interval", tied variables are represented by being included in brackets.

z <- anchors(fo, data, method="order", options=anchors.options(ties="interval"))

then a row with "{1,3},2" indicates that vign1 and vign3 are tied, and vign2 has a higher value than both of them.

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand `http://wand.stanford.edu`

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors,anchors.order

Examples

```
## see help(anchors.order)  and demo(anchors.plot) for examples
```

---

barplot.anchors.rank *Barlot of distribution of non-parametric ranks*

Description

Barplot of distribution of non-parametric ranks

Usage

```
  ## S3 method for class 'anchors.rank'
barplot(height, ...,
                                ties = c("uniform","minentropy","omit","cpolr"))
```

Arguments

height	anchors.rank object
...	may include additional anchors.rank objects that will plotted beside x, but these MUST be listed in consecutive order immediately following x. in addition, may list extra arguments for barplot function
ties	shows distribution of ranks by method for allocating ties/interval valued cases to a scalar value "uniform": allocates in equal proportions among scalar values "omit": drops cases with interval values "cpolr": uses censored ordered probit model to allocate ties "minentropy": allocates ties to produce minimum entropy

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors,plot.anchors.rank

Examples

```
## see demo(anchors.freedom3)  and demo(anchors.plot) for examples
```

---

chopit *Compound Hierarchical Ordered Probit (CHOPIT)*

Description

Estimate Compound Hierarchical Ordered Probit (CHOPIT) model

Usage

```
chopit(formula, data, subset,
       options=anchors.options(),
       na.action = na.omit)
```

Arguments

formula	A list of named formulas giving a symbolic description of the model to be fit. See 'Details' below.
data	An anchors.data class object. See 'Details' below.
subset	Logical expression indicating elements or rows to keep: missing values are taken as false; equivalent to function subset.
options	An anchors.options class object. See 'Details' below.
na.action	Specify the "NA action" which should be applied to 'data'. Default is R standard option 'na.omit'; can also be set to 'na.fail'.

Details

The formula syntax is designed to allow the same list of formulas to be used for both anchors and chopit. If a user would like to use exactly the same cases with chopit as with anchors (i.e., drop cases with any missing responses or missing cpolr values), and vise versa (i.e., also drop any case with missing values in the tau=, tau1= formulae), then the user should use the same list of formula for all methods and use the option anchors.options(delete="maximal"). See example below.

Only options relevant to chopit are discussed here.

The named list() of formulas may include

self: self-response variable and linear predictors.

vign: vignette responses, bound together by cbind (as in glm binomial syntax), with ONLY '~ 1' as RHS of equation (formulas must have RHS). Must be present for all methods.

tau : linear predictors of cutpoints, NO LHS variable.

tau1 : Optional. linear predictors of only the mean shift of all cutpoints NO LHS variable. Default: if omitted, set equal to formula specified in 'tau='.

Example:

```
fo <- list(self = xsayself ~ age,
           vign = cbind(xsay3,xsay1)    ~ 1,
           tau  = ~ age + china,
           tau1 = ~ age + china + male  )
```

One can also use a single formula as a short hand: specifying

fo <- self ~ vign1 + vign2

is equivalent to

```
fo <- list(self = self ~ 1
            vign = cbind(vign1,vign2) ~ 1,
            tau  = ~ 1,
            tau1 = ~ 1,
            cpolr= ~ 1)
```

All of the response variables must be in the form of consequetive non-negative numeric integers, i.e., 1, 2, ... K.

** anchors currently does not support factor responses.**

The chopit model does *not* by default require that every respondent answer all vignette or the self questions to be included in the model; only answers that are non-missing are used in the likelihood function.

Value

data	list of class anchors.data
parm	list which contains MLEs
count	list containing summary of data dimensions
options	list of options, possibly modified from original call to anchors() or internal consistency with use of chopit
optim	complete object returned by optim() or genoud() call
hess	Hessian
LL.vign	likelihood values for the vignette component of model
LL.self	likelihood values fo rthe self component of model
gr	gradients of fitted model
time	timing information for estimation

options and anchors.options()

Invoking the chopit model without options,

```
chopit(formula, data)
```

is equivalent to,

```
chopit(formula, data,
                  options = anchors.options( normalize ="self",
                                             vign.var  = "hetero",
                                             linear    = TRUE,
                                             analytical= TRUE,
                                             optimizer= "optim"))
```

To change an option setting, pass one or more of the following tagged values to the options argument via the `anchors.options()` function. Alternative vluaes for options are passed using the tag=new.value syntax (same with the `par()` function.

To see all default values, type `anchors.options()` without arguments.

normalize Normalization constraints imposed.

"self" = location is set by removing any intercept from x0 vector and constraining variance of first self question to be 1.

"hilo" = sets location and scale by setting first theta to 0 and last theta to 1.

vign.var "homo" constrains all vignettes to have a single, common variance.

"hetero" allows variances to differ for each vignette

linear TRUE: (default) use additive linear formulation of taus if true.

FALSE: uses additive exponentiated values to force each cutpoint to be positive.

NOTE: Analytical gradients only availabe with linear formulation.

analytical TRUE; (default) use analytical gradients–much faster than numerical.

