Sources and methods

This item considers a range of sources and methods commonly used in local population history. These vary in sophistication and complexity, but are intended to be of benefit to the broad LPS readership, and are accompanied by worked examples. Each item is written by an experienced population history practitioner, and will usually address both the possibilities and the pitfalls of the respective sources and methods under discussion. The LPS Board are happy to enter into correspondence on this item, which should be addressed in the first instance to the LPS General Office.

A review of methods for identifying mortality 'crises' using parish record data

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It is well known that in the sixteenth, seventeenth and eighteenth centuries mortality in most parts of Europe was subject to periodic surges, or abrupt temporary increases in the number of deaths, due mainly to epidemics of infectious diseases or short-term subsistence problems. These peaks in the numbers of deaths are often referred to as mortality 'crises' and their study during the parish register era has long been a concern of those interested in local population studies, reports of research on the subject regularly appearing in the pages of this journal.[1] Although it is demonstrably untrue that after the fifteenth century most deaths in England and Wales occurred during periods of unusually high mortality resulting from epidemic disease and famine (probably fewer than one in ten of all deaths occurred at these times), most communities experienced periods of suddenly elevated death rates.[2] These had a variety of effects on local populations: in the short-term came personal loss and sadness, and economic dislocation; in the medium-term the remarriage of widows and the consequent restructuring of familial relationships could change the social dynamics of the community.

A key stage in the investigation of mortality crises is identifying what exactly constituted a 'crisis'. Researchers have used various rules of thumb in this regard. In the absence of base population totals the usual approach has been to work with annual burial totals, and to establish the existence of mortality crises by comparing the number of burials in each

1 See, for example, R. Humphreys, 'Mortality crises in sixteenth-century Dorking', *Local Population Studies*, 39 (1987), 46–53; I. Nelson, 'Famine and mortality crises in mid-Sussex, 1606–1640', *Local Population Studies*, 46 (1991), 39–49.

2 See A. Hinde, *England's population: a history since the Domesday survey* (London, 2003), 97–8.

year with that to be expected in an 'average' year.[3] For example Andrew Appleby in his study of famine in Tudor and Stuart Cumbria required the number of burials in a given year to be double the yearly average.[4]

This approach immediately raises the question of how to calculate the 'average'. There are two matters which need to be addressed. First, the 'average' might be changing, possibly because of a rise or fall in the parish's population. The usual way to take account of this is to calculate the expected 'average' annual total of burials for a given year using data for a number of years before or either side of the year in question. An average calculated in this way is called a 'moving average' because it 'moves' as the year being tested changes.[5] So, for example, if we want to assess whether a crisis occurred in 1700 say, we might compare the number of burials in 1700 with an average based on the 11-year period 1695–1705. For assessing whether 1701 was a crisis year we compare the number of burials in 1701 with an average based on the period 1696–1706, and so on. The length of the period upon which the moving average is to be based is chosen by the researcher, but there is a balance to be struck. Too short a period risks the moving average being distorted by lengthy mortality crises lasting several years, such as those of 1556–1560 and 1727–1730; too long a period might render it subject to underlying population increase or decrease. Generally, a period between 9 and 25 years will be appropriate. For rapidly changing populations, such as those of later sixteenth century towns, a shorter period of 9 or 11 years is probably best, and it seems preferable to centre the period on the year being examined, rather than take the 9 or 11 years before the year in question.[6] However, a period of 9 or 11 years can render the analysis difficult when there are mortality crises lasting several years (for example that of 1556–1560), and so in

3 If base population totals are available, mortality crises can be identified and their intensity and severity measured on the basis of the proportion of the population that died. A formula was proposed by T.H. Hollingsworth, 'An introduction to population crises', in H. Charbonneau and A. Larose eds, *The great mortalities: methodological studies of demographic crises in the past* (Liège, n.d.), 21–8; and discussed by H.C. Johansen, 'A note on Professor Hollingsworth's crisis intensity index', in Charbonneau and Larose, *Great mortalities*, 153–6; P. Marschalck, 'Crises of mortality: a comment on the paper of T.H. Hollingsworth', in Charbonneau and Larose, *Great mortalities*, 171–8; and A.B. Appleby, 'Crises of mortality: periodicity, intensity, chronology and geographical extent', in Charbonneau and Larose, *Great mortalities*, 283–5.

