

Predicciones sobre CoViD-19

Manuel Febrero-Bande

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

13 de mayo de 2021



DEPARTAMENTO DE ESTATÍSTICA,
ANÁLISE MATEMÁTICA E OPTIMIZACIÓN



- Predicciones

- Predicciones Fallecidos

3 Panorama internacional

Datos

Aplicación Shiny:

<http://modestya.usc.es:3838/covid19prediction/>

Último dato fichero CCAA: 11/05/2021

Fuente: [https:](https://)

```
//cnecovid.isciii.es/covid19/resources/casos_tecnica_ccaa.csv
```

Predicciones:

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

	$10^2 \sigma_R^2$			$10^2 \sigma_R^2(rob.)$			r^2		
Horiz	FLM	NP	SAM	FLM	NP	SAM	FLM	NP	SAM
H1	0.015	0.003	0.012	0.004	0.002	0.005	0.484	0.896	0.576
H4	0.048	0.026	0.044	0.039	0.022	0.038	0.819	0.91	0.836
H8	0.199	0.121	0.186	0.175	0.094	0.166	0.826	0.903	0.838
H12	0.584	0.372	0.549	0.628	0.335	0.575	0.799	0.882	0.811
H15	1.273	0.84	1.204	1.316	0.689	1.199	0.757	0.852	0.77

Tabla Previsión Confirmados: Mod. Lineal.

Last=11/05/2021

	Last	IA14	IA7	H1	H4	H8	H12	H15
España	3592764	143	54	3598325	3606412	3618104	3622930	3629865
Andalucía	563923	146	65	564967	566876	569541	571270	573075
Aragón	121160	220	75	121393	121705	122114	122299	122524
Asturias	51405	60	19	51451	51494	51568	51531	51547
Canarias	54127	71	29	54249	54476	54797	55025	55254
Cantabria	29605	153	50	29661	29745	29856	29903	29967
Castilla.y.León	226266	133	53	226585	227032	227746	228041	228509
Castilla.La.Mancha	188532	146	50	188786	189050	189414	189405	189524
Cataluña	598006	188	65	599100	600593	602473	603220	604118
Ceuta	5772	27	2	5775	5773	5772	5772	5772
Comunidad.Valenciana	391954	26	9	392258	392402	392909	392625	392917
Extremadura	74649	77	30	74748	74865	75056	75111	75234
Galicia	124151	80	34	124356	124698	125221	125529	125892
Islas.Baleares	59844	47	19	59911	59984	60125	60149	60236
La.Rioja	30185	163	52	30224	30271	30339	30343	30374
Madrid	698958	222	87	700116	702068	704977	706535	708547
Melilla	8915	226	108	8932	8966	9017	9052	9090
Murcia	111628	53	21	111740	111849	112074	112081	112220
Navarra	61185	206	72	61283	61420	61605	61666	61760
País.Vasco	192499	269	78	192787	193133	193465	193324	193234

Cuadro: Previsión Confirmados: Mod. Lineal - Horiz. (días).

© 2014 Blackwell Publishing Ltd *Journal of Internal Medicine* 275: 103–112

Last=11/05/2021

	Last	IA14	IA7	H1	H4	H8	H12	H15
España	3592764	143	54	3595765	3604529	3615345	3623757	3629541
Andalucía	563923	146	65	564677	566613	569191	571208	572476
Aragón	121160	220	75	121289	121637	121951	122227	122382
Asturias	51405	60	19	51416	51467	51532	51565	51563
Canarias	54127	71	29	54219	54453	54740	54967	55112
Cantabria	29605	153	50	29640	29730	29829	29888	29928
Castilla.y.León	226266	133	53	226441	226962	227668	228383	228982
Castilla.La.Mancha	188532	146	50	188637	188958	189256	189499	189603
Cataluña	598006	188	65	598605	600205	601531	602487	602636
Ceuta	5772	27	2	5772	5772	5772	5773	5778
Comunidad.Valenciana	391954	26	9	392005	392355	392824	393846	394831
Extremadura	74649	77	30	74699	74849	75051	75296	75526
Galicia	124151	80	34	124296	124672	125179	125664	126017
Islas.Baleares	59844	47	19	59877	59979	60117	60297	60451
La.Rioja	30185	163	52	30201	30254	30319	30360	30387
Madrid	698958	222	87	699625	701635	704452	706548	708313
Melilla	8915	226	108	8931	8966	9021	9064	9097
Murcia	111628	53	21	111674	111834	112059	112379	112667
Navarra	61185	206	72	61239	61388	61551	61651	61699
País.Vasco	192499	269	78	192690	193103	193174	193012	192499

Cuadro: Previsión Confirmados: Mod. Aditivo - Horiz. (días).

Tabla Ratio Incr. Confirmados: Mod. No Paramétrico.

Last=11/05/2021

	Last	H1	H4	H8	H12	H15
España	0.0010	0.0018	0.0070	0.0149	0.0232	0.0308
Andalucía	0.0013	0.0021	0.0077	0.0166	0.0257	0.0341
Aragón	0.0012	0.0022	0.0082	0.0176	0.0272	0.0360
Asturias	0.0006	0.0014	0.0056	0.0119	0.0186	0.0249
Canarias	0.0017	0.0026	0.0096	0.0205	0.0316	0.0419
Cantabria	0.0015	0.0029	0.0104	0.0223	0.0339	0.0447
Castilla.y.León	0.0008	0.0015	0.0056	0.0120	0.0189	0.0254
Castilla.La.Mancha	0.0008	0.0016	0.0062	0.0132	0.0206	0.0275
Cataluña	0.0012	0.0023	0.0086	0.0184	0.0283	0.0374
Ceuta	0.0001	0.0011	0.0041	0.0088	0.0141	0.0191
Comunidad.Valenciana	0.0002	0.0009	0.0035	0.0078	0.0126	0.0173
Extremadura	0.0006	0.0012	0.0049	0.0105	0.0166	0.0224
Galicia	0.0011	0.0016	0.0063	0.0135	0.0211	0.0283
Islas.Baleares	0.0005	0.0011	0.0045	0.0097	0.0155	0.0210
La.Rioja	0.0009	0.0018	0.0067	0.0143	0.0223	0.0295
Madrid	0.0012	0.0021	0.0078	0.0168	0.0259	0.0343
Melilla	0.0014	0.0021	0.0078	0.0168	0.0261	0.0346
Murcia	0.0004	0.0011	0.0042	0.0090	0.0145	0.0197
Navarra	0.0011	0.0021	0.0079	0.0170	0.0262	0.0347
País.Vasco	0.0014	0.0031	0.0114	0.0241	0.0364	0.0479

Cuadro: Previsión Ratio Incr. Confirmados: Mod. No Paramétrico - Horiz.
(días).

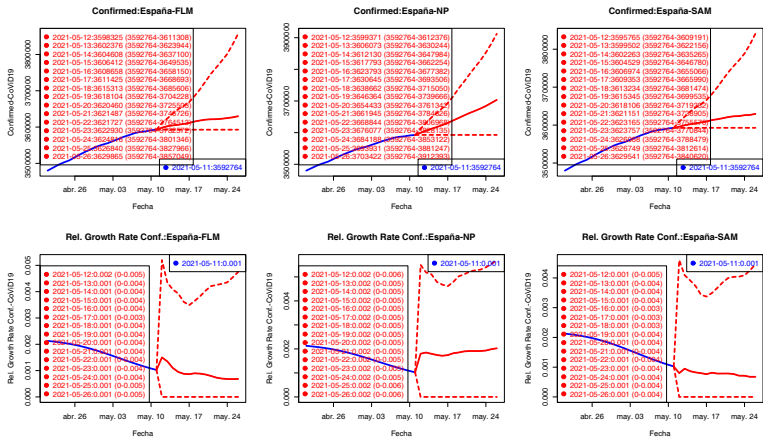
Tabla Ratio Incr. Confirmados: Mod. Aditivo.

