

# Package ‘md.tools’

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**Type** Package

**Title** Masked data tools

**Version** 0.1.0

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**Description** A set of tools for reading, writing, and manipulating masked data. Since masked data must often deal with matrices, particularly Boolean matrices, it also provides auxilliary tools designed to make working with them easier.

**License** MIT + file LICENSE

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 7.1.2

**URL** <https://queelius.github.io/md.tools/>,  
<https://github.com/queelius/md.tools>

**Imports** purrr,  
stats,  
dplyr,  
tibble,  
jsonlite,  
readr,  
stringr

**BugReports** <https://github.com/queelius/md.tools/issues>

**Depends** R (>= 2.10)

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exp_series_data_1	<i>Masked data for a series system with exponentially distributed nodes.</i>
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## Description

Masked data containing the system lifetime and other attributes of  $n=1000$  series system with parameter value  $\theta=c(3, 4, 5)$  and candidate model  $m_0$  (`md_cand_m0`). Each candidate set is specified with  $\alpha=1$  and size  $w=2$ .

## Usage

```
exp_series_data_1
```

## Format

A data frame with 1000 rows and 9 variables:

- s** Real observable variable, system lifetime
- k** Integer latent variable, the failed node
- w** Integer observable variable, number of candidates
- t.1** Real latent variable, lifetime of component 1
- t.2** Real latent variable, lifetime of component 2
- t.3** Real latent variable, lifetime of component 3
- c.1** Boolean observable variable, TRUE indicates component 1 is in candidate set
- c.2** Boolean observable variable, TRUE indicates component 2 is in candidate set
- c.3** Boolean observable variable, TRUE indicates component 3 is in candidate set

## Source

[https://github.com/queelius/masked.data/blob/master/data-raw/exp\\_series\\_data\\_1\\_gen.R](https://github.com/queelius/masked.data/blob/master/data-raw/exp_series_data_1_gen.R)

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is_md	<i>Test whether an object is a masked data (tbl_md).</i>
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**Description**

Test whether an object is a masked data (tbl\_md).

**Usage**

```
is_md(x)
```

**Arguments**

x	object to determine if masked data
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md	<i>Constructor for masked data.</i>
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**Description**

Takes an object x and converts it to masked data, a tibble (data frame) with some extra attributes, e.g., latent attribute to specify which variables are latent in the model.

**Usage**

```
md(x)
```

**Arguments**

x	object to convert to masked data.
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md_boolean_matrix_to_list	<i>Map Boolean matrix mat to a list of integer vectors.</i>
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**Description**

Map Boolean matrix mat to a list of integer vectors.

**Usage**

```
md_boolean_matrix_to_list(mat)
```

**Arguments**

mat	Boolean matrix
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md_cand_contains	<i>Decorates masked data with whether candidate set contains failed component.</i>
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### Description

Takes masked data frame `md` with candidate set encoded as `x` and a column `k` denoting component cause of failure and returns a decorated masked data frame with a column `contains` that denotes whether the candidate set contains the component cause of failure.

### Usage

```
md_cand_contains(md, var = "x")
```

### Arguments

<code>md</code>	masked data frame
<code>var</code>	column prefix for matrix encoding

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md_cand_sizes	<i>Decorates masked data with candidate sizes</i>
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### Description

Takes masked data frame `md` with candidate set encoded as `x` and returns a decorated masked data frame with a column `w` that denotes the size of the candidate sets. No new information is added, it just counts the number of times that a row element of `x` is `TRUE`.

### Usage

```
md_cand_sizes(md, var = "x")
```

### Arguments

<code>md</code>	masked data frame
<code>var</code>	column prefix for matrix encoding

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md_decode_matrix	<i>Decodes a matrix from specified columns in a data frame.</i>
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**Description**

An `nrow(df)`-by-`p` matrix `var` is encoded in data frame `df` with the columns `var.1,...,var.p` or `var1,...,varp`.

**Usage**

```
md_decode_matrix(df, var)
```

**Arguments**

<code>df</code>	data frame that contains the matrix
<code>var</code>	the symbolic name of the matrix

**Details**

A matrix will be returned with the appropriate ordering denoted by the index, e.g., `a.2` will come before `a.4`. There should be no gaps in the matrix indexes, e.g., if there is `a.4` then there must also be `a.1`, `a.2`, `a.3`.

**Value**

a matrix

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md_encode_matrix	<i>Encodes a matrix as a data frame with specified columns.</i>
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**Description**

Encodes a matrix as a data frame with specified columns.

**Usage**

```
md_encode_matrix(mat, var)
```

**Arguments**

<code>mat</code>	matrix
<code>var</code>	the symbolic name of the matrix (prefix of column names)

**Value**

a tibble (data frame) encoding of a matrix

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md_latent	<i>Obtain a list of latent variables from masked data.</i>
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**Description**

Obtain a list of latent variables from masked data.

**Usage**

```
md_latent(md)
```

**Arguments**

md	masked data to retrieve latent variables from.
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md_list_to_boolean_matrix	<i>Map list of integer vectors to Boolean matrix.</i>
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**Description**

Map list of integer vectors to Boolean matrix.

**Usage**

```
md_list_to_boolean_matrix(xs)
```

**Arguments**

xs	List of integer vectors.
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md_mark_latent	<i>Mark a variable in a masked data frame as latent.</i>
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**Description**

Mark a variable in a masked data frame as latent.

**Usage**

```
md_mark_latent(md, vars)
```

**Arguments**

md	masked data to modify
vars	variables to mark as latent.

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md_read_csv_with_meta	<i>Read a (masked) data frame table from a connection (e.g., url or filename).</i>
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### Description

Read a (masked) data frame table from a connection (e.g., url or filename).

### Usage

```
md_read_csv_with_meta(  
  file,  
  read_meta = T,  
  comment = "#",  
  max_meta_lns = 1000,  
  ...  
)
```

### Arguments

file	a path to a file, a connection, or literal data
read_meta	whether to read in metadata to populate attributes
comment	comment indicator, defaults to #
max_meta_lns	limit metadata search to the indicated number of lines
...	additional arguments to pass, like skip

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md_unmark_latent	<i>Mark a variable in a masked data frame as latent.</i>
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### Description

Mark a variable in a masked data frame as latent.

### Usage

```
md_unmark_latent(md, vars)
```

### Arguments

md	masked data to modify
vars	variables to mark as latent.

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md_write_csv_with_meta	<i>Write data frame object to a CSV (comma separated file), optionally with associated attribute data (stored as JSON in comments)</i>
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**Description**

Write data frame object to a CSV (comma separated file), optionally with associated attribute data (stored as JSON in comments)

**Usage**

```
md_write_csv_with_meta(df, file, comment = "#", ...)
```

**Arguments**

df	a data frame with attributes to write (like a masked data frame)
file	filename for csv
comment	denotes a comment block
...	additional arguments to pass

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print.tbl_md	<i>Print method for masked data (tbl_md).</i>
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**Description**

Print method for masked data (tbl\_md).

**Usage**

```
## S3 method for class 'tbl_md'  
print(x, drop_latent = F, ...)
```

**Arguments**

x	masked data to print
drop_latent	If TRUE, drop the latent random variables
...	additional arguments to pass



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