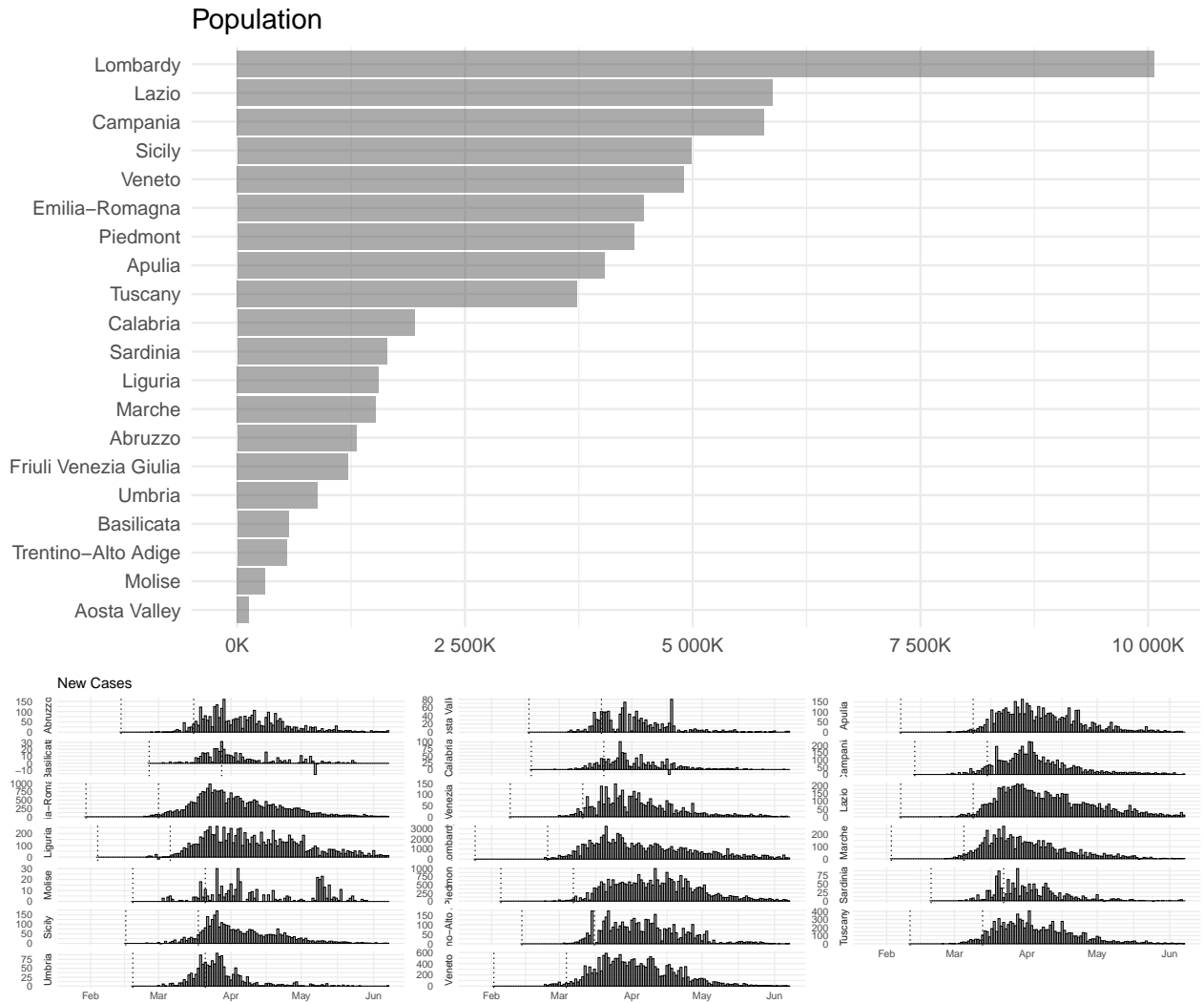
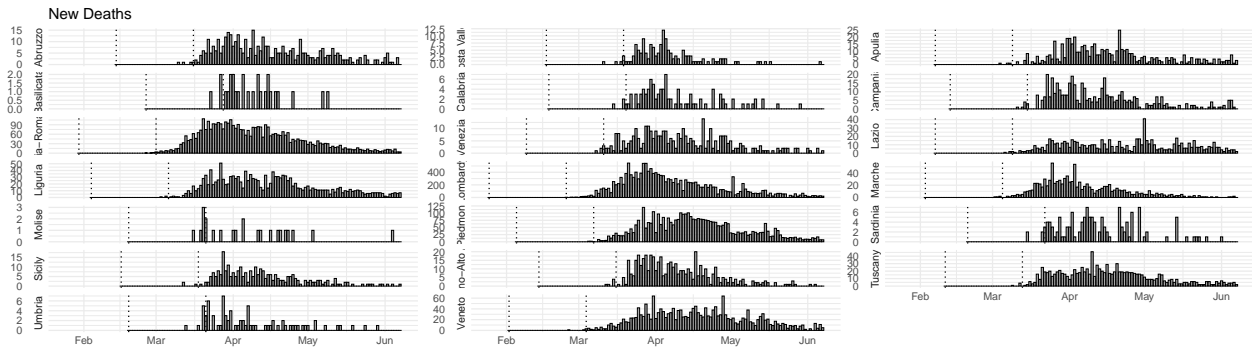


