

Some models

poisson_rw1_rw1 (distribution, level process, rate process)

$$y_t \sim \text{Poisson}(\lambda_t)$$

$$\ln(\lambda_{t+1}) = \ln(\lambda_t) + \delta_t + \epsilon_t, \quad \epsilon_t \sim \text{N}(0, \sigma_\epsilon^2)$$

$$\delta_{t+1} = \delta_t + \eta_t, \quad \eta_t \sim \text{N}(0, \sigma_\eta^2)$$

negbin_*_*

$$y_t \sim \text{Negative binomial}(p_t, r)$$

$$p_t = \frac{r}{r + \lambda_t}$$

*_*_const

const

$$\delta_{t+1} = \delta_t$$

$$\delta_0 \sim \text{N}(0, 10^6)$$

$$\ln(\lambda_{t+1}) = \ln(\lambda_t) + \delta_t$$

$$\ln(\lambda_0) \sim \text{N}(0, 10^6)$$

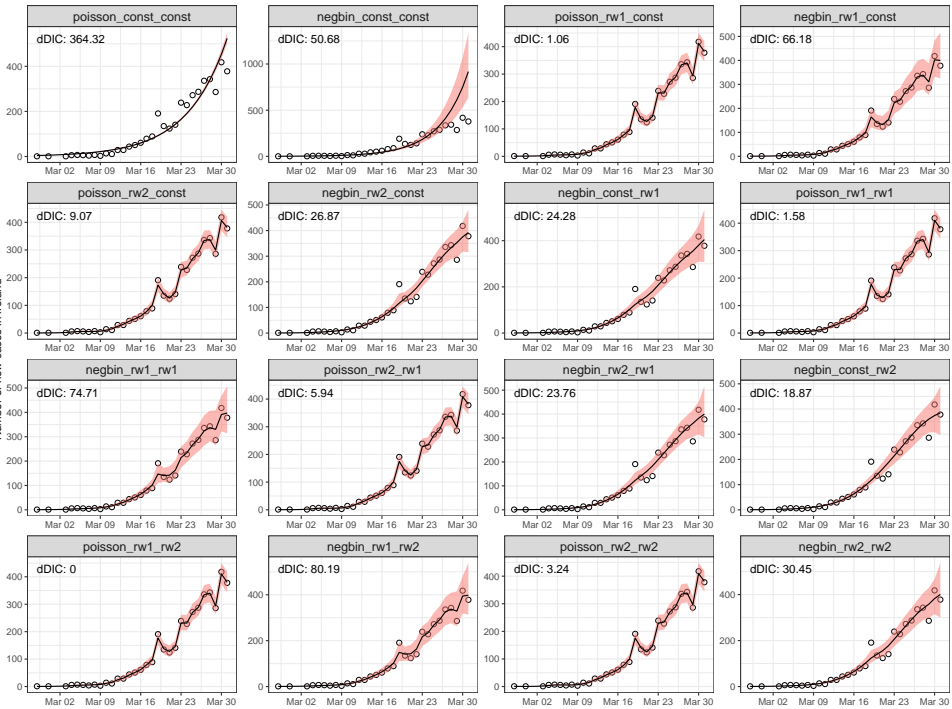
*_*_rw2

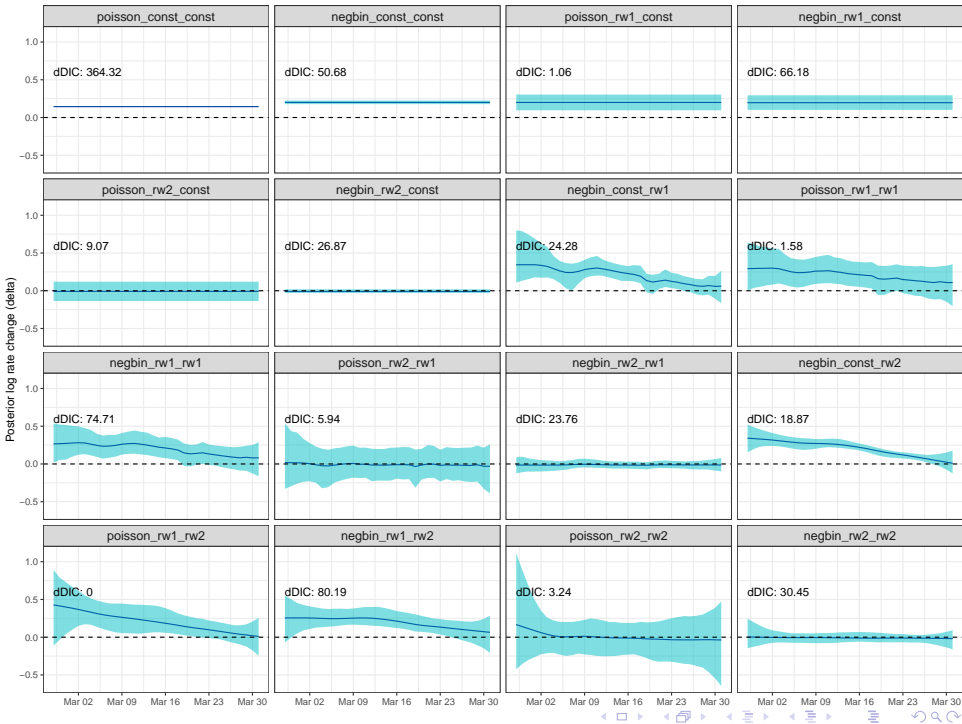
rw2

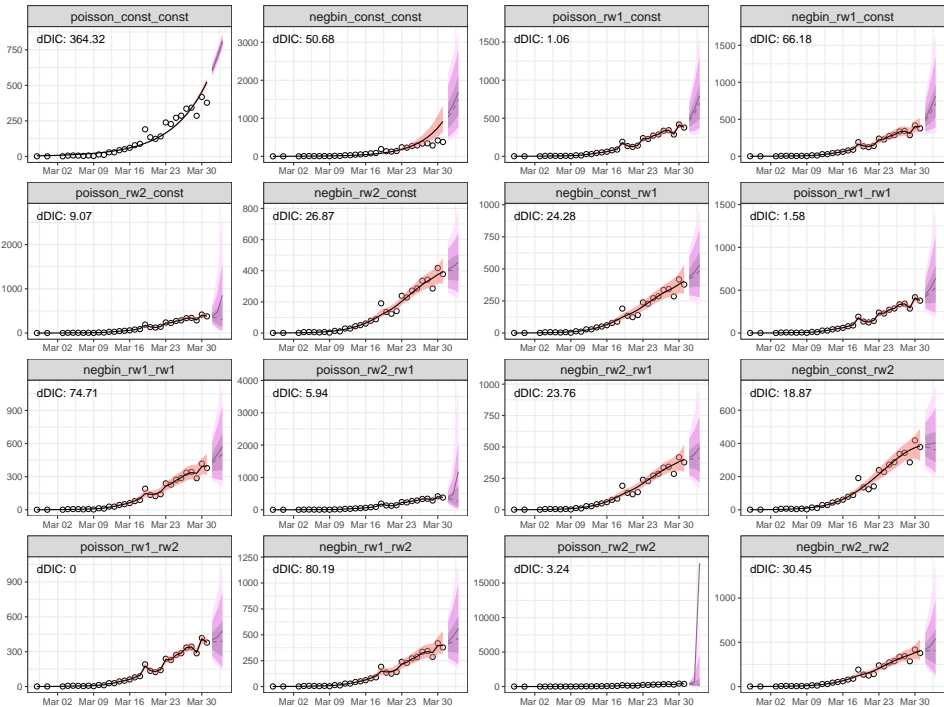
$$\delta_{t+1} = 2\delta_t - \delta_{t-1} + \eta_t$$

