Predicciones sobre CoViD-19

Manuel Febrero–Bande

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

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USC UNIVERSIDADE DE SANTIAGO DE COMPOSTELA
DEPARTAMENTO DE ESTATÍSTICA, ANÁLISE MATEMÁTICA E OPTIMIZACIÓN
modestya

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Datos

Número de datos funcionales: 1753

Países/Regiones distintos incorporados: 84

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	0.035	0.024	0.032
H1	$\sigma_R^2(rob.)$	0.023	0.006	0.023
H1	r^2	0.266	0.625	0.319
H2	σ_R^2	0.14	0.1	0.126
H2	$\sigma_R^2(rob.)$	0.077	0.024	0.073
H2	r^2	0.3	0.625	0.365
H3	σ_R^2	0.426	0.344	0.392
H3	$\sigma_R^2(rob.)$	0.206	0.069	0.193
H3	r^2	0.279	0.565	0.332

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 Lineal.

	Last	C:H1-lw	C:H1-fit	C:H1-up	C:H2-lw	C:H2-fit	C:H2-up
España	47610	47610	53566	60218	47610	59774	73333
Andalucía	3010	3226	3547	3867	3390	4049	4709
Aragón	907	954	1050	1146	1012	1209	1407
Asturias	779	827	909	992	871	1041	1211
Baleares	562	627	687	747	711	835	958
Canarias	657	691	760	829	740	883	1026
Cantabria	510	572	627	681	638	751	863
Cataluña	9937	10723	11795	12866	12032	14237	16442
Castilla.La.Mancha	2780	2972	3268	3563	3194	3802	4411
Castilla.y.León	2940	3254	3565	3876	3584	4225	4867
C..Valenciana	2616	2784	3068	3352	2954	3538	4122
Extremadura	742	788	867	947	848	1012	1176
Euskadi	3271	3390	3735	4081	3604	4316	5027
Galicia	1653	1840	2019	2198	1939	2307	2676
Madrid	14597	14681	16247	17813	14899	18122	21346
Murcia	477	493	545	596	538	643	749
Navarra	1197	1269	1406	1543	1322	1603	1884
La.Rioja	928	932	1030	1128	949	1150	1351

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

Confirmados Fallecidos

Tabla Modelo No Paramétrico.

	Last	C:H1-lw	C:H1-fit	C:H1-up	C:H2-lw	C:H2-fit	C:H2-up
España	47610	49402	51743	54085	50807	56311	61816
Andalucía	3010	3252	3401	3549	3432	3780	4128
Aragón	907	950	995	1039	996	1101	1206
Asturias	779	809	847	886	832	922	1012
Baleares	562	641	669	697	703	768	833
Canarias	657	678	710	742	693	769	845
Cantabria	510	575	600	625	647	707	766
Cataluña	9937	11217	11712	12207	12628	13785	14941
Castilla.La.Mancha	2780	2932	3068	3205	3048	3369	3689
Castilla.y.León	2940	3244	3390	3535	3527	3868	4209
C..Valenciana	2616	2956	3084	3213	3668	3971	4275
Extremadura	742	799	836	872	848	934	1019
Euskadi	3271	3366	3527	3688	3440	3818	4197
Galicia	1653	2026	2110	2193	2407	2601	2794
Madrid	14597	14873	15590	16307	14987	16674	18361
Murcia	477	508	531	555	543	598	653
Navarra	1197	1280	1338	1397	1314	1452	1590
La.Rioja	928	928	969	1014	928	1018	1125

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

Tabla Modelo Aditivo.

	Last	C:H1-lw	C:H1-fit	C:H1-up	C:H2-lw	C:H2-fit	C:H2-up
España	47610	50684	54824	58963	54203	62472	70742
Andalucía	3010	3358	3634	3910	3784	4339	4894
Aragón	907	992	1071	1151	1082	1241	1400
Asturias	779	839	908	977	902	1040	1178
Baleares	562	673	725	777	824	929	1034
Canarias	657	710	768	826	781	897	1012
Cantabria	510	603	652	701	725	822	920
Cataluña	9937	10806	11698	12590	11923	13708	15494
Castilla.La.Mancha	2780	2962	3218	3474	3160	3673	4187
Castilla.y.León	2940	3346	3610	3874	3832	4360	4887
C..Valenciana	2616	2820	3066	3311	3124	3620	4117
Extremadura	742	782	854	925	857	1000	1143
Euskadi	3271	3569	3858	4148	4013	4592	5172
Galicia	1653	1908	2070	2232	2083	2409	2736
Madrid	14597	15036	16305	17574	15697	18234	20772
Murcia	477	507	552	597	563	652	742
Navarra	1197	1249	1376	1504	1368	1624	1880
La.Rioja	928	959	1039	1118	1001	1160	1319

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

Tabla Ratio Incremento Modelo Lineal.

	Last	RI:H1-lw	RI:H1-fit	RI:H1-up	RI:H2-lw	RI:H2-fit	RI:H2-up
España	0.200	0.000	0.125	0.265	0.000	0.255	0.540
Andalucía	0.218	0.072	0.178	0.285	0.126	0.345	0.564
Aragón	0.196	0.052	0.158	0.263	0.116	0.333	0.550
Asturias	0.176	0.061	0.167	0.273	0.118	0.336	0.554
Baleares	0.175	0.115	0.221	0.328	0.265	0.485	0.704
Canarias	0.179	0.051	0.156	0.262	0.127	0.344	0.560
Cantabria	0.200	0.122	0.229	0.336	0.251	0.471	0.692
Cataluña	0.264	0.079	0.187	0.295	0.211	0.433	0.655
Castilla.La.Mancha	0.128	0.069	0.175	0.282	0.149	0.368	0.586
Castilla.y.León	0.195	0.107	0.213	0.318	0.219	0.437	0.655
C..Valenciana	0.207	0.064	0.173	0.281	0.129	0.352	0.576
Extremadura	0.166	0.061	0.169	0.276	0.143	0.364	0.585
Euskadi	0.199	0.036	0.142	0.247	0.102	0.319	0.537
Galicia	0.168	0.113	0.221	0.330	0.173	0.396	0.619
Madrid	0.182	0.006	0.113	0.220	0.021	0.241	0.462
Murcia	0.238	0.034	0.142	0.249	0.127	0.347	0.568
Navarra	0.180	0.060	0.175	0.289	0.104	0.339	0.573
La.Rioja	0.157	0.005	0.110	0.215	0.022	0.239	0.456

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

Tabla Ratio Incremento Modelo No Paramétrico.

	Last	RI:H1-lw	RI:H1-fit	RI:H1-up	RI:H2-lw	RI:H2-fit	RI:H2-up
España	0.200	0.038	0.087	0.136	0.067	0.183	0.298
Andalucía	0.218	0.080	0.130	0.179	0.140	0.256	0.371
Aragón	0.196	0.047	0.096	0.146	0.098	0.213	0.329
Asturias	0.176	0.039	0.088	0.137	0.068	0.183	0.298
Baleares	0.175	0.141	0.190	0.240	0.250	0.366	0.481
Canarias	0.179	0.032	0.081	0.130	0.055	0.170	0.286
Cantabria	0.200	0.126	0.176	0.225	0.269	0.385	0.501
Cataluña	0.264	0.129	0.179	0.228	0.271	0.387	0.504
Castilla.La.Mancha	0.128	0.055	0.104	0.153	0.096	0.212	0.327
Castilla.y.León	0.195	0.103	0.153	0.202	0.200	0.315	0.431
C..Valenciana	0.207	0.130	0.179	0.228	0.402	0.518	0.634
Extremadura	0.166	0.077	0.126	0.175	0.142	0.258	0.373
Euskadi	0.199	0.029	0.078	0.127	0.052	0.167	0.283
Galicia	0.168	0.226	0.276	0.326	0.456	0.573	0.690
Madrid	0.182	0.019	0.068	0.117	0.027	0.142	0.258
Murcia	0.238	0.065	0.114	0.163	0.138	0.253	0.368
Navarra	0.180	0.069	0.118	0.167	0.098	0.213	0.328
La.Rioja	0.157	0.000	0.044	0.093	0.000	0.097	0.212

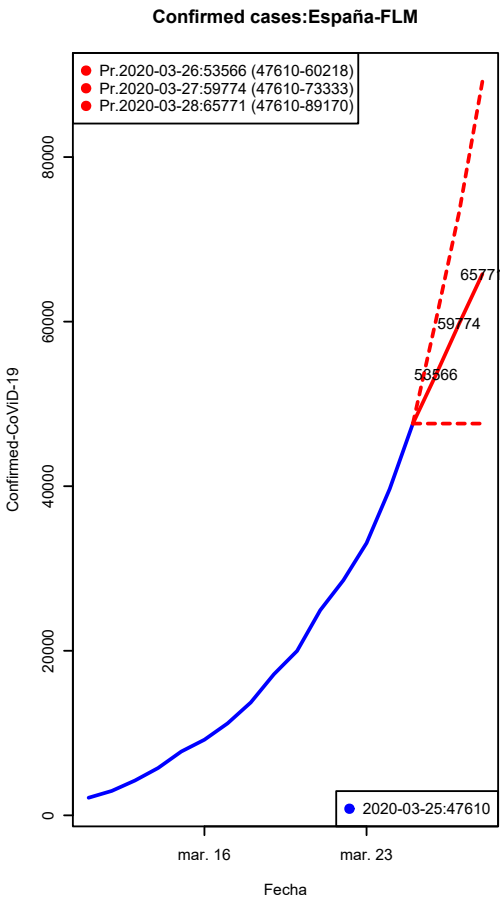
Table: Previsión Ratio incremento casos confirmados: Modelo No Paramétrico - Horizonte 1 y 2 días.

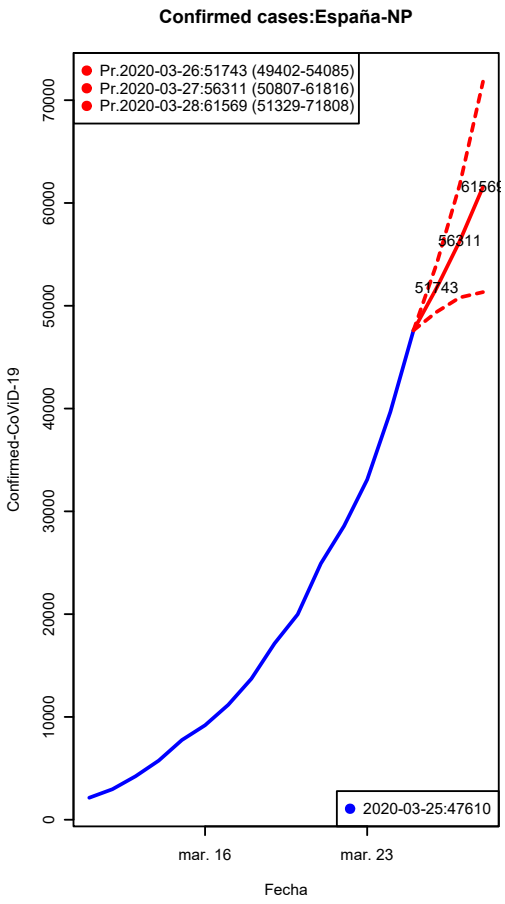
Tabla Ratio Incremento Modelo Aditivo.

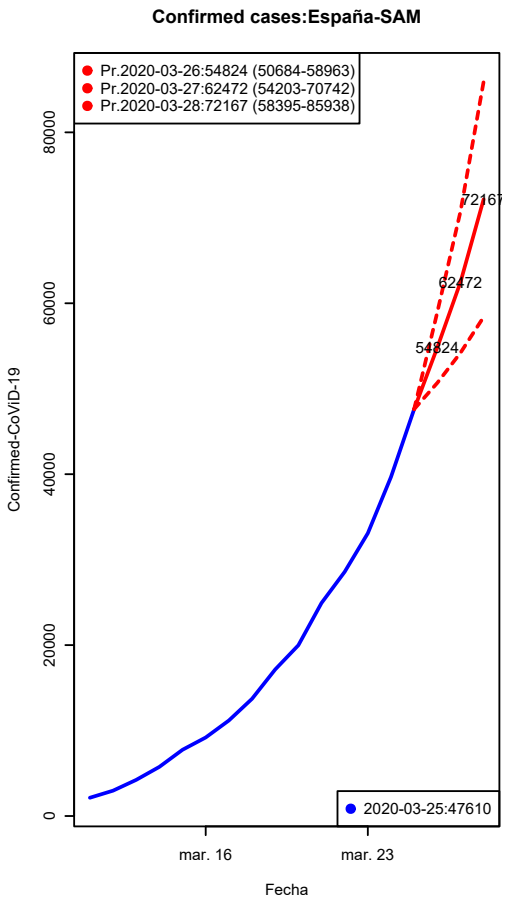
	Last	RI:H1-lw	RI:H1-fit	RI:H1-up	RI:H2-lw	RI:H2-fit	RI:H2-up
España	0.200	0.065	0.152	0.238	0.138	0.312	0.486
Andalucía	0.218	0.116	0.207	0.299	0.257	0.441	0.626
Aragón	0.196	0.093	0.181	0.269	0.192	0.368	0.543
Asturias	0.176	0.077	0.165	0.253	0.157	0.334	0.511
Baleares	0.175	0.196	0.289	0.381	0.466	0.653	0.839
Canarias	0.179	0.081	0.169	0.256	0.188	0.364	0.540
Cantabria	0.200	0.183	0.278	0.374	0.420	0.611	0.803
Cataluña	0.264	0.087	0.177	0.267	0.200	0.380	0.559
Castilla.La.Mancha	0.128	0.065	0.157	0.250	0.137	0.321	0.506
Castilla.y.León	0.195	0.138	0.228	0.318	0.303	0.483	0.662
C..Valenciana	0.207	0.078	0.172	0.266	0.194	0.384	0.573
Extremadura	0.166	0.054	0.150	0.246	0.155	0.348	0.540
Euskadi	0.199	0.091	0.179	0.268	0.227	0.404	0.581
Galicia	0.168	0.154	0.252	0.350	0.260	0.457	0.655
Madrid	0.182	0.030	0.117	0.204	0.075	0.249	0.423
Murcia	0.238	0.064	0.158	0.252	0.179	0.367	0.555
Navarra	0.180	0.043	0.150	0.256	0.143	0.357	0.570
La.Rioja	0.157	0.034	0.119	0.205	0.079	0.250	0.421