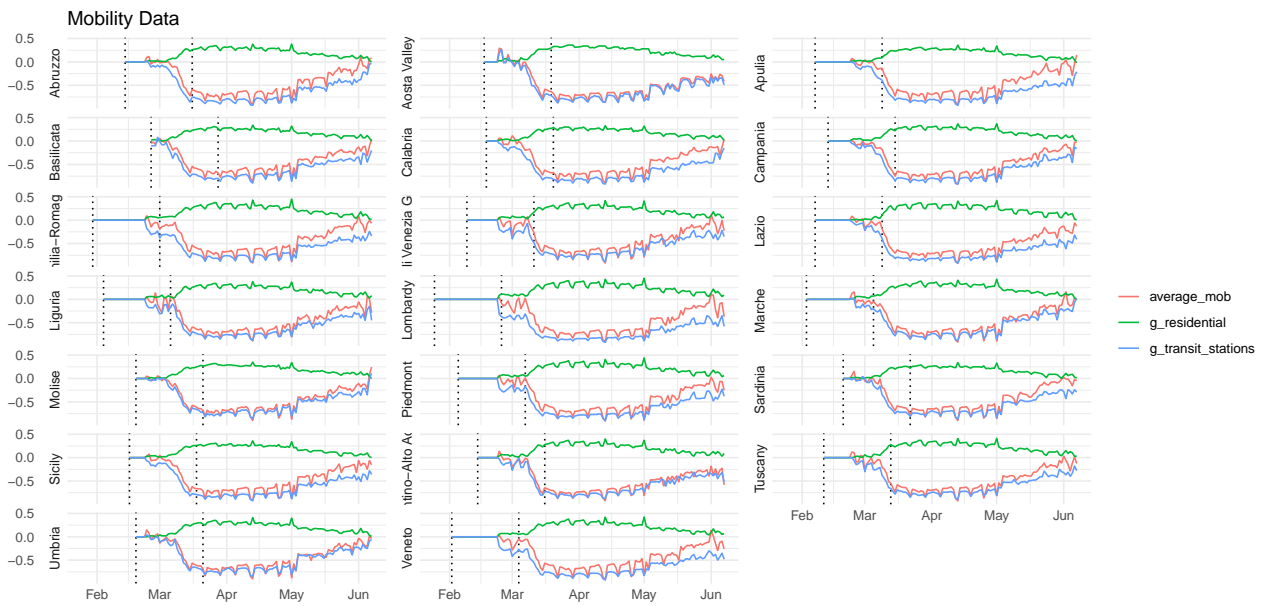
# Italy

## Data





Vertical dotted lines represent the first seeding day and the epidemic start date.



Vertical dotted lines represent the first seeding day and the epidemic start date.

