Chipping Campden's Mortality Crisis of 1741

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Introduction

One of the characteristics of death rates in the past is that they were extremely volatile. Indeed, in some periods, often labelled by historians as mortality crises, death rates could be more than twice the normal (or expected) level. Such mortality crises were quite frequent in medieval and early-modern times, although they seem to have become less common after the middle of the eighteenth century.[2] Their significance seems to have varied geographically too. Some parishes seem to have been particularly susceptible. For example, parishes at low altitudes were particularly at risk, as were market towns with high population densities where inhabitants were exposed to a range of airborne diseases, contaminated water supplies, public nuisances and to vermin and disease carrying insects.

There were a number of causes of such crises. Sometimes they were due to airborne diseases such as measles and influenza, or occasionally to insect and water-borne infections, such as a typhoid and dysentery. During the medieval and early modern periods bubonic - and occasionally pneumonic - plague was a much feared disease, although it had died out in Britain by the late seventeenth-century.[3] In the late fifteenth and sixteenth-centuries there were also a number of panics caused by sweating sickness, although this too seems to have disappeared by the seventeenth.[4] In the eighteenth-century smallpox became a big killer, and in the nineteenth there were some deadly cholera epidemics. There was also the possibility of hunger-related diseases arising from harvest failure. It is unlikely that in periods of food shortages many died from outright starvation. Rather, as the experience of Ireland in the 1840s suggests, they were more likely to die of famine-related diseases, typhus in particular. It is believed, however, that in England the impact of harvest-failures became less marked during the eighteenth-century, possibly due to the impact of the Poor Law and transport improvements. Nevertheless, food shortages continued to play an indirect role in exacerbating crises, because during such periods the unemployed became increasingly mobile as they searched for work, and this undoubtedly encouraged the spread of infectious diseases.

Any discussion of the causes of such crises, however, is often complicated by the absence of the appropriate records. It is true that a few towns published bills of mortality, or, failing that,

[1] My thanks are to Jenny Bruce, who was responsible for the transcription of the burial register, and to Catherine Woodward for her comments on an earlier draft.

[2] J. Hatcher, 'Mortality in the fifteenth-century: some new evidence', *Economic History Review*. 39, 1986, 19-32; B Harvey *Living and Dying, 1100-1540: The Monastic Experience*, Cambridge, Cambridge University Press,1993, E.A. Wrigley and R.S. Schofield, *The Population History of England, 1541-1871*, Cambridge: Cambridge University Press, 1981.

[3] P. Slack, *The Impact of Plague in Tudor and Stuart England*, Routledge, London, 1985. On the causes for its disappearance see A. Appleby, 'The disappearance of plague: a continuing puzzle,' *Economic History Review*, 33, 2, 1980, 161-73; P.Slack, 'The disappearance of plague: an alternative view', *Economic History Review*, 34.3, 1981, 469-476

[4] A. Dyer, 'The English Sweating Sickness of 1551: an Epidemic Anatomized', *Medical History*, 41, 1997, 362-384

they may have had full burial registers or vestry minutes that recorded the cause of the exceptional number of deaths. More often than not, however, this information is missing so that historians have to approach the topic indirectly by drawing inferences – make educated guesses - from their knowledge of the aetiology of a disease coupled with information about local climate, harvest conditions and the distribution of deaths.[5] For example, when Andrew Appleby examined whether there had been famine-induced mortality crises in Cumbria in the sixteenth and early seventeenth centuries he used information on food prices, baptisms, and the seasonal and age distribution of the burials.[6] His reasoning was that, apart from a marked rise in food prices, famine would have induced a collapse in the number of baptisms as conception rates fell as the nutritional status of the local population deteriorated. It would also have triggered-off a typhus epidemic, the characteristics of which were a rise in late autumn and winter deaths concentrated especially amongst adults. Thus, exceptionally high mortality and high food prices coupled with a collapse of baptisms and a rise of winter adult deaths could be taken as *prima facie* evidence in favour of a famine-induced mortality crisis.

In this note we shall look at two issues. First, using the burial register we consider whether, and when, Chipping Campden experienced mortality crises in the eighteenth and nineteenth centuries.[7] From this it emerges that there was one year – 1741 – when there was a major crisis. This was particularly acute amongst children and infants. Secondly, we will be concerned with the cause of this crisis. Unfortunately, we have not uncovered any relevant primary sources with which to answer this question, so that we have had to fall back on the indirect method.