FALSE: use numerical gradients

Currently analytical gradients are only available for model with normalize='self' and linear=TRUE options.

optimizer "optim": (default) estimate using `optim`

"genoud": estimate chopit using `genoud` optimizer

With optimizer = "optim", there are additional options for specifying how `optim` is invoked.

optim.method This sets the 'method' of `optim` and can be one of

optim.method = c("BFGS", "Nelder-Mead", "CG", "L-BFGS-B", "SANN")

"BFGS" is the default.

The Details section of `optim` gives the precise definition of each method.

maxit This option controls the maximum number of interations that optim will perform before stopping, even if a solution has not been found. Default: 500.

With optimizer = "genoud", there are additional options for specifying how `genoud` is invoked.

wait.generations If there is no improvement in the objective function in this number of generations, 'genoud' will think that it has found the optimum. Default: 1

pop.size Population Size. This is the number of individuals 'genoud' uses to solve the optimization problem. Default: 500

MemoryMatrix This variable controls if 'genoud' sets up a memory matrix. Such a matrix ensures that 'genoud' will request the fitness evaluation of a given set of parameters only once. The variable may be 'TRUE' or 'FALSE'. If it is 'FALSE', 'genoud' will be aggressive in conserving memory. Default: TRUE.

max.generations Maximum Generations. This is the maximum number of generations that 'genoud' will run when attempting to optimize a function. Default: 100.

domain 'Genoud' will create a Domains matrix by setting the lower bound for all of the parameters equal to -1 * 'default.domains' and the upper bound equal to 'default.domains'. Default: 5,

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

King, Gary; Christopher J.L. Murray; Joshua A. Salomon; and Ajay Tandon. "Enhancing the Validity and Cross-cultural Comparability of Survey Research," American Political Science Review, Vol. 98, No. 1 (February, 2004): 191-207, copy at http://gking.harvard.edu/files/abs/vign-abs.shtml

See Also

anchors, anchors.data, anchors.options, optim, genoud

Examples

```
##
data(mexchn)
fo <- list(self = xsayself ~ 1,
           vign = xsay3    ~ 1,
           tau  =           ~1 )
out1  <- chopit( fo, mexchn)
summary(out1)
```

`chopitsim` *Simulated Data for test chopit function*

Description

Simulated data with two self-response questions (qself1,qself2) and three vignettes (qvign1,qvign2,qvign3). Random effect (RE) also included.

Survey respondents were asked in almost the same language for a self-assessment and for an assessment of several hypothetical persons described by written vignettes. The vignettes for one particular domain of political efficacy were the following:

qvign1: "[Alison] lacks clean drinking water. She and her neighbors are supporting an opposition candidate in the forthcoming elections that has promised to address the issue. It appears that so many people in her area feel the same way that the opposition candidate will defeat the incumbent representative."

qvign2: "[Jane] lacks clean drinking water because the government is pursuing an industrial development plan. In the campaign for an upcoming election, an opposition party has promised to address the issue, but she feels it would be futile to vote for the opposition since the government is certain to win."

qvign3: "[Moses] lacks clean drinking water. He would like to change this, but he can't vote, and feels that no one in the government cares about this issue. So he suffers in silence, hoping something will be done in the future."

The following question is then read to the respondent for each vignette and for a self-assessment: How much say [does 'name' / do you] have in getting the government to address issues that interest [him / her / you]?

For the self-assessment and each of the vignette questions, respondents are given the same set of ordinal categories in which to respond, for example "(5) Unlimited say, (4) A lot of say, (3) Some say, (2) Little say, (1) No say at all."

Usage

```
data(chopitsim)
```

Author(s)

Jonathan Wand

Source

Based on R/sim/mc12rev/hopitmc.Ae.data/hopitmc.Ae.007.111.2000.1.dat

convert *Convert factor or character variables into integers*

Description

Use convert to transform factor or character variables into ordered integer values prior to using anchors or chopit.

Usage

```
convert(vars, data, order, ...)
```

Arguments

vars	a character vector identifying the variables in data to be converted to integers.
data	data frame containing vars.
order	a character vector identifying the factor levels to be converted to integers, in increasing order. If NA is omitted here (default), NA values are retained as NA. If NA is included, then NA values are converted to the the last category (which can be adjusted via ....
...	addtional arguments passed to factor.

Value

A data frame, with the character or factor variables identified in vars replaced by integers.

Author(s)

Olivia Lau

References

Jonathan Wand, Gary King and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

See Also

anchors, chopit

Examples

```
set.seed(391)
a <- sample(c("net gain", "little effect",  "modest loss", "major loss"),
            20, replace=TRUE)

dta <- as.data.frame( list(ncost=a) , stringsAsFactors  = FALSE)
```

```
print(dta)

newdat <- convert("ncost", data = dta,
                  order = c("net gain", "little effect",  "modest loss", "major loss"))

print(newdat)
```

---

cpolr *Censored ordered probit*

Description

Censored ordered probit for analysis of anchoring vignettes. Used in the context of anchoring vignettes as a parametric model for breaking ties/interval in non-parametric ranks.