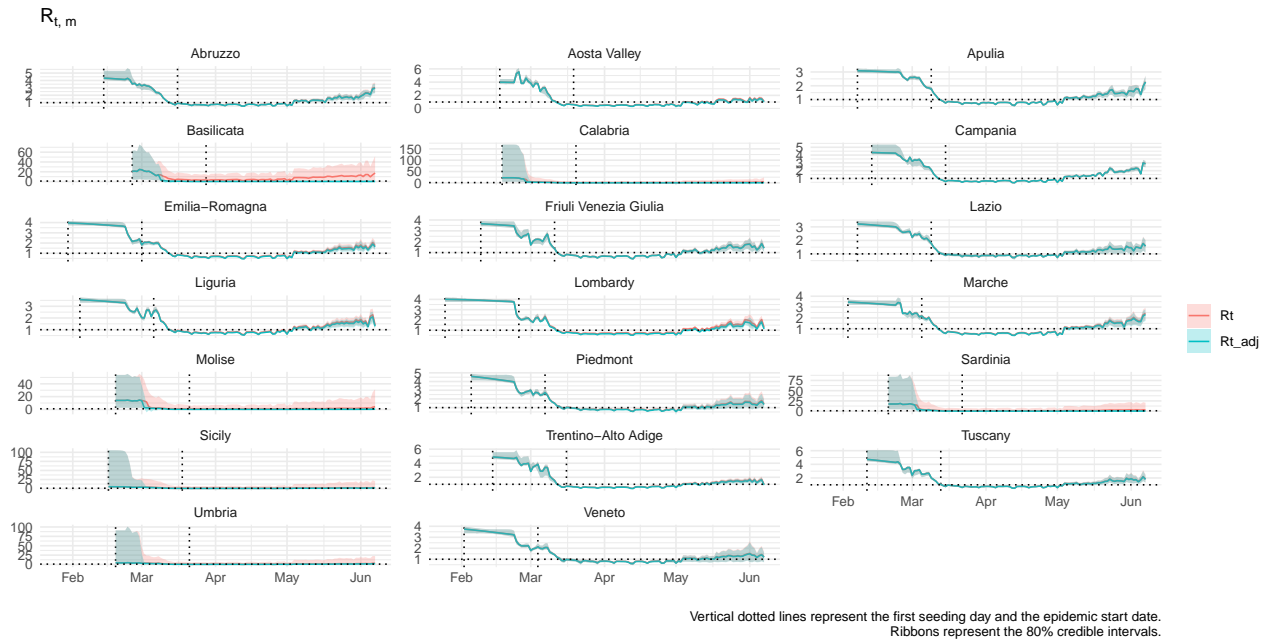
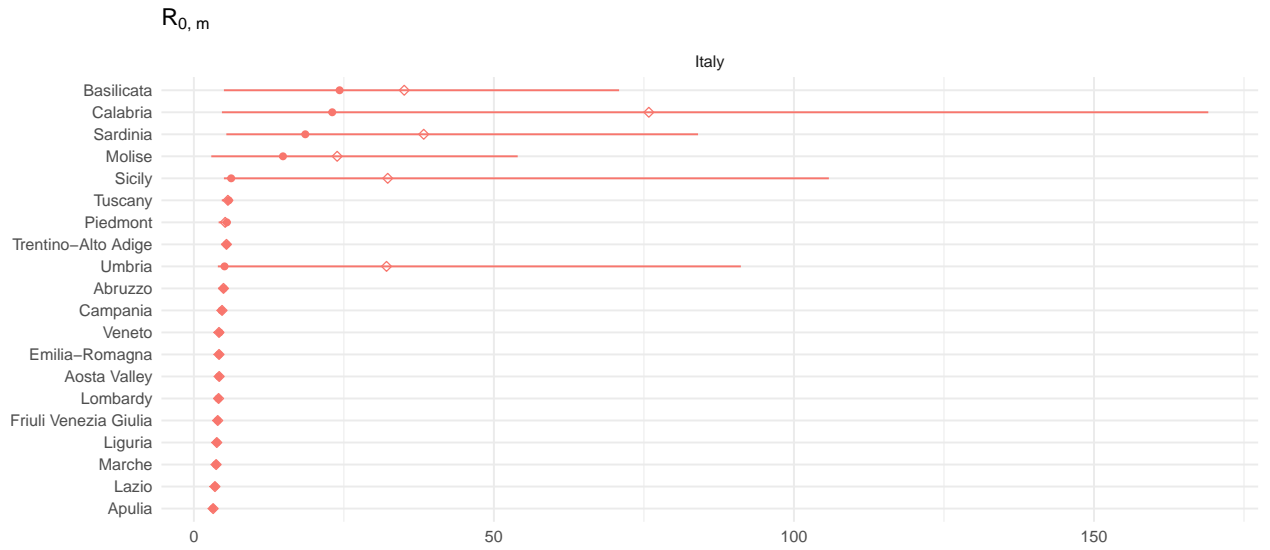
## Analysis

Number of divergent transitions = 841

Maximum  $\hat{R}$  = 2.14316632299219

Minimum Bulk ESS = 5.21468069799888

Minimum Tail ESS = 4.78380502010035



Contact rate function:

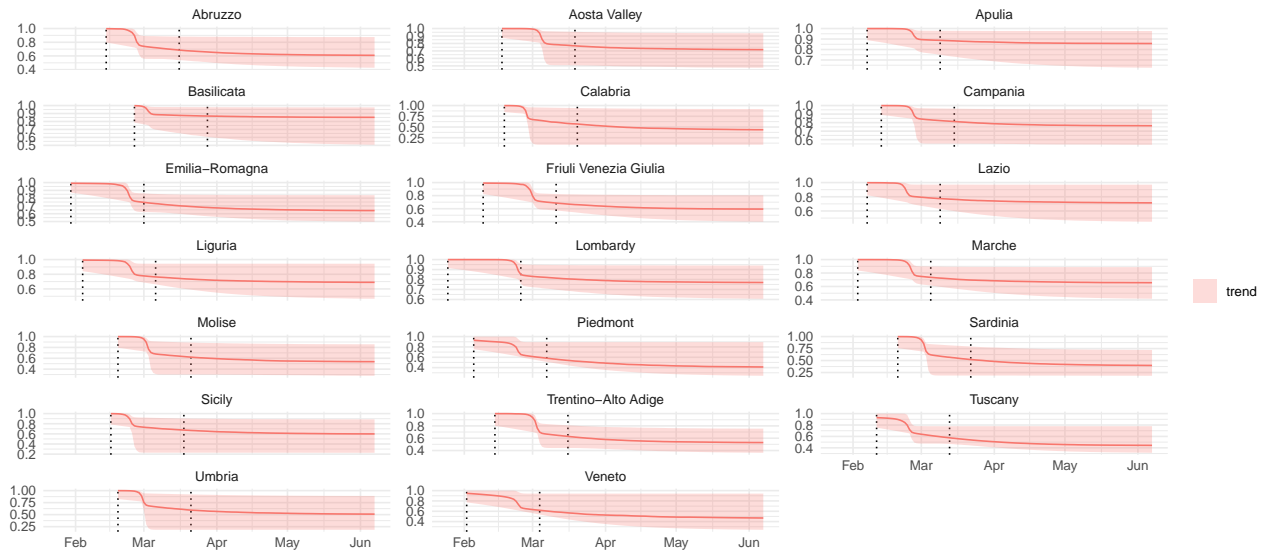
$$cr(t; t^*, \lambda_j, \kappa) = \lambda_j + \frac{1 - \lambda_j}{1 + \exp(\kappa(t - t^*))}$$

