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The Great Plague of 1603-4: To what extent did the Great Plague of 1603-4 spread to the parishes around Bristol?

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To what extent did the Great Plague of 1603-4 spread to the parishes around Bristol?

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Introduction

At the time of writing, COVID-19 has claimed over 3 million lives across the world.[1] The Pandemic has reignited interest in historical epidemiology.[2] This dissertation will examine the spread of the Great Plague of 1603-4 in Bristol compared to its surrounding rural hinterland, building on the seminal work of Paul Slack on Plague in Early Modern England.[3] Bristol experienced 6 major Bubonic Plague epidemics from 1540-1650, each killing around 10-20% of the city's population.[4] In March 2020, the Imperial College London predicted that up to 550,000 people (approximately 0.8% of the UK's population) could die if COVID-19 was left to spread unchecked.[5] This illustrates the severity of Early Modern Plagues and their significance to the social history of the period.

Slack estimated that from 1470-1670 over 800,000 people died from Bubonic Plague in England.[6] Bubonic Plagues affected England from the Black Death of 1348/49 until 1665/66. Despite its disappearance from England, Plague has re-emerged in other parts of the world since the late 19th Century and Madagascar witnessed an epidemic during 2017.[7] The disease is caused by the bacterium *Yersinia pestis*, discovered by Alexandre Yersin in 1894.[8] Bubonic

[1]'Covid map: Coronavirus cases, deaths, vaccinations by country', *BBC News* < https://www.bbc.co.uk/news/world-51235105> [accessed 24 April 2021].
[2] L. Shaw-Taylor, 'An introduction to the history of infectious diseases, epidemics and the early phases of the long-run decline in mortality', *The Economic History Review*, 73 (2020), 1-19 (p. 1).
[3]P. Slack, *The Impact of Plague in Tudor and Stuart England* (Oxford: Clarendon Press, 1985), p. xiii.
[4]Slack, 'The Local Incidence of Epidemic Disease: The Case of Bristol 1540-1650' in *The Plague Reconsidered: A new look at its origins and effects in 16th and 17th Century England* ed. by Cambridge Group for the History of Population and Social Structure (Matlock: Local Population Studies Supplement, 1977), pp.49-62 (pp. 51-2).
[5]'Imperial College Report 9', *Imperial College London* <https://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/covid-19/report-9-impact-of-npis-on-covid-19/> [accessed 16 October 2020].
[6]Slack, *Impact*, p. 175.
[7]G. Alfani and T. E. Murphy, 'Plague and Lethal Epidemics in the Pre-Industrial World', *The Journal of Economic History*, 77 (2017), 314-43 (p. 319); 'Plague – Madagascar', *World Health Organisation* < https://www.who.int/csr/don/15-november-2017-plague-madagascar/en/> [accessed 26 April 2021].
[8]J-N., Biraben, 'Current Medical and Epidemiological Views on Plague' in *The Plague Reconsidered: A new look at its origins and effects in 16th and 17th Century England* ed. by Cambridge Group for the History of Population and Social Structure, pp.25-36 (p. 25).

Plague usually results from the bite of an infected flea, causing the human lymph nodes to become swollen by the infection and produce Plague buboes. It is estimated that 50-60% of cases are fatal without prompt and effective treatment.[9] Laboratory experiments in the 20th Century have improved epidemiological understandings of Plague. God's punishment for sins and miasma theories of corrupted air were used to explain the occurrence of Plagues during the Early Modern period.[10] The historiography of Early Modern epidemics has benefitted from enhanced understandings of Plague epidemiology.

Previous scholarship has often discussed the impact of Plagues upon different social groups, institutions and the economy.[11] The geography of Early Modern Plagues was first studied by historians in the 1970s and this topic should be revisited.[12] Slack compared the incidence of Plague in urban and rural areas of Devon and Essex in long term county surveys.[13] Population historians Edward Anthony Wrigley and Roger Schofield stated that Plague became relatively rare except in large urban centres by the 17th Century.[14] Studies of Early Modern Plague outbreaks have often focused on towns and cities such as Bristol, Newcastle and London.[15] In 1977, Slack investigated mortality patterns caused by Plague within Bristol from 1540-1650 and did not study the records for the rural parishes surrounding the city. [16] Slack's argument that Plague was predominantly an urban crisis may be tested and further quantified through the analysis of Bristol's rural hinterland during the 1603-4 Epidemic.[17] Guido Alfani has

[9]'Plague', *World Health Organisation* <https://www.who.int/health-topics/plague#tab=tab_3> [accessed 18 October 2020].
[10]Slack, *Impact*, pp. 26-7.
[11]Alfani and Murphy, p. 330.
[12]Alfani and Murphy, p. 322.
[13]Slack, *Impact*, p. 80.
[14]E. A. Wrigley and R. Schofield, *The Population History of England 1541-1871: A Reconstruction* (London: Edward Arnold, 1981), p. 668.
[15]Slack, *Impact*, p. 54; K. Wrightson, *Ralph Tailor's Summer: A Scrivener, His City, and the Plague* (New Haven: Yale University Press, 2011), p. 9.
[16]Slack, 'Local Incidence', p. 49.
[17]Slack, *Impact*, p. 110.

attempted to trace a pattern between the incidence of Plague in urban and rural areas of 17th Century Italy and has considered Plague intensity and territorial pervasiveness.[18] Alfani argued that Plagues were less pervasive in rural areas than urban areas in England, unlike in Italy, where they were as pervasive as in urban areas.[19]

This dissertation supports the interpretations of Slack and Alfani that Plague was more prevalent in urban areas of England during the 17th Century.[20] It will be argued that the 1603-4 Bubonic Plague spread to the parishes around Bristol to a limited extent. The small number of rural parishes affected had lower levels of mortality compared to the city parishes. The limited impact of the 1603-4 Plague on Bristol's rural hinterland may have been influenced by climate, communications and population density.[21] A relatively mild climate assisted the spread of Plague in the winter of 1603-4 to rural areas that had a much lower population density compared to Bristol's parishes. The timing of Plague burials in urban and rural parishes suggests that Plague spread sporadically via existing land and sea routes.

The parish registers for the rural parishes surrounding Bristol may be used to assess how far the 1603-4 Plague spread outside the city. Bristol was a major port and provincial city with approximately 12,000 inhabitants in 1603.[22] The city's urban parishes were surrounded by distinct rural environs and hence Bristol provides a logical case study to compare the spread of Plague in urban and rural areas.[23] The Great Plague of 1603-4 has been selected as it is known to have spread very widely across England.[24] An analysis of Bristol and its rural

[18]Alfani, 'Plague in seventeenth-century Europe and the decline of Italy: an epidemiological hypothesis', *European Review of Economic History*, 17 (2013), 408-430 (p. 408).
[19]Alfani, pp. 419-20.
[20]Slack, *Impact*, p. 110; Alfani, pp. 419-20.
[21]Slack, *Impact*, p. 111.
[22]Slack, 'Local Incidence', p. 51.
[23]C. Estabrook, *Urbane and Rustic England: Cultural ties and social spheres in the provinces, 1660-1780* (Stanford: Stanford University Press, 1998), p. 6.
[24]Slack, *Impact*, pp. 68-9.

hinterland in 1603-4 will provide a useful insight into the geographical spread of Early Modern Plagues.

Parish registers of baptisms, marriages and burials originate from a royal edict in 1538 that required parishes to keep records of their congregations.[25] This study has consulted digitised parish registers on Ancestry for Bristol and its surrounding parishes. The date of registers has been interpreted using the Gregorian calendar rather than the old style Julian calendar to aid understandings of annual burials.[26]

The registers possess strengths and limitations for the study of Early Modern Plagues. They provide a useful insight into the population history of England in a period before the establishment of the census and death certificates.[27] Parish scribes were accountable for what they recorded as lists of baptisms, marriages and burials had to be sent to the Bishop of the Diocese.[28] However, parochial officials were often liable to errors and even registers that appear to be well-kept are unlikely to give a complete record of mortality.[29] Also, scribes could die during the course of an epidemic which created issues for the quality and consistency of recording.[30] Slack recognised that parish registers underestimated the level of mortality during an epidemic as they only listed the burials in the churchyard and not the deaths in the parish.[31] Burial registers often omitted the cause of death and cannot account for non-fatal cases of Plague.[32] The word 'Plague' or letter 'P' was written in the margin for most of Bristol's

[25]*Guide to the Parish Records of the City of Bristol and the County of Gloucester,* ed. by I. Gray and E. Ralph (London: Printed for the Records Section of the Bristol and Gloucestershire Archaeological Society, 1963), p. xvi.
[26]Slack, *Impact*, p. xvi.
[27]Wrigley and Schofield, p. 2.
[28]'About Bristol, England, Church of England Baptisms, Marriages and Burials, 1538-1812', *Ancestry* <https://www.ancestry.co.uk/search/collections/61666/> [accessed 15 April 2021].
[29]Slack, *Impact*, p. 55.
[30]Wrigley and Schofield, p. 16.
[31]Slack, *Impact*, p. 55.
[32]Slack, *Impact*, p. 53.

parish registers during 1603-4, but a minority of rural parishes included this level of detail which raises difficulties for establishing the occurrence of epidemics in these areas.

However, parish registers can be analysed quantitatively and qualitatively to demonstrate the epidemiological characteristics of Plague such as the level of mortality, seasonality and the intra-familial pattern of burials. Plague epidemics often produced a spike in burials which can be revealed by an initial quantitative analysis of the register. A more detailed qualitative analysis of the names and dates of burials can identify seasonal and intra-familial patterns. Plagues often occurred from July-October when conditions were optimal for potential vectors to breed and migrate to transmit the disease.[33] An intra-familial pattern of deaths was often witnessed as members of the same household died because the same infected vector was moving between them.[34] Overall, the parish registers hold limitations but can be used to study the spread of the 1603-4 Plague in urban and rural areas.

Twenty parish registers have been consulted, including the 13 urban parishes originally studied by Paul Slack and the records of 7 rural parishes previously unstudied.[35] The 7 rural parishes were selected based on the availability of their records on Ancestry, their location within an 8-mile radius of Bristol and the chronological range of records which needed to include the period 1593-1610 to permit a fair comparison with the urban parishes. Although the study acknowledges the limitations of the available evidence, sources will be used to draw tentative conclusions on the geographical spread of the 1603-4 Bubonic Plague in Bristol and its rural hinterland.

[33]Slack, *Impact*, p. 8.
[34]Slack, *Impact*, p. 177.
[35]Slack, 'Local Incidence', p. 54.

The argument for the limited impact of the 1603-4 Plague on the rural parishes surrounding Bristol will begin by re-examining the data for the urban parishes that were studied by Slack. The opening chapter will analyse the spread of the Plague within Bristol. Chapter 2 will interpret the data for the 7 rural parishes surrounding the city. The same methods used in Chapter 1 will allow a direct comparison of the spread of the Epidemic in urban and rural areas. Chapter 3 will show that the low number of rural parishes that were affected by the Epidemic experienced a lesser degree of mortality and relative severity compared to Bristol's parishes. The effects of climate and population density will be used to account for the differences of mortality and severity in urban and rural areas. The final chapter will consider the impacts of communication networks on the limited presence of Plague in Bristol's rural hinterland. Overall, the Great Plague of 1603-4 did spread to some rural parishes surrounding Bristol, but it was more pervasive and severe within the city.

Chapter 1- The spread of the 1603-4 Plague within Bristol

This chapter will examine the vast spread of the 1603-4 Plague across Bristol, comparing it to the spread of Plague in Bristol's rural hinterland in chapter 2. Bubonic Plague was a regular occurrence in Bristol with 4 major outbreaks from 1540-1602, recorded by surviving sources.[36] Slack researched the impact of 6 major epidemics on Bristol from 1540-1650.[37]

Bristol's city boundaries enclosed an area of 738 acres with 18 original parishes, 13 of which have surviving parish registers that include the Epidemic years, 1603-4.[38] Figure 1 below shows the 18 parishes.

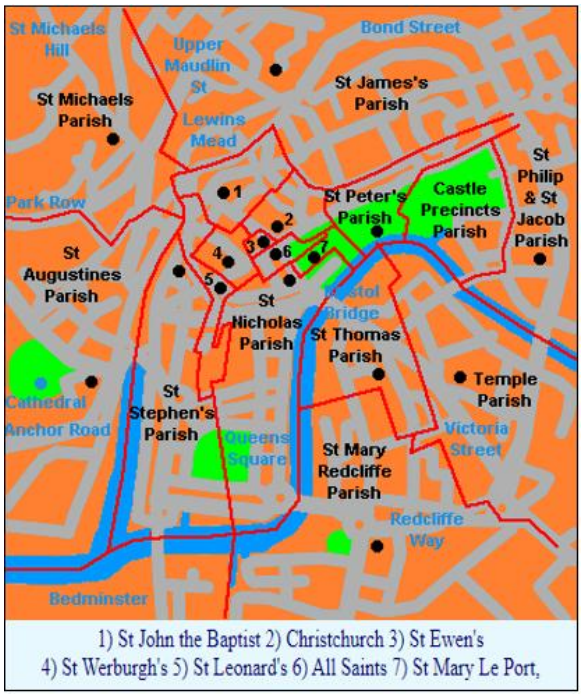


Fig. 1: Map of Bristol's Earliest Parishes.[39]

[36]Slack, 'Local Incidence', p. 51.
[37]Slack, 'Local Incidence', p. 59.
[38]Estabrook, p. 44.
[39]'Map of Bristol's Earliest Parishes', *Bristol: A History and Guide* <http://brisray.com/bristol/bound1.htm> [accessed 29 June 2020].

