Package 'apdesign'

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

Description

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

Usage

```
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

```
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))
```

apdesign_i *apdesign_i: AP coding for a single subject*

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 *Repeated measures data over three years*

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 *Data for a single time trend over three years*

Description

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

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

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