

# Package ‘BRPL’

May 6, 2026

**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)

**LazyData** true

**Config/testthat/edition** 3

**NeedsCompilation** no

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brpl	<i>Calculate Bivariate Quantiles</i>
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### 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")
```

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brpl-class	<i>brpl Class</i>
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### Description

Base class for bivariate quantile calculations

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brplPlot-class	<i>brplPlot Class</i>
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**Description**

Class for plotting bivariate quantile results

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myecdf	<i>Calculate Empirical Cumulative Distribution Function</i>
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**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

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plot,brplPlot-method	<i>Plot Method for brplPlot Class</i>
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**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 <code>brp1Plot</code> . The object must include the following slots: <ul style="list-style-type: none"> <li>• <code>@data</code>: A data frame containing the data to be plotted, including <code>var1</code>, <code>var2</code>, and a classification indicator <code>indicator</code>.</li> <li>• <code>@var1</code>: A string specifying the name of the first variable to be plotted (X-axis).</li> <li>• <code>@var2</code>: A string specifying the name of the second variable to be plotted (Y-axis).</li> <li>• <code>@indicator</code>: A binary variable indicating the classification or grouping of points.</li> <li>• <code>@tau</code>: A threshold value included in the plot's title.</li> <li>• <code>@plvar2</code>: A matrix object defining the data points for the additional line in the plot.</li> </ul>
y	Ignored. Included for compatibility with the generic <code>plot</code> function.
...	Additional arguments passed to the base R <code>plot</code> 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.

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pov_line_example	<i>Example dataset</i>
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**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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