Package: Romeb (via r-universe)

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Type Package

Title Robust Median-Based Bayesian Growth Curve Modeling

Version 0.2.0

Date 2026-07-01

Description Implements robust median-based Bayesian linear growth curve models for complete data and for data with Missing Completely at Random (MCAR), Missing At Random (MAR), or Missing Not At Random (MNAR) mechanisms. Models are fitted using 'rjags' through 'JAGS' and posterior summaries are computed with 'coda'. The main function allows users to specify outcome variables, auxiliary variables for MNAR missingness models, prior hyperparameters, and initial values directly through function arguments.

License GPL-3

URL https://github.com/DandanTang0/Romeb

BugReports https://github.com/DandanTang0/Romeb/issues

Depends R (>= 4.2.0)

Imports coda, rjags, stats, utils

Suggests knitr, rmarkdown, testthat (>= 3.0.0)

VignetteBuilder knitr

SystemRequirements JAGS

Encoding UTF-8

Language en-US

LazyData true

LazyDataCompression xz

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.3

Config/testthat/edition 3

NeedsCompilation no

Config/pak/sysreqs jags

Repository https://dandantang0.r-universe.dev

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`model` *Bayesian Growth Curve Model for Complete Data, MCAR (Missing Completely at Random, and MAR (Missing at Random*

Description

A character string containing the JAGS model specification for complete data (no missing values), MCAR, and MAR.

Usage

```
model
```

Format

A character string.

model_MNAR — *Bayesian Growth Curve Model for MNAR (Missing Not At Random)*

Description

JAGS model definition for data with MNAR mechanism.

Usage

```
model_MNAR
```

Format

A character string.

model_MNAR_k — *Bayesian Growth-Curve Model for MNAR with Auxiliary Variable (k)*

Description

JAGS model definition for MNAR mechanism with auxiliary variable k.

Usage

```
model_MNAR_k
```

Format

A character string.

NYS — *Youth Attitudes toward Deviance (NYS, 1976–1980)*

Description

A real data set from the 1976–1980 National Youth Survey of U.S. youth.

Usage

```
NYS
```

Format

A data frame with 1,725 rows and 7 variables:

age Participant age (years)

gender Gender (0 = female, 1 = male)

Atd1 Attitude toward social deviance, wave 1

Atd2 Attitude toward social deviance, wave 2

Atd3 Attitude toward social deviance, wave 3

Atd4 Attitude toward social deviance, wave 4

Atd5 Attitude toward social deviance, wave 5

Source

National Youth Survey, waves 1976–1980 (downloadable at https://www.icpsr.umich.edu/icpsrweb/ICPSR/series/88)

`Romeb` *Romeb: Robust Median-Based Bayesian Growth Curve Modeling*

Description

Implements robust median-based Bayesian growth-curve models that handle MCAR/MAR/MNAR missing-data mechanisms and complete data. Models are fitted via **rjags**/JAGS and summarized with **coda**.

Fits a median-based Bayesian growth curve model under MCAR, MAR, MNAR or complete-data assumptions. If `K > 0` the first `K` columns in `data` are treated as auxiliary variables.

Usage

```
Romeb(
  Missing_Type,
  data,
  time,
  seed,
  K = 0,
  chain = 1,
  Niter = 6000,
  burnIn = 3000
)
```

Arguments

Missing_Type	Character; one of MNAR, MAR, MCAR, no missing.
data	Matrix or data frame containing outcome columns (and optionally auxiliary variables).
time	Numeric vector of measurement times (e.g., c(0,1,2,3)).
seed	Integer seed for reproducibility.
K	Integer; number of auxiliary variables (default 0).
chain	Integer; number of MCMC chains (default 1).
Niter	Integer; iterations per chain (default 6000).
burnIn	Integer; burn-in iterations (default 3000).

Value

An object of class RomebResult containing

quantiles posterior means, SDs and quantiles

geweke Geweke z-scores

credible_intervals 95% equal-tail credible intervals

hpd_intervals 95% highest posterior density intervals

samps_full full coda::mcmc.list (including burn-in)

Author(s)

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See Also

Useful links:

- https://github.com/DandanTang0/Romeb
- Report bugs at https://github.com/DandanTang0/Romeb/issues

Examples

```
set.seed(123)
Y <- matrix(rnorm(300), 100, 3)
fit <- Romeb("no missing", data = Y, time = c(0,1,2), seed = 123, K = 0,
             Niter = 6000, burnIn = 3000)
print(fit)
```

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