4 A.B. Appleby, *Famine in Tudor and Stuart England* (Palo Alto, 1978), 116–8. This was only one of several criteria Appleby listed. The remainder, though, were concerned with deciding on the cause of a crisis. Here we are concerned simply with ascertaining whether there was a crisis, without regard to inferring its cause. The same criterion was also used by J. Skinner, '"Crisis mortality" in Buckinghamshire 1600–1750', *Local Population Studies*, 28 (1982), 67–72.

5 R.S. Schofield, '"Crisis" mortality', *Local Population Studies*, 9 (1972), 11. This article is reprinted in M. Drake ed., *Population studies from parish registers*, (Matlock, 1982), 97–108.

6 For example, in his study of crisis mortality in Cambridge, Colchester and Reading in the sixteenth and seventeenth centuries, Nigel Goose used a nine-year moving average centred on the year: see N. Goose, 'Fertility and mortality in pre-industrial English towns from probate and parish register evidence', in T. Arkell, N. Evans and N. Goose eds, *When death do us part: understanding and interpreting the probate records of early modern England* (Oxford, 2000), 200–11.

more slowly changing populations, a longer period of 21 or 25 years centred on the year being tested might be more appropriate.[7]

The second issue is whether the calculation of the 'average' should include the year being examined. If we do include it, and it turns out to be a crisis year, then the 'average' will be inflated by the extra deaths occurring in the crisis, and this, paradoxically, will actually make it less likely that we declare the year in question to be a crisis year. Schofield argues that if we exclude the year being examined, then 'by the same token, we also ought to exclude from our calculation of the moving average any of the surrounding years which can be shown to be a "crisis" year. Unfortunately, this would involve us in a somewhat circular argument'.[8] He concludes that it is simpler to include the year in question and that, in any event, whether or not we include it is much less important for identifying crisis years than 'our choice of the factor by which the annual number of burials must exceed the average annual number' in order that a year be considered a crisis year.[9]

Let us turn to this last point. Schofield admits that the choice is to some extent arbitrary, and eventually settles on the figure of twice the average annual number of burials used by Appleby and others.[10] There is an obvious problem with this. In a small parish with, say, five burials a year on average, a year in which there were ten burials might not be considered very unusual, even though this is double the yearly average. But in a large parish with 50 burials a year on average, a year in which there were 100 burials would definitely be regarded as an extraordinarily bad year.[11] Schofield acknowledges this problem and says that '[a] more careful study of "crisis" mortality would make some correction for this fact'.[12] In his analysis of Sussex parishes, Derek Turner applied Schofield's criterion, and ran into the same problem. He thought the criterion picked out crises in the smaller parishes which were 'genuine' but that 'genuine crises of roughly the same order of magnitude in the larger parishes were not being picked out because in

7 My preference is always to use a moving average centred on the year being tested. If we use the years preceding the year in question, it is hard to distinguish genuine crises from sudden 'step-changes' in the number of burials arising from an increase in the geographical extent of a parish, or increases in the area from which those buried in a church were drawn, as the first year following such a 'step-change' will appear as if it were a crisis.

