INSTITUTO NACIONAL DE ESTADISTICA

Estimate of weekly deaths

Methodology

Madrid, February 2025

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1 Objective

Weekly and monthly death estimates are intended to provide quick estimates of the number of deaths that occur each week and each month from the entries recorded in the computerized Civil Registries, as well as their comparison with historical death data. This allows the data to be interpreted with a necessary historical perspective, given the variability of deaths over time. Three types of data will thus coexist in the project:

- Definitive data (deaths to 2023).
- Estimated data (completing the series up to the present).

2 Background

Death Statistics forms part of the group of Vital Statistics, which has a long tradition in Spain. This is an annual operation, although provisional data has also been published on a semi-annual basis for several years.

The publication schedule is conditioned by the circuit through which the primary data is produced. Death Statistics are based on the joint Medical Death Certificate/Statistical Death Bulletin (CMD / BED). One part is completed by the doctor certifying the death, and another by family members or the funeral home. This document is delivered to the corresponding Civil Registry, which also fills in certain registration data.

Civil registries produce monthly lots, and at the beginning of month m+1 send the INE all the CMD/BED received for deaths that occurred in month m to the corresponding provincial INE delegation. These paper certificates or bulletins are scanned in the INE delegations throughout month m+1, so that at the end of month m+1 or the beginning of the month m + 2, the scanned information for deaths in month m will be available. .

In practice, not all civil registries send month m deaths at the beginning of month m+1. Rather, it is generally necessary to wait two more months for the receipt of overdue bulletins to be completed. In some cases, it may even be necessary to make a complaint.

Deaths with judicial intervention must also be considered. These also generally arrive with more delay than the rest.

In short, in the best of cases it is necessary to wait for the first of month m+4 to have solid information regarding month m, and this information will always be provisional. Definitive consolidated death data for year t is not available until December of year t+1. The last definitive data published is thus that of 2020.

Under normal circumstances, it would be necessary to wait until the beginning of July to have a clear picture of the increase in deaths caused by the Covid-19 outbreak in Spain, which occurred in March 2020.

Eurostat began to request that countries voluntarily send estimates or results on the total number of deaths, taking the week as the observation unit to make them more comparable. The INE joined the initiative and in June 2020 began to send this data to Eurostat, along with publishing this new statistic under the category of experimental

statistics and under the name *"Estimation of the number of weekly deaths during the Covid-19 outbreak".*

In February 2024, the published tables were extended, and monthly death tables were added to the weekly death series. In this way, the comparison with the "Monthly Estimates of Births" is facilitated and allows us to obtain a quicker estimate of the vegetative growth. Moreover, since then, a highly provisional estimate of the number of deaths occurring each year t is obtained only two months after the end of that year. That is, in February of year t+1, an estimate of the number of deaths in year t will already be available. This estimate is provisional and will be adjusted monthly until the publication of definitive data in November of year t+1.

Having quick, up-to-date deaths figures was a prior aspiration of the INE and users, which was always postponed because it was subject to limitations in the availability of the original data. Deaths are not usually news but when they are (heat waves, flu or other seasonal phenomena) death statistics were not able to offer figures until much later.

Almost two years after the start of the Estimation of the number of weekly deaths (EDeS) experimental statistics, we can verify that the method devised and the sources on which it is based allow the project to continue beyond the covid-19 pandemic, thereby satisfying said demand.

The original source of the data is not the medical death certificates on which the death statistics are based, but rather entries in the civil registries. Several years ago, the Ministry of Justice launched the INFOREG application to record various registry entries, including deaths. This application has been implemented in Civil Registries and while not all civil registries use it (around 7% of deaths in Spain are still not recorded in computerized civil registries) it has reached a high degree of implementation and stability throughout the national territory. The EDeS statistic contemplates, therefore, a method to estimate the total number of deaths from (approximately) 93% of deaths that are recorded.

Starting in October 2021, INFOREG was gradually replaced by a new application, DICIREG, which ideally will be implemented throughout Spain within a period of about three years. Once this is achieved, all deaths will be registered, meaning it will not be necessary for EDeS to carry out this procedure to estimate the total, and the statistics will be completely based on the count of the DICIREG administrative record.

INFOREG (and its successor, DICIREG) offers the great advantage of being always up-to-date: on any given day, you can see the deaths recorded the day before. While delays may at times occur, they generally do not exceed a week, meaning that with the data recorded today, the number of deaths taking place a week ago can be determined with great precision in municipalities that have computerized civil registries.

