An Phríomh-Oifig Staidrimh
Central Statistics Office

Standard SIMS Report:

Deaths Registration

Single Integrated Metadata Structure (SIMS) Report

For

Deaths Registration

This documentation applies to the reporting period:

2024

Last edited:
04/11/2024

1. Table of Contents

2. Introduction

Statistics on deaths registered in Ireland have been collected and published since 1864. This was initially done by the General Register Office. Since 1953 the reports have been compiled by the Central Statistics Office, based on administrative data supplied by the General Register Office.

Every death occurring in Ireland must be registered with the General Register Office(GRO). However, there is no legal requirement to register a stillbirth with the General Registration Office (GRO). Registration of a stillbirth is voluntary. These reports are used by perinatal health researchers.

The details of these two types of death registrations are compiled into statistical reports by the Central Statistics Office, acting on behalf of the Minister for Social Protection.

3. Contact

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4. Metadata Update

4.1. Metadata last certified

07/11/2024

4.2. Metadata last posted

04/11/2024

4.3. Metadata last update

07/11/2024

5. Statistical Presentation

5.1. Data Description

Data on causes of death (CoD) provide information on mortality patterns and form a major element of public health information.

CoD data refer to the underlying cause which - according to the World Health Organisation (WHO) - is "the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury".

Statistics on deaths registered in Ireland provide a comprehensive picture of the number of deaths, ages at death, and underlying causes of death of the population. They are crucial for demographic research, and for much of health research.

Quarterly publications on death registrations include aggregation by age, sex, area of residence, underlying cause of death, crude death rates.

Annual publications on death occurrences include aggregation by date, month and quarter of occurrence, age, sex, area of residence, underlying cause of death, marital status, place of occurrence crude and standardised death rates.

Deaths are reported by the residence of the deceased. The classification is at the level of counties, cities and certain town. See Statistical Classifications.

Stillbirths are reported by the residence of the parent and aggregated by:

- sex, underlying cause of stillbirth, weight, gestation period
- age, area of residence, socio-economic group and marital status of parents,
- number of previous children of mother

5.2. Classification System

Deaths
CoD data are derived from death certificates. The information provided in the medical certificate of cause of death is mapped to the International Statistical Classification of Diseases and Related Health Problems (ICD).

All deaths registered on or after 1, January 2007 are classified according to The World Health Organisation's International Classification of Diseases, ICD10. The current version is use is ICD10 2016 with updated decision tables provided by the IRIS institute which includes WHO and Table group updates effective from2019. https://icd.who.int/browse10/2016/en

ICD-10 codes are continuously being updated to include revisions by The World Health Organisation, see high level ICD-10 codes below.

I	A00–B99	Certain infectious and parasitic diseases
II	C00–D48	Neoplasms
III	D50–D89	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
IV	E00–E90	Endocrine, nutritional and metabolic diseases
V	F00–F99	Mental and behavioural disorders
VI	G00–G99	Diseases of the nervous system
VII	H00–H59	Diseases of the eye and adnexa
VIII	H60–H95	Diseases of the ear and mastoid process
IX	I00–I99	Diseases of the circulatory system
X	J00–J99	Diseases of the respiratory system
XI	K00–K93	Diseases of the digestive system

XII	L00–L99	Diseases of the skin and subcutaneous tissue
XIII	M00–M99	Diseases of the musculoskeletal system and connective tissue
XIV	N00–N99	Diseases of the genitourinary system
XV	O00–O99	Pregnancy, childbirth and the puerperium
XVI	P00–P96	Certain conditions originating in the perinatal period
XVII	Q00–Q99	Congenital malformations, deformations and chromosomal abnormalities
XVIII	R00–R99	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
XIX	S00–T98	Injury, poisoning and certain other consequences of external causes
XX	V01–Y98	External causes of morbidity and mortality
XXI	Z00–Z99	Factors influencing health status and contact with health services
XXII	IU00–U99	

Deaths from 1979 to 2006 were coded according to ICD-9. Causes of death for other years were classified by earlier versions of ICD

All stillbirths registered on or after 1, January 2007 are classified according to The World Health Organisation's International Classification of Diseases, Version 10 (ICD-10).
http://www.who.int/classifications/apps/icd/icd10online

Stillbirths and late foetal deaths from 1979 to 2006 were coded according to ICD-9. Causes of stillbirth/late foetal death for other years were classified by earlier versions of ICD.

The principal economic status (PES) classification group:
1 = At work
2 = Unemployed
3 = Student
4 = Home Duties
5 = Retired
6 = Disabled
8 = Under 15
9 = Unknown
The PES replaced Social Class classification group from 2013 onwards.

The principal occupation classification groups:
There is a 10 category Standard Occupation Code (SOC2010) Classification used from 2012. See directly below in alphabetical order:

Standard Occupation Codes Occupations included are as listed
4 Administrative and secretarial occupations
3 Associate professional and Technical occupations
6 Caring, Leisure and Other service occupations
9 Elementary occupations
1 Managers, Directors and Senior officials
8 Process, Plant and Machine operatives
2 Professional occupations
7 Sales and Customer service occupations
5 Skilled trades occupations
0 Unemployed, Retired, Student and occupation unknown

New NUTS 3 breakdown used from 2018
The composition of the current NUTS regions effective from 1st January 2018 is as follows:
Northern and Western (Border and West), Southern (Mid-West, South-East and South-West) and Eastern and Midland (Dublin, Mid-East and Midland).

