

Predicciones sobre CoViD-19

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Breve descripción del Modelo de predicción

Objetivo: Predecir ratio de incremento a 1, 2, o 3 días: $r^{(k)}(t) = \frac{x_{t+k} - x_t}{x_t + 1}$

Información usada: Pasado de esta variable a un retardo durante los últimos 15 días: $R^{(1)} = \{r^{(1)}(-14), \dots, r^{(1)}(0)\}$.

Datos para alimentar el modelo:

https://github.com/CSSEGISandData/COVID-19/tree/master/csse_covid_19_data/csse_covid_19_time_series/. Algunas series de tiempo (como el Cruise Ship) son filtrados por inconsistencia, presunta falta de veracidad o por valores bajos. En la predicción final se reconstruye el número de casos esperado.

Se construyen tres modelos funcionales de la regresión

general: $r^{(k)}(0) = f(R^{(1)}) + \epsilon$ donde la diferencia radica en la forma de la función f

- Lineal: $f(R^{(1)}) = \int_{-14}^0 R^{(1)}(t) \beta(t) dt$
- NP: f es una estimación no paramétrica tipo núcleo.
- SAM: f es una combinación aditiva de funciones suaves de las componentes principales.

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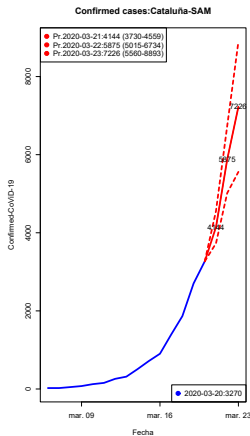
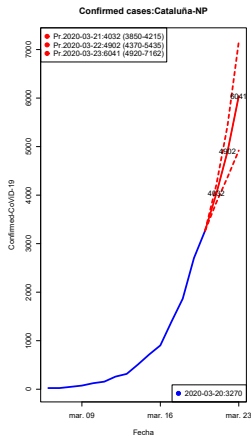
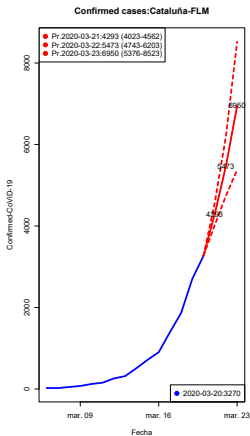
- Predicciones

Datos

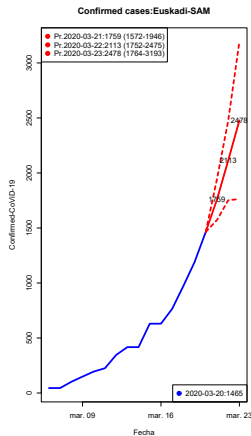
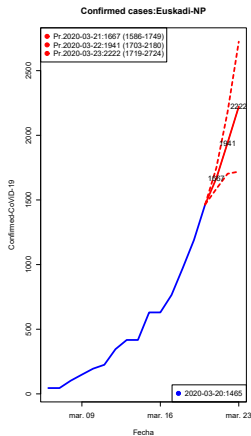
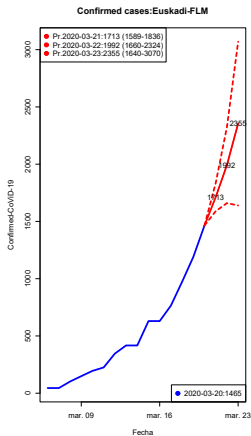
Número de datos funcionales: 1529

