Package ‘surveydata’

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Copyright Andrie de Vries
Description Data obtained from surveys contains information not only about the survey responses, but also the survey metadata, e.g. the original survey questions and the answer options. The 'surveydata' package makes it easy to keep track of this metadata, and to easily extract columns with specific questions.
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surveydata-package  

Tools, classes and methods to manipulate survey data.

### Description

Tools, classes and methods to manipulate survey data.
Details

Surveydata objects have been designed to function with SPSS export data, i.e. the result of an SPSS import, `foreign::read.spss()`. This type of data is contained in a data.frame, with information about the questionnaire text in the `variable.labels` attribute. Surveydata objects keep track of the variable labels, by offering methods for renaming, subsetting, etc.

Coercion functions:

- `as_surveydata()`
- `is_surveydata()`
- `as.data.frame.surveydata()`

To access and modify attributes:

- `pattern()`
- `varlabels()`

To subset or merge surveydata objects:

- `merge()`
- `Extract()`
- `cbind.surveydata()`

To extract question text from varlabels:

- `question_text()`
- `question_text_common()`
- `question_text_unique()`

To fix common encoding problems:

- `encToInt()`
- `intToEnc()`
- `fix_common_encoding_problems()`

To clean data:

- `remove_dont_know()` to remove "Don’t know" responses
- `remove_all_dont_know()` to remove "Don’t know" responses from all questions
- `fix_levels_01()` to fix level formatting of all question with Yes/No type answers

Miscellaneous tools:

- `dropout()` to determine questions where respondents drop out

Author(s)

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Examples

library(surveydata)

# Create surveydata object

sdat <- data.frame(
  id = 1:4,
  Q1 = c("Yes", "No", "Yes", "Yes"),
  Q4_1 = c(1, 2, 1, 2),
  Q4_2 = c(3, 4, 4, 3),
  Q4_3 = c(5, 5, 6, 6),
  Q10 = factor(c("Male", "Female", "Female", "Male")),
  crossbreak = c("A", "A", "B", "B"),
  weight = c(0.9, 1.1, 0.8, 1.2)
)

varlabels(sdat) <- c(
  "RespID",
  "Question 1",
  "Question 4: red", "Question 4: green", "Question 4: blue",
  "Question 10",
  "crossbreak",
  "weight"
)

sv <- as.surveydata(sdat, renameVarlabels = TRUE)

# Extract specific questions
sv[, "Q1"]
sv[, "Q4"]

# Query attributes
varlabels(sv)
pattern(sv)

# Find unique questions
questions(sv)
which.q(sv, "Q1")
which.q(sv, "Q4")

# Find question text
question_text(sv, "Q1")
question_text(sv, "Q4")
question_text_common(sv, "Q4")
question_text_unique(sv, "Q4")

# Basic operations on a surveydata object, illustrated with the example dataset membersurvey

class(membersurvey)
questions(membersurvey)

which.q(membersurvey, "Q1")
which.q(membersurvey, "Q3")
which.q(membersurvey, c("Q1", "Q3"))

question_text(membersurvey, "Q3")
question_text_unique(membersurvey, "Q3")
question_text_common(membersurvey, "Q3")

# Extracting columns from a surveydata object

head(membersurvey[, "Q1"])
head(membersurvey["Q1"])
head(membersurvey[, "Q3"])
head(membersurvey[, c("Q1", "Q3")])

# Note that the result is always a surveydata object, even if only one column is extracted

head(membersurvey[, "id"])
str(membersurvey[, "id"])

---

as.data.frame.surveydata

*Coerces surveydata object to data.frame.*

**Description**

Coerces surveydata object to data.frame.

**Usage**

```r
## S3 method for class 'surveydata'
as.data.frame(x, ..., rm.pattern = FALSE)
```

**Arguments**

- `x` Surveydata object to coerce to class data.frame
- `...` ignored
- `rm.pattern` If TRUE removes `pattern()` attributes from `x`

**See Also**

`surveydata-package`
as.surveydata

Description

Methods for creating surveydata objects, testing for class, and coercion from other objects.