Last=11/05/2021

	Last	H1	H4	H8	H12	H15
España	0.0010	0.0008	0.0033	0.0063	0.0086	0.0102
Andalucía	0.0013	0.0013	0.0048	0.0093	0.0129	0.0152
Aragón	0.0012	0.0011	0.0039	0.0065	0.0088	0.0101
Asturias	0.0006	0.0002	0.0012	0.0025	0.0031	0.0031
Canarias	0.0017	0.0017	0.0060	0.0113	0.0155	0.0182
Cantabria	0.0015	0.0012	0.0042	0.0076	0.0096	0.0109
Castilla.y.León	0.0008	0.0008	0.0031	0.0062	0.0094	0.0120
Castilla.La.Mancha	0.0008	0.0006	0.0023	0.0038	0.0051	0.0057
Cataluña	0.0012	0.0010	0.0037	0.0059	0.0075	0.0077
Ceuta	0.0001	0.0000	0.0000	0.0000	0.0002	0.0010
Comunidad.Valenciana	0.0002	0.0001	0.0010	0.0022	0.0048	0.0073
Extremadura	0.0006	0.0007	0.0027	0.0054	0.0087	0.0118
Galicia	0.0011	0.0012	0.0042	0.0083	0.0122	0.0150
Islas.Baleares	0.0005	0.0006	0.0023	0.0046	0.0076	0.0101
La.Rioja	0.0009	0.0005	0.0023	0.0045	0.0058	0.0067
Madrid	0.0012	0.0010	0.0038	0.0079	0.0109	0.0134
Melilla	0.0014	0.0018	0.0057	0.0119	0.0167	0.0204
Murcia	0.0004	0.0004	0.0018	0.0039	0.0067	0.0093
Navarra	0.0011	0.0009	0.0033	0.0060	0.0076	0.0084
País.Vasco	0.0014	0.0010	0.0031	0.0035	0.0027	0.0000

Cuadro: Previsión Ratio Incr. Confirmados: Mod. Aditivo - Horiz. (días).

Confirmados: España

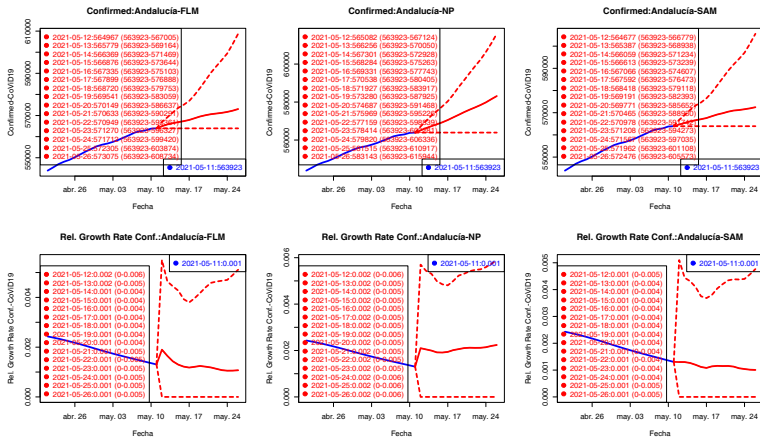


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

← Confirmados

← Fallecidos

Confirmados: Andalucía

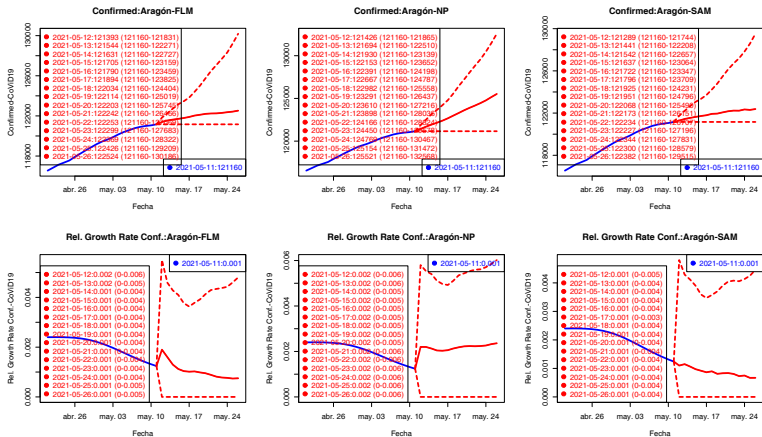


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

◀ Fallecidos

Confirmados: Aragón

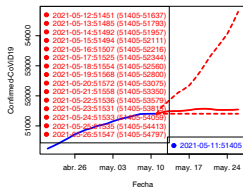


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

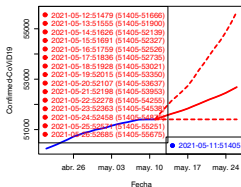
◀ Confirmados ▶ Fallecidos

Confirmados: Asturias

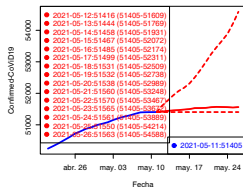
Confirmed: Asturias-FLM



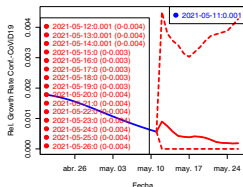
Confirmed: Asturias-NP



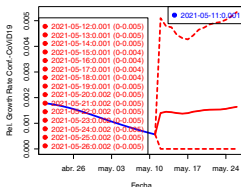
Confirmed: Asturias-SAM



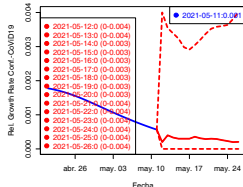
Rel. Growth Rate Conf.: Asturias-FLM



Rel. Growth Rate Conf.: Asturias-NP



Rel. Growth Rate Conf.: Asturias-SAM

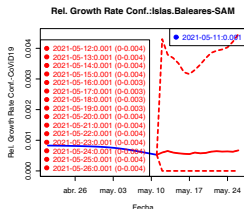
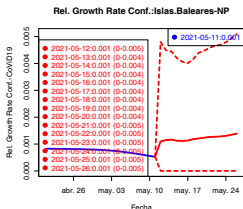
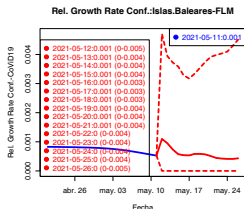
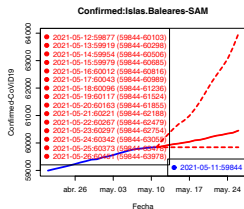
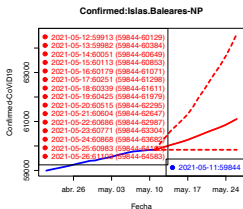
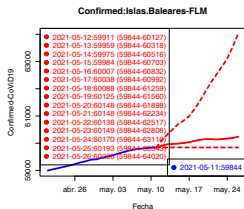


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

◀ Fallecidos

Confirmados: Islas Baleares



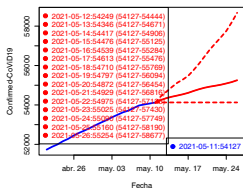
Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

Confirmados

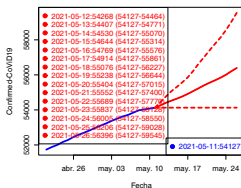
Fallecidos

Confirmados: Canarias

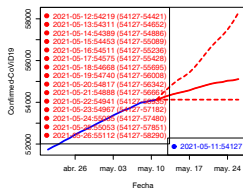
Confirmed:Canarias-FLM



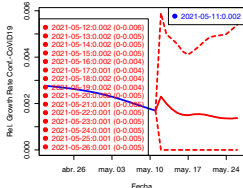
Confirmed:Canarias-NP



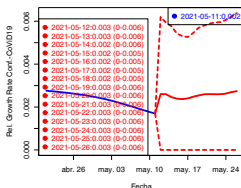
Confirmed:Canarias-SAM



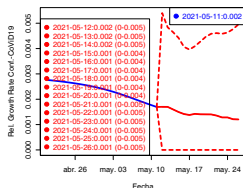
Rel. Growth Rate Conf.:Canarias-FLM



Rel. Growth Rate Conf.:Canarias-NP



Rel. Growth Rate Conf.:Canarias-SAM



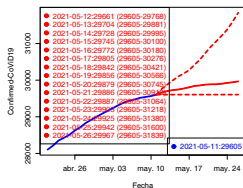
Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

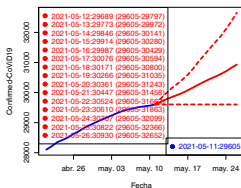
◀ Fallecidos

Confirmados: Cantabria

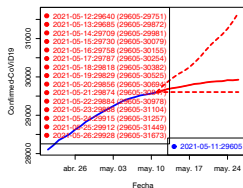
Confirmed:Cantabria-FLM



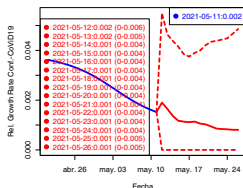
Confirmed:Cantabria-NP



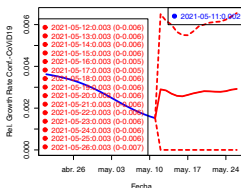
Confirmed:Cantabria-SAM



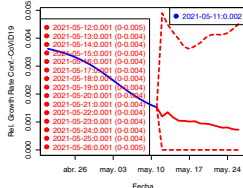
Rel. Growth Rate Conf.:Cantabria-FLM



Rel. Growth Rate Conf.:Cantabria-NP



Rel. Growth Rate Conf.:Cantabria-SAM

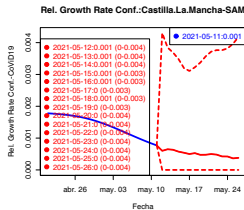
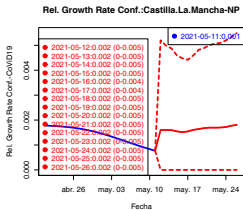
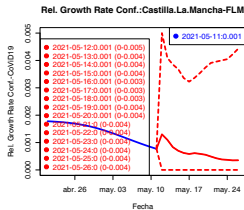
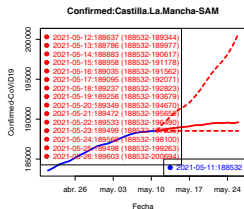
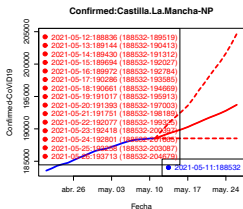
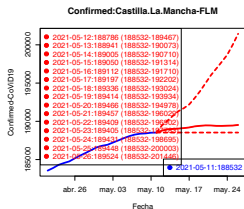


