

Package: rbin (via r-universe)

November 5, 2024

Type Package

Title Tools for Binning Data

Version 0.2.1

Description Manually bin data using weight of evidence and information value. Includes other binning methods such as equal length, quantile and winsorized. Options for combining levels of categorical data are also available. Dummy variables can be generated based on the bins created using any of the available binning methods. References: Siddiqi, N. (2006) [doi:10.1002/9781119201731.biblio](https://doi.org/10.1002/9781119201731.biblio).

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URL <https://github.com/rsquaredacademy/rbin>,
<https://rbin.rsquaredacademy.com>

BugReports <https://github.com/rsquaredacademy/rbin/issues>

Depends R (>= 3.3)

Imports data.table, ggplot2, stats, utils

Suggests covr, graphics, knitr, miniUI, rmarkdown, rstudioapi, shiny,
testthat (>= 3.0.0), vdiff

VignetteBuilder knitr

Encoding UTF-8

LazyData true

RoxygenNote 7.3.2

Config/testthat/edition 3

Repository <https://rsquaredacademy.r-universe.dev>

RemoteUrl <https://github.com/rsquaredacademy/rbin>

RemoteRef HEAD

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| | |
|-------|--------------------------------|
| mbank | <i>Bank marketing data set</i> |
|-------|--------------------------------|

Description

The data is related with direct marketing campaigns of a Portuguese banking institution. The marketing campaigns were based on phone calls. Often, more than one contact to the same client was required, in order to access if the product (bank term deposit) would be ('yes') or not ('no') subscribed.

Usage

mbank

Format

A tibble with 4521 rows and 17 variables:

age age of the client
job type of job
marital marital status
education education level of the client
default has credit in default?
housing has housing loan?
loan has personal loan?
contact contact communication type
month last contact month of year
day_of_week last contact day of the week

duration last contact duration, in seconds

campaign number of contacts performed during this campaign and for this client

pdays number of days that passed by after the client was last contacted from a previous campaign

previous number of contacts performed before this campaign and for this client

poutcome outcome of the previous marketing campaign

y has the client subscribed a term deposit?

Source

[Moro et al., 2014] S. Moro, P. Cortez and P. Rita. A Data-Driven Approach to Predict the Success of Bank Telemarketing. Decision Support Systems, Elsevier, 62:22-31, June 2014

rbinAddin

Bin continuous data

Description

Manually bin continuous data using weight of evidence.

Usage

```
rbinAddin(data = NULL)
```

Arguments

data A data.frame or tibble.

Examples

```
## Not run:  
rbinAddin(data = mbank)  
  
## End(Not run)
```

| | |
|-----------------|-----------------------|
| rbinFactorAddin | <i>Custom binning</i> |
|-----------------|-----------------------|

Description

Manually combine categorical variables using weight of evidence.

Usage

```
rbinFactorAddin(data = NULL)
```

Arguments

data A data.frame or tibble.

Examples

```
## Not run:  
rbinFactorAddin(data = mbank)  
  
## End(Not run)
```

| | |
|-------------|-------------------------------|
| rbin_create | <i>Create dummy variables</i> |
|-------------|-------------------------------|

Description

Create dummy variables from bins.

Usage

```
rbin_create(data, predictor, bins)
```

Arguments

data A data.frame or tibble.
predictor Variable for which dummy variables must be created.
bins An object of class rbin_manual or rbin_quantiles or rbin_equal_length
 or rbin_winsorized.

Value

data with dummy variables.

Examples

```
k <- rbin_manual(mbank, y, age, c(29, 39, 56))
rbin_create(mbank, age, k)
```

| | |
|-----------------|--------------------------------|
| rbin_equal_freq | <i>Equal frequency binning</i> |
|-----------------|--------------------------------|

Description

Bin continuous data using the equal frequency binning method.