8 Schofield, '"Crisis" mortality', 11.

9 Schofield, '"Crisis" mortality', 12. The question of whether to include the year being tested in the calculation of the moving average has not been resolved. Dupâquier, 'L'analyse statistique', for example, omits it, as does Sylvia Watts, 'Some aspects of mortality in three Shropshire parishes in the mid-seventeenth century', *Local Population Studies*, 67 (2001), 19–20. Appleby, 'Crises of mortality', 285–8, discusses the arguments for and against inclusion. A modification to the moving average method which may circumvent the problem is to calculate the 'average' based on, say, deaths in the five years either side of the year being tested, but to exclude the highest and lowest values, or the two highest and the two lowest values. This was the approach used by Del Panta and Livi-Bacci, 'Chronology, intensity and diffusion of mortality in Italy, 1600–1850', in Charbonneau and Larose, *Great mortalities*, 72.

10 Schofield, '"Crisis" mortality', 12–3.

11 E.A. Wrigley and R.S. Schofield, *The population history of England 1541–1871: a reconstruction* (London 1981), 649.

12 Schofield, '"Crisis" mortality', 16.

years of unusually high mortality the number of burials often just fell short of twice the normal average'. His solution was to adopt the alternative criterion that burials should be more than 1.5 times the 'average'.[13] In her study of mortality in the Shropshire parishes of Wellington, Wem and Whitchurch, Sylvia Watts identified 'crises' in which the number of burials was 2.5, 2.0 and 1.5 times an 11-year moving average.[14]

Let us illustrate these points using some real data. Tables 1 and 2 (pp.89–90) give the numbers of burials each month in the 50-year period 1725–1774 for two parishes in Hampshire: Aldershot and Ringwood. Aldershot was (then) a much smaller parish than Ringwood. The average number of burials per year in Aldershot was 7.1, and the average in Ringwood was more than ten times this number, at 74.6. It is clear from an inspection of the data that there were some years with greatly elevated mortality, for example 1758–1760 in Aldershot and 1726 and 1761 in Ringwood. But were these the only years when we can say that mortality was at crisis levels? Indeed, were the levels of mortality in these years such as to constitute a crisis?

Tables 3a and 3b (pp.91–2) displays the means and standard deviations based on 11-year and 25-year moving averages for the two parishes (the standard deviation is explained below). Notice that we cannot begin the 11-year moving average until 1730, for we need data for five years before the central year in order to calculate the moving average. Similarly, the series of 11-year moving averages ends in 1769, as for later years we do not have five years' worth of data after the central year. For the 25-year moving averages, we need 12 years' data before and after the central year in order to do the calculations, so the series begin in 1737 and ends in 1762.[15]

The moving averages do 'smooth' the annual fluctuations, but they are still affected by years with high mortality, especially in the smaller parish of Aldershot. For example the 11-year moving average almost doubles between 1752 and 1755 as the years of high mortality in 1758–1760 enter the calculation. It then almost halves between 1763 and 1766 as these years leave the calculation. The impact of the years of heavy mortality in 1758–1760 is even greater on the standard deviation.

We now turn to consider the years which are identified to be crisis years according to the criteria. Let us first take the simple criterion that the number of burials should be double that of the moving average centred on the year in question. In Aldershot, applying this criterion using the 11-year moving average would lead to 1737, 1758 and 1759 being

13 D. Turner, '"Crisis" mortality in nine Sussex parishes', *Local Population Studies*, 11 (1973), 40 (this article is reprinted in Drake ed., *Population studies*, 109–12); the same criterion is used by Del Panta and Livi-Bacci, 'Chronology, intensity and diffusion', 79–80

14 Watts, 'Some aspects of mortality', 20.

15 Note that the burial registers for both parishes began before 1725 and continued after 1774, so if we were to use the entire registers we should be able to calculate moving averages for these years. Even with the full data set, though, there will always be years at the beginning and end of the series for which moving averages cannot be calculated, and there would be more of these years the longer the period used to calculate the moving average.

declared as crisis years (but not 1760, even though this year had more burials than 1737). Using the 25-year moving average with the same criterion would lead to 1737, 1740, 1758, 1759 and 1760 being regarded as crisis years. Using a criterion that the number of burials should be 1.5 times the moving average value would result in the years 1737, 1740, 1748, 1758, 1759, 1760 and 1767 being regarded as crisis years with an 11-year moving average and 1737, 1740, 1741, 1758, 1759 and 1760 being considered crisis years with a 25-year moving average. In this parish, the second of these criteria probably results in too many years being considered crisis years—it seems hard, looking at the data, to make the case for 1741 being a crisis year, for example.