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

◀ Fallecidos

Confirmados: Castilla-La Mancha

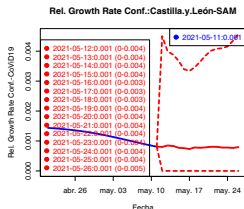
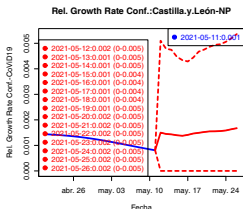
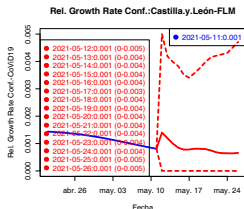
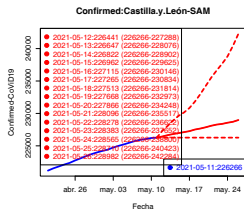
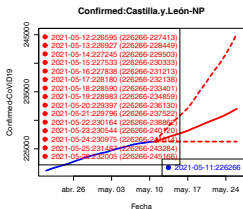
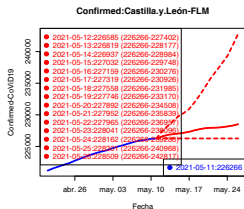


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

◀ Fallecidos

Confirmados: Castilla y León

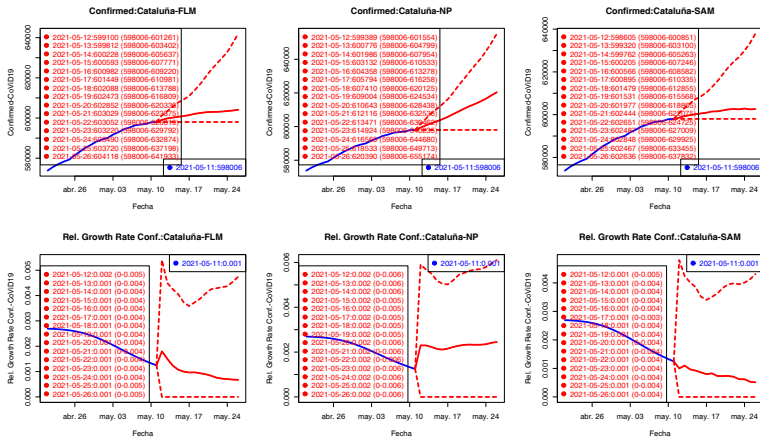


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

← Confirmados

← Fallecidos

Confirmados: Cataluña

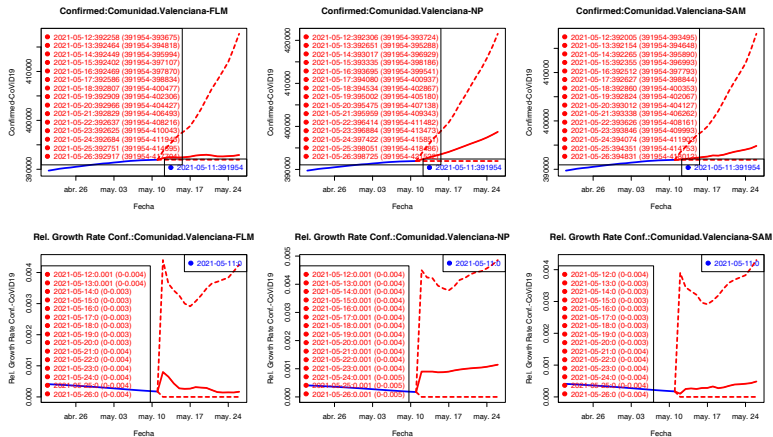


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

← Confirmados

← Fallecidos

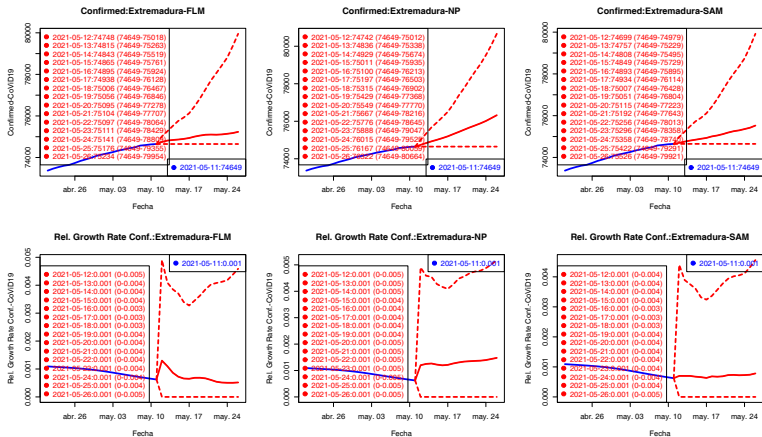
Confirmados: C. Valenciana



Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados ◀ Fallecidos

Confirmados: Extremadura

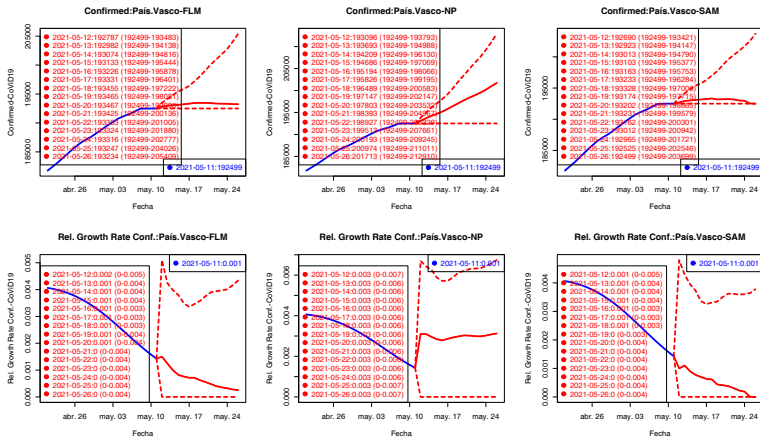


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

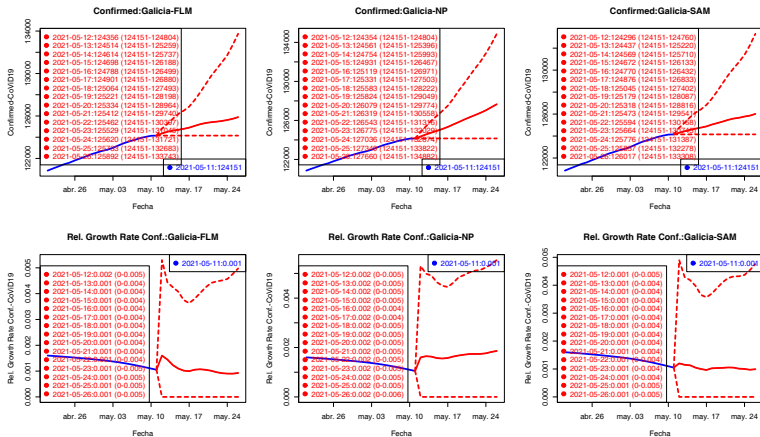
← Confirmados

← Fallecidos

Confirmados: País Vasco



Confirmados: Galicia

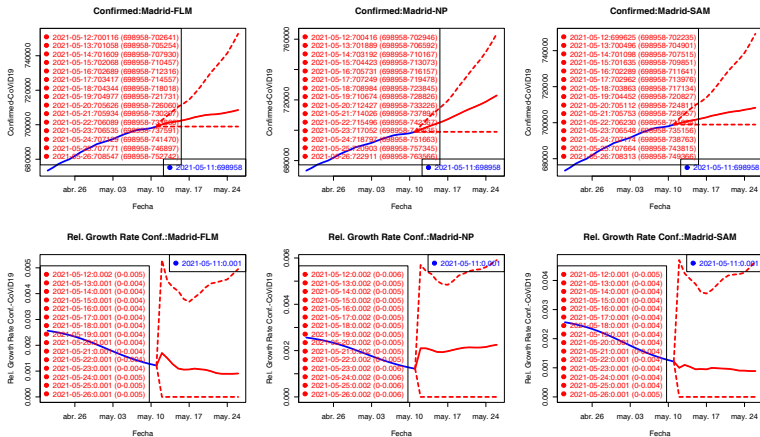


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

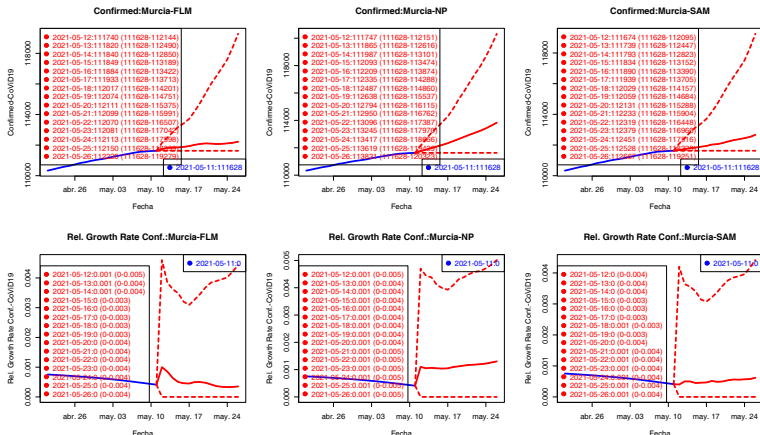
◀ Fallecidos

Confirmados: Madrid



Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

Confirmados: Murcia

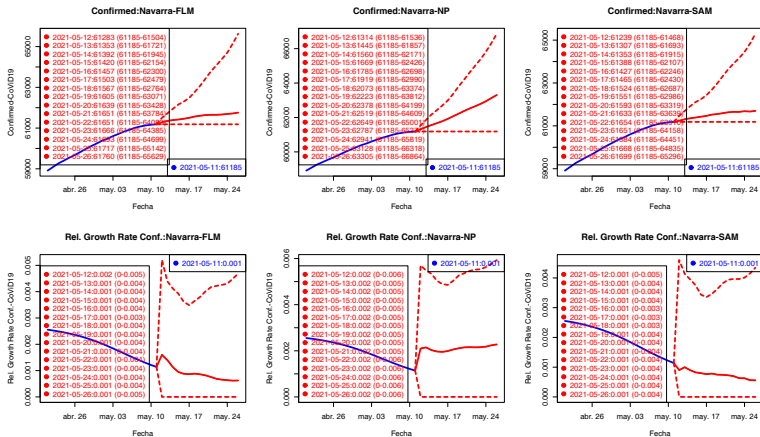


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

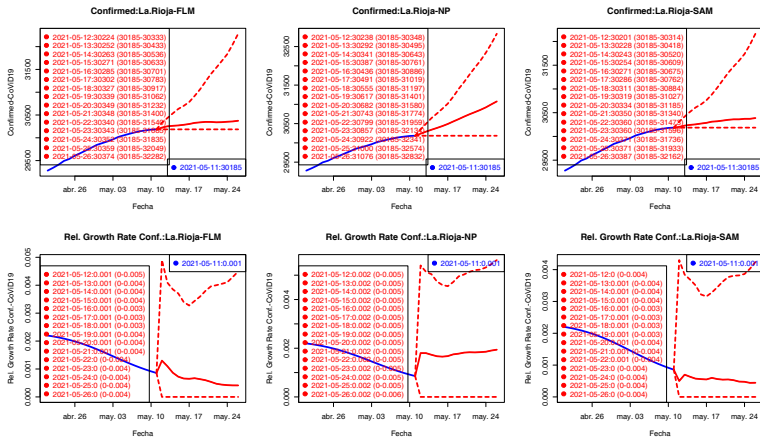
◀ Confirmados

◀ Fallecidos

Confirmados: Navarra



Confirmados: La Rioja



Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

← Confirmados

← Fallecidos

Table of Contents

- 1 Casos Confirmados
 - Predicciones
- 2 Fallecidos
 - Predicciones Fallecidos
- 3 Panorama internacional

Modelos para fallecidos por CoViD-19

Último dato: 11/05/2021 Fuente: https://cnecovid.isciii.es/covid19/resources/casos_hosp_uci_def_sexo_edad_provres.csv

Predicciones:

▶ España

▶ Andalucía

▶ Aragón

▶ Asturias

▶ I. Baleares

▶ Canarias

▶ Cantabria

▶ Castilla-La Mancha

▶ Castilla y León

▶ Cataluña

▶ C. Valenciana

▶ Extremadura

▶ País Vasco

▶ Galicia

▶ Madrid

▶ Murcia

▶ Navarra

▶ La Rioja

▶ Mod Lineal

▶ Mod NP

▶ Mod Aditivo