Países/Regiones distintos incorporados: 52

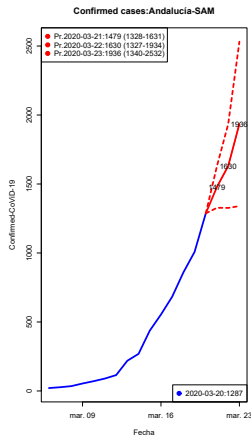
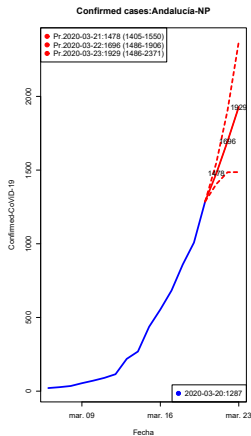
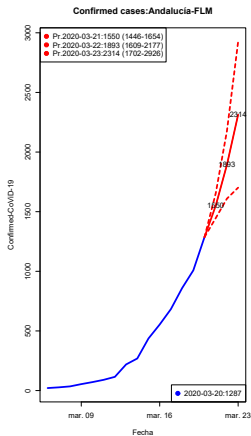
Horiz	Medida	FLM	NP	SAM
H1	σ_R^2	0.112	0.091	0.106
H1	r^2	0.151	0.463	0.196
H2	σ_R^2	0.536	0.475	0.5
H2	r^2	0.163	0.424	0.217
H3	σ_R^2	2.32	2.376	2.218
H3	r^2	0.118	0.299	0.153



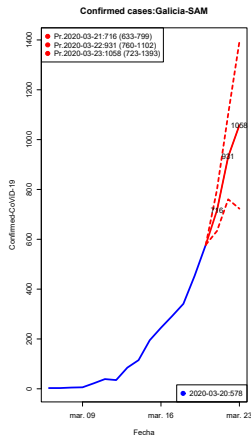
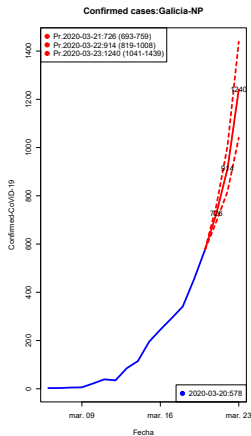
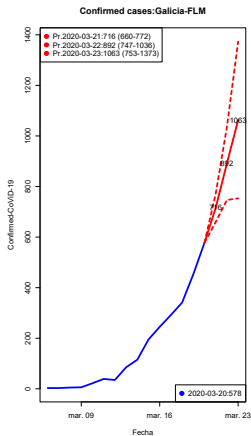
Confirmed cases: Euskadi



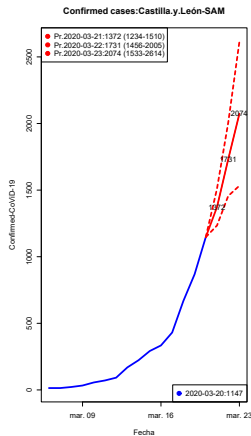
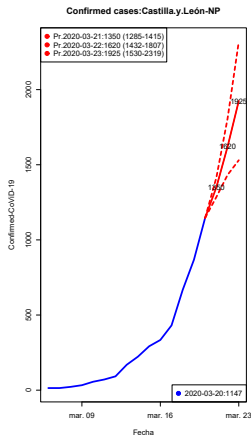
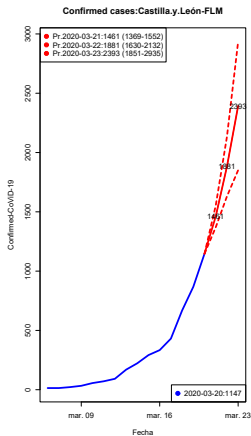
Confirmed cases: Andalucía