The Great Plague of 1603-4 began in London in April before reaching Bristol on 18 July 1603.[40] William Adams was a contemporary from Bristol who estimated that 2,600 people died of the Plague in the city between July 1603 and February 1605.[41] Slack analysed 9 surviving parish registers out of 18 original parishes in his study of Early Modern epidemics in the city.[42] Using this sample and estimates of population distribution from 1540s Chantry records, Slack calculated that 2,200 people could have died in Bristol between August 1603 and July 1604.[43] The Plague can be identified in all of the 13 surviving parish registers, confirming that the disease was widespread within the city and was responsible for the deaths of almost one-fifth of its population.

The spread of the Epidemic across Bristol's parishes can be plotted in chronological order of Plague burials. This method has been used by Leslie Bradley and Justin Champion to chart the geographical spread of Plagues in 1603-4 and 1665-6 within London.[44] Epidemic plotting relies on the detection of the first Plague burial recorded by the parish clerk in the register. If Plague was not mentioned in the register, then the month that Plague began must be estimated from the increase in the number of burials.[45] There is uncertainty when attempting to explain the time sequence and transmission of the Plague because of the period between the date of infection and death.[46] The parish registers only provide information on when an individual was buried rather than the date that they became infected. Bristol's first reported

[40]*Adams's chronicle of Bristol,* ed. by F. F. Fox (Bristol: Arrowsmith, 1910), 178; L. Bradley, 'The geographical spread of Plague' in *The Plague Reconsidered: A new look at its origins and effects in 16th and 17th Century England* ed. by Cambridge Group for the History of Population and Social Structure, pp.127-32 (p.130).
[41]Fox, p. 178.
[42]Slack, 'Local Incidence', p. 51.
[43]E. E. Williams, *The Chantries of William Canynges in St. Mary Redcliffe, Bristol* (Bristol: William George's Sons Ltd, 1950), pp. 32-41; Slack, 'Local Incidence', p. 51.
[44]Bradley, p. 127; J. Champion, *London's Dreaded Visitation: The Social Geography of the Great Plague in 1665* (London: Centre for Metropolitan History, 1995), p. 102.
[45]Bradley, p. 127.
[46]Bradley, p. 131.

Plague victim was Joan Olyver who was buried in Christchurch on 4 August 1603. According to 20th Century scientific experiments, the duration of Plague from infection to death was approximately 10-14 days.[47] This suggests that the causative agent of the Plague in Christchurch may have arrived as early as 21 July 1603, which closely corresponds to the opening date of the Epidemic reported in Adams' Chronicle.[48]

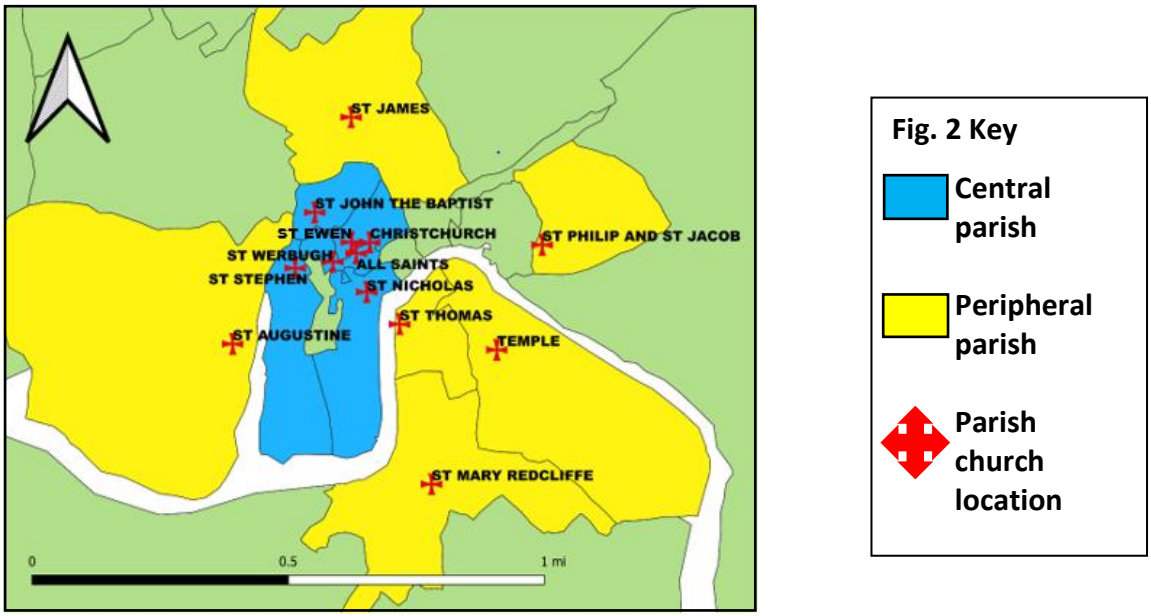


Fig. 2: A QGIS map to show the central and peripheral parishes of Bristol.[49] (The dataset does not include the parish boundaries of St. Werbugh which was relocated from the centre of Bristol in 1878).[50]

[47]R. Pollitzer, *Plague* (Geneva: World Health Organisation, 1954), p. 485.
[48]Fox, p. 178.
[49]R. J. P. Kain and R. R. Oliver, 'Historic Parishes of England and Wales: An Electronic Map of Boundaries before 1850 with a Gazetteer and Metadata (2001)' in UK Data Service. SN: 4348 <http://doi.org/10.5255/UKDA-SN-4348-1> [accessed 16 October 2020].
[50]Gray and Ralph, p. 36.

Figure 3 demonstrates a lack of correlation between the timing of Plague in Bristol's central and peripheral parishes as Plague appears to have spread sporadically across the city in 1603.

Parish	Approximate date of first Plague burial
Christchurch	4 August 1603
St. Mary Redcliffe	11 August 1603
St. Philip and St Jacob	12 August 1603
St. Nicholas	18 August 1603
St. James	20 August 1603
St. Thomas	23 August 1603
St. Stephen	August 1603
St. John the Baptist	8 September 1603
St. Augustine the less	9 September 1603
All Saints	13 September 1603
Temple	21 September 1603
St. Ewen	30 September 1603
St. Werbugh	13 December 1603

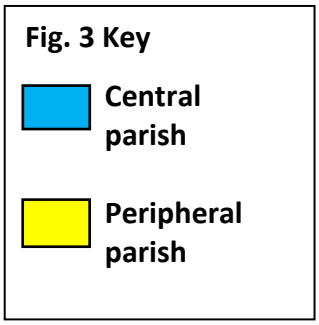


Fig. 3: Table showing the approximate date of the first Plague burial in Bristol's central and peripheral parishes.

All of Bristol's parish registers reveal an acceleration of burials in 1603-4. Figures 4 and 5 show the impact of the Plague on the number of burials within the central and peripheral parishes.

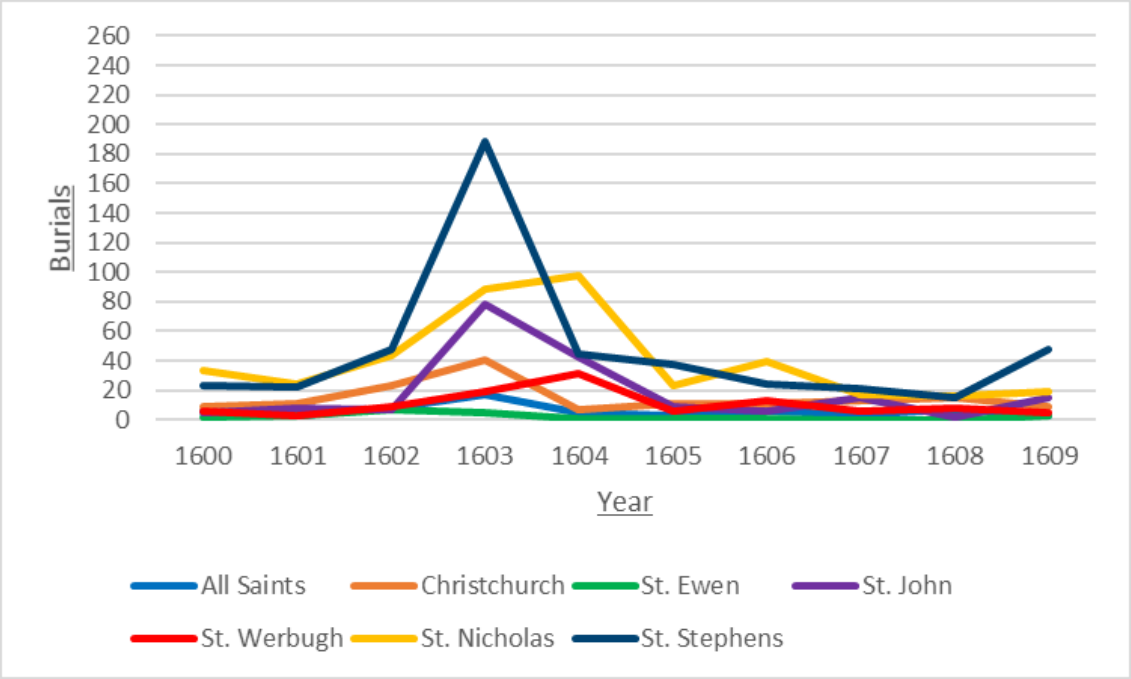


Fig. 4: A line graph to show the annual burials in Bristol's central parishes, 1600-10.

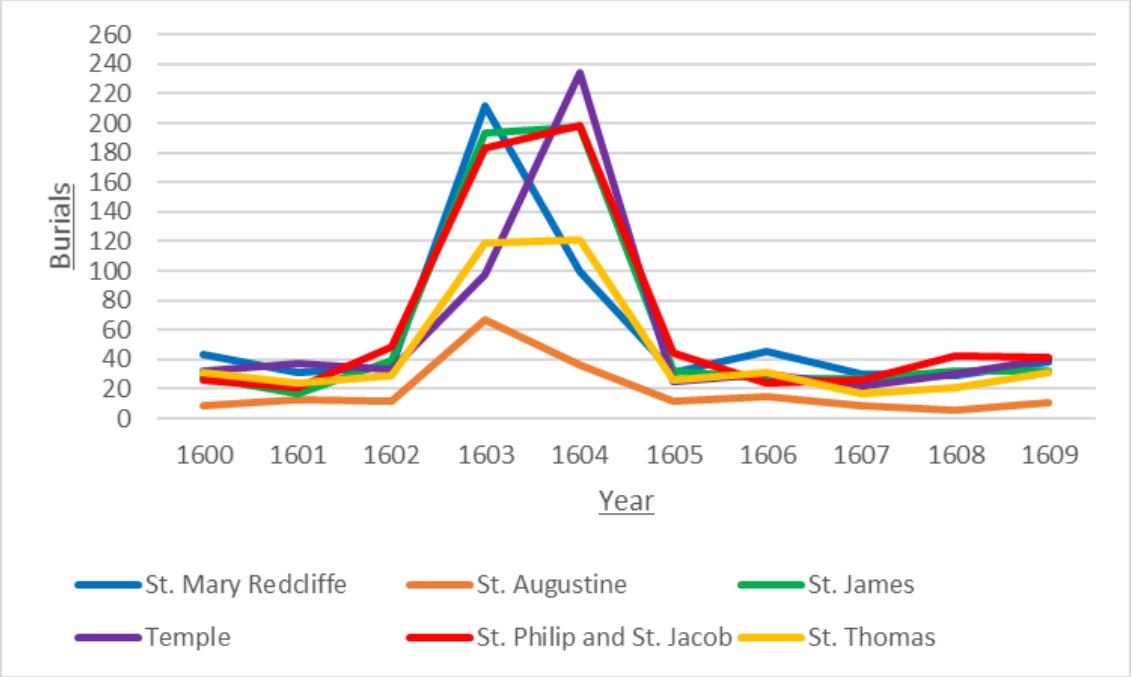


Fig. 5: A line graph to show the annual burials in Bristol's peripheral parishes, 1600-10.