	$10^2 \sigma_R^2$			$10^2 \sigma_R^2(rob.)$			r^2		
Horiz	FLM	NP	SAM	FLM	NP	SAM	FLM	NP	SAM
H1	0.005	0.004	0.004	0.001	0.001	0.001	0.566	0.627	0.57
H4	0.018	0.017	0.017	0.008	0.009	0.007	0.82	0.833	0.832
H8	0.061	0.065	0.056	0.034	0.039	0.028	0.859	0.854	0.87
H12	0.13	0.141	0.116	0.088	0.097	0.073	0.865	0.858	0.88
H15	0.205	0.229	0.173	0.158	0.19	0.13	0.873	0.862	0.893

Tabla Previsión Fallecidos: Mod. Lineal.

Last=11/05/2021

	Last	H1	H4	H8	H12	H15
España	78816	78858	78886	78927	78822	78816
Andalucía	9700	9709	9721	9737	9738	9728
Aragón	3450	3453	3457	3465	3464	3462
Asturias	1952	1953	1953	1953	1952	1952
Canarias	743	744	747	752	755	757
Cantabria	560	560	561	561	560	560
Castilla.y.León	6738	6740	6740	6739	6738	6738
Castilla.La.Mancha	5865	5867	5865	5865	5865	5865
Cataluña	14231	14235	14233	14231	14231	14231
Ceuta	112	113	114	115	116	116
Comunidad.Valenciana	7317	7319	7317	7317	7317	7317
Extremadura	1778	1778	1778	1778	1778	1778
Galicia	2379	2380	2379	2379	2379	2379
Islas.Baleares	830	830	830	831	830	830
La.Rioja	765	766	766	769	768	768
Madrid	15189	15199	15210	15226	15213	15189
Melilla	96	97	98	101	103	105
Murcia	1592	1592	1592	1592	1592	1592
Navarra	1166	1167	1167	1168	1166	1166
País.Vasco	4353	4356	4360	4359	4353	4353

Cuadro: Previsión fallecidos: Mod. lineal - Horiz. (días).

Tabla Previsión Fallecidos: Mod. No Paramétrico.

Last=11/05/2021

	Last	H1	H4	H8	H12	H15
España	78816	78903	79196	79643	80071	80479
Andalucía	9700	9713	9754	9817	9879	9938
Aragón	3450	3454	3467	3488	3507	3526
Asturias	1952	1954	1961	1971	1980	1989
Canarias	743	744	748	755	761	767
Cantabria	560	561	563	566	569	571
Castilla y León	6738	6745	6768	6803	6836	6867
Castilla-La Mancha	5865	5871	5891	5921	5949	5977
Cataluña	14231	14245	14295	14370	14441	14508
Ceuta	112	113	114	117	119	121
Comunidad Valenciana	7317	7323	7346	7380	7412	7443
Extremadura	1778	1780	1786	1795	1804	1812
Galicia	2379	2381	2389	2401	2413	2424
Islas Baleares	830	831	834	838	842	845
La Rioja	765	766	769	773	777	781
Madrid	15189	15207	15267	15358	15447	15531
Melilla	96	97	98	100	102	104
Murcia	1592	1593	1599	1606	1613	1620
Navarra	1166	1168	1173	1181	1190	1197
País Vasco	4353	4360	4382	4416	4448	4480

Cuadro: Previsión fallecidos: Mod. No Paramétrico - Horiz. (días).

Tabla Previsión Fallecidos: Mod. Aditivo.

