

# Package ‘mnonr’

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**Type** Package

**Title** A Generator of Multivariate Non-Normal Random Numbers

**Version** 1.0.0

**Author** Wen Qu and Zhiyong Zhang

**Maintainer** Wen Qu <wqu@end.edu>

**Description** A data generator of multivariate non-normal data in R. It combines two different methods to generate non-normal data, one with user-specified multivariate skewness and kurtosis (more details can be found in the paper: Qu, Liu, & Zhang, 2019 <doi:10.3758/s13428-019-01291-5>), and the other with the given marginal skewness and kurtosis. The latter one is the widely-used Vale and Maurelli's method. It also contains a function to calculate univariate and multivariate (Mardia's Test) skew and kurtosis.

**Depends** R (>= 3.1.0)

**License** GPL-2 | GPL-3

**Encoding** UTF-8

**LazyData** true

**Imports** stats

**Suggests** MASS, knitr, rmarkdown, semTools

**VignetteBuilder** knitr

**RoxygenNote** 6.1.1

**NeedsCompilation** no

**Repository** CRAN

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 mardia

*Univariate and Multivariate skewness and kurtosis checker*


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**Description**

Univariate and Multivariate skewness and kurtosis checker

**Usage**

```
mardia(x, na.rm = TRUE)
```

**Arguments**

|       |  |
|-------|--|
| x     | A data matrix  |
| na.rm | An indication of the missing data, the default value is True |

**Value**

Data information: sample size and number of variables. The marginal and multivariate test (Mardia's Test) of skewness and kurtosis.

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 mnonr

*Multivariate Non-normal Random Number Generator based on Multivariate Measures*


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**Description**

Multivariate Non-normal Random Number Generator based on Multivariate Measures

**Usage**

```
mnonr(n, p, ms, mk, Sigma, initial = NULL)
```

**Arguments**

|         |  |
|---------|--|
| n       | Sample size  |
| p       | Number of variables  |
| ms      | A value of multivariate skewness   |
| mk      | A value of multivariate kurtosis   |
| Sigma   | A covariance matrix (In this function, the generated data are standardized. A correlation matrix is equal to its corresponding covariance matrix.) |
| initial | A vector with 3 numbers for initial polynomial coefficients' (b,c,d). The default setting is (0.9,0.4,0).  |

**Value**

A data matrix (multivariate data)

**Examples**

```
mnonr::mnonr(n=10000,p=2,ms=3,mk=61,Sigma=matrix(c(1,0.5,0.5,1),2,2),initial=NULL)
```

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|       |  |
|-------|--|
| unonr | <i>Multivariate Non-normal Random Number Generator based on Marginal Measures (Vale and Maurelli's method)</i> |
|-------|--|

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**Description**

Generate Multivariate Non-normal Data using Vale and Maurelli (1983) method. The codes are copied from mvrnonnorm function in the semTools package.

**Usage**

```
unonr(n, mu, Sigma, skewness = NULL, kurtosis = NULL, empirical = FALSE)
```

**Arguments**

|           |   |
|-----------|---|
| n         | Sample size   |
| mu        | A mean vector   |
| Sigma     | A covariance matrix   |
| skewness  | A skewness vector   |
| kurtosis  | A kurtosis vector   |
| empirical | If TRUE, mu and Sigma specify the empirical not population mean and covariance matrix |

**Value**

A data matrix (multivariate data)

**References**

Vale, C. D. & Maurelli, V. A. (1983) Simulating multivariate nonnormal distributions. *Psychometrika*, 48, 465-471.

**Examples**

```
unonr(1000, c(1, 2), matrix(c(10, 2, 2, 5), 2, 2), skewness = c(1, 2), kurtosis = c(3, 8))
```

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