Consider now the case of Ringwood. In this parish, the criterion that the number of burials in a year should be double the 'average' produces not a single year between 1730 and 1769, using the 11-year moving average, and not a single year between 1737 and 1762 using the 25-year moving average. The reason for this is that because Ringwood is a large parish, the 'average' number of burials is large, so a big absolute differential in the number of burials (as, for example, in 1761, when there were 63 more burials than might have been expected on the basis of the moving averages) is not sufficient to double the tally. If we use the criterion of 1.5 times the 'average', then under both the 11-year and the 25-year moving average only 1761 falls into this category. The years 1740 and 1750, for example, which clearly seem bad years, are not classified as crises.

One way to tackle the problem of differential parish size is to adjust the criterion on the basis of the general variability of the number of burials in the parish in question. The usual way to achieve this is to base the criterion not just on the 'average' number of burials but also on the standard deviation of the series of burials. The standard deviation is a statistical quantity, details of which can be found in almost all statistics textbooks.[16] In brief, it is the square root of the mean *squared deviation* from the 'average'. For example, if we take the first 11-year moving average for the Aldershot series (Table 3a), which relates to the years 1725–1736, the annual numbers of burials are 6, 6, 10, 4, 2, 3, 3, 8, 3, 2, and 2. The average of these 11 numbers is 4.45. The squared deviations from the moving average are obtained, for each of the component numbers, by subtracting the average and squaring the result. Thus, for 1725 and 1726 we obtain $(6 - 4.45)^2 = 2.4$. For 1727 we obtain $(10 - 4.45)^2 = 30.8$. Performing this calculation for all 11 years and then taking the mean of the resulting squared deviations gives a mean of 6.61, the square root of which is 2.57.

Using a criterion based on the standard deviation adjusts for differences in parish populations. The usual rule is that a crisis year is any year in which the number of burials is more than two standard deviations above the 'average' level.[17] The rule of two standard deviations is based on the assumption that in the absence of an unusual event, the numbers of burials in each year follow a Normal distribution. If this assumption is valid, a year in which the number of deaths is more than two standard deviations above

16 See, for example, R. Floud, *An introduction to quantitative methods for historians* (London, 1973), 72–7.

17 Del Panta and Livi-Bacci, 'Chronology, intensity and diffusion', 79–80.

the 'average' will only occur one year in 40, so it is good statistical evidence that something unusual is happening.[18]

Applying this approach to the Aldershot data (Table 3a) with an 11-year moving average results in only one year, 1758, being regarded as a crisis year—as 32 is more than 10.82 + 2 x 9.10. Even 1759, with 24 burials, is not regarded as a crisis year. Using a 25-year moving average, however, does bring 1759 into the frame, along with 1737. For Ringwood (Table 3b), with an 11-year moving average, the years 1740, 1750 and 1761 are regarded as crisis years, but with a 25-year moving average only 1740 and 1761 are more than two standard deviations above the average.

A more elaborate approach was taken by E.A. Wrigley and R.S. Schofield in *The population history of England*.[19] They used monthly burial data rather than annual data, and attempted to forecast the number of burials each month in each parish. They then regarded any single month with a number of burials 3.36 or more standard errors above the forecast trend, or 'any run of two or more consecutive months, each of which was at least 2.05 standard errors above the forecast trend value' as constituting crisis mortality.[20] The standard error is bigger for smaller parishes than for larger parishes, and this means that in smaller parishes the number of burials has to rise proportionately further above the trend for a crisis to be confirmed than it does in larger parishes, which solves the problem encountered by Turner in his study of Sussex.[21]

