Package 'eatPrep'

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2 aggregateData

aggr	egateData		A_{ξ}	ggi	reg	gai	te I	Da	ıta	se	ts	wi	ith	Se	2V 6	erc	ıl I	Ki	na	ls o	of.	M	iss	in	g I	Val	lue	?S			
Index																															19
	writeSpss	 						•																			•				17
	scoreData																														
	recodeMbi																														
	readSpss . recodeData																														

Description

Aggregate datasets with constraints on missing values

Usage

Arguments

dat A data frame containing the data to be aggregated.

subunits A data frame with subunit information. See 'Details'.

A data frame with unit information. See 'Details'.

aggregatemissings

Optional: A symmetrical $n \times n$ matrix with information on how missing values should be aggregated. If no matrix is given, the default will be used. See 'Examples'

'Examples'.

rename Logical indicating whether units with only one subunit should be renamed to

their unit name? Default is FALSE.

recodedData Logical indicating whether colnames in dat are the subunit names (as in subunits\$subunit)

or recoded subunit names (as in subunits\$subunitRecoded). Default is TRUE,

meaning that colnames are recoded subitem names.

verbose Logical. If TRUE additional information is printed.

Details

aggregateData aggregates units in data frames with special consideration of missing values. The aggregation of missing values is specified in the argument aggregatemissings. The rownames and colnames of this $n \times n$ matrix correspond to the missing codes in the data. Additionally, the values "vc" (for valid code) and "err" (for error) are used. If aggregatemissings is a data frame, it will be coerced to a matrix with the first column of the data frame being transformed into the rownames of the matrix. A warning will be given if the matrix is not symmetrical.

aggregateData combines the subunits one by one, i.e. it aggregates the first two subunits of a unit, then adds the third subunit to the new aggregated variable and continues in this manner until all subunits are aggregated. In every step during the process a value of the first variable (e.g., the aggregated variable from the previous step) is matched with the rownames of aggregatemissings and the corresponding value of the second variable (e.g., the next subitem to be aggregated) is matched with the colnames of aggregatemissings. The new value of the aggregated variable

aggregateData 3

will therefore be the value in aggregatemissings[firstVar, secondVar]. If the aggregation produces "err" at any point, it will stop. If the value in the final aggregated variable is "vc", either the mean or the sum of subunits will be calculated (the rule given in units\$unitAggregateRule determines which one will be chosen).

Examples of data frames subunits and units can be found via data(inputList).

Value

A data frame with aggregated units and, if rename = TRUE, renamed subunits.

Warning

Missings are only correctly aggregated if their values correspond to the values given in aggregatemissings. aggregateData does not check for value types or whether codes are valid. Use of checkData and recodeData before using aggregateData is therefore strongly recommended.

Author(s)

Nicole Haag, Anna Lenski

References

For missing types see http://code.google.com/p/zkdlib/wiki/MissingHandling

See Also

recodeData, checkData

```
data(inputDat)
data(inputList)

dat1 <- inputDat[[1]]  # get first dataset from inputDat

# recode data
datRec <- recodeData(dat1, inputList$values, inputList$subunits)

# define matrix for missing aggregation (note: this is the default matrix)
am <- matrix(c("vc" , "mvi", "vc" , "mci", "err", "vc" , "vc" , "err",
"mvi", "mvi", "err", "mci", "err", "err", "err", "err",
"vc" , "err", "mnr", "mci", "err", "mir", "mnr", "err",
"mci", "mci", "mci", "mci", "err", "mir", "mci", "err",
"err", "err", "err", "err", "mbd", "err", "err", "err",
"vc" , "err", "mir", "mci", "err", "mir", "mir", "err",
"vc" , "err", "mnr", "mci", "err", "mir", "mbi", "err",
"err", "err", "err", "err", "err", "err", "err", "err", "err", "err",
"err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "err", "er
```

```
verbose = TRUE)
```