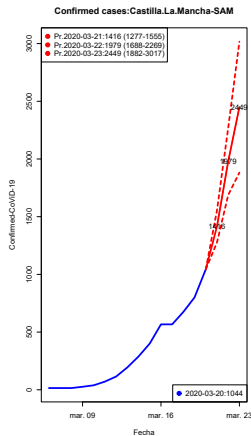
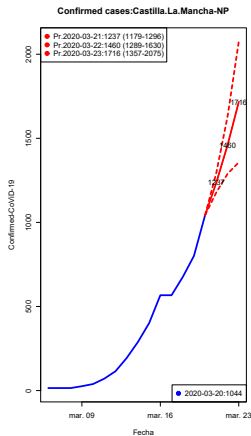
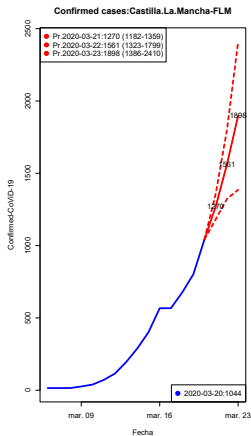
Confirmed cases: Galicia

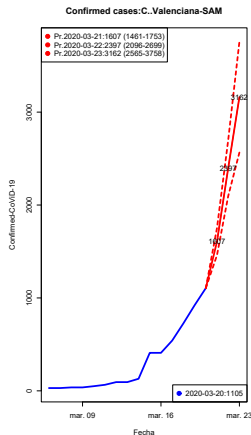
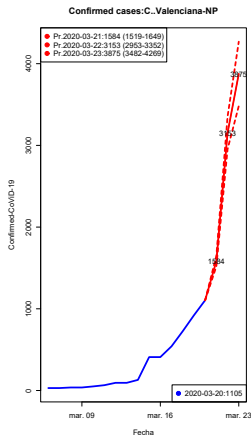


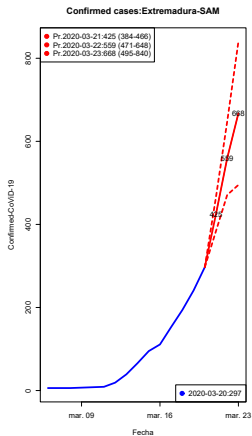
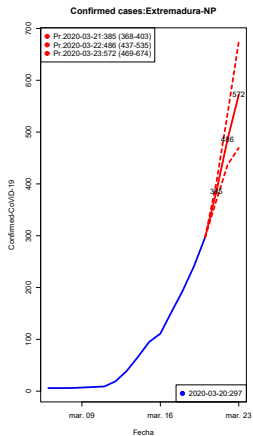
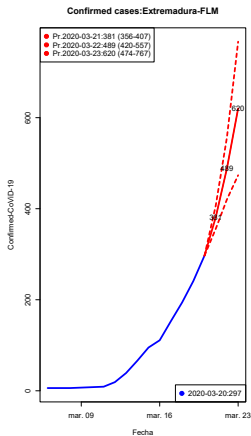
Confirmed cases: Castilla y León



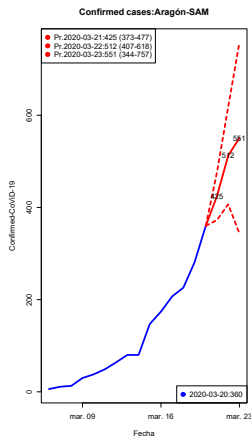
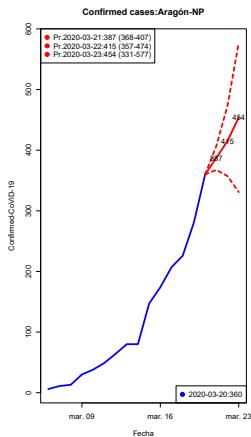
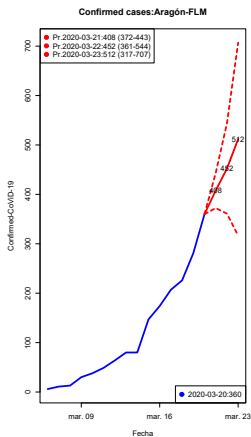
Confirmed cases: Castilla-La Mancha



