Package ‘puzzle’

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Type Package
Title Assembling Data Sets for Non-Linear Mixed Effects Modeling
Version 0.0.1
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Description To Simplify the time consuming and error prone task of assembling complex data sets for non-linear mixed effects modeling. Users are able to select from different absorption processes such as zero and first order, or a combination of both. Furthermore, data sets containing data from several entities, responses, and covariates can be simultaneously assembled.
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Suggests rmarkdown, knitr, devtools, testthat
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df_cov

A covariate data set.

Description

A dataset containing covariate information.

Usage

df_cov

Format

A tibble with 12 rows and 4 variables:

ID  Individual
TIME  Time, in hours
VARIABLE  Variable
VALUE  Value of the variable
**df_cov_start**

Starting covariate data set.

**Description**

A dataset containing covariate information.

**Usage**

```r
df_cov_start
```

**Format**

A data frame with 4 rows and 3 variables:

- **ID** Individual
- **VARIABLE** Variable
- **VALUE** Value of the variable

---

**df_cov_time_dependent_start**

A covariate data set to be used with time dependent covariates.

**Description**

A dataset containing time dependent covariates.

**Usage**

```r
df_cov_time_dependent_start
```

**Format**

A data frame with 6 rows and 4 variables:

- **ID** Individual
- **VARIABLE** Variable
- **VALUE** Value of the variable
- **TIME** Time, in hours
df_dose

Description
A dataset containing dose information.

Usage
df_dose

Format
A data frame with 12 rows and 3 variables:
- **ID** Individual
- **TIME** Time, in weeks
- **AMT** Dose, in mg

df_dose_datetime

Description
A dataset containing dose information in datetime format.

Usage
df_dose_datetime

Format
A data frame with 5 rows and 12 variables:
- **ID** Individual
- **TRT** Treatment label
- **DOSE** Dose, in mg
- **PERIOD** Period
- **DAY** Day of administration
- **AMT** Dose, in mg
- **DATETIME** Dta ein datetime format
- **TIMEPOINT** Timepoint
- **COHORT** Cohort
- **FORM** Drug form
- **TREATMENT** Treatment
- **FOOD** Food status
**df_dose_evid4**

*A dose data set to be used with EVID=4.*

**Description**

A dataset containing dosing information.

**Usage**

```
df_dose_evid4
```

**Format**

A data frame with 418 rows and 10 variables:

- **ID** Individual
- **PERIOD** Period
- **TIMEPOINT** Timepoint
- **TIME** Time, in hours
- **AMT** Dose, in mg
- **TRT** Treatment label
- **DAY** Day of administration
- **SEQUENCE** Sequence
- **TRT2** Treatment
- **EVID** Evid value

---

**df_dose_optional_columns**

*A dose data set to be used with optional columns.*

**Description**

A dataset containing dosing information.

**Usage**

```
df_dose_optional_columns
```

---
Format

A data frame with 4 rows and 6 variables:

- **ID**: Individual
- **TIME**: Time, in hours
- **AMT**: Dose, in mg
- **OCC**: Occasion
- **TIMEPOINT**: Timepoint
- **TRT**: Treatment

---

**df_dose_start**

*A dose data set example.*

Description

A dataset containing dosing information.

Usage

`df_dose_start`

Format

A data frame with 4 rows and 3 variables:

- **ID**: Individual
- **TIME**: Time, in hours
- **AMT**: Dose, in mg

---

**df_extra_times**

*An extra times data set example.*

Description

A dataset containing extra times.

Usage

`df_extra_times`

Format

A data frame with 251 rows and 1 variable:

- **TIME**: Time, in hours
df_extra_times_datetime

An extra times data set example with datetime format.

Description
A dataset containing extra times in datetime format.

Usage
df_extra_times_datetime

Format
A data frame with 20 rows and 1 variable:

ID Individual
DATETIME Datetime
TIMEPOINT Timepoint

df_extra_times_metabolite_evid4

An extra times metabolite data set to be used with EVID=4.