automateDataPreparation

automateDataPreparation

Description

prepare datasets for automateModels

Usage

```
automateDataPreparation(datList = NULL, inputList, path = NULL,
readSpss, checkData, mergeData, recodeData, recodeMnr = FALSE,
aggregateData, scoreData, writeSpss,
mnrFunction = c( "recodeMbiToMnr" , "mnrCoding" ),
filedat = "mydata.txt", filesps = "readmydata.sps", breaks=NULL, nMbi = 2,
rotation.id = NULL, aggregatemissings = NULL, rename = TRUE, recodedData = TRUE,
correctDigits=FALSE, truncateSpaceChar = TRUE, newID = NULL, oldIDs = NULL,
missing.rule = list(mvi = 0, mnr = 0, mci = 0, mbd = NA, mir = 0, mbi = 0),
verbose = FALSE)
```

a list of data frames (see data(inputDat)). If NULL SPSS .sav files have to be

Arguments

datList

uatList	read in and readSPSS has to be TRUE.
inputList	a list of data frames containing additional information (see data(inputList)).
path	a character string containing the path required by readSpss (source of SPSS files) and writeSpss. Default is the current R working directory.
readSpss	logical. If TRUE function readSpss will be called.
checkData	logical. If TRUE function checkData will be called.
mergeData	logical. If TRUE function mergeData will be called.
recodeData	logical. If TRUE function recodeData will be called.
recodeMnr	logical. If TRUE function recodeMbiToMnr will be called.
aggregateData	logical. If TRUE function aggregateData will be called.
scoreData	logical. If TRUE function scoreData will be called.
writeSpss	logical. If TRUE function writeSpss will be called.
mnrFunction	character. Choose one of two functions for mnr coding, either "recodeMbiTo-Mnr" (default) or "mnrCoding".
filedat	a character string containing the name of the output data file required by writeSpss.
filesps	a character string containing the name of the output syntax file required by writeSpss.
breaks	numeric vector (argument used by recodeMbiToMnr).
nMbi	numeric (argument used by recodeMbiToMnr).
rotation.id	character (argument used by recodeMbiToMnr).

catPbc 5

missing.rule a list containing recode information for character missings required by writeSpss.

See 'References' for description of default values.

aggregatemissings

a symmetrical $n \times n$ matrix or a data frame from inputListq with information on how missing values should be aggregated. If no matrix is given,

the default will be used. See 'Details' in aggregateData.

rename logical. See aggregateData. recodedData logical. See aggregateData.

correctDigits logical. See readSpss.

truncateSpaceChar

logical. See readSpss.

newID a character string containing the case IDs name in the final data frame. Default

is "ID" or a character string specified in inputList\$newID.

oldIDs a vector of character strings containing the IDs names in the original datasets.

Default is as specified in inputList\$savFiles.

verbose logical. If TRUE progress and additional information is printed.

Value

A data frame.

Author(s)

Karoline Sachse

References

http://code.google.com/p/zkdlib/wiki/MissingHandling

Examples

catPbc

Calculate Item Discrimination for Each Category of Categorical Variables

Description

catPbc calculates discrimination statistics for the categories of categorical variables, i.e. the correlations of each category with the total score on the test. This information can be useful in determining which categories of an item are influencing the overall fit and discrimination in item response scaling applications and/or to find mistakes in recoding.

6 catPbc

Usage

```
catPbc(datRaw, datRec, idRaw, idRec, context.vars, values, subunits, xlsx = NULL)
```

Arguments

datRaw A merged unrecoded dataset

datRec The same dataset as in datRaw, in recoded form

idRaw Name or column number of the identifier (ID) variable in unrecoded dataset idRec Name or column number of the identifier (ID) variable in recoded dataset context.vars

Names or column numbers of one or more context variables (e.g., sex, school).

catPbc will ignore these variables.

Data frame with information about values, see inputList for details. values subunits Data frame with information about subunits, see inputList for details.

xlsx Optional: Full path of Excel file for results.

Details

The column names of datRaw and datRec must be consistent with the names provided by the columns subunit and subunitRecoded in data.frame subunits. Otherwise, catPbc will fail.

