

Predicciones sobre CoViD-19

Manuel Febrero-Bande

Dpt. de Estadística, Análisis Matemático y Optimización
Univ. de Santiago de Compostela

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DEPARTAMENTO DE ESTADÍSTICA,
ANÁLISE MATEMÁTICA E OPTIMIZACIÓN



- Predicciones

- Predicciones

Número de datos funcionales: 2000
Países/Regiones distintos incorporados: 66

Predicciones:

- ▶ España
- ▶ Andalucía
- ▶ Aragón
- ▶ Asturias
- ▶ Baleares
- ▶ Canarias
- ▶ Cantabria
- ▶ Cataluña
- ▶ Castilla-La Mancha
- ▶ Castilla y León
- ▶ C. Valenciana
- ▶ Extremadura
- ▶ Euskadi
- ▶ Galicia
- ▶ Madrid
- ▶ Murcia
- ▶ Navarra
- ▶ La Rioja
- ▶ Mod Lineal
- ▶ Mod NP
- ▶ Mod Aditivo

Horiz	Medida	FLM	NP	SAM
H1	σ_R^2	0.114	0.099	0.106
H1	$\sigma_R^2(rob.)$	0.059	0.024	0.067
H1	r^2	0.131	0.414	0.19
H2	σ_R^2	0.5	0.451	0.467
H2	$\sigma_R^2(rob.)$	0.216	0.092	0.23
H2	r^2	0.158	0.412	0.211
H3	σ_R^2	2.055	2.05	1.971
H3	$\sigma_R^2(rob.)$	0.6	0.265	0.693
H3	r^2	0.125	0.325	0.158

Nota. Los valores del r^2 son bajos pero en la muestra hay mucha heterocedasticidad y datos extraños de manera que no se dan las condiciones para estimar bien esta cantidad.

Tabla Modelo No Paramétrico.

	C:H1-lw	C:H1-fit	C:H1-up	C:H2-lw	C:H2-fit	C:H2-up
España	33524	36025	38525	33089	39389	46489
Andalucía	2022	2170	2319	2015	2436	2857
Aragón	657	706	754	643	781	918
Asturias	625	670	715	635	763	890
Baleares	479	510	541	520	606	693
Canarias	485	521	558	481	572	675
Cantabria	372	399	425	397	472	547
Cataluña	6381	6830	7279	6593	7865	9137
Castilla.La.Mancha	2183	2340	2497	2202	2648	3094
Castilla.y.León	2157	2312	2468	2202	2643	3084
C..Valenciana	1981	2124	2268	2261	2670	3078
Extremadura	525	563	600	569	675	781
Euskadi	2442	2626	2810	2421	2881	3402
Galicia	1362	1453	1545	1395	1654	1914
Madrid	10764	11562	12360	10575	12583	14848
Murcia	361	387	413	352	426	500
Navarra	886	949	1016	886	1019	1209
La.Rioja	747	796	853	747	862	1024

Table: Previsión número de casos confirmados: Modelo No Paramétrico - Horizonte 1 y 2 días.

Tabla Modelo Aditivo.

	C:H1-lw	C:H1-fit	C:H1-up	C:H2-lw	C:H2-fit	C:H2-up
España	33089	38472	44018	35473	45752	56030
Andalucía	1961	2176	2512	1961	2574	3189
Aragón	706	816	926	778	980	1181
Asturias	594	657	763	594	786	984
Baleares	453	522	591	544	672	800
Canarias	481	550	630	524	672	819
Cantabria	424	484	544	573	682	792
Cataluña	5925	6797	7807	6337	8191	10044
Castilla.La.Mancha	2078	2411	2770	2305	2970	3636
Castilla.y.León	2055	2329	2675	2257	2896	3535
C..Valenciana	2051	2388	2725	2043	2652	3261
Extremadura	493	545	630	493	623	778
Euskadi	2605	3013	3421	2882	3631	4379
Galicia	1208	1362	1592	1208	1604	2034
Madrid	10575	12290	14094	11018	14365	17712
Murcia	378	441	504	394	511	629
Navarra	886	972	1199	886	1154	1595
La.Rioja	747	844	968	750	978	1206

Table: Previsión número de casos confirmados: Modelo Aditivo - Horizonte 1 y 2 días.

Tabla Ratio Incremento Modelo Lineal.