Both line graphs demonstrate the large number of burials across all of Bristol's parishes in 1603-4. The Plague was responsible for raising the number of annual burials but it was not the sole cause of deaths. All the central parishes except St. Nicholas and St. Werbugh recorded a peak number of burials in 1603. In contrast, the peripheral parishes of St. James, Temple and St. Philip and St. Jacob experienced a greater number of burials in 1604 relative to 1603. Most peripheral parishes have burial peaks with a wider timespan, suggesting that the Plague persisted there for longer, despite arriving in central and peripheral areas at approximately the same time. Figure 6 shows that Plague burials were still being recorded in 5 out of 6 peripheral parishes in December 1604 when the disease was no longer evident in 6 out of 7 central areas.

Parish	Approximate date of last Plague burial	Approximate duration of Plague (months)
All Saints	January 1604	6
St. John	February 1604	5
St. Ewen	6 February 1604	5
St Augustine	June 1604	11
St. Stephen	August 1604	12
St. Werbugh	September 1604	10
Christchurch	16 November 1604	16
St. Mary Redcliffe	December 1604	17
St. Thomas	January 1605	17
St Nicholas	30 January 1605	17
Temple	25 February 1605	17
St. James	31 March 1605	19
St. Philip and St. Jacob	20 April 1605	20

Fig. 6 Key

Central parish

Peripheral parish

Fig. 6: Table showing Bristol's central and peripheral parishes in chronological order of the last Plague burial date and the overall duration of the disease in each area.

The scale of burials was different in central and peripheral parishes. The peripheral parishes of St. James, Temple and St. Philip and St. Jacob recorded 197, 234 and 198 burials in 1604 respectively. These were greater than the peak of 188 burials in St Stephen, the worst affected central parish in 1603.

Slack argued that the spread of Plague in Bristol was influenced by the relative wealth and hygiene standards of each parish.[51] He ranked the urban parishes in order of relative wealth through a comparison of the 1524 and 1591 parish subsidy assessments with the 1547 Chantry certificates.[52] The poorest parishes tended to be located in the peripheral areas of the city.[53]

Slack estimated the relative severity of the 1603-4 Plague in each parish by calculating the ratio of epidemic to normal burials. [54] This was a measurement of the level of increase of the burials witnessed in 1603-4, compared to the normal annual average burials for the 10 years preceding the Epidemic (1593-1602). Slack's original results have been reproduced as a bar chart in Figure 7.

[51]Slack, 'Local Incidence', p. 54.
[52]Slack, 'Local Incidence', pp. 52-3.
[53]Slack, *Impact*, p. 122.
[54]Slack, 'Local Incidence', p. 53.

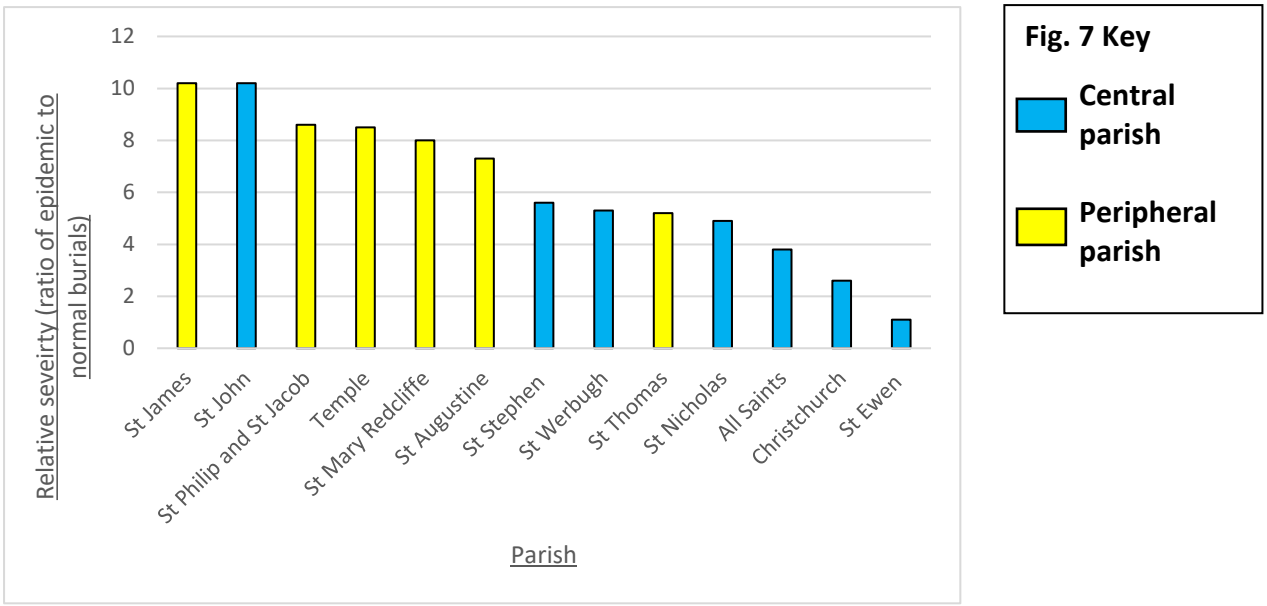


Fig. 7: Bar chart showing the central and peripheral Bristol parishes ranked in order of relative severity for the 1603-4 Plague based on the results of Paul Slack.[55]

In the worst period of the Epidemic from August 1603 to July 1604, the peripheral parishes of St. James, Temple and St. Philip and St. Jacob witnessed a greater rise in the number of burials compared to the central parishes (except St. John). Slack acknowledged that there was not a perfect correlation between the relative severity of Plague and the wealth of each parish so it cannot be stated as the sole factor determining the spread of Plague across the city .[56]

On reflection, Plague affected all urban parishes in Bristol according to surviving parish registers. The greater persistence and severity of the Plague in the peripheral areas of Bristol may have impacted the rural areas immediately outside the city walls. The next chapter will examine the extent that the Plague spread to the rural parishes surrounding the city.

[55]Slack, 'Local Incidence', p. 54.
[56]Slack, 'Local Incidence', p. 53.

Chapter 2- The spread of the 1603-4 Plague outside Bristol

The Great Plague of 1603-4 only spread to 3 out of 7 rural parishes surrounding Bristol which included St. George Easton-In-Gordano, St. Andrew Clifton and Holy Trinity Westbury-On-Trym. This chapter will examine the burial records of the rural parishes in order of when they became affected by Plague. The map below shows the incidence of the 1603-4 Plague in rural areas within an 8-mile radius of Bristol.

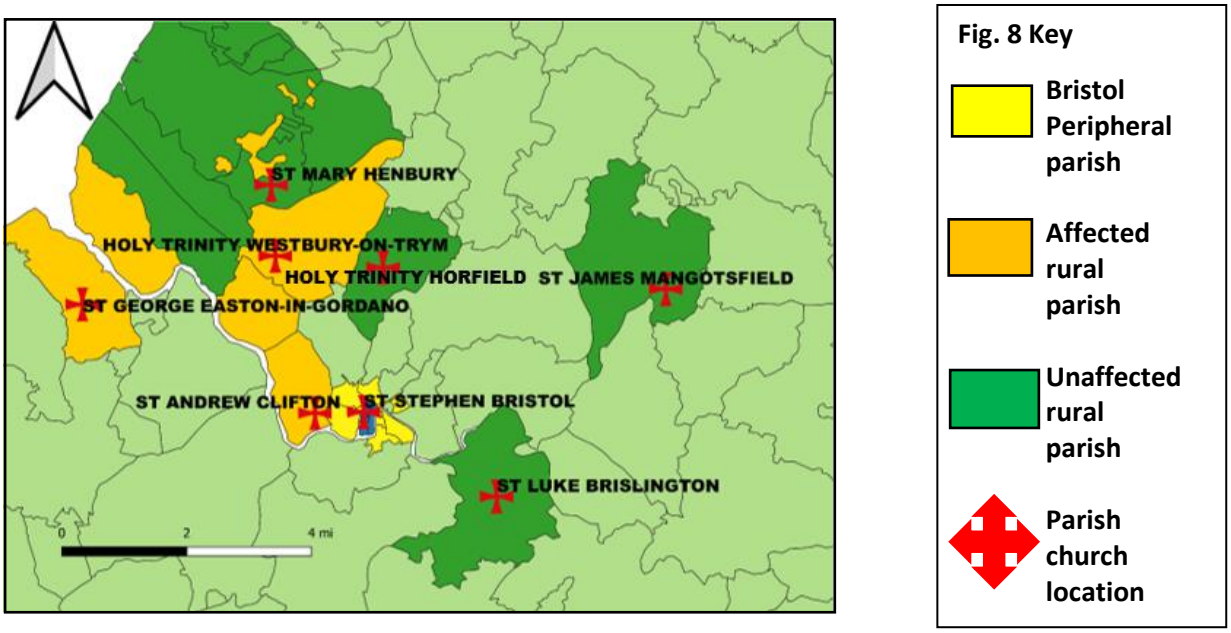


Fig 8: Map of Bristol and surrounding rural parishes affected by the 1603-4 Plague.

Carl Estabrook noted that all villages within 11 miles of Bristol's peripheral parishes were part of the city's rural environs.[57] This included nucleated manorial villages and scattered settlements that mainly consisted of agriculturalists and labourers.[58] The 3 rural parishes around Bristol that were affected by Plague were all to the west of the city but were not dissimilar to other unaffected areas in terms of internal settlement characteristics. Estabrook

[57]Estabrook, p. 6.
[58]Estabrook, p. 6.

has argued that Bristol had a limited social and cultural influence on its rural hinterland in the 17th Century due to a clear topographical divide.[59] It can be reasoned that Bristol's rural hinterland included relatively isolated communities with different demographic characteristics compared to the city. This may have influenced the limited spread of the Plague to rural areas surrounding Bristol.

Figure 9 below reveals the limited signs of an increase in burials across the 7 rural parishes in 1603-4. Figures 4 and 5 in chapter 1 revealed that Bristol's parishes all had a similar upsurge of burials in 1603-4. In contrast, the rural parishes had burial peaks at different times in the period 1600-10, suggesting that they were relatively isolated from Bristol and each other.

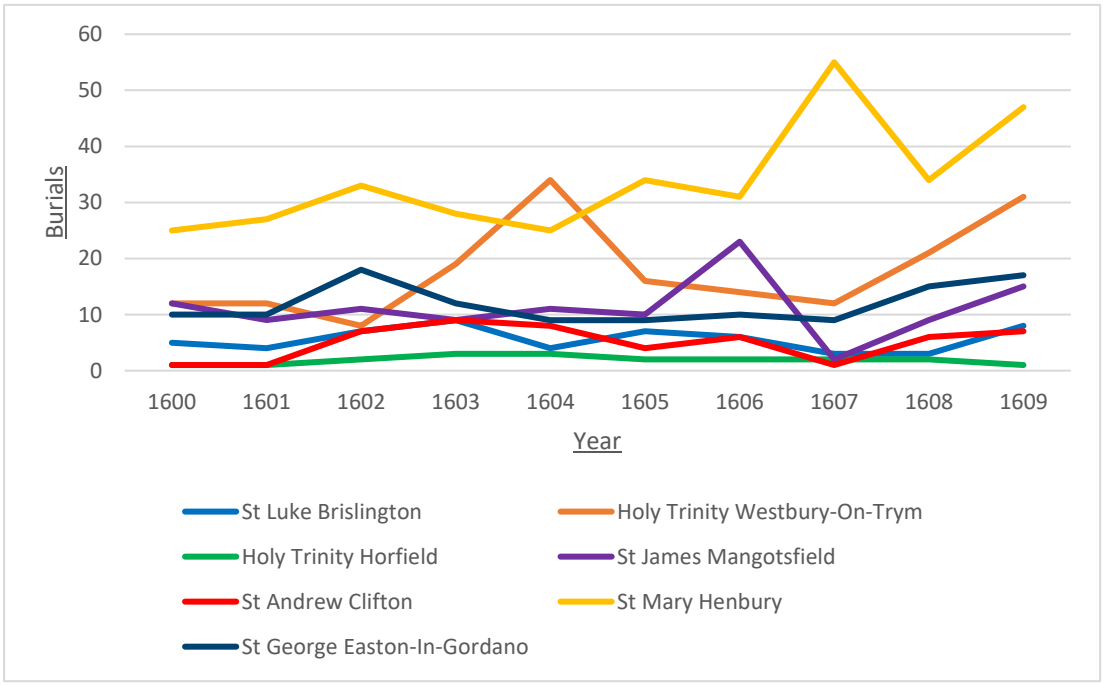


Fig. 9: A line graph of the annual burials in the 7 rural parishes surrounding Bristol, 1600-10.

The spike in burials at St. Mary Henbury in 1607 reflects the impact of a devastating tidal flood. Henbury was badly affected by the tidal flood as it contained low-lying coastal land in close

[59]Estabrook, p. 7.

proximity to the Severn Estuary.[60] Other rural parishes show unrelated patterns of mortality and the 3 rural parishes affected by the 1603-4 Plague cannot be deduced from the graph alone. A qualitative analysis of parish registers was required to trace the occurrence of Plague in Bristol's rural hinterland.