Value

A data frame with the discrimination values for each category of categorical variables. The data frame contains the following columns:

item Name of unrecoded item

cat Name of category

Number of responses for this item Absolute frequency of the category freq frea.rel Relative frequency of the category

catPbc Discrimination value for the category (correlation with total score)

recodevalue Recode value for the category

subunitType Type of subunit, see inputList for details

Author(s)

Nicole Haag

```
data(inputDat)
data(inputList)
datRaw <- mergeData(newID = "ID", datList = inputDat, addMbd = TRUE)</pre>
datRec <- recodeData(datRaw, values = inputList$values, subunits=inputList$subunits)</pre>
     <- catPbc(datRaw, datRec, idRaw = "ID", idRec = "ID", context.vars = "hisei",</pre>
                   values = inputList$values, subunits = inputList$subunits)
```

checkData 7

checkData	Check Datasets for Missing Values and Invalid Codes	

Description

Check data frames for missing or duplicated entries in the ID variable, persons and/or variables without valid codes, and invalid codes. Invalid codes are codes which are not specified in table values.

Usage

```
checkData (dat, values, subunits, units, verbose = TRUE)
```

Arguments

dat	A data frame to be checked.	
gat	- A data trame to be checked.	

values A data frame with code information. See 'Details'.
subunits A data frame with subunit information. See 'Details'.
units A data frame with unit information. See 'Details'.
verbose Logical. If FALSE no information is printed.

Details

The results of checkData will be written to the console.

Examples of data frames values, subunits and units can be found via data(inputList).

Author(s)

Nicole Haag, Anna Lenski

References

For missing types see http://code.google.com/p/zkdlib/wiki/MissingHandling

Description

Check data frames according to test design for valid codes instead of expected sysMis and for sysMis instead of valid codes.

8 inputDat

Arguments

dat	A data frame
booklets	A data frame with booklet information. See 'Examples'.
blocks	A data frame with block information. See 'Examples'.
rotation	A data frame with rotation information. See 'Examples'.
sysMis	sysMis identifier as character. Default is "NA".
id	Case-id identifier as character. Default is "ID".
	Optional: A data frame with subunit information (c.f. inputList). See 'Details'. Used to find names of recoded subunits.
verbose	logical. If FALSE no information is printed.

Author(s)

Karoline Sachse

Examples

inputDat

List of Three Datasets from Educational Assessment

Description

Simulated data for three booklets for an educational assessment study.

```
data(inputDat)
```

inputList 9

Format

This list contains 3 data frames, each with the following columns:

ID Person-ID

Hisei A continuous covariate.

Ixx Item responses to a selection of 30 test items.

Details

code, subunit and unit descriptions are stored in dataset inputList.

Examples

```
data(inputDat)
str(inputDat)
```

inputList

Data Frames with Code, Subunit and Unit Information for Datasets in inputDat

Description

These data frames contain information about codes, subunits and units for the datasets in inputDat and are necessary inputs for e.g. automateDataPreparation, checkData, recodeData, aggregateData and scoreData.

Usage

```
data(inputList)
```

Format

A list with three data frames:

1. units: Unit information, contains the following columns:

```
unit Unit name.
unitType Subunit types: ID = ID variable; TI = test item; CV = context variable.
unitLabel Unit label, to be used by writeSpss.
unitDescription Unit description.
unitAggregateRule Aggregate rule for unit: SUM; MEAN.
unitScoreRule Scoring rule for unit (not sure how this will be used in the future.)
```

2. subunits: Subunit information, contains the following columns:

```
unit Unit name, for which subunits are given.
subunit Subunit name.
subunitType Subunit types:?.
subunitLabel Subunit label, to be used by writeSpss.
subunitDescription Subunit descriptions.
subunitPosition Subunit position in test booklet (e.g., line 1).
```

10 inputList

subunitTransniveau Subunit transformation level.

subunitRecoded Name of recoded subunit.

subunitLabelRecoded Label for recoded subunit, to be used when writeSpss is applied to
 a dataset produced by recodeData.