	RI:H1-lw	RI:H1-fit	RI:H1-up	RI:H2-lw	RI:H2-fit	RI:H2-up
España	0.060	0.175	0.290	0.109	0.396	0.683
Andalucía	0.060	0.175	0.291	0.093	0.382	0.671
Aragón	0.084	0.200	0.316	0.160	0.449	0.738
Asturias	0.053	0.173	0.294	0.092	0.389	0.686
Baleares	0.120	0.236	0.352	0.255	0.545	0.834
Canarias	0.076	0.189	0.302	0.147	0.432	0.717
Cantabria	0.176	0.291	0.406	0.382	0.670	0.958
Cataluña	0.100	0.216	0.333	0.192	0.483	0.773
Castilla.La.Mancha	0.076	0.193	0.311	0.143	0.435	0.727
Castilla.y.León	0.107	0.222	0.338	0.210	0.498	0.786
C..Valenciana	0.091	0.210	0.330	0.142	0.438	0.733
Extremadura	0.058	0.174	0.290	0.085	0.374	0.663
Euskadi	0.078	0.192	0.306	0.152	0.437	0.723
Galicia	0.074	0.201	0.328	0.125	0.435	0.744
Madrid	0.022	0.139	0.256	0.026	0.317	0.607
Murcia	0.068	0.191	0.314	0.118	0.420	0.722
Navarra	0.000	0.124	0.264	0.000	0.255	0.589
La.Rioja	0.026	0.140	0.255	0.042	0.329	0.616

Table: Previsión Ratio incremento casos confirmados: Modelo lineal- Horizonte 1 y 2 días.

Tabla Ratio Incremento Modelo No Paramétrico.

	RI:H1-lw	RI:H1-fit	RI:H1-up	RI:H2-lw	RI:H2-fit	RI:H2-up
España	0.013	0.089	0.164	0.000	0.190	0.405
Andalucía	0.031	0.107	0.182	0.028	0.242	0.457
Aragón	0.030	0.106	0.182	0.008	0.223	0.438
Asturias	0.053	0.128	0.204	0.069	0.284	0.498
Baleares	0.196	0.274	0.352	0.298	0.515	0.731
Canarias	0.007	0.083	0.159	0.000	0.188	0.403
Cantabria	0.072	0.148	0.224	0.144	0.359	0.574
Cataluña	0.077	0.153	0.228	0.113	0.327	0.542
Castilla.La.Mancha	0.051	0.126	0.202	0.060	0.274	0.489
Castilla.y.León	0.050	0.125	0.201	0.072	0.286	0.501
C..Valenciana	0.042	0.117	0.193	0.190	0.404	0.619
Extremadura	0.065	0.141	0.216	0.153	0.368	0.582
Euskadi	0.009	0.085	0.161	0.000	0.190	0.405
Galicia	0.127	0.203	0.279	0.155	0.369	0.584
Madrid	0.018	0.093	0.169	0.000	0.190	0.404
Murcia	0.045	0.121	0.196	0.020	0.234	0.448
Navarra	0.000	0.072	0.147	0.000	0.150	0.364
La.Rioja	0.000	0.065	0.141	0.000	0.154	0.370

Table: Previsión Ratio incremento casos confirmados: Modelo No Paramétrico
 - Horizonte 1 y 2 días.

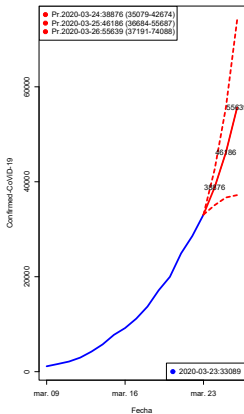
Tabla Ratio Incremento Modelo Aditivo.

	RI:H1-lw	RI:H1-fit	RI:H1-up	RI:H2-lw	RI:H2-fit	RI:H2-up
España	0.000	0.163	0.330	0.072	0.383	0.693
Andalucía	0.000	0.110	0.281	0.000	0.313	0.626
Aragón	0.106	0.278	0.451	0.219	0.535	0.850
Asturias	0.000	0.106	0.285	0.000	0.323	0.656
Baleares	0.131	0.304	0.476	0.360	0.678	0.997
Canarias	0.000	0.143	0.309	0.090	0.396	0.702
Cantabria	0.221	0.394	0.566	0.649	0.964	1.279
Cataluña	0.000	0.147	0.318	0.070	0.382	0.695
Castilla.La.Mancha	0.000	0.160	0.333	0.109	0.429	0.749
Castilla.y.León	0.000	0.133	0.302	0.098	0.409	0.720
C..Valenciana	0.079	0.256	0.433	0.075	0.395	0.715
Extremadura	0.000	0.105	0.277	0.000	0.263	0.577
Euskadi	0.076	0.244	0.413	0.190	0.499	0.809
Galicia	0.000	0.128	0.318	0.000	0.327	0.683
Madrid	0.000	0.162	0.333	0.042	0.358	0.675
Murcia	0.096	0.278	0.460	0.141	0.481	0.821
Navarra	0.000	0.097	0.353	0.000	0.302	0.799
La.Rioja	0.000	0.129	0.295	0.004	0.309	0.613

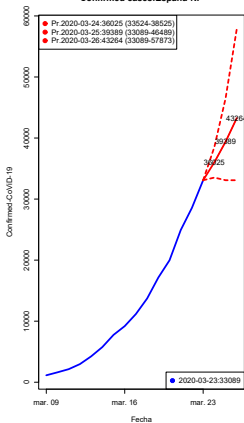
Table: Previsión Ratio incremento casos confirmados: Modelo Aditivo - Horizonte 1 y 2 días.