Usage

```
rbin_equal_freq(data = NULL, response = NULL, predictor = NULL, bins = 10)

## S3 method for class 'rbin_equal_freq'
plot(x, print_plot = TRUE, ...)
```

Arguments

| | |
|------------|---|
| data | A data.frame or tibble. |
| response | Response variable. |
| predictor | Predictor variable. |
| bins | Number of bins. |
| x | An object of class rbin_quantiles. |
| print_plot | logical; if TRUE, prints the plot else returns a plot object. |
| ... | further arguments passed to or from other methods. |

Value

A tibble.

Examples

```
bins <- rbin_equal_freq(mbank, y, age, 10)
bins

# plot
plot(bins)
```

| | |
|-------------------|-----------------------------|
| rbin_equal_length | <i>Equal length binning</i> |
|-------------------|-----------------------------|

Description

Bin continuous data using the equal length binning method.

Usage

```
rbin_equal_length(  
  data = NULL,  
  response = NULL,  
  predictor = NULL,  
  bins = 10,  
  include_na = TRUE  
)
```

```
## S3 method for class 'rbin_equal_length'  
plot(x, print_plot = TRUE, ...)
```

Arguments

| | |
|------------|---|
| data | A data.frame or tibble. |
| response | Response variable. |
| predictor | Predictor variable. |
| bins | Number of bins. |
| include_na | logical; if TRUE, a separate bin is created for missing values. |
| x | An object of class rbin_equal_length. |
| print_plot | logical; if TRUE, prints the plot else returns a plot object. |
| ... | further arguments passed to or from other methods. |

Value

A tibble.

Examples

```
bins <- rbin_equal_length(mbank, y, age, 10)  
bins  
  
# plot  
plot(bins)
```

| | |
|-------------|-----------------------|
| rbin_factor | <i>Factor binning</i> |
|-------------|-----------------------|

Description

Weight of evidence and information value for categorical data.

Usage

```
rbin_factor(data = NULL, response = NULL, predictor = NULL, include_na = TRUE)
```

```
## S3 method for class 'rbin_factor'  
plot(x, print_plot = TRUE, ...)
```

Arguments

| | |
|------------|---|
| data | A data.frame or tibble. |
| response | Response variable. |
| predictor | Predictor variable. |
| include_na | logical; if TRUE, a separate bin is created for missing values. |
| x | An object of class rbin_factor. |
| print_plot | logical; if TRUE, prints the plot else returns a plot object. |
| ... | further arguments passed to or from other methods. |

Examples

```
bins <- rbin_factor(mbank, y, education)  
bins  
  
# plot  
plot(bins)
```

| | |
|---------------------|-----------------------|
| rbin_factor_combine | <i>Combine levels</i> |
|---------------------|-----------------------|

Description

Manually combine levels of categorical data.

Usage

```
rbin_factor_combine(data, var, new_var, new_name)
```

Arguments

| | |
|----------|---|
| data | A data.frame or tibble. |
| var | An object of class factor. |
| new_var | A character vector; it should include the names of the levels to be combined. |
| new_name | Name of the combined level. |

Value

A tibble.

Examples

```
upper <- c("secondary", "tertiary")
out <- rbin_factor_combine(mbank, education, upper, "upper")
table(out$education)

out <- rbin_factor_combine(mbank, education, c("secondary", "tertiary"), "upper")
table(out$education)
```

rbin_factor_create *Create dummy variables*

Description

Create dummy variables for categorical data.

Usage

```
rbin_factor_create(data, predictor)
```

Arguments

| | |
|-----------|---|
| data | A data.frame or tibble. |
| predictor | Variable for which dummy variables must be created. |

Value

A tibble with dummy variables.

Examples

```
upper <- c("secondary", "tertiary")
out <- rbin_factor_combine(mbank, education, upper, "upper")
rbin_factor_create(out, education)
```

| | |
|-------------|-----------------------|
| rbin_manual | <i>Manual binning</i> |
|-------------|-----------------------|

Description

Bin continuous data manually.