Usage

as.surveydata(
  x,
  sep = "_",
  exclude = "other",
  ptn = pattern(x),
  defaultPtn = list(sep = sep, exclude = exclude),
  renameVarlabels = FALSE
)

un_surveydata(x)

Arguments

x Object to coerce to surveydata
sep Separator between question and sub-question names
exclude Excludes from pattern search
ptn A list with two elements, sep and exclude. See pattern() and which.q() for more detail.
defaultPtn The default for ptn, if it doesn’t exist in the object that is being coerced.
renameVarlabels If TRUE, turns variable.labels attribute into a named vector, using names(x) as names.

Details

The function un_surveydata() removes the surveydata class from the object, leaving intact the other classes, e.g. data.frame or tibble

See Also

surveydata-package, is.surveydata()
Examples

library(surveydata)

# Create surveydata object
sdat <- data.frame(
id = 1:4,
Q1 = c("Yes", "No", "Yes", "Yes"),
Q4_1 = c(1, 2, 1, 2),
Q4_2 = c(3, 4, 4, 3),
Q4_3 = c(5, 5, 6, 6),
Q10 = factor(c("Male", "Female", "Female", "Male")),
crossbreak = c("A", "A", "B", "B"),
weight = c(0.9, 1.1, 0.8, 1.2)
)

varlabels(sdat) <- c(
"RespID",
"Question 1",
"Question 4: red", "Question 4: green", "Question 4: blue",
"Question 10",
"crossbreak",
"weight"
)

sv <- as.surveydata(sdat, renameVarlabels = TRUE)

# Extract specific questions
sv[, "Q1"]
sv[, "Q4"]

# Query attributes
varlabels(sv)
pattern(sv)

# Find unique questions
questions(sv)
which.q(sv, "Q1")
which.q(sv, "Q4")

# Find question text
question_text(sv, "Q1")
question_text(sv, "Q4")

question_text_common(sv, "Q4")
question_text_unique(sv, "Q4")

# Basic operations on a surveydata object, illustrated with the example dataset membersurvey
class(membersurvey)
questions(membersurvey)

which.q(membersurvey, "Q1")
which.q(membersurvey, "Q3")
which.q(membersurvey, c("Q1", "Q3"))

question_text(membersurvey, "Q3")
question_text_unique(membersurvey, "Q3")
question_text_common(membersurvey, "Q3")

# Extracting columns from a surveydata object

head(membersurvey[, "Q1"])
head(membersurvey["Q1"])  
head(membersurvey[, "Q3"])
head(membersurvey[, c("Q1", "Q3")])

# Note that the result is always a surveydata object, even if only one column is extracted

head(membersurvey[, "id"])
str(membersurvey[, "id"])

---

**as_opentext_datatable**  *Converts free format question text to datatable using the DT package.*

**Description**

Converts free format question text to datatable using the DT package.

**Usage**

```r
as_opentext_datatable(data, q)
```

**Arguments**

- `data`: surveydata object
- `q`: Question

**See Also**

Other open text functions: `print_opentext()`

**Examples**

```r
as_opentext_datatable(membersurvey, "Q33")
```
cbind.surveydata  

**Combines surveydata object by columns.**

**Description**

Combines surveydata object by columns.

**Usage**

```r
## S3 method for class 'surveydata'
cbind(..., deparse.level = 1)
```

**Arguments**

- `...` surveydata objects
- `deparse.level` ignored

**dropout**  

*Calculates at which questions respondents drop out.*

**Description**

The number of respondents for each question is calculated as the length of the vector, after omitting NA values.

**Usage**

```r
dropout(x, summary = TRUE)
```

**Arguments**

- `x` surveydata object, list or data.frame
- `summary` If TRUE, returns a shortened vector that contains only the points where respondents drop out. Otherwise, returns the number of respondents for each question.

**Value**

Named numeric vector of respondent counts

**Examples**

```r
dropout(membersurvey[-(127:128)])
```
encToInt

Converts a character vector to an integer vector.

Description

Conversion of character vector to integer vector. The encoding of the character vector can be specified but defaults to the current locale.

