Package ‘apdesign’

November 15, 2016

Title  An Implementation of the Additive Polynomial Design Matrix
Version 1.0.0
Description An implementation of the additive polynomial (AP) design matrix. It constructs and appends an AP design matrix to a data frame for use with longitudinal data subject to seasonality.
Depends R (>= 3.2.3)
License GPL-3
LazyData true
Imports Matrix (>= 1.2)
RoxygenNote 5.0.1
Suggests testthat
NeedsCompilation no
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Repository CRAN
Date/Publication 2016-11-15 07:16:42

R topics documented:

apdesign .................................................. 2
apdesign_i .................................................. 3
indv_change ................................................ 4
mean_change .............................................. 4

Index 5
Description

apdesign: AP coding apdesign returns a data frame with additive polynomial coding

Usage

```r
apdesign(data, id_var, time_var, center_time, cycle_var, center_cycle,
         max_degree = c(1, 1))
```

Arguments

- `data`: A data frame.
- `id_var`: A character that indicates the subject identifier in `data`.
- `time_var`: A character that indicates the within-cycle time indicator in `data`.
- `center_time`: A numeric specifying the within-cycle time to center on.
- `cycle_var`: A character that indicates the cycle indicator in `data`.
- `center_cycle`: A numeric specifying the cycle to center on.
- `max_degree`: A vector of numerics specifying the highest degree for each polynomial.

Value

Output will be a data frame.

Examples

```r
id <- c(rep(1, 10), rep(2, 10))
y <- c(c(10, 15, 21, 20, 23, 25, 27, 25, 28, 29),
      c(12, 16, 18, 20, 20, 22, 28, 27, 29, 31))
time <- c(c(0.2, 0.5, 0.7), c(0.3, 0.6, 0.75, 0.89), c(0.1, 0.3, 0.8),
          c(0.3, 0.6, 0.7, 0.85), c(0.2, 0.7, 0.79), c(0.2, 0.5, 0.75))
cycle <- c(rep(1, 3), rep(2, 4), rep(3, 3), rep(1, 4), rep(2, 3), rep(3, 3))
df <- data.frame(id, y, time, cycle)
apdesign(data = df, id = "id", time_var = "time", cycle_var = "cycle",
          center_cycle = 1, center_time = 0, max_degree = c(2, 1))
```
Description

apdesign_i: AP coding for a single subject

Usage

apdesign_i(data, cycle_var, center_cycle, time_var, center_time,
            max_degree = c(1, 1), matricies = FALSE)

Arguments

data          A data frame.
cycle_var     A character that indicates the cycle indicator in data.
center_cycle  A numeric specifying the cycle to center on.
time_var      A character that indicates the within-cycle time indicator in data.
center_time   A numeric specifying the within-cycle time to center on.
max_degree    A vector of numerics specifying the highest degree for each polynomial.
matricies     If TRUE, will print the AP, D1 and D2 matricies.

Value

Output will be a matrix.

Examples

y <- c(10, 15, 21, 20, 23, 25, 27, 25, 28, 29)
time <- c(c(0.2, 0.5, 0.7), c(0.3, 0.6, 0.75, 0.89), c(0.1, 0.3, 0.8))
cycle <- c(rep(1, 3), rep(2, 4), rep(3, 3))
df <- data.frame(y, time, cycle)
apdesign_i(data = df, time_var = "time", cycle_var = "cycle",
            center_cycle = 1, center_time = 0, max_degree = c(2,1))
## indv_change

### Description

A dataset of longitudinal responses of 36 study participants over a three years span.

### Usage

`indv_change`

### Format

A data frame with 234 observations and 5 variables:

- `id`  subject identifier
- `cycle` cycle number
- `cycle_time` time since the start of the cycle, in weeks
- `start_time` time since the start of the study, in weeks
- `response` outcome measure

## mean_change

### Description

Data for a single time trend over three years

### Usage

`mean_change`

### Format

A data frame with 9 observations and 4 variables:

- `cycle` cycle number
- `cycle_time` time since the start of the cycle, in weeks
- `start_time` time since the start of the study, in weeks
- `response` outcome measure
Index

*Topic datasets
  indv_change, 4
  mean_change, 4

apdesign, 2
apdesign_1, 3
indv_change, 4
mean_change, 4