

Excess Winter Mortality in Northern Ireland Statistics: Methodology Change Guidance

November 2020

Contents

1. Introduction to this guidance	1
1.1 Historical Excess Winter Mortality Statistics Data	1
1.2 Reason for changes to Excess Winter Mortality Statistics Data	1
1.3 The New publication	1
1.4 User engagement	2
2 The New Methodology	3
2.1 Excess Winter Mortality Definition	3
2.2 Data Source	3
2.3 New Methodology benefits	4
2.4 New Methodology known issues	4
3 Analysis of Impact	5
3.1 Overall Excess Winter Mortality	5
3.2 Worked Example for 2017/18	6
Annex 1 Registration-Based Methodology	7
Annex 2 Impact by Age, Sex, Cause of Death & Trust	8

1. Introduction to this guidance

This guidance is being issued to coincide with the first publication of Excess Winter Mortality in Northern Ireland Statistics data using an updated methodology.

This document has been produced by NISRA to summarise methodological changes being implemented in the series.

1.1 Historical Excess Winter Mortality Statistics Data

Since 2011 Northern Ireland Statistics & Research Agency have produced annual estimates of Excess Winter Mortality in Northern Ireland using deaths which are registered with the General Register Office (GRO). The number of deaths can vary depending on the season and in particular tend to increase in the winter. Historical estimates present the difference between the actual number of winter deaths **registered** in the 4 month period December to March and the expected number of deaths.

Historical Excess Winter Mortality Statistics, based on the date the death was registered are available up to and including 2016/17 on the NISRA website at: <insert link>

1.2 Reason for changes to Excess Winter Statistics Data

While the methodology adopted broadly aligned with estimates in other UK regions, the methodology used in NI has been based on when deaths are **registered**, not when they **occurred**.

Using this definition has two practical issues:

- firstly, all deaths in Northern Ireland should be registered within 5 days from when the occurred. There are some situations where the registration of a death can be delayed, specifically where the death has been accidental, unexpected or suspicious. These deaths must be referred to the Coroner and can result in a delay in registration.
- secondly, the exact timing of holiday periods associated with, for example, Christmas and Easter, can impact on the number of registrations and thus the excess winter statistic. Furthermore, Easter can occur in the late 'Winter' period which will have an additional effect

In order to align with the other UK counterparts NISRA has revised its methodology. Further detailed explanations of the changes in classification are provided in section 2.

1.3 The new publication

The new release seeks to replicate all of the analysis produced in historical Excess Winter Mortality Statistics. This will include the breakdowns of information provided in the old live tables. Due to the change in methodology this analysis will be published as a new set of live tables, with headline EWM figures based on the previous methodology for comparative purposes.

1.4 User engagement

Users are encouraged to provide feedback on this new methodology and provide suggestions for improvements to future publications.

Comments on any issues relating to this methodology and planned future release are welcomed and encouraged.

Responses should be addressed to:

Vital Statistics Team

Demography@nisra.gov.uk

Telephone: 028 90 388492

We are constantly trying to improve our service and would like to hear your feedback on how we are doing.

Have you time to complete our short Vital Statistics User Survey? Please Click [here](#)

2 The New Methodology

This section sets out an overview of the new methodology which is being adopted. It differs slightly from the previous Excess Winter methodology, details of which are still available in Annex 1.

2.1 Excess Winter Mortality Definition

The full methodology has two estimates. Excess Winter Mortality (EWM) defines the winter period as December to March and compares the number of deaths in this winter period with the number of deaths in two non-winter periods. The other is the EWM Index which is calculated so that comparisons can be made between sexes, age groups and regions.

Box 1: Excess Winter Mortality (EWM) – method of calculation

The method defines the winter period as December to March, and compares the number of deaths that **occurred** in this winter period with the average number of non-winter deaths **occurring** in the preceding August to November and the following April to July:

$$\text{Excess Winter Mortality} = \text{Deaths Occurring Dec to Mar} - \left(\frac{\text{Deaths Occurring Aug to Nov} + \text{Deaths Occurring Apr to Jul}}{2} \right)$$

The Excess Winter Mortality index is calculated as the number of excess winter deaths divided by the average non-winter deaths expressed as a percentage:

$$\text{EWM Index} = \left(\frac{\text{EWM}}{\text{Average non-winter deaths}} \right) \times 100$$

2.2 Data Source

Mortality data in Northern Ireland come from information collected when a death is certified and registered with GRO. During registration all information is entered on to an electronic system called the Northern Ireland Registration Office System (NIROS), which is managed by NISRA's General Registrar Office (GRO). Statisticians within NISRA's Vital Statistics Unit have a live link to the data contained within NIROS for analysis on behalf of the Registrar General for Northern Ireland.

Each September the Vital Statistics Unit produce an annual file showing the number of deaths occurring in the previous year and includes all deaths registered up to and including 31st August. This allows time for some late registrations (e.g. deaths that have been referred to the Coroner) to appear in the data.

Further details on the quality and coverage of mortality data in Northern Ireland are available in [Quality and Methodology Information \(QMI\) for Northern Ireland death statistics](#).