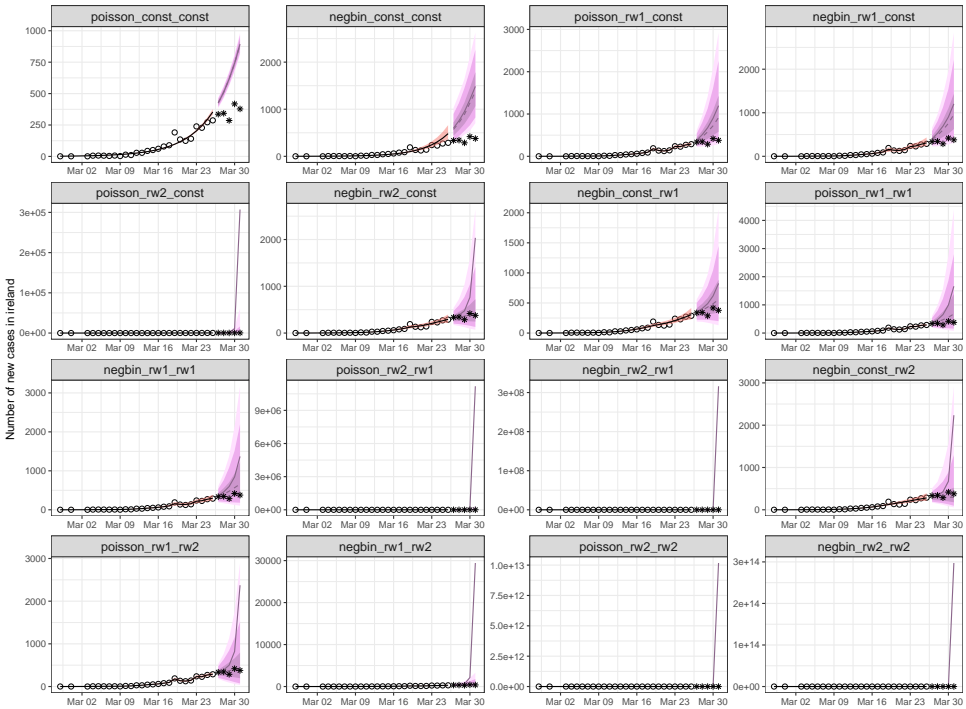
$$\ln(\lambda_{t+1}) = 2\ln(\lambda_t) - \ln(\lambda_{t-1}) + \delta_t + \epsilon_t$$

