Package ‘codebookr’

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Title Create Codebooks from Data Frames
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Description Quickly and easily create codebooks (i.e. data dictionaries) directly from a data frame.
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cb_add_col_attributes  Add Attributes to Columns

Description

Add arbitrary attributes to columns (e.g., description, source, column type). These attributes can later be accessed to fill in the column attributes table.

Usage

```
cb_add_col_attributes(df, .x, ...)
```

Arguments

- **df**: Data frame of interest
- **.x**: Column of interest in df
- **...**: Arbitrary list of attributes (i.e., attribute = "value")

Details

Typically, though not necessarily, the first step in creating your codebook will be to add column attributes to your data. The `cb_add_col_attributes()` function is a convenience function that allows you to add arbitrary attributes to the columns of the data frame. These attributes can later be accessed to fill in the column attributes table of the codebook document. Column attributes can serve a similar function to variable labels in SAS or Stata; however, you can assign many different attributes to a column and they can contain any kind of information you want.

Although the `cb_add_col_attributes()` function will allow you to add any attributes you want, there are currently **only five** special attributes that the `codebook()` function will recognize and add to the column attributes table of the codebook document. They are:

- **description**: Although you may add any text you desire to the `description` attribute, it is intended to be used to describe the question/process that generated the data contained in the column. Many statistical software packages refer to this as a variable label. If the data was imported from SAS, Stata, or SPSS with variable labels using the `haven` package, `codebook` will automatically recognize them. There is no need to manually create them. However, you may overwrite the imported variable label for any column by adding a `description` attribute.

- **source**: Although you may add any text you desire to the `source` attribute, it is intended to be used to describe where the data contained in the column originally came from. For example, if the current data frame was created by merging multiple data sets together, you may want to use the `source` attribute to identify the data set it originates from. As another example, if the current data frame contains longitudinal data, you may want to use the `source` attribute to identify the wave(s) in which data for this column was collected.

- **col_type**: The `col_type` attribute is intended to provide additional information above and beyond the `Data type` (i.e., column class) about the values in the column. For example, you may have a column of 0’s and 1’s, which will have a `numeric` data type. However, you may want to inform data users that this is really a dummy variable where the 0’s and 1’s represent discrete
categories (No and Yes). Another way to think about it is that the Data type attribute is how
R understands the column and the Column type attribute is how humans should understand
the column. Currently accepted values are:

- Numeric
- Categorical
- Time

Perhaps even more importantly, setting the col_type attribute helps R determine which de-
scriptive statistics to calculate for the bottom half of the column attributes table. Inside of
the codebook() function, the cb_add_summary_stats() function will attempt to figure out
whether the column is:

- numeric
- categorical - many categories (e.g. participant id)
- categorical - few categories (e.g. sex)
- time - including dates

Again, this matters because the table of summary stats shown in the codebook document
depends on the value cb_add_summary_stats() chooses. However, the user can directly
tell cb_add_summary_stats() which summary stats to calculate by providing a col_type
attribute to a column with one of the following values: Numeric, Categorical, or Time.

**value_labels:** Although you may pass any named vector you desire to the value_labels attribute,
it is intended to inform your data users about how to correctly interpret numerically coded
categorical variables. For example, you may have a column of 0's and 1's that represent dis-
crete categories (i.e., "No" and "Yes") instead of numerical quantities. In many other software
packages (e.g., SAS, Stata, and SPSS), you can layer "No" and "Yes" labels on top of the 0's
and 1's to improve the readability of your analysis output. These are commonly referred to as
value labels. The R programming language does not really have value labels in the same way
that other popular statistical software applications do. R users can (and typically should) co-
erce numerically coded categorical variables into factors; however, coercing a numeric vector
to a factor is not the same as adding value labels to a numeric vector because the underlying
numeric values can change in the process of creating the factor. For this, and other reasons,
many R programmers choose to create a *new* factor version of a numerically encoded vari-
able as opposed to overwriting/transforming the numerically encoded variable. In those cases,
you may want to inform your data users about how to correctly interpret numerically coded
categorical variables. Adding value labels to your codebook is one way of doing so.