Wrigley and Schofield's approach is sophisticated, but clearly unsatisfactory in two respects. First, it involves seemingly *ad hoc* and arbitrary complications. Second, it is somewhat schizophrenic about the conceptualisation of the process being studied. For example, the approach of identifying mortality crises by using deviations from trend of more than a certain number of standard errors involves the assumption that the distribution of the numbers of burials per month is Normal. This would be true, as Wrigley and Schofield say, in large parishes and 'if the fluctuations in the monthly burial totals had been independent of each other'.[22] But they argue that the latter was not true because if a parish has experienced a surge of deaths, this would deplete the population and lead to fewer deaths in the immediately subsequent periods.[23]

18 An extension of this approach, classifying the severity of mortality crises by the number of standard deviations above the mean the number of burials rose, was used by J. Dupâquier, 'L'analyse statistique des crises de mortalité', in Charbonneau and Larose, *Great mortalities*, 85–97.

19 Wrigley and Schofield, *Population history*, 646–9.

20 Wrigley and Schofield, *Population history*, 647. The authors state that the figures of 3.36 and 2.05 were arrived at 'After much experiment…'.

21 Wrigley and Schofield, *Population history*, 648. The precise application of their criteria is actually more complicated that I have described, since they applied a correction when calculating the standard error for small parishes.

22 Wrigley and Schofield, *Population history*, 647.

23 This argument is based, as Wrigley and Schofield admit, on an analysis of the series of annual national death rates. Yet there is no necessary read-across from national patterns in this case to patterns at the local level. Many factors could operate to reduce the correlation between the number of deaths in neighbouring months at the parish level, for example migration, which would not operate to anything like the same extent at the national level.

Nevertheless, they then argue that, despite this, they will use the Normal assumption as a 'rough yardstick'.[24]

The conclusion which might be drawn from these examples is that the identification of mortality crises is not an exact science. Different methods produce different results. The rule that the number of burials should be 1.5 or 2 times the 'average' tends to result in too many crises being identified in small parishes, and too few years being classified as crisis years in large parishes. The rule that the number of burials should be more than two standard deviations above the 'average' can produce too few crisis years in certain circumstances when the 'average' and its standard deviation are inflated by a lengthy period of high mortality (as in Aldershot in 1758–1760). The use of an 11-year moving average can lead to a year not being classified as a crisis year when it is part of a crisis lasting several years (as in the case of 1760 in Aldershot) even though other years with fewer deaths that are located in periods when the mortality regime was generally benign *are* classified as crisis years. This is because a crisis lasting three or four years can substantially distort an 11-year moving average.

The inexact nature of the identification of mortality crises might be seen as an advantage by some, as it allows room for the judgement of the researcher to enter the process. In other respects, though, it is rather unsatisfactory. A range of different rules is applied by different researchers, and different recommendations about the application of these rules seem to apply to large and small parishes, and to urban and rural areas. In a future article, I hope to describe an alternative approach which overcomes some of these problems.