Confirmed cases: España

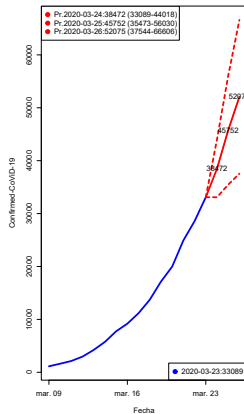
Confirmed cases:España-FLM



Confirmed cases:España-NP



Confirmed cases:España-SAM

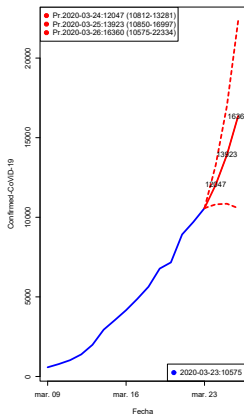


◀ Confirmados

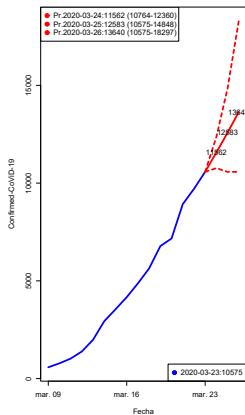
◀ Fallecidos

Confirmed cases: Madrid

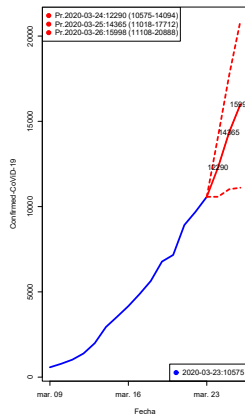
Confirmed cases:Madrid-FLM



Confirmed cases:Madrid-NP



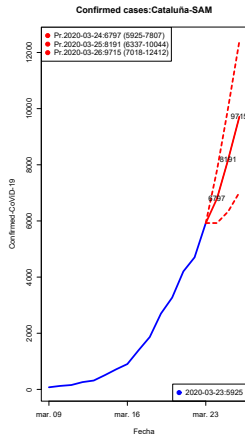
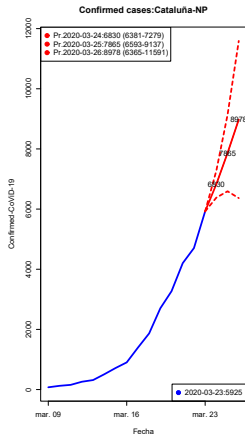
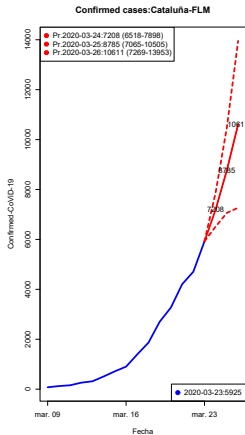
Confirmed cases:Madrid-SAM