The outbreaks of the 1603-4 Plague in the 3 rural parishes surrounding Bristol all occurred after the Epidemic had started in the city. The first parish in Bristol's rural hinterland to be affected by the 1603-4 Plague was St. George Easton-in-Gordano that was approximately 5 miles to the west of the city.

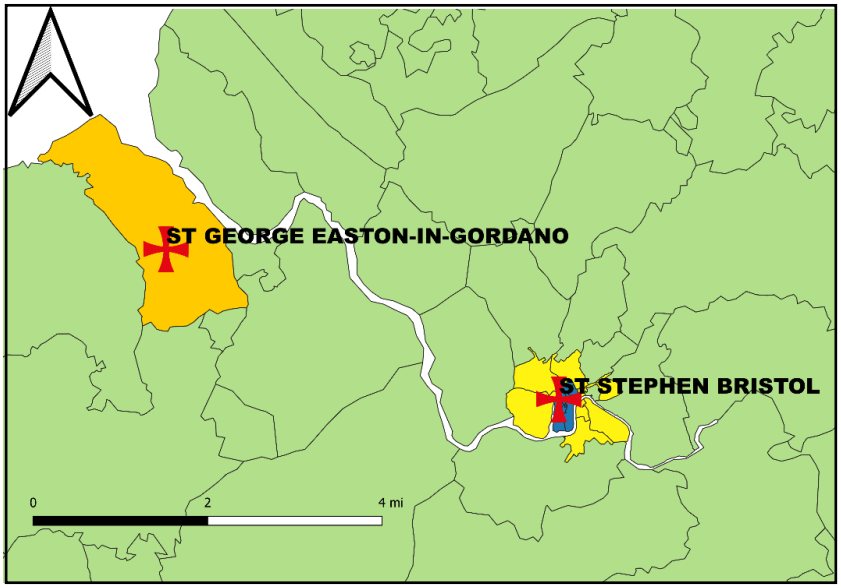


Fig. 10: Map to show the location of St. George Easton-In-Gordano.

[60]E. T. Jones, R. Hewlett and A. W. Mackay, 'Weird weather in Bristol during the Gridelwald Fluctuation (1560-1630 CE)', *Weather*, 76 (2021), 104-110 (p.105).

Easton-In-Gordano witnessed 19 burials in 1603-4 which accounted for approximately 5% of the 370-450 parish inhabitants. The 10-year annual average burials from 1593-1602 was 13.1. The 12 burials witnessed in 1603 were below the normal annual average for the decade preceding the Epidemic. However, the records confirm the presence of Plague in the parish despite its limited impact on the number of burials as shown by Figure 11.

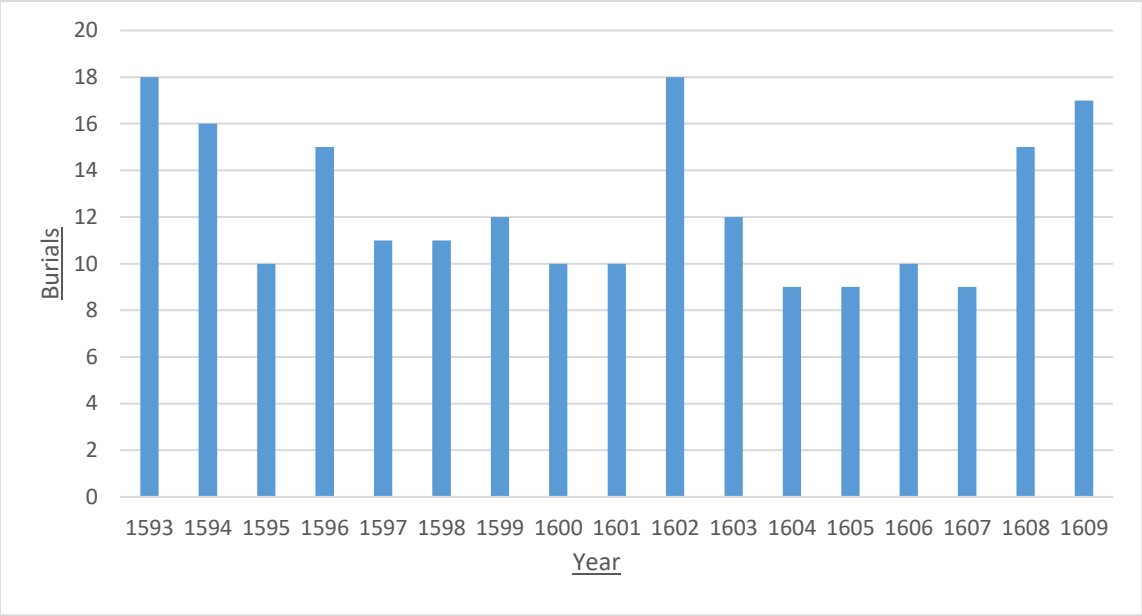


Fig. 11: A bar chart of annual burials at St George Easton-In-Gordano, 1593-1610.

The parish scribe wrote the letter 'P' in the margin for 8 burials in 1603-4. An Irish merchant and stranger in the parish was the first recorded Plague victim and was buried on 16 August 1603 which was just 12 days after the first recorded Plague burial in Bristol. A boy born in Bristol was buried on 15 December 1603. This demonstrates that Easton-In-Gordano was well connected to Bristol by land and river transport.

By the end of 1603 there had been 5 burials in Easton-In-Gordano that were definitely caused by Plague. However, there was no acceleration of monthly burials or an intra-familial pattern of deaths. The intra-familial pattern of burials emerged by the end of February 1604. Matthew and Susanna Whitwood were both buried as a result of the Plague between 26 February and

21 March 1604. One day after Susanna's burial, another member of the same household - William Whitwood - was buried. The burial of William Whitwood was the last time that the clerk used the letter 'P' in the margin. However, the son and daughter of John Coombe were both buried within 2 days of each other in early May 1604, which would suggest that the Plague was still present in the parish. Thus, Plague affected Easton-In-Gordano sporadically over approximately 9 months from August 1603-May 1604.

St. Andrew Clifton became the second rural parish surrounding Bristol to be affected by the Plague in October 1603. Clifton was less than a 5-minute walk from the Bristol quays in the city parish of St Augustine.[61]

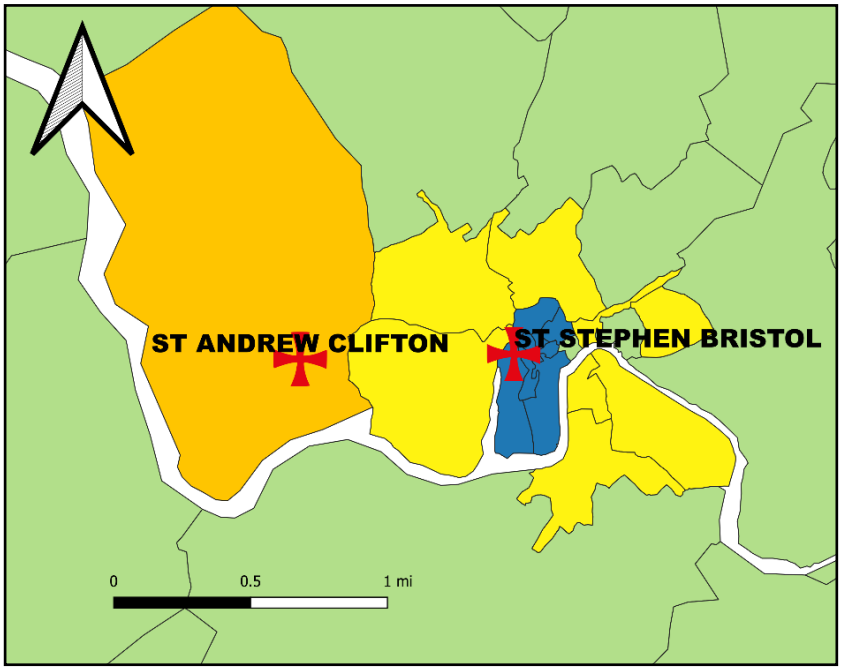


Fig 12: Map to show the location of St. Andrew Clifton.

[61]Estabrook, p. 13.

St. Andrew Clifton had very small numbers of annual burials in the period 1600-10 which raises the degree of statistical uncertainty when accounting for mortality patterns. Clifton and St. Luke Brislington had a peak of 9 burials in 1603, which was the largest annual burials total witnessed by both parishes from 1593-1610. However, there was no evidence of the 1603-4 Epidemic in the records of St. Luke Brislington which demonstrates the issues of attributing minor burial spikes to Plague.

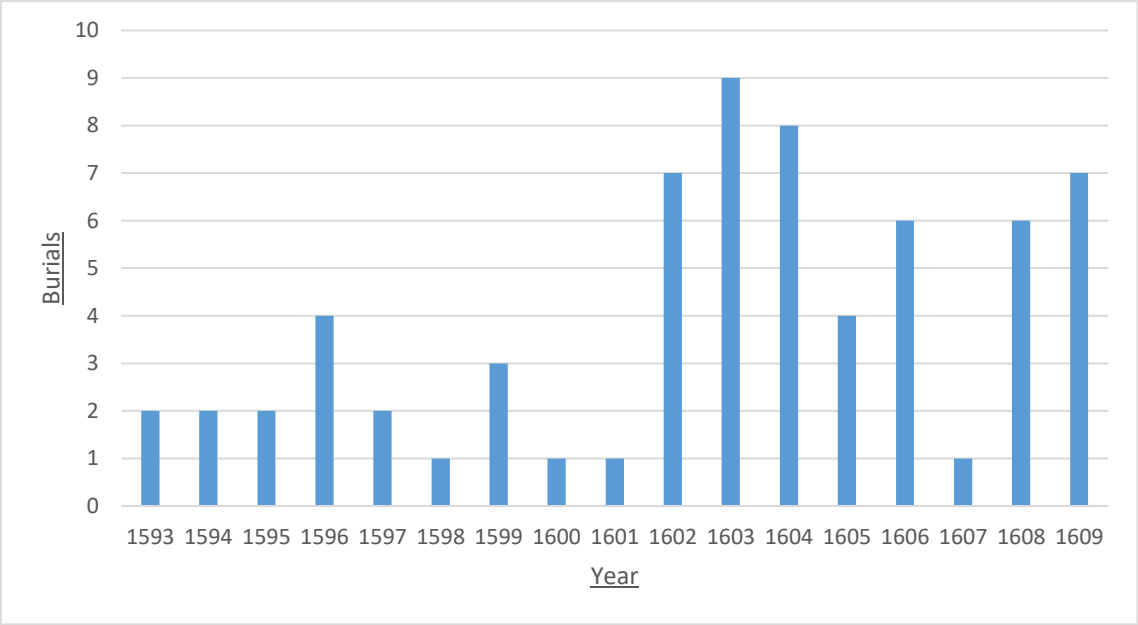


Fig. 13: A bar chart of annual burials at St. Andrew Clifton, 1593-1610.

However, the word 'Plague' was mentioned as a cause for 3 out of 9 deaths in 1603. Four-year-old Anne Pope, the first Plague victim in Clifton, was buried on 9 October 1603. Two of her siblings William and Margery Pope were buried on the 25th and 27th of October and a fourth member of the household, Edward Pope, was buried on 27 November. The word 'Plague' was not mentioned in the burial records of William, Margery and Edward, but it can be inferred that the intra-familial pattern of deaths in the Pope family fits the known characteristics of a Bubonic Plague.[62] After Anne's burial in early October, the same vector

[62]Slack, *Impact*, p. 177.

could have infected William and Margery who both died approximately 2 weeks after Anne and within 2 days of each other, corresponding to the normal Plague incubation and illness periods.[63] The burial of Edward Pope was approximately 4 weeks after William and Margery had been buried and this may mean that his death was unrelated to Plague or he became infected from a different source. There may have been at least 3 deaths in the Pope family caused by Plague.

At least 2 other households in Clifton were affected by the Great Plague of 1603-4. The death of John, servant of William Thomas, was attributed to the Plague and he was buried on 18 January 1604. William Thomas' daughter, Anne, was buried on 4 January 1604 but her death was not recorded as Plague. It is significant that both members of the same household died within 2 weeks of each other. The final mention of Plague in Clifton's parish register was the death of 5-year-old Thomasine Ragland who was buried on 18 February 1604.

Overall, Plague killed at least 3 residents of Clifton. The low numbers of burials at Clifton in 1603-4 raises statistical uncertainties but a qualitative analysis of the register shows that Plague was identified by the parish scribe. Further Plague victims are suggested by the increased intra-familial clustering of burials in 1603-4.

Holy Trinity Westbury-On-Trym became the third rural parish surrounding Bristol to be affected by the Plague in March 1604. The parish was approximately 3 miles west of Bristol with approximately 575-650 inhabitants. Figure 14 shows the scattered settlements within the parish.

[63]Pollitzer, p. 485.