where

$$\lambda_j \sim \text{Beta}(3, 1)$$

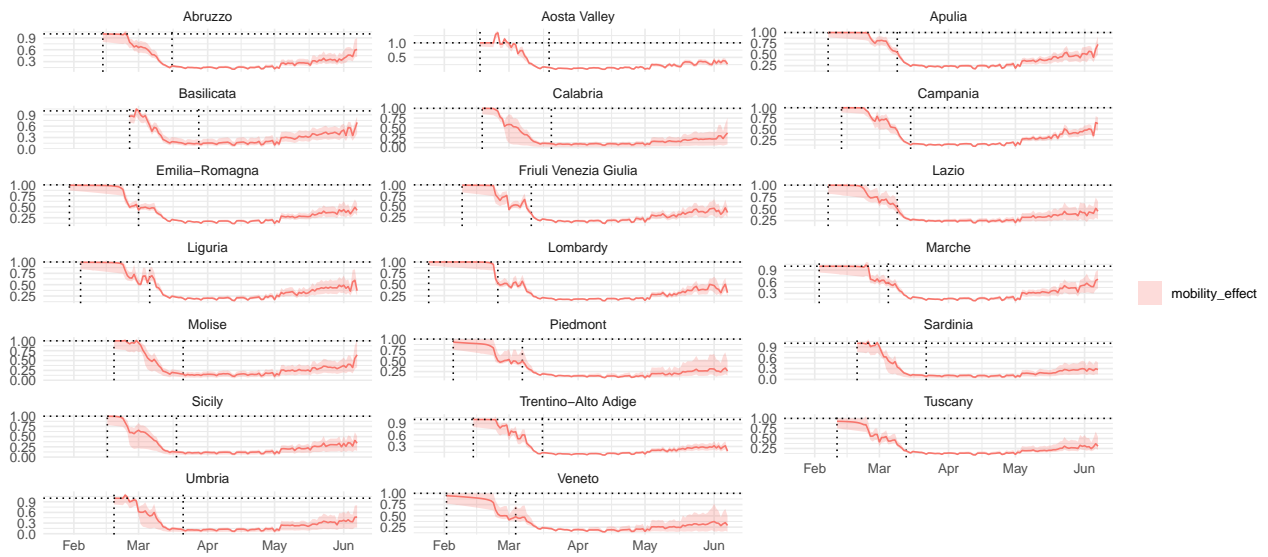
$$\kappa \sim \text{NegHalfNormal}(0, 1).$$