◀ Confirmados

◀ Fallecidos

Confirmed cases: Cataluña

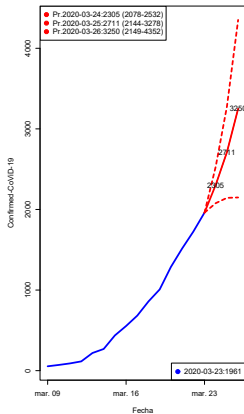


◀ Confirmados

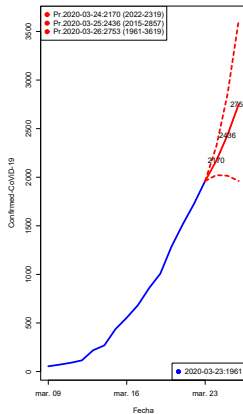
◀ Fallecidos

Confirmed cases: Andalucía

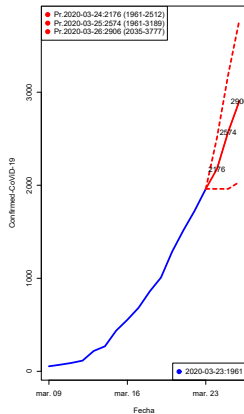
Confirmed cases:Andalucia-FLM



Confirmed cases:Andalucia-NP



Confirmed cases:Andalucia-SAM

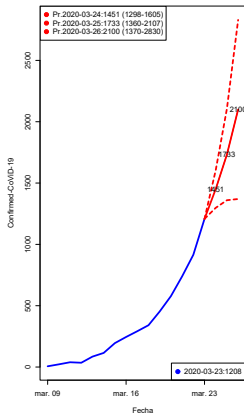


◀ Confirmados

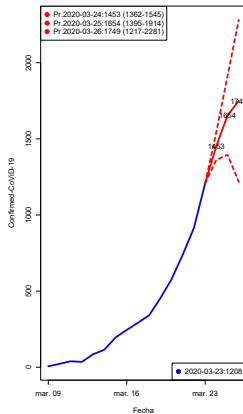
◀ Fallecidos

Confirmed cases: Galicia

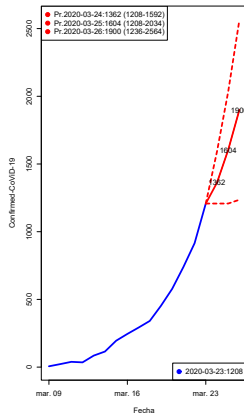
Confirmed cases:Galicia-FLM



Confirmed cases:Galicia-NP



Confirmed cases:Galicia-SAM

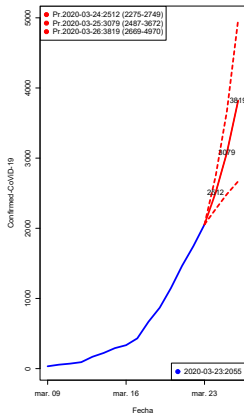


◀ Confirmados

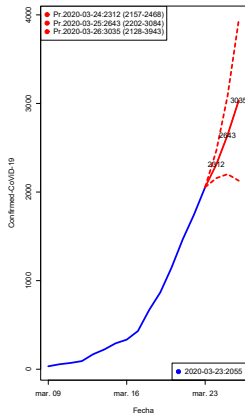
◀ Fallecidos

Confirmed cases: Castilla y León

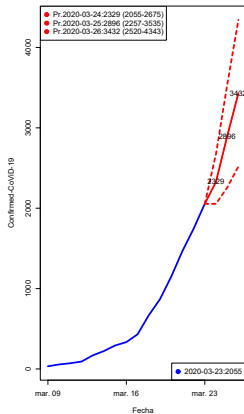
Confirmed cases:Castilla.y.León-FLM



Confirmed cases:Castilla.y.León-NP



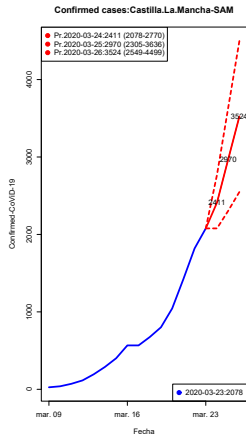
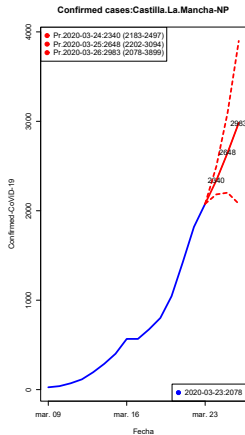
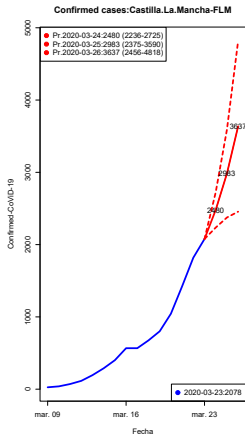
Confirmed cases:Castilla.y.León-SAM



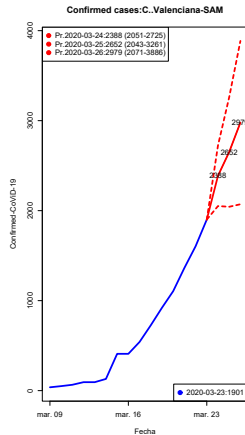
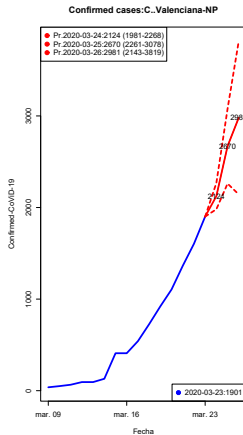
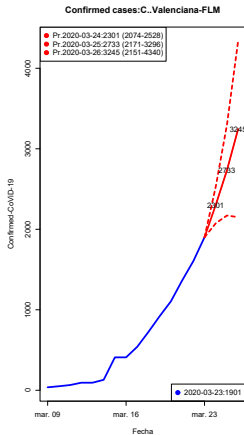
◀ Confirmados

◀ Fallecidos

Confirmed cases: Castilla-La Mancha


[◀ Confirmados](#)
[◀ Fallecidos](#)