NUTS3 Regional Authority areas: Border, Midland, West, Dublin, Mid-East, Mid- West, South-East and South-West

The current regional classification came into effect on the 1st of January 2018. Tipperary North (Mid-West region) and Tipperary South (formally in the South-East region) were amalgamated into Tipperary and classified as part of the Mid- West region. Louth has moved from the Border region to the Mid-East region.

Border	Cavan	**Dublin**	Dublin City
	Donegal		Dún Laoghaire-Rathdown
	Leitrim		Fingal
	Monaghan		South Dublin
	Sligo		
Midland	Laois	**Mid-East**	Kildare
	Longford		Meath
	Offaly		Wicklow
	Westmeath		Louth
West	Galway City	**Mid-West**	Clare
	Galway County		Limerick City and County
	Mayo		Tipperary
	Roscommon		
South-West	Cork City	**South-East**	Carlow
	Cork County		Kilkenny
	Kerry		Waterford City and County
			Wexford

5.3. Sector Coverage

Public Health.

5.4. Statistical Concepts and definitions

Concepts and definitions are described in the Commission regulation (EU) No 328/2011 in articles 2 and 3.

5.4.1. Stillbirth definition and characteristics collected

The terms used in relation to stillbirths and infant mortality are defined as follows:

- Stillbirth: Stillbirth weighing 500 grams or more or at gestational age of 24 weeks or more. this definition applies to stillbirth figures from 1995 onwards.
- Late foetal death: Foetal death at or over 28 weeks gestation. this definition was applied up to 1994 inclusive.
- Early neonatal death: Death at ages under 1 week live born infant.
- Perinatal deaths: Stillbirths or late foetal deaths plus early neonatal deaths.
- Late neonatal deaths: Death between the ages of 1 week and 4 weeks of live born infant.
- Neonatal death: Death at ages under 4 weeks of live born infant.
- Post neonatal death: Death between the ages of 4 weeks and 1 year of live born infant.
- Infant death: Death at ages under 1 year of live born infant.
- Maternal death: a maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

5.4.2. National definition used for usual residency

From 2007 onwards, the population concept of usual residence has been used, i.e. all persons usually resident and present in the State on census night, plus absent persons who are usually resident in Ireland, but are temporarily away from home and outside the State on Census night. All persons are classified according to the region of their usual residence.

5.5. Statistical Unit

The statistical units are the deceased persons and the stillborns, respectively.

5.6. Statistical Population

All deaths that occur in the State including those visiting the country at time of death but are residing outside of the State. - Irish residents that die abroad are not included in the population.

5.6.1. Neonates of non-resident mothers

Neonates of non-resident mothers are included in the published data.

5.6.2. Non-residents

Non-residents that die in the State are included in the mortality statistics.

5.6.3. Residents dying abroad

Irish residents dying abroad are not included in the statistics. Only deaths that occurred in the State are included in the population.

5.7. Reference Area

Ireland (26 counties).
Northern and Western (Border and West), Southern (Mid-West, South-East and South-West) and Eastern and Midland (Dublin, Mid-East and Midland).

5.8. Time Coverage

Ireland is providing COD data to Eurostat in line with EU regulation for the years 2011 (causes of death (EU) No 328/2011) onwards. National publications adopted ICD-10 from 2007 et seq.
This report refers to reference year 2023.

5.9. Base period

Not applicable

6. Unit of Measure

Numbers of persons.

7. Reference Period

Calendar year for annual statistics.
Calendar Quarter for quarterly statistics.

8. Institutional Mandate

8.1. Legal Acts and other agreements

8.1.1. National legal acts

Vital Statistics releases and publications are prepared on behalf of the Minister for Employment Affairs and Social Protection in accordance with the provisions of Section 2 of the Vital Statistics and Births, Deaths and Marriages Registration Act 1952 (as amended by section 7 of the Births, Deaths and Marriages Registration Act 1972) and Section 73 (when commenced) of the Civil Registration Act 2004.

The preparation of Vital Statistics releases and publications is delegated by the Minister for Employment Affairs and Social Protection to the CSO in accordance with the provisions of Section 2 of the Vital Statistics and Births, Deaths and Marriages Registration Act 1952 (as amended by section 7 of the Births, Deaths and Marriages Registration Act 1972) and Section 73 (when commenced) of the Civil Registration Act 2004. Where a death involves an inquest, the CSO sends a form (form 104) to the Garda Síochána. This form should be completed by the Garda who investigated the death. The Garda states whether, in his/her opinion, the death was accidental, suicidal, homicidal, or the intent cannot be determined, and this additional information is used by the CSO in determining the underlying cause of death statistical code. Form 104 is collected by the CSO under the Statistics Act, 1993 and the terms of that act in relation to protection of information apply to form 104; the information provided on the form is confidential and may only be used for statistical purposes.

8.1.2. European legal acts

CoD data was submitted to Eurostat on the basis of a gentleman's agreement established in the framework Eurostat's Working Group on "Public Health Statistics" until data with reference year 2010.
A Regulation on Community statistics on public health and health and safety at work (EC) No 1338/2008 was signed by the European Parliament and the Council on 16 December 2008. This Regulation is the framework of the data collection on the domain.
Within the context of this framework Regulation, a Regulation on Community statistics on public health and health and safety at work, as regards statistics on causes of death (EU) No 328/2011 was signed by the European Parliament and the Council on 5 April 2011.
CoD data according to this regulation is submitted to Eurostat since reference year 2011.