Last=11/05/2021

	Last	H1	H4	H8	H12	H15
España	78816	78834	78927	79047	79077	79045
Andalucía	9700	9706	9725	9750	9765	9770
Aragón	3450	3452	3457	3466	3470	3470
Asturias	1952	1952	1953	1953	1953	1952
Canarias	743	744	747	752	756	758
Cantabria	560	560	560	561	560	560
Castilla y León	6738	6738	6745	6751	6755	6753
Castilla-La Mancha	5865	5865	5871	5879	5879	5875
Cataluña	14231	14231	14235	14235	14231	14231
Ceuta	112	113	113	115	116	116
Comunidad Valenciana	7317	7317	7321	7327	7335	7333
Extremadura	1778	1778	1780	1782	1783	1784
Galicia	2379	2379	2382	2383	2384	2383
Islas Baleares	830	830	831	833	834	835
La Rioja	765	765	766	768	769	769
Madrid	15189	15195	15212	15243	15243	15239
Melilla	96	97	98	100	102	103
Murcia	1592	1592	1593	1595	1596	1596
Navarra	1166	1166	1169	1173	1175	1177
País Vasco	4353	4355	4362	4368	4363	4354

Cuadro: Previsión fallecidos: Mod. Aditivo - Horiz. (días).

Tabla Ratio Incr. Fallecidos: Mod. Lineal.

Last=11/05/2021

	Last	H1	H4	H8	H12	H15
España	0.0005	0.0005	0.0009	0.0014	0.0001	0.0000
Andalucía	0.0008	0.0009	0.0022	0.0038	0.0039	0.0028
Aragón	0.0008	0.0008	0.0020	0.0043	0.0042	0.0036
Asturias	0.0004	0.0004	0.0005	0.0007	0.0000	0.0000
Canarias	0.0017	0.0018	0.0058	0.0120	0.0160	0.0189
Cantabria	0.0005	0.0005	0.0010	0.0018	0.0004	0.0000
Castilla.y.León	0.0003	0.0004	0.0003	0.0001	0.0000	0.0000
Castilla.La.Mancha	0.0003	0.0003	0.0000	0.0000	0.0000	0.0000
Cataluña	0.0003	0.0003	0.0001	0.0000	0.0000	0.0000
Ceuta	0.0046	0.0050	0.0144	0.0247	0.0366	0.0380
Comunidad.Valenciana	0.0001	0.0003	0.0000	0.0000	0.0000	0.0000
Extremadura	0.0002	0.0003	0.0000	0.0000	0.0000	0.0000
Galicia	0.0002	0.0002	0.0000	0.0000	0.0000	0.0000
Islas.Baleares	0.0003	0.0004	0.0004	0.0011	0.0000	0.0000
La.Rioja	0.0007	0.0008	0.0018	0.0046	0.0045	0.0045
Madrid	0.0007	0.0007	0.0014	0.0024	0.0016	0.0000
Melilla	0.0062	0.0077	0.0243	0.0490	0.0756	0.0901
Murcia	0.0001	0.0002	0.0000	0.0000	0.0000	0.0000
Navarra	0.0008	0.0006	0.0012	0.0018	0.0000	0.0000
País.Vasco	0.0010	0.0006	0.0016	0.0014	0.0000	0.0000

Cuadro: Previsión Ratio Incr. Fallecidos: Mod. lineal - Horiz. (días).

Tabla Ratio Incr. Fallecidos: Mod. No Paramétrico.

Last=11/05/2021

	Last	H1	H4	H8	H12	H15
España	0.0005	0.0011	0.0048	0.0105	0.0159	0.0211
Andalucía	0.0008	0.0013	0.0055	0.0121	0.0184	0.0246
Aragón	0.0008	0.0012	0.0050	0.0109	0.0166	0.0221
Asturias	0.0004	0.0010	0.0044	0.0095	0.0144	0.0190
Canarias	0.0017	0.0019	0.0071	0.0157	0.0238	0.0319
Cantabria	0.0005	0.0011	0.0046	0.0101	0.0153	0.0202
Castilla.y.León	0.0003	0.0010	0.0044	0.0096	0.0145	0.0191
Castilla.La.Mancha	0.0003	0.0010	0.0044	0.0095	0.0144	0.0190
Cataluña	0.0003	0.0010	0.0045	0.0097	0.0147	0.0195
Ceuta	0.0046	0.0053	0.0187	0.0408	0.0602	0.0773
Comunidad.Valenciana	0.0001	0.0009	0.0040	0.0087	0.0130	0.0172
Extremadura	0.0002	0.0010	0.0044	0.0095	0.0144	0.0190
Galicia	0.0002	0.0010	0.0043	0.0094	0.0142	0.0187
Islas.Baleares	0.0003	0.0009	0.0043	0.0093	0.0140	0.0186
La.Rioja	0.0007	0.0011	0.0046	0.0101	0.0154	0.0204
Madrid	0.0007	0.0012	0.0051	0.0112	0.0170	0.0225
Melilla	0.0062	0.0053	0.0189	0.0430	0.0659	0.0856
Murcia	0.0001	0.0009	0.0041	0.0089	0.0134	0.0176
Navarra	0.0008	0.0015	0.0060	0.0132	0.0202	0.0269
País.Vasco	0.0010	0.0017	0.0066	0.0144	0.0219	0.0293

Cuadro: Previsión Ratio Incr. Fallecidos: Mod. No Paramétrico - Horiz. (días).

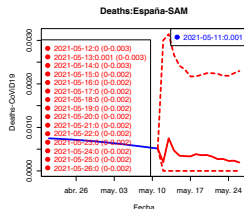
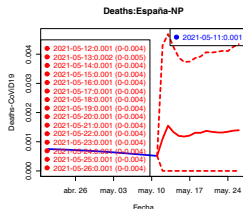
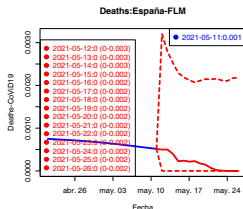
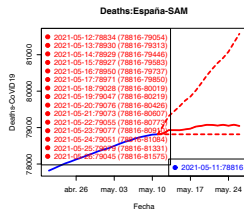
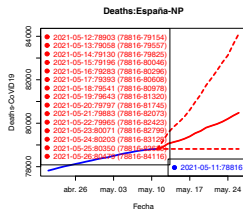
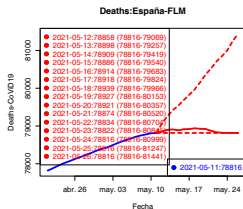
Tabla Ratio Incr. Fallecidos: Mod. Aditivo.

Last=11/05/2021

	Last	H1	H4	H8	H12	H15
España	0.0005	0.0002	0.0014	0.0029	0.0033	0.0029
Andalucía	0.0008	0.0006	0.0026	0.0052	0.0067	0.0072
Aragón	0.0008	0.0005	0.0021	0.0047	0.0059	0.0059
Asturias	0.0004	0.0000	0.0004	0.0003	0.0005	0.0000
Canarias	0.0017	0.0016	0.0057	0.0115	0.0172	0.0205
Cantabria	0.0005	0.0002	0.0004	0.0010	0.0000	0.0000
Castilla.y.León	0.0003	0.0000	0.0010	0.0019	0.0026	0.0022
Castilla.La.Mancha	0.0003	0.0000	0.0010	0.0024	0.0023	0.0017
Cataluña	0.0003	0.0000	0.0003	0.0003	0.0000	0.0000
Ceuta	0.0046	0.0048	0.0126	0.0237	0.0369	0.0383
Comunidad.Valenciana	0.0001	0.0000	0.0006	0.0013	0.0024	0.0022
Extremadura	0.0002	0.0000	0.0009	0.0020	0.0029	0.0032
Galicia	0.0002	0.0000	0.0011	0.0016	0.0021	0.0017
Islas.Baleares	0.0003	0.0001	0.0015	0.0032	0.0053	0.0061
La.Rioja	0.0007	0.0004	0.0017	0.0045	0.0057	0.0058
Madrid	0.0007	0.0004	0.0015	0.0036	0.0036	0.0033
Melilla	0.0062	0.0079	0.0221	0.0414	0.0593	0.0674
Murcia	0.0001	0.0000	0.0008	0.0017	0.0026	0.0026
Navarra	0.0008	0.0004	0.0027	0.0064	0.0075	0.0094
País.Vasco	0.0010	0.0004	0.0022	0.0034	0.0024	0.0002

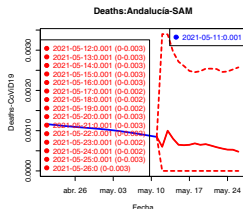
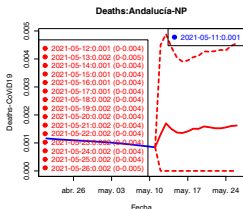
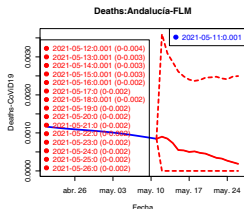
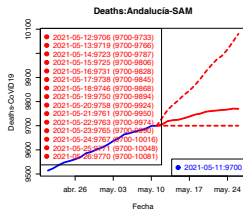
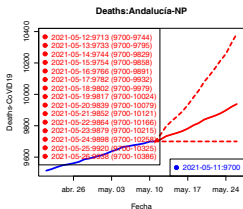
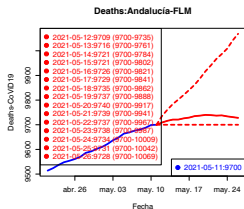
Cuadro: Previsión Ratio Incr. Fallecidos: Mod. Aditivo - Horizonte 1 – 5 días.