Usage

```
cpolr(formula, data, weights, start, ..., subset, na.action,
               contrasts = NULL, Hess = TRUE, model = TRUE, method =
               c("probit", "logistic", "cloglog", "cauchit"), debug = 0)
```

Arguments

formula	A formula representing 'C' range produced by anchors as a function of other variables: `cbind(Cs, Ce) ~ x1 + x2`
data	a data frame containing two columns Cs, Ce and the covariates identified in the formula.
weights	optional case weights in fitting. Default to 1.
start	initial values for the parameters. This is in the format 'c(coefficients, zeta)'
...	additional arguments to be passed to optim[stats], most often a 'control' argument.
subset	expression saying which subset of the rows of the data should be used in the fit. All observations are included by default.
na.action	a function to filter missing data.
contrasts	a list of contrasts to be used for some or all of the factors appearing as variables in the model formula.
Hess	logical for whether the Hessian (the observed information matrix) should be returned.
model	logical for whether the model matrix should be returned.
method	default is probit; alternatives are logistic or complementary log-log or cauchit (corresponding to a Cauchy latent variable and only available in R >= 2.1.0).
debug	additional printing if > 0

Details

For cpolr, `cpolr.method` default is probit; for additional options, see method option in `polr`

Value

An object of classes `c("cpolr", "polr")`. This has components

`coefficients`	the coefficients of the linear predictor, which has no intercept.
`zeta`	the intercepts for the class boundaries.
`deviance`	the residual deviance.
`fitted.values`	a matrix, with a column for each level of the response.
`lev`	the names of the response levels.
`terms`	the 'terms' structure describing the model.
`df.residual`	the number of residual degrees of freedoms, calculated using the weights.
`edf`	the (effective) number of degrees of freedom used by the model.
`n, nobs`	the (effective) number of observations, calculated using the weights. ('nobs' is for use by 'stepAIC').
`call`	the matched call.
`convergence`	the convergence code returned by `optim`.
`niter`	the number of function and gradient evaluations used by `optim`.
`Hessian`	Hessian matrix from `optim`.

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Based on `polr` function written by Brian Ripley, modifications by Jonathan Wand

References

Venables, W. N. and Ripley, B. D. (2002) *Modern Applied Statistics with S.* 4th edition. Springer.

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

See Also

`anchors`, `polr`

Examples

```
data(freedom)

## an example of directly using cpolr:
ra <- anchors(self ~ vign1 + vign3 + vign6, data = freedom, method ="C")
freedom2 <- insert(freedom, ra )
out <- cpolr(cbind(Cs, Ce) ~ as.factor(country) + sex + educ,
            data = freedom2)
summary(out)


## simplified in the context of anchors:
fo <- list(self= self ~ 1,
           vign = cbind(vign1,vign3,vign6) ~ 1,
           cpolr= ~ as.factor(country) + sex + educ)
ra2 <- anchors(self ~ vign1 + vign3 + vign6, data = freedom, method ="C")
summary(ra, ties="cpolr")

## AVERAGE fitted values
## conditional on observed
fitted(ra2, ties="cpolr", unconditional=FALSE,average=TRUE)
## unconditional prediction
fitted(ra2, ties="cpolr", unconditional=TRUE,average=TRUE)

## fitted probability for each observation
## conditional on observed
fitted(ra2, ties="cpolr", unconditional=TRUE, average=FALSE)
## unconditional prediction
fitted(ra2, ties="cpolr", unconditional=TRUE, average=FALSE)
```

`fitted.anchors.cpolr` *Conditional and unconditional prediction for censored ordered probit*

Description

Conditional and unconditional prediction for censored ordered probit. Unconditional prediction returns the fitted values (predicted probabilities) from the `cpolr` object. Conditional prediction takes the observed range of the diff-corrected self-response output from `anchors` and renormalizes the predicted probabilities for each observation.

Usage

```
   ## S3 method for class 'anchors.cpolr'
fitted(object, average = FALSE, unconditional = FALSE, ...)
```

Arguments

object	anchors.cpolr object
average	a logical value. See values below for more details.
unconditional	Set to TRUE if you submit an anchors.object AND want the unconditional probabilities returned. One case that you would submit a anchors.rank object is if you did subsetting for the anchors object but not for the cpolr object, and want the intersection of the two objects used for the unconditional probabilities.
...	required for S3, but any other options will be ignored.

Value

If average = FALSE, a matrix of predicted probabilities with rows corresponding to observations, and columns corresponding to categories.

If average = TRUE, the matrix of predicted probabilities (conditional or unconditional) is summarized to a vector (summed by categories, then renormalized to sum to 1).

If anchors object has been specified, then each observation is renormalized to fall into the range of the diff-corrected self-response for that observation. If there are no ties for a given observation, then that observation is a vector consisting of (k-1) zeros and 1 one. If there are ties, then the predicted probabilities for that observation are renormalized to fall within the diff-corrected range.

If anchors object is omitted, identical to the matrix of predicted probabilities from the cpolr output.

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Venables, W. N. and Ripley, B. D. (2002) *Modern Applied Statistics with S.* 4th edition. Springer.

