General Register Office
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SCOTLAND
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Increased Winter Mortality in Scotland 2009/10

Figures for increased winter mortality in Scotland in winter 2009/10 and earlier years.

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A National Statistics publication for Scotland

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Main points

The main points in this report are:

- There were 19,688 deaths in Scotland in the four months of winter 2009/10 (December to March), compared with 20,532 in winter 2008/09. Despite the unusually cold weather, winter 2009/10 had the second lowest number of deaths registered in the twenty most recent winters - only slightly more than the lowest figure in that period (which was 19,651 deaths in winter 2005/06).

- Comparing the number of deaths in the four winter months with the average for the adjacent four-month periods, the increase in mortality in winter 2009/10 was 2,760, which was less than the corresponding figure of 3,510 for winter 2008/09.

- Increased winter mortality has tended to be relatively low in recent years. Since the winter of 1951/52 (when the series began), the lowest figure was for winter 2005/06 (1,780), the second lowest was for winter 2001/02 (1,840), and the fifth and sixth lowest were in 2007/08 and 2000/01 (2,180 and 2,220, respectively) - so the latest ten winters had four of the six lowest figures recorded.

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1. Introduction

This release presents provisional figures for increased winter mortality in Scotland in winter 2009/10. The Tables and Charts provide overall figures for Scotland for almost 60 years, statistics of increased winter mortality by age-group for Scotland as a whole for 20 years and for each NHS Board area for 10 years, and also recent years' numbers of deaths registered for Scotland and NHS Board areas.

Increased winter mortality is defined as the difference between the number of deaths in the four-month 'winter' period (December – March, inclusive) and the average number of deaths in the two four-month periods which precede and follow winter. There is no single cause of additional deaths in winter. Very few are caused by hypothermia. Most are from respiratory and circulatory diseases such as pneumonia, coronary heart disease and stroke. In only a small proportion of deaths is influenza recorded as the underlying cause.

This edition has been improved to provide:

- information about the overall mean temperature and the level of influenza in each winter (Table 2 has been expanded, and new Charts 2 and 3 have been added);
- the numbers of deaths registered in the winter, and in the preceding and subsequent 4-month periods, for each NHS Board area (in a new Table 5);
- much more background information, such as a separate page which includes notes on some medical causes of increased winter mortality, describes some research studies' findings on factors that influence increased winter mortality, and reports on a comparison of the figures for a number of European countries.

2. Commentary

2.1 Table 1 summarises recent trends for Scotland. It is estimated that there were about 2,760 'additional' deaths in Scotland during winter 2009/10, 750 fewer than the 3,510 in the previous winter. Table 1 also shows the extent to which the winter increase in mortality affects the elderly, particularly those aged 75 and over.

2.2 Chart 1 shows the increased winter mortality figures for each winter from 1951/52 individually (the bars) and as a 5-year moving average (which should give a better guide to the overall trend, as it 'smoothes out' most, but not all, of the effect of year-to-year fluctuations in the figures). The chart shows that there has been an overall downward trend in the number of 'additional' winter deaths over the past (almost) 60 years: although there have been unusually high numbers in some years, the height of the peaks appears to be falling, and the 5-year moving average is tending to decline. However, there are fluctuations around the overall long-term downward trend, such as the short-term rise in the moving average towards the end of the 1990s.

2.3 Table 2 gives the figures for the 59 winters for which these statistics are available. Despite the unusually cold weather, winter 2009/10 had what is, in historical terms, a relatively low number of 'additional' deaths: 2,760 - which is the eighteenth

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lowest figure since the series started in 1951/52. Winter 2005/06, with mild weather and no serious outbreaks of flu, had the lowest number of 'additional' deaths (1,780) recorded; the winters of 2001/02, 2007/08 and 2000/01 had the second, fifth and sixth lowest figures (1,840, 2,180 and 2,220, respectively). Therefore, the latest ten winters had four of the six lowest figures since 1951/52.

2.4 Table 3 gives a more detailed breakdown of increased winter mortality by age and NHS Board area. There are some negative figures: these are cases where a particular age-group had fewer deaths in the winter period than the average of the two adjacent non-winter periods. This happens sometimes because the number of deaths may fluctuate 'randomly' during the year. The 'all ages' figures for increased winter mortality take account of any negative values for individual age-groups.

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3. Relationship with Overall Mean Winter Temperature and the Level of Influenza Activity

3.1 In general, there are more deaths in colder months, and mortality tends to rise as temperatures fall. Table 2 also gives the Met Office's overall mean winter temperature for Scotland for each of the years. On this basis, 2009/10 was the second coldest winter of all the years shown (almost as cold as winter 1962/63), so an increase in winter mortality would have been expected. However, Chart 2 shows that there is no clear relationship between increased winter mortality and the overall mean winter temperature in different years. There may be a number of reasons for this: for example, over the years, improvements in home insulation and the spread of central heating will have altered the relationship between the weather outdoors and people's indoor temperatures; and the overall mean winter temperature may not be a good indicator of the severity of a winter because it is an average over three months (so it could suggest that a winter with some extremely cold weeks in, say, January was a ‘mild’ one if there were unusually warm weather in December and/or February).

3.2 The number of "additional" deaths in winter 2009/10 was just over half (53%) of the figure for 1999/2000, which was the last time that influenza activity was at a high level. Despite ‘H1N1/swine’ flu, winter 2009/10 had a relatively low level of influenza activity. Table 2 also includes indicators of the level of influenza activity, which GROS has calculated from figures for General Practitioner consultation rates for influenza-like illnesses which were supplied by Health Protection Scotland (HPS). The ‘fluspotter’ surveillance scheme, which ran from 1971 to 2008, has been superseded by the Pandemic Influenza Primary Care Reporting (PIPeR) scheme, which started in 2004. GROS has expressed each indicator in the form of an index, with the 2004/05 value being 100 in each case (there would be expected to be differences between the two series' index values for the other years which they have in common, because different measuring systems are likely to produce different results). Some of the winters which had particularly high levels of increased winter mortality were in periods with unusually high levels of influenza activity (e.g. 1975/76 and 1989/90), but there have also been occasions when the relationship was less clear (e.g. 1971/72 had a very high level of influenza activity, but its increased winter mortality did not differ greatly from the 5-year moving average).

3.3 Chart 3 illustrates the general tendency for increased winter mortality to be higher when there are more cases of influenza. It should be noted that when influenza is at its highest, it may not be within the four winter months (as defined for the purpose of these statistics), which may reduce the statistical correlation between influenza activity and increased winter mortality. This can be seen from HPS's regular Influenza Updates (which are available on the HPS website), which include a chart comparing the latest and the previous influenza seasons' GP consultation rates for flu. For example, the updates produced in April 2010 show that influenza in the 2009/10 season peaked in early November 2009 - which was before the start of what is defined as "winter 2009/10" for the statistics of increased winter mortality.