Ireland



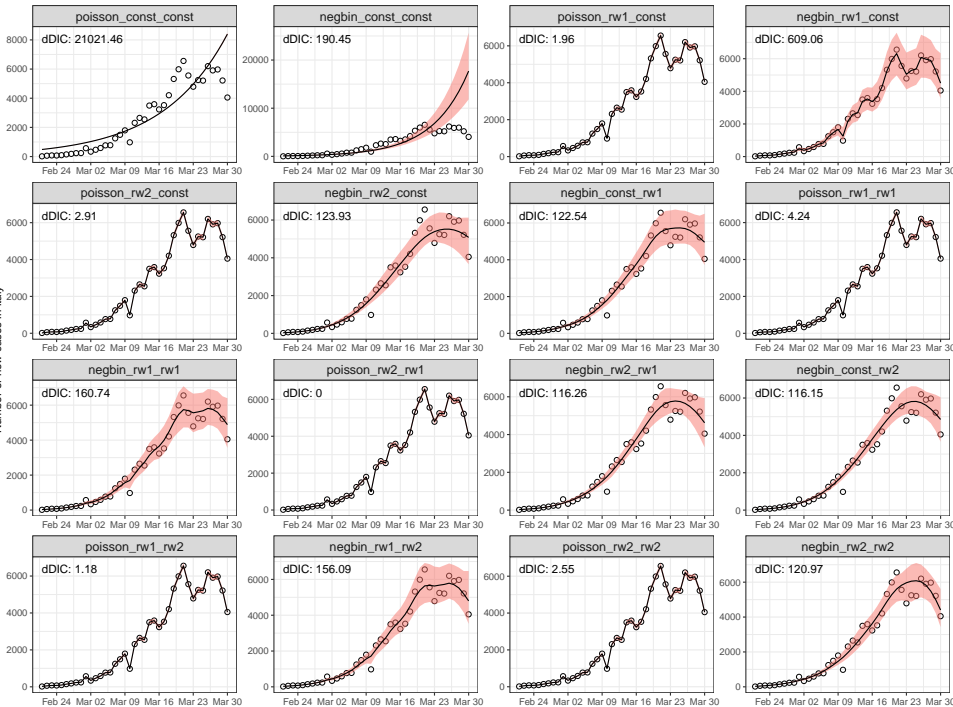


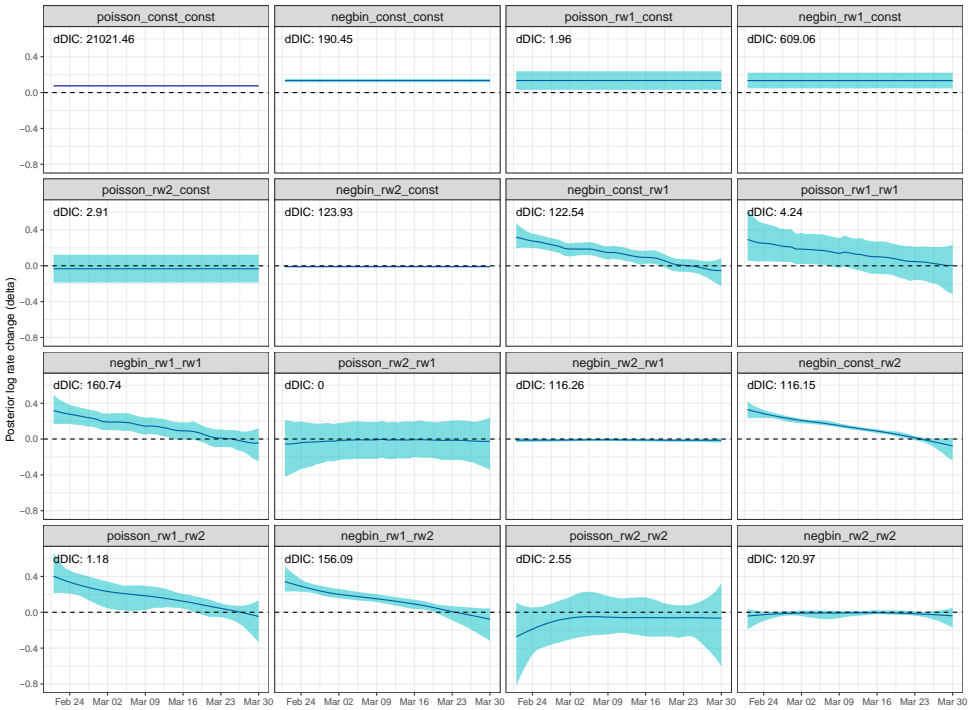


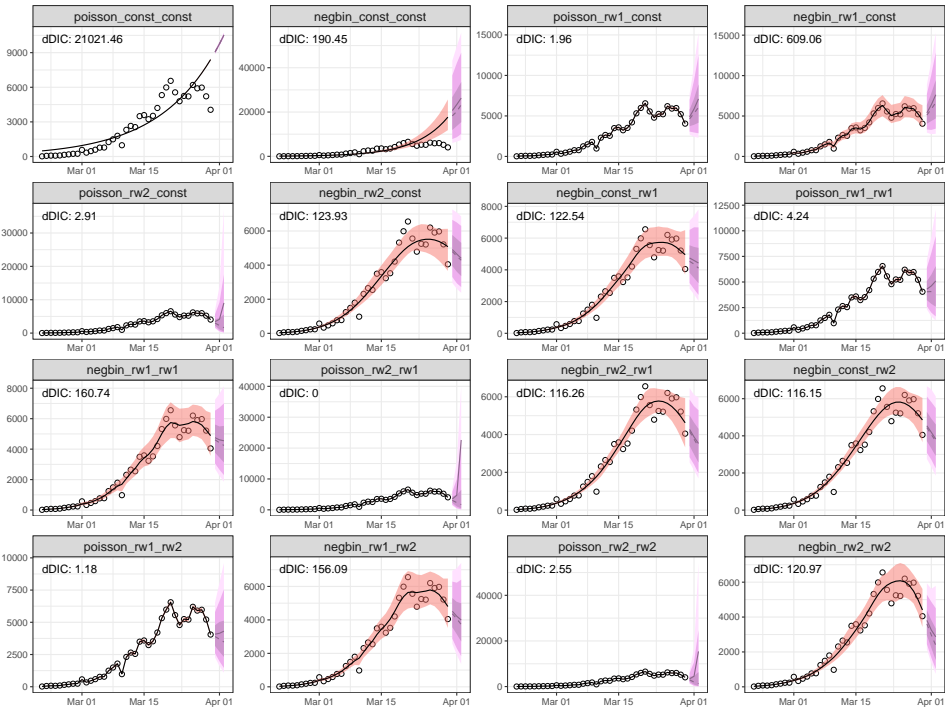


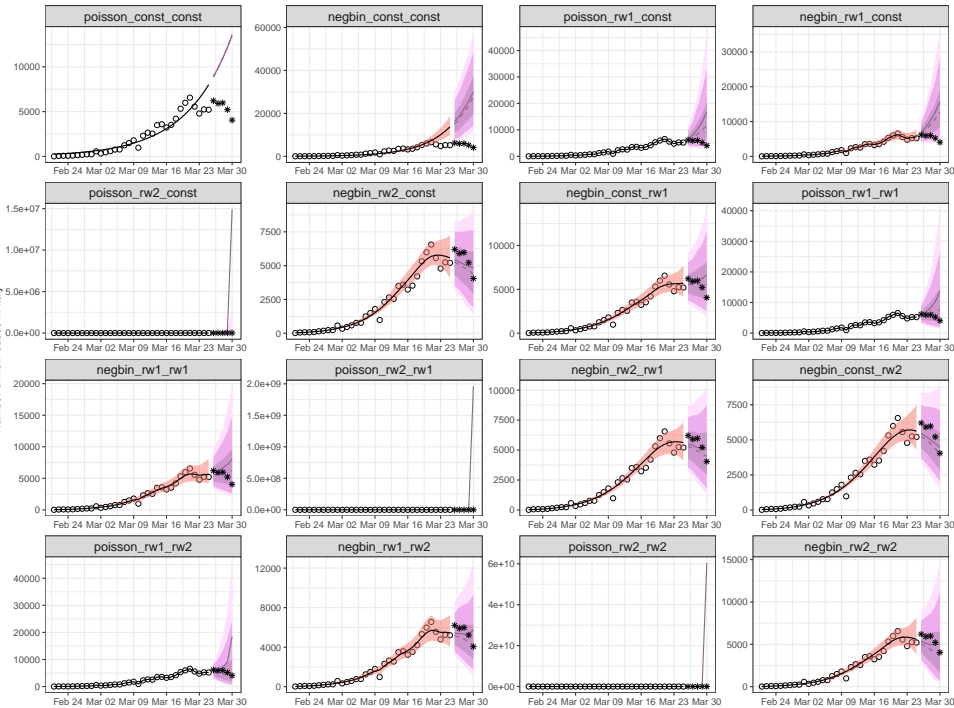
	mean_re					median_re				
negbin_const_const	78.97%	abs > 100%	abs > 100%	abs > 100%	abs > 100%	70.24%	abs > 100%	abs > 100%	abs > 100%	abs > 100%
negbin_const_rw1	4.75%	18.84%	70.74%	47.74%	abs > 100%	0%	10.06%	50.7%	16.75%	47.35%
negbin_const_rw2	-8.74%	-0.7%	48.61%	61.16%	abs > 100%	-15.77%	-14.58%	5.94%	-28.71%	-22.22%
negbin_rw1_const	19.63%	54.28%	abs > 100%	abs > 100%	abs > 100%	13.24%	40.67%	abs > 100%	81.46%	abs > 100%