Mortality Crises

To measure the incidence of (annual) mortality crises, we have followed the approach suggested by Roger Schofield.[8] He used moving averages to measure the underlying – or expected – number of burials. He then divided the number of actual burials by the expected number. A crisis was then defined as a year when the mortality ratio – the number of burials relative to the expected number – exceeded a specific figure. The most frequently used figure has been two, although there is nothing sacrosanct about this figure; it is arbitrary.

In Figure 1 we have plotted both the number and the expected number of burials. The latter has been measured using an eleven-year moving average. The graph suggests that, in-line with the national pattern, the period of greatest volatility in burials occurred in the first half of the eighteenth century, after which major fluctuations became less pronounced. Even so, there were some years when the level of excess mortality was quite high as evidenced in 1729, 1741, 1769, 1786, 1848 and 1869. To see whether these warrant the description crisis

[5] N. Woodward 'Crisis Mortality in a Welsh Market Town: Carmarthen, 1675-1799', *Welsh History Review*, 22, 3, 2005, 432-462

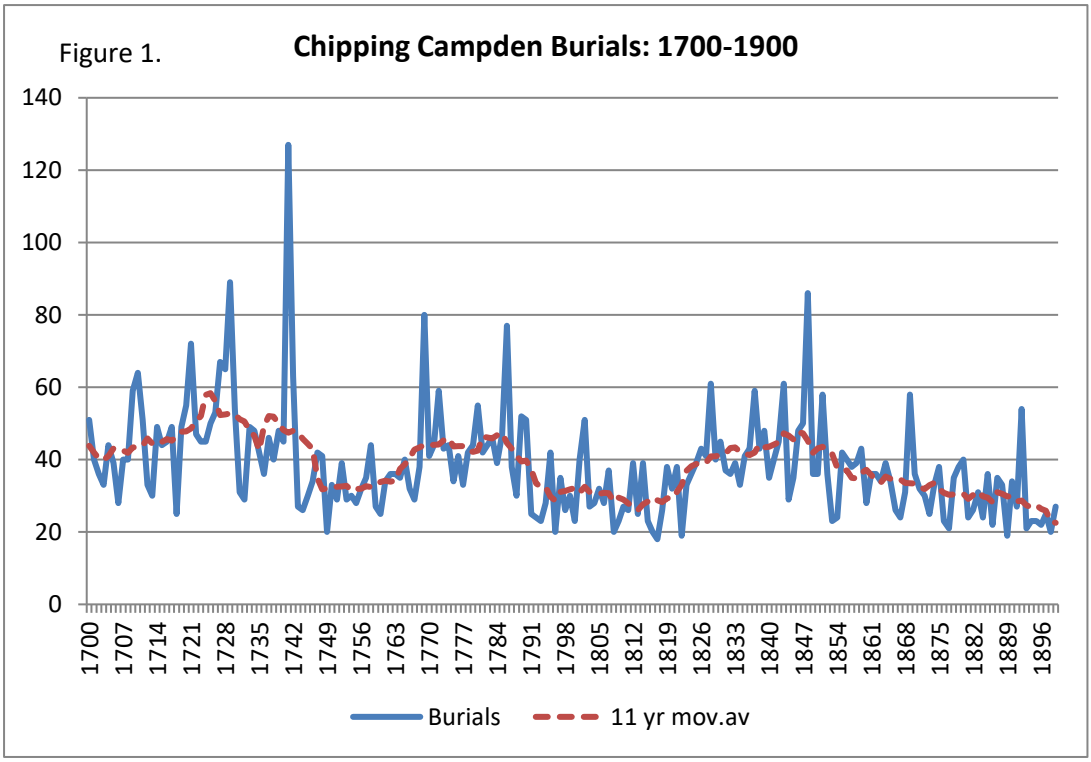
[6] A.B. Appleby, 'Disease or Famine? Mortality in Cumberland and Westmorland, 1580-1640', *Economic History Review,* 26, 1973, 403-32

[7] Of course it is likely that there were crises before this. However, although the first burials were registered in 1616, it is evident that there are periods during the seventeenth-century when they were grossly under-recorded.