24 Wrigley and Schofield, *Population history*, 647.

Table 1 Monthly totals of burials in Aldershot parish, 1725–1774

Year	Month												Total
	J	F	M	A	M	J	J	A	S	O	N	D	
1725	2	0	1	0	3	0	0	0	0	0	0	0	6
1726	0	0	0	1	0	1	0	1	1	0	0	2	6
1727	0	2	0	1	0	0	1	2	1	1	1	1	10
1728	2	0	0	0	0	0	1	0	0	0	0	1	4
1729	0	1	0	0	0	0	0	1	0	0	0	0	2
1730	1	1	0	0	0	0	0	0	0	0	0	1	3
1731	0	0	0	0	1	0	1	0	0	0	1	0	3
1732	0	0	0	1	0	2	0	2	0	1	1	1	8
1733	0	0	2	1	0	0	0	0	0	0	0	0	3
1734	0	1	0	0	0	0	0	0	1	0	0	0	2
1735	1	0	0	0	0	0	0	0	0	1	0	0	2
1736	1	1	1	0	2	0	1	0	1	2	0	0	9
1737	0	1	1	1	1	0	3	1	0	4	1	2	15
1738	2	1	0	2	1	1	0	0	1	0	0	0	8
1739	2	1	1	0	0	0	0	0	0	0	0	0	4
1740	0	2	0	1	1	5	0	1	1	0	1	0	12
1741	0	0	0	1	2	1	0	1	2	0	1	1	9
1742	0	0	0	0	0	0	1	0	1	0	0	3	5
1743	0	2	2	1	1	2	0	0	0	1	0	0	9
1744	0	1	1	0	1	2	0	1	0	0	0	0	6
1745	0	0	1	0	0	0	0	0	0	0	1	2	4
1746	0	1	1	1	0	1	0	0	0	0	0	0	4
1747	0	1	0	1	0	1	1	0	0	0	0	1	5
1748	2	0	1	2	0	1	1	0	0	3	0	1	11
1749	0	1	1	0	0	0	1	1	0	0	0	0	4
1750	0	0	0	0	0	0	0	1	1	0	1	0	3
1751	0	1	0	1	1	1	1	0	0	0	0	0	5
1752	0	0	2	0	2	1	0	0	0	1	0	0	6
1753	0	0	0	2	0	1	0	1	0	0	0	1	5
1754	1	0	1	0	0	1	1	0	0	1	0	0	5
1755	0	1	0	1	0	0	1	0	0	0	0	0	3
1756	0	1	0	0	2	1	0	0	0	0	3	0	7
1757	2	0	1	0	1	1	0	0	0	0	0	0	5
1758	1	1	4	4	2	5	5	4	0	4	1	1	32
1759	2	2	1	2	3	4	4	1	0	1	1	3	24
1760	5	5	1	3	3	0	0	1	0	0	0	0	18
1761	1	0	0	0	2	0	0	0	2	0	0	1	6
1762	1	1	1	1	0	0	0	0	0	0	0	1	5
1763	2	0	1	0	1	0	0	0	2	1	1	1	9
1764	0	0	1	1	0	1	1	1	0	2	0	2	9
1765	0	0	2	1	1	0	1	1	0	0	1	0	7
1766	1	0	1	1	2	0	1	1	0	0	0	0	7
1767	2	1	0	1	1	1	0	0	0	3	0	1	10
1768	0	0	0	0	1	4	0	0	0	0	0	0	5
1769	0	0	0	0	2	1	0	0	0	0	0	0	3
1770	0	0	1	1	0	0	0	0	1	2	0	0	5
1771	0	0	0	0	0	0	1	1	2	0	2	0	6
1772	0	0	1	0	0	0	0	0	0	0	0	0	1
1773	0	0	1	0	0	0	3	3	0	1	0	0	8
1774	1	0	2	0	0	0	0	0	0	0	0	2	5
1725–1774													353

Source: Aldershot burial register. See R.S. Schofield, *Parish register aggregate analysis* (Hatfield, 1998), which includes a CD-ROM containing the data, and is available from the Local Population Studies Society General Office, address on inside front cover of this journal.