8.2. Data Sharing

Researchers can apply to access mortality microdata by completing a Research Microdata Application Form and other relevant forms. Very strict procedures/criteria are in place to protect the confidentiality/security of data. Only applicants that meet this strict criteria are conferred with Officer of Statistics status. No microdata can be accessed from outside of the State. All researcher outputs must be approved by the relevant Statistician before being released to the researcher.
Ireland has provided data to the World Health Otganisation (WHO) for some years previously.
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9. Confidentiality

9.1. Confidentiality – policy

All information supplied to the CSO is treated as strictly confidential. The Statistics Act, 1993 sets stringent confidentiality standards: Information collected may be used only for statistical purposes, and no details that might be related to an identifiable person or business undertaking may be divulged to any other government department or body.
These national statistical confidentiality provisions are reinforced by the following EU legislation: Council Regulation (EC) No 223/2009 on European statistics for data collected for EU statistical purposes.
Further details are outlined in the CSO's Code of Practice on Statistical Confidentiality.

For more information on the CSO confidentiality policy please visit:
https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/statisticalconfidentiality/

9.2. Confidentiality – data treatment

The CSO suppresses any sensitive data to ensure that there is no data published whereby an individual can be identified in the data. As a general rule location, gender and individual ages are not published together in a single table. Data is aggregated and for example if there are single units reported than the underlying cause of death is included in a range and is not a specific ucod code or age is reported within an age range or the gender isn't identifiable. The same applies to information disseminated in response to queries.
With regard to micro-date, strict criteria/protocols are in place. Researchers must become Officers of Statistics before access to microdata is granted. Furthermore, mortality data cannot be merged to any other dataset. All outputs must be approved by the relevenat Statistician before outputs are released to researchers.

Care is taken to ensure that the data disseminated by the CSO is not explosive where age, location and gender coupled with the core variable of interest doesn't allow the identiity of the deceased when releasing sensitive cause of death data. For example in annual report where the number of deaths reported are less than 3 by general location and sex then the underlying cause is reported as a range e.g. R00-R99 or V01-Y89
Age-group, location, sex and specific cause of death code are never disseminated together in one table. For example if there is a single unit reported in 15-24 age group, sex is male and cause of death range is A00-B99 and no location is provided, then the identity of the deceased is suppressed.
For stillbirth and neonatal figures, no breakdown by parity is displayed to ensure confidentiality.
When dealing with specific queries, the one age-group is aggregated with another age-group if necessary in order to ensure primary and secondary confidentiality.

10. Release Policy

10.1. Release Calendar

The date of dissemination of all statistics released by CSO can be found in the Release Calendar published in CSO.ie. This calendar is regularly updated.

10.2. Release calendar access

The release calendar can be accessed via the CSO website, www.cso.ie, or directly from this link:
https://www.cso.ie/en/csolatestnews/releasecalendar/

10.3. User access

In accordance with Principle 6 of the European Statistics Code of Practice all users of CSO statistics have equal access via the CSO website at the same time of 11 am. Any privileged pre-release access to any outside user is limited, controlled and publicised. In the event that leaks occur, pre-release arrangements are revised so as to ensure impartiality.

The CSO recognises that in very limited circumstances a business need for pre-release access may be substantiated. Any form of pre-release access is a privilege and a strict CSO pre-release access policy is adhered to for these special requests. The full pre-release access policy can be accessed at https://www.cso.ie/en/aboutus/lgdp/csodatapolicies/csopolicyonpre-releaseaccess/

The various results are published nationally in statistical release format as well as on the CSO website (www.cso.ie). Selected extracts from the results are posted on the CSO's data dissemination database, PxStat.

11. Frequency of Dissemination

Quarterly vital statistics releases are disseminated on a quarterly basis and a summary of the four quarters is disseminated at the end of May each year. The data is generally published within five months from the end of the relevant quarter. The registered data is regarded as provisional data. A death may have occurred in one year and registered in a subsequent year. This publication includes all deaths that were registered in the reference year.

The Vital Statistics Annual Report is disseminated within 22 months from the end of the relevant period, for example the report for 2020 was published on the 28/10/2022 while the 2021 report was published on 31/10/2023. The annual data is regarded as final data.

Life Tables, each cycle using three years of mortality data around the Census Year. is published every five years. The last analysis was calculated based on the mortality (final) data for the years 2015, 2016 and 2017 and used census 2016 data. The most recent iteration of Life Tables was published in June 2020.

12. Accessibility and clarity

12.1. News release

A press release was issued which each of the releases/publications listed under the Publications section.

12.2. Publications

Vital Statistics - Quarterly report and Yearly Summary
https://www.cso.ie/en/statistics/birthsdeathsandmarriages/vitalstatistics/

Report on Vital Statistics (annual)
https://www.cso.ie/en/statistics/birthsdeathsandmarriages/vitalstatisticsannualreport/

Deaths and Cause of Death at Local Electoral Area (LEA)
https://www.cso.ie/en/statistics/birthsdeathsandmarriages/deathsandcauseofdeathatlocalelectoralareaslea/

Suicide Statistics (Annual): https://www.cso.ie/en/statistics/birthsdeathsandmarriages/suicidestatistics/

12.3. On-line database

The publications on deaths are available in tabular format form the CSO's main dissemination database, PxStat

Death Occurrences (Final): https://data.cso.ie/product/VSDO
Death Registrations (Provisional): https://data.cso.ie/product/VSDR
Infant Mortality and Stillbirths: https://data.cso.ie/product/VSIMS

12.3.1. AC 1. Data tables - consultations

Not calculated.

12.4. Micro-data Access

Not applicable.