Usage

encToInt(x, encoding = localeToCharset())

Arguments

- x: Character vector
- encoding: A character string describing the encoding of x. Defaults to the current locale.
  See also iconvlist()

Value

An integer vector

See Also

iconv()

Other Functions to clean data:

- fix_common_encoding_problems()
- fix_levels_01_spss()
- has_dont_know()
- intToEnc()
- leveltest()
- remove_all_dont_know()
- remove_dont_know()

Examples

encToInt("\xfa")

fix_common_encoding_problems

Fix common encoding problems when working with web imported data.

Description

This function tries to resolve typical encoding problems when importing web data on Windows. Typical problems occur with pound and emdash (–), especially when these originated in MS-Word.

Usage

fix_common_encoding_problems(x, encoding = localeToCharset())
fix_levels_01_spss

Arguments

- **x**  
  A character vector
- **encoding**  
  A character string describing the encoding of x. Defaults to the current locale.
  See also `iconvlist()`

See Also

Other Functions to clean data: `encToInt()`, `fix_levels_01_spss()`, `has_dont_know()`, `intToEnc()`, `leveltest`, `remove_all_dont_know()`, `remove_dont_know()`

---

**fix_levels_01_spss**  
Fix level formatting of all question with Yes/No type answers.

Description

Fix level formatting of all question with Yes/No type answers.

Usage

```r
fix_levels_01_spss(dat)
fix_levels_01_r(dat)
fix_levels_01(dat, origin = c("R", "SPSS"))
```

Arguments

- **dat**  
  surveydata object
- **origin**  
  Either R or SPSS

See Also

Other Functions to clean data: `encToInt()`, `fix_common_encoding_problems()`, `has_dont_know()`, `intToEnc()`, `leveltest`, `remove_all_dont_know()`, `remove_dont_know()`
has_dont_know

Tests whether levels contain "Don't know".

Description

Returns TRUE if x contains any instances of dk

Usage

has_dont_know(x, dk = "Don't Know")

Arguments

x Character vector or factor
dk Character vector, containing search terms, e.g. c("Don't know","Don't Know")

Value

TRUE or FALSE

See Also

Other Functions to clean data: encToInt(), fix_common_encoding_problems(), fix_levels_01_spss(), intToEnc(), leveltest, remove_all_dont_know(), remove_dont_know()

intToEnc

Converts an integer vector to a character vector.

Description

Conversion of integer vector to character vector. The encoding of the character vector can be specified but defaults to the current locale.

Usage

intToEnc(x, encoding = localeToCharset())

Arguments

x Integer vector
encoding A character string describing the encoding of x. Defaults to the current locale. See also iconvlist()

Value

A character vector
is.surveydata

See Also

iconv()

Other Functions to clean data: encToInt(), fix_common_encoding_problems(), fix_levels_01_spss(), has_dont_know(), leveltest, remove_all_dont_know(), remove_dont_know()

Examples

intToEnc(8212)

is.surveydata Tests whether an object is of class surveydata.

Description

Tests whether an object is of class surveydata.

Usage

is.surveydata(x)

Arguments

x Object to check for being of class surveydata

See Also

surveydata-package

lapply_names Applies function only to named elements of a list.

Description

This is useful to clean only some columns in a list (or data.frame or surveydata object). This is a simple wrapper around lapply() where only the named elements are changed.

Usage

lapply_names(x, names, FUN, ...)

Arguments

x list
names character vector identifying which elements of the list to apply FUN
FUN function to apply.
... additional arguments passed to FUN
See Also

Other Tools: question_order()

---

leveltest  

Fix level formatting of all question with Yes/No type answers.

Description

Fix level formatting of all question with Yes/No type answers.

Usage

leveltest_spss(x)

leveltest_r(x)

Arguments

x  
surveydata object

See Also

Other Functions to clean data: encToInt(), fix_common_encoding_problems(), fix_levels_01_spss(), has_dont_know(), intToEnc(), remove_all_dont_know(), remove_dont_know()

---

membersurvey  

Data frame with survey data of member satisfaction survey.

Description

Data frame with survey data of member satisfaction survey.

Usage

membersurvey

Format

data frame
merge  

Merge surveydata objects.

Description

The base R merge will merge data but not all of the attributes. This function also merges the variable.labels attribute.