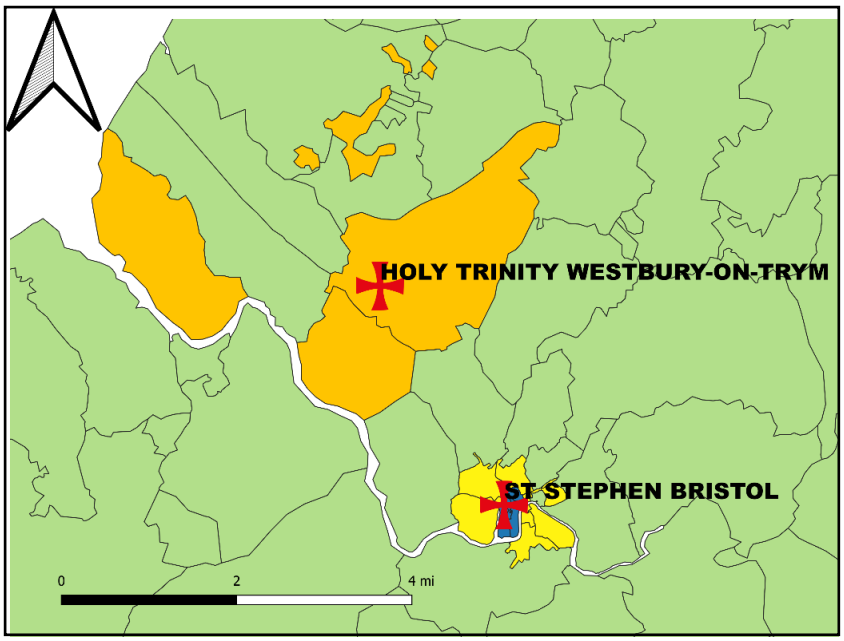


Fig. 14: Map to show the location of Holy Trinity Westbury-On-Trym.

According to Figure 15, annual burials rose after 1602 with a peak of 34 burials reached in 1604. The total number of burials in 1604 when Plague struck the parish was almost twice the normal annual average of 19 burials per year from 1593-1602.

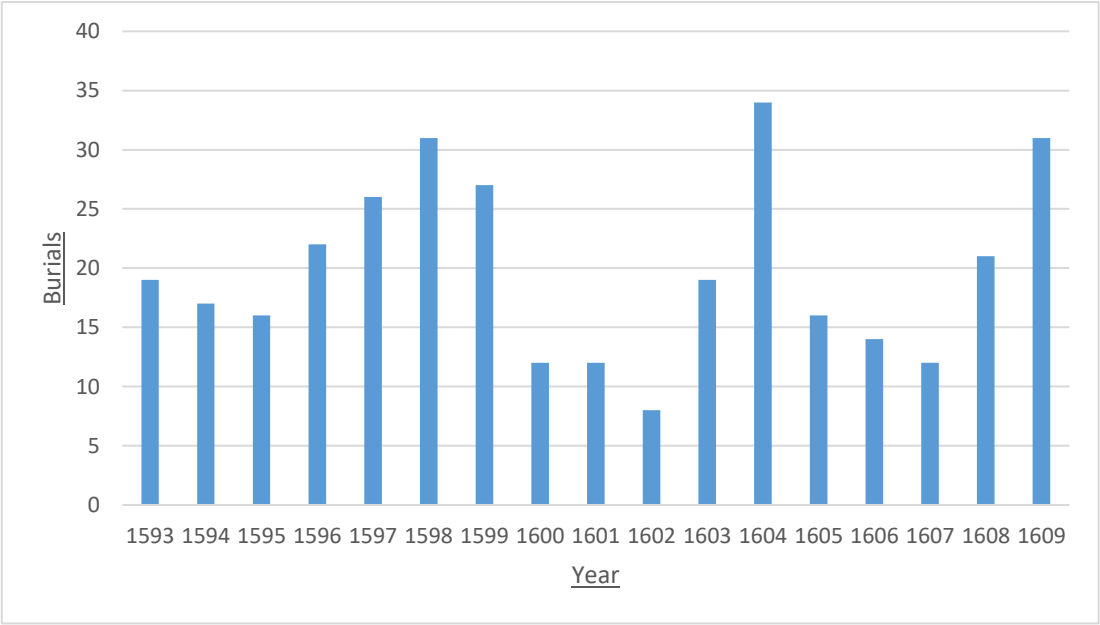


Fig. 15: A bar chart of annual burials at Holy Trinity Westbury-On-Trym, 1593-1610.

The scribe did not record the word 'Plague' in the lists of burials in 1603-4 for Westbury-On-Trym. The presence of an epidemic can be determined from a detailed analysis of the parish register. An intra-familial clustering of burials began in Spring 1604, with 3 families experiencing multiple deaths in under 2 months. Seventeen days after the burial of Lawrence Rustyne on 4 March 1604, his 10-year-old daughter Joan was buried. Four members of the Charnell family were buried over 15 days from 26 March-10 April 1604. The death patterns of the Rustyne and Charnell families almost satisfy the average 2-week duration of Plague cases.[64] In the last week of April 1604, Joan and John Morris were buried within 5 days of each other. Hence, at least 3 families saw a clustering of burials in March and April 1604 which was abnormal and suggests the presence of Bubonic Plague. On this basis, Plague started to affect Westbury-On-Trym in early March 1604. There were 21 burials in the parish from March-June 1604, but only 8 burials from July 1604-January 1605. In the Plague year 1604, half of the burials occurred in March and April.

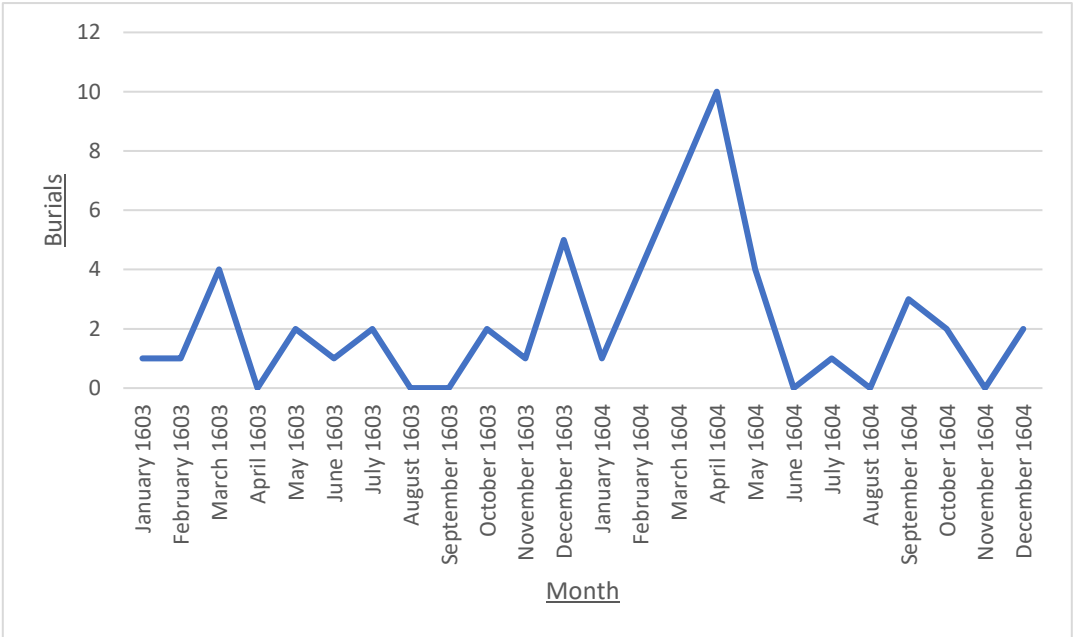


Fig. 16: A line graph to show the monthly burials at Holy Trinity Westbury-On-Trym, January 1603-January 1605.

[64]Pollitzer, p. 485.

Figure 16 demonstrates that monthly burials for the parish of Westbury-On-Trym in 1604 did not fit the normal seasonal pattern of Plagues that tended to occur from July-October.[65] However, Easton-In-Gordano and Clifton were affected by Plague in the autumn and winter of 1603-4 when colder temperatures normally inhibited the breeding of transmission vectors. Plague spread to a limited number of rural areas in the autumn and winter of 1603-4 due to a climate conducive to the breeding of transmission vectors.

Westbury-On-Trym was affected by Plague approximately 7 months after the first Plague burial was reported in Easton-In-Gordano. This is surprising given that the communities of Pill in Easton-In-Gordano and Shirehampton in Westbury-On-Trym were less than a mile from each other across the River Avon. However, the increase of intra-familial burials at Easton-In-Gordano and Westbury-On-Trym both occurred in March 1604 which could have been due to the close proximity of Pill and Shirehampton. Overall, the word 'Plague' is absent from the registers for Westbury-On-Trym, but an acceleration of intra-familial burials from March 1604 suggests that the rural parish was affected by the Epidemic.

The evidence may support Alfani's comments on the greater territorial pervasiveness of 17th Century Plagues in Italy compared to England. Territorial pervasiveness refers to the ability of a Plague to infect vast areas.[66] This study was of a much smaller geographical area and chronological period so it cannot be compared directly to Alfani's work. The longer the period under study, the less likely a parish would be unaffected by Plagues (all else equal). Alfani split his data into individual outbreaks that can be compared with this study.

[65]Slack, *Impact*, p. 8.
[66]Alfani, p. 408.

Case	Probability of an urban area being affected	Probability of a rural area being affected	Probability of a rural area being unaffected
Bristol: 1603-4	(13/13)=100%	(3/7)=43%	(4/7)=57%
Italy: 1629-30	(18/21)=86%	(61/75)=81%	(14/75)=19%

Fig. 17: Table to show the comparison of this study to the work of Alfani on the territorial pervasiveness of Plagues in urban and rural areas.[67]

Figure 17 demonstrates that the rural hinterland parishes of Bristol had a greater probability of being unaffected by Plague in 1603-4 compared to the Italian rural communities in 1629-30. However, all of Bristol's urban parishes are located within the same 'community' as interpreted by Alfani. This means the data for Bristol's 13 urban parishes are not directly comparable with Alfani's urban communities that were more dispersed. Italian communities studied by Alfani had more developed communication networks which illustrates the importance of connectivity for the spread of Plague.[68] This is the main reason for comparing the territorial pervasiveness of Plague in English and Italian rural areas.

It may be suggested that the communities studied by Alfani were of a different nature to the parishes surrounding Bristol due to the large difference between the probabilities of rural areas in England and Italy being unaffected by Plague. Alfani did not provide information on the size of the Italian communities and their proximity to communication networks. Hence, a comparison of territorial pervasiveness in rural areas of England and Italy must ensure that the types of community studied are similar due to the effects of transportation on the spread of Plague.

[67]Alfani, p. 416.
[68]Alfani, p. 418.

This chapter has identified the relatively minor spread of the 1603-4 Plague to rural parishes surrounding Bristol. The next chapter will demonstrate the relatively low mortality and severity of the Plague in the rural areas affected.

Chapter 3- The low mortality and relative severity in Bristol's rural hinterland

The 3 rural parishes that were affected by the 1603-4 Plague had a lower level of mortality and relative severity compared to parishes within Bristol. This would support the argument that the Epidemic had a limited impact beyond Bristol's boundaries. Contrasting densities of settlement in urban and rural parishes may account for the different levels of mortality and relative severity in Bristol and its hinterland.

To determine the level of mortality and the severity of the 1603-4 Plague, the population of each parish had to be estimated. The methods of Slack were used to calculate the average number of baptisms and burials for the parishes during the pre-Plague period 1593-1602 (due to a gap in the records the averages for St. Luke Brislington were taken for the period 1586-95).[69] Baptismal and burial estimates did not include the Plague years 1603-4 as this would artificially raise the average number of burials.[70] The estimates did not include the period after the Epidemic as baptisms often accelerate in the years following a crisis.[71] Wrigley and Schofield provided national averages of birth and death rates per 1000 members of a population per year for the period 1541-1871 which were used to estimate parish population sizes.[72] Population estimates have been given as ranges in order to minimise the level of uncertainty as short-term fluctuations could occur due to migration, economic conditions and

[69]Slack, 'Local Incidence', p. 54.
[70]Schofield, 'Crisis Mortality', *Local Population Studies*, 9 (1972), 10-22 (p.11).
[71]Slack, *Impact*, p. 185.
[72]Wrigley and Schofield, p. 311.

mortality crises.[73] Figure 18 reveals that rural parishes surrounding Bristol were often less populated than the urban parishes in the city.