Confirmed cases: C. Valenciana

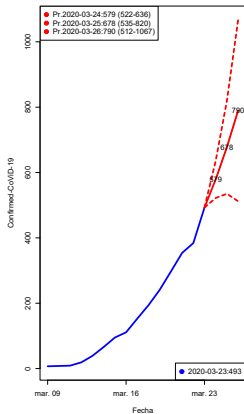


◀ Confirmados

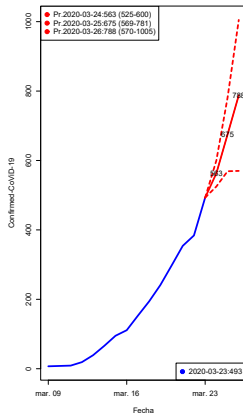
◀ Fallecidos

Confirmed cases: Extremadura

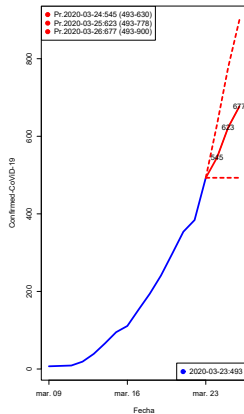
Confirmed cases:Extremadura-FLM



Confirmed cases:Extremadura-NP



Confirmed cases:Extremadura-SAM

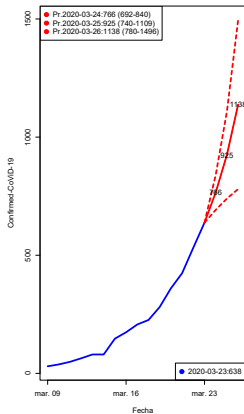


◀ Confirmados

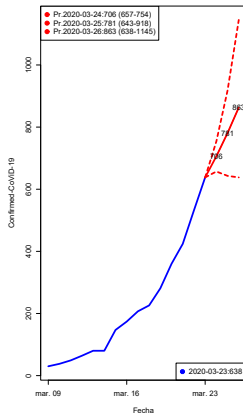
◀ Fallecidos

Confirmed cases: Aragón

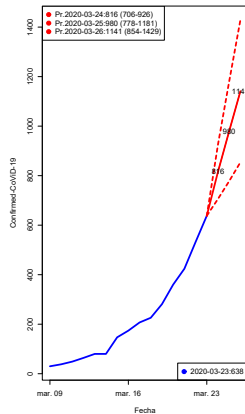
Confirmed cases:Aragón-FLM



Confirmed cases:Aragón-NP



Confirmed cases:Aragón-SAM

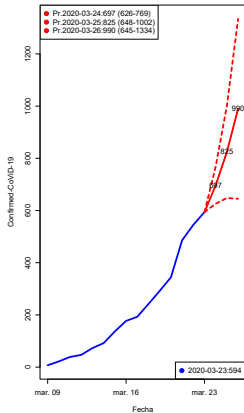


◀ Confirmados

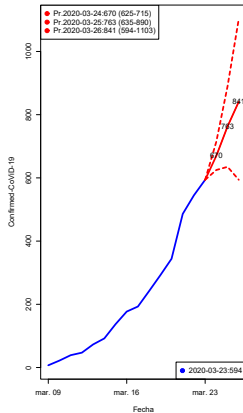
◀ Fallecidos

Confirmed cases: Asturias

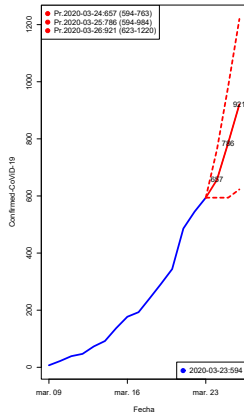
Confirmed cases: Asturias-FLM



Confirmed cases: Asturias-NP



Confirmed cases: Asturias-SAM

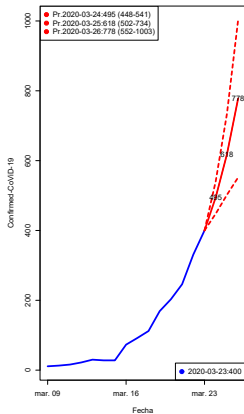


◀ Confirmados

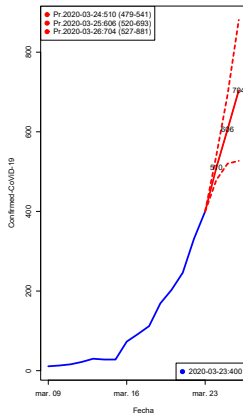
◀ Fallecidos

Confirmed cases: Baleares

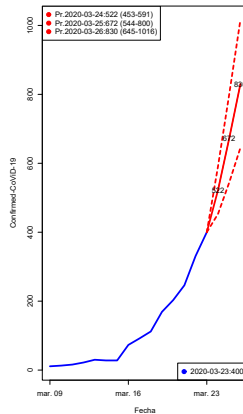
Confirmed cases:Baleares-FLM



Confirmed cases:Baleares-NP



Confirmed cases:Baleares-SAM

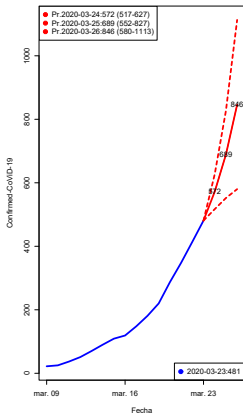


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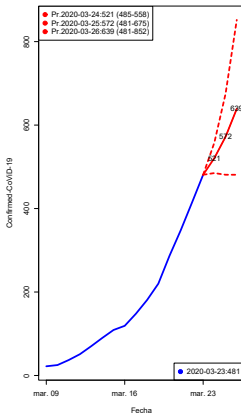
◀ Fallecidos

