Package: EpiNova (via r-universe)

May 24, 2026

Title Flexible Extended State-Space Epidemiological Models with Modern Inference

Version 0.1.0

Description An extended epidemiological modelling framework that goes beyond the classical SIR (Susceptible-Infectious-Recovered) model. Supports SEIR (Susceptible-Exposed-Infectious-Recovered), SEIRD (Susceptible-Exposed-Infectious-Recovered-Deceased), SVEIRD (Susceptible-Vaccinated-Exposed-Infectious-Recovered-Deceased), and age-stratified compartmental models with flexible intervention functions (spline-based, Gaussian process, or user-defined). Inference is available via maximum likelihood or sequential Monte Carlo (SMC, also known as particle filtering) with no external binary dependencies. Includes a dependency-free real-time effective reproduction number (Rt) estimator, spatial multi-patch models with gravity-model mobility, ensemble forecasting via Bayesian model averaging (BMA), and proper scoring rules including CRPS (Continuous Ranked Probability Score), coverage, and MAE (Mean Absolute Error) for forecast evaluation. Methods follow Anderson and May (1991, ISBN:9780198545996), Doucet, de Freitas, and Gordon (2001) <doi:10.1007/978-1-4757-3437-9>, Cori et al. (2013) <doi:10.1093/aje/kwt133>, and Gneiting and Raftery (2007) <doi:10.1198/016214506000001437>.

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Encoding UTF-8

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.3

Depends R (>= 4.0.0)

Imports deSolve, ggplot2, dplyr, tidyr, splines, scales

Suggests DEoptim, MASS, numDeriv, rstan, TMB, EpiEstim, knitr, rmarkdown, testthat (>= 3.0.0), ggpubr, patchwork

Config/testthat/edition 3

VignetteBuilder knitr

URL https://github.com/causalfragility-lab/EpiNova

BugReports https://github.com/causalfragility-lab/EpiNova/issues

Config/pak/sysreqs libicu-dev

Repository https://causalfragility-lab.r-universe.dev

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RemoteUrl https://github.com/causalfragility-lab/epinova

RemoteRef HEAD

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