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

See Also

anchors, cpolr

Examples

```
## see examples in anchors
```

`fitted.anchors.rank` *Fitted values of non-parametric models*

Description

Fitted values of non-parametric models

Usage

```
   ## S3 method for class 'anchors.rank'
fitted(object, ..., ties = c("omit", "uniform", "cpolr",
                 "minentropy"), average = FALSE, unconditional = FALSE)
```

Arguments

`object`	object of class `anchors.rank`.
`...`	required for S3, but any other options will be ignored.
`ties`	method for allocating ties/interval valued cases to a scalar value
`average`	a logical value. See `values` below for more details.
`unconditional`	Set to TRUE if you submit an anchors.object AND want the unconditional probabilities returned. One case that you would submit a anchors.rank object is if you did subsetting for the anchors object but not for the cpolr object, and want the intersection of the two objects used for the unconditional probabilities.

Value

If `average = FALSE`, a matrix of predicted probabilities with rows corresponding to observations, and columns corresponding to categories.

If `average = TRUE`, the matrix of predicted probabilities (conditional or unconditional) is summarized to a vector.

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand `http://wand.stanford.edu`

References

Venables, W. N. and Ripley, B. D. (2002) *Modern Applied Statistics with S*. 4th edition. Springer.

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

See Also

anchors, cpolr

Examples

```
## Basic usage: see anchors
```

---

fitted.cpolr *Conditional and unconditional prediction for censored ordered probit*

Description

Conditional and unconditional prediction for censored ordered probit. Unconditional prediction returns the fitted values (predicted probabilities) from the cpolr object. Conditional prediction takes the observed range of the diff-corrected self-response output from anchors and renormalizes the predicted probabilities for each observation.

Usage

```
   ## S3 method for class 'cpolr'
fitted(object, anchors, average = FALSE, unconditional = FALSE, ...)
```

Arguments

object	output from cpolr.
anchors	leave missing for unconditional prediction (or set unconditional=TRUE). For conditional prediction, specify the object of class anchors.rank used to run cpolr originally.
average	a logical value. See values below for more details.

unconditional	Set to TRUE if you submit an anchors.object AND want the unconditional probabilities returned. One case that you would submit a anchors.rank object is if you did subsetting for the anchors object but not for the cpolr object, and want the intersection of the two objects used for the unconditional probabilities.
...	required for S3, but any other options will be ignored.

Value

If `average = FALSE`, a matrix of predicted probabilities with rows corresponding to observations, and columns corresponding to categories.

If `average = TRUE`, the matrix of predicted probabilities (conditional or unconditional) is summarized to a vector (summed by categories, then renormalized to sum to 1).

If `anchors` object has been specified, then each observation is renormalized to fall into the range of the diff-corrected self-response for that observation. If there are no ties for a given observation, then that observation is a vector consisting of (k-1) zeros and 1 one. If there are ties, then the predicted probabilities for that observation are renormalized to fall within the diff-corrected range.

If `anchors` object is omitted, identical to the matrix of predicted probabilities from the `cpolr` output.

Note

If the `anchors` object is made using a subset of the data used to create the `cpolr` object, then invoking `fitted.cpolr` will not use the same cases in calculating the conditional probabilities as it would if the `anchors` object is omitted!

If you want to have the same cases used in the unconditional calculation as in the conditional with a subsetted `anchors` object, then include `anchors` object and set `unconditional.override = TRUE`.

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand `http://wand.stanford.edu`

References

Venables, W. N. and Ripley, B. D. (2002) *Modern Applied Statistics with S.* 4th edition. Springer.

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

See Also

`anchors`, `cpolr`

Examples

```
## Basic usage: see cpolr
```

`freedom` *Freedom of Speech Data*

Description

Selection of individual-level survey data for freedom of speech.

Usage

```
data(freedom)
```

Details

A table with 3,500 observations and 12 variables.

- sex1 for men and 0 for women
- ageAge of respondent in years
- educLevels of education, coded as a numeric variable with
  - 1No formal education
  - 2Less than primary school education
  - 3Completed primary school
  - 4Completed secondary school
  - 5Completed high school
  - 6Completed college
  - 7Completed post-graduate degree
- countryCharacter strings consisting of "Oceana", "Eurasia", and "Eastasia", after Orwell's *1984*.
- selfSelf assessment (see below).
- vign1-vign6Response to vignettes (see below).

Survey respondents were asked in almost the same language for a self-assessment and for an assessment of several hypothetical persons described by written vignettes. The self assessment (`self`, in the data set), "How free do you think [name/you] [is/are] to express [him-her/your]self without fear of government reprisal?" was first asked of the survey respondent with respect to him or herself, and then after each of vignette. The possible response categories are:

- 1Completely free
- 2Very free
- 3Moderately free

- 4Slightly free
- 5Not free at all

The vignettes, ordered from most free to least free, are:

- vign1[Kay] does not like many of the government's policies. She frequently publishes her opinion in newspapers, criticizing decisions by officials and calling for change. She sees little reason these actions could lead to government reprisal.
- vign2[Michael] disagrees with many of the government's policies. Though he knows criticism is frowned upon, he doesn't believe the government would punish someone for expressing critical views. He makes his opinion known on most issues without regard to who is listening.
- vign3[Bob] has political views at odds with the government. He has heard of people occasionally being arrested for speaking out against the government, and government leaders sometimes make political speeches condemning those who criticize. He sometimes writes letters to newspapers about politics, but he is careful not to use his real name.
- vign4[Connie] does not like the government's stance on many issues. She has a friend who was arrested for being too openly critical of governmental leaders, and so she avoids voicing her opinions in public places.
- vign5[Vito] disagrees with many of the government's policies, and is very careful about whom he says this to, reserving his real opinions for family and close friends only. He knows several men who have been taken away by government officials for saying negative things in public.
- vign6[Sonny] lives in fear of being harassed for his political views. Everyone he knows who has spoken out against the government has been arrested or taken away. He never says a word about anything the government does, not even when he is at home alone with his family.