Number	Parish	Population
1	St. Thomas	1150-1350
2	St. Nicholas	1120-1240
3	Temple	1100-1300
4	St. Stephen	1075-1140
5	St. Mary Redcliffe	1050-1250
6	St. Philip and St. Jacob	1000-1200
7	Henbury	900-1100
8	St. James	700-900
9	Christchurch	640-700
10	Westbury-On-Trym	575-600
11	Mangotsfield	450-500
12	St. John the Baptist	420-480
13	Easton-In-Gordano	370-450
14	Brislington	310-380
15	St. Augustine	250-350
16	St. Werbugh	220-280
17	All Saints	200-250
18	St. Ewen	140-160
19	Horfield	95-115
20	Clifton	85-100

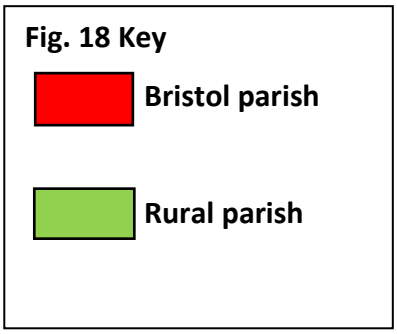


Fig. 18: Table of estimated population sizes of Bristol's parishes and the rural areas surrounding the city.

Mortality rates were calculated by dividing the total number of burials in 1603-4 by the lower and upper estimates of population size for each parish. Slack counted the burials for the urban parishes during the period from August 1603-July 1604 when the Plague had the most noticeable impact on mortality.[74] This has been replicated for the rural parishes and Figure

[73]Wrigley and Schofield, p. 285.

[74]Slack, 'Local Incidence', p. 51.

19 shows the 20 urban and rural parishes ranked in order of the highest estimated mortality rate.

Number	Parish	August 1603-July 1604 Burials	Lower Mortality Rate (%)	Upper Mortality Rate (%)
1	St. James	310	34.4	44.3
2	St. Augustine	93	26.6	37.2
3	St. Philip and St. Jacob	302	25.2	30.2
4	St. John the Baptist	113	23.5	26.9
5	St. Mary Redcliffe	277	19.8	26.4
6	Temple	263	20.2	23.9
7	St. Stephen	188	16.5	17.5
8	St. Werbugh	35	12.5	15.9
9	St. Thomas	171	12.7	14.9
10	Clifton	12	12	14.1
11	St. Nicholas	124	10	11.1
12	All Saints	18	7.2	9
13	Christchurch	45	6.4	7
14	Westbury-On-Trym	34	5.7	5.9
15	Easton-In-Gordano	17	3.8	4.6
16	St. Ewen	6	3.8	4.3
17	Horfield	3	2.6	3.2
18	Henbury	29	2.6	3.2
19	Mangotsfield	9	1.8	2
20	Brislington	6	1.6	1.9

Fig. 19 Key

Urban parish

Affected rural parish

Unaffected rural parish

Fig. 19: Table showing Bristol's parishes and rural parishes ranked in order of the highest estimated mortality rate.

There are minor discrepancies between the order of the parishes in terms of lower and upper mortality rates because of the different ranges of population estimations. However, this does not alter the fact that rural parishes affected by the 1603-4 Plague generally suffered a lower level of mortality compared to urban parishes. Five of the 13 parishes within Bristol had a mortality rate of at least 20% which was over 3 times greater than the lowest estimated mortality rate of Westbury-On-Trym and over 5 times the mortality rate of Easton-In-Gordano. Only 3 urban parishes had a mortality rate below 10%. In contrast, 86% of the rural parishes had a mortality rate below 10%. The urban parishes, affected rural parishes and unaffected rural parishes have been grouped together from left to right in Figure 20 to visually demonstrate the difference of mortality rates between Bristol and its hinterland.

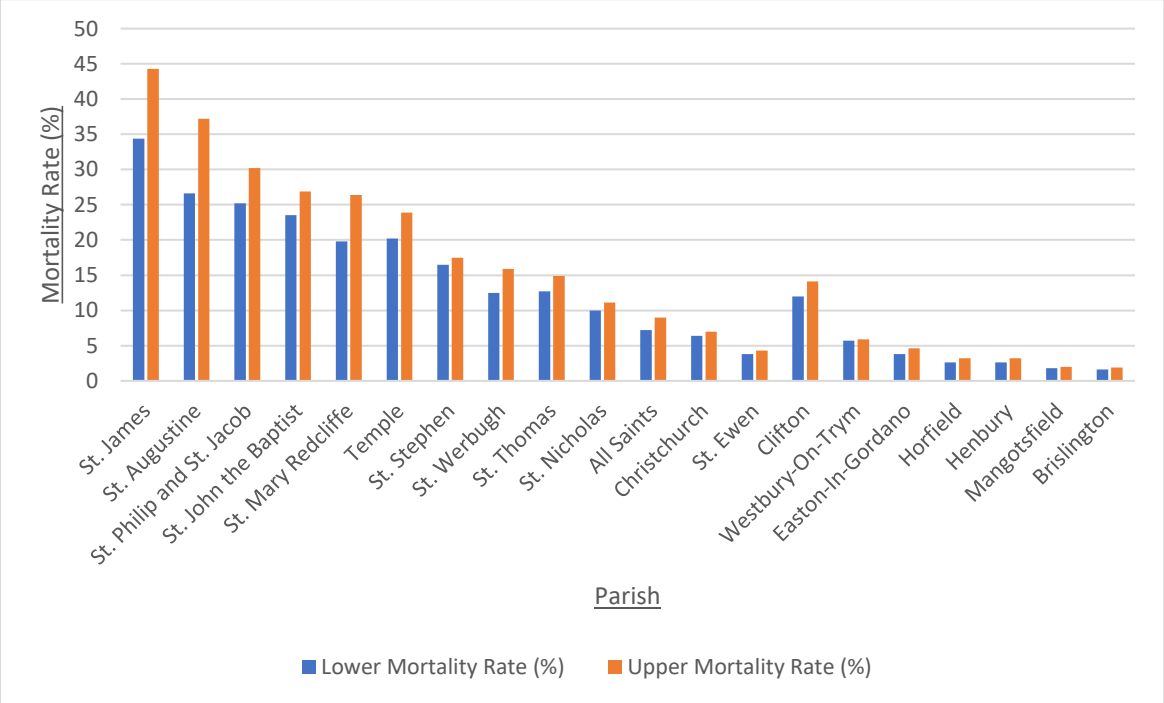


Fig. 20: A clustered bar chart to show the lower and upper mortality rates for the urban and rural parishes during 1603-4.

The affected rural parish of Clifton had a mortality rate in 1603-4 between 12-14.1% which was higher than 4 urban parishes from central Bristol. However, this was due to the low number of normal annual average burials at Clifton which was the least populated parish in the study. This increases the likelihood of short term fluctuations in burials and the level of uncertainty. Clifton had a high number of burials from August 1603-July 1604 in relation to its population size of 85-100 people, which would have had a significant impact on the community. However, Clifton still had a mortality rate that was lower than over half of the urban parishes in the study. Clifton's highest estimated mortality rate was over 10% lower than the 5 worst affected urban areas and over 30% lower than the approximate upper mortality rate of the peripheral city parish of St. James.

The relative severity of the Plague in the rural parishes surrounding Bristol was generally much lower compared to the urban parishes within Bristol. As mentioned in the first chapter, relative severity is the ratio of Epidemic (August 1603-July 1604) to normal annual average burials. Data for the rural parishes has been collected to form a direct comparison with Slack's original work on Bristol's parishes and the results are shown in Figure 21.

Number	Parish	August 1603-July 1604 Burials	Normal Annual Average Burials (1593-1602)	Ratio
		a	b	a/b
1	St. James	310	30.3	10.2
2	St. John the Baptist	113	11.1	10.2
3	St. Philip and St. Jacob	302	35.2	8.6
4	Temple	263	30.8	8.5
5	St. Mary Redcliffe	277	34.6	8
6	St. Augustine	93	12.8	7.3
7	St. Stephen	188	33.4	5.6
8	St. Werbugh	35	6.6	5.3
9	St. Thomas	171	32.8	5.2
10	St. Nicholas	124	25.4	4.9
11	Clifton	12	2.5	4.8
12	All Saints	18	4.8	3.8
13	Christchurch	45	17.6	2.6
14	Westbury-On-Trym	34	19	1.8
15	St. Ewen	6	3.8	1.6
16	Easton-In-Gordano	17	13.1	1.3
17	Horfield	3	2.7	1.1
18	Henbury	29	37.1	0.8
19	Mangotsfield	9	14.4	0.6
20	Brislington	6	9.9	0.6

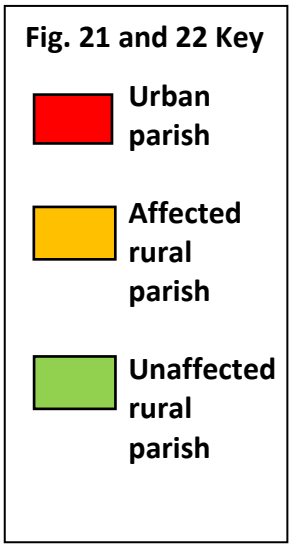


Fig. 21: Table showing Bristol's parishes studied by Slack and rural parishes outside Bristol ranked in order of the relative severity of the 1603-4 Plague.[75]

[75]Slack, 'Local Incidence', p. 54.

Figure 21 demonstrates that only the rural parish of Clifton saw burials rise to over twice the normal annual average during the worst period of the Epidemic. Early Modern demographic historians such as Wrigley and Schofield have used the term 'mortality crisis' to identify significant surges in death rates.[76] A mortality crisis represents a doubling of the deaths in a given area compared to the mean for the period immediately preceding the Plague.[77] The evidence shows that almost all of the urban parishes witnessed a mortality crisis in 1603-4 but only one rural parish (Clifton) met the threshold for a mortality crisis, confirming the greater severity of Plague within Bristol.

Slack identified a greater number of rural parishes in Essex that recorded a mortality crisis from 1603-6. There were 9 rural Essex parishes within a 25-mile radius of the town of Colchester that saw burials rise three-fold from 1570-1610.[78] Forty-four percent of these rural parishes avoided a crisis mortality ratio of 3.0 or above in the Epidemic years 1603-6. In Bristol's hinterland, 67% of the rural parishes affected by Plague did not have a crisis mortality ratio of 3.0 or above. It must be acknowledged that Slack would have had more chance of finding rural parishes with high crisis mortality ratios as his study covered a larger geographical area and longer time period. Slack identified parishes affected by Plague on the basis of crisis mortality ratios which inhibits a direct comparison of territorial pervasiveness between rural parishes in Essex and Bristol's hinterland. However, a tentative comparison suggests that Plague was more severe in rural areas of Essex compared to Bristol's hinterland.

The differences of mortality rate and relative severity in Bristol and surrounding rural parishes during the Epidemic of 1603-4 is partly explained by the differing population densities and

[76]Wrigley and Schofield, p. 332.
[77]Slack, *Impact*, p. 81.
[78]Slack, *Impact*, p. 102.

numbers of households found in each area. Urban parishes were much more densely settled than rural areas as shown in Figure 22. The table shows the significant gap between the estimates for the least densely populated urban parish (St. Augustine) and the most densely populated rural parish (Easton-In-Gordano).

Number	Parish	Lower Population Estimate	Upper Population Estimate	Area (km squared)[79]	Lower Population Density (number of people per square km)	Upper Population Density (number of people per square km)
		a	b	c	a/c	b/c
1	St. Ewen	140	160	0.003	46667	53333
2	Christchurch	640	700	0.019	33684	36842
3	All Saints	200	250	0.008	25000	31250
4	St. Thomas	1150	1350	0.064	17969	21094
5	St. Werbugh	220	280	0.014	15714	20000
6	St. Nicholas	1120	1240	0.085	13716	14588
7	St. John the Baptist	420	480	0.038	11053	12632
8	St. Stephen	1075	1140	0.102	10539	11176
9	St. Philip and St. Jacob	1000	1200	0.118	8475	10169
10	St. Mary Redcliffe	1050	1400	0.277	3791	5054
11	Temple	1100	1300	0.315	3492	4127
12	St. James	700	900	0.781	896	1152
13	St. Augustine	250	350	0.624	401	561
14	Easton-In-Gordano	370	450	6.376	58	71
15	Mangotsfield	450	500	10.713	42	47
16	Brislington	310	380	9.535	33	40
17	Westbury-On-Trym	575	600	17.698	32	34
18	Clifton	85	100	3.347	25	30
19	Henbury	900	1100	40.924	22	27
20	Horfield	95	115	5.372	18	21

Fig. 22: Table showing the urban and rural parishes in order of the upper estimate for population density, expressed as the number of people per square kilometre.

[79]Estabrook, p. 45; Kain and Oliver, 'Historic Parishes of England and Wales: An Electronic Map of Boundaries before 1850 with a Gazetteer and Metadata (2001)' in UK Data Service. SN: 4348 <http://doi.org/10.5255/UKDA-SN-4348-1> [accessed 16 October 2020].

However, Figure 22 only shows in crude terms that urban areas were more densely populated and it should be noted that settlements were not evenly distributed within parishes. In Clifton, some would have lived in isolated farmhouses while others lived in the village. Large parts of the city parish of St. Stephen such as the marsh was open land and uninhabited. This would suggest that the spread of Plague in urban and rural areas was not solely dependent on population density.