2.3 New Methodology benefits

Using provisional data allows NISRA to make available estimates within 3 months of the end of the time period in question, rather than over a year after the time period, which was the position with the previous registration-based series.

2.4 New Methodology known issues

As this occurrence-based dataset is provisional, deaths that are registered because they are referred to the coroner or an inquest was held may not be included in the extract if they were registered after August. Where a death has been referred to the Coroner, on average, 75 per cent of Coroner's Cases are registered within 90 days of the death occurring. This figure increased to 94 per cent by one year.

The occurrence based method therefore suffers from the problem of never providing a final statistic as deaths that occurred in one year can be registered in the next. This means that the figures contained in the dataset would underestimate the true number.

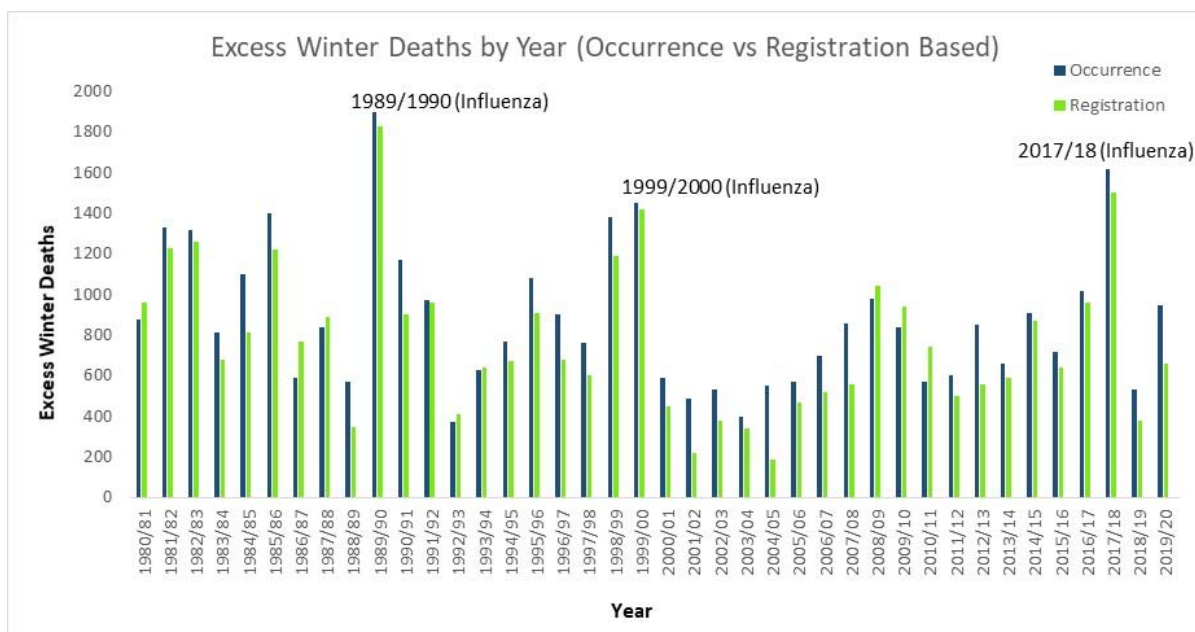
3. Analysis of Impact

3.1 Overall Excess Winter Mortality

Figure 1 shows that the impact of the difference between the registration and occurrence based method is generally small. Year on year however differences of EWM can vary, with timings of holiday periods associated with Christmas and Easter and the numbers of deaths referred to the Coroner all effecting registration delays.

The overall increase in Excess Winter Mortality between the years 1980/81 to 2019/20 was 14 per cent, equating to a 2 point difference in the EWM Index from 17 to 19.

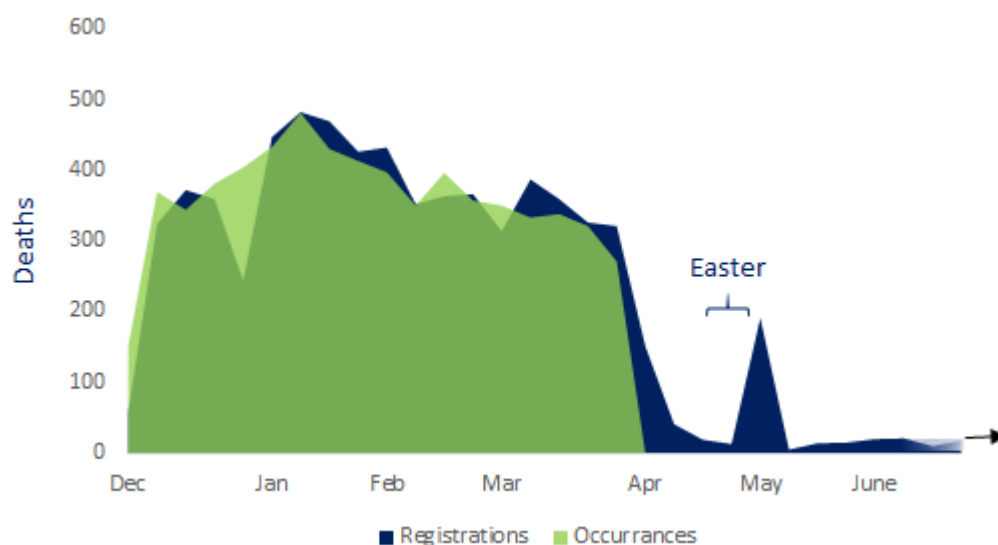
Figure 1



This increase is because when calculated based on when the death **occurred** then winter deaths (which are generally higher than the rest of the year) you are ‘pulling in’ more cases registered in non-winter into the winter ‘season’, than you are ‘pushing out’, therefore increasing EWM.