[8] R.S. Schofield, 'Crisis Mortality', *Local Population Studies*, 9, 1972, 10-21

years, we have calculated the mortality ratio. As Table 1 shows, however, if we adopt the standard definition of a crisis as a year with a mortality ratio of two or more, only one year qualifies: 1741. At that time there were roughly 45 burials a year. Yet in 1741 there were 127. Obviously, this must have been a year of considerable distress.

Figure 1.



If we adopt a less stringent definition of a crisis, say a mortality ratio of 1.75, certain other years qualify (Table 1), viz., 1848, 1769 and 1869, while 1786 and 1729 only just fall short. 1892 qualifies too but it is doubtful whether we can realistically describe this as a crisis year. By the 1890s the underlying number of annual deaths had fallen to roughly 29 so it would take only a modest increase in the deaths to push the ratio over the benchmark figure. That is what happened in 1892 when there was a minor flu outbreak in the first quarter of the year.

Table 1 Highest Mortality Ratios by year

1741	**2.67**
1848	1.90
1892	1.90
1769	1.88
1869	1.81
1786	1.73
1729	1.69

Was Campden particularly prone to mortality crises? To answer this question, we have compared the incidence of crises in Campden with that in the six other Gloucestershire

market towns that featured in the *Population History of England*.[9] The results for the years between 1700 and 1830 are shown in Table 2. It suggests that experience varied quite considerably. Certain towns – Fairford, Minchinhampton and Wooton-under-Edge – experienced virtually no crises, while other towns, most notably Tetbury and Winchcombe, could be described as crisis prone. Campden, however, along with Stroud, occupies the middle ground.

Table 2 Incidence of Mortality Crises and Selected Mortality Ratios, 1700-1830: Gloucestershire Market Towns

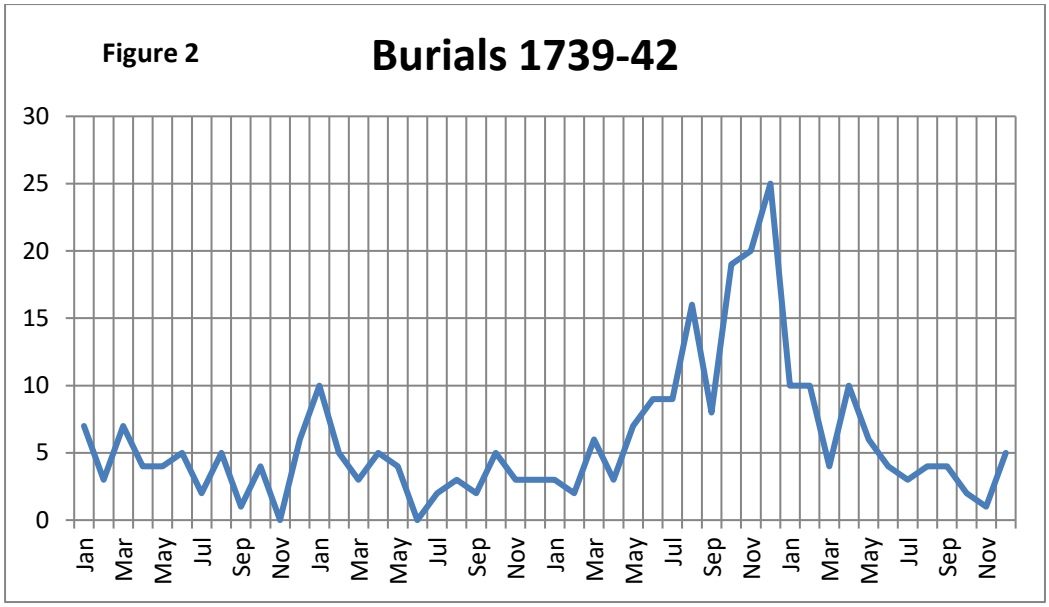
Parish	Major Crisis*	Minor Crisis	Mortality Ratio 1741	Highest Mortality Ratio
Chipping Campden	1	1	2.67	2.67
Fairford	0	0	1.27	1.64
Minchinhampton	0	1	1.22	1.78
Stroud	1	0	0.65	2.75
Tetbury	3	4	1.23	2.18
Winchcombe	2	3	2.15	2.15
Wooton-under-Edge	0	0	0.85	1.12

*A major crisis is defined as one when the annual mortality ratio rises above 2. A minor crisis is one where the ratio is between 1.75 and 2.