Usage

```r
## S3 method for class 'surveydata'
merge(x, y, ...)
```

Arguments

- `x`: surveydata object
- `y`: surveydata object
- `...`: Other parameters passed to `merge()`

print_opentext  

Print open text questions.

Description

Print open text questions.

Usage

```r
print_opentext(data, q, cat = TRUE)
```

Arguments

- `data`: data
- `q`: Question number
- `cat`: If TRUE, prints results using `cat()`

See Also

Other open text functions: `as_opentext_datatable()`

Examples

```r
print_opentext(membersurvey, "Q33")
```
### questions

*Returns a list of all the unique questions in the surveydata object.*

**Summary**

In many survey systems, sub-questions take the form Q1\_a, Q1\_b, with the main question and sub-question separated by an underscore. This function conveniently returns all of the main questions in a `surveydata()` object. It does this by using the `pattern()` attribute of the surveydata object.

**Usage**

```r
questions(x, ptn = pattern(x))
```

**Arguments**

- `x` Object to coerce to `surveydata`
- `ptn` A list with two elements, `sep` and `exclude`. See `pattern()` and `which.q()` for more detail.

**Value**

numeric vector

**See Also**

- `which.q`
- Other Question functions: `question_text_common()`, `question_text_unique()`, `question_text()`, `split_common_unique()`, `which.q()`

**Examples**

```r
# Basic operations on a surveydata object, illustrated with the example dataset membersurvey

class(membersurvey)

questions(membersurvey)

which.q(membersurvey, "Q1")
which.q(membersurvey, "Q3")
which.q(membersurvey, c("Q1", "Q3"))

question_text(membersurvey, "Q3")
question_text_unique(membersurvey, "Q3")
question_text_common(membersurvey, "Q3")

# Extracting columns from a surveydata object

head(membersurvey[, "Q1"])
```
question_order

Changes vector to ordered factor, adding NA levels if applicable.

Description
Changes vector to ordered factor, adding NA levels if applicable.

Usage
question_order(x)

Arguments
x character vector

See Also
Other Tools: lapply_names()

question_text

Returns question text.

Description
Given a question id, e.g. "Q4", returns question text for this question. Note that this returns. The functions question_text_unique() and question_text_common() returns the unique and common components of the question text.

Usage
question_text(x, Q)

Arguments
x A surveydata object
Q The question id, e.g. "Q4". If not supplied, returns the text for all questions.
question_text_common

Value
character vector

See Also
Other Question functions: question_text_common(), question_text_unique(), questions(), split_common_unique(), which.q()

Examples
# Basic operations on a surveydata object, illustrated with the example dataset membersurvey

class(membersurvey)

questions(membersurvey)

which.q(membersurvey, "Q1")
which.q(membersurvey, "Q3")
which.q(membersurvey, c("Q1", "Q3"))

question_text(membersurvey, "Q3")
question_text_unique(membersurvey, "Q3")
question_text_common(membersurvey, "Q3")

# Extracting columns from a surveydata object

head(membersurvey[, "Q1"])
head(membersurvey[, "Q1"])
head(membersurvey[, "Q3"])
head(membersurvey[, c("Q1", "Q3")])

# Note that the result is always a surveydata object, even if only one column is extracted

head(membersurvey[, "id"])
str(membersurvey[, "id"])

question_text_common
Returns common element of question text.

Description
Given a question id, e.g. "Q4", finds all sub-questions, e.g. "Q4_1", "Q4_2", etc, and returns the question text that is common to each.

Usage
question_text_common(x, Q)
question_text_unique

Arguments

  x  A surveydata object
  Q  The question id, e.g. "Q4". If not supplied, returns the text for all questions.