Table 2 Monthly totals of burials in Ringwood parish, 1725–1774

Year	Month												Total
	J	F	M	A	M	J	J	A	S	O	N	D	
1725	3	4	7	9	3	4	4	4	4	0	2	4	48
1726	7	7	13	10	14	14	15	23	24	12	6	2	147
1727	3	10	1	2	4	2	1	6	6	12	6	12	65
1728	4	5	8	4	1	7	5	8	4	12	7	4	69
1729	9	5	11	6	4	7	5	8	5	15	9	10	94
1730	21	8	3	13	12	2	8	7	6	4	6	6	96
1731	6	3	8	18	7	4	5	8	3	5	5	10	82
1732	6	4	4	3	4	6	3	3	3	1	4	7	48
1733	4	11	9	8	9	2	5	12	6	7	12	8	93
1734	7	5	5	11	9	4	1	6	3	5	11	6	73
1735	8	10	5	1	1	6	1	6	4	2	10	6	60
1736	5	7	6	9	7	2	1	5	2	5	3	3	55
1737	4	7	8	12	4	9	6	5	4	6	17	7	89
1738	9	7	9	2	8	3	8	3	3	7	5	13	77
1739	20	6	7	8	9	5	4	4	3	5	7	3	81
1740	11	8	6	15	13	7	7	6	12	11	4	7	107
1741	5	5	10	6	5	6	6	6	3	9	6	10	77
1742	10	6	4	12	10	8	2	4	6	5	4	5	76
1743	6	4	8	7	2	5	2	4	7	3	7	6	61
1744	12	7	14	5	5	5	3	4	2	2	5	11	75
1745	5	4	12	8	1	2	5	4	3	2	6	4	56
1746	9	3	0	9	3	10	5	5	4	2	7	7	64
1747	11	5	5	5	3	4	3	4	4	5	8	3	60
1748	9	4	7	12	11	8	3	4	3	5	6	4	76
1749	13	9	6	3	1	5	4	4	6	8	7	8	74
1750	8	8	12	8	10	11	10	10	4	13	6	4	104
1751	12	1	7	4	1	3	4	2	7	6	3	3	53
1752	3	3	4	4	5	3	4	2	5	5	10	4	52
1753	14	1	6	12	5	3	3	8	4	9	6	3	74
1754	8	5	5	4	1	7	6	5	5	11	10	8	75
1755	5	7	8	7	4	3	4	8	13	5	7	7	78
1756	11	4	9	2	8	4	5	4	3	7	7	8	72
1757	3	4	3	4	6	2	5	5	2	4	9	5	52
1758	6	5	7	5	6	8	4	2	3	8	8	10	72
1759	3	5	8	5	6	8	5	8	4	6	4	12	74
1760	10	3	6	10	8	4	4	5	1	5	5	6	67
1761	6	14	8	8	21	13	22	19	14	3	2	6	136
1762	10	4	5	3	4	3	6	4	5	9	6	4	63
1763	8	7	5	5	14	3	5	6	3	1	6	10	73
1764	6	5	7	7	4	6	5	4	3	4	3	5	59
1765	11	4	6	2	4	6	5	10	8	6	11	3	76
1766	6	6	3	4	6	8	6	6	7	4	6	6	68
1767	10	12	12	4	9	2	5	3	3	6	9	10	85
1768	9	8	7	9	11	5	5	2	6	3	6	5	76
1769	6	4	6	8	8	7	12	4	8	10	7	2	82
1770	9	10	7	7	6	9	4	6	6	4	4	8	80
1771	7	10	1	12	6	6	4	7	6	6	8	3	76
1772	10	2	3	1	7	6	2	3	6	3	5	12	60
1773	5	5	6	5	2	6	4	6	7	3	7	4	60
1774	6	13	7	0	3	4	2	4	6	2	2	9	58
1725–1774													3,728

Source: Ringwood burial register: from *Parish register aggregate analysis* (as in Table 1).

Table 3a Moving averages and standard deviations of number of burials: Aldershot, 1725–1774