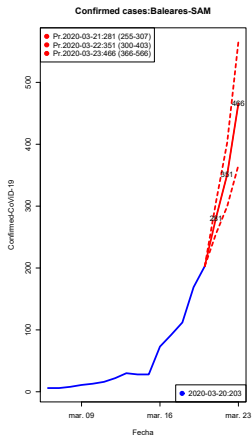
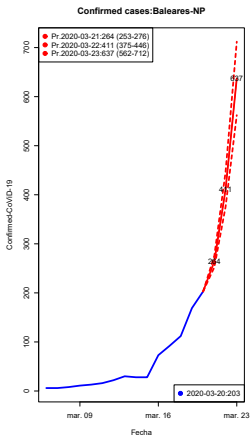
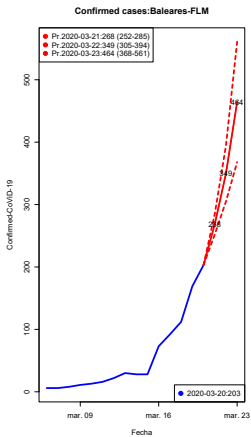




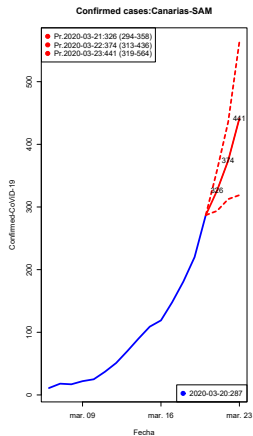
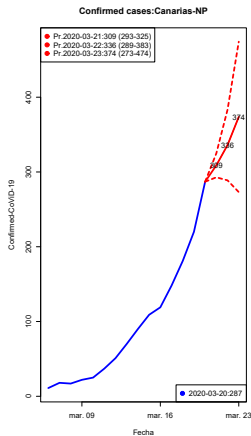
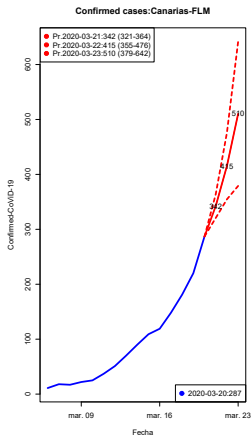
Confirmed cases: Aragón



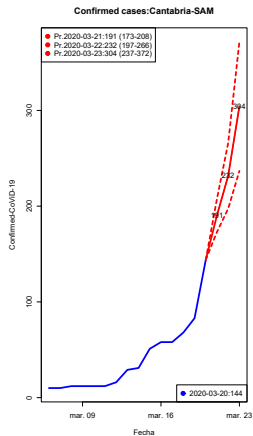
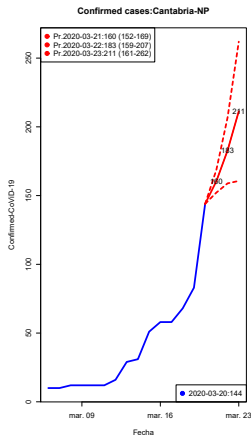
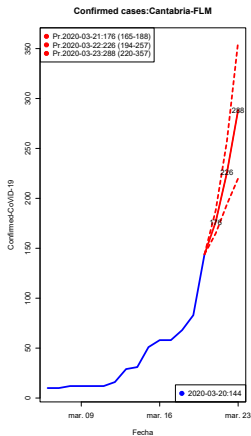
Confirmed cases: Balears