3 Type of Operation

It is a mixed operation, fundamentally based on administrative records (deaths registered by the Civil Registries) but with an added component of estimating the total number of deaths to correct for a lack of coverage and delays in recording.

The weekly information is offered in the form of tables with retrospective series since 1975 and the monthly one since 2009.

4 Content

4.1 POPULATION UNDER STUDY

The deaths that occurred in Spain in the period analysed.

4.2 GEOGRAPHICAL SCOPE

The data are estimated at the national level of the Autonomous Community, province and islands; that is, following the European territorial classification NUTS-3.

A very important element to consider is that the estimated data include all deaths occurring in Spain and are published by place of registration, regardless of whether the deceased is a resident or not. On the other hand, the definitive data are published by place of residence, therefore, they do not include those deceased persons who are not residents.

It should also be taken into consideration that the comparison of the estimates with the definitive data by Autonomous Community may give rise to certain differences, since there may be cases of deceased persons whose registration is managed in one province while they reside in another.

This restriction is imposed by the fact that the deceased person's residence is not always properly recorded Inforeg, while data for the place of registration is inherent to the Inforeg system.

4.3 REFERENCE PERIOD

Weekly data are provided since 2000 and monthly data from 2009 to the present.

The time period in the weekly tables shall take the form AAAASMXX, while that in the monthly tables shall be indicated as AAAAMYY where::

- YYYYY is the year, e.g. 2024.
- XX is the week number according to the ISO8601 standard (ranging from 01 to 52/53 depending on the year). The first week of a year is the calendar week (Monday to Sunday) that contains the first Thursday of the year.
- YY is the number of the month according to the ISO8601 standard (ranging from 01 to 12).

4.4 CLASSIFICATION VARIABLES

In addition to the classification by provinces and islands, the estimated data is also broken down by:

- Sex.
- Five-year age groups (0-4 5-9, …, 90 and over).

5 Characteristics of the Project

5.1 OBSERVATION UNITS TO WHICH THE PRIMARY DATA REFER

The observation unit is the death entry registered in the Civil Registry, which contains the registration data used for the statistics: sex and age of the deceased person.

5.2 DATA COLLECTION METHODOLOGY

The General Office of Legal Security and Public Faith sends files of deaths recorded in INFOREG/DICIREG to the INE on a daily basis. For the estimation, the files received up to Monday of the week prior to publication are used.

5.3 ESTIMATION METHOD

The weekly deaths recorded in INFOREG/DICIREG for each week in each geographical area (CCAA, provinces, islands) are calculated as follows:

$$\widehat{D}_i^t = D_i^t * f_i * r_{ix}$$

Where $\widehat{D}_i^t$ is the estimated number of deaths for geographic entity i (Autonomous Community, province, island) and week t,

D_i^t is the number of deaths registered in INFOREG/DICIREG for week t in geographic entity i.

$\boldsymbol{f_i}$ are the under coverage correction coefficients for the original Inforeg data. It is an expansion factor that historically relates recorded deaths that finally occurred in geographical area i (Autonomous Community, province, island). See the values in the annex.

r_{ix} is a coefficient that corrects the delay in recording data in INFOREG/DICIREG for the geographical area "i", and the age in weeks "x" of the deaths with respect to the date of publication. This coefficient is used in very isolated cases, for the most recent two weeks published. This is updated and corrected with each new publication of results.

On the other hand, the monthly deaths in each geographical area (Autonomous Communities, provinces, islands) are calculated as follows:

$$\widehat{D}_i^m = D_i^m * f_i$$

Where $\widehat{D}_i^m$ is the estimated number of deaths for geographical entity i (Autonomous Community, province, island) and month m,

D_i^m is the number of deaths registered in INFOREG/DICIREG for week m in geographical entity i.

f_i are the undercoverage correction coefficients of the original INFOREG/DICIREG data.