12.5. Other

Irish Life Tables 2015-2017
https://www.cso.ie/en/csolatestnews/pressreleases/2020pressreleases/pressstatementirishlifetables2015-2017/

Many of the regular thematic CSO publications include tables of death statistics. Examples are Measuring Ireland's progress, Women and Men in Ireland, Ireland – North and South, and Ageing in Ireland. These publications can be seen at: https://www.cso.ie/en/index.html,

The following organisations also produce statistics on deaths in Ireland:

ESRI
https://www.esri.ie/publications/browse?keywords=nprs

Healthcare Pricing Office:
http://www.hpo.ie/index.htm?NPRS

Downloadable data can be found in Ireland's Open data portal:
https://data.gov.ie/dataset/otal-births-stillbirths-early-neonatal-deaths-and-perinatal-deaths-500-grams-only-nprs-and-2016

12.5.1. AC2. Metadata consultations

Not calculated.

12.6. Documentation on Methodology

Documents on the Methodology used to compile this report can be found on the CSO website or by following the link: https://www.cso.ie/en/methods/birthsdeathsandmarriages/deathregistration/

For broad overview of the methodology please see the background notes that accompany each release.

12.6.1. AC3 – Metadata completeness – rate

Not calculated.

12.7. Quality Documentation

The Quality Report for this Survey can be found on the CSO website of by following the link:
https://www.cso.ie/en/methods/qualityreports/deathsregistration/

13. Quality Management

13.1. Quality Assurance

Quality Management Framework
The CSO avails of an office wide Quality Management Framework (QMF). This framework allows all CSO processes and outputs to meet the required standard as set out in the European Statistics Code of Practice (ESCOP). The QMF foundations are based on establishing the UNECE's Generic Statistical Business Process Model (GSBPM) as the operating statistical production model to achieve a standardised approach to Quality Management. All and any changes implemented to CSO processes and outputs require adherence to the QMF.

13.2. Quality Assessment

The causes of death data are based on a regulation, which defines scope, definitions of variables and characteristics of the data.
Cause of Death coding is very complicated and has a subjective element, so errors can also occur here. However, the editing process will identify where the deceased has been assigned an underlying cause of death inappropriate to their age or sex.

There is ongoing training by senior mortality coders. Coders aim to keep abreast of all the major updates by the WHO. The IRIS software version 5.6 includes the WHO major and minor updates in the automatic coding. Our senior coders contribute regularly to the international mortality forum and are continuously networking and building solid relationships with COD experts in other EU member states and further afield e.g. Canada and Australia.

Difficult cases are discussed by the coders to achieve consensus on arriving at the most suitable cause of death code.

The Quality of the data is very good. The CSO uses IRIS software for cause of death coding - there is around 55%-'58% automatic coding done in IRIS each week. The balance of the coding including all external causes of death are coded manually by the Mortality Coders in the CSO. The Statistician has several edits run in SAS to highlight particular situations e.g. women that have been coded to testicular cancer. There are also many quality edits built into our Data Management System which will highlight inconsistencies in the cause of death coding. The CSO also has the benefits of an expert Nosologist on site.

The quality of the mortality coding is dependent on very good quality medical certification on the death certificate.

Mortality statistics are fundamental to medical and social demographic analysis. They are also one of the most reliable and important statistics. All mortality data is sourced from the General Registration Office (GRO), any obvious error or incomplete data is queried and corrected.
There were 2 consultations with representatives of agencies/organisations engaged under the umbrella the Suicide Liaison Group to discuss how best to present data on late registered deaths due to intentional self-harm. Late registered deaths from intentional self-harm are often registered around 2 years from the date of death as such cases must be referred to the Coroner's Office for further investigation, Inquest, and subsequent registration of the death. Tables have been updated on the CSO PxStat for users.
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14. Relevance

14.1. User Needs

Vital Statistics releases and publications are prepared on behalf of the Minister for Employment Affairs and Social Protection in accordance with the provisions of Section 2 of the Vital Statistics and Births, Deaths and Marriages Registration Act 1952 (as amended by section 7 of the Births, Deaths and Marriages Registration Act 1972) and Section 73 (when commenced) of the Civil Registration Act 2004.

Mortality statistics are fundamental to demographic analysis. They are also one of the most reliable and important statistics for health researchers. The CSO is involved in various liaison groups and user groups to ensure that customer needs are met where possible.
For example, the Vital Statistics section is involved in a suicide liaison group to develop further the detail that can be provided to researachers, academics, the general public etc. There a many customers that sign up as Officers of Statistics to interrogate the mortality data - we run special outputs for certain key medical researchers e.g. National Cancer Registry Ireland.

There are numerous researchers engaged in a variety of medical research projects that are conferred with Officer of Statistics status (i.e respiratory, circulatory, neoplasms etc.).

14.1.1. Main National Users

- Government
- Other CSO sections
- Demographic Researchers, Health Researchers
- The public
- Professional Bodies

14.1.2. Principal External Users

- European Union/Eurostat
- World Health Organisation

14.2. User Satisfaction

The Vital Statistics section provide data to numerous health researchers, that are conferred with the 'Officer of Statistics' status, many of which are involved in longitudinal studies. The section responds to numerous requests for data, from students, interest groups, researchers, academics and the general public. The feedback, in general, is very positive. For example we published new tables on what type of institution the person dies in e.g. hospice, maternity unit, nursing home, clinical setting, psychiatric hospital etc. this was widely welcomed especially by the Irish Hospice Foundation as they can use these statistics for planning etc.

14.3. Data Completeness

Data completeness is analysed below with regards Eurostat's requirements for transmitted data.