3.4 Influenza is recorded as the cause of relatively few deaths. Information about the numbers of deaths from different causes is given in the Vital Events Reference Tables. Table 6.1 shows that, in most years, there are only a few deaths for which

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the underlying cause is recorded as influenza (ICD-10 codes J10-J11): in recent years, the largest such figures were 62 in 1999 and 131 in 2000 (which are relatively small when compared with 1999/2000's figure of 5,190 for increased winter mortality) and 62 in 2009 (which includes all the deaths for which the underlying cause was "swine flu" which were registered in 2009, and is, again, relatively small compared with the 2009/10 figure of 2,760 for increased winter mortality). There were far fewer influenza deaths in most other years (e.g. only ten in 2008). "Swine flu" accounted for only a small proportion of 2009/10's increased winter mortality. The HPS Influenza Update dated 15 April 2010 stated that "the total number of reports received of deaths among those with confirmed Influenza A H1N1v in Scotland remains at 69", a figure which covers the period since "swine flu" started in Scotland in Spring 2009, so the number of "swine flu" deaths included in the increased winter mortality figure for 2009/10 will be less than that.

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4. How Increased Winter Mortality is calculated

4.1 Increased winter mortality is defined as the difference between the number of deaths in the four-month "winter" period (December – March, inclusive) and the average number of deaths in the two four-month periods which precede winter (August – November) and follow winter (April – July). This is a standard definition which is used by the Office for National Statistics, the World Health Organisation and others (who may describe it as "excess winter deaths" or "excess winter mortality").

4.2 The numbers of deaths registered each winter, and in the adjacent four-month periods, are provided in Table 4, along with figures for increased winter mortality (sometimes referred to as the "seasonal difference") which have been calculated from those numbers of deaths.

4.3 Table 4 shows that there were 19,688 deaths in Scotland in the four months of winter 2009/10 (December to March), compared with 20,532 in winter 2008/09. Despite the unusually cold weather, winter 2009/10 had the second lowest number of deaths registered in the twenty most recent winters. The number of deaths in winter 2009/10 was only slightly more than the lowest figure in the past twenty years, which was 19,651 deaths in winter 2005/06. In the ten year period which began with winter 2000/01, the number of deaths has varied between 19,651 in winter 2005/06 and 21,058 in winter 2002/03.

4.4 The 19,688 deaths in the four months of winter 2009/10 exceeded both the 17,059 deaths in the preceding 4-month period and the 16,789 deaths in the following 4-month period. Comparing the four winter months with the average of the 4-month periods before and after the winter, and rounding the result to the nearest ten, gives a figure for increased winter mortality of 2,760 for winter 2009/10 – which is less than the 3,510 for winter 2008/09, which was calculated using the same method.

4.5 Table 5 provides the same kind of information as Table 4 for each NHS Board area for each of the latest four years.

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5. Background

5.1 This is an annual publication. GROS collects the underlying data on a daily basis, as and when each event is registered. The statistics for the latest winter are all new; the figures for the previous winter may have been revised very slightly.

5.2 Information about (e.g.) the sources, methods, definitions and reliability of these statistics is available from the GROS web site's pages of general background information on Vital Events statistics and background information on points which are specific to statistics about deaths. These figures are directly comparable with those for other parts of the United Kingdom: there are no significant differences across the UK in how Vital Events data are collected and processed.

5.3 The figures for the latest winter, and the subsequent four month period, given here are provisional. They were produced from the information that GROS held about deaths which had been registered by (roughly) 3-4 weeks before the date on which this release was published. By law, a death which occurs in Scotland must be registered within eight days. Therefore, hardly any deaths which occurred in the winter (December to March), or in the subsequent four month period (April to July), will not have been registered in time to be included in GROS's statistical database before the tables for this release were produced. However, the figures could change slightly, because ‘ate’ registrations occur occasionally, in unusual circumstances. GROS does not "freeze" its statistical data for a given year until it starts to prepare the final statistics for the calendar year as a whole, which are published in the following summer.

5.4 Statistics of increased winter mortality inform public debate and the development of government policy on matters such as the health of the elderly population, fuel poverty and whether there is a need to improve the housing stock in terms of central heating and thermal insulation.

5.5 A separate Background Note gives information about some of the medical causes of increased winter mortality, describes some research studies' findings on factors that influence increased winter mortality, reports on a comparison of the figures for a number of European countries, mentions previous GROS publications on this topic, and provides references to the sources of the material. The main points to note are:

- high cold-related mortality is associated with low indoor temperatures, and with people not wearing appropriate clothing when outdoors in cold weather;
- increased winter mortality was at the same level in Scotland as the overall mean for the 14 European countries covered by a comparative study; and
- increased winter mortality is higher in countries with a warmer winter climate, probably because their homes tend to be poorly insulated and their populations tend not to dress well for cold weather.

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Table 1: Increased winter mortality by age group, Scotland, 1990/91 to 2009/10

	0-64	65-74	75-84	85+	All ages
1990/91	230	580	750	880	2,430
1991/92	350	560	1,020	950	2,890
1992/93	280	550	950	960	2,740
1993/94	350	440	990	800	2,590
1994/95	240	380	930	760	2,310
1995/96	250	860	1,420	1,120	3,650
1996/97	320	630	1,350	1,350	3,640
1997/98	170	730	950	760	2,610
1998/99	380	790	1,660	1,920	4,750
1999/2000	650	970	1,820	1,750	5,190
2000/01	260	370	820	760	2,220
2001/02	80	230	820	710	1,840
2002/03	350	300	940	920	2,510
2003/04	320	510	840	1,170	2,840
2004/05	200	430	1,030	1,090	2,760
2005/06	330	280	550	610	1,780
2006/07	190	410	980	1,180	2,750
2007/08	130	320	880	850	2,180
2008/09	370	590	1,170	1,370	3,510
2009/10 prov.	460	370	890	1,040	2,760

Notes

1. Increased winter mortality has been defined as the difference between the number of deaths in the months December - March and the average of the preceding (August - November) and following (April - July) non-winter periods.
2. Because of the approximate nature of this measure, numbers have been rounded independently to the nearest 10. The sum of the age group figures may, therefore, differ from the "all ages" total.