### Contact Rate

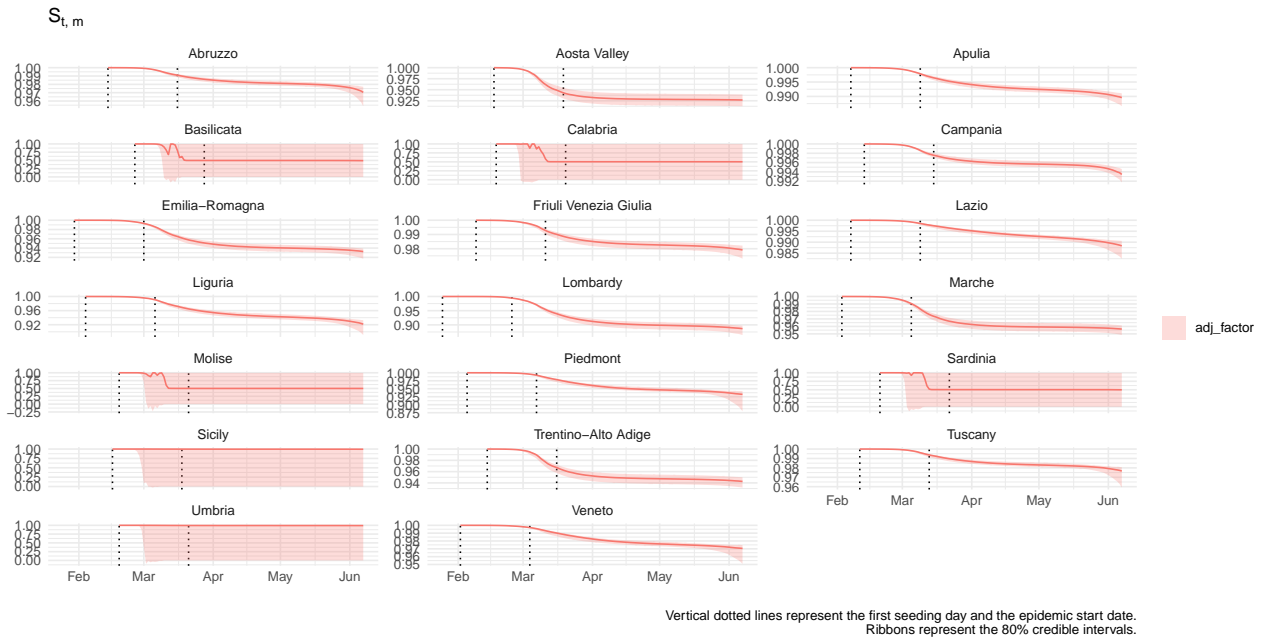


Vertical dotted lines represent the first seeding day and the epidemic start date.  
Ribbons represent the 80% credible intervals.