A lower number of households were affected by the Plague in rural parishes compared to the urban parishes within Bristol as shown by Figure 23.

Parish	Number of Households affected by Plague (Jan. 1603-Jan. 1605)	Number of Households with one recorded burial (Jan. 1603-Jan. 1605)
Clifton	3	11
Easton-In-Gordano	5	16
Westbury-On-Trym	3	40
St. Stephen Bristol	32	137

Fig. 23 Key

Affected rural parish

Urban parish

Fig. 23: Table showing the number of households affected by Plague in affected rural parishes compared to St. Stephen Bristol.

In smaller rural settlements it was more feasible for non-infected people to avoid households with known cases of Plague. Rural parishes often included scattered houses which had a degree of isolation from their neighbours. In the larger urban parishes of Bristol, it would have been more difficult to obtain an awareness of the medical state of others and isolate from

infected households in densely crowded streets. There would have been a high level of intercourse and movement between relatively small urban parishes that were in close proximity to each other.[80] This would have allowed Plague to spread more easily and severely within the city.

On reflection, the rural parishes affected by Plague had a lower level of mortality and relative severity compared to parishes within Bristol and the density of settlements contributed to this. The next chapter will examine the role of communication networks that may have influenced the limited spread of the Plague to rural areas surrounding Bristol.

[80]Bradley, p. 131.

Chapter 4- Accounting for the limited spread of the 1603-4 Plague to Bristol's rural hinterland

This chapter will focus on the timings of Plague deaths and burial surges in Bristol and surrounding areas to understand the impact of communication networks on the spread of the 1603-4 Plague.

Plague relied on pre-existing human communication networks but often spread randomly.[81] The parish registers indicate that the Epidemic spread from London to Bristol from April to August 1603, emanating from Bristol to rural areas in autumn 1603 and throughout 1604. Plague often arrived later at places more distant from the original focus.[82] For example, Westbury-On-Trym which is farther from Bristol than Clifton, was affected at a later date. The probability of a traveller leaving a settlement and passing on infective vectors to other settlements was very low so the Plague could only 'jump' across parishes sporadically.[83]

The method of epidemic plotting can be used to suggest how Plague may have spread from London to Bristol in 1603 via the main A4 land route. London's first Plague burial was recorded in Stepney on 21 April 1603 and the disease spread to other London parishes from May to September 1603.[84] It had reached Bristol by July 1603 and may have spread over land routes.[85] The main land route from London to Bristol was charted by John Ogilby in the 17th Century.[86] The parish of St. Giles Reading, located on the main London road, suffered Plague cases in 1603-4 before a more widespread outbreak occurred from 1606-8.[87] Further along

[81]Slack, *Impact*, p. 12.
[82]Bradley, p. 132.
[83]Bradley, p. 131.
[84]Bradley, p. 130.
[85]Fox, p. 178.
[86]J. Ogilby, *Britannia* (London: printed for Abel Swall, at the Unicorn in Pater-noster-row, 1698), pp. 5-6.
[87]Slack, *Impact*, p. 67.

the route from London to Bristol were the towns of Hungerford and Marlborough.[88] The parish of Hungerford was approximately 50-60 miles east of Bristol. In September 1603, the son of a butcher from the Bristol-London road was recorded as the first Plague victim.[89] Nine miles to the west of Hungerford was the parish of St. Mary Marlborough. Plague was not recorded in the parish register, but an upsurge of intra-familial burials in October 1603 is consistent with known Plague characteristics.[90] Further study of parishes in Berkshire and Wiltshire would be required to determine the potential spread of the Plague over land from London to Bristol in 1603 but these records could not be accessed. The limited parishes sampled suggest that Plague reached Bristol before areas along the A4 land route closer to London. This is not what would be expected but could be explained by the limitations of the epidemic plotting method that cannot record the precise time that Plague arrived in parishes. Some parishes on the route to Bristol may have escaped the Epidemic because of its sporadic trajectory.

The causes of the Plague and its transmission were not understood in scientific terms in the 17th Century but the need to prevent the spread of disease from London was articulated by Bristol's Common Council on 23 June 1603.[91] Preventative measures that recognised the potential of Plague spreading from London overland were enacted before infections started in Bristol. The Council prohibited inhabitants of London attending St. James' Fair which was held on 25 July each year.[92] Travellers from London would only be permitted if they could,

[88]Ogilby, p. 5.
[89]'The Plague Epidemic 1603-04', *Hungerford Virtual Museum* <https://www.hungerfordvirtualmuseum.co.uk/index.php/27-themes/elizabethan-hungerford/491-the-plague-epidemic-1603-04#:~:text=A%20total%20of%20fifty-three%20people%20died%20of%20the,also%20recorded%2C%20although%20apparently%20not%20from%20the%20plague> [accessed 5 April 2021].
[90]Slack, *Impact*, p. 177.
[91]Bristol Record Office, M/BCC/CCP/1/1 Common Council Proceedings 1598-1608, p. 78; Slack, *Impact*, p. 46.
[92]W. Barrett, *The history and antiquities of the city of Bristol* (Bristol: Printed by W. Pine, 1789), p. 134.

"…bringe Certificat from

the Lord Mayor of London that

the house from whense such

p*er*son or p*er*sons come

in London was not Infected

With sicknes at his or their

Cominge from thence nor in six

Weekes before his cominge…".[93]

Above is the first record of the Council's attempts to prevent the Plague entering Bristol. Their intent was to control the city boundaries especially through Lawfords Gate which was the main gateway into the Old Market. Wares and merchandise from London had to be aired before entering the city but the Epidemic had already started in Bristol before St. James' Fair.[94] Bristol's Councillors implemented household quarantines of the infected, as directed in the Plague Orders of 1578.[95] This order hoped to prevent infected people from leaving their houses and spreading the disease to surrounding areas.

The timing of Plague outbreaks in Bristol and surrounding areas demonstrates the potential importance of land transmission to the spread of the disease which the orders of the Common Council failed to control. Plague affected a limited proportion of Bristol's rural hinterland after the city was first affected in 1603. However, Plague reached areas further away in

[93]BRO, CCP 1598-1608, p. 78.
[94]BRO, CCP 1598-1608, p. 78; J. Latimer, *The annals of Bristol in the seventeenth century* (Bristol: William George's Sons, 1900), p. 19.
[95]BRO, CCP 1598-1608, p. 83; Slack, *Impact*, pp. 211-12.

Gloucestershire such as Awre, Sandhurst, St. Mary Tewkesbury and Westbury-On-Severn. The town of Gloucester was approximately 35 miles away from Bristol and was affected by Plague in 1604. The failed quarantine measures of Bristol's Common Council may have impacted places surrounding Bristol that lay outside the 8-mile radius covered by this study. The fact that places outside the 8-mile radius were affected by Plague in 1604 despite the limited spread of the disease to Bristol's rural hinterland, suggests that the geographical distribution of the disease, though random, was often caused by human travel over existing communication networks between larger settlements.

The major land routes out of Bristol to Gloucester, London, Wells and Exeter did not pass through the 7 rural parishes included in this study. This is shown by Ogilby and Morgan's map of major land routes in Figure 24.[96]

Fig. 24: John Ogilby and William Morgan's representation of the major land routes leading out of Bristol in the 17th Century.[97]

[96]Ogilby and W. Morgan, *The traveller's pocket-book* (London: printed for J. Buckland, J. Rivington, S. Crowder, B. Law, T. Caslon, J. Almon, C. Corbet, C. Bowles, W. Stuart, J. Sewell, W. Domville, J. Russel, and R. Baldwin, 1777), p. 1.
[97]Ogilby and Morgan, p. 1.

This suggests that the rural parishes were relatively isolated from key communication routes and may account for the absence of Plague in Brislington, Henbury, Horfield and Mangotsfield in 1603-4. However, Brislington was mentioned by Ogilby and Morgan as a location on the route from Bristol to Bath and this parish was unaffected by Plague.[98] This suggests that communication networks do not solely account for the limited spread of Plague to Bristol's rural hinterland.

The fact that Shirehampton in the parish of Westbury-On-Trym was affected by Plague approximately 8 months after Bristol, suggests that land transport caused the spread of the disease. Shirehampton included the service community for the 'Hungroad' near Avonmouth, where larger ships visiting the port of Bristol often docked to discharge cargo or take on supplies.[99] The village had its own chapel from 1510, but there is no evidence to suggest that it kept a separate burial register until 1727.[100] Inhabitants of Shirehampton such as Richard Webb were mentioned in Westbury's burial register in 1604. The evidence that Shirehampton was affected by Plague after Bristol, suggests that the disease did not enter the city via its shipping.

However, Plague may have reached Bristol via its shipping. Slack noted that Plague arrived in the eastern ports of England in 1602.[101] The burial of Hendrick Bode in Bristol's peripheral parish of St. Philip and St. Jacob to the east of the city on 12 August 1603 was noted as the parish's first Plague death.[102] This was only 8 days after Bristol's first recorded Plague burial.

[98]Ogilby and Morgan, p. 77.
[99]Jones, *Inside the Illicit Economy: Reconstructing the Smugglers' Trade of Sixteenth Century Bristol* (London: Routledge, 2016), p. 114.
[100]N. Orme and J. Cannon, *Westbury-On-Trym: Monastery, Minster and College* (Bristol: Bristol Record Society, 2010), p. 42.
[101]Slack, *Impact*, p. 13.
[102]Slack, *Impact*, p. 112.

Bode was a sailor from Hamburg who was 'carried in the nyght and laide in the streate' after his death. His ship lay at the quay where all the large vessels would have docked. Figure 25 shows that this was within the parish of St. Stephen where Bristol Chronicler William Adams reported that the Plague began in the city.[103]

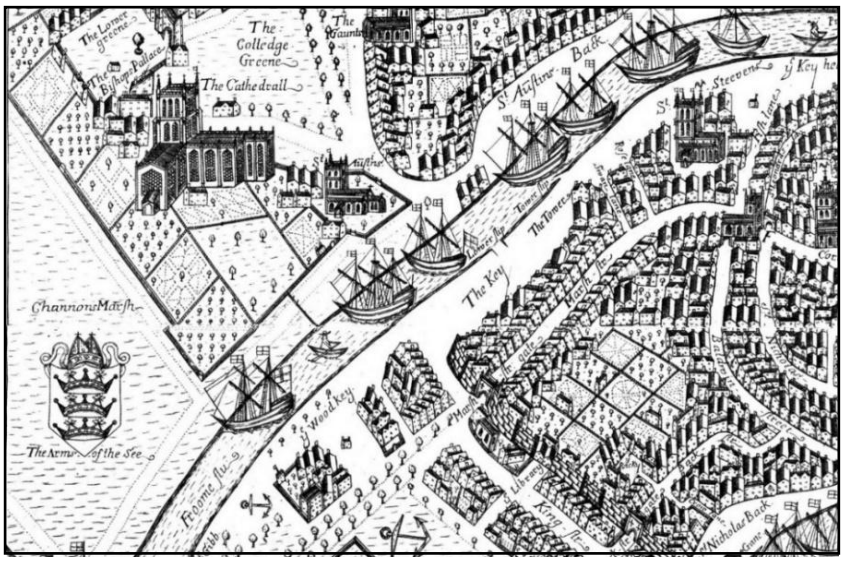


Fig. 25: James Millerd's map of Bristol, cropped to show the location of the quay in the parish of St. Stephen.[104]

The fact that a ship from Germany was in Bristol and one of its mariners was among the first people in Bristol to be buried during the 1603-4 Plague raises the possibility that the disease entered the port via a ship. An Irish Merchant was the first recorded Plague burial in the rural parish of St. George Easton-In-Gordano which included the Pill service community at the 'Hungroad' near Avonmouth. The merchant was buried on 16 August 1603, soon after Plague had started in Bristol. His death did not trigger an immediate upsurge of burials in the parish but the registers cannot permit the detection of potentially non-fatal Plague cases that could have been caused by the merchant.

[103]Fox, p. 178.
[104]J. Millerd, *An exact delineation of the famous city of Bristol and suburbs* (1673).

Evidence on the timing of Plague burials in urban and rural parish registers reveal that Plague spread to Bristol and emanated outwards from the city. Land and sea routes may have acted together to cause the spread of Plague to Bristol and then to a limited number of parishes in the rural hinterland. Slack's study of Essex also showed that the towns of Colchester and Maldon recorded Plague burials before surrounding rural parishes.[105] This suggests that the later arrival of Plague in rural parishes may be due to their relative isolation from communication networks.

On consideration, the random nature of transmission over pre-existing human transport networks could have contributed to the limited impact of the 1603-4 Plague in Bristol's rural hinterland. If the quarantine measures of the Council had been effective in summer 1603, surrounding parishes may have been unaffected by Plague. The infection in Bristol could have been a necessary precondition for the infection of smaller settlements in Gloucestershire and Somerset because of Bristol's high population and its role as a trade and urban centre. The random nature of Plague transmission over pre-existing communication networks inhibits simple explanations for its geographical spread.