14.3.1. Data Completeness rate

1. For mandatory variables:
All mandatory variables provided e.g. year of death by occurrence, sex, cause(es) of death etc - 100%

2. For voluntary variables:
Circa 30% of records are referred to the Coroners Office (i.e. deaths that occur in Nursing Homes, Unnatural deaths etc) and it is that Office that registers the death. There are often gaps in information in some variables namely Nationality and Country of Birth and these variables are completed by Vital Statistics Section in the CSO bssed on other information that is provided on the electronic death certificate.

3. For additional variables:

- External CoD: For external causes of death included in data for 2021 - narrative provided in each death record - 100%
- Place of occurrence for external CoD: Place of occurrence (fourth digit of COD code is provided in each UCOD)
- Activity for external CoD: Activity for external COD is not collected.

15. Accuracy and reliability

15.1. Overall accuracy

Overall, the quality of the data received from the General Registration Office (GRO) is of very high quality. Any amendments to the data are received subsequently from the GRO. Furthermore, edits are a part of the CSO data capture system which will highlight any inconsistencies in the data. Further edits are done in SAS to check for inconsistencies.

The mortality data received from the General Registration Office (GRO) is comprehensive and of good quality and any queries raised by the Vital Statistics Office is provided where possible. Details on Nationality and Country of birth is improving over time, generally, where this information is absent, there is enough information provided to make a definitive decision in respect of both these variables. Otherwise, 'unknown' is returned.

15.2. Sampling Error

Not applicable.

15.2.1. A1. Sampling error indicator

Not applicable.

15.3. Non-sampling Error

Not applicable.

15.3.1. Coverage error

All deaths occurring in Ireland are legally obliged to be registered, (there are approximately 30,000 deaths annually). Non-registration is rare because of the necessity of a death certificate for many legal purposes. However, there can sometimes be considerable delay in registration of deaths, particularly in the case of deaths requiring an inquest.

Deaths for each of the years 1940 to 1967 exclude non-residents. From 1968 however, the number of deaths includes non-residents. Since the 2020 Annual Report (published in October 2022) the current practice is an extract of data will be taken in quarter 3 of the publication year to ensure each year has the most up to date number of registered deaths included and to attempt to lessen the growing trend in the proportion of deaths being registered after the reference year.

Prior to this, deaths were only included in the annual figures if they were registered in the reference year, or the following year. For example, for the 2010 Annual Report, deaths were only included in the headline figures if they were registered in either 2010 or 2011. This increase in coverage results in (~1.2% to ~1.7%) additional registered deaths included for the reference period. However, these differences will fluctuate for any given year as they are a function of the time it takes to register a death in Ireland, which can vary.

Moreover, to deal with registration delays the CSO has introduced a range of PxStat tables to include further late registered deaths in headline figures so figures presented in the Annual Report should not be considered final and thus can be further revised.

The introduction of the Civil Registration (Electronic Registration) Act 2024 and its implementation in practice should result in an increase coverage of deaths occurring in the reference year and subsequently being registered in the reference year, and thus decrease the impact of late registered deaths on overall figures in future years.

15.3.1.1. A2. Over coverage rate

Not applicable.

15.3.1.2. A3. Common units – proportion

Not applicable.

15.3.2. Measurement error

Not applicable.

15.3.3. Non-Response Error

Not applicable.

15.3.3.1. Unit non-response rate

Not applicable.

15.3.3.2. Item non-response rate

Not applicable.

15.3.4. Processing error

Details of the death may be entered incorrectly at the registry office. However, usually the original intent of the attending doctor can be deciphered by the CSO cause of death coder. Moreover, the CSO incorporates amended information from the GRO as part of their work

Cause of Death coding is very complicated and has a subjective element, so errors can also occur here. However, the editing process will identify where the deceased has been assigned an underlying cause of death inappropriate to their age or sex.

15.3.5. Model assumption error

Not applicable.

16. Timeliness and punctuality

16.1. Timeliness

The CSO disseminated the underlying cause of death data for 2021 based on the date the death occurred (final data) on the 31st October 2023 (i.e. T+22 months). Provisional mortality data is published on a quarterly basis. The most recent quarterly data i.e. Quarter 2 2023 was published on the 30th November 2023 and is based on the date of registration of the death.

The situation in Ireland is that the next-of-kin has 3 months from the date of death in which to register the death. Also, all unnatural deaths are referred to the Coroners Office and some cases can take approximately 2 years to finalise and for the death to be subsequently registered by that office.

The aim is to publish quarterly results on the deaths, births, and marriages registered within 4 months of the end of the quarter.
The annual report on births, deaths, and stillbirths is generally published within 22 months of the end of relevant year of occurrence.

16.1.1. TP1. Time lag – First results

Not applicable.

16.1.2. TP2. Time lag – Final results

+4 months for quarterly results
+22 months for annual (yearly) summary

16.2. Punctuality

The publication times for releases including death statistics are indicated in the CSO's Release Calendar well in advance of their planned publication date. The statistics are regularly published on time in accordance with this date.

16.2.1. TP3. Punctuality – Punctuality - delivery and publication

0 days.

17. Comparability

17.1. Comparability – Geographical

As cause of death coding strictly follows World Health Organisation guidelines, statistics are internationally comparable. These guidelines also ensure comparability over time.
Version 10 of ICD coding was introduced in Ireland in 2007. Deaths from 1979 to 2006 were coded according to ICD-9. Causes of death for other years were classified by earlier versions of ICD.
Version 10 of ICD coding was introduced in Ireland in 2007.

