

Package ‘BayesianFitForecast’

January 20, 2025

Type Package

Title Bayesian Parameter Estimation and Forecasting for
Epidemiological Models

Version 1.0.0

Description Methods for Bayesian parameter estimation and forecasting in epidemiological models.
Functions enable model fitting using Bayesian methods and generate forecasts with uncertainty quantification.
Implements approaches described in <[doi:10.48550/arXiv.2411.05371](https://doi.org/10.48550/arXiv.2411.05371)> and <[doi:10.1002/sim.9164](https://doi.org/10.1002/sim.9164)>.

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Encoding UTF-8

Imports bayesplot, readxl, openxlsx, rstan, ggplot2, dplyr

Depends R (>= 3.5.0)

URL <https://github.com/gchowell/BayesianFitForecast>

BugReports <https://github.com/gchowell/BayesianFitForecast/issues>

RoxygenNote 7.3.2

Suggests knitr, rmarkdown, testthat (>= 3.0.0)

VignetteBuilder knitr

Config/testthat/edition 3

NeedsCompilation no

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Repository CRAN

Date/Publication 2024-12-05 18:20:07 UTC


```
excel_file <- system.file("extdata", "SanFrancisco.xlsx",
                          package = "BayesianFitForecast")
# Run the analysis

Run_analyzeResults(
  data_file = data_file,
  option_file = option_file,
  excel_file = excel_file,
  output_path = NULL)

# Results are saved in the specified directory or temporary directory if none is provided.
```

Run_MCMC

Run MCMC Analysis with Specified Option File

Description

This function runs an MCMC analysis based on the specified option file, sourcing auxiliary scripts, and executing the analysis.

Usage

```
Run_MCMC(option_file, excel_file = NULL, output_path = NULL)
```

Arguments

option_file	The name of the option file (e.g., "option1.R") located in the current working directory.
excel_file	The path to the Excel file containing the data.
output_path	Directory where the output will be saved. If NULL, uses a temporary directory.

Value

None. The function executes and saves results directly.

Examples

```
# Get path to the example option file included with package
option_file <- system.file("extdata", "option.R",
                          package = "BayesianFitForecast")

# Specify the path to the Excel file you want to analyze
excel_file <- system.file("extdata", "SanFrancisco.xlsx",
                          package = "BayesianFitForecast") # Modify this path accordingly

# Run the MCMC analysis

Run_MCMC(option_file = option_file, excel_file = excel_file, output_path = NULL)
```

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