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Table 2: Increased winter mortality, mean winter temperature and indicators of level of influenza activity, Scotland, 1951/52 - 2009/10

Year	Increased Winter Mortality		Mean Winter Temperature * (deg. C.)	Indicators of Influenza Activity **	
	Additional deaths (Dec-Mar)	5-year moving average		"Fluspotter" (Index: 2004/05 = 100)	"PIPeR" (Index: 2004/05 = 100)
1951/52	5,240		1.89		
1952/53	5,890		2.94		
1953/54	4,770	5,634	2.70		
1954/55	5,820	5,140	1.41		
1955/56	6,450	4,854	1.52		
1956/57	2,770	5,734	3.47		
1957/58	4,460	5,388	2.06		
1958/59	9,170	5,166	1.66		
1959/60	4,090	5,630	2.12		
1960/61	5,340	6,160	2.56		
1961/62	5,090	5,068	2.13		
1962/63	7,110	5,092	0.16		
1963/64	3,710	5,294	3.09		
1964/65	4,210	4,680	1.87		
1965/66	6,350	4,378	1.60		
1966/67	2,020	4,596	3.00		
1967/68	5,600	5,162	1.91		
1968/69	4,800	4,434	1.55		
1969/70	7,040	5,024	1.52		
1970/71	2,710	4,720	3.41		
1971/72	4,970	4,322	3.56	3,412	
1972/73	4,080	3,606	3.23	1,286	
1973/74	2,810	4,352	3.50	2,081	
1974/75	3,460	4,064	3.88	1,144	
1975/76	6,440	4,218	3.72	2,951	
1976/77	3,530	4,494	1.02	656	
1977/78	4,850	4,336	1.77	2,214	
1978/79	4,190	3,802	0.45	951	
1979/80	2,670	4,356	2.47	967	
1980/81	3,770	4,300	2.97	800	
1981/82	6,300	4,020	1.36	1,542	
1982/83	4,570	4,112	2.49	1,309	
1983/84	2,790	4,300	2.53	1,698	
1984/85	3,130	3,688	2.12	705	
1985/86	4,710	3,292	1.28	1,107	
1986/87	3,240	3,166	2.00	847	
1987/88	2,590	3,632	3.14	337	
1988/89	2,160	3,176	5.12	819	
1989/90	5,460	3,106	3.34	2,753	
1990/91	2,430	3,136	1.99	319	
1991/92	2,890	3,222	3.94	928	
1992/93	2,740	2,592	3.42	979	
1993/94	2,590	2,836	1.77	2,053	
1994/95	2,310	2,986	2.89	219	
1995/96	3,650	2,960	1.76	907	
1996/97	3,640	3,392	2.48	1,763	
1997/98	2,610	3,968	4.51	272	
1998/99	4,750	3,682	3.26	718	
1999/00	5,190	3,322	3.03	1,973	
2000/01	2,220	3,302	2.16	144	
2001/02	1,840	2,920	3.39	95	
2002/03	2,510	2,434	2.96	98	
2003/04	2,840	2,346	3.20	321	
2004/05	2,760	2,528	3.94	100	100
2005/06	1,780	2,462	3.35	77	125
2006/07	2,750	2,596	4.34	367	142
2007/08	2,180	2,596	3.61	116	134
2008/09	3,510		2.60		117
2009/10 (provisional)	2,760		0.39		77

* the mean winter temperature for Scotland (for December to February), as obtained from the Met Office web site (the relevant page is reached thus: Home > Weather > UK > Climate > Download regional values)

** indicators of the numbers of GP consultations for influenza-like illness, calculated from figures which were supplied by Health Protection Scotland (HPS). The "fluspotter" index value was calculated from the maximum rate (per 100,000) in each 'flu season, as supplied by HPS, and the "PIPeR" index value from the maximum of all the rates for weeks 48 to 13 (i.e. December to March, roughly) that were provided by HPS. The PIPeR surveillance system has superseded the "fluspotter" system which ceased to operate in 2008. PIPeR is an enhanced surveillance system which collects additional clinical and epidemiological data to provide more accurate interpretation of seasonal influenza and respiratory virus activity. Since these systems measure activity using different methods and definitions, their results are not directly comparable.

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Table 3: Increased winter mortality and increased winter mortality index, by age group and NHS Board area of usual residence, 2000/01 to 2009/10

Scotland

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	2,220	260	370	820	760	*12*	*7*	*9*	*14*	*16*
2001/02	1,840	80	230	820	710	*10*	*2*	*6*	*14*	*15*
2002/03	2,510	350	300	940	920	*14*	*9*	*8*	*16*	*19*
2003/04	2,840	320	510	840	1,170	*16*	*9*	*13*	*14*	*25*
2004/05	2,760	200	430	1,030	1,090	*15*	*5*	*12*	*18*	*23*
2005/06	1,780	330	280	550	610	*10*	*9*	*8*	*10*	*13*
2006/07	2,750	190	410	980	1,180	*16*	*5*	*12*	*18*	*24*
2007/08	2,180	130	320	880	850	*12*	*3*	*9*	*16*	*17*
2008/09	3,510	370	590	1,170	1,370	*21*	*10*	*18*	*22*	*28*
2009/10 (P)	2,760	460	370	890	1,040	*16*	*13*	*11*	*17*	*21*

Ayrshire and Arran

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	90	-20	10	60	40	*6*	*.*	*3*	*12*	*11*
2001/02	100	30	-30	50	50	*7*	*9*	*.*	*10*	*13*
2002/03	170	20	30	60	70	*12*	*7*	*8*	*12*	*18*
2003/04	230	20	50	50	110	*16*	*7*	*17*	*9*	*28*
2004/05	260	10	70	80	100	*19*	*5*	*25*	*17*	*27*
2005/06	150	60	40	0	50	*10*	*21*	*14*	*1*	*12*
2006/07	220	40	30	60	90	*16*	*14*	*10*	*14*	*24*
2007/08	140	-10	30	40	90	*10*	*.*	*9*	*8*	*23*
2008/09	380	30	50	160	140	*29*	*11*	*19*	*42*	*35*
2009/10 (P)	190	10	10	90	70	*14*	*4*	*5*	*23*	*19*

Borders

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	50	10	10	30	0	*13*	*20*	*12*	*25*	*.*
2001/02	40	0	10	20	10	*9*	*4*	*9*	*15*	*6*
2002/03	40	10	0	10	20	*9*	*9*	*4*	*6*	*15*
2003/04	40	-10	10	10	30	*9*	*.*	*14*	*9*	*17*
2004/05	60	0	10	20	30	*15*	*1*	*20*	*15*	*21*
2005/06	60	0	10	20	30	*14*	*.*	*16*	*13*	*22*
2006/07	60	10	0	10	30	*15*	*18*	*5*	*10*	*24*
2007/08	80	20	10	0	40	*19*	*32*	*19*	*0*	*36*
2008/09	100	10	20	40	30	*24*	*15*	*23*	*34*	*21*
2009/10 (P)	50	-10	10	20	30	*12*	*.*	*9*	*18*	*25*