References

WHO's World Health Survey by Lydia Bendib, Somnath Chatterji, Alena Petrakova, Ritu Sadana, Joshua A. Salomon, Margie Schneider, Bedirhan Ustun, Maria Villanueva

Jonathan Wand, Gary King and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

`insert` *Insert DIF-corrected variable into original data frame*

Description

Insert the DIF corrected variable into the original data frame, with missing values for observations for which it was impossible to calculate DIF correction (due to missingness in either the self-response or one or more of the vignette responses).

Usage

```
insert(data, obj, vnames, overwrite, debug)
```

Arguments

data	Original data frame
obj	anchors.rank class object
vnames	A list of character vectors of length 2,which represent the variable names (in the output data frame) for the lower and upper bounds, respectively, of the DIF corrected variables. By default, this will be derived from column names of B and C in the anchors.rank object: `B=c("Bs", "Be"),C=c("Cs", "Ce")`.
overwrite	A logical value (defaults to `FALSE`). Indicates whether to overwrite variables with names the same as `colnames` already exist in `data`.
debug	Default: 0

Value

A data frame, with the same number of observations as the input `data`, but with two or four additional variables, corresponding to the lower and upper bounds of the DIF corrected variable.

Author(s)

Olivia Lau

References

Jonathan Wand, Gary King and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

See Also

anchors,cpolr

Examples

```
data(freedom)
ra <- anchors(self ~ vign1 + vign3 + vign6, data = freedom, method="B")
freedom <- insert(freedom, ra )
names(freedom)
```

mexchn *Poltical Efficacy Data*

Description

Data on political efficacy data from China and Mexico pilot surveys.

Survey respondents were asked in almost the same language for a self-assessment and for an assessment of several hypothetical persons described by written vignettes. The vignettes for one particular domain of political efficacy were the following:

xsay1: "[Alison] lacks clean drinking water. She and her neighbors are supporting an opposition candidate in the forthcoming elections that has promised to address the issue. It appears that so many people in her area feel the same way that the opposition candidate will defeat the incumbent representative."

xsay2: "[Imelda] lacks clean drinking water. She and her neighbors are drawing attention to the issue by collecting signatures on a petition. They plan to present the petition to each of the political parties before the upcoming election."

xsay3: "[Jane] lacks clean drinking water because the government is pursuing an industrial development plan. In the campaign for an upcoming election, an opposition party has promised to address the issue, but she feels it would be futile to vote for the opposition since the government is certain to win."

xsay4: "[Toshiro] lacks clean drinking water. There is a group of local leaders who could do something about the problem, but they have said that industrial development is the most important policy right now instead of clean water."

xsay5: "[Moses] lacks clean drinking water. He would like to change this, but he can't vote, and feels that no one in the government cares about this issue. So he suffers in silence, hoping something will be done in the future."

The following question is then read to the respondent for each vignette and for a self-assessment: How much say [does 'name' / do you] have in getting the government to address issues that interest [him / her / you]?

For the self-assessment and each of the vignette questions, respondents are given the same set of ordinal categories in which to respond, for example "(5) Unlimited say, (4) A lot of say, (3) Some say, (2) Little say, (1) No say at all."

Additional notes:

1. omits cases with missing values for demographics china,age,male,educyrs

2. but retains cases with missing question responses MISSING RESPONSES ARE included as ZEROES in xsayself,xsay1,xsay2,xsay3,xsay4,xsay5

3. Number of cases:

1. N = 5080 (stacked data, one obs per person-question)

2. Number of unique id values in each country with valid responses CHN MEX Total 371 + 551 = 922

4. Mapping of responses to values: "no say at all" 1 "little say" 2 "some say" 3 "a lot of say" 4 "unlimited say" 5

Usage

```
data(mexchn)
```

References

WHO's World Health Survey by Lydia Bendib, Somnath Chatterji, Alena Petrakova, Ritu Sadana, Joshua A. Salomon, Margie Schneider, Bedirhan Ustun, Maria Villanueva

King, Gary; Christopher J.L. Murray; Joshua A. Salomon; and Ajay Tandon. "Enhancing the Validity and Cross-cultural Comparability of Survey Research," American Political Science Review, Vol. 98, No. 1 (February, 2004): 191-207, copy at http://gking.harvard.edu/files/abs/vign-abs.shtml

---

plot.anchors.combn *Plot results from anchors(method='entropy')*

Description

Plot results from anchors(method='entropy')

Usage

```
  ## S3 method for class 'anchors.combn'
plot(x, ... , xy )
```

Arguments

x	anchors.combn object
...	additional options for plot
xy	name two columns from anchors.combn to plot (case insensitive, and you only need to specify first three letters of each name); must be a vector of strings of length 2.

