

# Package ‘orthogonalize’

February 28, 2019

**Type** Package  
**Title** Simple covariate residualization  
**Version** 1.1  
**Date** 2019-2-21  
**Author** Pavel Panko  
**Maintainer** Pavel Panko <pavel.panko@ttu.edu>  
**Description** Residualize an outcome variable based on a predictor set.  
**License** GPL (>=3)  
**Imports** Rcpp (>= 0.12.18), RcppArmadillo  
**LinkingTo** Rcpp, RcppArmadillo  
**RoxygenNote** 6.1.1  
**Suggests** testthat, devtools

## R topics documented:

orthogonalize . . . . . 1

---

orthogonalize	<i>Residualize covariates.</i>
---------------	--------------------------------

---

## Description

Provides functionality to create residual "orthogonal" scores via linear regression more quickly and conveniently than `lm`.

## Usage

```
orthogonalize(formula, data, intercept = FALSE, group = NULL)
```

**Arguments**

<code>formula</code>	a "character" vector or an object of class "formula" specifying the 'response' variable to be residualized and a set of 'terms' to residualize the 'response' on, using linear regression.
<code>data</code>	a "data.frame" object containing the data set.
<code>intercept</code>	a "logical" value indicating whether or not to add the intercept term estimated by the regression model to the extracted residuals in the return object. Defaults to FALSE.
<code>group</code>	an optional "numeric" or "factor" vector that specifies subsets of the data for within-group residualization. Can also be a "character" value specifying the column name of the grouping variable if it is attached to the "data.frame" provided to the <code>data</code> argument. Defaults to NULL.

**Details**

This function is based on symbolic model representation via a formula, just like `lm`. The formula accepts a single 'response' separated by a `"~"` from a set of 'terms', which are themselves separated by a `+`. The formula is evaluated and the relevant data are provided to a OLS estimator where the 'response' is regressed on the 'terms'. The residuals of the 'response' are retained and returned by the function; the returned residuals of the 'response' variable can be said to be "orthogonalized" in respect to the 'terms'. If `group` is provided, the within-group 'response' residuals are returned.

**Value**

a numeric vector of the same length as the provided `data`.

**Author(s)**

Pavel Panko

**Examples**

```
## Load the data:
data(iris)

## Orthogonalize "Petal.Width":
Petal.Width.Prime <- orthogonalize(
  formula = "Petal.Width ~ Petal.Length + Sepal.Length",
  data     = iris,
  intercept = TRUE
)

## Orthogonalize "Petal.Width" within "Species":
Petal.Width.Prime <- orthogonalize(
  formula = "Petal.Width ~ .",
  data     = iris,
  group    = "Species"
)
```