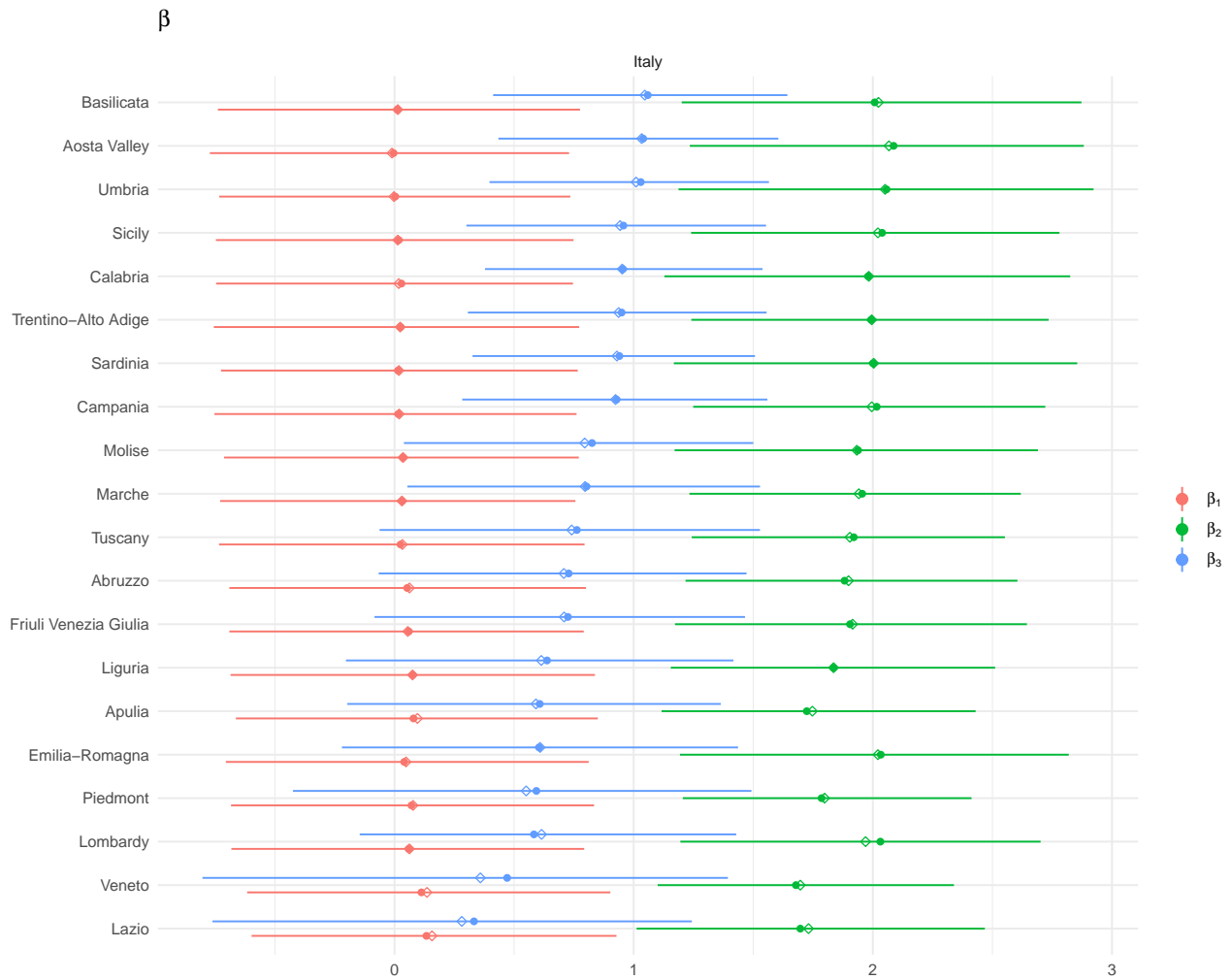
### Mobility effect

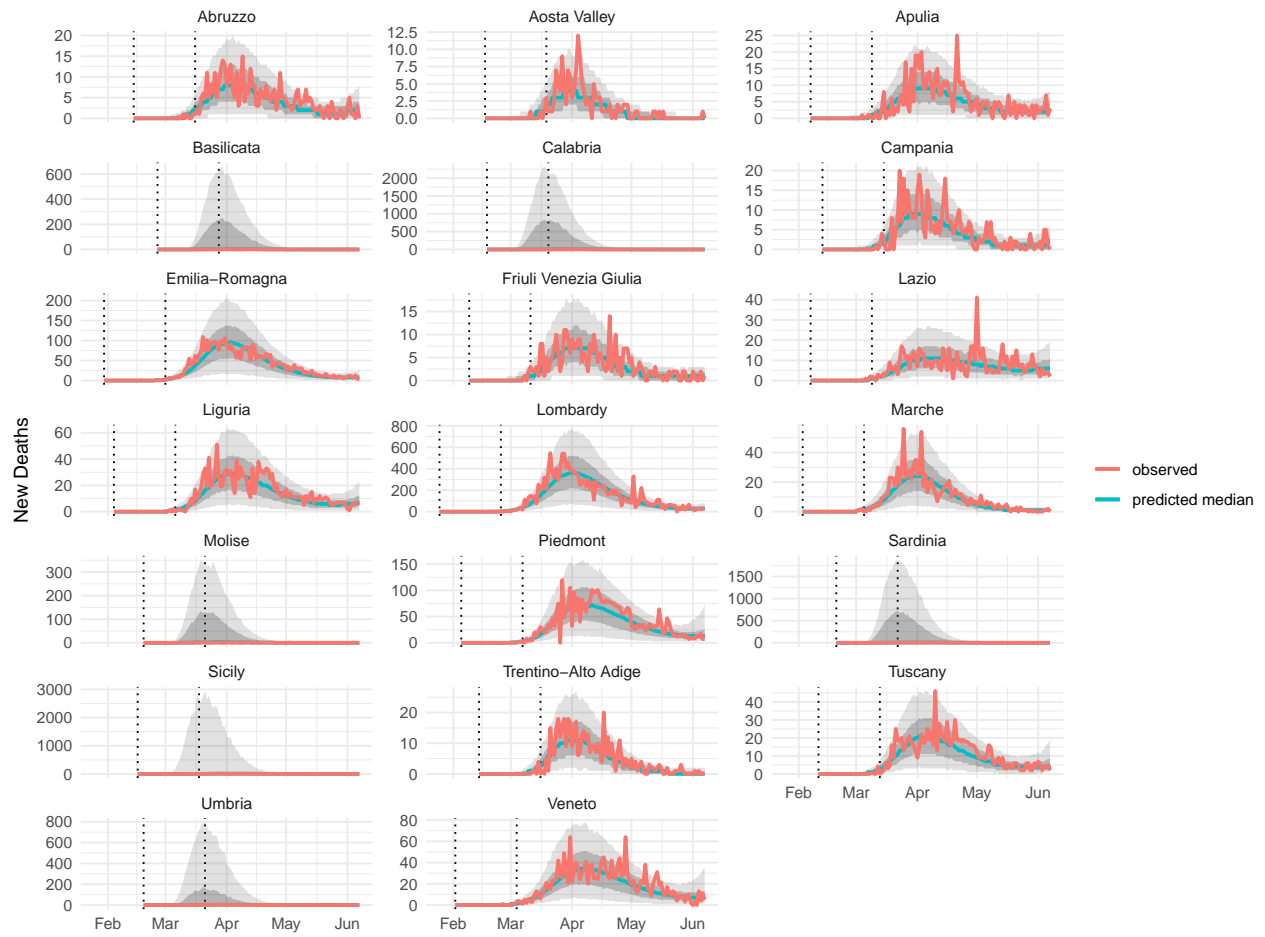


Vertical dotted lines represent the first seeding day and the epidemic start date.  
Ribbons represent the 80% credible intervals.



