Package 'BRPL'

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Title Methods for Bivariate Poverty Line Calculations

Version 1.0.2

Description
Provides tools for identifying subgroups within populations based on individual response patterns to specific interventions or treatments. Designed to support researchers and clinicians in exploring heterogeneous treatment effects and developing personalized therapeutic strategies. Offers functionality for analyzing and visualizing the interplay between two variables, thereby enhancing the interpretation of social sustainability metrics. The package focuses on bivariate discriminant analysis and aims to clarify relationships between indicator variables.

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Encoding UTF-8

RoxygenNote 7.3.3

Imports graphics, methods

Depends R (>= 3.5.0)

Suggests testthat (>= 3.0.0)

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NeedsCompilation no

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Contents

`brpl` *Calculate Bivariate Quantiles*

Description

Calculate Bivariate Quantiles

Usage

```
brpl(data, var1, var2, tau = 0.5, nalpha = 100)
```

Arguments

`data`	Input data frame (tibbles and other data.frame variants are automatically converted to data.frame)
`var1`	Name of first variable
`var2`	Name of second variable
`tau`	Quantile level (default: 0.5)
`nalpha`	Number of alpha values (default: 100)

Value

An object of class brplPlot

Examples

```
df_data <- data.frame(x = 1:10, y = 1:10)
result <- brpl(df_data, "x", "y")
```

`brpl-class` *brpl Class*

Description

Base class for bivariate quantile calculations

brplPlot-class *brplPlot Class*

Description

Class for plotting bivariate quantile results

myecdf *Calculate Empirical Cumulative Distribution Function*

Description

Calculate Empirical Cumulative Distribution Function

Usage

```
myecdf(data, var, min.var = 0)
```

Arguments

data	A data frame containing the variable
var	Character string specifying the variable name
min.var	Minimum value for the variable

Value

List containing ecdf and quantile functions

plot,brplPlot-method *Plot Method for brplPlot Class*

Description

This method defines the plotting behavior for objects of the class brplPlot. It generates a scatter plot visualizing the relationship between two variables (var1 and var2) along with classification indicators and an additional line for further insights.

Usage

```
## S4 method for signature 'brplPlot'
plot(x, y, ...)
```

Arguments

x	An object of class `brplPlot`. The object must include the following slots: • `@data`: A data frame containing the data to be plotted, including `var1`, `var2`, and a classification indicator `indicator`. • `@var1`: A string specifying the name of the first variable to be plotted (X-axis). • `@var2`: A string specifying the name of the second variable to be plotted (Y-axis). • `@indicator`: A binary variable indicating the classification or grouping of points. • `@tau`: A threshold value included in the plot's title. • `@plvar2`: A matrix object defining the data points for the additional line in the plot.
y	Ignored. Included for compatibility with the generic `plot` function.
...	Additional arguments passed to the base R `plot` function.

Details

This method creates:

- A scatter plot with points colored based on the value of `indicator`:
  - `darkgreen` for `indicator` = 1.
  - `blue` for other values.
- An additional line, derived from the `plvar2` matrix, drawn in black.

The title of the plot includes the threshold value (`tau`) for easier interpretation.

Value

This function does not return a value. It generates a plot as a side effect.

`pov_line_example` *Example dataset*

Description

Dataset containing measurements for leisure time (in minutes) and income based on expenditure share

Usage

```
pov_line_example
```

Format

a `data.frame` with 67335 rows and 3 columns:

leisure Leisure time in minutes

inc_expenses Income based on expenditure share of households

weight Assumed population sampling weights

Source

Dorn, Franziska, et al. "A bivariate relative poverty line for leisure time and income poverty: Detecting intersectional differences using distributional copulas." Review of Income and Wealth 70.2 (2024): 395-419.

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