What is also evident from the Table is that five of the seven parishes experienced above expected mortality in 1741. However, the excess mortality in that year was generally quite low. In only two parishes – Chipping Campden and Winchcombe - was there a major mortality crisis. The Table also underlines the severity of Chipping Campden's mortality in 1741. Only one market town – Stroud (in 1712) – experienced a more serious crisis at any time over the period covered by the comparisons.

From the burial register, it is also evident that the 1741 crisis was a fairly long-drawn out process. Figure 2 shows the monthly distribution of deaths during 1741 as well as the two surrounding years. The level of mortality was already above the expected level in the summer of 1741. It then accelerated in the autumn, peaking at 25 in the December. After this the number of deaths fell quite quickly, although it was not until the summer of 1742 that mortality had returned to non-crisis levels.

[9] This data is available on a CD-ROM issued by *Local Population Studies*



The burial register at this time also allows us to roughly determine the importance of infant and child fatalities. Table 3 records this information for the years between 1740 and 1742 by quarter. Overall, it suggests that infant and child burials accounted for 38 per cent of the total. However, there are two periods when they were more important than this. The first is in the third quarter of the three years. This is almost certainly attributable to gastric infections, the consequence of higher temperatures and a poor environment. The second occurs during the fourth quarter of 1741 – the peak quarter of the mortality crisis – when they accounted for 64 per cent of all deaths. Clearly, whatever caused the crisis seriously affected the young.

Table 3. **Incidence of Deaths: Chipping Campden**

Year/Quarter	Infants and Children Burials	Total Burials	Per cent Infants/Children
1840.1	3	18	16.7
1840.2	2	9	22.2
1840.3	4	7	57.1
1840.4	1	11	9.1
1841.1	5	11	45.5
1841.2	3	19	15.8
1841.3	13	33	39.4
1841.4	41	64	64.1
1842.1	9	24	37.5
1842.2	4	20	20.0
1842.3	5	11	45.5
1842.4	1	8	12.5

Causes of the 1741 Crisis

The foregoing suggests that Campden's mortality crisis of 1741 was quite unusual. But what caused it? We can immediately rule-out certain diseases. For example, there were diseases that had not yet emerged. Cholera, which was the cause of a number of local crises in the nineteenth-century, is a case in point. As already mentioned, there were some major epidemic diseases which had died out by the 1740s, most notably sweating sickness and bubonic plague. There were also certain diseases which by the eighteenth century had become less virulent. Measles is generally cited as an example.[10] Mention should also be made of Tuberculosis. Respiratory TB in particular was one of the major killers in history, and we can probably assume it was a major cause of death in Chipping Campden.[11] However, because there was a long and variable lapse between contagion and death, the disease was endemic rather than epidemic in nature.

Turning to the more likely causes of the crisis, the first possibility is that it was due to a typhus epidemic. On the face of it this is quite plausible. 1741 was a year of famine in Ireland. Indeed, *pro rata* the mortality rate was greater in the early 1740s than it was a century later during the Great Famine.[12] Furthermore, conditions in Britain were poor in the early 1740s. It is true that 1741, apart from a wet September, had a warm dry summer and a good harvest.[13] However, this was not true of the two preceding years (Table 4). In 1739 there was a wet winter and spring. In 1740 there was an extremely wet summer. As a result, Hoskins referred to the harvest of 1739 as deficient and that of 1740 as a dearth. The consequence of these poor harvests there was a marked rise in both grain and bread prices. As Figure 3 shows, these were exceptionally high in 1739 and 1740, although by 1741 they had fallen back to much lower levels.

[10] A.Dyer 'Epidemics of measles in a seventeenth-century English town, *Local Population Studies*, 34, 1985, 35-45.

[11] The extent of this should not exaggerated. TB rates were exceptionally high amongst manual workers. However, the reports of the Registrar General suggest that they were relatively low amongst farmworkers, the most important occupational group, in Campden.