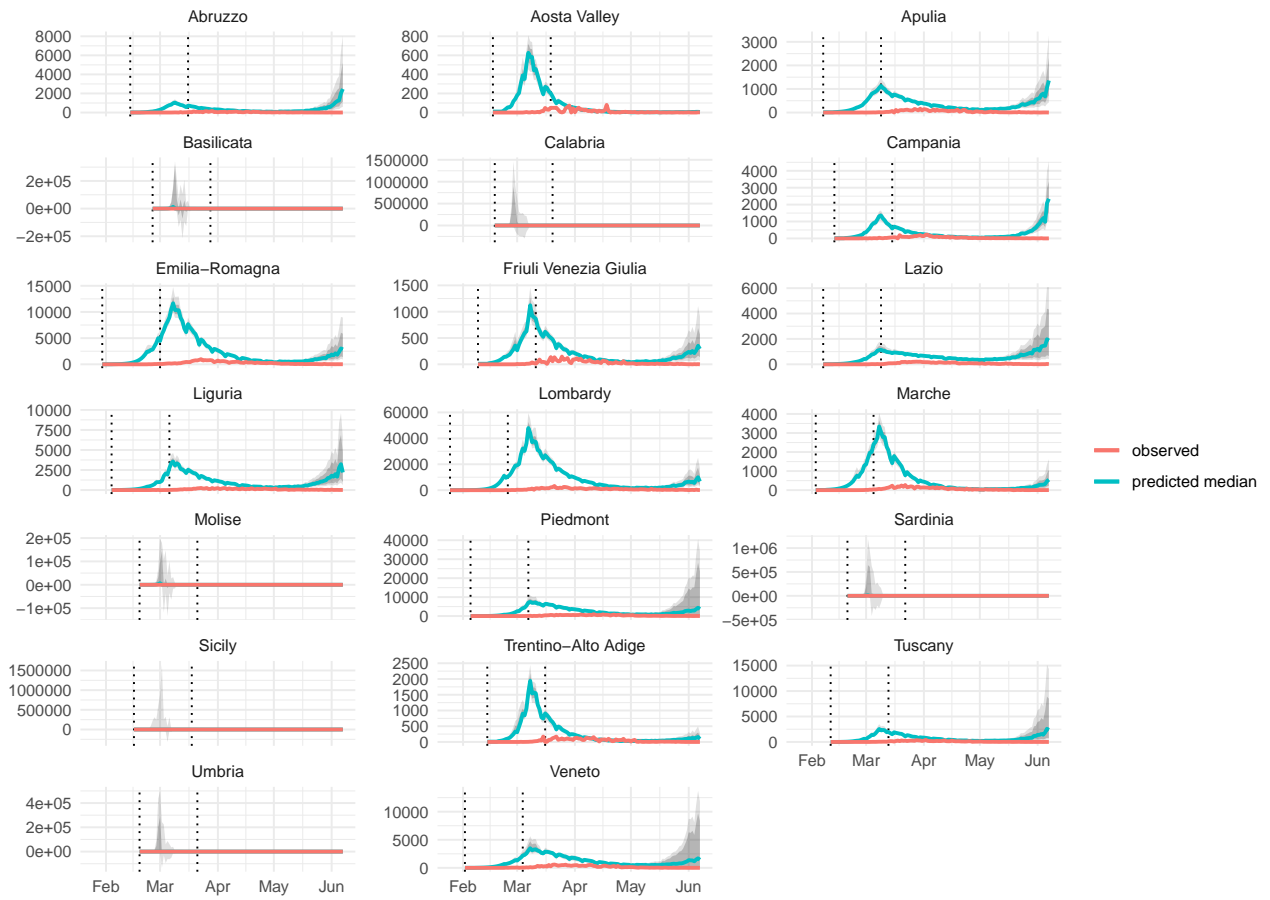
Mobility linear model:  $\beta_1 \cdot X_{\text{residential}} + \beta_2 \cdot X_{\text{transit}} + \beta_3 \cdot X_{\text{average}}$ .





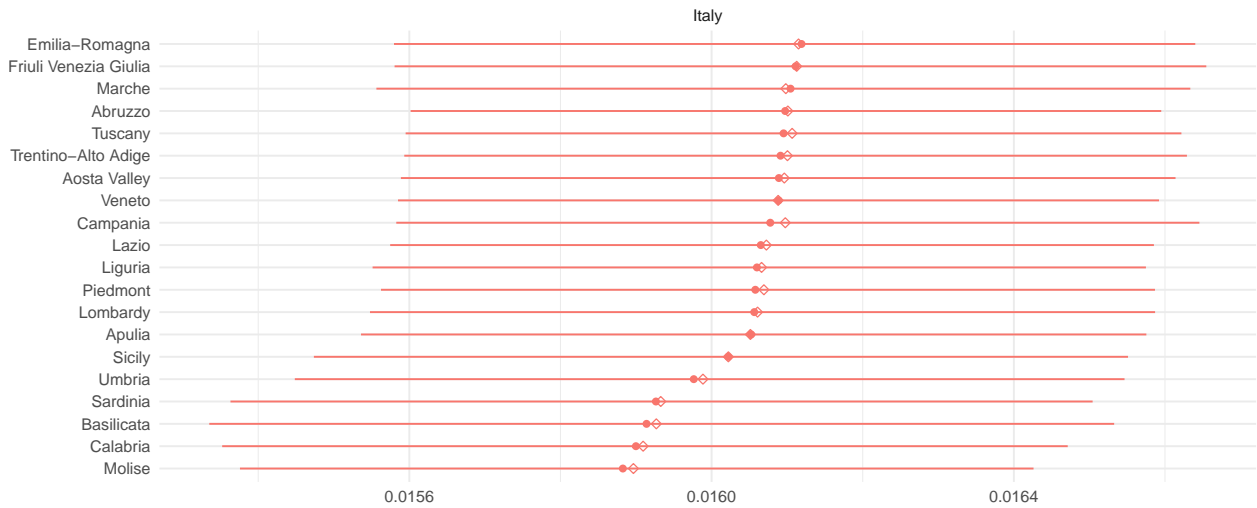
Solid black line: observed new deaths. Grey ribbon: posterior predicted new deaths. Vertical dotted lines represent the first seeding day and the epidemic start date.