3. values: Value information, contains the following columns:

subunit Subunit name, for which values are given.

value Valid values for the respective subunit.

valueRecode Recode values for the respective value.

valueType Value types: vc = valid code; mbd = missing - by design; mvi = missing - volume insufficient; mnr = missing - not reached; mci = missing - coding impossible; mbi = missing - by intention.

valueLabel Value labels, to be used by writeSpss.

valueDescription Value descriptions.

valueLabelRecoded Labels for recoded values, to be used when writeSpss is applied to a dataset produced by recodeData.

valueDescriptionRecoded Descriptions for recoded values.

4. unitRecodings: Unit recoding information, contains the following columns:

unit Unit name

value Valid values for the respective unit.

valueRecode Recode values for the respective value.

valueType Value types: vc = valid code; mbd = missing - by design; mvi = missing - volume insufficient; mnr = missing - not reached; mci = missing - coding impossible; mbi = missing - by intention.

valueLabel Value labels, to be used by writeSpss.

valueDescription Value descriptions.

valueLabelRecoded Labels for recoded values, to be used when writeSpss is applied to a dataset produced by recodeData.

5. savFiles: information for readSpss, contains the following columns:

filename SPSS filenames

case.id ID variable in the respective dataset, used by mergeData

6. newID: information for mergeData, contains the following columns:

kev one of the entries should be master-id

value the corresponding value; how the ID variable in the final dataset shall be named

- 7. aggrMiss: missing aggregation pattern for aggregateData
- 8. blocks: missing aggregation pattern for aggregateData

subunit Subunit name.

block Block name.

subunitBlockPosition The subunit's position in the corresponding block.

9. booklets: Design

booklet Booklet name.

block1 ... blockX Block names in booklet.

10. rotation: Assignment of IDs to booklets

ID Case identifier.

booklet Booklet name.

mergeData 11

Examples

```
data(inputList)
str(inputList)
```

	_	
mer	geL	ata)

Merge Data Frames and fill NA gaps

Description

Merges data frames using one key variable. Fills NA gaps.

Usage

```
mergeData(newID = "ID", datList, oldIDs=NULL, addMbd = FALSE, verbose=FALSE)
```

Arguments

newID	character string containing the ID variable's name in the future merged dataset
datList	list of data frames to be merged
oldIDs	character vector OR numeric vector containing either names of the key variables in datList or their column number in each dataframe in datList Default is a vector containing replicates of the value of newID.
addMbd	logical. If TRUE NA is replaced by "mbd" (missing by desgin).
verbose	logical. If TRUE progress is printed.

Value

a data frame containing unique cases and unique variables. All cases and all variables that could be identified in the original data frames will be kept and matched.

Author(s)

Karoline Sachse, Nicole Haag

```
data(inputDat)
str(inputDat)

mergedDataset <- mergeData("idstud", inputDat, c("ID", "ID", "ID"), addMbd=TRUE)
str(mergedDataset)

mergedDataset <- mergeData("ID", inputDat, verbose=TRUE)
str(mergedDataset)</pre>
```

12 readSpss

readDaemonXlsx

read xlsx-Files produced by ZKDaemon

Description

read xlsx-Files produced by ZKDaemon

Usage

```
readDaemonXlsx(filename)
```

Arguments

filename

A character string containing path, name and extension of .xlsx produced by ZKDaemon. Caution! Sheet names are important (see Details).

Details

```
Reads in the following .xlsx sheets: "units", "subunits", "values", "unitrecoding", "sav-files", "params", "aggregate-missings", "itemproperties", "propertylabels", "booklets", "blocks"
```

Value

A list of data frames containing information that is required by automateDataPreparation

Author(s)

Karoline Sachse

Examples

str(inputList)

readSpss

Read SPSS Data Files and Truncate Space in String Variables and Change Column Width

Description

Read SPSS Data Files and Truncate Space in String Variables and Change Column Width

```
readSpss(file, correctDigits = FALSE, truncateSpaceChar = TRUE, oldID = NULL, newID = NULL)
```

recodeData 13

Arguments

file Name of the SPSS data file to be read in

correctDigits Logical: whether values should be transformed to have uniform width in each

column, see 'Details'.

truncateSpaceChar

Logical: whether string variables should be trimmed to remove leading and trail-

ing spaces.

oldID Optional: A character string containing the ID name in the original SPSS dataset.

newID Optional: A character string containing the ID name after reading in the data.

