

Package: simIC (via r-universe)

May 28, 2026

Title Simulate and Analyze Interval and Mixed-Censored Survival Data

Version 0.1.0

Description Provides tools to simulate and analyze interval-censored survival data, including left-, right-, and uncensored cases, under common parametric distributions such as Weibull, Exponential, Log-Normal, Log-Logistic, Gamma, Gompertz, Normal, Logistic, and EMV. The package supports both direct maximum likelihood estimation and imputation-based approaches, making it suitable for methodological research, benchmarking, and teaching purposes. An interactive web-based companion tool is also available.

License MIT + file LICENSE

Encoding UTF-8

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.2

URL <https://github.com/jayarasan/simIC>

BugReports <https://github.com/jayarasan/simIC/issues>

Repository <https://jayarasan.r-universe.dev>

Date/Publication 2025-07-29 03:48:16 UTC

RemoteUrl <https://github.com/jayarasan/simic>

RemoteRef HEAD

RemoteSha f705a41763fe3702b8057322b1e42921c531dc54

Contents

mle_imp	2
mle_int	2
simIC	3

Index	5
--------------	----------

mle_imp	<i>Imputation-Based MLE for Interval-Censored Data</i>
---------	--

Description

Estimates distribution parameters using imputed event times.

Usage

```
mle_imp(
  left,
  right,
  dist = "weibull",
  impute = c("midpoint", "random", "median", "harmonic_median", "geometric_median",
            "random_survival")
)
```

Arguments

left	Left bounds of censoring intervals
right	Right bounds of censoring intervals
dist	Distribution name (e.g. <code>"weibull"</code> , <code>"loglogistic"</code> , <code>"EMV"</code>)
impute	Imputation method: <code>"midpoint"</code> , <code>"random"</code> , etc.

Value

A list containing estimates, standard errors, and log-likelihood

mle_int	<i>Imputation-Based MLE for Interval-Censored Data</i>
---------	--

Description

Estimates distribution parameters using imputed event times.

Usage

```
mle_int(left, right, dist, true_params = list())
```

Arguments

left	Left bounds of censoring intervals
right	Right bounds of censoring intervals
dist	Distribution name (e.g. <code>"weibull"</code> , <code>"loglogistic"</code> , <code>"EMV"</code>)
impute	Imputation method: <code>"midpoint"</code> , <code>"random"</code> , etc.

Value

A list containing estimates, standard errors, and log-likelihood

simIC	<i>Simulate Interval-Censored Survival Data</i>
-------	---

Description

This function simulates interval-censored survival data from various parametric distributions.

Usage

```
simIC(
  n = 100,
  dist = "weibull",
  shape = 2,
  scale = 1,
  meanlog = 0,
  sdlog = 1,
  location = 0,
  dist_params = list(),
  width = 1,
  visit_start = 0
)
```

Arguments

n	Number of samples.
dist	The distribution to use. Options: "weibull", "exp", "lognormal", "loglogistic", "normal", "logistic", "EMV", "gamma", "gompertz".
shape	Shape parameter (for Weibull, Log-Logistic, Gamma, Gompertz).
scale	Scale parameter (for Weibull, Log-Logistic, Gamma, Gompertz, Logistic).
meanlog	Mean log (for Log-Normal).
sdlog	Standard deviation of log (for Log-Normal).
location	Location parameter (for Logistic, Normal, EMV).
dist_params	Optional list of distribution-specific parameters (not used currently).
width	Width of censoring intervals.
visit_start	Starting time for visit schedule (default = 0).

Value

A data frame with columns: id, left, right, event, and true_time.

Examples

```
simIC(n = 15, dist = "weibull", shape = 1.2, scale = 5, width = 4)  
simIC(n = 10, dist = "lognormal", meanlog = 3, sdlog = 1, width = 5)
```

Index

mle_imp, 2

mle_int, 2

simIC, 3