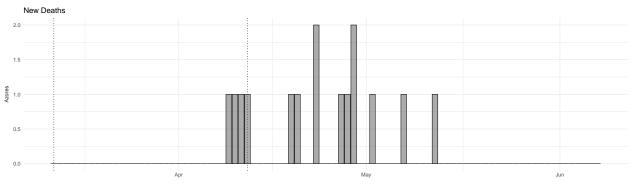
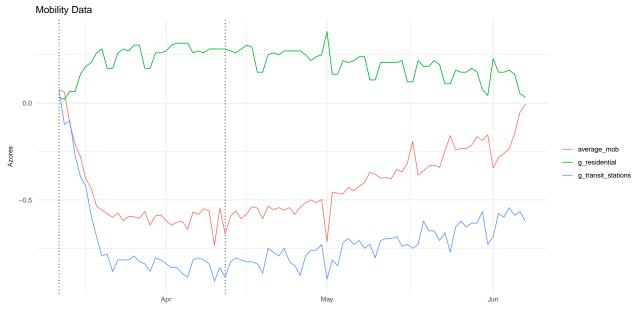
# Portugal

### 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**

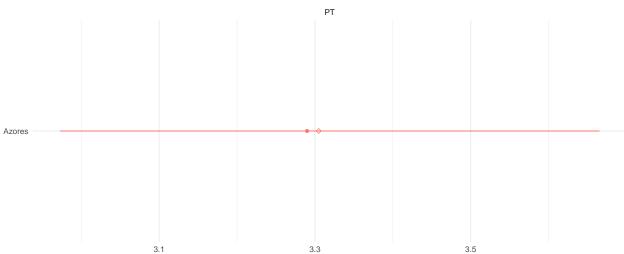
Number of divergent transitions = 0

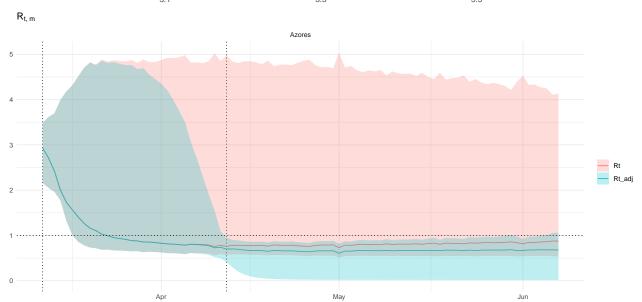
Maximum  $\hat{R} = 1.536733$ 

Minimum Bulk ESS = 7.140994

Minimum Tail ESS = 6.626435







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

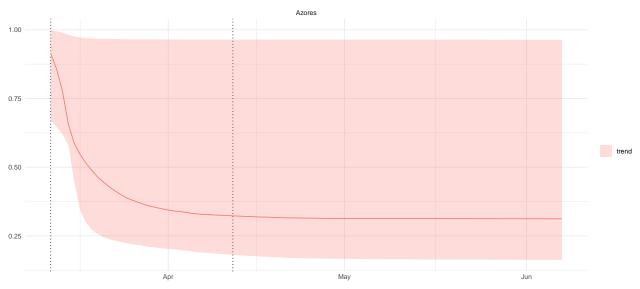
Contact rate function:

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

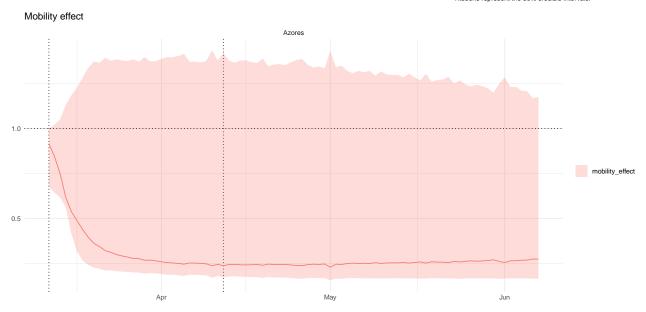
where

$$\lambda_j \sim \text{Beta}(3,1)$$
  $\kappa \sim \text{NegHalfNormal}(0,1).$ 

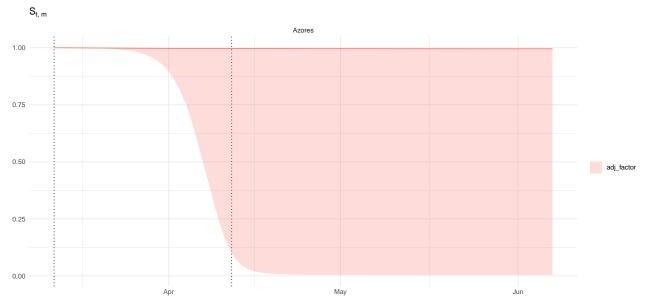




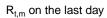
Vertical dotted lines represent the first seeding day and the epidemic start date. Ribbons represent the 80% credible intervals.

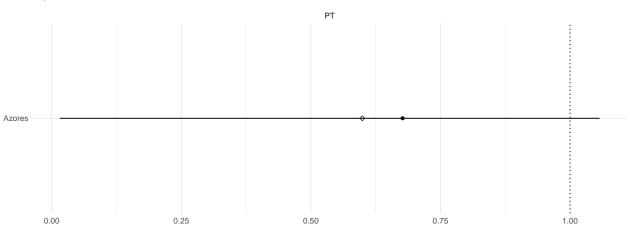


Vertical dotted lines represent the first seeding day and the epidemic start date. Ribbons represent the 80% credible intervals.



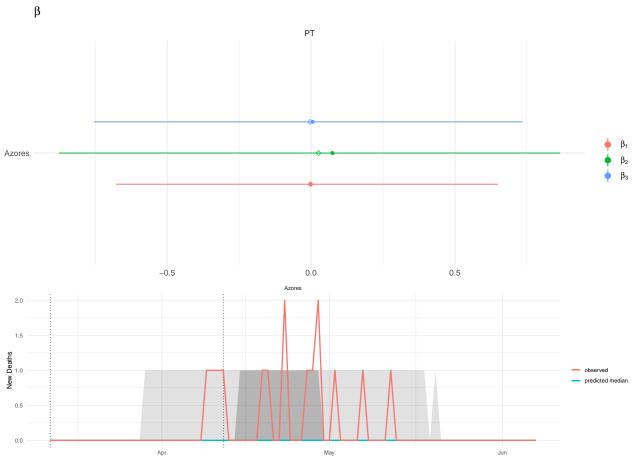
Vertical dotted lines represent the first seeding day and the epidemic start date. Ribbons represent the 80% credible intervals.





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





### 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.

#### Imputed Cases

