

Monthly mortality estimates for Aotearoa New Zealand

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The project

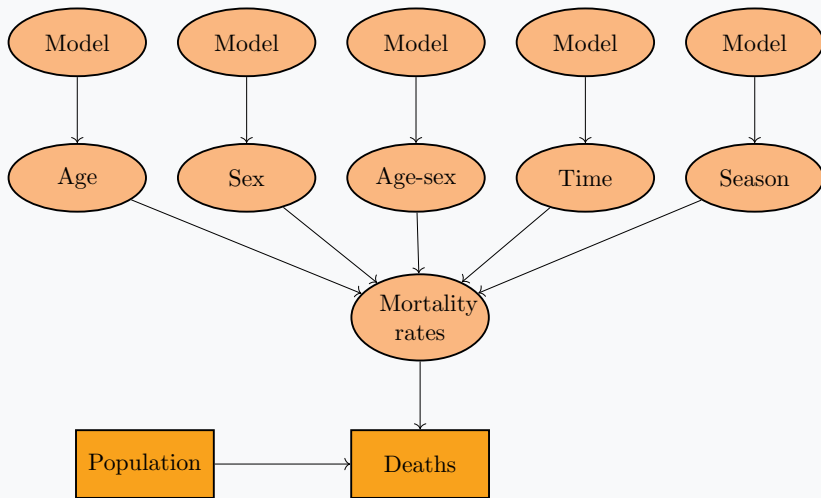
- Estimate mortality by age, sex, month
 - Current official is three-year rolling average
- Challenges
 - Small numbers
 - Complicated patterns
- Why
 - Effect of events, eg COVID
 - Seasonal mortality
 - Generic methodology
- Exploratory, work in progress

The model

Data

- Deaths by age, sex, month
 - Date of occurrence (not registration)
- Population at risk
 - Interpolated from quarterly ERP