Fallecidos: España



Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

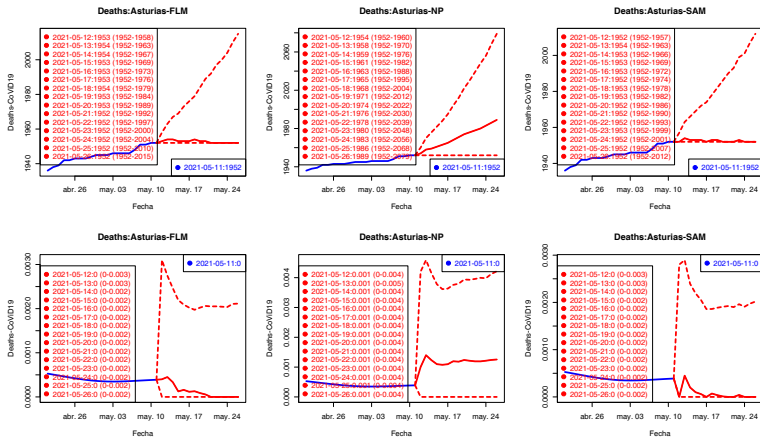
Fallecidos: Andalucía



Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

◀ ◻ ▶ ◀ ◻ ▶ ◀ ≡ ▶ ◀ ≡ ▶ ≡ | ≡ ↺ 🔍 ↻

Fallecidos: Asturias

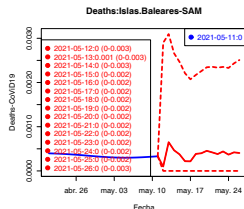
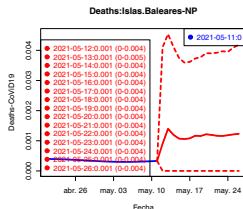
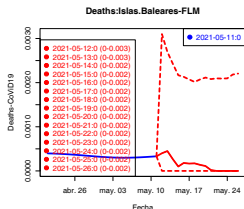
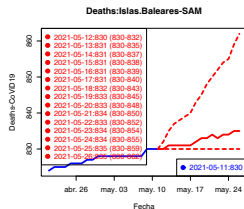
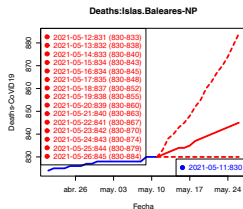
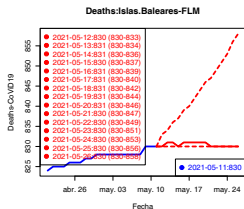


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

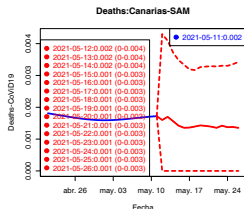
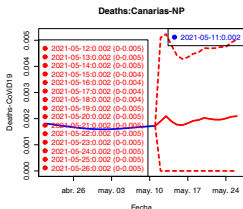
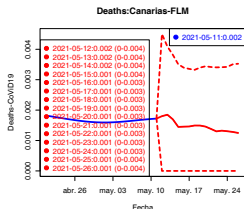
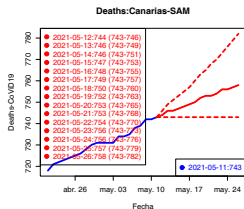
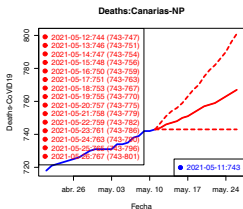
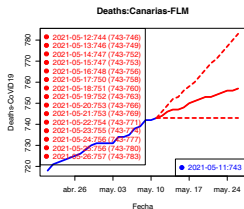
◀ Fallecidos

Fallecidos: Islas Baleares



Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

Fallecidos: Canarias

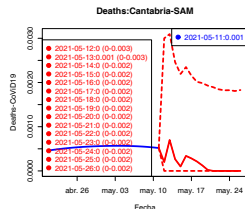
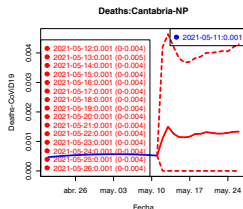
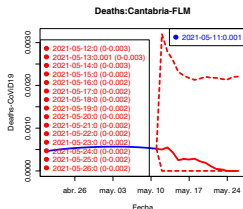
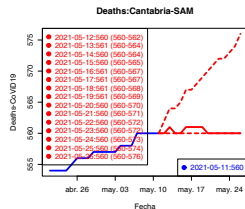
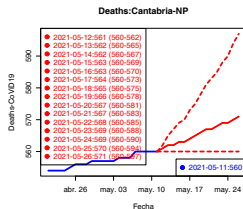
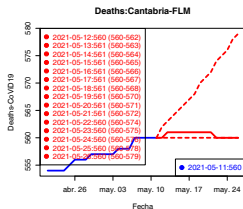


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

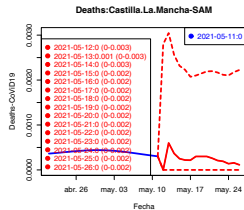
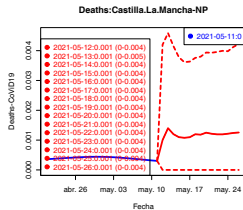
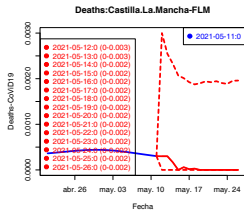
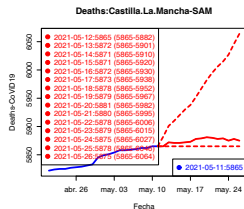
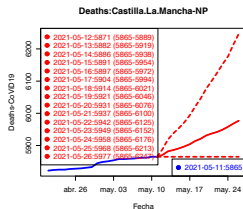
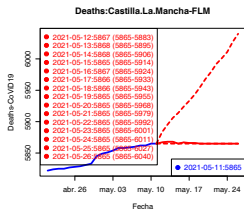
◀ Fallecidos

Fallecidos: Cantabria



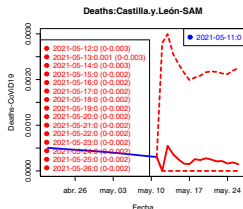
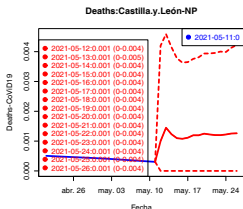
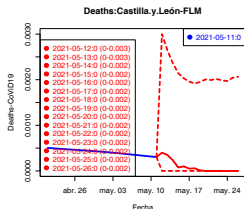
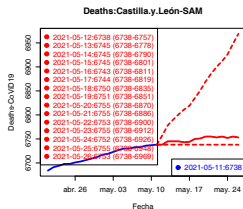
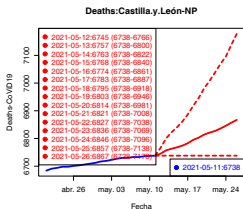
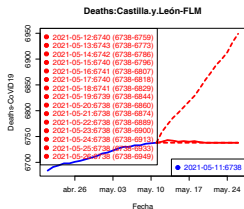
Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

Fallecidos: Castilla-La Mancha



Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

Fallecidos: Castilla y León

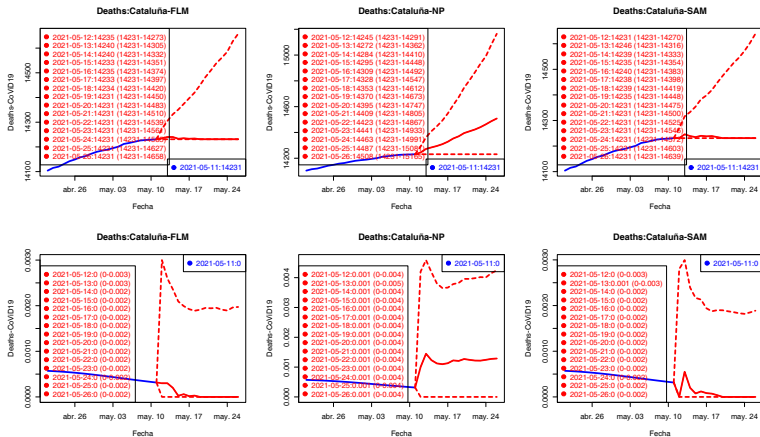


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

◀ Fallecidos

Fallecidos: Cataluña

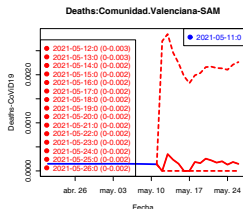
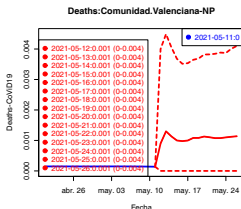
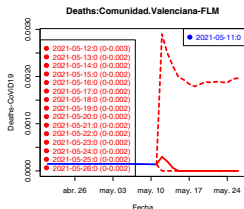
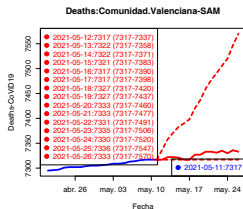
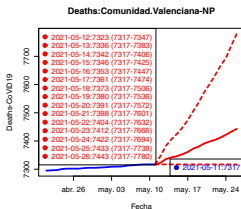
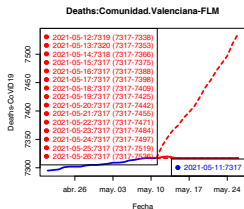


Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

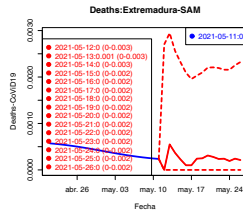
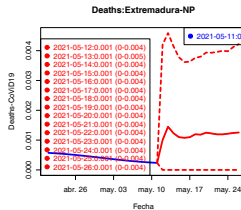
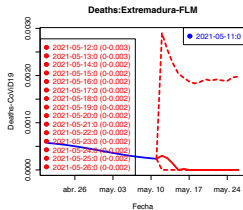
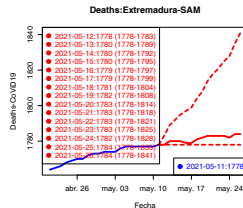
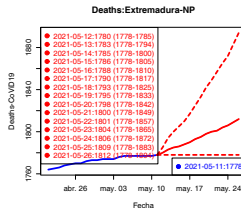
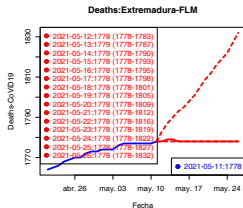
◀ Fallecidos

Fallecidos: C. Valenciana



Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

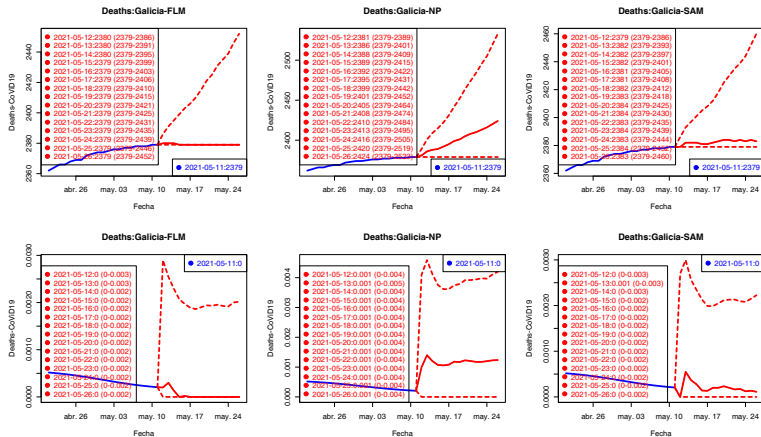
Fallecidos: Extremadura



Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados ▶ Fallecidos

Fallecidos: Galicia

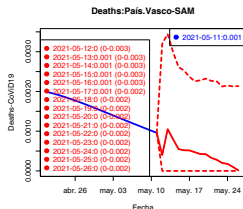
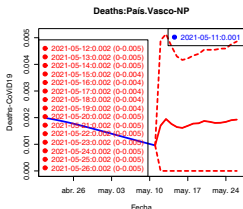
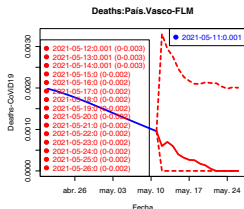
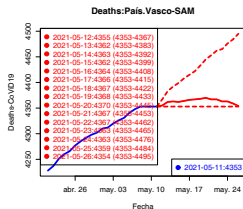
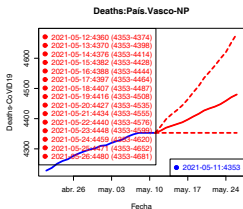
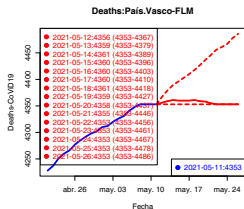


Los valores del Ratio de incremento de H2-H15 están rescalados a H1 para su comparación gráfica.

◀ Confirmados

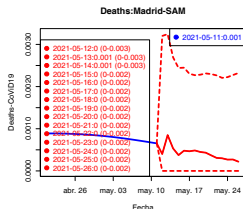
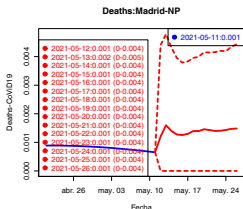
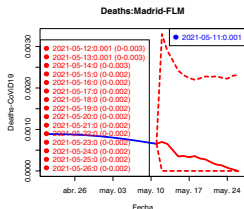
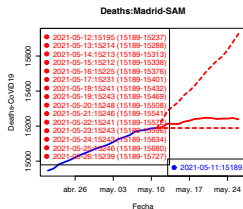
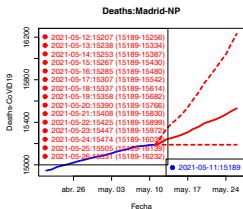
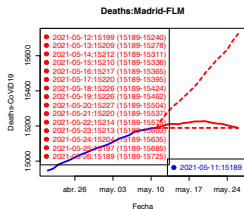
◀ Fallecidos

Fallecidos: País Vasco



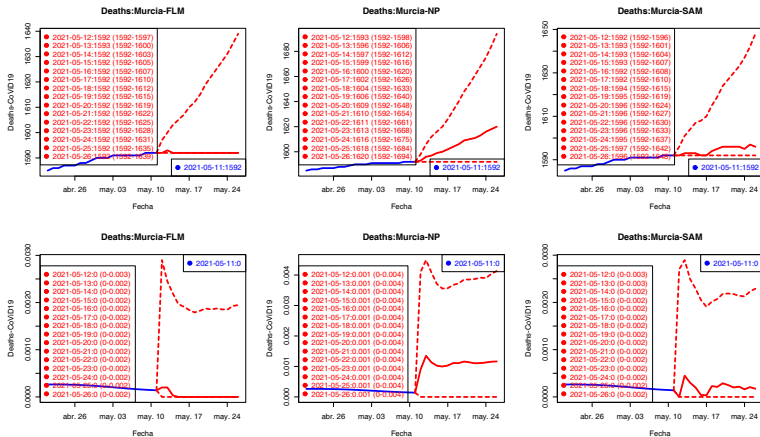
Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

Fallecidos: Madrid



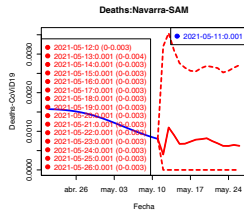
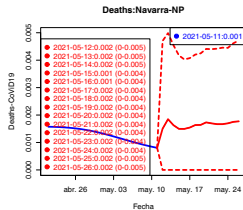
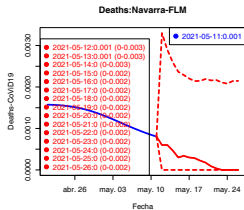
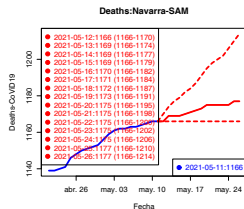
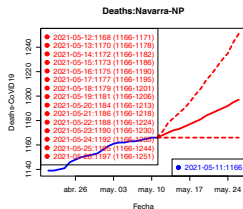
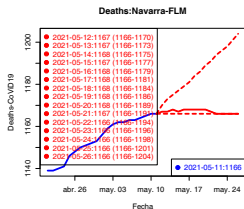
Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

Fallecidos: Murcia



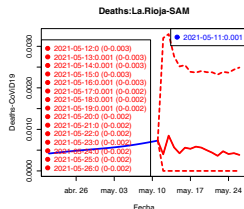
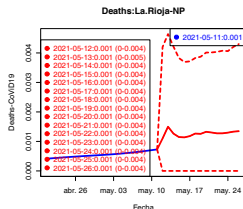
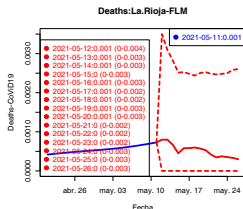
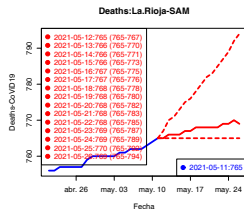
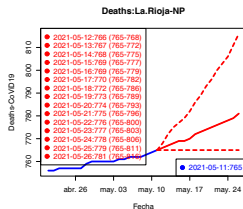
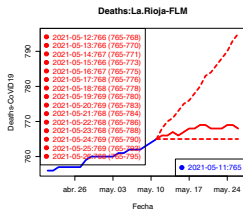
Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