New Cases  
predicted vs observed



Solid black line: observed new deaths. Grey ribbon: posterior predicted new deaths.  
Vertical dotted lines represent the first seeding day and the epidemic start date.

IFR



# Prior Prediction

## Not Available.

# Diagnostics

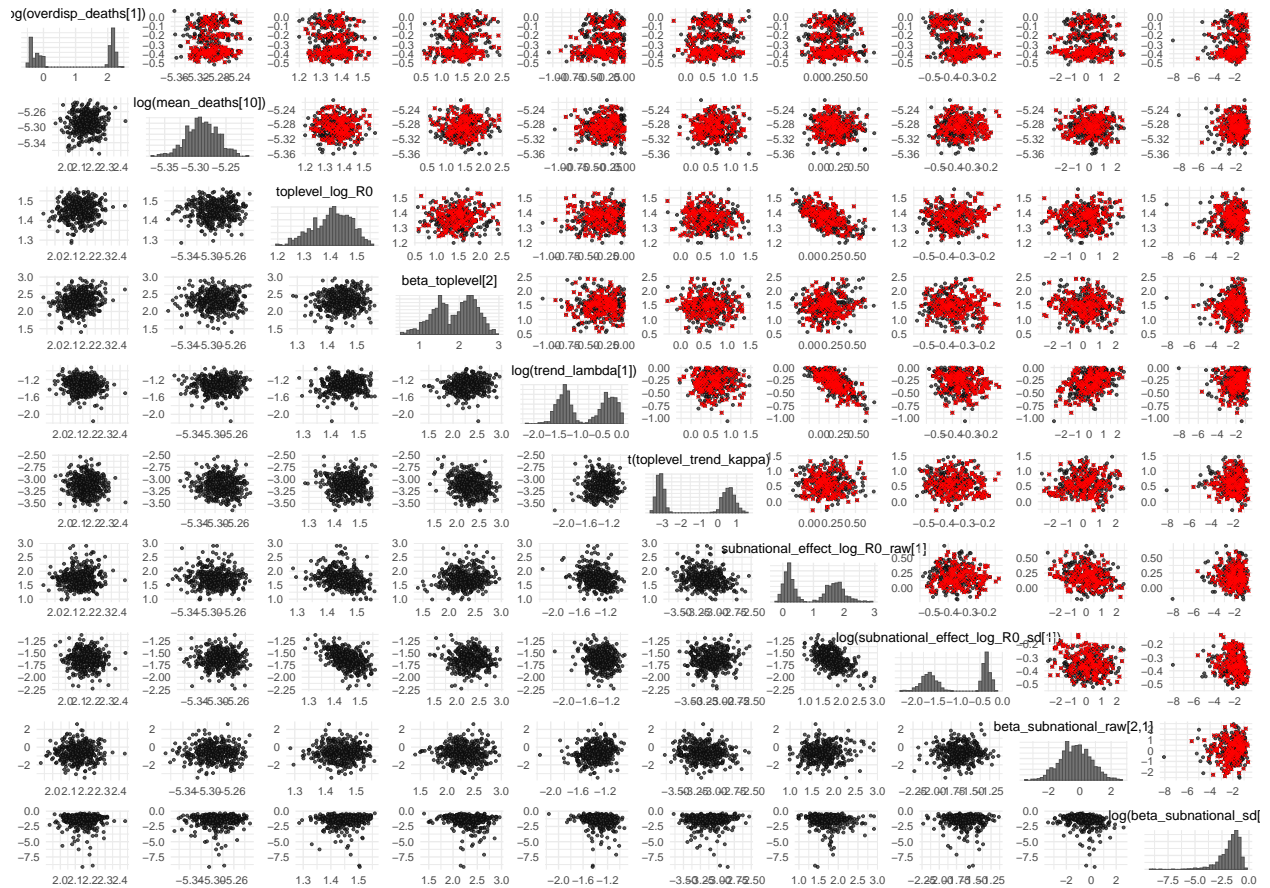
## This is bayesplot version 1.7.2

## - Online documentation and vignettes at [mc-stan.org/bayesplot](http://mc-stan.org/bayesplot)

## - bayesplot theme set to bayesplot::theme\_default()

## \* Does `_not_` affect other ggplot2 plots

## \* See `?bayesplot_theme_set` for details on theme setting





Posterior distribution of parameters