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

Confirmed cases: España

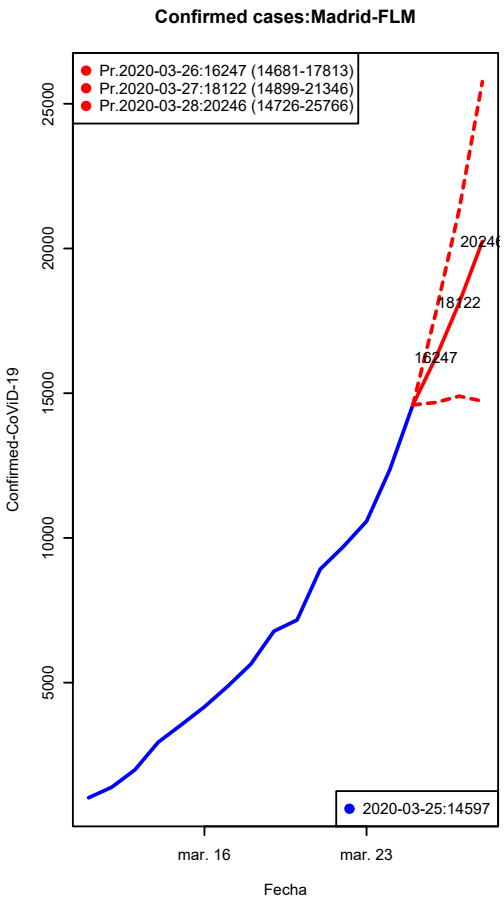


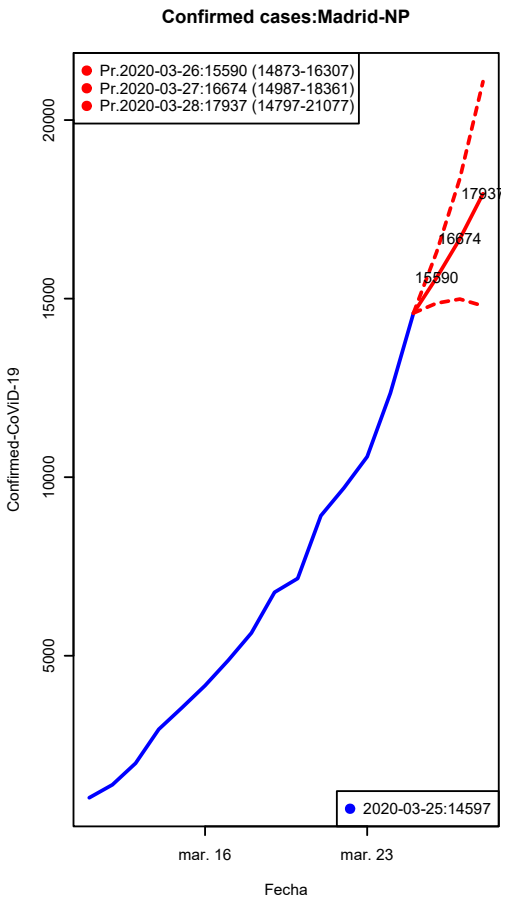


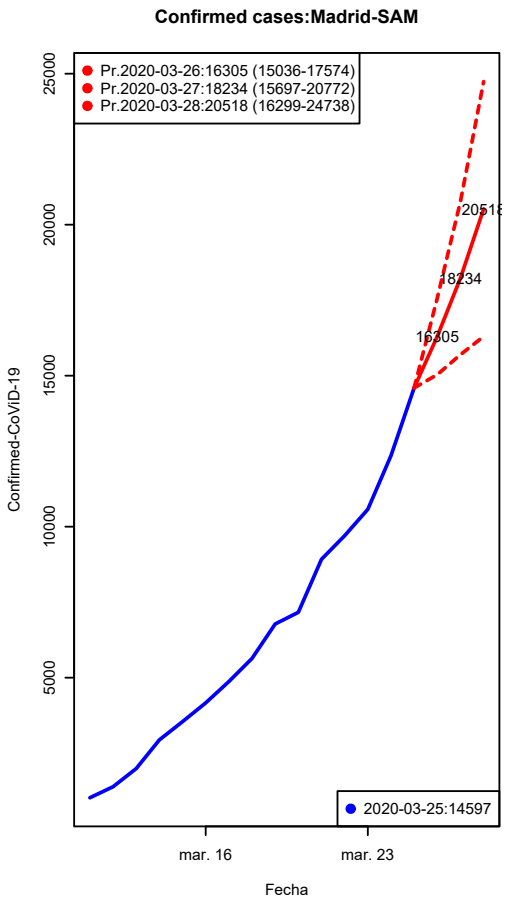


Confirmados Fallecidos

Confirmed cases: Madrid

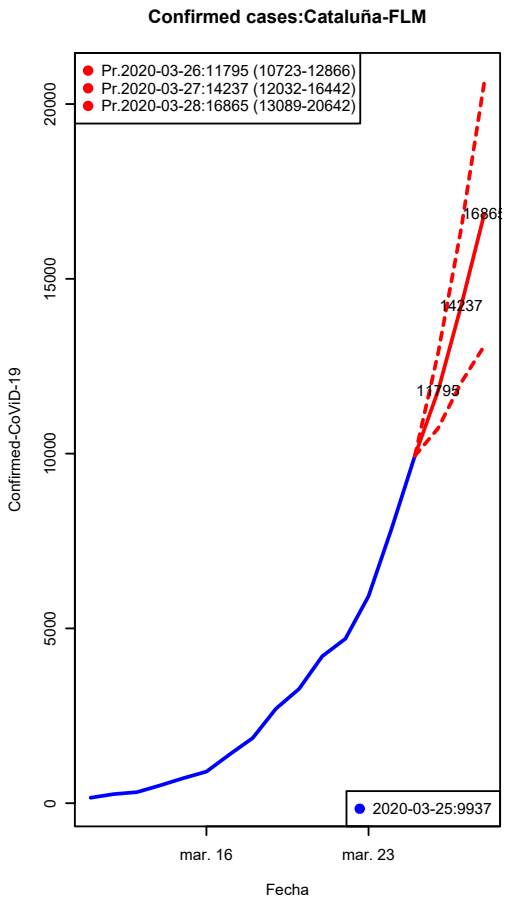


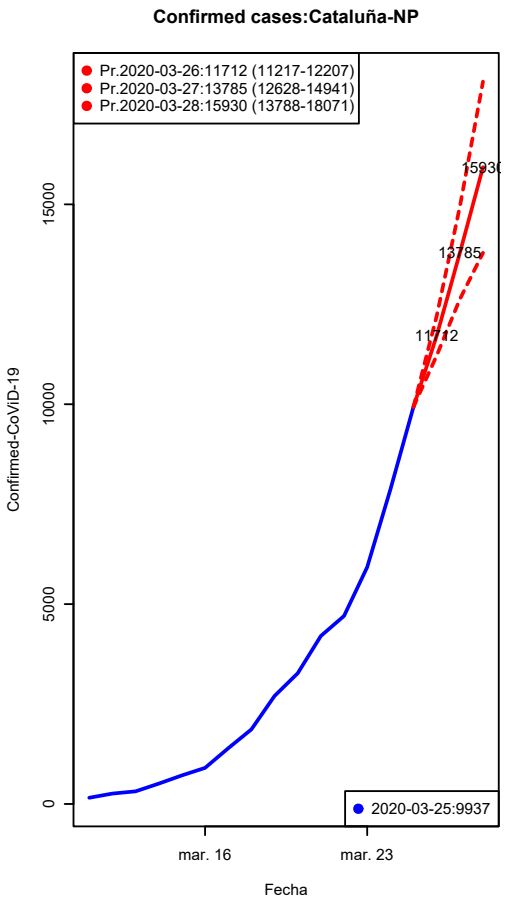


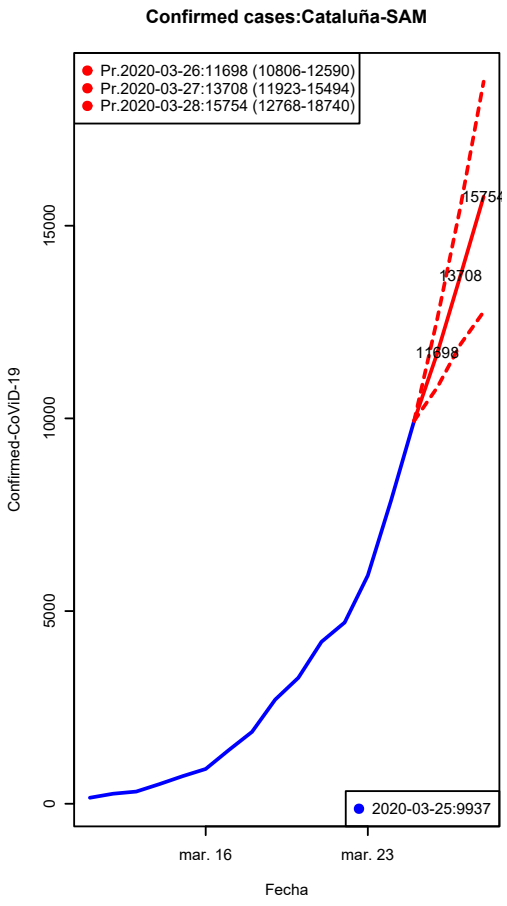


Confirmados Fallecidos

Confirmed cases: Cataluña

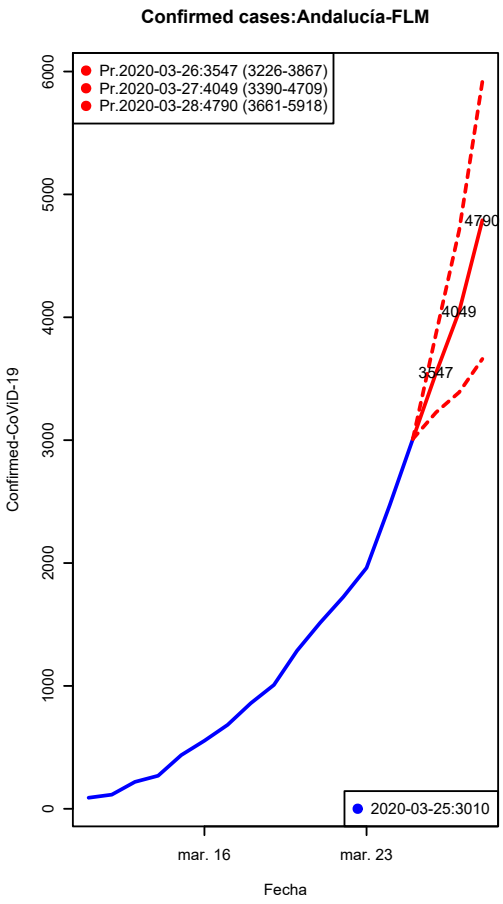


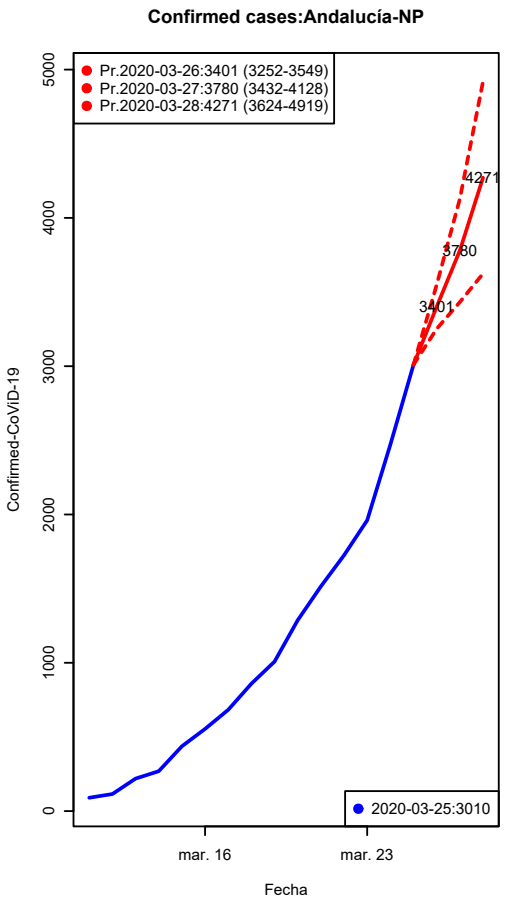


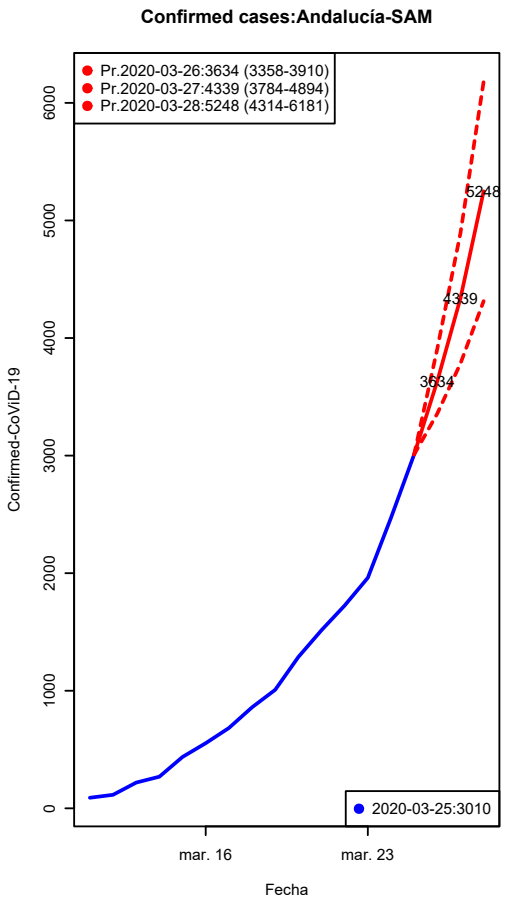


Confirmados Fallecidos

Confirmed cases: Andalucía

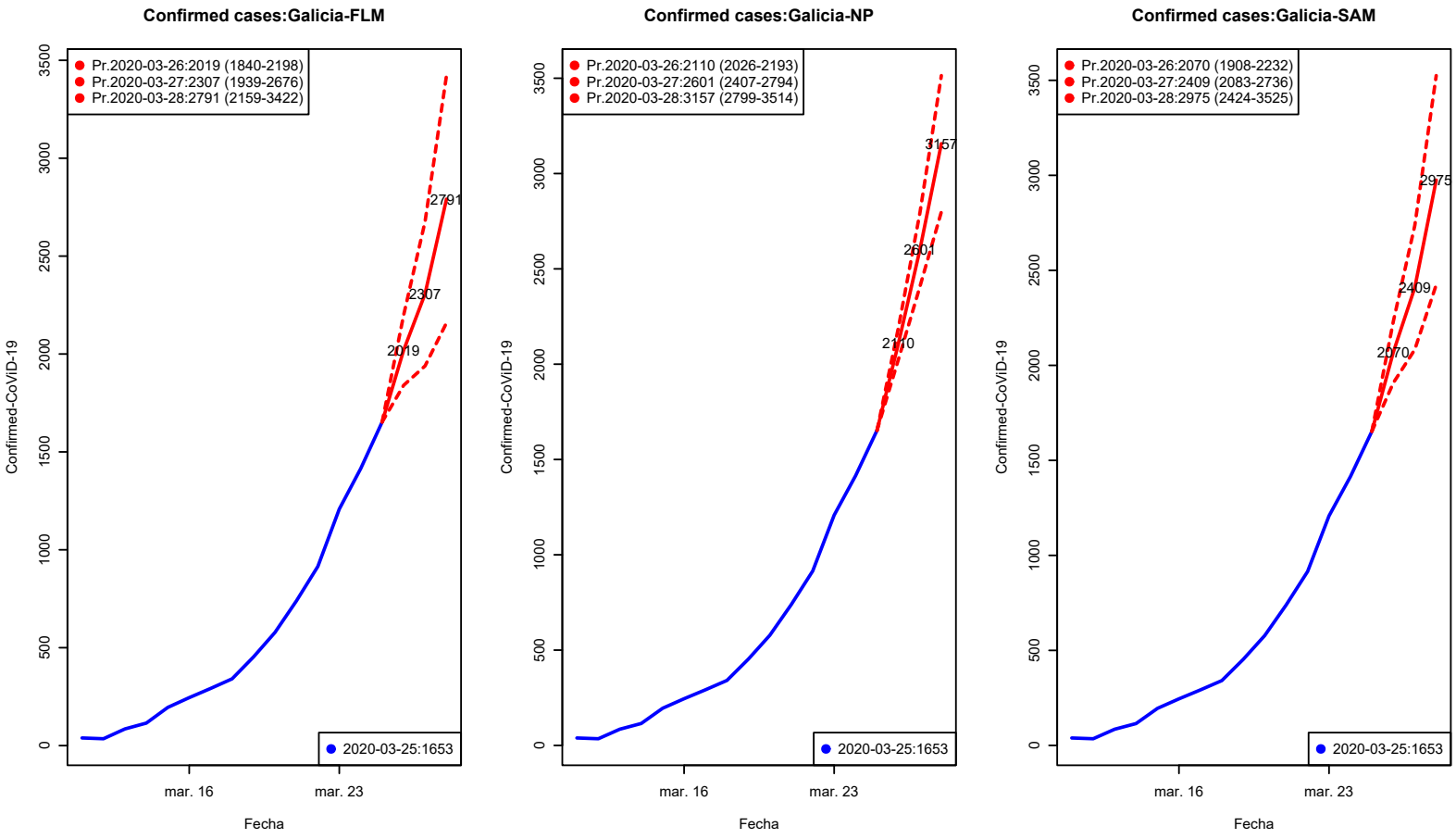






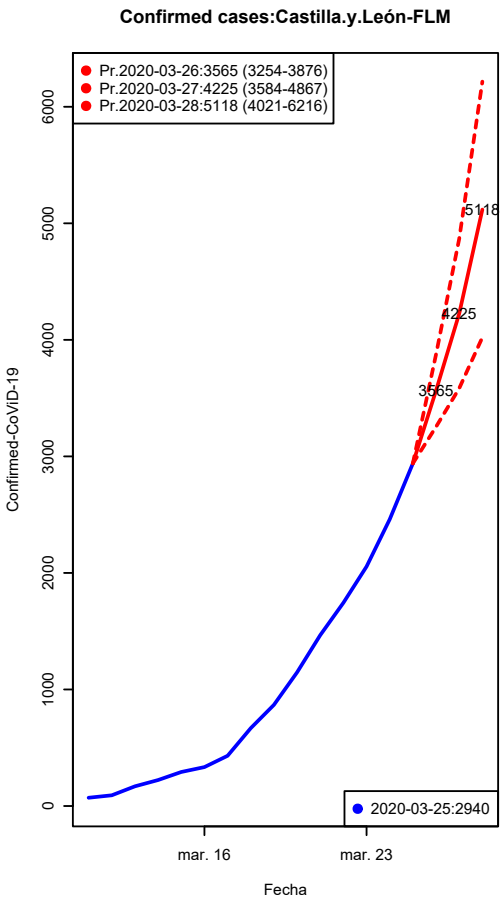
Confirmados Fallecidos

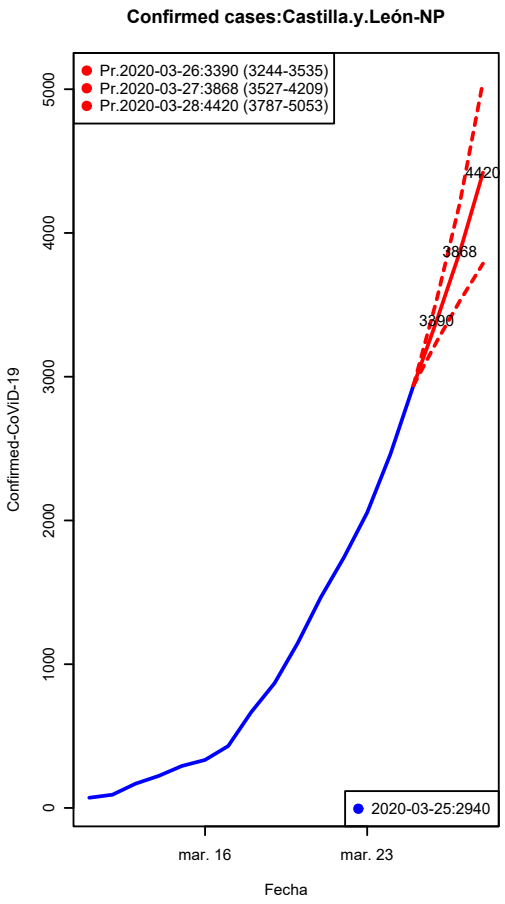
Confirmed cases: Galicia

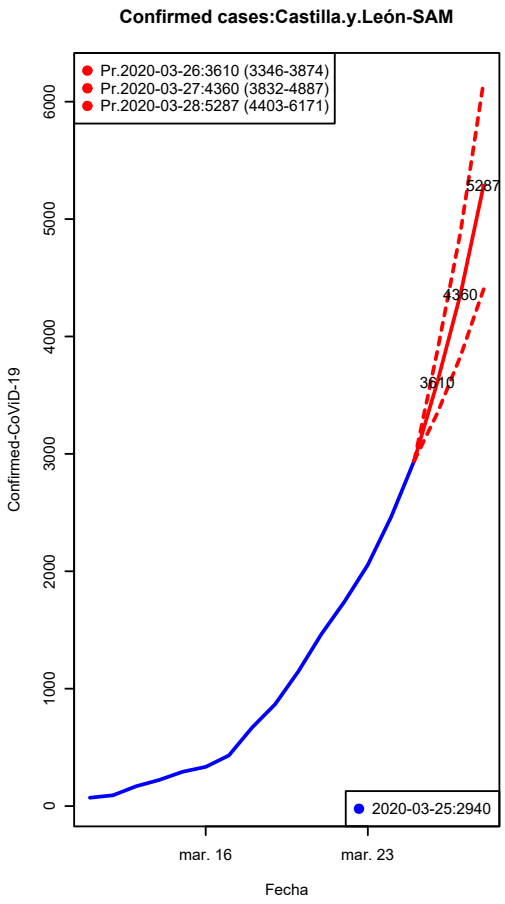


Confirmados Fallecidos

Confirmed cases: Castilla y León

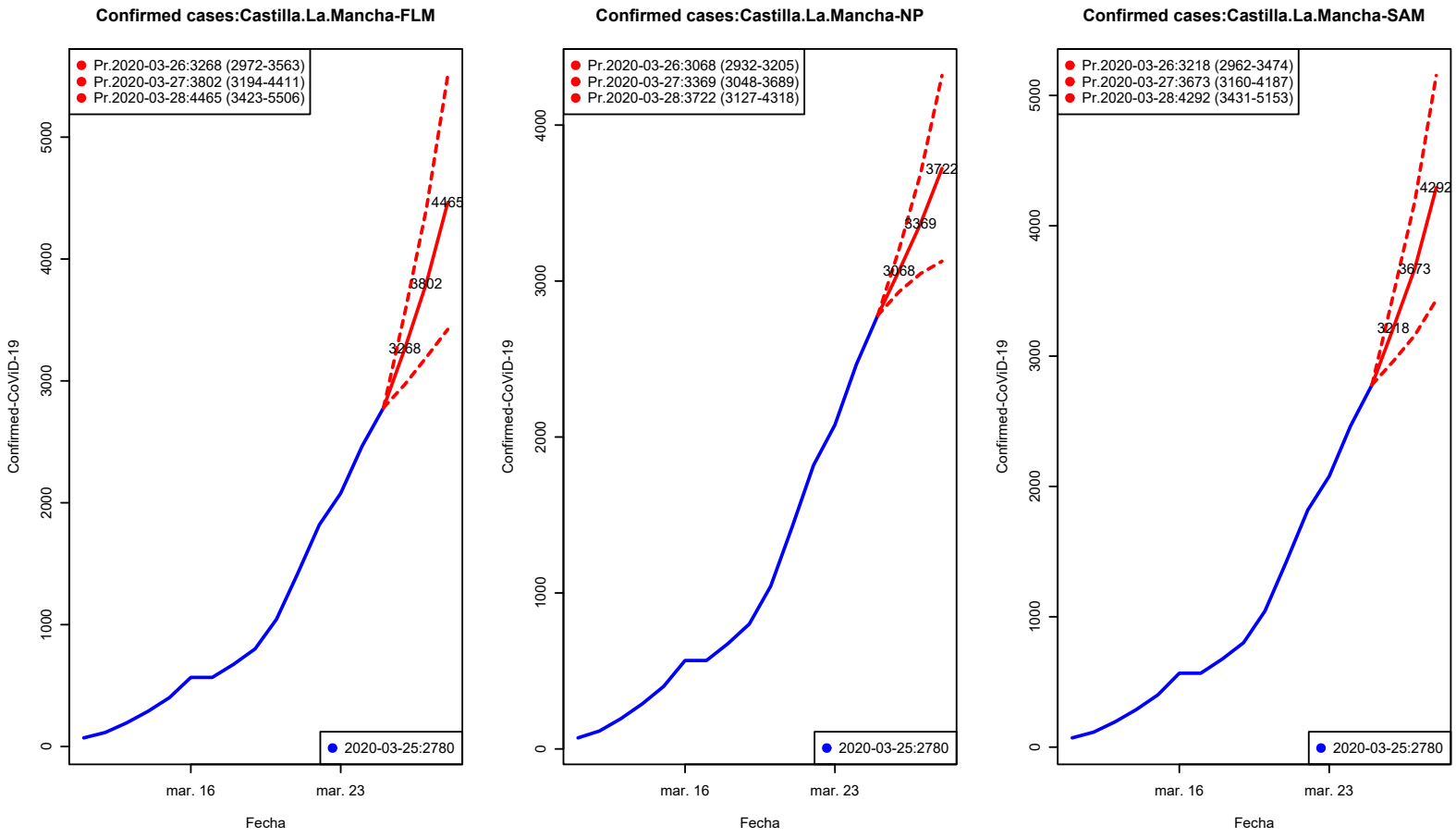






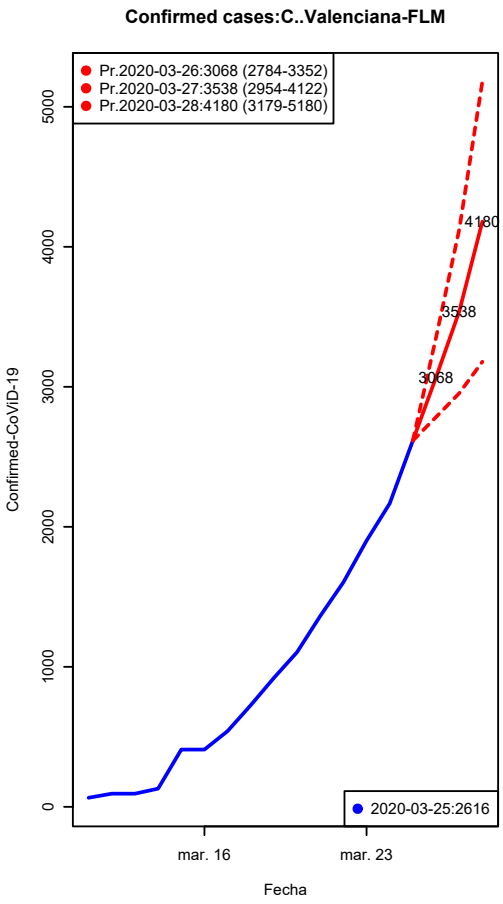