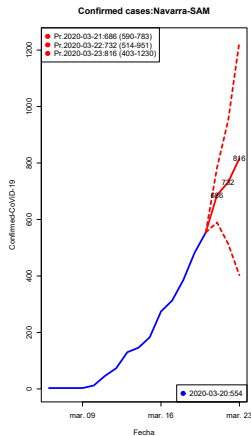
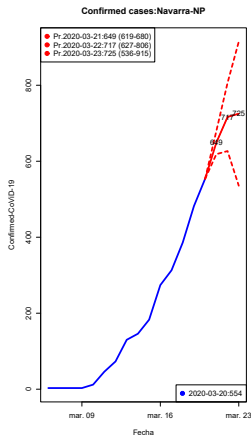
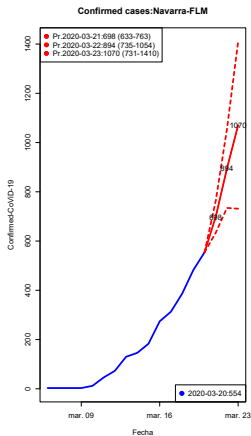
Confirmed cases: Canarias



Confirmed cases: Cantabria



Confirmed cases: Navarra



Confirmed cases: La Rioja

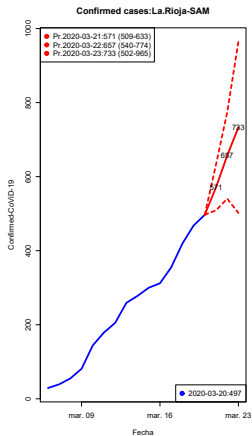
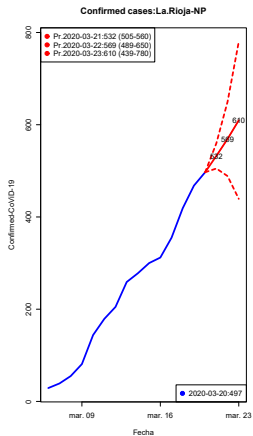
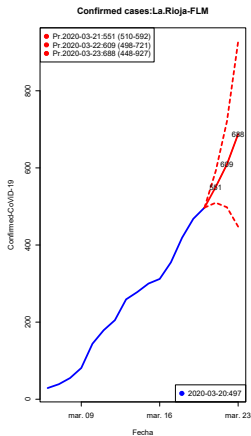


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Modelos para fallecidos por CoViD-19

Número de datos funcionales: 480

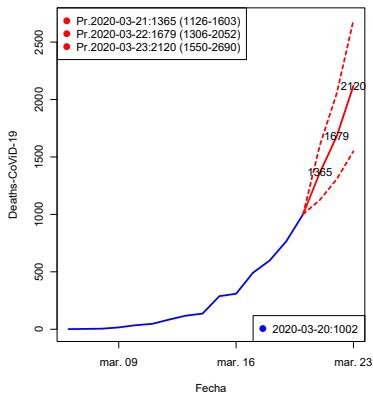
Países/Regiones distintos incorporados: 12

Horiz	Medida	FLM	NP	SAM
H1	σ_R^2	0.075	0.067	0.061
H1	r^2	0.207	0.427	0.337
H2	σ_R^2	0.176	0.168	0.127
H2	r^2	0.351	0.501	0.522
H3	σ_R^2	0.43	0.402	0.327
H3	r^2	0.41	0.556	0.544

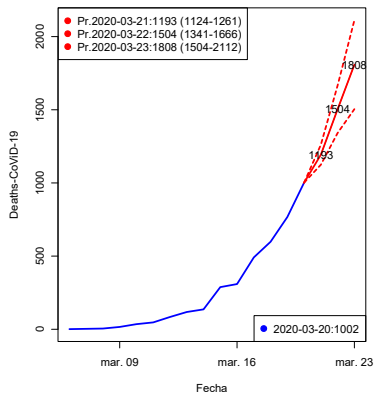
Aunque los valores de r^2 son más altos que para el número de casos, la predicción para ciertas series se vuelve caótica como efecto del escaso número de datos.