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors,anchors.combn

Examples

```
## see help(anchors.combn) and demo(anchors.plot) for examples
```

`plot.anchors.rank` *Plot components of anchors.rank objects*

Description

Plot components of anchors.rank objects. Currently this only makes a scatter plot if anchors(...,combn=TRUE). For plots of densities of ranks, see `barplot.anchors.rank`

Usage

```
  ## S3 method for class 'anchors.rank'
plot(x, ..., xy)
```

Arguments

`x`	anchors.rank object
`...`	for plot
`xy`	name two columns from anchors.combn to plot (case insensitive, and you only need to specify first three letters of each name); must be a vector of strings of length 2; see Details below.

Details

Each observation in the plot is a subset of vignettes, represented by their index values as originally passed by the formula (see `anchors.order` for an example/description).

To define the axis of the scatter plot, the columns to choose from include:

"estimated": estimated entropy from cplor model

"minimum": minimum entropy from minimum.entropy calculation

"interval": number of cases with interval (non-scalar) ranks

"span" average span of ranks (including scalar cases)

"max" maximum B or C value for the subset of vignettes

Choose two of the above, e.g., xy=c("minimum","interval")

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors, anchors.order

Examples

```
## see help(anchors) and demo(anchors.plot) for examples
```

---

poleff *Simulated Poltical Efficacy Data*

Description

Simulated data based on political efficacy data from China and Mexico pilot surveys.

Survey respondents were asked in almost the same language for a self-assessment and for an assessment of several hypothetical persons described by written vignettes. The vignettes for one particular domain of political efficacy were the following:

xsay1: "[Alison] lacks clean drinking water. She and her neighbors are supporting an opposition candidate in the forthcoming elections that has promised to address the issue. It appears that so many people in her area feel the same way that the opposition candidate will defeat the incumbent representative."

xsay2: "[Imelda] lacks clean drinking water. She and her neighbors are drawing attention to the issue by collecting signatures on a petition. They plan to present the petition to each of the political parties before the upcoming election."

xsay3: "[Jane] lacks clean drinking water because the government is pursuing an industrial development plan. In the campaign for an upcoming election, an opposition party has promised to address the issue, but she feels it would be futile to vote for the opposition since the government is certain to win."

xsay4: "[Toshiro] lacks clean drinking water. There is a group of local leaders who could do something about the problem, but they have said that industrial development is the most important policy right now instead of clean water."

xsay5: "[Moses] lacks clean drinking water. He would like to change this, but he can't vote, and feels that no one in the government cares about this issue. So he suffers in silence, hoping something will be done in the future."

The following question is then read to the respondent for each vignette and for a self-assessment: How much say [does 'name' / do you] have in getting the government to address issues that interest [him / her / you]?

For the self-assessment and each of the vignette questions, respondents are given the same set of ordinal categories in which to respond, for example "(5) Unlimited say, (4) A lot of say, (3) Some say, (2) Little say, (1) No say at all."

Additional notes:

1. omits cases with missing values for demographics china,age,male,educyrs

2. but retains cases with missing question responses MISSING RESPONSES ARE included as ZEROES in xsayself,xsay1,xsay2,xsay3,xsay4,xsay5

3. Number of cases:

1. N = 5080 (stacked data, one obs per person-question)

2. Number of unique id values in each country with valid responses CHN MEX Total 371 + 551 = 922

4. Mapping of responses to values: "no say at all" 1 "little say" 2 "some say" 3 "a lot of say" 4 "unlimited say" 5

Usage

```
data(poleff)
```

Author(s)

Jonathan Wand

`poleffna` *Simulated Poltical Efficacy Data—with NAs, DEMO ONLY!*

Description

This is only used as an example on effect of missing data coding. Missing reponses are coded with NA here instead of zeroes.

Usage

```
data(poleff)
```

Author(s)

Jonathan Wand

`replace.list` *Updating contents of one list using a second list*

Description

Update or insert named elements into a list using a second source list.

Usage

```
replace.list( old, new )
```

Arguments

`old`	The target list to be updated
`new`	The soure list whose elements will be inserted into 'old'

Value

An updated list will be returned – note that the original

Note

'old' is unchanged: remember to assign the result.

Also, this is recursive function if 'new' is a list of lists.

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors

Examples

```
## replace y, and insert w
a <- list( x = 1, y = 2, z = 3)
b <- list( y = 4, w = 5)
replace.list( a, b)

## recursive
a <- list( x = list( y = 1, z = 2) )
b <- list( x = list( y = 2, w = 3) )
replace.list( a, b)

## if there is any disagreement between structure of old and new
## then structure of new list replaces structure of old list
a <- list( x = 1, y = list( y=1,z=2))
b <- list( x = list( y = 2, w = 3) , y = -9)
replace.list( a, b)
```

---

replace.value *Replaces occurences of a value with another value in set of columns*

Description

Replaces a single value in a set of columns with another given value. This makes it easy to change the default missing value indicator, for example.

Usage

```
replace.value( data, names, from=NA, to=as.integer(0), verbose = FALSE)
```

Arguments

data	data frame
names	a vector of character strings identifying columns to be updated
from	value to find and replace, can specify vectors
to	replacement value, must be a scalar
verbose	prints warnings if typeof(from) != typeof(to)

Details

Will replace storage mode of 'to' with mode of 'from' in dataset.