Details

If correctDigits=TRUE, the values in each column are transformed to have uniform width by adding leading zeros. The width of a column is determined by the longest value in this column, e.g., if a column contains the values 1, 10, 100 the transformed column will be 001, 010, 100. This can be useful if the values had leading zeros which were removed by reading in the SPSS file.

If oldID and newID are used, the ID variable in the SPSS dataset will be changed to newID when the file is read.

Value

A data frame with trimmed character variables and corrected values (if specified). All columns are of mode character.

Author(s)

Nicole Haag, Sebastian Weirich

recodeData	Recode Datasets with Missing Values	
------------	-------------------------------------	--

Description

Recode datasets with special consideration of missing values.

Usage

```
recodeData(dat, values, subunits, verbose = FALSE)
```

Arguments

values A data frame with code information. See 'Details'.
subunits A data frame with subunit information. See 'Details'.
verbose Logical. If TRUE additional information is printed.

14 recodeMbiToMnr

Details

recodeData recodes data frames with special consideration of missing values. The results of recodeData will be written to a protocol file with sunk. recodeData will give warnings, if missing or incomplete recode informations are found. Values without recode information will NOT be recoded!

Examples of data frames values and subunits can be found via data(inputList).

Value

A data frame with recoded variables according to the specifications in values and subunits. Colnames will be the names specified in subunits\$subunitRecoded.

Author(s)

Martin Hecht, Christiane Penk, Nicole Haag

References

http://code.google.com/p/zkdlib/wiki/MissingHandling

See Also

```
aggregateData, checkData
```

Examples

```
data(inputDat)
data(inputList)

dat1 <- inputDat[[1]]  # get first dataset from inputDat
datRec <- recodeData(dat1, inputList$values, inputList$subunits, verbose = TRUE)
str(datRec)</pre>
```

recodeMbiToMnr

Recode Missing by Intention to Missing not Reached

Description

recodeMbiToMnr converts missing responses coded as missing by intention at the end of a block of items to missing not reached.

```
recodeMbiToMnr (dat, id, rotation.id, booklets, blocks, rotation, breaks, nMbi = 2,
subunits = NULL, verbose = FALSE)
```

recodeMbiToMnr 15

Arguments

dat A dataset. Missing by intention needs to be coded mbi.

id Name or column number of identifier (ID) variable in dataset.

rotation.id Name of rotation indicator (e.g. "booklet") in dat.

booklets A data frame containing the sequence of blocks in each booklet in wide format.

The column names need to be booklet, block1, block2, block3

blocks A data frame containing the sequence of subunits in each block in long format.

The column names need to be subunit, block, subunitBlockPosition.

rotation A data frame containing the assignment of booklets to participants. The first

column should have the same name as the ID variable in dat and the second

column needs to be namedbooklet.

breaks Number of blocks after which mbi shall be recoded to mnr, e.g., c(1,2) to spec-

ify breaks after the first and second block.

nMbi Number of mbi-Codes required at the end of a block to code mnr. Needs to be

>=1.

subunits Optional: A data frame with subunit information if a dataset is used that has

been recoded with recodeData. This data frame will be used to find the names

of recoded subunits in dat.

verbose logical. If TRUE additional diagnostics are printed.

Details

In order to code mnr, a certain number of subunits at the end of a block need to be coded mbi. This number can be specified with the argument nMbi. The default is 2, i.e. if the last and second to last subitem in a block are coded mbi, both subunits, as well as the preceding subunits coded mbi, will be recoded to mnr. If nMbi is larger than the number of subunits in a given block, no subitem in this block will be recoded. If all subunits in a block are coded mbi, none of them will be recoded to mnr.