Confirmed cases: Canarias

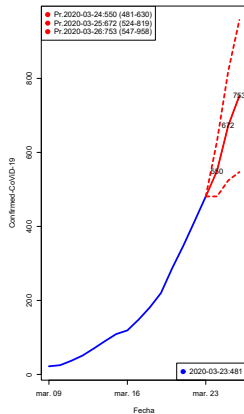
Confirmed cases:Canarias-FLM



Confirmed cases:Canarias-NP



Confirmed cases:Canarias-SAM

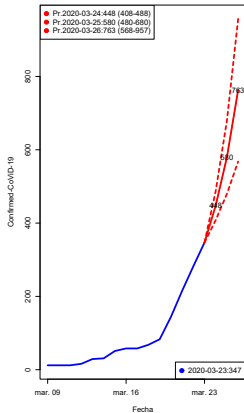


◀ Confirmados

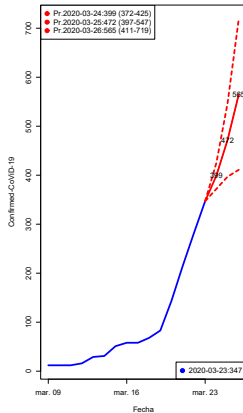
◀ Fallecidos

Confirmed cases: Cantabria

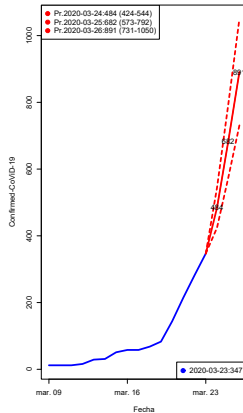
Confirmed cases:Cantabria-FLM



Confirmed cases:Cantabria-NP



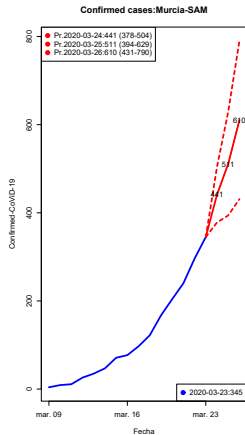
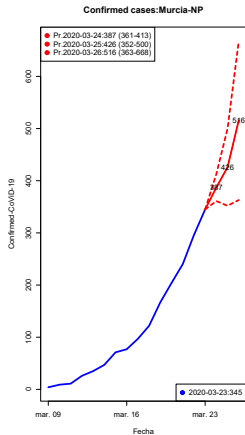
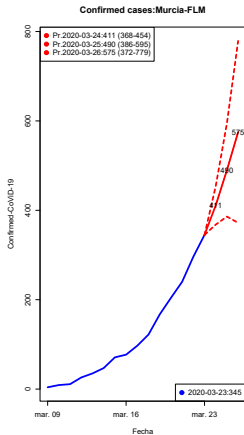
Confirmed cases:Cantabria-SAM



◀ Confirmados

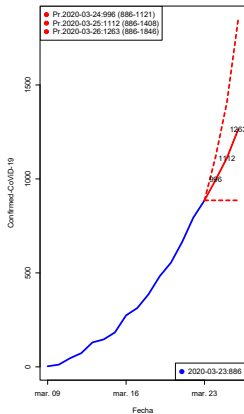
◀ Fallecidos

Confirmed cases: Murcia

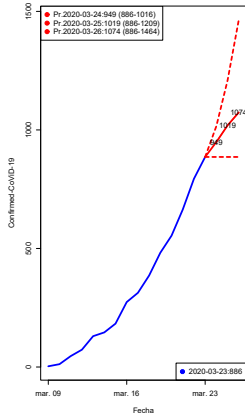

[◀ Confirmados](#)
[◀ Fallecidos](#)

Confirmed cases: Navarra

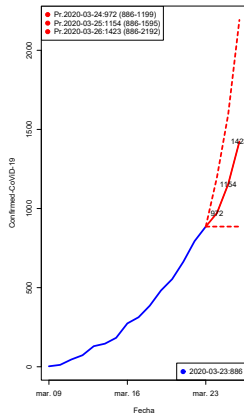
Confirmed cases:Navarra-FLM



Confirmed cases:Navarra-NP



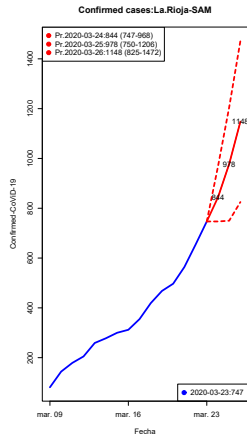
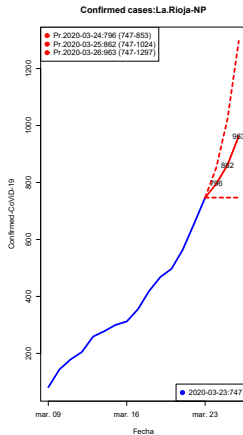
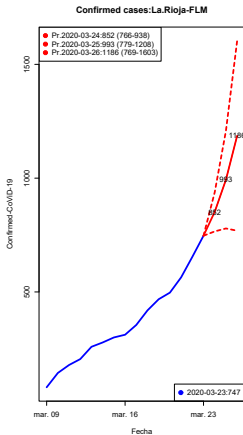
Confirmed cases:Navarra-SAM