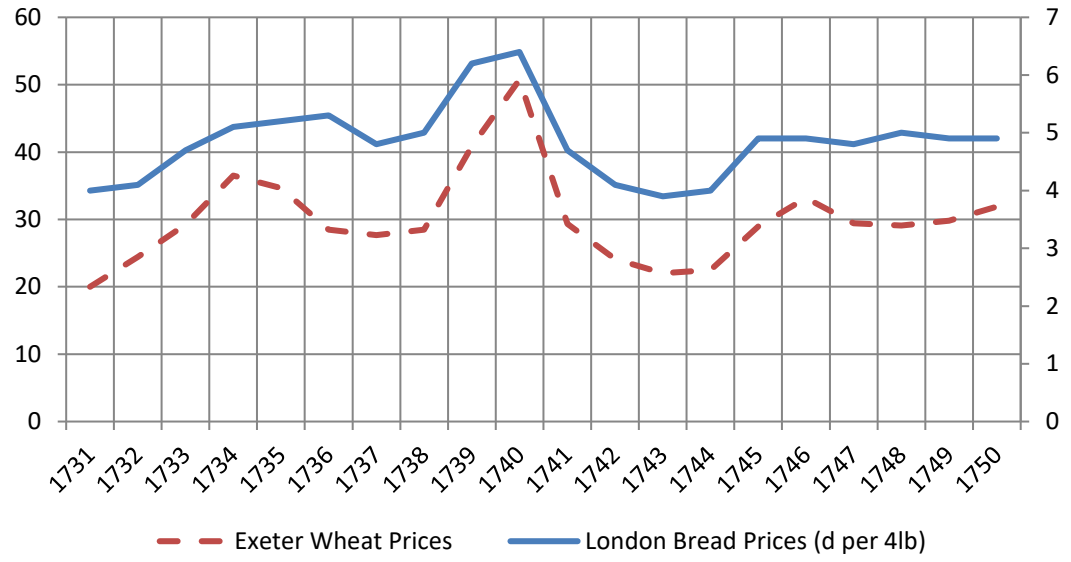
[12] David Dickin, 'The Other Great Irish Famine', in C.Portier *The Great Irish Famine*: Dublin, Mercier Press.

[13] WG Hoskins, 'Harvest Fluctuations and English Economic History, 1620-1759', *Agricultural History Review*, 16,1968,15-31.

Table 4	Weather Patterns					
	Average Monthly Temperatures					
	1737	1738	1739	1740	1741	1742
Jan	6.2	4.6	4.0	-2.8	1.7	1.9
Feb	4.2	4.6	6.8	-1.6	4.4	3.6
Mar	6.1	5.5	5.8	3.9	4.2	4.1
Apr	8.8	9.9	6.7	6.4	7.1	6.6
May	12.5	11.4	11.6	8.6	9.3	10.6
Jun	15.9	14.2	15.2	12.8	15.2	15.0
Jul	17.4	16.4	16.0	15.3	15.6	15.8
Aug	13.8	16.0	14.7	14.7	16.7	15.8
Sep	14.2	12.5	13.1	14.0	14.7	12.2
Oct	8.9	10.2	9.6	5.3	11.0	9.2
Nov	6.1	6.3	3.7	3.3	7.8	4.4
Dec	4.9	6.1	3.2	2.2	3.9	1.1
	Rainfall					
	1737	1738	1739	1740	1741	1742
Jan	48	96	131	15	68	105
Feb	132	40	152	14	53	54
Mar	138	64	60	48	18	2
Apr	85	76	141	56	21	101
May	63	108	126	49	37	108
Jun	66	148	116	65	70	89
Jul	35	37	98	113	37	124
Aug	226	69	95	131	75	11
Sep	185	115	117	136	208	86
Oct	64	73	29	50	79	116
Nov	33	39	91	101	112	139
Dec	81	54	80	148	26	22

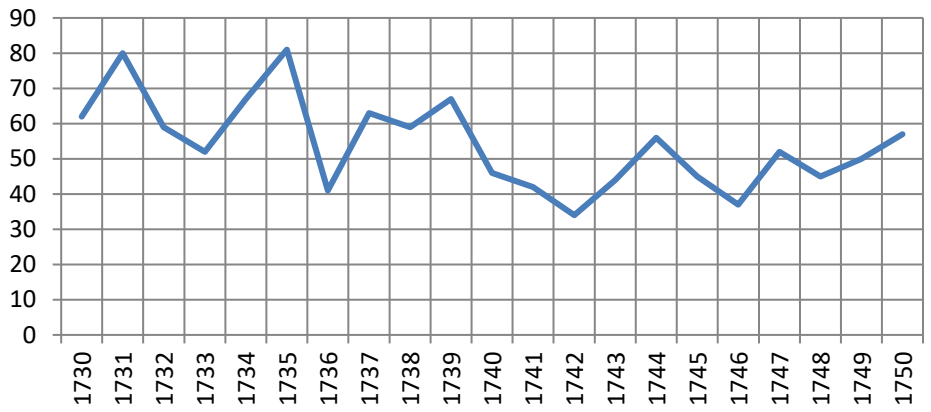
Source: G. Manley, 'Central England Temperatures: Monthly means 1659 to 1973', *Quarterly Journal of the Royal Meteorological Society*, 1974; B.G. Wales-Smith,'Monthly and annual totals of rainfall representative of Kew, Surrey, from 1697 to 1970, *The Meterological Society*,1971