Usage

```
rbin_manual(  
  data = NULL,  
  response = NULL,  
  predictor = NULL,  
  cut_points = NULL,  
  include_na = TRUE  
)  
  
## S3 method for class 'rbin_manual'  
plot(x, print_plot = TRUE, ...)
```

Arguments

| | |
|------------|---|
| data | A data.frame or tibble. |
| response | Response variable. |
| predictor | Predictor variable. |
| cut_points | Cut points for binning. |
| include_na | logical; if TRUE, a separate bin is created for missing values. |
| x | An object of class rbin_manual. |
| print_plot | logical; if TRUE, prints the plot else returns a plot object. |
| ... | further arguments passed to or from other methods. |

Details

Specify the upper open interval for each bin. 'rbin' follows the left closed and right open interval. If you want to create_bins 10 bins, the app will show you only 9 input boxes. The interval for the 10th bin is automatically computed. For example, if you want the first bin to have all the values between the minimum and including 36, then you will enter the value 37.

Value

A tibble.

Examples

```
bins <- rbin_manual(mbank, y, age, c(29, 31, 34, 36, 39, 42, 46, 51, 56))
bins

# plot
plot(bins)
```

| | |
|----------------|-------------------------|
| rbin_quantiles | <i>Quantile binning</i> |
|----------------|-------------------------|

Description

Bin continuous data using quantiles.

Usage

```
rbin_quantiles(  
  data = NULL,  
  response = NULL,  
  predictor = NULL,  
  bins = 10,  
  include_na = TRUE  
)  
  
## S3 method for class 'rbin_quantiles'  
plot(x, print_plot = TRUE, ...)
```

Arguments

| | |
|------------|---|
| data | A data.frame or tibble. |
| response | Response variable. |
| predictor | Predictor variable. |
| bins | Number of bins. |
| include_na | logical; if TRUE, a separate bin is created for missing values. |
| x | An object of class rbin_quantiles. |
| print_plot | logical; if TRUE, prints the plot else returns a plot object. |
| ... | further arguments passed to or from other methods. |

Value

A tibble.

Examples

```
bins <- rbin_quantiles(mbank, y, age, 10)
bins

# plot
plot(bins)
```

| | |
|----------------|---------------------------|
| rbin_winsorize | <i>Winsorized binning</i> |
|----------------|---------------------------|

Description

Bin continuous data using winsorized method.

Usage

```
rbin_winsorize(
  data = NULL,
  response = NULL,
  predictor = NULL,
  bins = 10,
  include_na = TRUE,
  winsor_rate = 0.05,
  min_val = NULL,
  max_val = NULL,
  type = 7,
  remove_na = TRUE
)

## S3 method for class 'rbin_winsorize'
plot(x, print_plot = TRUE, ...)
```

Arguments

| | |
|-------------|--|
| data | A data.frame or tibble. |
| response | Response variable. |
| predictor | Predictor variable. |
| bins | Number of bins. |
| include_na | logical; if TRUE, a separate bin is created for missing values. |
| winsor_rate | A value from 0.0 to 0.5. |
| min_val | the low border, all values being lower than this will be replaced by this value. The default is set to the 5 percent quantile of predictor. |
| max_val | the high border, all values being larger than this will be replaced by this value. The default is set to the 95 percent quantile of predictor. |

| | |
|-------------------------|--|
| <code>type</code> | an integer between 1 and 9 selecting one of the nine quantile algorithms detailed in <code>quantile()</code> to be used. |
| <code>remove_na</code> | logical; if TRUE NAs will removed while calculating quantiles |
| <code>x</code> | An object of class <code>rbin_winsorize</code> . |
| <code>print_plot</code> | logical; if TRUE, prints the plot else returns a plot object. |
| <code>...</code> | further arguments passed to or from other methods. |

Value

A tibble.

Examples

```
bins <- rbin_winsorize(mbank, y, age, 10, winsor_rate = 0.05)
bins

# plot
plot(bins)
```

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