negbin_rw1_rw1	8.46%	33.72%	abs > 100%	abs > 100%	abs > 100%	1.79%	16.62%	67.13%	35.65%	74.47%
negbin_rw1_rw2	3.39%	23.46%	abs > 100%	abs > 100%	abs > 100%	-3.57%	3.21%	34.79%	1.2%	20.11%
negbin_rw2_const	-2.29%	11.9%	65.92%	82.74%	abs > 100%	-7.74%	-1.46%	26.4%	-7.42%	7.67%
negbin_rw2_rw1	0.8%	29.05%	abs > 100%	abs > 100%	abs > 100%	-7.14%	-2.33%	27.27%	-7.66%	9.79%
negbin_rw2_rw2	10.54%	70.16%	abs > 100%	abs > 100%	abs > 100%	0.6%	13.99%	67.48%	38.28%	95.5%
poisson_const_const	26.68%	49.13%	abs > 100%	77.44%	abs > 100%	26.79%	48.98%	abs > 100%	77.03%	abs > 100%
poisson_rw1_const	14.13%	48.67%	abs > 100%	abs > 100%	abs > 100%	8.63%	33.82%	abs > 100%	72.97%	abs > 100%
poisson_rw1_rw1	8.3%	38.52%	abs > 100%	abs > 100%	abs > 100%	1.49%	17.2%	65.38%	33.97%	79.76%
poisson_rw1_rw2	-1.15%	13.35%	75.12%	96.47%	abs > 100%	-5.06%	0.29%	30.07%	-5.5%	7.67%
poisson_rw2_const	-2.8%	40.87%	abs > 100%	abs > 100%	abs > 100%	-9.82%	-7.14%	16.96%	-18.3%	-6.75%
poisson_rw2_rw1	-1.03%	68.14%	abs > 100%	abs > 100%	abs > 100%	-11.31%	-11.37%	4.2%	-29.9%	-24.74%
poisson_rw2_rw2	2.88%	abs > 100%	abs > 100%	abs > 100%	abs > 100%	-14.58%	-23.91%	-23.25%	-60.89%	-70.11%
	Mar 27	Mar 28	Mar 29	Mar 30	Mar 31	Mar 27	Mar 28	Mar 29	Mar 30	Mar 31