6 Dissemination plan and periodicity

6.1 PLAN FOR TABLES

The following tables are published:

- Estimates of the number of deaths per week:
    - Weekly and accumulated deaths. National and by Autonomous Community. 1975-2025.
    - Weekly and accumulated deaths. National and by province. 1975-2025.
    - Weekly and accumulated deaths. Islands. 1975-2025.
    - Weekly and accumulated deaths by sex and age. National and by Autonomous Community. 1975-2025.
    - Weekly and accumulated deaths by sex and age. National and by province. 1975-2025.
- Estimates of the number of deaths per month:
    - Monthly and cumulative deaths. National and Autonomous Communities. 2000-2024.
    - Monthly and accumulated deaths. National and provinces. 2000-2024.
    - Monthly and accumulated deaths. Islands. 2000-2024.
    - Monthly and accumulated deaths by sex and age. National and Autonomous Communities. 2000-2024.
    - Monthly and accumulated deaths by sex and age. National and provinces. 2000-2024.

6.2 OPERATION CALENDAR AND UPDATING OF PROVISIONAL DATA

The EDS statistics are published monthly around the 15th. On that date, a working day of week s, the weekly deaths series will be updated until week s-3 (calendar week, Monday to Sunday). For the monthly deaths' series, data for month m will be published for month m-2.

As provisional data based on CMD/BED documents become available, estimates will be replaced by these provisional data.

7 Cost and burden

Being a statistic based on an administrative record; they do not have an additional burden on the informants.

The estimate of the budget appropriation necessary to finance the Weekly and Monthly Death Statistics foreseen in the 2024 Annual Programme is 45.63 thousand euros.

Annex Correction coefficients for the original Inforeg data

Territorial scope	Inforeg deaths/INE deaths (in%)	Under-coverage correction coefficient (f i)
Andalucía		
Almería	99.80809	1.00192
Cádiz	99.59777	1.00404
Córdoba	99.92877	1.00000
Granada	99.45802	1.00545
Huelva	99.57108	1.00431
Jaén	99.86423	1.00136
Málaga	99.30443	1.00700
Sevilla	99.80880	1.00192
Aragón		
Huesca	80.09163	1.00000
Teruel	78.81508	1.00000
Zaragoza	100.00000	1.00000
Principado de Asturias	99.71635	1.00284
Illes Balears		
Ibiza y Formentera	101.76125	0.98269
Mallorca	100.68946	0.99315
Menorca	100.13889	0.99861
Canarias		
Fuerteventura (Las Palmas)	103.30739	0.96798
Gran Canaria (Las Palmas)	102.62973	0.97438
Lanzarote (Las Palmas)	100.12674	0.99873
La Gomera (Sta Cruz de Tenerife)	76.11111	1.31387
El Hierro (Sta Cruz de Tenerife)	89.91597	1.11215
La Palma (Sta Cruz de Tenerife)	91.86296	1.08858
Tenerife (Sta Cruz de Tenerife)	103.75346	0.96382
Cantabria	75.28895	1.07000
Castilla y León		
Ávila	86.74089	1.15286
Burgos	84.22894	1.18724
León	68.91806	1.28970
Palencia	77.99544	1.28213
Salamanca	62.06151	1.61130
Segovia	84.71148	1.18048
Soria	86.89076	1.15087
Valladolid	96.31082	1.03830
Zamora	69.17505	1.44561

Territorial scope	Inforeg deaths/INE deaths (in%)	Under-coverage correction coefficient (f i)
Castilla la Mancha		
Albacete	99.12387	1.00884
Ciudad Real	98.22683	1.01805
Cuenca	88.09168	1.13518
Guadalajara	91.28592	1.09546
Toledo	96.54402	1.03580
Cataluña		
Barcelona	99.61230	1.00389
Girona	99.66633	1.00335
Lleida	99.68582	1.00315
Tarragona	99.62426	1.00377
Comunitat Valenciana		
Alicante/Alacant	99.35003	1.00654
Castellón / Castelló	99.55196	1.00450
Valencia / València	99.48825	1.00514
Extremadura		
Badajoz	94.82529	1.05457
Cáceres	84.19732	1.11100
Galicia		
Coruña, A	100.37813	0.99623
Lugo	99.89911	1.00101
Ourense	99.91468	1.00000
Pontevedra	99.69289	1.00308
Comunidad de Madrid	88.41345	1.01500
Región de Murcia	98.07586	1.01962
Comunidad Foral de Navarra	99.48160	1.00521
País Vasco		
Araba/Álava	97.42250	1.02646
Gipuzkoa	99.86830	1.00132
Bizkaia	99.85526	1.00145
La Rioja	78.05957	1.00000
Ceuta	97.54601	1.02516
Melilla	99.01768	1.00992