Confirmados Fallecidos

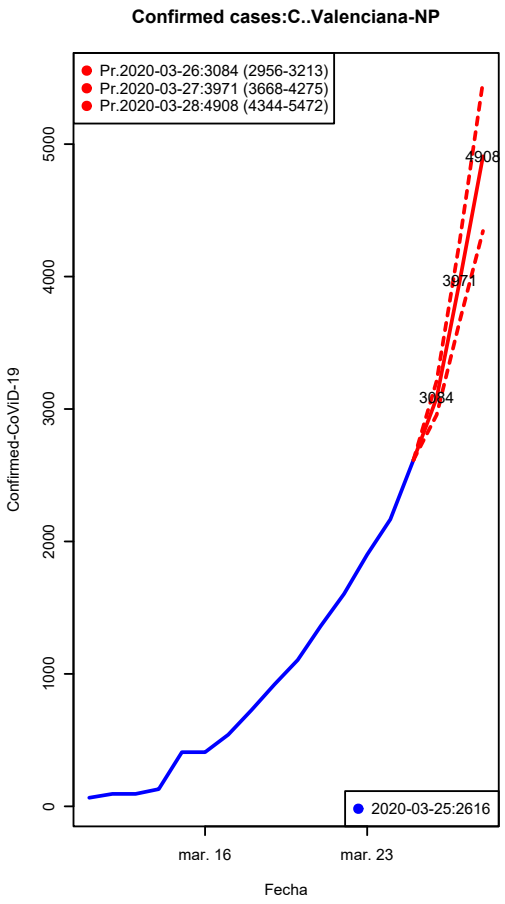
Confirmed cases: Castilla-La Mancha

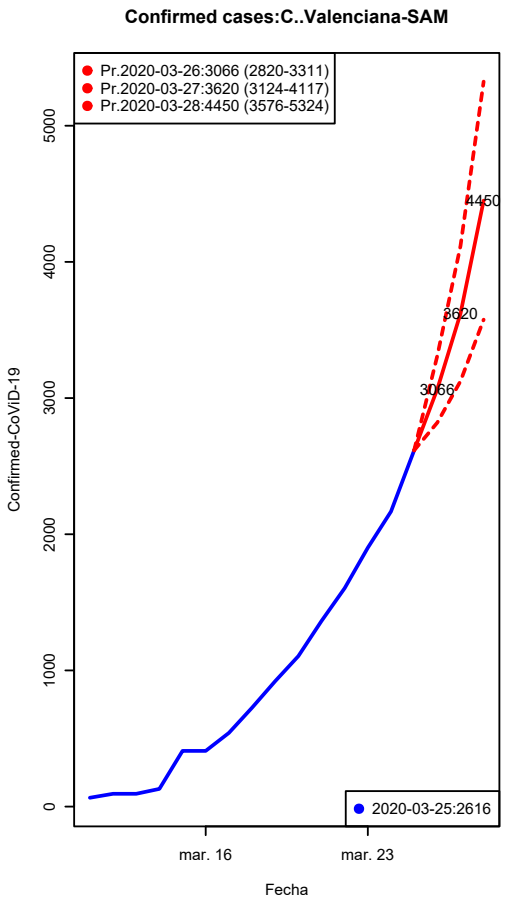


Confirmados Fallecidos

Confirmed cases: C. Valenciana

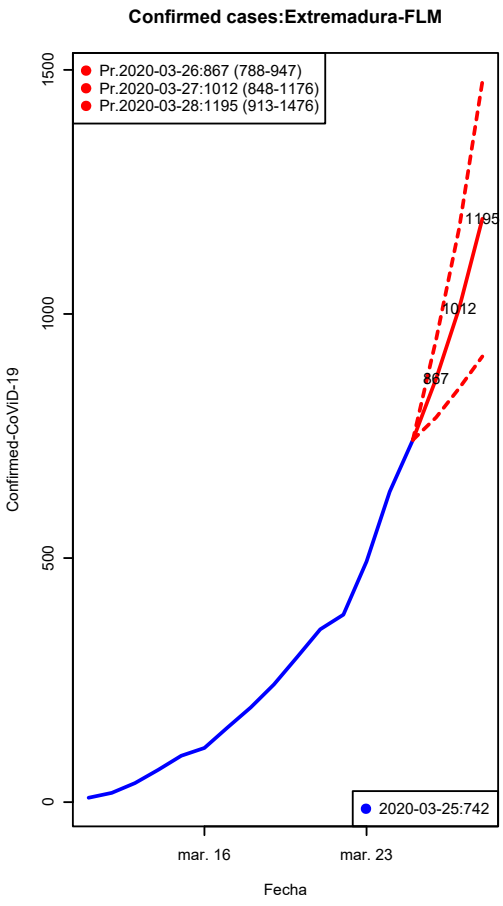


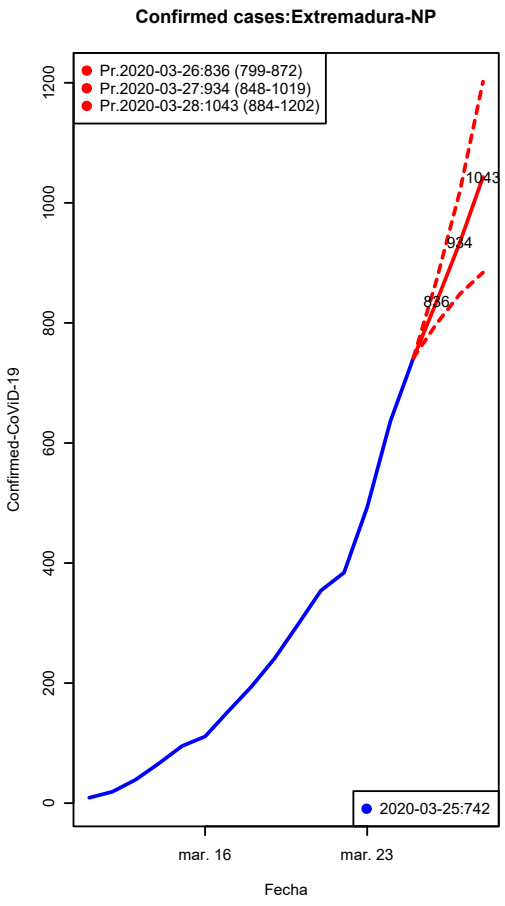


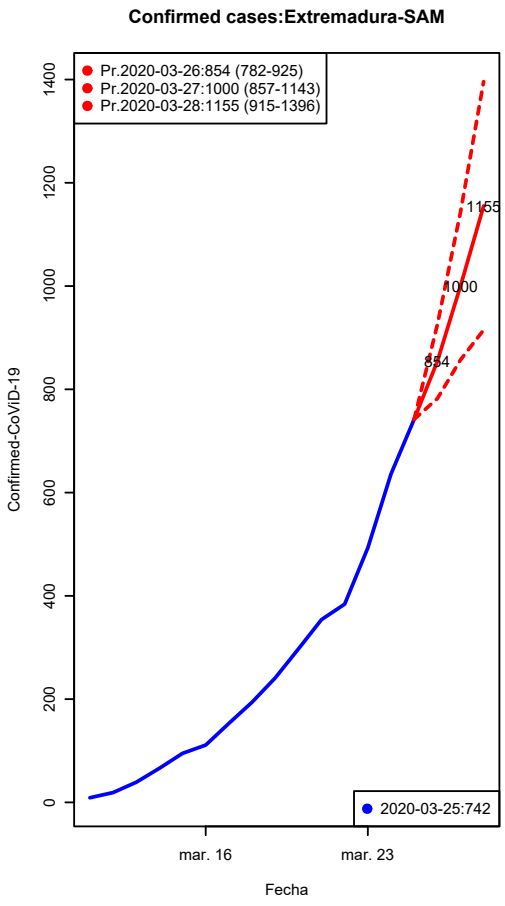


Confirmados Fallecidos

Confirmed cases: Extremadura

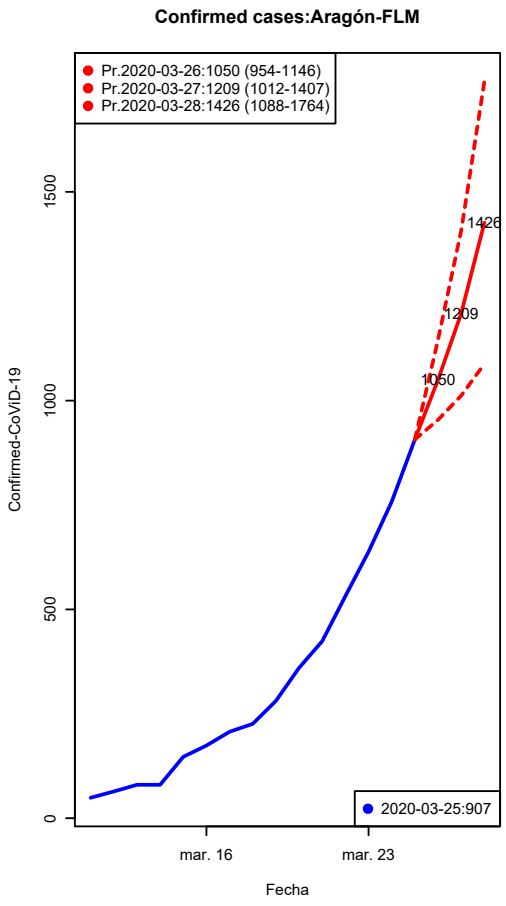


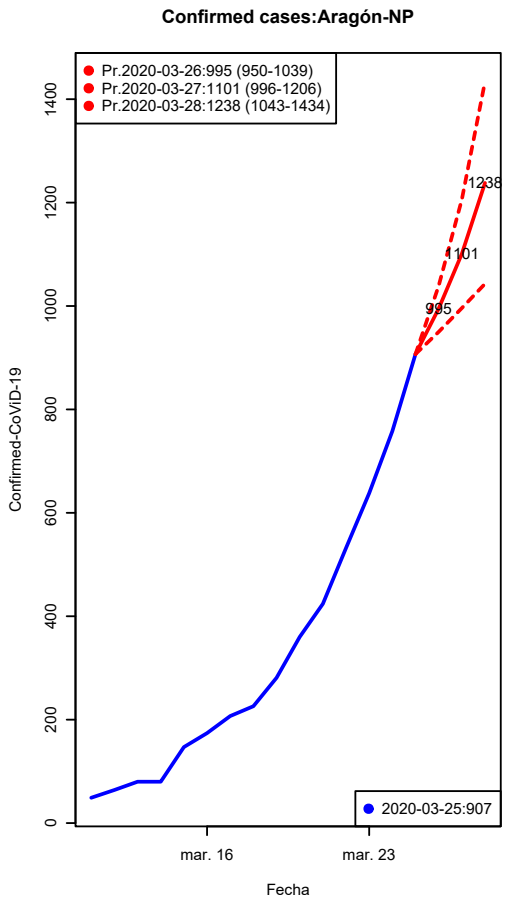


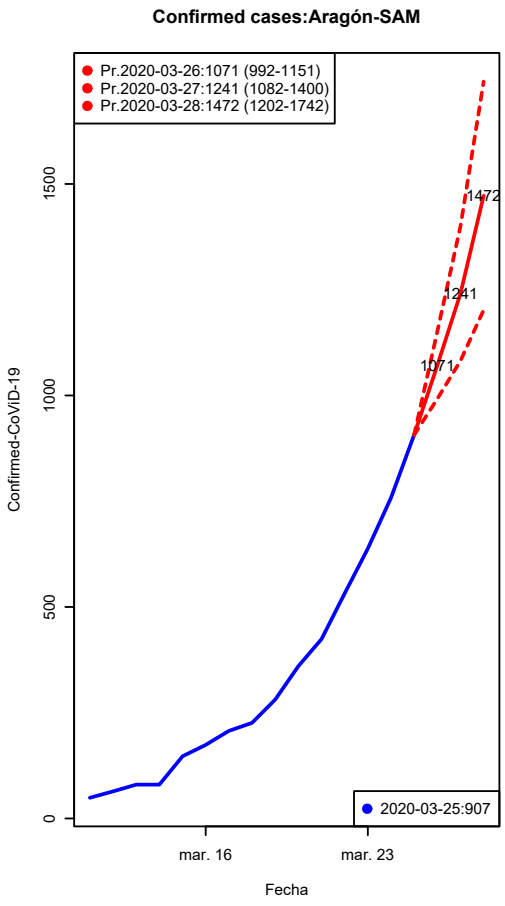


Confirmados Fallecidos

Confirmed cases: Aragón

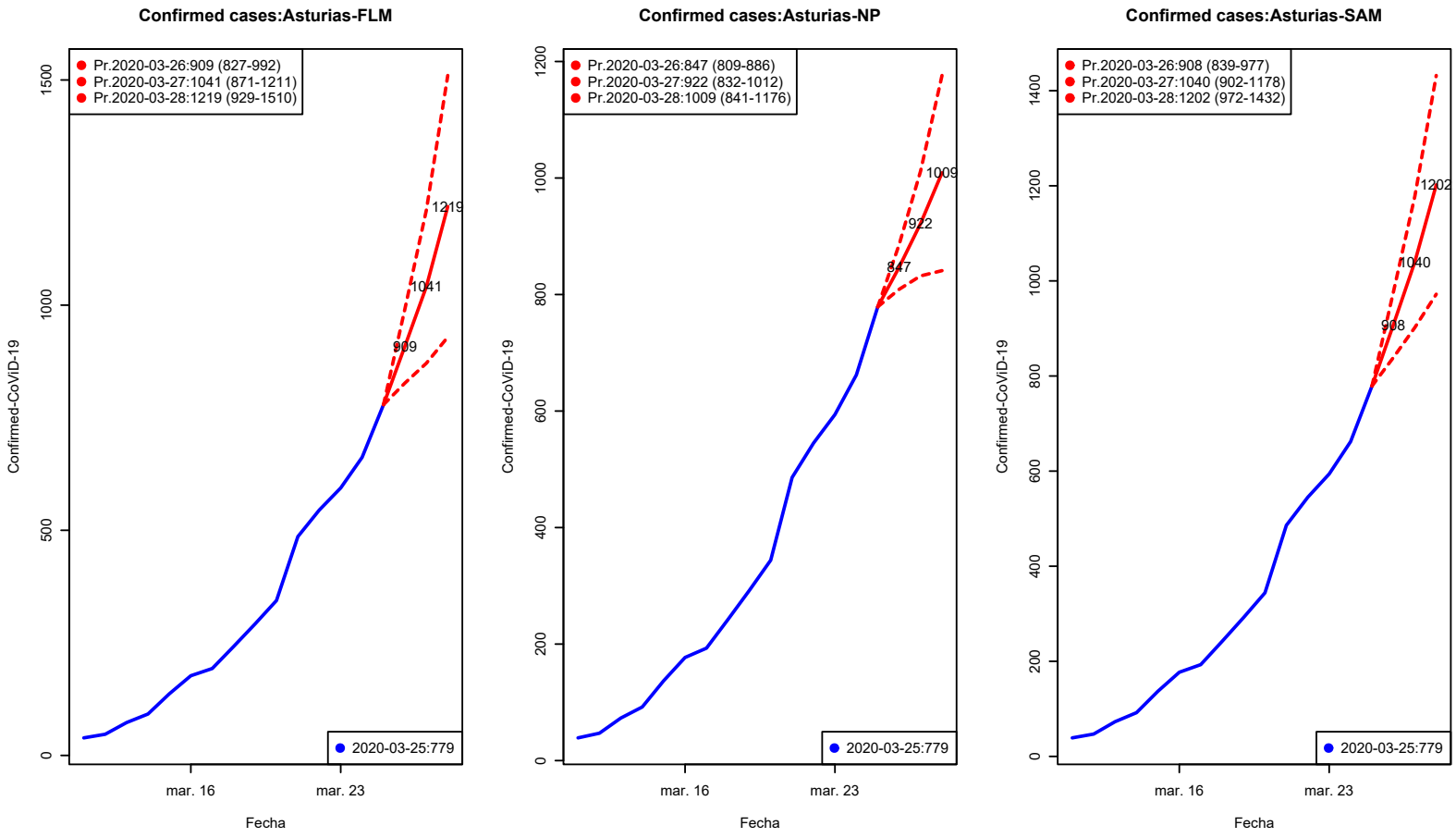






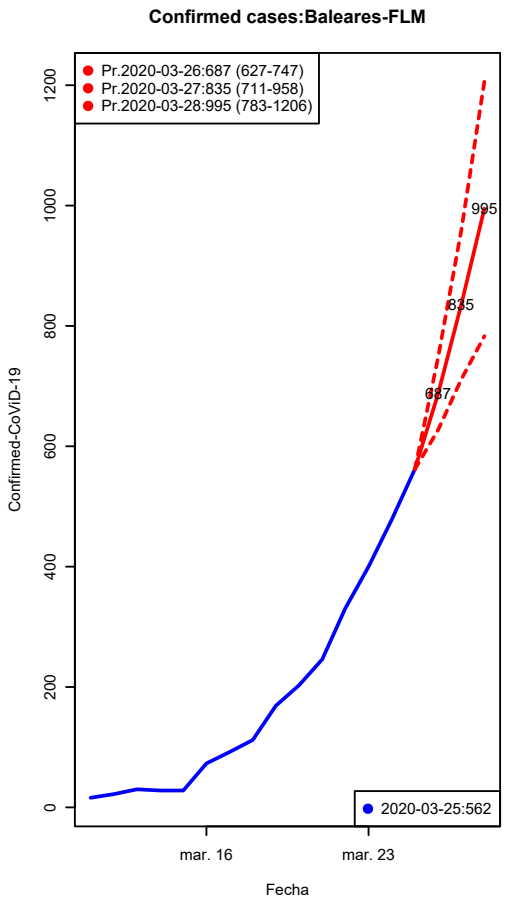
Confirmados Fallecidos

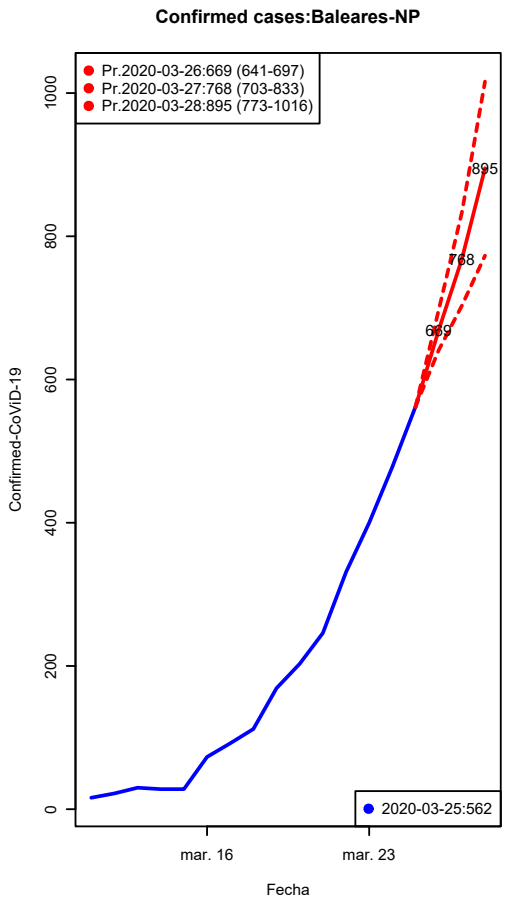
Confirmed cases: Asturias

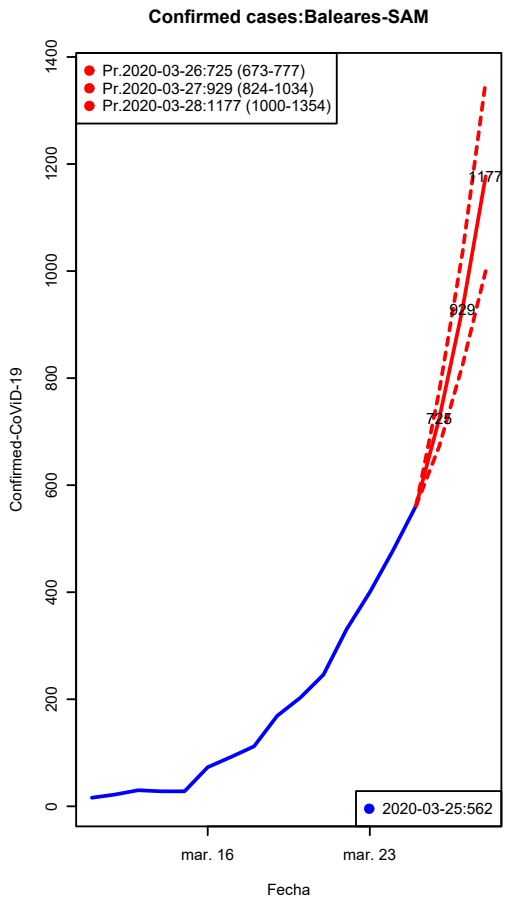


Confirmados Fallecidos

Confirmed cases: Baleares

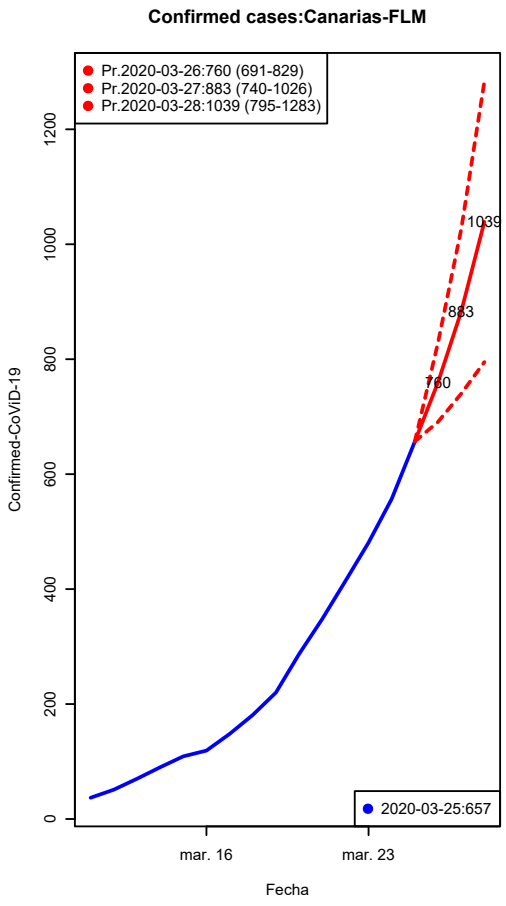


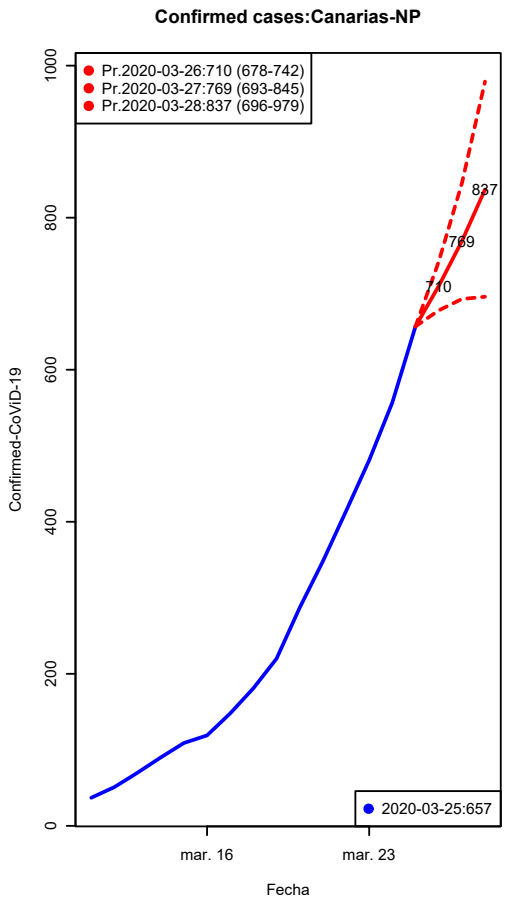


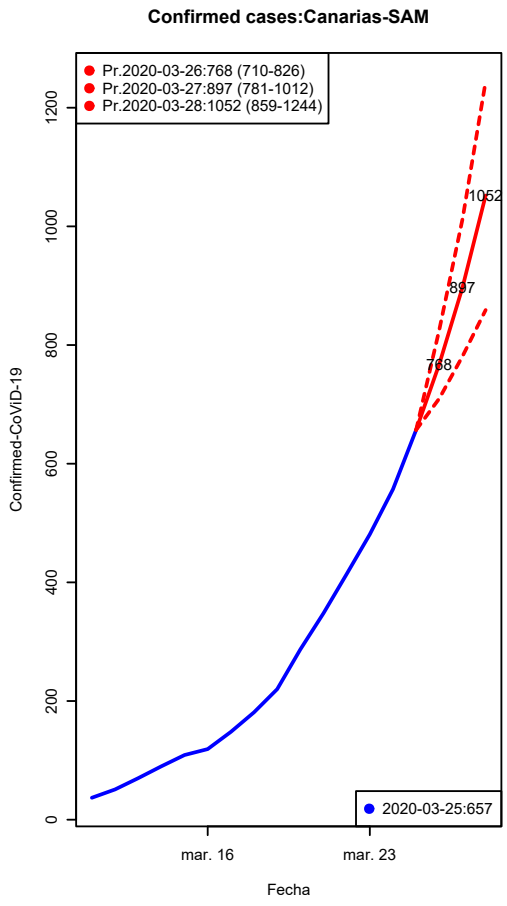