Value

  character vector

See Also

  Other Question functions: question_text_unique(), question_text(), questions(), split_common_unique(), which.q()

Examples

  # Basic operations on a surveydata object, illustrated with the example dataset membersurvey
  class(membersurvey)
  questions(membersurvey)
  which.q(membersurvey, "Q1")
  which.q(membersurvey, "Q3")
  which.q(membersurvey, c("Q1", "Q3"))

  question_text(membersurvey, "Q3")
  question_text_unique(membersurvey, "Q3")
  question_text_common(membersurvey, "Q3")

  # Extracting columns from a surveydata object
  head(membersurvey[, "Q1"])
  head(membersurvey[, "Q1"])
  head(membersurvey[, "Q3"])
  head(membersurvey[, c("Q1", "Q3")])

  # Note that the result is always a surveydata object, even if only one column is extracted
  head(membersurvey[, "id"])
  str(membersurvey[, "id"])

question_text_unique  Returns unique elements of question text.

Description

  Given a question id, e.g. "Q4", finds all sub-questions, e.g. Q4_1, Q4_2, etc, and returns the question text that is unique to each
```
question_text_unique

Usage

question_text_unique(x, Q)

Arguments

x          A surveydata object
Q          The question id, e.g. "Q4". If not supplied, returns the text for all questions.

Value

character vector

See Also

Other Question functions: question_text_common(), question_text(), questions(), split_common_unique(), which.q()

Examples

# Basic operations on a surveydata object, illustrated with the example dataset membersurvey
class(membersurvey)
questions(membersurvey)
which.q(membersurvey, "Q1")
which.q(membersurvey, "Q3")
which.q(membersurvey, c("Q1", "Q3"))
question_text(membersurvey, "Q3")
question_text_unique(membersurvey, "Q3")
question_text_common(membersurvey, "Q3")

# Extracting columns from a surveydata object
head(membersurvey[, "Q1"])
head(membersurvey["Q1"])
head(membersurvey[, "Q3"])
head(membersurvey, c("Q1", "Q3"))

# Note that the result is always a surveydata object, even if only one column is extracted
head(membersurvey[, "id"])
str(membersurvey[, "id"])
```
remove_all_dont_know

Removes "Do not know" and other similar words from factor levels in data frame.

Description

Removes "Do not know" and other similar words from factor levels in data frame

Usage

remove_all_dont_know(x, dk = NULL, message = TRUE)

Arguments

- **x**: List or data frame
- **dk**: Character vector, containing search terms, e.g. c("Do not know", "DK"). These terms will be replaced by NA. If NULL, defaults to c("I don't know", "Don't know", "Don't know", "Dont know", "DK")
- **message**: If TRUE, displays message with the number of instances that were removed.

Value

A data frame

See Also

hasDK() and removeDK()

Other Functions to clean data: encToInt(), fix_common_encoding_problems(), fix_levels_01_spss(), has_dont_know(), intToEnc(), leveltest, remove_dont_know()

remove_dont_know

Removes "Don't know" from levels and replaces with NA.

Description

Tests the levels of x contain any instances of "Don't know". If so, replaces these levels with NA

Usage

remove_dont_know(x, dk = "Don't Know")

Arguments

- **x**: Character vector or factor
- **dk**: Character vector, containing search terms, e.g. c("Don't know", "Don't Know")
Value

A factor with "Dont know" removed

See Also

Other Functions to clean data: encToInt(), fix_common_encoding_problems(), fix_levels_01_spss(), has_dont_know(), intToEnc(), leveltest, remove_all_dont_know()

---

**rmattrs**

Removes pattern and variable.labels from attributes list.

**Description**

Removes pattern and variable.labels from attributes list.

**Usage**

rm.attrs(x)

**Arguments**

x: Surveydata object

---

**rmpattern**

Removes pattern from attributes list.

**Description**

Removes pattern from attributes list.

**Usage**

rmpattern(x)

**Arguments**

x: Surveydata object
**split_common_unique**  
Get common and unique text in question based on regex pattern identification.

**Description**  
Get common and unique text in question based on regex pattern identification.

**Usage**  
```
split_common_unique(x, ptn = NULL)
```

**Arguments**  
- **x**  
  A character vector  
- **ptn**  
  A `regex()` pattern that defines how the string should be split into common and unique elements

**See Also**  
Other Question functions: `question_text_common()`, `question_text_unique()`, `question_text()`, `questions()`, `which.q()`

---

**strCommonUnique**  
Finds the common and unique elements in a character vector.

**Description**  
Function takes a character string as input and find the common and unique elements. Assumes that the common element is at start of string.