Dumfries and Galloway

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	70	10	10	40	10	*12*	*7*	*5*	*25*	*5*
2001/02	50	-10	0	40	10	*9*	*.*	*1*	*23*	*8*
2002/03	80	20	10	10	50	*14*	*15*	*8*	*7*	*27*
2003/04	30	0	20	0	10	*5*	*.*	*16*	*2*	*8*
2004/05	70	0	20	30	20	*12*	*.*	*18*	*15*	*10*
2005/06	60	20	30	-10	20	*10*	*17*	*28*	*.*	*13*
2006/07	60	0	10	30	20	*10*	*4*	*5*	*14*	*11*
2007/08	90	30	10	30	20	*16*	*37*	*7*	*13*	*15*
2008/09	140	20	30	40	40	*25*	*23*	*29*	*25*	*24*
2009/10 (P)	100	10	10	30	50	*18*	*12*	*12*	*17*	*27*

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Table 3, continued

Fife

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	280	40	60	70	100	*23*	*20*	*23*	*18*	*32*
2001/02	200	40	50	50	60	*17*	*19*	*20*	*12*	*18*
2002/03	90	30	10	40	20	*7*	*12*	*2*	*8*	*6*
2003/04	150	-10	20	10	130	*12*	*.*	*6*	*2*	*38*
2004/05	250	30	20	120	90	*21*	*13*	*8*	*27*	*25*
2005/06	40	10	-30	30	30	*4*	*4*	*.*	*8*	*10*
2006/07	150	-10	20	70	80	*12*	*.*	*6*	*18*	*21*
2007/08	210	10	10	80	110	*17*	*3*	*3*	*21*	*33*
2008/09	280	10	60	80	130	*23*	*6*	*25*	*21*	*36*
2009/10 (P)	190	30	40	60	60	*16*	*14*	*17*	*16*	*16*

Forth Valley

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	150	0	40	80	40	*16*	*.*	*18*	*26*	*17*
2001/02	30	-20	0	10	40	*2*	*.*	*.*	*2*	*14*
2002/03	120	-30	30	80	50	*13*	*.*	*12*	*25*	*19*
2003/04	180	30	30	40	70	*18*	*16*	*16*	*13*	*28*
2004/05	170	20	50	80	30	*18*	*8*	*24*	*25*	*12*
2005/06	180	0	40	70	70	*19*	*2*	*21*	*22*	*27*
2006/07	150	30	10	20	90	*16*	*14*	*8*	*7*	*34*
2007/08	110	20	-10	40	50	*12*	*9*	*.*	*15*	*21*
2008/09	280	40	40	90	110	*32*	*21*	*24*	*32*	*45*
2009/10 (P)	100	20	20	-10	60	*11*	*14*	*10*	*.*	*24*

Grampian

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	190	40	60	40	50	*12*	*12*	*17*	*8*	*11*
2001/02	160	-10	0	80	100	*10*	*.*	*.*	*15*	*20*
2002/03	280	60	0	110	110	*17*	*17*	*0*	*20*	*23*
2003/04	320	20	40	150	110	*20*	*7*	*14*	*28*	*24*
2004/05	250	20	60	80	90	*15*	*7*	*20*	*14*	*19*
2005/06	130	0	30	30	70	*8*	*0*	*9*	*6*	*14*
2006/07	380	40	10	140	200	*23*	*12*	*4*	*26*	*40*
2007/08	250	20	50	100	70	*15*	*7*	*16*	*19*	*14*
2008/09	270	20	50	60	150	*16*	*5*	*16*	*11*	*30*
2009/10 (P)	210	40	30	50	100	*13*	*12*	*10*	*9*	*18*

Greater Glasgow & Clyde[5]

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	550	120	80	190	160	*12*	*11*	*7*	*13*	*15*
2001/02	560	10	170	240	150	*12*	*1*	*16*	*17*	*14*
2002/03	820	180	140	190	310	*18*	*17*	*13*	*13*	*30*
2003/04	670	100	150	190	230	*15*	*9*	*15*	*13*	*22*
2004/05	610	20	40	280	270	*13*	*2*	*4*	*20*	*26*
2005/06	450	130	50	120	160	*10*	*13*	*5*	*8*	*15*
2006/07	770	50	140	280	290	*18*	*5*	*16*	*21*	*28*
2007/08	600	30	90	260	210	*14*	*3*	*10*	*20*	*20*
2008/09	800	110	150	200	330	*19*	*11*	*19*	*16*	*31*
2009/10 (P)	570	120	70	220	160	*14*	*13*	*8*	*18*	*15*

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Table 3, continued

Highland[b]

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	60	0	-30	40	50	*6*	*.*	*.*	*13*	*16*
2001/02	120	30	10	40	50	*10*	*13*	*3*	*10*	*14*
2002/03	90	0	10	70	20	*8*	*.*	*5*	*19*	*6*
2003/04	140	40	-20	60	60	*12*	*16*	*.*	*16*	*19*
2004/05	140	0	20	20	100	*13*	*1*	*8*	*5*	*38*
2005/06	80	20	-20	50	20	*7*	*11*	*.*	*16*	*6*
2006/07	190	30	30	60	70	*16*	*12*	*12*	*18*	*21*
2007/08	80	0	0	-10	80	*7*	*0*	*1*	*.*	*26*
2008/09	150	0	40	30	70	*13*	*1*	*18*	*10*	*23*
2009/10 (P)	200	40	30	50	80	*19*	*20*	*13*	*15*	*25*

Lanarkshire

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	250	20	40	110	80	*13*	*5*	*9*	*18*	*21*
2001/02	210	-20	20	100	100	*11*	*.*	*4*	*17*	*26*
2002/03	250	30	30	120	60	*13*	*7*	*8*	*21*	*14*
2003/04	400	60	30	160	150	*22*	*14*	*8*	*26*	*38*
2004/05	280	30	70	120	60	*15*	*6*	*17*	*18*	*15*
2005/06	290	60	50	110	70	*15*	*13*	*14*	*19*	*15*
2006/07	210	-10	80	80	60	*11*	*.*	*21*	*13*	*13*
2007/08	240	-10	40	160	50	*13*	*.*	*10*	*28*	*10*
2008/09	470	80	80	190	120	*26*	*20*	*22*	*33*	*27*
2009/10 (P)	430	110	60	140	120	*23*	*27*	*14*	*25*	*26*

Lothian

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	360	40	80	120	120	*14*	*7*	*16*	*15*	*17*
2001/02	220	30	-10	140	60	*9*	*6*	*.*	*17*	*9*
2002/03	360	50	0	170	140	*14*	*10*	*.*	*20*	*19*
2003/04	400	20	80	110	190	*16*	*5*	*16*	*13*	*29*
2004/05	390	60	70	90	170	*16*	*12*	*15*	*11*	*25*
2005/06	230	30	20	130	50	*9*	*5*	*5*	*17*	*7*
2006/07	270	0	20	120	120	*11*	*1*	*4*	*16*	*18*
2007/08	220	10	50	90	70	*9*	*3*	*13*	*11*	*9*
2008/09	420	30	70	170	150	*18*	*5*	*17*	*24*	*20*
2009/10 (P)	380	40	60	110	170	*17*	*9*	*14*	*15*	*25*