Description
A dataset containing extra times for an hypothetical metabolite.

Usage
df_extra_times_metabolite_evid4

Format
A data frame with 770 rows and 3 variable:

PERIOD Period
TIMEPOINT Timepoint
TIME Time, in hours
**df_extra_times_parent_evid4**

An extra times parent data set to be used with EVID=4.

---

**Description**

A dataset containing extra times for an hypothetical parent drug.

**Usage**

df_extra_times_parent_evid4

**Format**

A data frame with 770 rows and 3 variable:

- **PERIOD** Period
- **TIMEPOINT** Timepoint
- **TIME** Time, in hours

---

**df_extra_times_time**  
An extra times data set example.

---

**Description**

A dataset containing extra times.

**Usage**

df_extra_times_time

**Format**

A data frame with 1040 rows and 3 variable:

- **ID** Individual
- **TIME** Time, in hours
- **TIMEPOINT** Timepoint
df_metabolite_evid4

A pharmacokinetic metabolite data set to be used with EVID=4.

Description

A dataset containing pharmacokinetic information for an hypothetical metabolite.

Usage

df_metabolite_evid4

Format

A data frame with 1359 rows and 7 variables:

- **ID**: Individual
- **PERIOD**: Period
- **TIMEPOINT**: Timepoint
- **TIME**: Time, in hours
- **DV**: Drug concentration, in mg/L
- **TIMEDAY**: Timeday
- **DAY**: Day of administration

df_parent_evid4

A pharmacokinetic parent data set to be used with EVID=4.

Description

A dataset containing pharmacokinetic information for an hypothetical parent drug.

Usage

df_parent_evid4

Format

A data frame with 1359 rows and 7 variables:

- **ID**: Individual
- **PERIOD**: Period
- **TIMEPOINT**: Timepoint
- **TIME**: Time, in hours
- **DV**: Drug concentration, in mg/L
- **TIMEDAY**: Timeday
- **DAY**: Day of adminstration
**df_pd_start**  
*An starting pharmacodynamic data set example.*

**Description**
A dataset containing pharmacodynamic observations.

**Usage**

df_pd_start

**Format**
A tibble with 6 rows and 3 variable:

- **ID** Individual
- **TIME** Time, in hours
- **DV** Response, ng/mL

---

**df_pk**  
*A pharmacokinetic data set.*

**Description**
A dataset containing pharmacokinetic information.

**Usage**

df_pk

**Format**
A tibble with 132 rows and 4 variable:

- **ID** Individual
- **TIMEPOINT** Timepoint
- **TIME** Time, in hours
- **DV** Drug concentration, ng/mL
df_pk_datetime

Description
A pharmacokinetic data set example in datetime format.

Usage
df_pk_datetime

Format
A data frame with 65 rows and 7 variable:
- ID: Individual
- DV: Response, ng/mL
- DATETIME: Datetime
- TIMEPOINT: Timepoint
- DAY: Day
- PERIOD: Period
- BLQ: I a BLQ?
- LLOQ: Lower limit of quantification, ng/mL

df_pk_metabolite

Description
A pharmacokinetic data set of metabolite data.

Usage
df_pk_metabolite

Format
A data frame with 10 rows and 3 variable:
- ID: Individual
- TIME: Time, in hours
- DV: Drug concentration, ng/mL
df_pk_optional_columns

A pharmacokinetic data set to be used with optional columns.

Description
A dataset containing pharmacokinetic information.

Usage
df_pk_optional_columns

Format
A data frame with 12 rows and 5 variable:

- **ID**: Individual
- **TIME**: Time, in hours
- **DV**: Drug concentration, ng/mL
- **OCC**: Occasion
- **TIMEPOINT**: Timepoint

df_pk_parent

A pharmacokinetic data set for an hypothetical parent drug.