Figure 3. **Bread Prices and Exeter Wheat Prices**



Could the deficient harvests of 1739 and 1740 have triggered-off a bout of typhus in 1741? Using the criteria suggested by Appleby, some of the evidence points, at least superficially, in that direction. Figure 4 shows, baptisms were indeed low in 1741, and, as Figure 2 shows, the deaths were concentrated into the autumn of 1741, spilling over into the winter of 1742. The evidence, however, is equivocal. For example, a close perusal of Figure 4 suggests that the decline in baptisms predates 1741 and continues for much of 1740s suggesting perhaps that the fall in baptisms may have been due less to famine conditions than to some other factor(s). The typhus explanation is also weakened by the finding that the deaths were concentrated amongst infants and children (Table 3), whereas typhus deaths were most common amongst adults. As a result, it is implausible to claim that the 1741 crisis was due primarily typhus, although that is not to say that poor harvest conditions in 1739 and 1740 had no impact on the high level of mortality in 1741.

Figure 4. **Baptisms: Chipping Campden, 1730-50**



The second possibility is that the crisis was due to an influenza epidemic. This explanation has the advantage that it could account for the age distribution of the deaths as flu mortality is usually concentrated amongst the young and the elderly. It is also the case that flu was a cause of the exceptional mortality in Chipping Campden in both 1848 and 1892. Flu epidemics too were evident in the eighteenth-century with major epidemics in 1729, 1732, and 1781.[14] Was the crisis of 1741 another example? It seems doubtful. For one thing, flu tends to strike in the autumn and, in particular, in the winter months. Yet, as Figure 2, shows an upsurge in mortality is evident as early as July 1741 and peaks very early for an influenza epidemic. Even more serious, is that flu tends to be a highly contagious disease. So we would expect it to observe a marked increase in burials in all parishes. But, as Table 2 shows, 1741 was not a year of crisis in most of the other Gloucestershire parishes.

A third possibility is that the crisis was due to what the Registrar General would later classify as Dysentery and Diarrhoea, a category that embraces a number of diseases including, in addition to dysentery, gastro-enteritis and typhoid. What these diseases have in common is that they are both transmitted by faecal contamination of either food or water. They were common in warm years, particularly in the summer and autumn months, when temperatures were at their highest.[15] The diseases had moderately high fatality rates, counting both Edward I and Henry V amongst their victims. However, the incidence of burials was particularly prevalent amongst children and infants.[16]

The attraction of this explanation is that in 1741 there was a mild spring was followed by an unusually warm summer and early autumn (Table 4). We also know that environmental

[14] A.W.Crosby, Influenza, in *The Cambridge Historical Dictionary of Disease*, Cambridge, Cambridge University Press, 2003, pp.178-81

[15] *The Annual Report of the Registrar General* of 1884 suggests that when mean weekly temperatures rose above 63^{0}F (17.2^{0}C) deaths from diarrhoea and dysentery were liable to be high.

[16] The extent of this however was liked to the prevalence of breast feeding which provided some immunity.

conditions in Campden, in common with many market towns, were quite poor.[17] This might explain why mortality was high during the summer and early autumn of 1741, although infant deaths were not particularly high in the summer. Nevertheless, there is a good reason to doubt whether these gastric diseases were the main cause of the crisis. The main problem is that the crisis peaked in the December 1741 and deaths continued a relatively high level through the winter of 1742. Yet it is difficult to believe that during these cold months dysentery or gastro-enteritis could have thrived.