Orkney

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	**0-64**	**65-74**	**75-84**	**85+**	**All ages**	**0-64**	**65-74**	**75-84**	**85+**
2000/01	0	0	-10	0	0	*.*	*.*	*.*	*15*	*6*
2001/02	10	0	0	0	10	*12*	*19*	*.*	*16*	*26*
2002/03	10	0	10	0	0	*10*	*.*	*42*	*18*	*0*
2003/04	10	0	10	0	0	*20*	*23*	*71*	*12*	*2*
2004/05	40	10	0	10	20	*66*	*82*	*43*	*49*	*84*
2005/06	-10	0	-10	0	0	*.*	*22*	*.*	*.*	*2*
2006/07	10	0	10	-10	10	*9*	*.*	*57*	*.*	*49*
2007/08	0	0	-10	10	0	*1*	*16*	*.*	*30*	*13*
2008/09	10	0	10	-10	10	*14*	*9*	*42*	*.*	*51*
2009/10 (P)	0	0	0	0	0	*.*	*9*	*.*	*8*	*.*

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Table 3, continued

Shetland

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2000/01	10	0	0	0	10	*8*	*.*	*18*	*0*	*35*
2001/02	10	-10	0	20	0	*10*	*.*	*.*	*106*	*.*
2002/03	-10	0	0	0	-10	*.*	*.*	*14*	*2*	*.*
2003/04	10	0	0	10	0	*11*	*10*	*12*	*26*	*.*
2004/05	0	0	-10	0	0	*.*	*.*	*.*	*29*	*12*
2005/06	20	0	10	0	10	*29*	*20*	*131*	*.*	*47*
2006/07	20	10	10	0	10	*32*	*47*	*55*	*14*	*28*
2007/08	10	0	0	10	0	*10*	*4*	*.*	*50*	*5*
2008/09	0	-10	0	0	10	*2*	*.*	*29*	*.*	*28*
2009/10 (P)	10	0	0	0	10	*17*	*29*	*.*	*12*	*28*

Tayside

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2000/01	180	20	30	40	90	*12*	*7*	*11*	*8*	*21*
2001/02	130	-10	30	40	80	*9*	*.*	*10*	*8*	*17*
2002/03	210	10	40	80	80	*14*	*3*	*14*	*16*	*18*
2003/04	260	40	80	50	90	*17*	*17*	*27*	*10*	*20*
2004/05	240	10	10	110	120	*17*	*3*	*3*	*23*	*28*
2005/06	80	10	50	0	20	*5*	*2*	*19*	*.*	*6*
2006/07	280	10	60	110	110	*20*	*2*	*24*	*25*	*24*
2007/08	150	-20	50	60	50	*10*	*.*	*19*	*14*	*11*
2008/09	220	40	0	90	100	*16*	*15*	*.*	*21*	*21*
2009/10 (P)	300	30	50	100	130	*22*	*11*	*20*	*24*	*28*

Western Isles

	Increased Winter Mortality[1,2]					Increased Winter Mortality Index[3,4]				
	All ages	0-64	65-74	75-84	85+	All ages	0-64	65-74	75-84	85+
2000/01	-10	0	-10	-10	10	*.*	*.*	*.*	*.*	*25*
2001/02	10	0	0	0	10	*6*	*.*	*0*	*5*	*14*
2002/03	-10	0	-10	10	-10	*.*	*.*	*.*	*15*	*.*
2003/04	0	10	0	-10	0	*.*	*25*	*5*	*.*	*1*
2004/05	10	0	0	10	0	*13*	*0*	*24*	*29*	*0*
2005/06	20	0	0	10	20	*18*	*.*	*5*	*21*	*45*
2006/07	-10	-10	-10	10	0	*.*	*.*	*.*	*20*	*8*
2007/08	10	10	0	20	-10	*5*	*23*	*.*	*48*	*.*
2008/09	10	-10	0	20	-10	*8*	*.*	*12*	*61*	*.*
2009/10 (P)	40	10	10	20	0	*35*	*53*	*29*	*84*	*.*

Notes:

1. Increased winter mortality has been defined as the difference between the number of deaths in the months December - March and the average of the preceding (August - November) and following (April - July) non-winter periods. A negative figure occurs when there were fewer deaths during the winter period than the average of the two "non-winter" periods.

2. Because of the approximate nature of this measure, numbers have been rounded independently to the nearest 10. The sum of the age group figures may therefore appear to differ from the "all ages" total.

3. The IWM Index is the (unrounded) number of "additional" winter deaths divided by the (unrounded) average number of deaths in a four month "non-winter" period, expressed as a percentage.

4. The IWM Index has not been calculated when the number of "additional" winter deaths was negative.

5. Figures for "Greater Glasgow & Clyde" and "Highland" include deaths in the relevant parts of the former NHS Argyll and Clyde area.

(P). Data for the latest year are provisional.

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Table 4: Increased winter mortality - underlying death registrations, Scotland, 1990/91 to 2009/10

Period	Number of deaths registered			Increased winter mortality (or seasonal difference) [1]	
	Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	(actual)	(rounded)
1990/91	21,859	19,103	19,752	2,432	2,430
1991/92	22,217	19,305	19,352	2,889	2,890
1992/93	22,416	19,417	19,929	2,743	2,740
1993/94	22,504	21,104	18,732	2,586	2,590
1994/95	21,510	19,103	19,301	2,308	2,310
1995/96	22,821	19,074	19,260	3,654	3,650
1996/97	22,438	18,585	19,005	3,643	3,640
1997/98	21,320	18,311	19,105	2,612	2,610
1998/99	23,163	18,856	17,973	4,749	4,750
1999/2000	23,379	18,407	17,974	5,189	5,190
2000/01	20,388	18,061	18,281	2,217	2,220
2001/02	20,366	18,239	18,815	1,839	1,840
2002/03	21,058	18,599	18,499	2,509	2,510
2003/04	21,024	18,616	17,749	2,842	2,840
2004/05	20,658	18,064	17,736	2,758	2,760
2005/06	19,651	17,619	18,127	1,778	1,780
2006/07	20,384	17,526	17,739	2,752	2,750
2007/08	19,900	17,600	17,850	2,175	2,180
2008/09	20,532	17,075	16,969	3,510	3,510
2009/10 prov.	19,688	17,059	16,789	2,764	2,760

1. Increased winter mortality, or the "seasonal difference", is defined as the number of deaths in the "winter" period of 4 months less the average of the numbers of deaths in the preceding period of 4 months and the following period of 4 months.