Death cases: España

Deaths cases:España-FLM

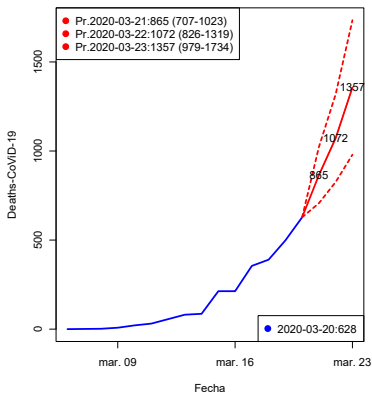


Deaths cases:España-NP

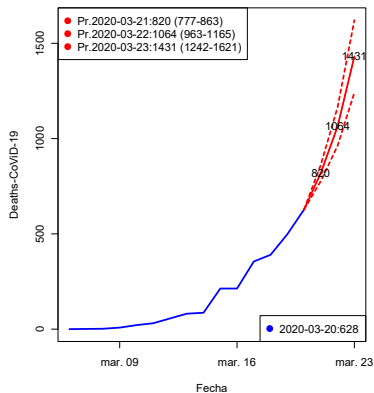


Death cases: Madrid

Deaths cases:Madrid-FLM

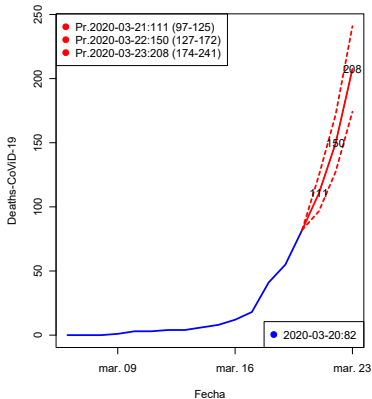


Deaths cases:Madrid-NP

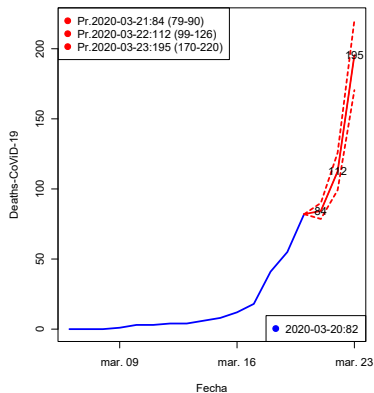


Death cases: Cataluña

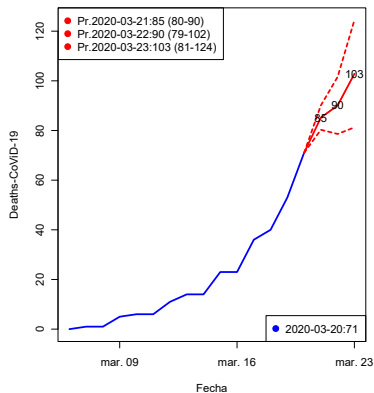
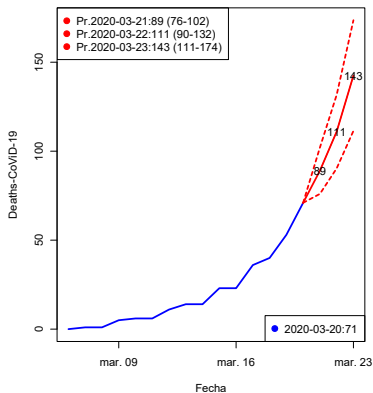
Deaths cases:Cataluña-FLM



Deaths cases:Cataluña-NP

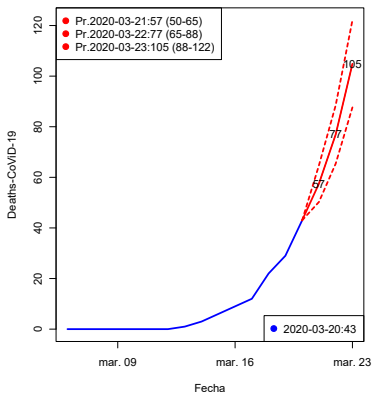


Deaths cases:Euskadi-NP



Death cases: Castilla y León

Deaths cases:Castilla.y.León-FLM



Deaths cases:Castilla.y.León-NP