Value

A data frame, with the same number of observations as the input data, but with replaced values as specified.

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors

Examples

```
## data with zeroes as missing values in responses
data(poleff)
## data with NA missing values in responses
data(poleffna)

## convert NA to 0:
dd  <- replace.value(poleffna,c("xsayself","xsay1","xsay2","xsay3","xsay4","xsay5"))

## convert 0 to NA:
dd2 <- replace.value(poleff,c("xsayself","xsay1","xsay2","xsay3","xsay4","xsay5"),0,as.double(NA))
```

---

selfcare *Selfcare data for China*

Description

Questions:

1. Overall in the last 30 days, how much difficulty did [name of person/you] have with self-care, such as washing or dressing [yourself/himself/herself]? 2. In the last 30 days, how much difficulty did [name of person/you] have in taking care of and maintaining [your/his/her] general appearance (e.g.grooming, looking neat and tidy etc.)

Response categories:

1. None 2. Mild 3. Moderate 4. Severe 5. Extreme/Cannot Do

Vignettes:

1. [Helena] pays a lot of attention to the way she looks. She requires no assistance with cleanliness, dressing and eating.***

2. [Anne] takes twice as long as others to put on and take off clothes, but needs no help with this. Although it requires an effort, she is able to bathe and groom herself, though less frequently than before. She does not require help with feeding.***

3. [Victor] usually requires no assistance with cleanliness, dressing and eating. He occasionally suffers from back pain and when this happens he needs help with bathing and dressing.***

4. [Sandra] lives on her own and has no relatives or friends nearby. Because of her arthritis, she is house-bound. She often stays all day in the same clothes that she has slept in as changing clothes is too painful. A neighbour helps her wash herself.***

5. [Sue] is quadriplegic and must be washed, groomed, dressed and fed by somebody else.***

Variables:

q2020: self-assessemnt

q2101d: vignette 1

q2119d: vignette 2

q2113d: vignette 3

q2105d: vignette 4

q2117d: vignette 5

q1008: married is '2'

q1006: height

q1001: sex

q1002: age

q1004: weight

q1010: years of schooling.

Usage

```
data(selfcare)
```

References

WHO's World Health Survey by Lydia Bendib, Somnath Chatterji, Alena Petrakova, Ritu Sadana, Joshua A. Salomon, Margie Schneider, Bedirhan Ustun, Maria Villanueva

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

`sleep` *Sleep data for China*

Description

Question:

1. In the last 30 days, how much difficulty do you think [name of person/you] had with sleeping, such as falling asleep, waking up frequently during the night or waking up too early in the morning?

2. In the last 30 days, how much of a problem did you have due to not feeling rested and refreshed during the day?

Response categories:

1. None 2. Mild 3. Moderate 4. Severe 5. Extreme/Cannot Do

Vignettes:

1. [Mark] falls asleep every night within five minutes of going to bed. He sleeps soundly during the whole night and wakes up in the morning feeling well-rested.***

2. [Paolo] has no trouble falling asleep at night and does not wake up during the night, but every morning he finds it difficult to wake up. He uses an alarm clock but falls back asleep after the alarm goes off. He is late to work on four out of five days.***

3. [Noemi] falls asleep easily at night, but two nights a week she wakes up in the middle of the night and cannot go back to sleep for the rest of the night.***

4. [Damien] wakes up almost once every hour during the night. When she wakes up in the night, it takes around 15 minutes for her to go back to sleep. In the morning she does not feel well-rested.***

5. [Daniel] takes about two hours every night to fall asleep. He wakes up once or twice a night feeling panicked and takes more than one hour to fall asleep again. Three to four nights a week he wakes up in the middle of the night and cannot go back to sleep for the rest of the night.***

q2080 : self-assessment

q2119c : vignette 1

q2103c : vignette 2

q2107c : vignette 3

q2109c : vignette 4

q2115c : vignette 5

q1008: married is '2'

q1006: height

q1001: sex

q1002: age

q1004: weight

q1010: years of schooling.

Usage

```
data(sleep)
```

References

WHO's World Health Survey by Lydia Bendib, Somnath Chatterji, Alena Petrakova, Ritu Sadana, Joshua A. Salomon, Margie Schneider, Bedirhan Ustun, Maria Villanueva

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

`summary.anchors.chopit`

Summary of CHOPIT Analysis

Description

Prints estimates and -log-likelihood from the out of CHOPIT model.

Usage

```
 ## S3 method for class 'anchors.chopit'
summary( object, ..., digits = 4 )
```

Arguments

`object`	The object of class "anchors.chopit", as returned by `anchors`
`...`	additional arguments affecting the summary produced
`digits`	Number of digits you would like to have printed, using `round` function.