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Table 5: Increased winter mortality - underlying death registrations, NHS Board area of usual residence, 2006/07 to 2009/10

NHS Board area	Period	Number of deaths registered: Winter (Dec - Mar)	Preceding period (Aug - Nov)	Following period (Apr - Jul)	Increased winter mortality (or seasonal difference) [1]: (actual)	(rounded)
Ayrshire and Arran						
	2006/07	1,596	1,362	1,397	217	220
	2007/08	1,572	1,425	1,444	138	140
	2008/09	1,714	1,328	1,337	382	380
	2009/10 prov.	1,521	1,340	1,320	191	190
Borders						
	2006/07	469	383	433	61	60
	2007/08	476	398	402	76	80
	2008/09	487	383	400	96	100
	2009/10 prov.	449	381	423	47	50
Dumfries and Galloway						
	2006/07	648	552	628	58	60
	2007/08	652	584	537	92	90
	2008/09	683	541	554	136	140
	2009/10 prov.	677	577	568	105	100
Fife						
	2006/07	1,410	1,299	1,217	152	150
	2007/08	1,417	1,187	1,234	207	210
	2008/09	1,477	1,158	1,241	278	280
	2009/10 prov.	1,357	1,204	1,137	187	190
Forth Valley						
	2006/07	1,086	925	948	150	150
	2007/08	1,047	951	923	110	110
	2008/09	1,166	910	858	282	280
	2009/10 prov.	988	877	904	98	100
Grampian						
	2006/07	2,014	1,665	1,600	382	380
	2007/08	1,926	1,675	1,685	246	250
	2008/09	1,921	1,658	1,642	271	270
	2009/10 prov.	1,853	1,629	1,660	209	210
Greater Glasgow & Clyde						
	2006/07	5,087	4,363	4,270	771	770
	2007/08	4,919	4,281	4,356	601	600
	2008/09	4,942	4,213	4,077	797	800
	2009/10 prov.	4,681	4,256	3,965	571	570

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Table 5, continued

Highland						
	2006/07		1,314	1,116	1,141	186	190
	2007/08		1,176	1,088	1,108	78	80
	2008/09		1,239	1,138	1,049	146	150
	2009/10	prov.	1,265	1,044	1,089	199	200
Lanarkshire						
	2006/07		2,160	1,895	1,999	213	210
	2007/08		2,193	1,972	1,925	245	240
	2008/09		2,235	1,765	1,771	467	470
	2009/10	prov.	2,254	1,825	1,828	428	430
Lothian						
	2006/07		2,645	2,344	2,416	265	270
	2007/08		2,652	2,384	2,477	222	220
	2008/09		2,781	2,313	2,415	417	420
	2009/10	prov.	2,663	2,291	2,275	380	380
Orkney						
	2006/07		79	74	71	7	10
	2007/08		85	92	77	1	0
	2008/09		77	72	63	10	10
	2009/10	prov.	68	67	74	-3	0
Shetland						
	2006/07		90	65	71	22	20
	2007/08		68	62	62	6	10
	2008/09		69	68	67	2	0
	2009/10	prov.	88	68	83	13	10
Tayside						
	2006/07		1,669	1,363	1,420	278	280
	2007/08		1,594	1,383	1,503	151	150
	2008/09		1,624	1,424	1,382	221	220
	2009/10	prov.	1,677	1,385	1,360	305	300
Western Isles						
	2006/07		117	120	128	-7	-10
	2007/08		123	118	117	6	10
	2008/09		117	104	113	9	10
	2009/10	prov.	147	115	103	38	40

1. Increased winter mortality, or the "seasonal difference", is defined as the number of deaths in the "winter" period of 4 months less the average of the numbers of deaths in the preceding period of 4 months and the following period of 4 months.

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Chart 1: Increased winter mortality, Scotland, 1951/52 to 2009/10