Confirmados Fallecidos

Confirmed cases: Canarias

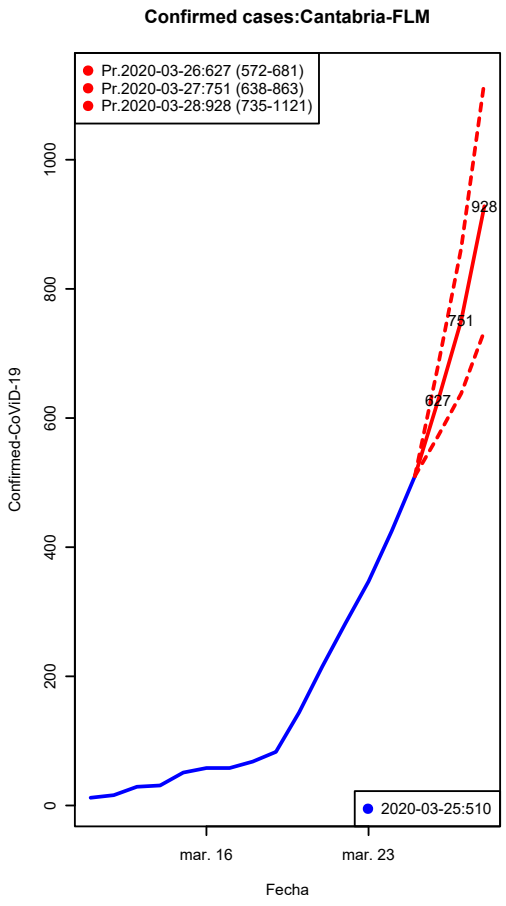


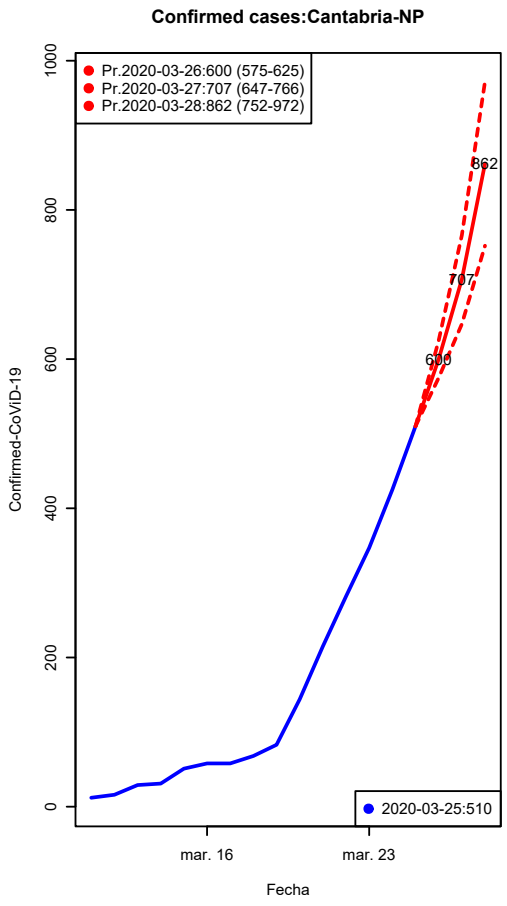


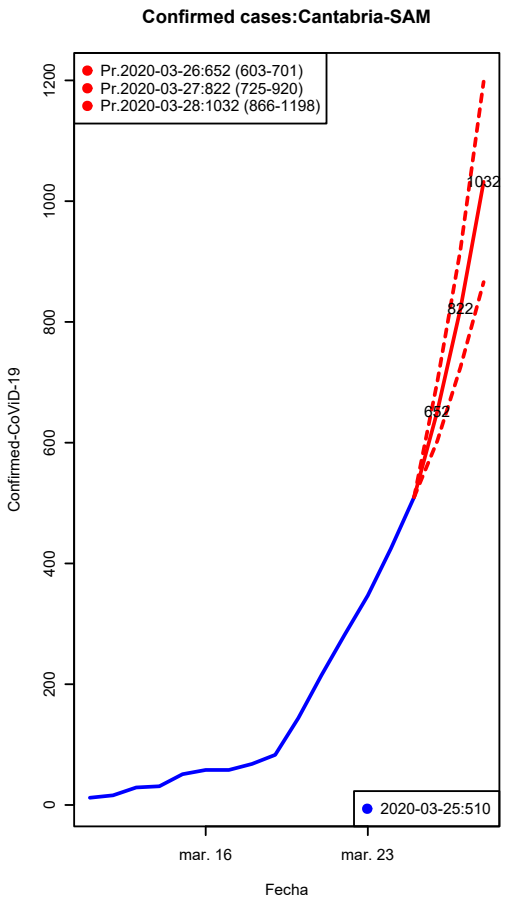


Confirmados Fallecidos

Confirmed cases: Cantabria

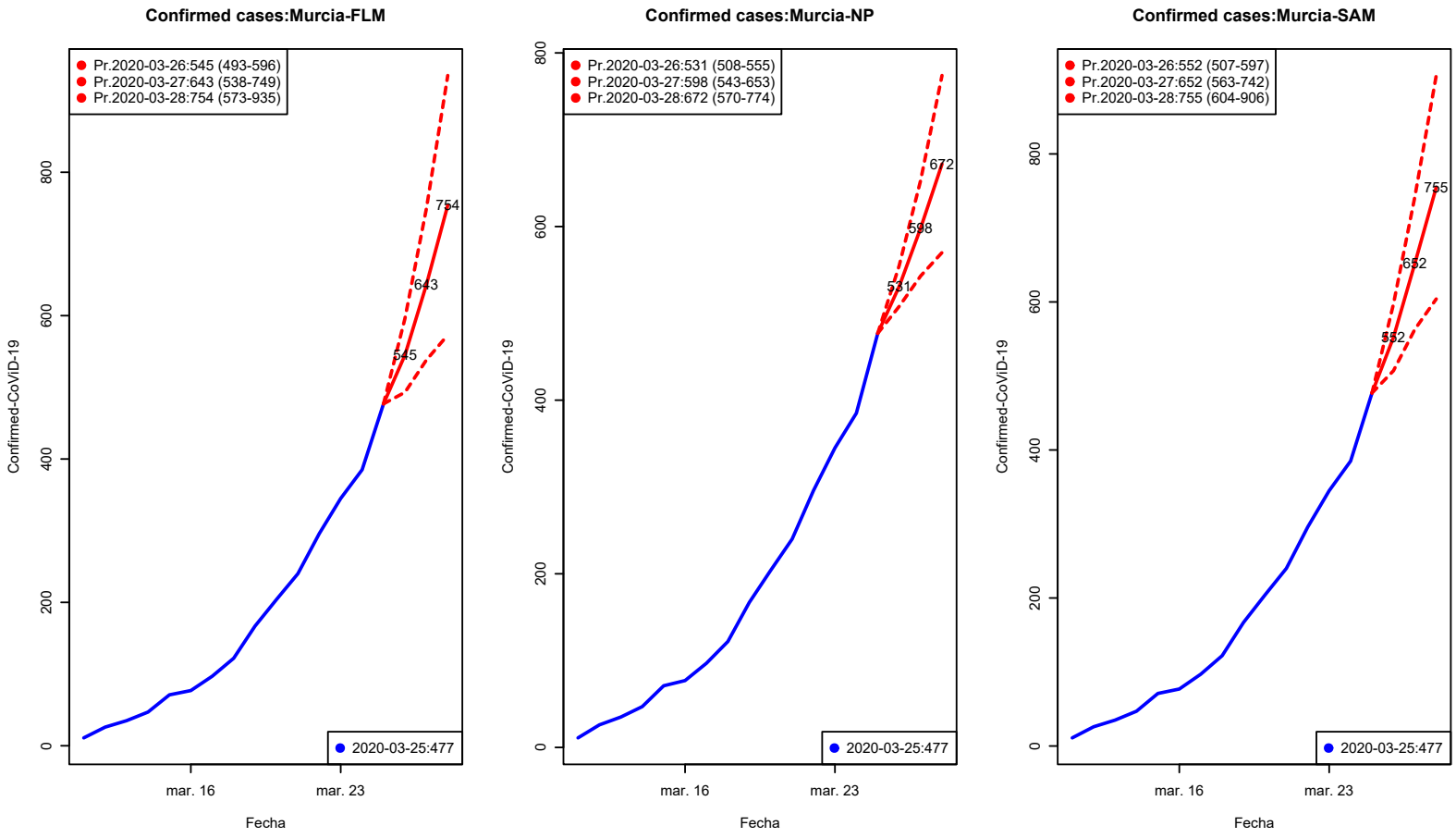






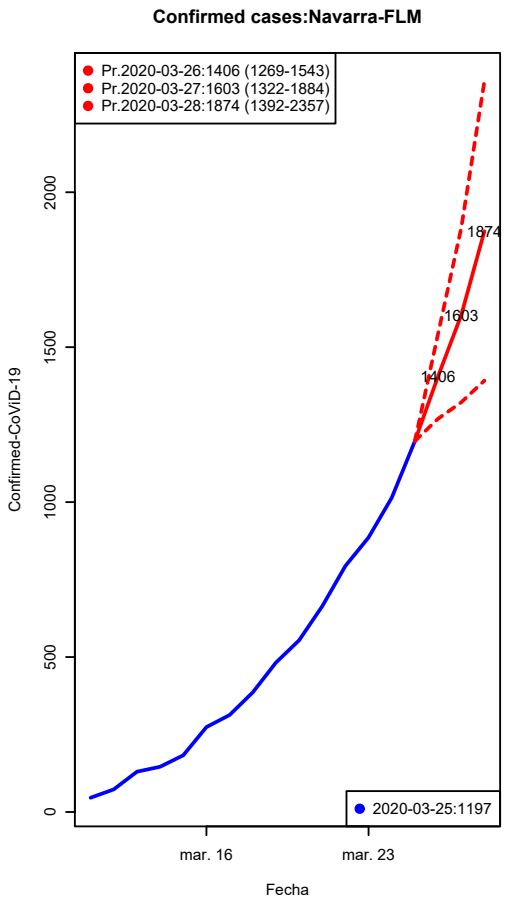
Confirmados Fallecidos

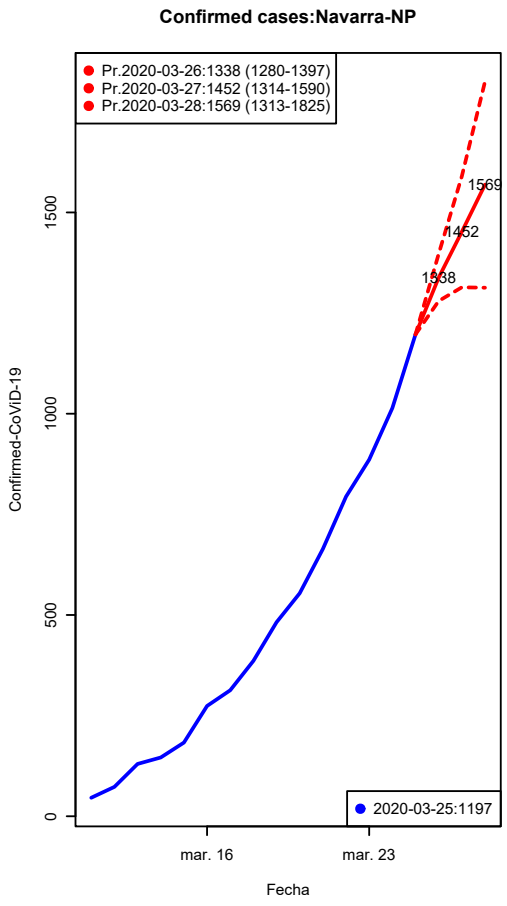
Confirmed cases: Murcia

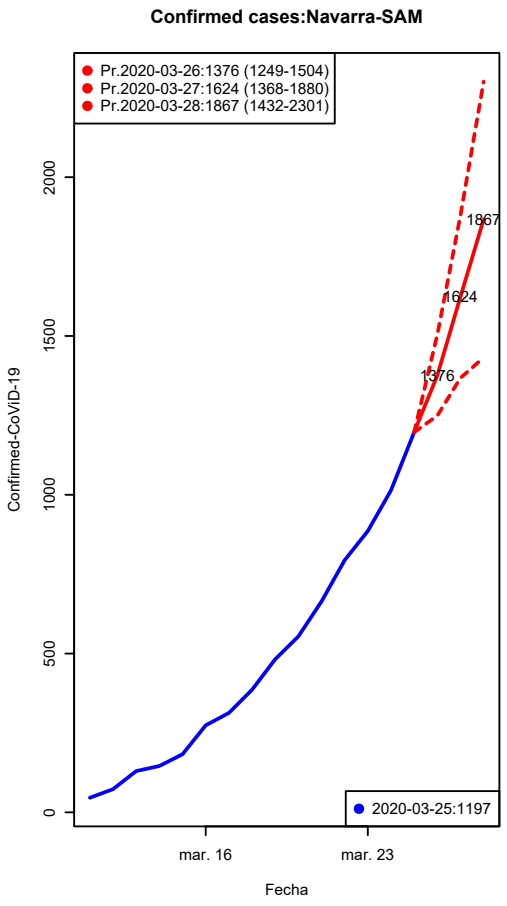


Confirmados Fallecidos

Confirmed cases: Navarra

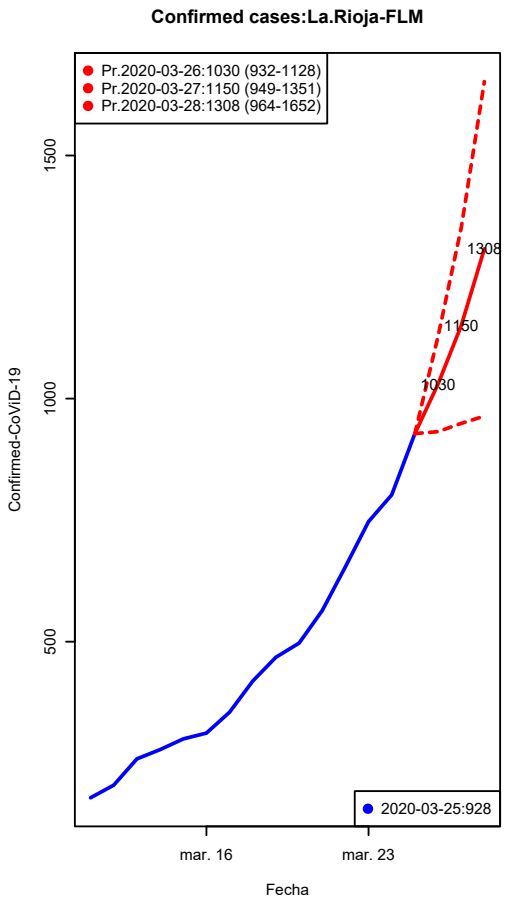


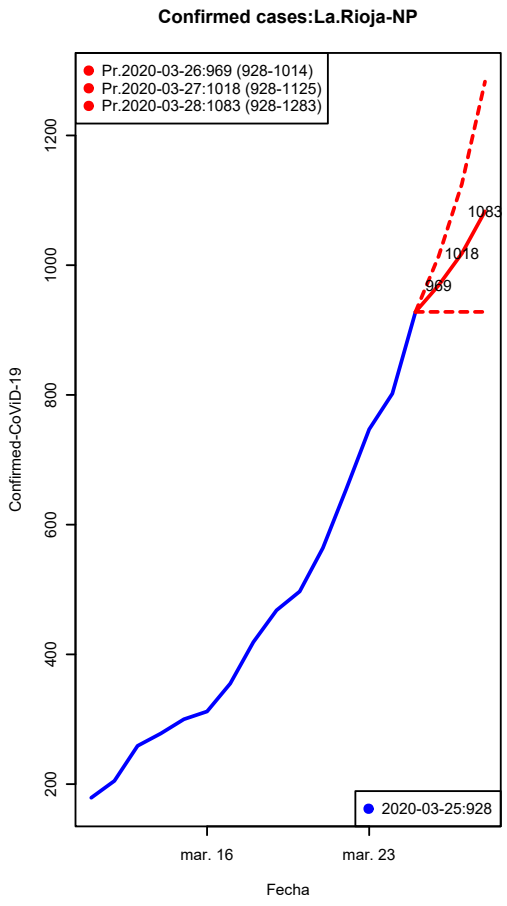


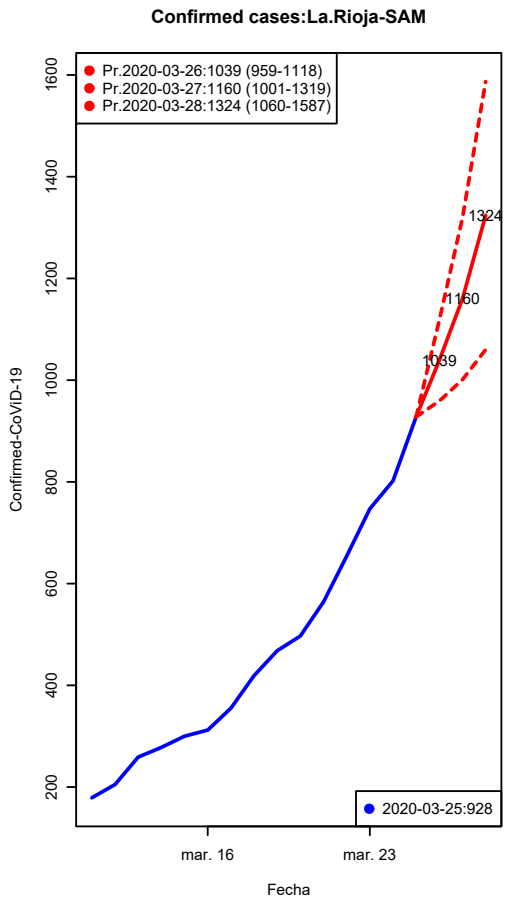


Confirmados Fallecidos

Confirmed cases: La Rioja







Confirmados Fallecidos

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1 Casos Confirmados
- Predicciones

2 Fallecidos
- Predicciones

Modelos para fallecidos por CoViD-19

Número de datos funcionales: 990
Países/Regiones distintos incorporados: 22