Specification

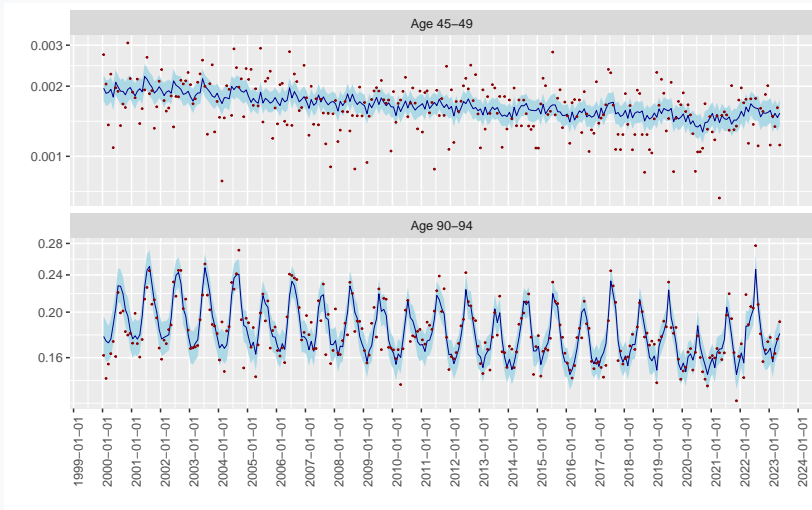


Computation

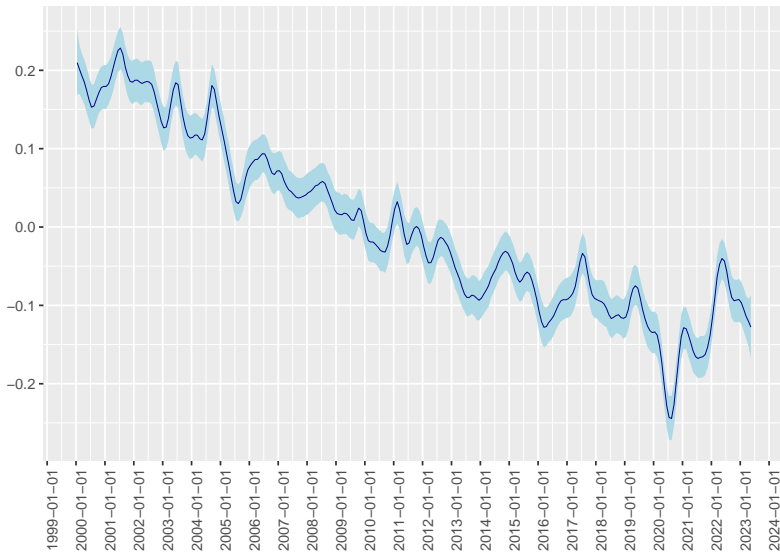
- Bayesian
- Open source R package
 - github.com/bayesiandemography/bage
- Fast approximation
 - Template Model Builder (TMB)

Preliminary results

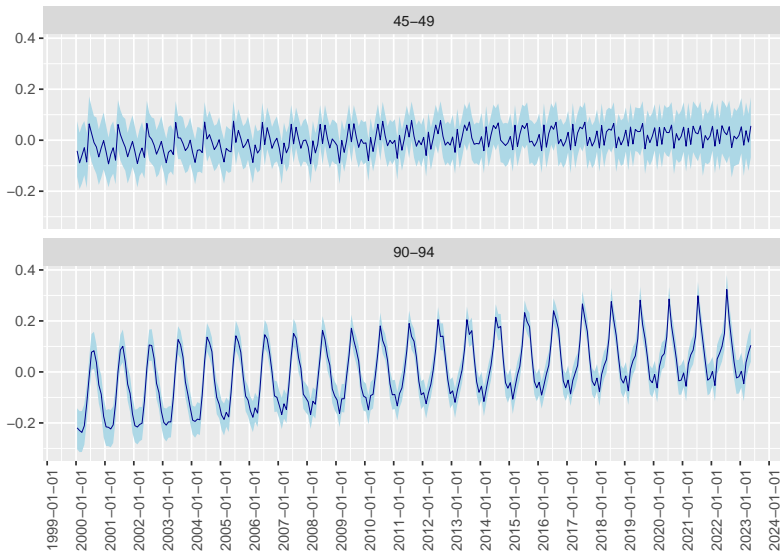
Mortality rates, females aged 45-49 and 90-94



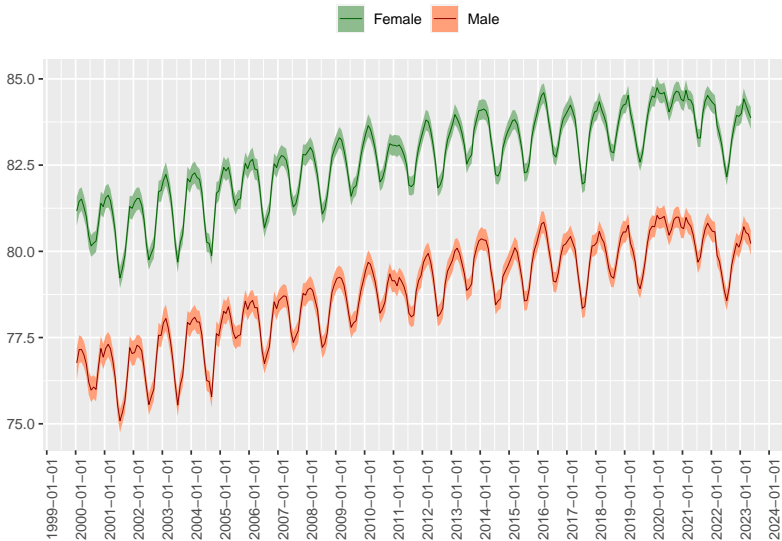
Time effect



Seasonal effect



Life expectancy



Future work

Monthly mortality

- Model testing
- Refine decomposition
- Isolate effects of COVID

General methodology

- Extend theory and software
- Other topics
 - Fertility
 - Migration
 - Labour force
 - etc
- Detailed estimation becomes routine