Fallecidos: Navarra



Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

Fallecidos: La Rioja

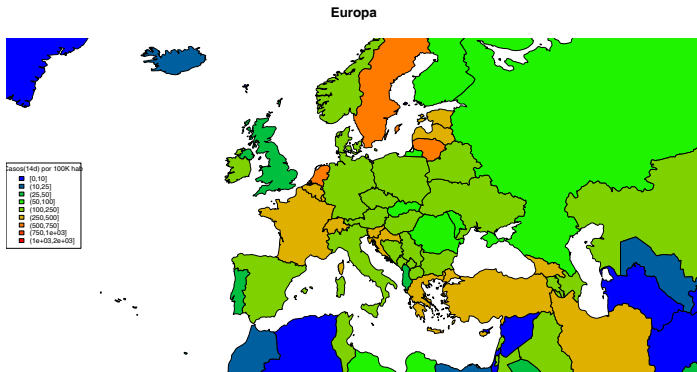


Los valores del Ratio de incremento de H2–H15 están rescalados a H1 para su comparación gráfica.

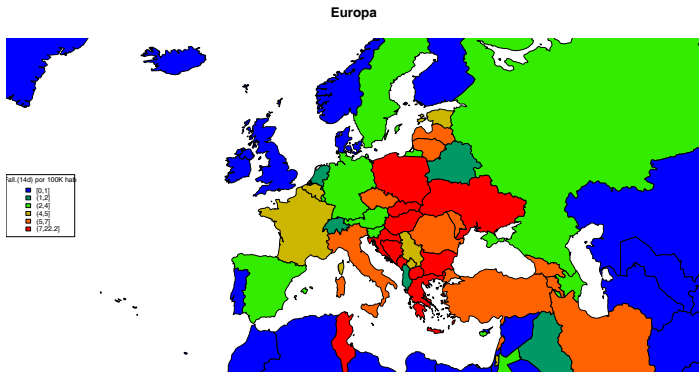
Table of Contents

- 1 Casos Confirmados
 - Predicciones
- 2 Fallecidos
 - Predicciones Fallecidos
- 3 Panorama internacional

Europa: Incidencia Acumulada (14d) por 100K hab.

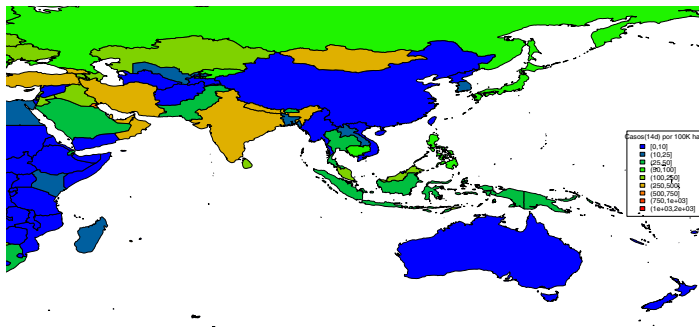


Europa: Fallecidos (14d) por 100K hab.



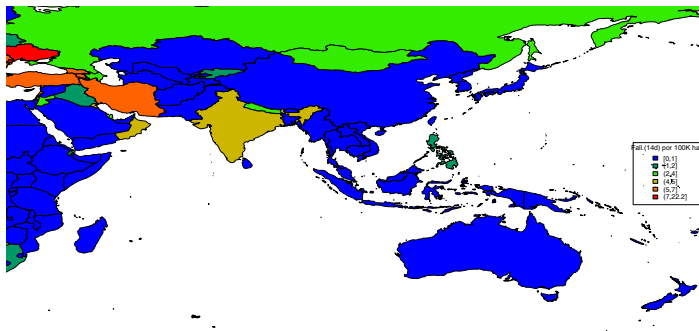
Asia y Oceanía: Incidencia acumulada (14d) por 100K hab.

Asia y Oceanía



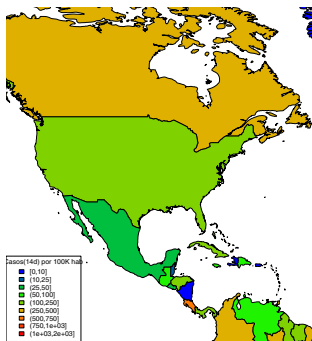
Asia y Oceanía: Fallecidos (14d) por 100K hab.

Asia y Oceanía

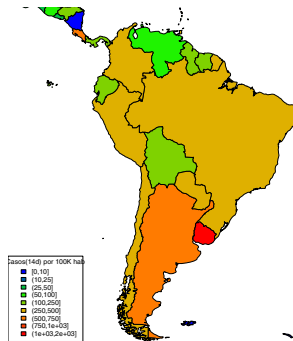


América: Incidencia acumulada (14d) por 100K hab.

América del Norte

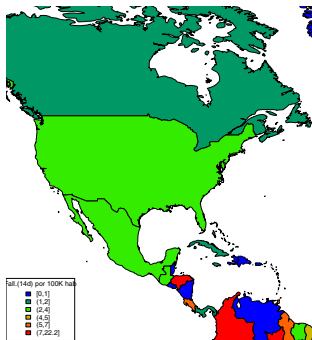


América del sur

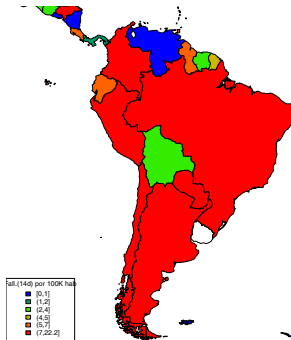


América: Fallecidos (14d) por 100K hab.

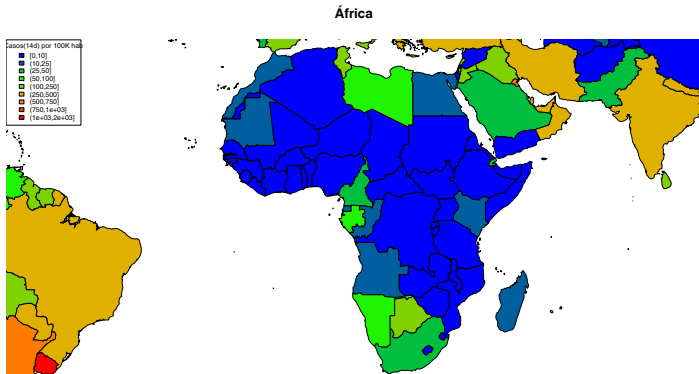
América del Norte



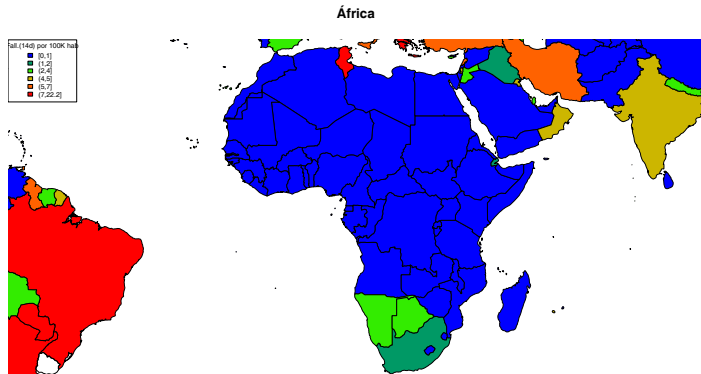
América del sur



África: Incidencia acumulada (14d) por 100K hab.



África: Fallecidos (14d) por 100K hab.



Breve descripción del Modelo de predicción

Objetivo: Predecir ratio de incremento de casos confirmados a 1–5 días: $r^{(k)}(t) = \frac{x_{t+k} - x_t}{x_t + 1}$

Información usada: Pasado de esta variable suavizada (retardo 1) durante los últimos 21 días: $R^{(1)} = \{r^{(1)}(-21), \dots, r^{(1)}(0)\}$.

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 Diamond Princess) son filtrados por inconsistencia, presunta falta de veracidad o por valores anormalmente 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: $f(R^{(1)}) = \int_{-21}^0 R^{(1)}(t)\beta(t)dt$
- NP: f es una estimación no paramétrica tipo núcleo.
- SAM: f es una combinación aditiva de funciones suaves de las componentes principales funcionales.

Para el objetivo de predecir el ratio de incremento de fallecidos, se usa además del pasado de la propia variable, el ratio de incremento pasado de casos confirmados.