If a subunits data frame is specified, recodeMbiToMnr expects to find the recoded subunits in dat.

Examples for data frames booklets, blocks, rotation and subunits can be found via data(inputList)

Value

A data frame with missing not reached coded as mnr. For each person with at least one mnr in the returned dataset the names of recoded variables are given as an attribute to dat.

Author(s)

Nicole Haag

16 scoreData

```
nMbi = 2, subunits = inputList$subunits, verbose = TRUE)
```

scoreData

Score Datasets with Missing Values

Description

Score datasets with special consideration of missing values.

Usage

```
scoreData(dat, unitrecodings, units, verbose = FALSE)
```

Arguments

dat A data frame

unitrecodings A data frame with information about the scoring of units. See 'Details'.

units A data frame with unit information. See 'Details'.

verbose logical. If TRUE additional information is printed.

Details

This function is very similar to recodeData, but with a few defaults that are more sensible for scoring. scoreData will give warnings when incomplete scoring informations are found. Values without scoring information will not be scored!

Examples of data frames unitrecodings and units can be found via data(inputList).

Value

A data frame with scored variables according to the specifications in unitrecodings and units.

Author(s)

Nicole Haag

References

http://code.google.com/p/zkdlib/wiki/MissingHandling

See Also

recodeData, automateDataPreparation, inputList

writeSpss 17

Examples

writeSpss

Export Datasets to SPSS

Description

Writes data and SPSS syntax files.

Usage

```
writeSpss(dat, values, subunits, units,
    filedat = "mydata.txt", filesps = "readmydata.sps",
    missing.rule = list(mvi = 0, mnr = 0, mci = NA, mbd = NA, mir = 0, mbi = 0),
    path = getwd(), sep = "\t", dec = ",", verbose = FALSE)
```

Arguments

dat	A data frame which should be exported to SPSS.
values	A data frame with code information. See 'Details'.
subunits	A data frame with subunit information. See 'Details'.
units	A data frame with unit information. See 'Details'.
filedat	A character string with the name of the output data file.
filesps	A character string with the name of the output syntax file.
missing.rule	A list containing recode information for character missings. See 'References' for description of default values.
path	A character string containing the path of the output file. The value in path is appended to filedat and filesps. By default, files are written to the current R working directory. If path=NULL then no file path appending is done.
sep	The separator between the data fields.
dec	The decimal separator for numerical data.
verbose	Logical. If TRUE file names and additional information are printed.

18 writeSpss

Details

This function automates most of the work needed to export a dataset to SPSS. It uses a modified version of writeForeignSPSS() from the foreign package and of mids2spss() from the mice package. The modified version allows for a choice of the field and decimal separators, makes some improvements to the formatting and provides variable labels and value labels according to the information in the data frames values, subunits and units.

Examples of data frames values, subunits and units can be found on data(inputList).

The SPSS syntax file has the proper file names and separators set, so in principle it should run and read the data without alteration. SPSS is more strict than R with respect to the paths. Always use the full path, otherwise SPSS may not be able to find the data file.

Value

Used for its side effects. The return value is NULL.

Author(s)

Nicole Haag

References

http://code.google.com/p/zkdlib/wiki/MissingHandling

See Also

inputList

Index

```
*Topic datasets
    inputDat, 8
    inputList, 9
aggregateData, 2, 4, 5, 9, 10, 14
automateDataPreparation, 4, 9, 12, 16
catPbc, 5
checkData, 3, 4, 7, 9, 14
checkDesign, 7
inputDat, 4, 8, 9
{\tt inputList}, {\it 3, 4, 6, 8, 9, 9, 14-16, 18}
mergeData, 4, 10, 11
readDaemonXlsx, 12
readSpss, 4, 5, 10, 12
recodeData, 3, 4, 9, 10, 13, 16
recodeMbiToMnr, 4, 14
scoreData, 4, 9, 16
writeSpss, 4, 5, 9, 10, 17
```