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Confirmed cases: La Rioja



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Modelos para fallecidos por CoViD-19

Número de datos funcionales: 688

Países/Regiones distintos incorporados: 16

Predicciones:

▶ España

▶ Andalucía

▶ Castilla-La Mancha

▶ Castilla y León

▶ Cataluña

▶ Euskadi

▶ Madrid

▶ Mod Lineal

▶ Mod NP

▶ Mod Aditivo

Horiz	Medida	FLM	NP	SAM
H1	σ_R^2	0.069	0.058	0.06
H1	$\sigma_R^2(rob.)$	0.048	0.01	0.038
H1	r^2	0.232	0.475	0.328
H2	σ_R^2	0.182	0.171	0.143
H2	$\sigma_R^2(rob.)$	0.163	0.072	0.131
H2	r^2	0.373	0.515	0.501
H3	σ_R^2	0.509	0.526	0.439
H3	$\sigma_R^2(rob.)$	0.434	0.159	0.357
H3	r^2	0.415	0.504	0.49

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

Tabla Fallecidos Modelo Lineal.

	F:H1-lw	F:H1-fit	F:H1-up	F:H2-lw	F:H2-fit	F:H2-up
España	2515	2866	3216	2949	3557	4164
Andalucía	68	77	86	82	98	114
Castilla.La.Mancha	175	199	222	220	261	303
Castilla.y.León	121	137	153	154	182	210
Cataluña	295	333	372	384	451	518
Euskadi	130	147	165	149	179	209
Madrid	1441	1653	1866	1647	2014	2380

Table: Previsión fallecidos: Modelo lineal- Horizonte 1 y 2 días.

	R:H1-lw	R:H1-fit	R:H1-up	R:H2-lw	R:H2-fit	R:H2-up
España	0.153	0.313	0.473	0.351	0.630	0.908
Andalucía	0.163	0.321	0.479	0.403	0.679	0.954
Castilla.La.Mancha	0.203	0.367	0.531	0.513	0.796	1.080
Castilla.y.León	0.185	0.339	0.493	0.508	0.777	1.046
Cataluña	0.202	0.358	0.515	0.566	0.839	1.111
Euskadi	0.084	0.226	0.368	0.238	0.489	0.739
Madrid	0.141	0.309	0.477	0.304	0.594	0.884

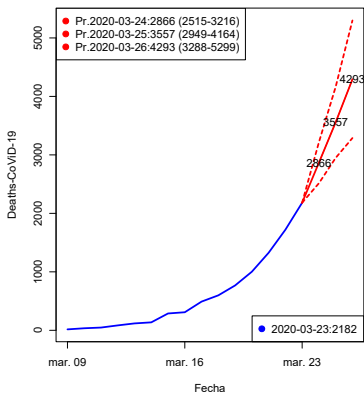
Table: Previsión Fallecidos Ratio incremento: Modelo lineal- Horizonte 1 y 2 días.