Description
A dataset containing pharmacokinetic information.

Usage
df_pk_parent

Format
A data frame with 12 rows and 3 variable:

- **ID**: Individual
- **TIME**: Time, in hours
- **DV**: Drug concentration, ng/mL
A pharmacokinetic data set example.

**Description**
A dataset containing pharmacokinetic information.

**Usage**
df_pk_start

df_pk_start

**Format**
A tibble with 12 rows and 3 variable:

- **ID** Individual
- **TIME** Time, in hours
- **DV** Response, ng/mL

A pharmacodynamic data set.

**Description**
A dataset containing pharmacodynamic information for response 1.

**Usage**
df_response1

**Format**
A data frame with 6 rows and 3 variable:

- **ID** Individual
- **TIME** Time, in hours
- **DV** Response, ng/mL
**df_response2**  
_A pharmacodynamic data set._

**Description**  
A dataset containing pharmacodynamic information for response 2.

**Usage**  
df_response2

**Format**  
A data frame with 6 rows and 3 variable:
- **ID** Individual
- **TIME** Time, in hours
- **DV** Response, seconds

**df_response3**  
_A pharmacodynamic data set._

**Description**  
A dataset containing pharmacodynamic information for response 3.

**Usage**  
df_response3

**Format**  
A data frame with 6 rows and 3 variable:
- **ID** Individual
- **TIME** Time, in hours
- **DV** Response, in hours
Description

Build pharmacometric data sets from basic tabulated files

Usage

puzzle(directory = NULL, order = NULL, coercion = list(name = NULL, sep = ","), optionalcolumns = NULL, pk = list(name = NULL, data = NULL),
        dose = list(name = NULL, data = NULL), cov = list(name = NULL, data = NULL),
        pd = list(name = NULL, data = NULL), extratimes = list(name = NULL, data = NULL),
        nm = list(name = NULL), fillcolumns = NULL, nocoercioncolumns = NULL, norepeatcolumns = NULL,
        initialindex = 0, na.strings = "N/A", arrange = "ID,TIME,CMT,desc(EVID)",
        datetimeformat = "%Y-%m-%d %H:%M:%S", timeunits = "hours",
        timezone = Sys.timezone(), ignore = "C", missingvalues = ".",
        parallel = TRUE, verbose = FALSE, username = NULL)

Arguments

directory: path to your directory
order: define the absorption order, can be 0, 1, c(0,1), or c(1,1)
coercion: define name for coercion file
optionalcolumns: define optional columns
pk: define the required file containing the pk information. It can be a .csv or an .xlsx file
dose: define the required file containing the dose information. It can be a .csv, an .xlsx file or an R object.
cov: define the optional file containing the covariate information. It can be a .csv, an .xlsx file or an R object.
pd: define the optional file containing the pd information. It can be a .csv, or a .xlsx file.
extratimes: define the optional file containing the additional times. It can be a .csv, or a .xlsx file.
nm: name of output file generated by puzzle
fillcolumns: define columns to be filled
nocoercioncolumns: define columns to be dropped from the coercion file
norepeatcolumns: define columns not to be repeated
initialindex: define the lower category of categorical covariates
na.strings define value for na
arrange define how the columns should be arranged
datet imeformat define format for date times
timeunits define time units if needed
timezone define timezone
ignore define ignore value
missingvalues define missing value
parallel define parallel zero + first order absorption
verbose define verbose
username define person performing the assembling

Value

a pharmacometrics ready data set

Examples

```r
## Not run:
nm = list(pk = list(parent=as.data.frame(puzzle::df_pk_start)),
dose=as.data.frame(puzzle::df_dose_start),
cov=as.data.frame(puzzle::df_cov_start))
puzzle(directory=file.path(tempdir()),
order=c(0),
pk=list(data=nm$pk),
dose=list(data=nm$dose),
cov=list(data=nm$cov))

## End(Not run)
```
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