Year	Annual no.	Moving average centred on year in question		Standard deviation	
		11-year	25-year	11-year	25-year
1725	6				
1726	6				
1727	10				
1728	4				
1729	2				
1730	3	4.45		2.57	
1731	3	4.73		2.86	
1732	8	5.55		4.12	
1733	3	5.36		3.96	
1734	2	5.36		3.96	
1735	2	6.27		4.22	
1736	9	6.82		4.15	
1737	15	7.00	6.16	4.02	3.40
1738	8	7.09	6.04	4.06	3.46
1739	4	7.36	6.00	3.87	3.46
1740	12	7.55	5.84	3.65	3.37
1741	9	7.73	5.88	3.41	3.35
1742	5	7.36	6.00	3.47	3.26
1743	9	7.00	6.00	2.80	3.26
1744	6	6.64	6.16	2.90	3.21
1745	4	6.55	6.04	3.00	3.19
1746	4	5.91	7.20	2.47	5.95
1747	5	5.64	8.08	2.27	6.70
1748	11	5.64	8.72	2.27	6.85
1749	4	5.27	8.60	2.00	6.87
1750	3	5.00	8.20	2.09	6.78
1751	5	5.27	8.24	2.14	6.78
1752	6	5.36	8.44	2.10	6.72
1753	5	7.82	8.24	7.93	6.69
1754	5	9.00	8.16	9.18	6.69
1755	3	10.27	8.36	9.37	6.67
1756	7	10.55	8.20	9.20	6.70
1757	5	10.55	8.08	9.20	6.76
1758	32	10.82	8.12	9.10	6.74
1759	24	11.18	8.20	8.94	6.71
1760	18	11.36	8.04	8.83	6.83
1761	6	11.73	7.92	8.56	6.80
1762	5	12.00	7.96	8.45	6.78
1763	9	12.00		8.45	
1764	9	9.36		5.96	
1765	7	7.64		3.84	
1766	7	6.55		2.02	
1767	10	6.09		2.57	
1768	5	6.36		2.60	
1769	3	6.00		2.49	
1770	5				
1771	6				
1772	1				
1773	8				
1774	5				

Source: Aldershot burial register: from *Parish register aggregate analysis* (as in Table 1).

Table 3b Moving averages and standard deviations of number of burials: Ringwood, 1725–1774

Year	Annual no.	Moving average centred on year in question		Standard deviation	
		11-year	25-year	11-year	25-year
1725	48				
1726	147				
1727	65				
1728	69				
1729	94				
1730	96	79.55		26.89	
1731	82	80.18		26.21	
1732	48	74.91		16.14	
1733	93	76.00		15.83	
1734	73	77.09		15.73	
1735	60	78.27		17.36	
1736	55	76.55		16.43	
1737	89	76.00	76.12	16.34	20.71
1738	77	77.18	78.36	14.65	20.57
1739	81	75.55	74.60	13.77	15.70
1740	107	74.00	74.08	14.88	16.21
1741	77	74.36	74.28	14.58	16.18
1742	76	74.82	73.52	14.04	15.67
1743	61	73.64	72.80	13.32	15.03
1744	75	73.36	72.40	13.28	14.91
1745	56	75.45	72.56	15.88	14.66
1746	64	70.55	71.72	13.54	14.06
1747	60	68.27	71.76	14.34	14.06
1748	76	68.09	72.04	14.25	13.90
1749	74	69.36	75.28	14.19	18.29
1750	104	69.64	74.24	14.32	18.22
1751	53	71.09	74.08	13.66	18.21
1752	52	70.00	73.20	14.63	18.39
1753	74	71.09	71.96	14.29	17.07
1754	75	70.91	71.60	14.23	17.05
1755	78	70.27	71.96	14.24	17.23
1756	72	73.18	72.56	21.99	17.10
1757	52	74.09	72.84	21.33	17.20
1758	72	76.00	73.80	20.18	16.90
1759	74	74.64	74.28	20.77	16.78
1760	67	74.73	74.28	20.77	16.78
1761	136	73.82	73.64	20.83	17.01
1762	63	75.00	73.00	21.06	17.28
1763	73	77.18		19.77	
1764	59	78.09		19.74	
1765	76	78.64		19.70	
1766	68	79.45		19.38	
1767	85	72.55		8.47	
1768	76	72.27		8.81	
1769	82	70.91		9.71	
1770	80				
1771	76				
1772	60				
1773	60				
1774	58				

Sources: Ringwood burial register: from *Parish register aggregate analysis* (as in Table 1).