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand `http://wand.stanford.edu`

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

King, Gary; Christopher J.L. Murray; Joshua A. Salomon; and Ajay Tandon. "Enhancing the Validity and Cross-cultural Comparability of Survey Research," American Political Science Review, Vol. 98, No. 1 (February, 2004): 191-207, copy at http://gking.harvard.edu/files/abs/vign-abs.shtml

See Also

anchors,chopit

Examples

```
## see help(anchors)
```

---

summary.anchors.combn *Summary of anchors(..., method='entropy') analysis*

Description

Summary of anchors(..., method='entropy') analysis

Usage

```
 ## S3 method for class 'anchors.combn'
summary( object, ...,
                   sort = c("max","estimated","minimum","interval","span"),
                                  digits=3)
```

Arguments

object	The object of class "anchors.combn", as returned by anchors
...	additional arguments affecting the summary produced.
sort	column by which to sort results
digits	sig digits to print

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

King, Gary; Christopher J.L. Murray; Joshua A. Salomon; and Ajay Tandon. "Enhancing the Validity and Cross-cultural Comparability of Survey Research," American Political Science Review, Vol. 98, No. 1 (February, 2004): 191-207, copy at http://gking.harvard.edu/files/abs/vign-abs.shtml

See Also

anchors

Examples

```
## see anchors
```

`summary.anchors.order` *Calculate frequency of vignette orderings*

Description

Calculate frequency of vignette orderings

Usage

```
  ## S3 method for class 'anchors.order'
summary(object, top, digits = getOption("digits"),verbose=FALSE, ...)
```

Arguments

`object`	anchors.order object
`top`	Show 'top' most common combinations
`digits`	digits to print
`verbose`	additional summaries
`...`	additional arguments

Details

Each vignette is represented by the integer indexing it's place as passed to the function. For example, let

fo <- list(vign = cbind(vign1,vign2,vign3))

then 1=vign1, 2=vign2, 3=vign3. In the case of an anchors.order object produced with the option ties="interval", tied variables are represented by being included in brackets.

z <- anchors(fo, data, method="order", options=anchors.options(ties="interval"))

then a row with "{1,3},2" indicates that vign1 and vign3 are tied, and vign2 has a higher value than both of them.

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors,anchors.order

Examples

```
## see example in help(anchors.order)
```

---

summary.anchors.rank *Summary of non-parameteric anchors analysis*

Description

Summary of non-parameteric analysis of a set of vignettes and a self-assessment.

Usage

```
 ## S3 method for class 'anchors.rank'
summary( object, ..., ties = c("omit", "uniform", "cpolr",
                "minentropy"), combn = TRUE, digits = 3)
```

Arguments

object	The object of class "anchors.rank", as returned by anchors
...	additional arguments affecting the summary produced.
ties	(optional) shows distribution of ranks by method for allocating ties/interval valued cases to a scalar value; can be one or more of the following: "uniform": allocates in equal proportions among scalar values "omit": drops cases with interval values "cpolr": uses censored ordered probit model to allocate ties "minentropy": allocates ties to produce minimum entropy
combn	print summary of combn if avaiable in anchors.rank object
digits	sig digits to print

Note

Related materials and worked examples are available at http://wand.stanford.edu/anchors/

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

King, Gary; Christopher J.L. Murray; Joshua A. Salomon; and Ajay Tandon. "Enhancing the Validity and Cross-cultural Comparability of Survey Research," American Political Science Review, Vol. 98, No. 1 (February, 2004): 191-207, copy at http://gking.harvard.edu/files/abs/vign-abs.shtml

See Also

anchors

Examples

```
## see anchors
```

---

table1 *Results from cases given in King and Wand (2007)*

Description

Table with 13 observations and two columns, "Cs" (indicating the lower bound of the range for the DIF-corrected variable), and "Ce" (indicating the upper case of the DIF-corrected variable). This table provides a baseline for checking the output from the anchors example.

Usage

```
data(table1)
```

Author(s)

Gary King and Jonathan Wand

References

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

`table1src` *Specific response values that have inequalities to create table1*

Description

Table with 13 observations.

summary(anchors(y ~ z1 + z2 , data=table1src))

will create contents of data(table1)

Usage

```
data(table1src)
```

Author(s)

Gary King and Jonathan Wand

References

Gary King and Jonathan Wand. "Comparing Incomparable Survey Responses: New Tools for Anchoring Vignettes," Political Analysis, 15, 1 (Winter, 2007): Pp. 46-66, copy at http://gking.harvard.edu/files/abs/c-abs.shtml.

`trim.data` *Trim a dataset to have same cases present in an anchors.data object*

Description

Given a dataset X that was used in the process of creating an anchors.data object Y (which may have had cases deleted due to missing values), trim cases of X to include only cases that would be used in an anchors() analyis of Y. Matching is done by rownames.

Usage

```
trim.data( data, anchors )
```

Arguments

`data`	A data.frame or matrix
`anchors`	An object returned by `anchors`

Value

A data.frame or matrix with cases that match rows of anchors$data$z0; matching done by rownames

Note

'data' is unchanged: remember to assign the result.

Author(s)

Jonathan Wand http://wand.stanford.edu

References

Wand, Jonathan; Gary King; and Olivia Lau. (2007) "Anchors: Software for Anchoring Vignettes". *Journal of Statistical Software*. Forthcoming. copy at http://wand.stanford.edu/research/anchors-jss.pdf

Wand, Jonathan and Gary King. (2007) Anchoring Vignetttes in R: A (different kind of) Vignette copy at http://wand.stanford.edu/anchors/doc/anchors.pdf

See Also

anchors

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