Italy









	mean_re					median_re				
	abs > 100%	abs > 100%	abs > 100%	abs > 100%	abs > 100%	abs > 100%	abs > 100%	abs > 100%	abs > 100%	abs > 100%
negbin_const_const										
negbin_const_rw1	-6.8%	-0.74%	1.14%	19.4%	64.03%	-10.57%	-5.5%	-6.06%	7.26%	39.63%
negbin_const_rw2	-12.03%	-11.11%	-16.32%	-9.15%	10.62%	-15.23%	-14.9%	-20.98%	-16.12%	-0.85%
negbin_rw1_const	10.83%	42.33%	72.82%	abs > 100%	abs > 100%	5.3%	31.88%	51.64%	abs > 100%	abs > 100%
negbin_rw1_rw1	-5.47%	4.8%	11.39%	37.9%	98.5%	-10.95%	-3.16%	-1.13%	15.07%	53.27%
negbin_rw1_rw2	-13.07%	-8.99%	-10.95%	1.98%	42.21%	-16.96%	-15.3%	-19.56%	-13.16%	4.4%
negbin_rw2_const	-12.4%	-10.66%	-14.84%	-5.35%	19.47%	-14.82%	-14.13%	-18.77%	-10.63%	7.47%
negbin_rw2_rw1	-10.85%	-8.44%	-12.77%	-1.73%	25.78%	-13.86%	-13.17%	-17.93%	-9.52%	10.51%
negbin_rw2_rw2	-13.48%	-13.24%	-17.24%	-5.99%	24.85%	-18.39%	-20.27%	-26.93%	-21.93%	-11.41%
poisson_const_const	43.15%	66.93%	83.4%	abs > 100%	abs > 100%	43.09%	66.91%	83.39%	abs > 100%	abs > 100%
poisson_rw1_const	5.25%	36.27%	71.04%	abs > 100%	abs > 100%	-1.72%	21.24%	40.73%	88.73%	abs > 100%
poisson_rw1_rw1	-4.32%	16.97%	37.61%	97.99%	abs > 100%	-10.05%	1.83%	7.89%	32.93%	88.1%
poisson_rw1_rw2	-13.05%	-0.66%	15.71%	76.72%	abs > 100%	-17.82%	-16.17%	-20.83%	-14.59%	2.15%
poisson_rw2_const	-8.07%	59.97%	abs > 100%	abs > 100%	abs > 100%	-20.15%	-19.97%	-29.83%	-32.22%	-24.9%
poisson_rw2_rw1	-4.22%	abs > 100%	abs > 100%	abs > 100%	abs > 100%	-19.76%	-22.06%	-29.63%	-25.3%	-13.02%
poisson_rw2_rw2	-7.47%	abs > 100%	abs > 100%	abs > 100%	abs > 100%	-21.59%	-30.5%	-47.2%	-58.36%	-65.01%
	Mar 26	Mar 27	Mar 28	Mar 29	Mar 30	Mar 26	Mar 27	Mar 28	Mar 29	Mar 30