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	0.072	0.064	0.068
H1	$\sigma_R^2(rob.)$	0.046	0.013	0.05
H1	r^2	0.219	0.433	0.26
H2	σ_R^2	0.197	0.191	0.179
H2	$\sigma_R^2(rob.)$	0.162	0.089	0.159
H2	r^2	0.353	0.485	0.407
H3	σ_R^2	0.523	0.554	0.471
H3	$\sigma_R^2(rob.)$	0.427	0.214	0.358
H3	r^2	0.389	0.47	0.446

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.

	Last	F:H1-lw	F:H1-fit	F:H1-up	F:H2-lw	F:H2-fit	F:H2-up
España	3434	3736	4259	4783	4175	5097	6019
Andalucía	113	127	145	163	146	178	210
Castilla.La.Mancha	263	300	344	387	352	428	504
Castilla.y.León	165	185	212	238	217	263	309
Cataluña	516	608	688	768	755	895	1036
Euskadi	155	161	184	207	173	213	254
Madrid	1825	1931	2214	2496	2069	2567	3064

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

Confirmados Fallecidos

Tabla Fallecidos Modelo No Paramétrico.

	Last	F:H1-lw	F:H1-fit	F:H1-up	F:H2-lw	F:H2-fit	F:H2-up
España	3434	3923	4087	4251	4382	4872	5362
Andalucía	113	136	142	147	164	180	196