This is demonstrated graphically In Figure 2 for the 2017/18 year, showing that deaths occurring in December 2017 – March 2018, as is always the case, were registered into the non-winter months and beyond.

Figure 2 Deaths Occurring vs Deaths Registered by Registration Month, Winter 'Season' 2017/18



3.2 Worked Example for 2017/18

Taking 2017/18 as a worked example, the exact difference between Registration based and Occurrence based estimates is demonstrated in Figure 3.

Figure 3 EWM 2017/18, Registration-Based vs Occurrence-Based

	Registration Based	Occurrence Based	
August 2017 - November 2017	5,071	5,085	
December 2017 - March 2018	6,403	6,521	
April 2018 - July 2018	4,742	4,715	Difference
Excess Winter Mortality (EWM)	1,497	1,621	125
EWM Index	31	33	2

In this example the actual number of deaths included in the calculations increases by only 1 per cent, but it has the effect of increasing the number of excess deaths by 8 per cent, which corresponds to a 2 point increase in the index.

Further analysis of the overall impact by age, sex, cause of death and Health Trust is available in Annex 2.

Annex 1

Excess Winter Mortality (EWM), Registration Based – method of calculation

The method defines the winter period as December to March, and compares the number of deaths that were **registered** in this winter period with the average number of non-winter deaths **registered** in the preceding August to November and the following April to July:

$$\text{Excess Winter Mortality (EWM)} = \text{Deaths Registered Dec to Mar} - \left(\frac{\text{Deaths Registered Aug to Nov} + \text{Deaths Registered Apr to Jul}}{2} \right)$$

The Excess Winter Mortality index is calculated as the number of excess winter deaths divided by the average non-winter deaths expressed as a percentage:

$$\text{EWM Index} = \left(\frac{\text{EWM}}{\text{Average non-winter deaths}} \right) \times 100$$

Annex 2

Analysis by age and sex has been carried out between the years 1980/81 to 2019/20, whereas Cause of Death and Health Trust have been carried out over 2001/02 to 2019/20.

A2.1 Overall EWM by Sex, Registration-Based vs Occurrence-Based, 1980/81 to 2019/20

Sex	EWM			EWM Index		
	Registration	Occurrence	% Increase 1980/81-2019/21	Registration	Occurrence	Increase 1980/81 - 2019/20
Male	13,453	15,737	17%	14	17	3
Female	17,095	19,106	12%	18	20	2
All Ages	30,547	34,843	14%	17	19	2

A2.2 Overall EWM by Age Group, Registration-Based vs Occurrence-Based, 1980/81 - 2019/20

Age Group	EWM			EWM Index		
	Registration	Occurrence	% Increase 1980/81 - 2019/20	Registration	Occurrence	Increase 1980/81 - 2019/20
0-64	2,399	4,088	70%	6	10	4
65-74	5,252	6,025	15%	13	15	2
75-84	11,233	12,310	10%	19	20	1
85+	11,664	12,421	6%	24	25	1
All Ages	30,547	34,843	14%	17	19	2

A2.3 Overall EWM by Cause of Death, Registration-Based vs Occurrence-Based, 2001/02 to 2019/20

Cause of Death	EWM			EWM Index		
	Registration	Occurrence	% Increase 2001/02 - 2019/20	Registration	Occurrence	Increase 2001/02 - 2019/20
Circulatory Disease (I00-I99)	3,597	4,297	19%	13	16	3
Respiratory Disease (J00-J99)	4,391	4,744	8%	39	43	4
All Other Causes of Death	3,740	4,993	33%	7	10	3
All Causes	11,728	14,034	20%	12	15	3

A2.4 Overall EWM by Trust, Registration-Based vs Occurrence-Based, 2001/02 to 2019/20

Trust	EWM			EWM Index		
	Registration	Occurrence	% Increase 2001/02 - 2019/20	Registration	Occurrence	Increase 2001/02 - 2019/20
Belfast HSC Trust	2,576	3,225	25%	12	16	4
Northern HSC Trust	2,864	3,272	14%	13	14	1
South Eastern HSC Trust	2,552	3,016	18%	14	17	3
Southern HSC Trust	2,002	2,385	19%	13	15	2
Western HSC Trust	1,735	2,137	23%	13	16	3
All Areas	11,728	14,034	20%	12	15	3