Definitions of stillbirth can vary internationally, with different conditions for gestation period and/or weight, or relying only on gestation period, or relying only on weight.

With regards to national level comparability the size of the geographical regions are not the same - Dublin is the largest region - there are no obvious issues arising when comparing regions - rates are calculated using the population of relevant regions.
The same variables are collected in respect of the deceased irrespective of what region the deceased resided.
The same process of collecting, coding and the transmission of data is uniform nationally and doesn't differ by region.

17.1.1. CC1. Asymmetry for mirror flow statistics

Not applicable.

17.2. Comparability over time

The World Health Organisation defines a stillbirth as the death of a foetus weighing at least 500 grams. This is the definition used in the National Perinatal Reporting System (NPRS). The definition of stillbirth as used by the CSO is a stillbirth weighing 500 grams or more or at gestational age of 24 weeks or more. This definition applies to stillbirth figures published by the CSO from 1995 onwards.

Note that due to the fact that 2011 data is the first data collection with a legal basis (and few changes in the requested variables and breakdowns), the data between 1994-2010 and starting from 2011 are not always comparable (in part due to the different groupings of causes of deaths). Moreover time series for data on stillbirths starts in 2011 and no information on previous data is available.
Mortality data is available for Ireland since 1864, although the rules for assigning an underlying cause of death has changed over time. The mortality coders adhere to the implementation of the WHO ICD-10 cause of death classification taking into account the major updates by the WHO.

While statistics of infant mortality are obtained in the course of the usual procedure for registration of deaths which has been in operation since 1863, particulars of late foetal mortality (defined below) have been obtained through a scheme of notification to the Directors of Community Care. The scheme of notifying late foetal deaths was introduced in 1957, but comparisons between different areas of the country showed marked differences in the coverage of the scheme in the early years. Consequently, the number of late foetal deaths in the early years of the scheme is believed to be understated.

- In 1995 stillbirths were registered in Ireland for the first time under the Stillbirths Registration Act, 1994.
- The definition of a stillbirth under the Act is broader than the definition used for late foetal deaths in previous Vital Statistics Reports.
- Late foetal deaths were defined as foetal deaths at or over 28 weeks gestation. This definition was applied up to 1994 inclusive.
- Stillbirths are defined as foetal deaths weighing 500 grams or more or at gestational age of 24 weeks or more. This definition applies to stillbirth figures from 1995 onwards.

There is a minor change in methodology concerning the calculation of the death rates at a county level for the annual report from 2013. Prior to this the county population used in the calculation of birth and death rates was calculated by applying the same factor of change in the population at a state level to each county during the inter-census years. For example:

- State Population (habitual residence) in 2011 Census year is 4,574,888
- Carlow population Census year = 54,723
- 2012 inter-census year estimate 4,585,400
- Factor of change = (4,585,400 /4,574,888) * 1.0022977
- Estimate population in Carlow for 2012 using factor of .0022977 as follows:
- Carlow 54,723*1.0022977= 54, 848= population estimate 2012

Regional population was calculated by summing the relevant counties and county boroughs.

17.2.1. Length of Comparable Time series

The CSO implemented ICD-10 from 2007 onwards. Iris software has been used since 1st January 2018 to code the underlying cause of death. This was a break from the American MICAR/ACME software that was previously used. There is approx. 50-55% automatic coding using this software and the balance of the coding is done manually. The use of Iris software by the other EU member states serves to make cause of death statistics comporable over time and accross countries.
Prior to the provision of cause of death data under a legal framework, data was provided from 1994 based on a gentlemans agreement.

13 years.

17.3. Coherence – cross domain

Vital Statistics data on births and deaths is the only comprehensive source of information for birth and death numbers. The annual population estimates produced by the CSO in intra-censal years rely on births and deaths figures produced by Vital Statistics, together with migration estimates.

The National Perinatal Reporting System (NPRS)**),** (http://www.hpo.ie/) also produces statistics on stillbirths, which can be compared to the numbers in the CSO reports. The NPRS figures are derived from birth notification forms only, rather than from stillbirths registered. In recent years, the numbers of stillbirths according to NPRS reports have been higher than the numbers published in CSO reports.

This suggests that there is some non-registration of stillbirths and that caution should be taken in interpreting the statistics on stillbirths in CSO reports.

As registration of a stillbirth is voluntary only the numbers of stillborn births that are registered are published by the CSO. This accounts for the difference that arises between the number of stillbirths per the birth notification forms and the number of stillbirths that are registered and published by the CSO.

17.3.1. Coherence – Sub annual and annual statistics

Not applicable, only annual data are available.

17.3.2. Coherence with National Accounts

Not applicable.

17.4. Coherence – internal

Data is coherent across all tables. Coherence adhered to, based on the most current data available.

18. Cost and Burden

The cost and burden of the data collection is reduced by using validation and dissemination IT tools. Vital statistics data is collected by means of administrative data and as such there are no survey costs are incurred.

19. Data Revision

19.1. Data Revision Policy

Published statistics are subject to correction and revision for a variety of reasons. The most common reasons include the receipt of additional information (for example, late survey responses) and updated seasonal factors. Occasional revisions also occur as a result of changes to definitions, methodology, classifications and general updating of statistical series.
It is recognised internationally that the existence of a sound revisions policy maintains credibility in official statistics. The CSO General Revisions Policy, which details how revisions should be managed and communicated to users, outlines the three main types of revisions:

- Planned Routine Revisions
- Planned Major Revisions
- Unplanned Revisions.