◀ Confirmados

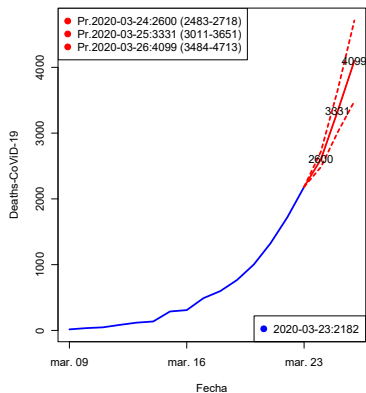
◀ Fallecidos

Fallecidos: España

Deaths cases:España-FLM



Deaths cases:España-NP

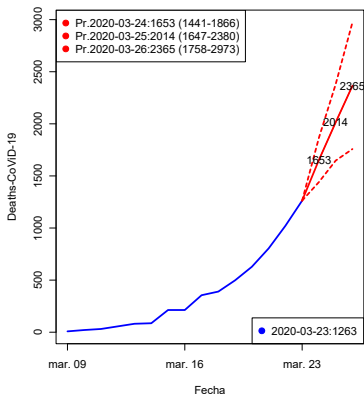


◀ Confirmados

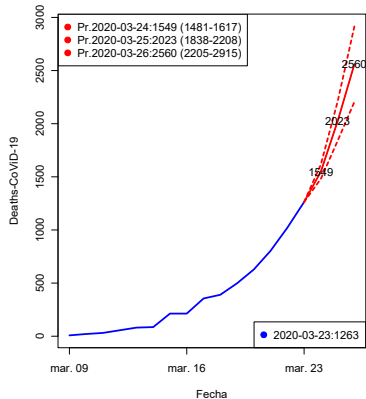
◀ Fallecidos

Fallecidos: Madrid

Deaths cases:Madrid-FLM



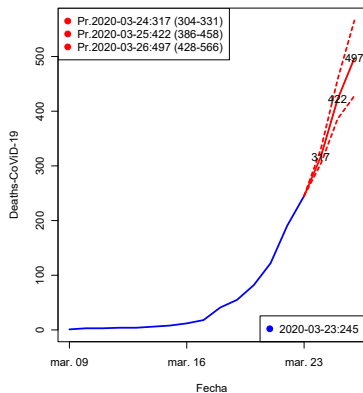
Deaths cases:Madrid-NP



◀ Confirmados

◀ Fallecidos

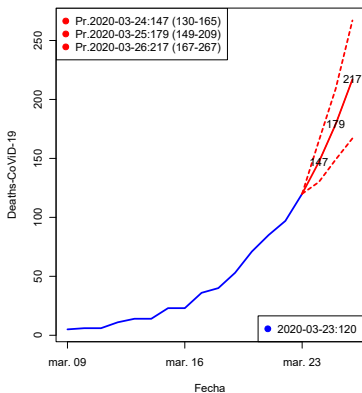
Deaths cases:Cataluña-NP



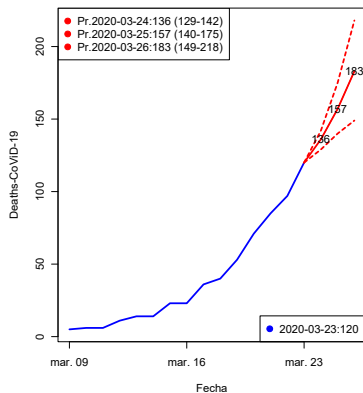
◀ Fallecidos

Fallecidos: Euskadi

Deaths cases:Euskadi-FLM



Deaths cases:Euskadi-NP

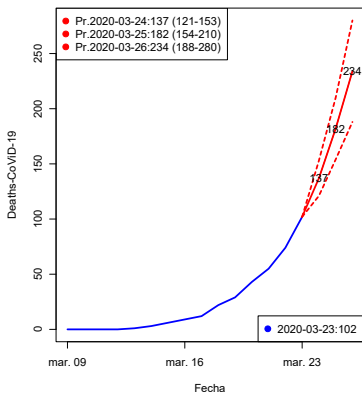


◀ Confirmados

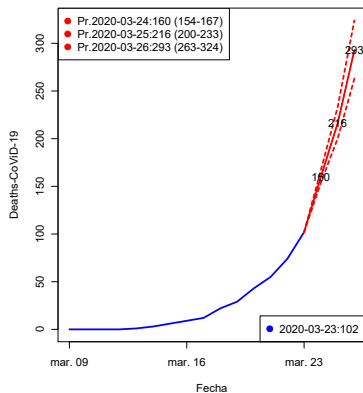
◀ Fallecidos

Fallecidos: Castilla y León

Deaths cases:Castilla.y.León-FLM



Deaths cases:Castilla.y.León-NP

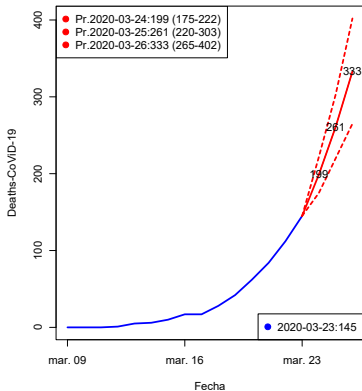


◀ Confirmados

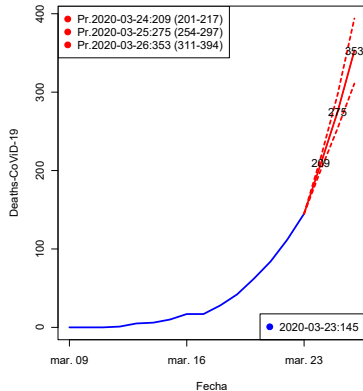
◀ Fallecidos

Fallecidos: Castilla-La Mancha

Deaths cases:Castilla.La.Mancha-FLM



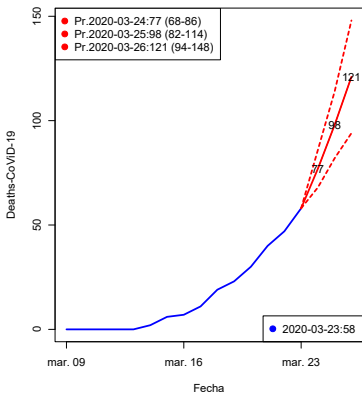
Deaths cases:Castilla.La.Mancha-NP



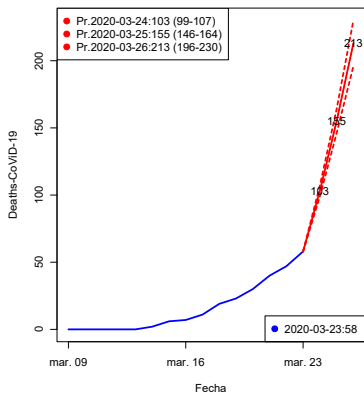
◀ Confirmados

◀ Fallecidos

Deaths cases:Andalucía-FLM



Deaths cases:Andalucía-NP



◀ Fallecidos

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.