**Usage**  
```
strCommonUnique(string)
```

**Arguments**  
- **string**  
  Character vector

**Value**  
list of common and unique strings

**Examples**  
```
test <- c("Q_1", "Q_2", "Q_3")
strCommonUnique(test)$common
strCommonUnique(test)$unique
```
survey_plot_question  
Plots single and as multi-response questions.

Description

Plots single and as multi-response questions.

Usage

survey_plot_question(data, q)

Arguments

data surveydata object
q Question

See Also

Other survey plotting functions: survey_plot_satisfaction(), survey_plot_yes_no()

Examples

question_text(membersurvey)
survey_plot_question(membersurvey, "Q2")
survey_plot_yes_no(membersurvey, "Q2")
survey_plot_satisfaction(membersurvey, "Q14")

survey_plot_satisfaction  
Plot satisfaction questions.

Description

Plot satisfaction questions.

Usage

survey_plot_satisfaction(data, q, fun = c("net", "top3", "top2"))

Arguments

data surveydata object
q Question
fun Aggregation function, one of net (compute net satisfaction score), top3 (compute top 3 box score) and top2 (compute top 2 box score)
**survey_plot_title**

**See Also**

Other survey plotting functions: `survey_plot_question()`, `survey_plot_yes_no()`

**Examples**

```r
question_text(membersurvey)
survey_plot_question(membersurvey, "Q2")
survey_plot_yes_no(membersurvey, "Q2")
survey_plot_satisfaction(membersurvey, "Q14")
```

---

**survey_plot_title**  
*Construct plot title from the question text, wrapping at the desired width.*

**Description**

This creates a plot title using `[ggplot2::ggtitle()]`. The main title is string wrapped, and the subtitle is the number of observations in the data.

**Usage**

```r
survey_plot_title(data, q, width = 50)
```

**Arguments**

- `data`  
  surveydata object
- `q`  
  Question
- `width`  
  Passed to `strwrap()`

---

**survey_plot_yes_no**  
*Plot data in yes/no format.*

**Description**

Plot data in yes/no format.

**Usage**

```r
survey_plot_yes_no(data, q)
```

**Arguments**

- `data`  
  surveydata object
- `q`  
  Question
See Also

Other survey plotting functions: `survey_plot_question()`, `survey_plot_satisfaction()`

Examples

```r
question_text(membersurvey)

survey_plot_question(membersurvey, "Q2")
survey_plot_yes_no(membersurvey, "Q2")
survey_plot_satisfaction(membersurvey, "Q14")
```

```
which.q

Identifies the columns indices corresponding to a specific question.

Description

In many survey systems, sub-questions take the form "Q1_a", "Q1_b", with the main question and sub-question separated by an underscore. This function conveniently returns column index of matches found for a question id in a `surveydata` object. It does this by using the `pattern` attribute of the `surveydata` object.

Usage

```r
which.q(x, Q, ptn = pattern(x))
```

Arguments

- `x`: Object to coerce to `surveydata`
- `Q`: Character string with question number, e.g. "Q2"
- `ptn`: A list with two elements, `sep` and `exclude`. See `pattern()` and `which.q()` for more detail.

See Also

- `questions()` to return all questions matching the `pattern()`

Other Question functions: `question_text_common()`, `question_text_unique()`, `question_text()`, `questions()`, `split_common_unique()`

Examples

```r
# Basic operations on a surveydata object, illustrated with the example dataset membersurvey

class(membersurvey)

questions(membersurvey)
```
which.q(membersurvey, "Q1")
which.q(membersurvey, "Q3")
which.q(membersurvey, c("Q1", "Q3"))

question_text(membersurvey, "Q3")
question_text_unique(membersurvey, "Q3")
question_text_common(membersurvey, "Q3")

# Extracting columns from a surveydata object
head(membersurvey[, "Q1"])
head(membersurvey["Q1"])
head(membersurvey[, "Q3"])
head(membersurvey[, c("Q1", "Q3")])

# Note that the result is always a surveydata object, even if only one column is extracted
head(membersurvey[, "id"])
str(membersurvey[, "id"])
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