- Add value labels to columns as a named vector to the value_labels attribute. For ex-
ample, value_labels = c("No" = 0, "Yes" = 1).
- If the data was imported from SAS, Stata, or SPSS with value labels using the haven
package, codebook will automatically recognize them. There is no need to manually
create them. However, you may overwrite the imported value labels for any column by
adding a value_labels attribute as shown in the example below.

**skip_pattern:** Although you may add any text you desire to the skip_pattern attribute, it is
intended to be used describe skip patterns in the data collection tools that impact which study
participants were exposed to each study item. For example, If a question in your data was only
asked of participants who were enrolled in the study for at least 10 days, then you may want
to add a note like "Not asked if days < 10" to the skip pattern section of the column attributes
table.
Value

Returns the same data frame (or tibble) passed to the df argument with column attributes added.

Examples

library(dplyr, warn.conflicts = FALSE)
library(codebookr)
data(study)

study <- study %>%
  cb_add_col_attributes(
    .x = likert,
    description = "An example Likert scale item",
    source = "Exposure questionnaire",
    col_type = "categorical",
    value_labels = c(
      "Very dissatisfied" = 1,
      "Somewhat dissatisfied" = 2,
      "Neither satisfied nor dissatisfied" = 3,
      "Somewhat satisfied" = 4,
      "Very satisfied" = 5
    ),
    skip_pattern = "Not asked if days < 10"
  )

codebook

Automate creation of a data codebook

Description

The codebook function assists with the creation of a codebook for a given data frame.

Usage

codebook(
  df,
  title = NA,
  subtitle = NA,
  description = NA,
  keep_blank_attributes = FALSE,
  no_summary_stats = NULL
)

Arguments

df The data frame the codebook will describe

title An optional title that will appear at the top of the Word codebook document

subtitle An optional subtitle that will appear at the top of the Word codebook document
description  An optional text description of the dataset that will appear on the first page of the Word codebook document

keep_blank_attributes
TRUE or FALSE. By default, the column attributes table will omit the Column description, Source information, Column type, value labels, and skip pattern rows from the column attributes table in the codebook document if those attributes haven’t been set. In other words, it won’t show blank rows for those attributes. Passing TRUE to the keep_blank_attributes argument will cause the opposite to happen. The column attributes table will include a Column description, Source information, Column type, and value labels row for every column in the data frame - even if they don’t have those attributes set.

no_summary_stats
A character vector of column names. The summary statistics will not be added to column attributes table for any column passed to this argument. This can be useful when a column contains values that are sensitive or may be used to identify individual people (e.g., names, addresses, etc.) and the individual values for that column should not appear in the codebook.

Details
Codebook expects that df is a data frame that you have read into memory from a saved data file. Please provide the path to the saved data file. This function gets selected attributes about file saved at path and stores those attributes in a data frame, which is later turned into a flextable and added to the codebook document.

Typically, though not necessarily, the first step in creating your codebook will be to add column attributes to your data. The cb_add_col_attributes() function is a convenience function that allows you to add arbitrary attributes to the columns of the data frame. These attributes can later be accessed to fill in the column attributes table of the codebook document. Column attributes can serve a similar function to variable labels in SAS or Stata; however, you can assign many different attributes to a column and they can contain any kind of information you want. For details see cb_add_col_attributes

Value
An rdocx object that can be printed to a Word document

Examples

```r
## Not run:
study_codebook <- codebook(
  df = study,
  title = "My Example Study",
  subtitle = "A Subtitle for My Example Study Codebook",
  description = "Brief (or long) description of the data."
)

# Create the Word codebook document
print(study_codebook, path = "example_codebook.docx")
```

## End(Not run)
Simulated study data.

Description

This is the code to create the study data - a simulated dataset that can be used to demonstrate how to use the codebook package.

Usage

study

Format

A data frame with 20 rows and 10 variables:

- id: Participant’s study identification number
- address: Participant’s home address
- sex: Biological sex of the participant assigned at birth, female/male
- date: Participant’s date of enrollment
- time: Participant’s time of enrollment
- date_time: Participant’s date and time of enrollment
- days: Total number of days the participant was enrolled in the study
- height: Participant’s height in inches at date of enrollment
- likert: An example Likert scale item, 1-5
- outcome: Participant experienced the outcome of interest, TRUE or FALSE
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