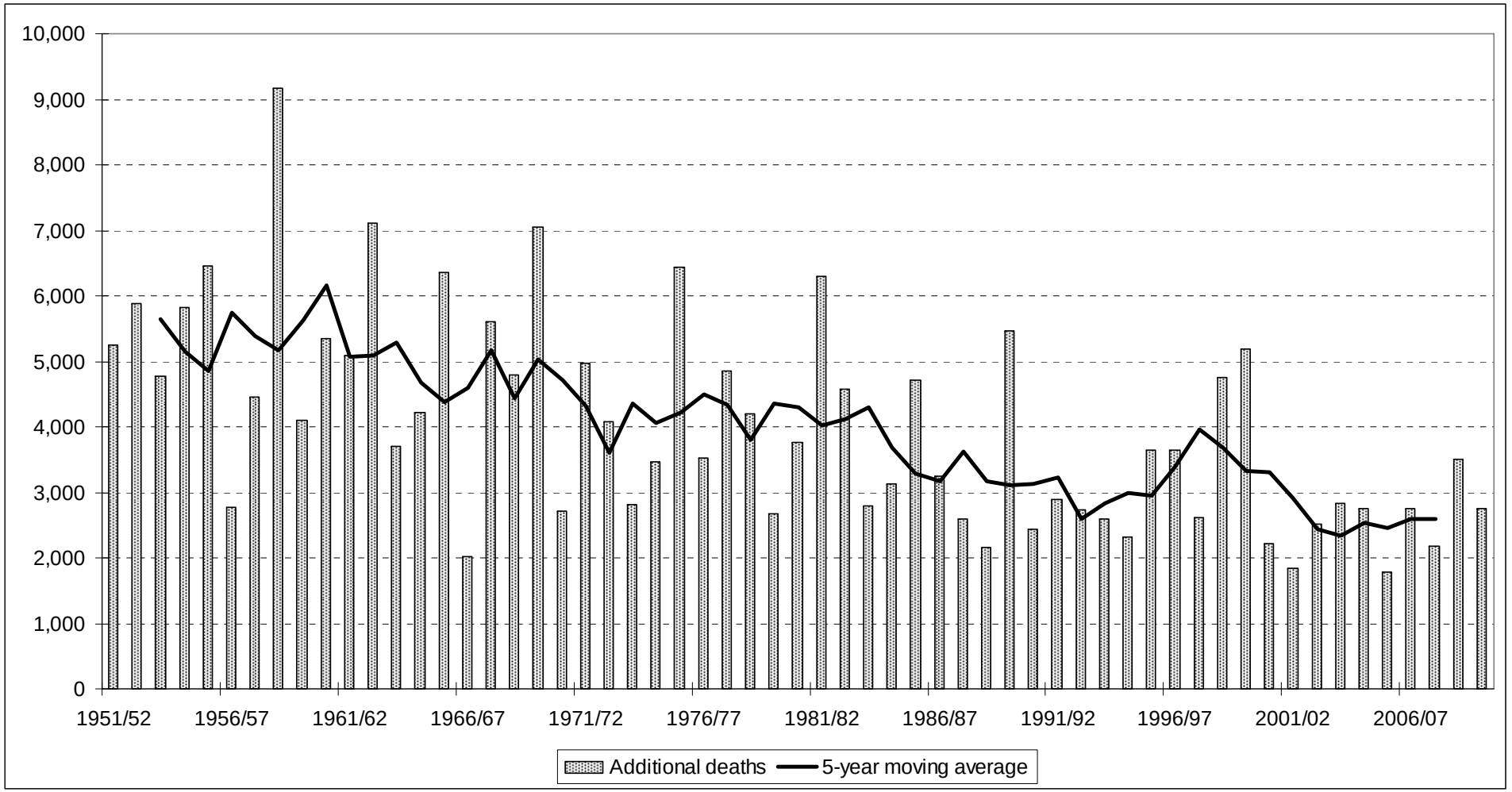

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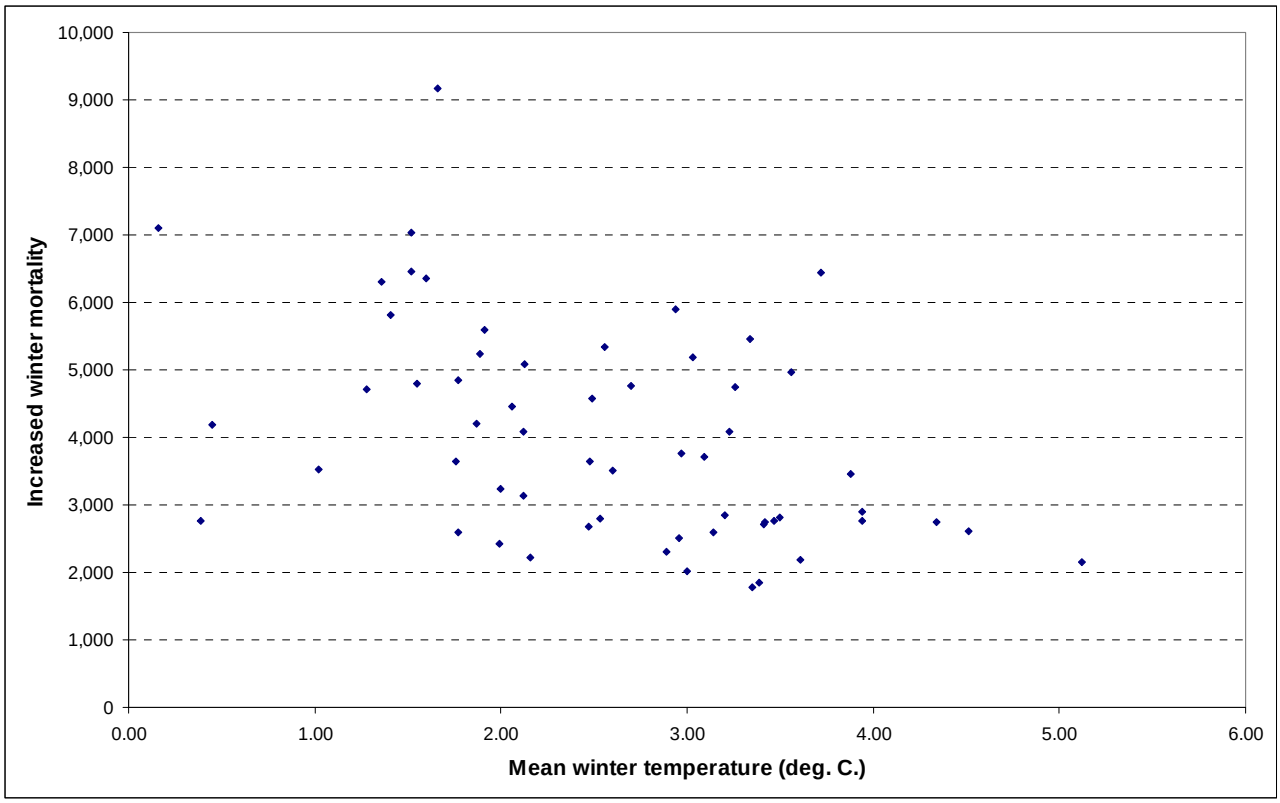
Chart 2: Increased winter mortality and mean winter temperature, Scotland:

(a) winter 1951/52 to winter 2009/10; and



(b) winter 1990/91 to winter 2009/10

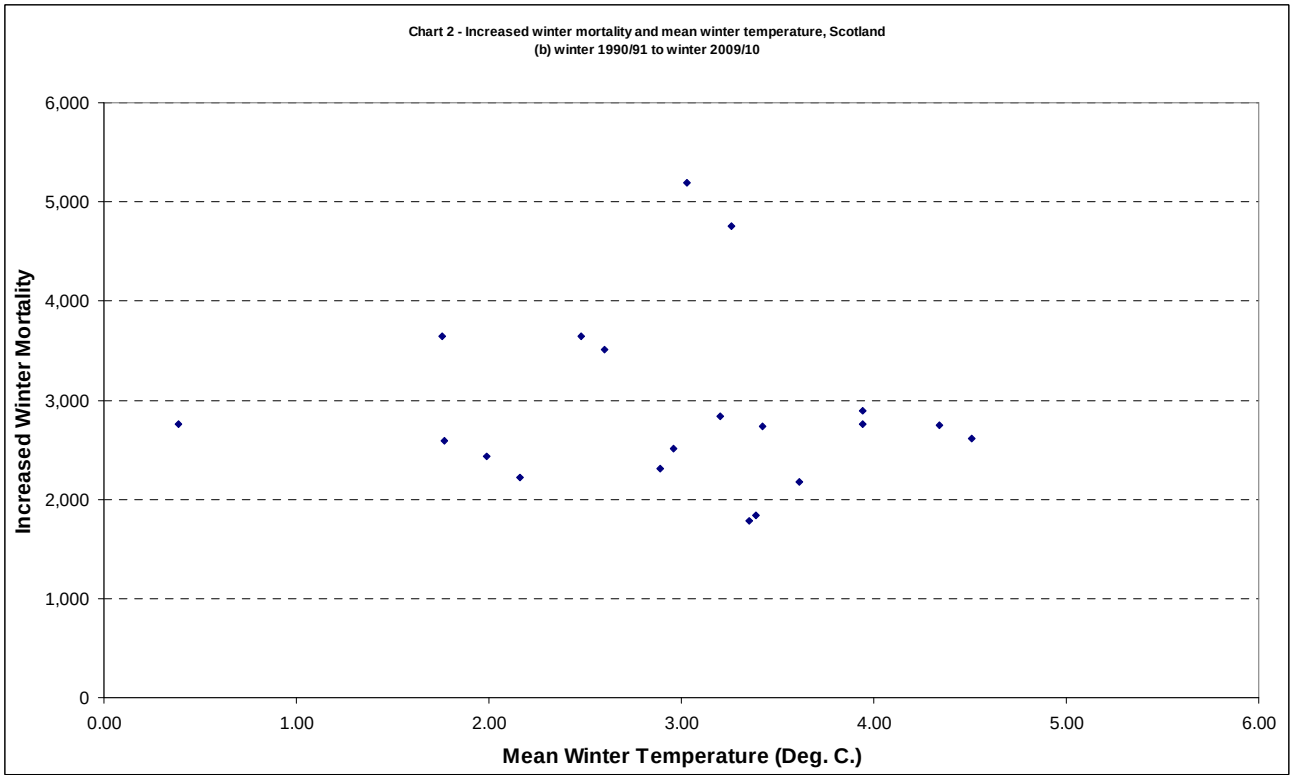


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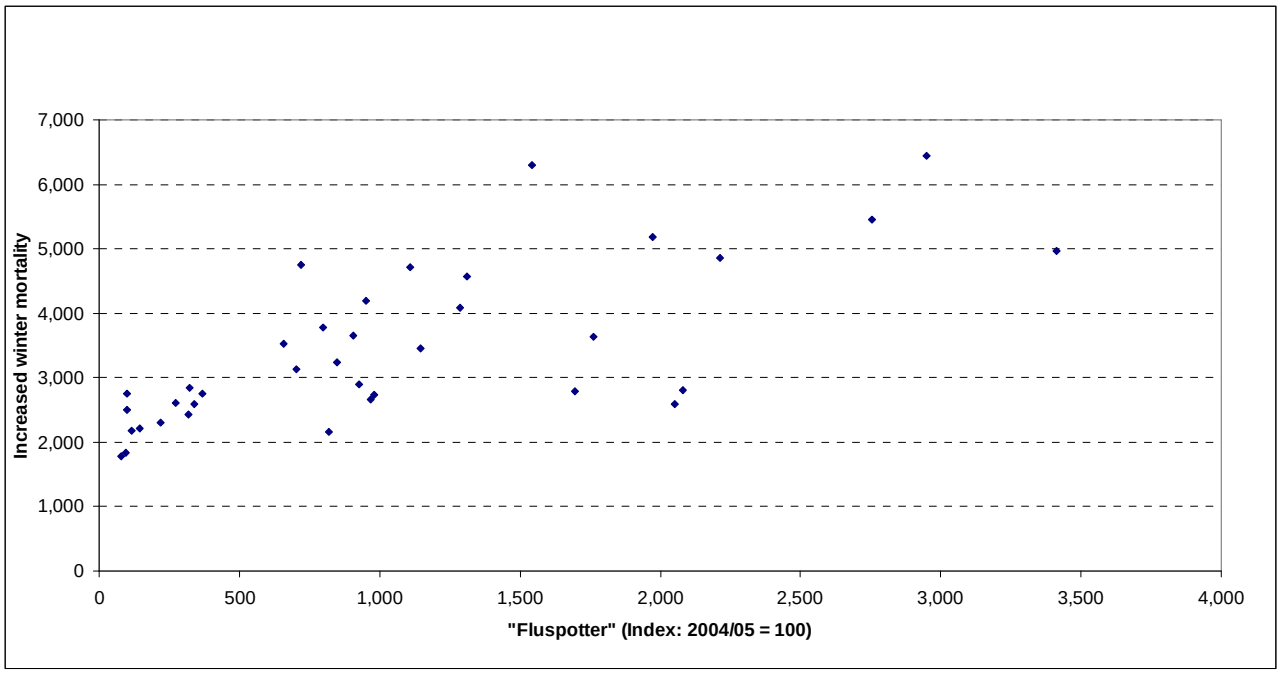
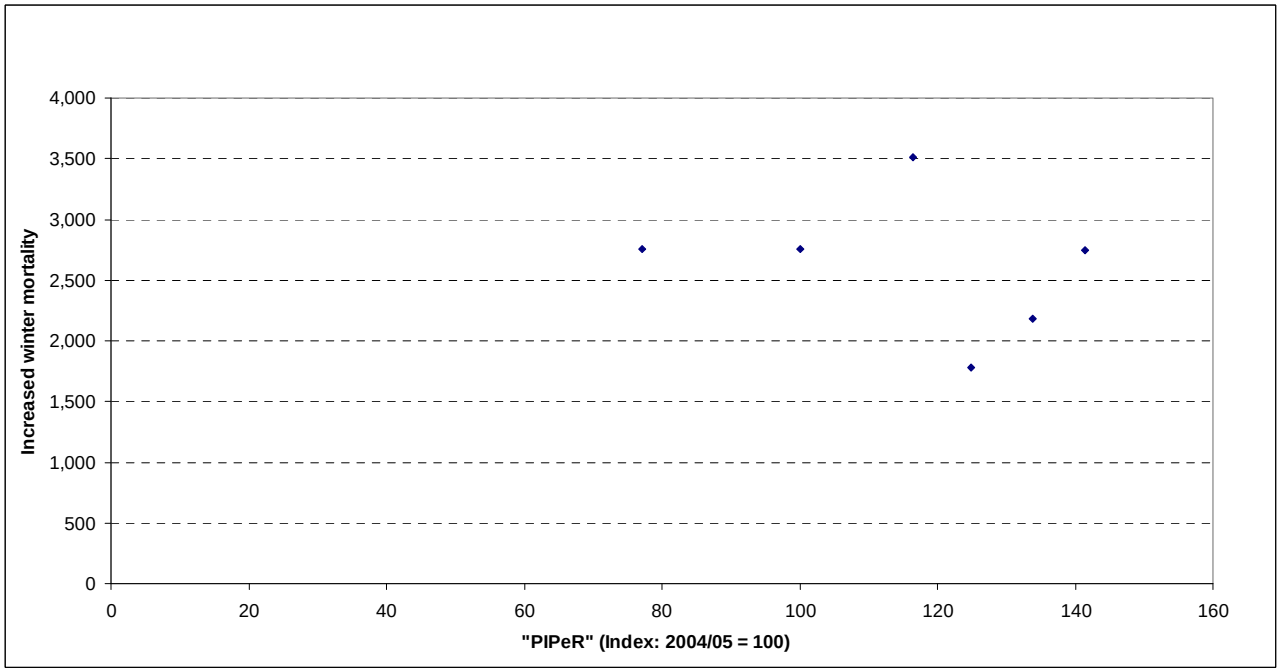
Chart 3: Increased winter mortality and indicators of influenza activity, Scotland:

(a) winters and 'flu seasons - 1971/72 to 2007/08, inclusive; and



(b) winters - 2004/05 to 2009/10, inclusive.



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