Castilla.La.Mancha	263	374	387	400	447	484	522
Castilla.y.León	165	208	216	224	239	263	286
Cataluña	516	621	647	672	764	838	912
Euskadi	155	170	177	184	181	203	225
Madrid	1825	1882	1969	2056	2088	2347	2606

Table: Previsión fallecidos: Modelo No Paramétrico - Horizonte 1 y 2 días.

Confirmados Fallecidos

Tabla Fallecidos Ratio Incremento Modelo Lineal.

	Last	R:H1-lw	R:H1-fit	R:H1-up	R:H2-lw	R:H2-fit	R:H2-up
España	0.274	0.088	0.240	0.393	0.216	0.484	0.753
Andalucía	0.295	0.124	0.283	0.442	0.294	0.573	0.852
Castilla.La.Mancha	0.217	0.141	0.306	0.470	0.338	0.626	0.913
Castilla.y.León	0.328	0.122	0.281	0.440	0.312	0.591	0.869
Cataluña	0.827	0.179	0.333	0.488	0.462	0.734	1.006
Euskadi	0.164	0.038	0.184	0.331	0.116	0.375	0.634
Madrid	0.189	0.058	0.213	0.368	0.134	0.406	0.679

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

Confirmados Fallecidos

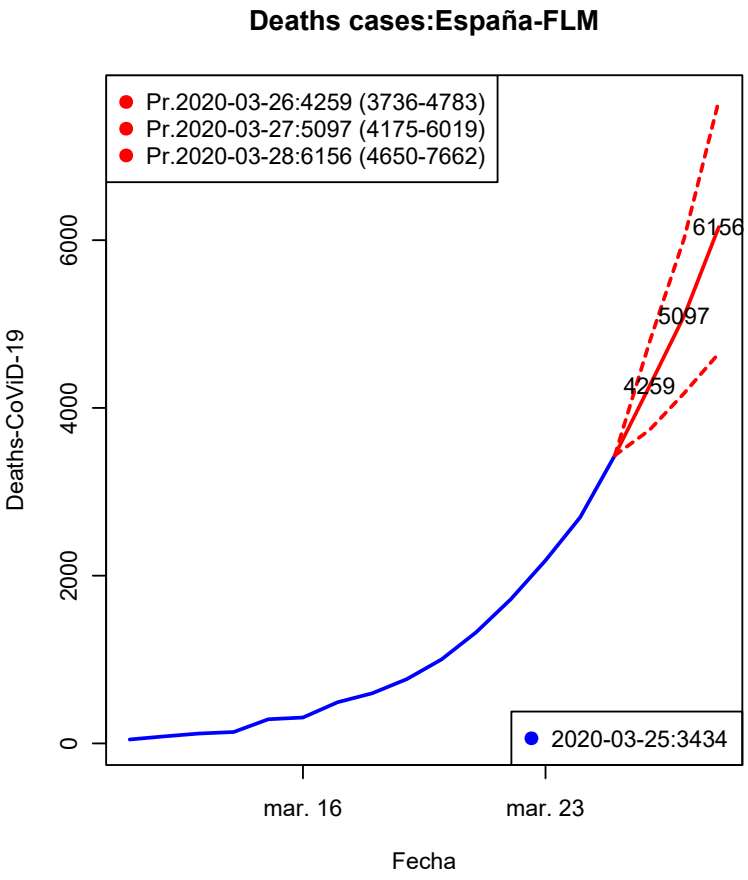
Tabla Fallecidos Ratio Incremento Modelo No Paramétrico.