This leaves us with a final, and, in the view expressed here, the most likely possibility; that the crisis was due to smallpox. Smallpox was an airborne viral infection, although it could be spread in bedding or clothing. At the outset the victim developed flu-like symptoms - high fever, aching, headache and vomiting - accompanied by a rash. The latter developed into sores which later scabbed-over leading to eventual pock-marking. The disease was highly contagious, although smallpox epidemics were long drawn-out affairs. It was also had a fairly high fatality rate – believed to be about 30 per cent. Anyone surviving the disease, however, enjoyed immunity against the disease for life. The disease, moreover, affected some fairly high profile celebrities. Elizabeth I, Abraham Lincoln and Stalin all survived the disease. Charles, Duke of Cambridge and son of James II, however, was not so lucky and died as a child.

Although the last case in Britain, outside of the laboratory, occurred in 1966 and the disease was officially eradicated in 1980, smallpox was a big killer in the eighteenth-century. Prior to this it is believed to have been less virulent. Even so, it was on the decline by the end of the eighteenth-century. In part, this was due to the introduction and improvement of inoculation techniques (i.e. deliberate infection with the virus) and with the introduction of Jenner's vaccination techniques (i.e. infection with cowpox) in 1796. As the virus was sensitive to climatic conditions, the disease was most likely to thrive in dry years[18] and it favoured the summer and autumn months.[19] The disease tended to be endemic in the cities because people were continuously exposed to the virus. Outside densely populated areas, however, exposure was more likely to be sporadic and, as a result, there could be a build-up of people, especially amongst infants and young children, who were susceptible to the disease. This would then flare-up into epidemic proportions once a carrier entered the settlement.[20]

Does the evidence support the idea that the crisis was primarily due to smallpox? Unfortunately, no documentary evidence has been uncovered. The burial register makes some references to smallpox in the 1830s, and the disease is mentioned on quite a few occasions in

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[17] The extent of this, however, was linked to the incidence of breast-feeding which provided some immunity *Campden: A New History*. 126-146.

[18] H. Nishiura, 'Smallpox and Season: Reanalysis of Historical Data*, Interdisciplinary Perspective on Disease*, 2009. https//:doi.org/10.1155/2009/591935

[19] As the virus mutated, however, there was a change in the seasonal incidence of the disease with a shift towards the autumn and winter in the second half of the eighteenth-century. O. Krylova and DJD Earn 'Patterns of Smallpox in London, England over three centuries'. *bioRχiv*, https://doi.org/10.1101/771220

[20] S.R. Duncan, S. Scott and C.J. Duncan, 'Smallpox epidemics in cities in Britain', *Journal of Interdisciplinary History*, 25, 1994, 255-71

in the vestry minutes for the second half of the eighteenth century.[21] Later there is even a reference to a mass smallpox vaccination programme.[22] However, both sources are silent about the causes of the death in 1741. Nevertheless, both the conditions and the distribution of the fatalities suggest that the crisis was caused by smallpox. In the years prior to 1741 there had been a low number of burials which might well be indicative of a build-up of a susceptible population. In the years immediately before the crisis there had been harvest failure too. At such times mobility levels tended to be high which in turn increased the likelihood that a carrier might enter the parish at the crucial time. In addition, 1741 was a mild year and, apart from the September, a dry one too. These were the conditions under which smallpox could thrive. Finally, the crisis was also a long-drawn out affair, albeit concentrated into the autumn months, and it disproportionately affected the young.

Although one can never be dogmatic about such issues, it seems, therefore, there is a high probability that the main cause of the crisis of 1741 was smallpox. This is not to claim that extraordinary number of deaths in 1741 was due entirely to a smallpox epidemic. Indeed there were a number of other factors that could have exacerbated the situation. As we have seen, food prices had been high in 1739 and 1740, and it is well-established that following a period of harvest failure mortality tended to be high, presumably because a decline in the nutritional status of the population would increase their susceptibility to a range of diseases.[23] Furthermore, the warm summer of 1741, on top of a relatively mild spring coupled with poor environmental conditions, may have increased the incidence of those gastric diseases that tended to thrive in the third quarter of the year.

Conclusions

The outcome would seem to be that when historians finally construct a timeline for Chipping Campden, one of the entries for 1741 might read: a year of exceptional mortality, thought to have been the outcome of a severe smallpox epidemic, possibly exacerbated by harvest failure in previous years coupled with a warm spring and summer.

[21] See, for example, Vestry Minutes, 8 April, 1755.
[22] Vestry Minutes, 29 May, 1833.
[23] R.D. Lee, 'Short-term variation: vital rates, prices and weather', in Wrigley and Schofield, *Population History of England*, 365-401