One reason for unplanned revisions occurring can be when errors are detected after publication. The 'CSO Error Correction Policy – How to deal with Publication Errors' outlines the steps taken when these errors are detected. As required under Principle 6.3 of the European Statistics Code of Practice, errors detected in published statistics are corrected at the earliest possible date and users are informed. An important step in the process is the documentation and analysis of errors that have occurred and their causes. This allows the CSO to take measures preventing similar errors from occurring in the future and uniformity in dealing with them when they do.

The data revision policy that CSO statistics adheres to can be found via the following link:
https://www.cso.ie/en/methods/quality/treatmentofrevisions/

19.2. Data Revision Practice

Not applicable.

19.2.1. Data Revision – Average size

Not calculated.

20. Statistical processing

20.1. Source Data

Administrative data files are received by CSO containing information on deaths from the following sources:

- Attending doctor for the cause of death, and the next of kin or other qualified informant for the demographic details.
- For unexpected deaths or deaths from external causes, the data sources are the coroner and the Gardai investigating the death.
- In the case of deaths involving an inquest, the form 104 is used for the purpose of supplementing the information on the Coroner's Certificate for better statistical classification of cause of death.
- Either parent of a stillborn child may voluntarily register the stillbirth. Registration of a stillbirth is not mandatory.

Stillbirths as recorded on Birth Notification Forms and the Medical Certificate Relating to the Birth of a Stillborn Child. See copy of Birth Notification form at the end of this document

20.1.1. Population and sampling frame

The population consists of all deaths registered in Ireland. There is no sampling frame as administrative data is used to generate the statistics.

20.1.2. Sampling design

Not applicable.

20.1.3. Survey size

Not applicable.

20.1.4. Survey technique

Weekly files of deaths registered in the previous week are sent electronically from the General Register Office (GRO) to the Central Statistics Office (CSO) in encrypted xml format. File is downloaded, decrypted and uploaded on to the CSO Data Management System (DMS).

Demography coding is done in the DMS and cause of death coding is done outside of the DMS.

Reconciliation sheets containing the reference number of each death is sent by the GRO to the CSO weekly. The number of deaths per the Reconciliation sheets is checked against the number of deaths in the DMS to ensure that numbers are the same.

Information about stillbirths as recorded on Birth Notification Forms and the Medical Certificate Relating to the Birth of a Stillborn Child is collected electronically by the General Registration Office. This information is sent to the Central Statistics Office annually and the file is in encrypted xml format. The file is decrypted to excel. Data for infant mortality and maternal deaths is included in the weekly death registrations transmitted to the CSO from the General Registration Office.

20.2. Frequency of data collection

Quarterly

20.3. Data Collection

Weekly files of deaths registered in the previous week are sent electronically from the General Register Office (GRO) to the Central Statistics Office (CSO) in encrypted xml format. File is downloaded, decrypted and uploaded on to the CSO Data Management System (DMS).

Information about stillbirths as recorded on Birth Notification Forms and the Medical Certificate Relating to the Birth of a Stillborn Child is collected electronically by the General Registration Office. This information is sent to the Central Statistics Office annually and the file is in encrypted xml format. The file is decrypted to excel. Data for infant mortality and maternal deaths is included in the weekly death registrations transmitted to the CSO from the General Registration Office.

20.3.1. Type of Survey/Process

Aggregation of administrative data concerning occurred deaths and registered stillbirths.

20.3.2. Questionnaire (including explanations)

For deaths that required an inquest, a survey form (form 104) is sent to the Garda Inspector in whose area the death occurred. The Garda Inspector then forwards the form to the relevant garda subdistrict or station. The primary purpose of this form is to help determine whether the death was the result of an accident, homicide, suicide, or natural causes.

20.3.3. Survey Participation

Every death occurring in Ireland must be registered with the General Register Office.

A Stillbirth occurring in Ireland may be registered with the General Register Office. Registration of a stillbirth is voluntary.

20.3.4. Data Capture

The attending physician completes the medical certificate of the cause of death on paper. This information, together with demographic information provided by the next of kin or other qualified informant, is entered electronically at registry offices around the country and forwarded to the General Registration Office. The registrations of the previous week from all registry offices are sent in a weekly encrypted XML file from the General Register Office to the Central Statistics Office.

For unexpected deaths or deaths due to external causes, the cause of death is determined by the coroner, following a postmortem and possibly an inquest. These deaths are included in the weekly file sent by the General Register Office to the Central Statistics Office. Copies of the Notification of Death form Part 1, Notification of Death form Part 2 and a sample of Death Certificate are at the end of this report.

The hospital completes details of the birth on the Birth Notification Form. The attending physician completes the Medical Certificate Relating to the Birth of a Stillborn Child and the General Registration Office is subsequently notified. When the stillbirth is registered the data from these forms is entered electronically by the General Registration Office and is encrypted and sent to CSO where file is decrypted into excel and cause of death coding is done in excel.

20.4. Data Validation

Reconciliation sheets containing the reference number of each death is sent by the GRO to the CSO weekly. The number of deaths per the Reconciliation sheets is checked against the number of deaths in the DMS to ensure that numbers are the same.