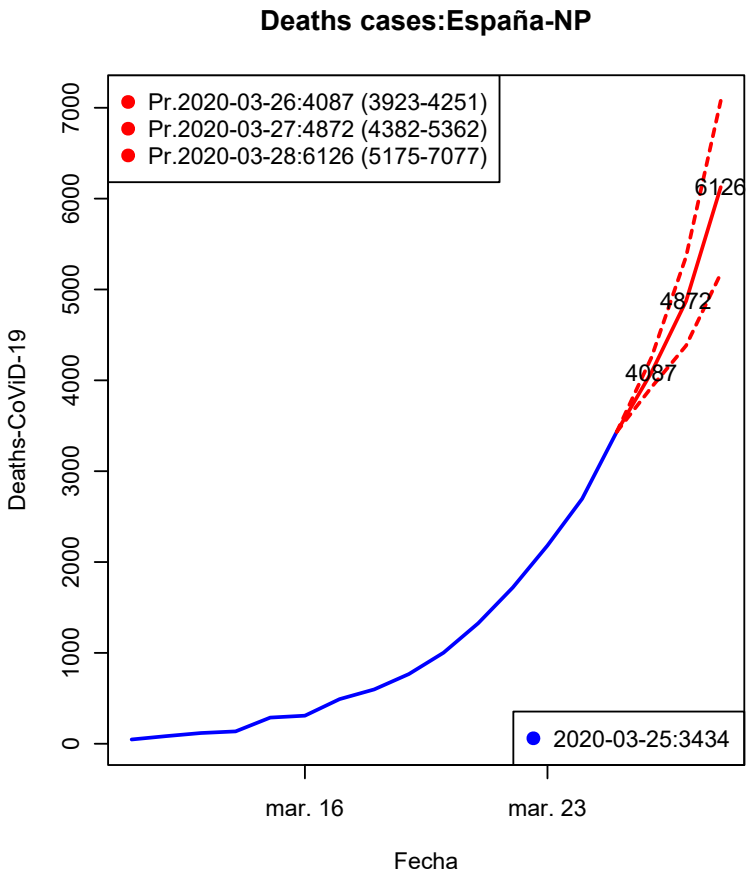
	Last	R:H1-lw	R:H1-fit	R:H1-up	R:H2-lw	R:H2-fit	R:H2-up
España	0.274	0.142	0.190	0.238	0.276	0.419	0.561
Andalucía	0.295	0.204	0.252	0.300	0.445	0.588	0.731
Castilla.La.Mancha	0.217	0.422	0.471	0.519	0.695	0.837	0.980
Castilla.y.León	0.328	0.259	0.308	0.356	0.445	0.587	0.730
Cataluña	0.827	0.204	0.253	0.302	0.481	0.623	0.766
Euskadi	0.164	0.093	0.141	0.189	0.165	0.308	0.451
Madrid	0.189	0.031	0.079	0.127	0.144	0.286	0.428