Coding

The main form of coding is attributing an underlying cause of death code to each death. An Underlying Cause of Death Code is determined from the 4 lines on the medical certificate of the cause of death (see section 1 and 11 of Medical Cause of Death Details on Part 1 of the death notification form – part 1 at end of this document). World Health Organisation rules (ICD-10) are followed in choosing this underlying cause of death code. For deaths not involving an inquest, from the 1st January 2018 the CSO is using new automated software called IRIS for selecting the underlying cause of death code. The IRIS coding system has been developed by the IRIS core group to code mortality data and is the preferred coding tool for European countries. Please note that the underlying cause of death is still classified to the International Classification of Diseases, ICD-10. Prior to the use of IRIS software, the CSO used the Medical Mortality Data System (MMDS) software package provided by the US National Centre for Health Statistics (NCHS). However, MMDS was replaced by IRIS when it ceased to be maintained/updated. The IRIS software codes the underlying cause of death in approximately 60% of deaths not involving an inquest, while the remaining 40% cases require manual intervention by mortality coders.

For some deaths, the CSO will send a query letter to the attending doctor, seeking details that will improve the quality of the code.

Deaths involving an inquest are all coded manually. The form 104 received from Gardai concerning a death will help determine the correct code. For some deaths a supplementary cause of death code is assigned in addition to the underlying cause of death. The most usual use of this is where the underlying cause of death is external (e.g. due to an accident, homicide or intentional self-harm), and the supplementary code describes the nature of the injuries sustained by the deceased.

Each death is geographically coded and given an Occupation code and Principal Economic Status (PES) code.

The death data held in excel format file is edited, to ensure that the ICD-10 code chosen as the underlying cause of death is appropriate to the sex and age of the deceased and is an acceptable underlying cause of death. This process follows Eurostat guidelines.
The file is also edited to eliminate inconsistencies between the sex/age of the deceased, and the Occupation and PES codes.

An Underlying Cause of Stillbirth Code is determined from the text string provided on the medical certificate of the stillbirth. World Health Organisation rules are followed in choosing this code. Cause is coded manually for all stillbirths.
Each stillbirth is geographically coded for the residence of the parents. The parents are also each assigned a Social Class and Socio-Economic Group code.

The data on stillbirths is held in Excel format and this file is edited to ensure that the ICD-10 code chosen as the underlying cause of death is an acceptable underlying cause of a stillbirth.

Demography coding is done in the DMS and cause of death coding is done outside of the DMS.

Description of coding procedure (central level, distributed among other bodies, etc.):
The mortality data is received electronically from the General Registration Office (GRO) every Thursday. Once the number of weekly deaths received are confirmed as correct, the data is uploaded in our Data Capture System. The CSO uses IRIS software to assign the underlying cause of death code in line with the WHO ICD-10 classification rules. There is approximately 56% of coding finalised in IRIS automatically. the balance of the codes which includes external causes of death codes (which are always coded manually) are coded manually by the Mortality Coders in the CSO.

Description of the procedures to detect errors (i.e.errors such as potential inconsistency in the death certificate or error due to mistake when filling the deaths certificates):

1. There are edits included in the CSO Data Capture System (DMS) which isolates certain ICD-10 codes and these are reviewed by the Mortality Coder and the Head Mortality Coder.

2. Where the narrative of the causes of death are complex then these cases are referred to our Lead Coder for further investigation and coding and also these examples are a source of training for our less experienced Coders.
3. The Statistician runs other edits in the SAS environment to isolate any other inconsistancies in the coding and these records are reviewd and recoded asis necessary by the Mortality Coders.

Description of the measures taken in order to solve detected errors:
If the Lead Coder detects an error in the IRIS Software then he contacts the IRIS Institute for feedback/correction.
If there is a need for further training of the Mortality Coders then this is provided.
An additional edit is written either in the DMS or generally in the SAS environment.

Coding performed by a certifier:
Coding is not performed by Certifier

Estimation of the percentage of autopsy from which information is available for coding:
Not Availabale.

Description of double coding exercises and rate of codification errors for underlying cause of death:
Not Available.

20.5. Data Compilation

Rates calculation

- Stillbirth rate: Stillbirths divided by total live births plus stillbirths, multiplied by 1,000.
- Late foetal mortality rate: Late foetal deaths divided by total live births plus late foetal deaths, multiplied by 1,000.
- Early neonatal mortality rate: Early neonatal deaths divided by total live births, multiplied by 1,000.
- Perinatal mortality rate: Perinatal deaths divided by total live births plus stillbirths, multiplied by 1,000.
- Late neonatal mortality rate: Late neonatal deaths divided by total live births, multiplied by 1,000.
- Neonatal mortality rate: Neonatal deaths divided by total live births, multiplied by 1,000.
- Post neonatal mortality rate: Post neonatal deaths divided by total live births, multiplied by 1,000.
- Infant mortality rate: Infant deaths divided by total live births, multiplied by 1,000.
- Maternal death rate: Maternal deaths divided by total live and stillbirths multiplied by 100,000.

For calculating the birth and death rates used for the annual report, the factor of change is calculated at the regional (NUTS3) level first and this is used to calculate the population at the relevant county level.
For example:
South East Region Population (habitual residence) in 2011 Census year is 499,304
Carlow population Census year = 54,723
2012 inter-census year estimate 500,831
Factor of change = (500,831 /499,304) * 1.0030582
Estimate population in Carlow for 2012 using factor of .0030582 as follows:
Carlow 54,723*1.0030582 = 54,890 = population estimate 2012
The overall rate at national level is unaffected by this revision.
The same proportion of the breakdown of the state population by county and age in the Census year 2011 has been applied to the population in 2013.

20.5.1. Imputation (for Non-Response or Incomplete Data Sets)

Not applicable.

20.5.1.1. A7. Imputation rate

Not calculated.

20.5.2. Grossing and Weighting

Not applicable.

20.6. Adjustment

20.6.1. Seasonal Adjustment

Not applicable.

21. Comment