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

Confirmados Fallecidos

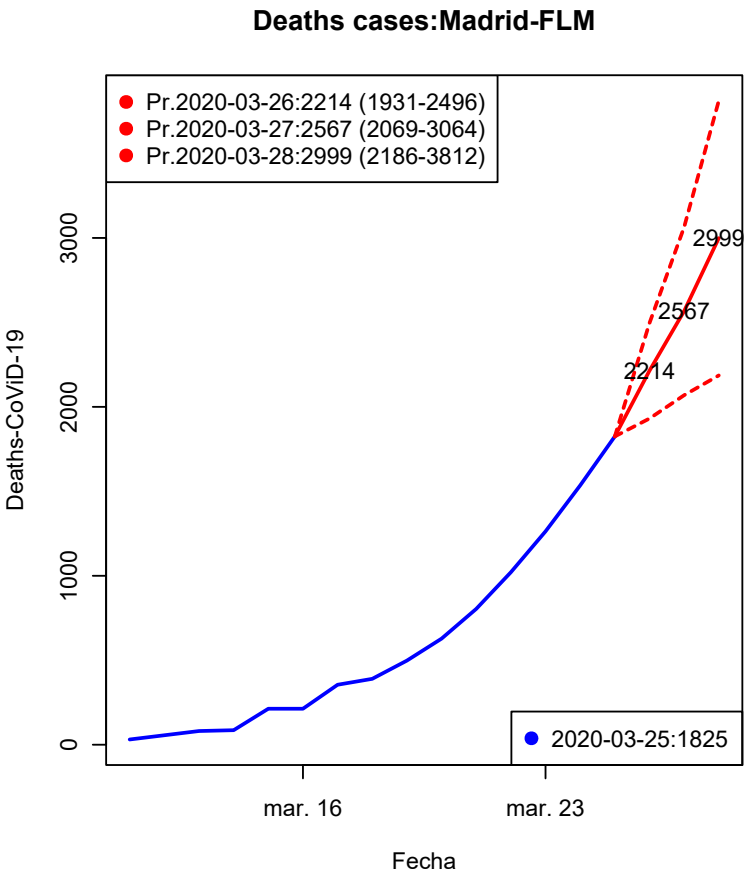
Fallecidos: España

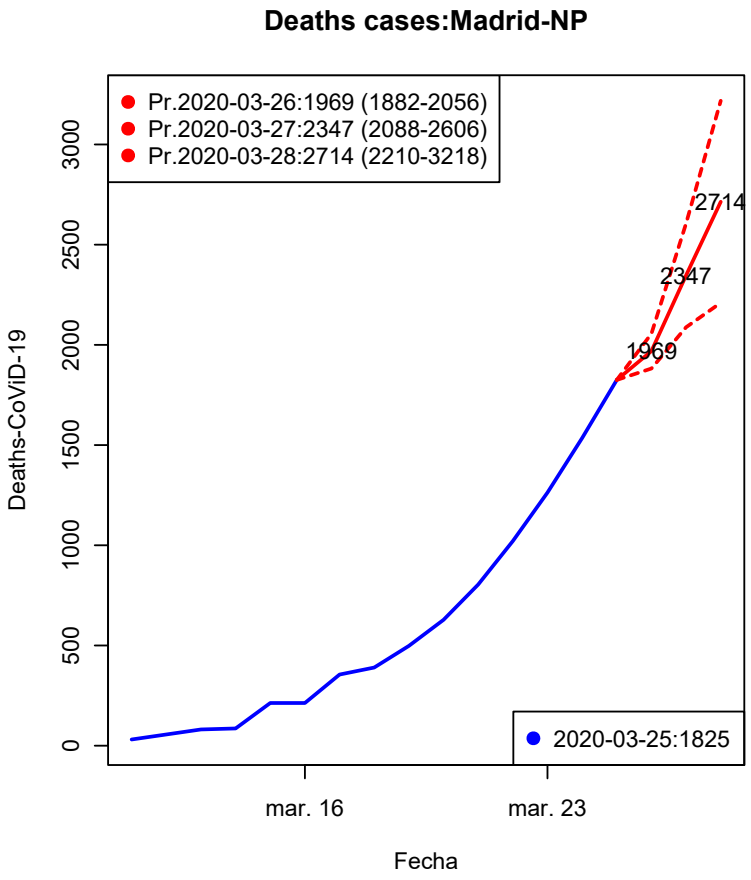




Confirmados Fallecidos

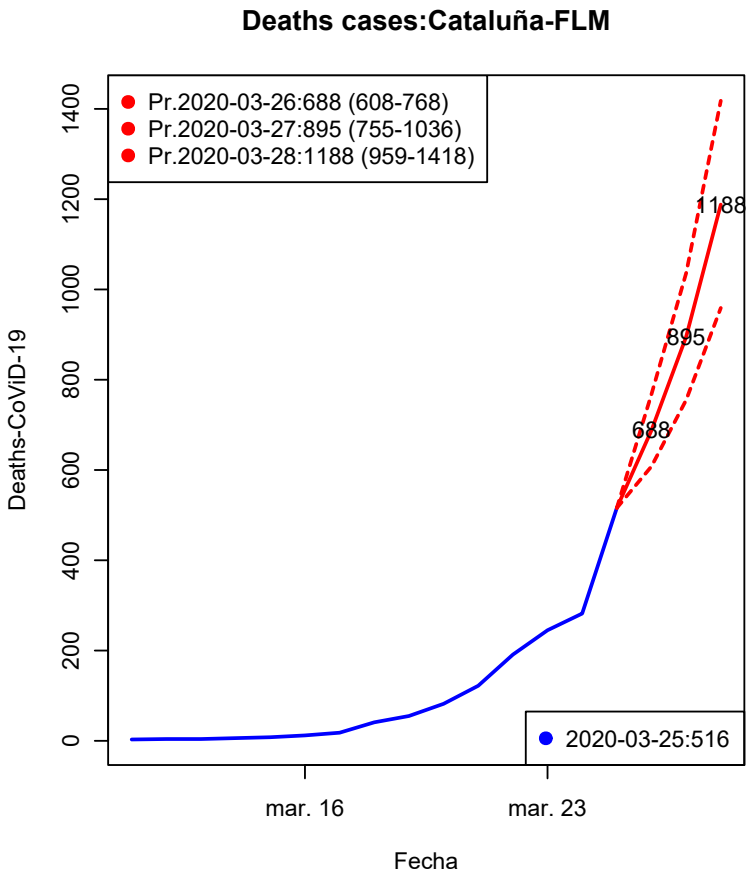
Fallecidos: Madrid

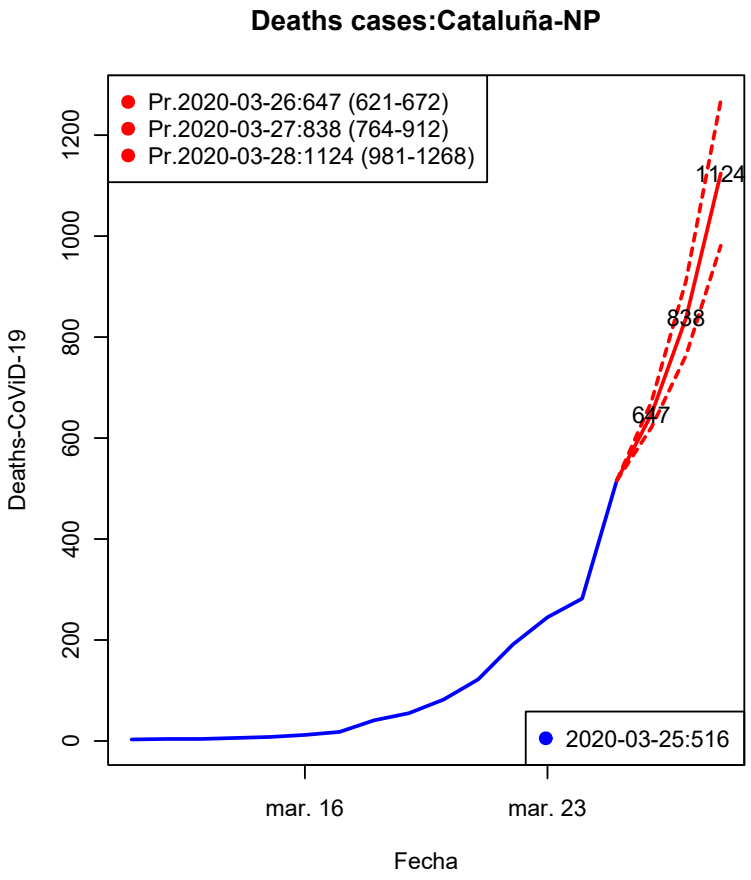




Confirmados Fallecidos

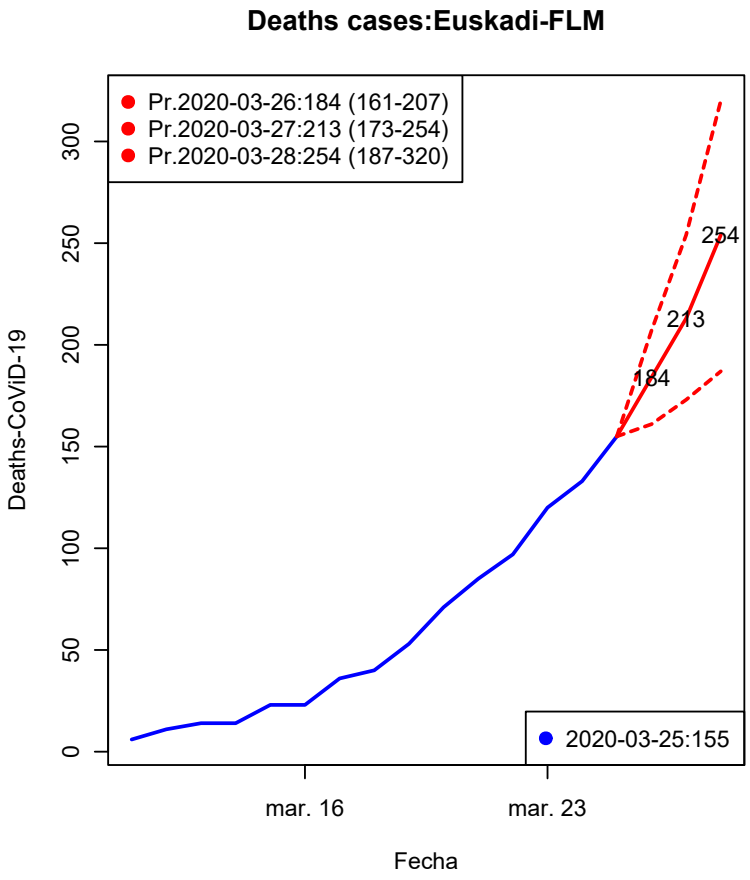
Fallecidos: Cataluña

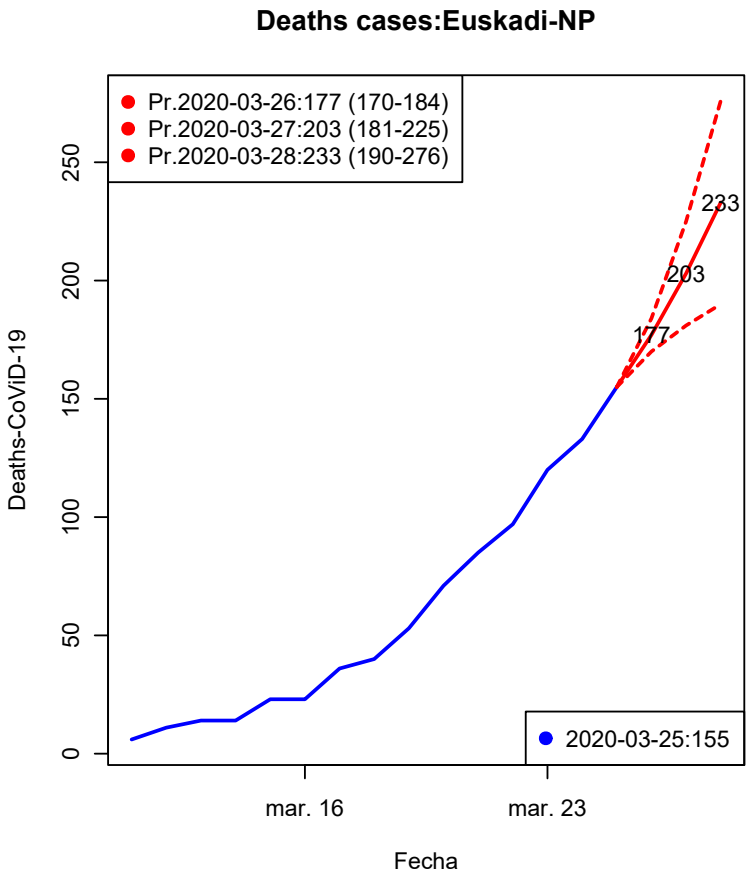




Confirmados Fallecidos

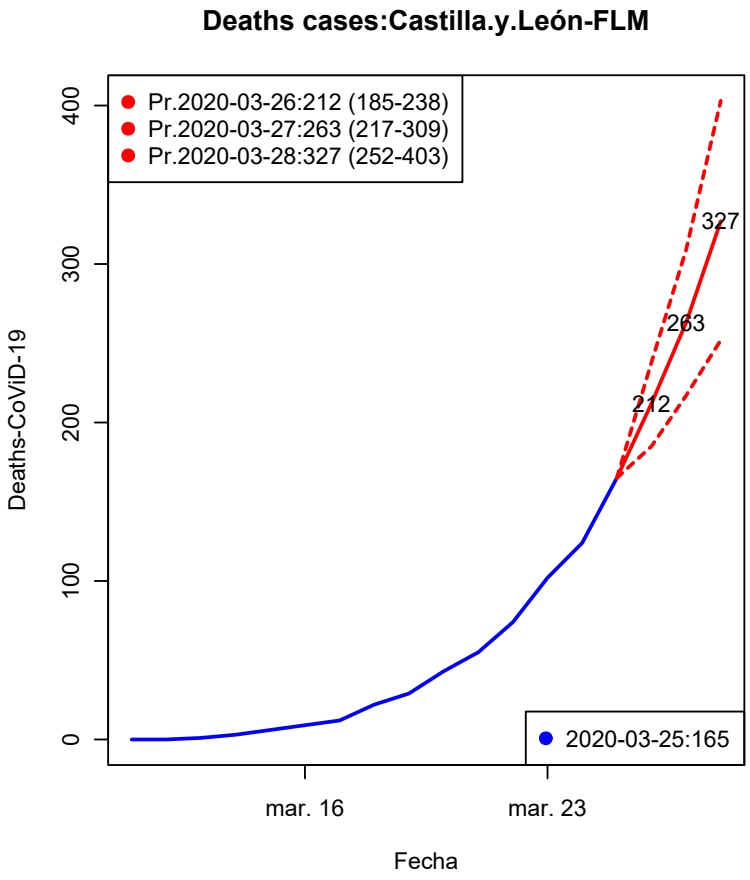
Fallecidos: Euskadi

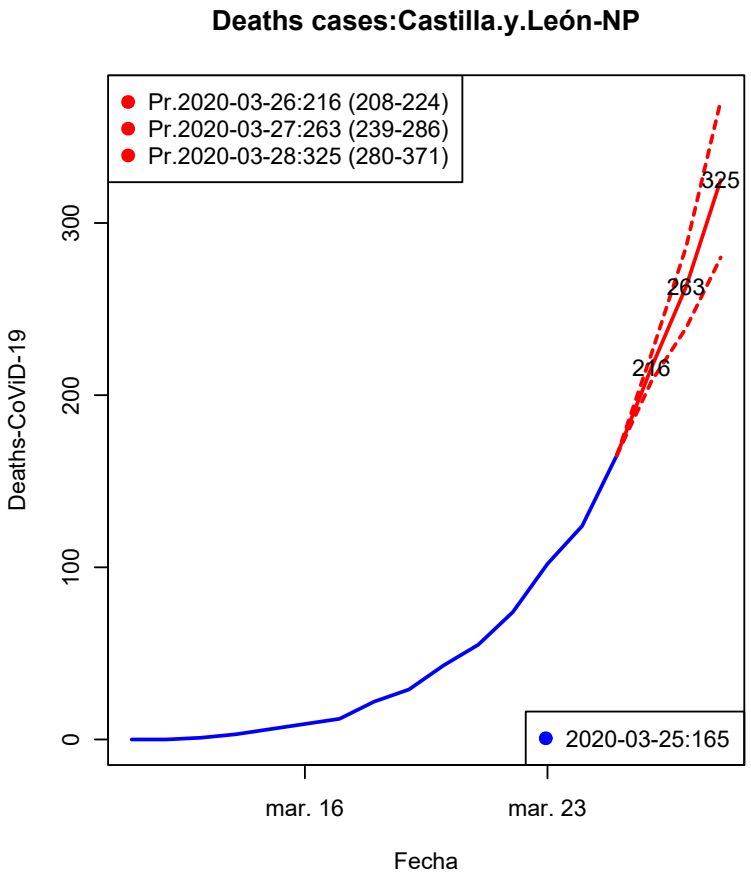




Confirmados Fallecidos

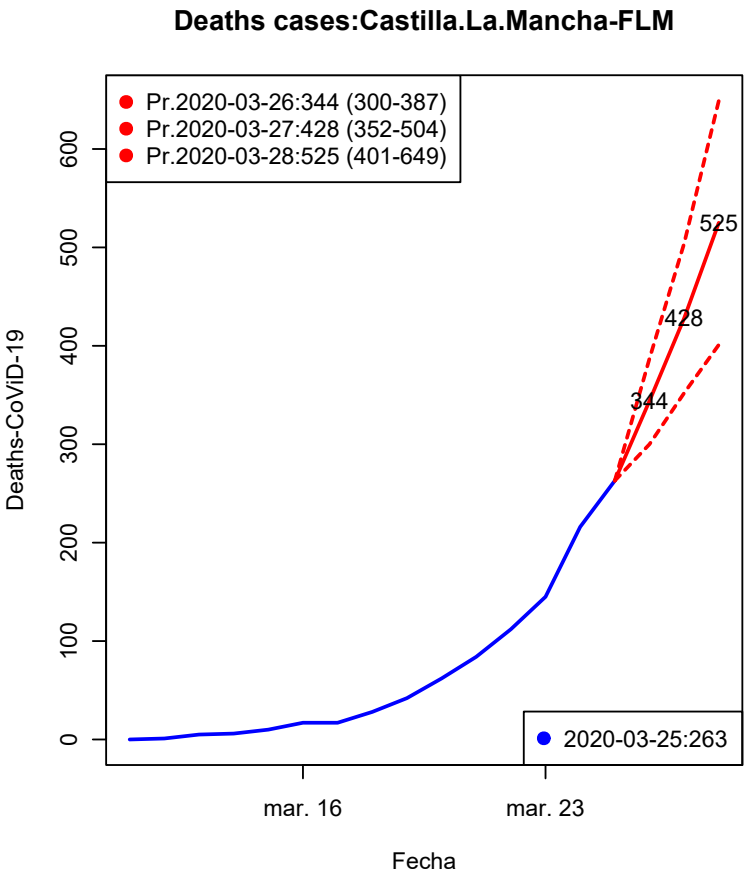
Fallecidos: Castilla y León

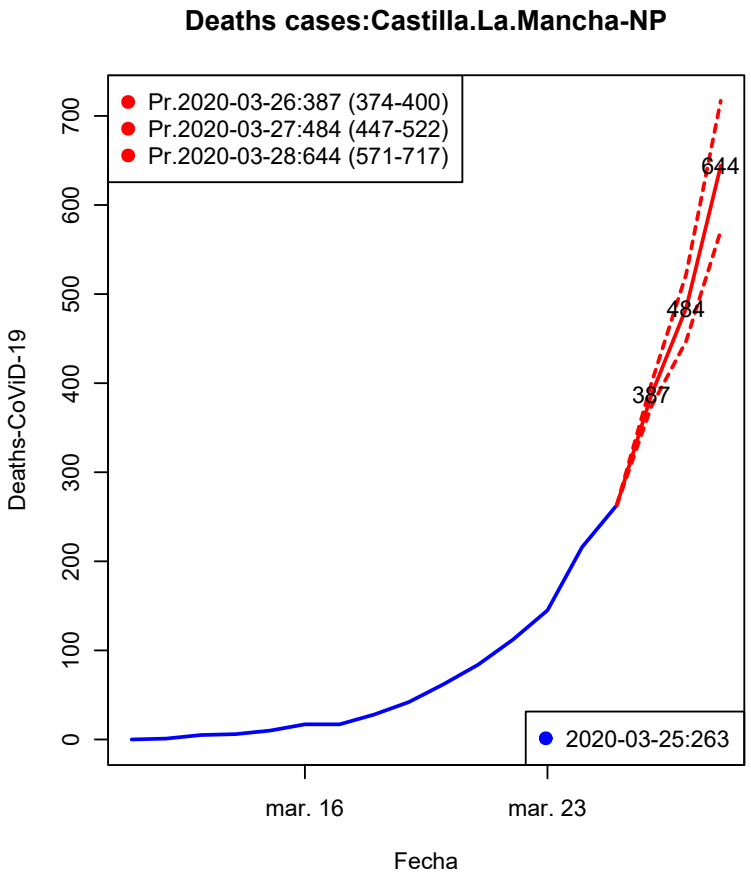




Confirmados Fallecidos

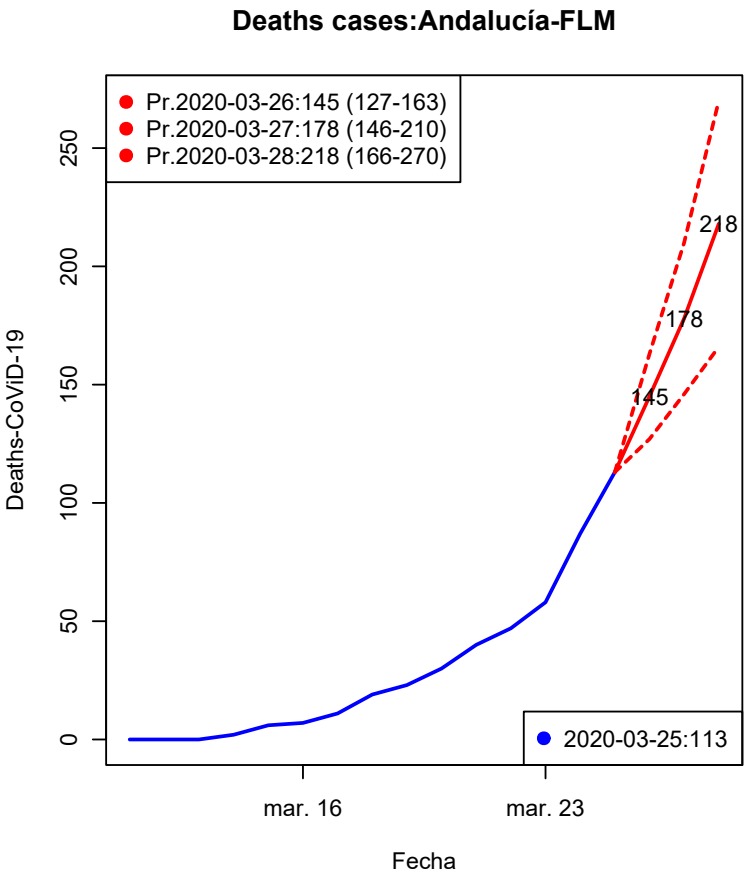
Fallecidos: Castilla-La Mancha

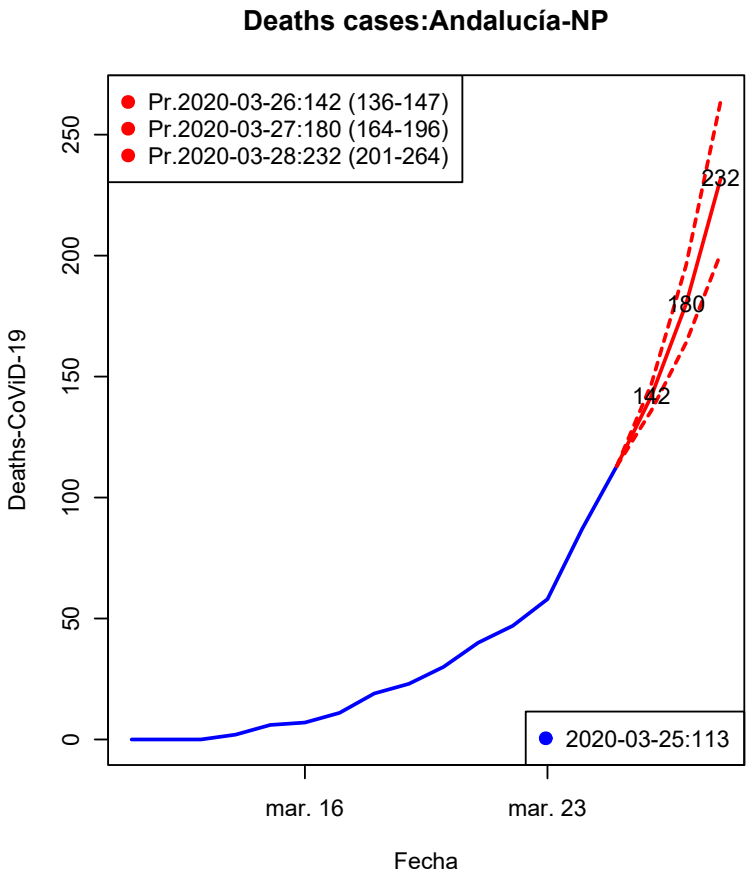




Confirmados Fallecidos

Fallecidos: Andalucía





Confirmados 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: $R^{(1)} = \{r^{(1)}(-14), \ldots, r^{(1)}(0)\}$.
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.