[105]Slack, *Impact*, p. 102.

Conclusion

In conclusion, the Great Plague of 1603-4 spread to the parishes around Bristol to a limited extent. The Epidemic which spread across all parishes within Bristol during the summer and autumn of 1603, affected 3 of the 7 rural hinterland parishes after the initial outbreak within the city. The parishes of St. George Easton-In-Gordano, St. Andrew Clifton and Holy Trinity Westbury-On-Trym, all located to the west of the city, were impacted by the Plague at different times from August 1603-March 1604. The lesser degree of mortality and relative severity experienced by the 3 affected parishes as compared to parishes within Bristol could be accounted for by their lower densities of settlement.

The infection of urban and rural parishes in the closing months of 1603 suggests the presence of a relatively mild winter that allowed potential vectors to breed and transmit the disease. The 7 rural parishes studied were not located along major transport routes identified by John Ogilby.[106] The approximate time sequence of Plague in urban and rural parishes suggests that the Plague could have been spread to Bristol and areas outside the city through multiple networks simultaneously. The spread of Plague across the city and to some surrounding areas could not be prevented by Bristol's Common Council. Places outside the 8-mile radius defined by this study such as Gloucester were impacted almost one year after the Epidemic started in Bristol.

This dissertation further quantifies Slack's observation that Plague in Early Modern England was more prevalent in urban areas and its spread was caused by multiple factors such as climate, communications and population density.[107] This study has also outlined theories of

[106]Ogilby and Morgan, p. 1.
[107]Slack, *Impact*, pp. 93-4 and p. 110.

transmission for the 1603-4 Plague from London to Bristol via land and sea routes. It is important to acknowledge the limited impact of the Plague in rural areas such as Clifton that were just outside the city boundaries of Bristol. The low probability of a rural parish within an 8-mile radius of Bristol being affected by Plague also supports Guido Alfani's argument that 17th Century Plagues were more territorially pervasive in rural areas of Italy than in England.[108] However, the size and connectivity of Alfani's Italian communities may be incomparable to English rural parishes. A more extensive survey of parish registers for areas of Gloucestershire and Somerset, now available on Ancestry, would be required to strengthen our understanding of the territorial pervasiveness of Plague in English rural areas. It is hoped that a renewed interest in historical epidemiology caused by COVID-19 can generate further local studies of parish registers to increase comparisons of the spread of Plague to urban and rural areas of Early Modern England.

[108]Alfani, p. 420.

Appendix

The following conventions have been adopted for the transcriptions of the Bristol Common Council Proceedings:

-Punctuation as in the text.

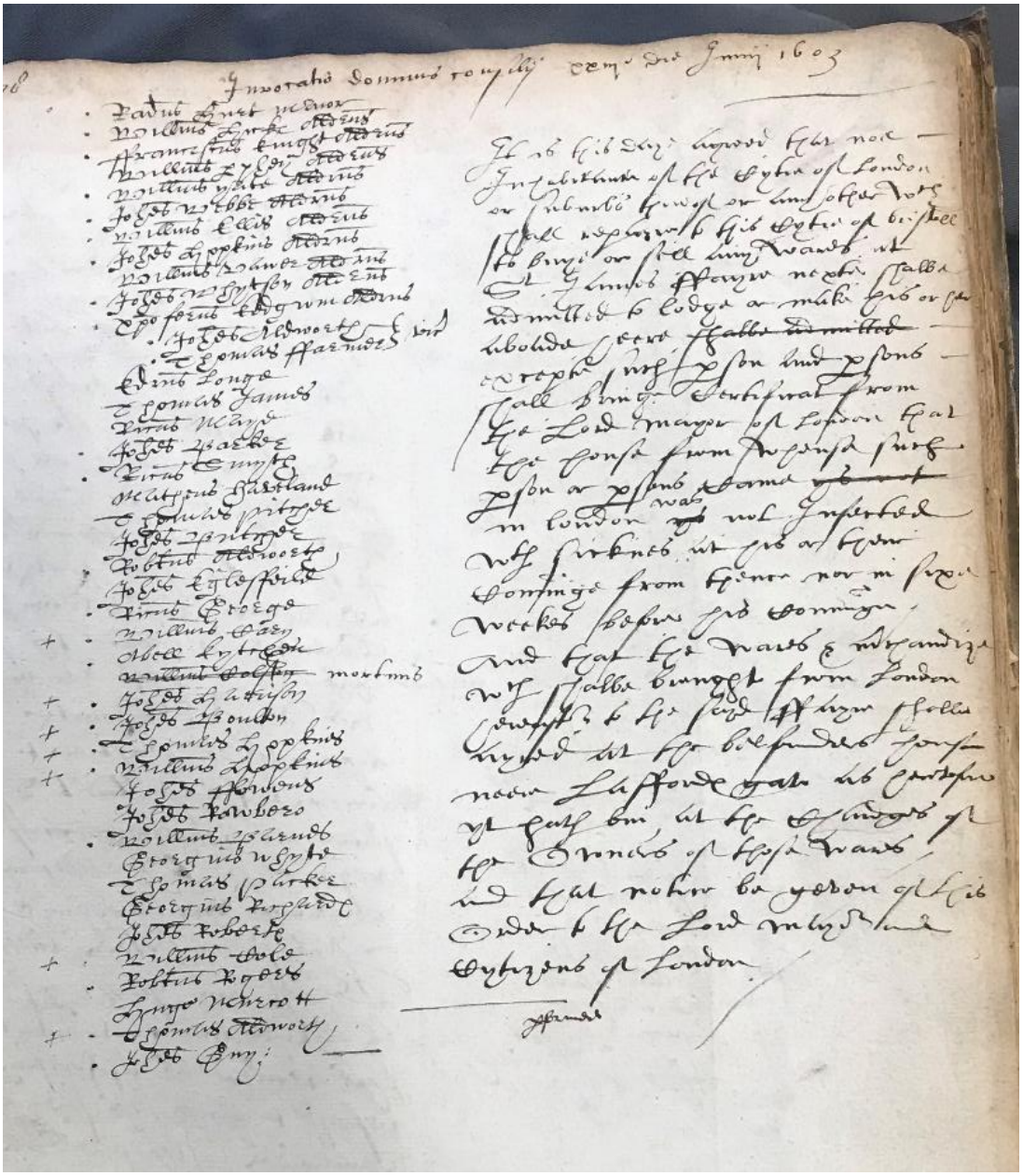
-Line breaks and paragraphs are as in the text.

-Spelling and capitalisation are as in the text.

-Original document page numbers are given.

-Suspensions and abbreviations are italicised.

Document 1- Bristol Record Office, M/BCC/CCP/1/1 Common Council Proceedings 1598-1608, p.78



Invocatio dommus consilij 23rd June 1603

It is this day agreed that noe

Inhabitants of the Cytie of London

or suburbs thereof or any other which

shall repair to this Cytie of Bristoll

to buy or sell any wares at

St James Fayre nexte shalbe

admitted to lodge or make his or her

aboade here

excepte such p*er*son and persons

shall bringe Certificat from

the Lord Mayor of London that

the house from whense such

p*er*son or p*er*sons come

in London was not Infected

With sicknes at his or their

Cominge from thence nor in six

Weekes before his cominge /

And that the wares and m*er*chandize

w*hi*ch shallbe brought from London

hereafter to the sayd Fayre shallbe

ayred at the benefides house

neere Laffordes Gate[109] as heretofore

yt hath been at the chardges of

the Owners of these wares /

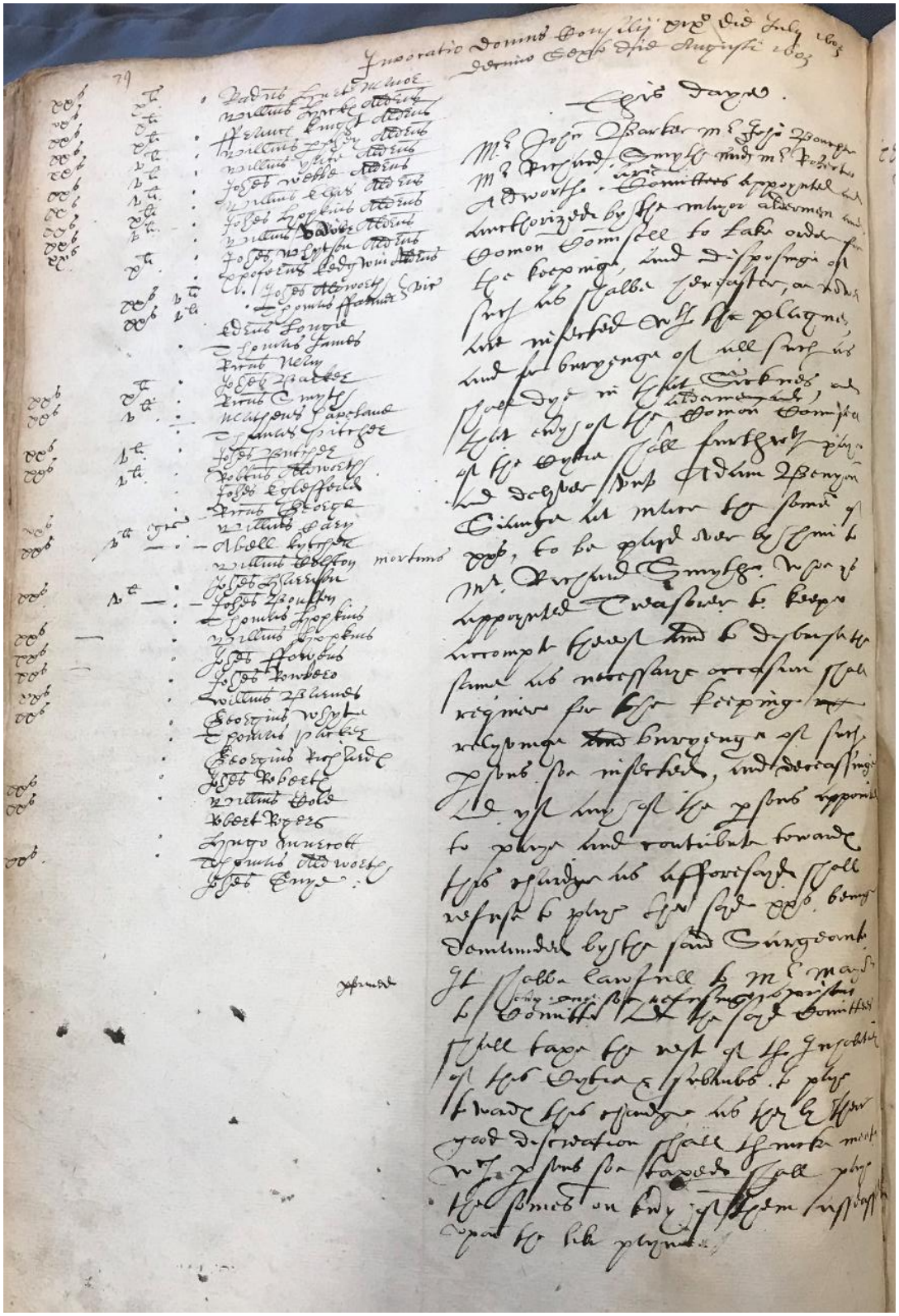
And that notice be geven of this

Order to the Lord Mayor and

Cytizens of London /

[109] Lawfords Gate: the gateway into the Old Market on the London Road

Document 2- Bristol Record Office, M/BCC/CCP/1/1 Common Council Proceedings 1598-1608, p.79



Invocatio dommus consilij 19th July 1603

6th August 1603

This daye

Mr John Barker, Mr John Boucher

Mr Richard Smyth and Mr Robert

Aldworth are appointed and

authorized by the mayor, aldermen and

Common Counsel to take order for

the keeping and disposing of

Such as shallbe hereafter, or now,

and infected w*ith* the plague

and for buryenge of all such as

shall dye in that Sicknes and

that ev*er*y of the aldermen Comon Counsilors

of the Cyttie shall forthw*it*h pay

and delyver unto Adam Benyon

Sargeant maire the summe of

xx s, to be payd for by him to

Mr Richard Smyth who is

appoynted Treasurer to keepe

accompt thereof and to disburse the

same as necessarye occasion shall

require for the keeping and

relyvinge and burying[110] of such

p*er*sons soe infected and deceassinge

and yf any of the p*er*sons appointed

to pay and contribute towardes

this chardges as afforesayd shall

refuse to pay the sayd xx s being

Demanded by the said Sargeant

It shallbe lawfull to Mr Mayor

to commit ev*er*yone for refusing to prison & the sayd committee

shall taxe the rest of the Inhabitants

of this Cytie and suburbs to paye

towarde this chardge as they by their

[110]Dealing with special provisions for burying the Plague dead.

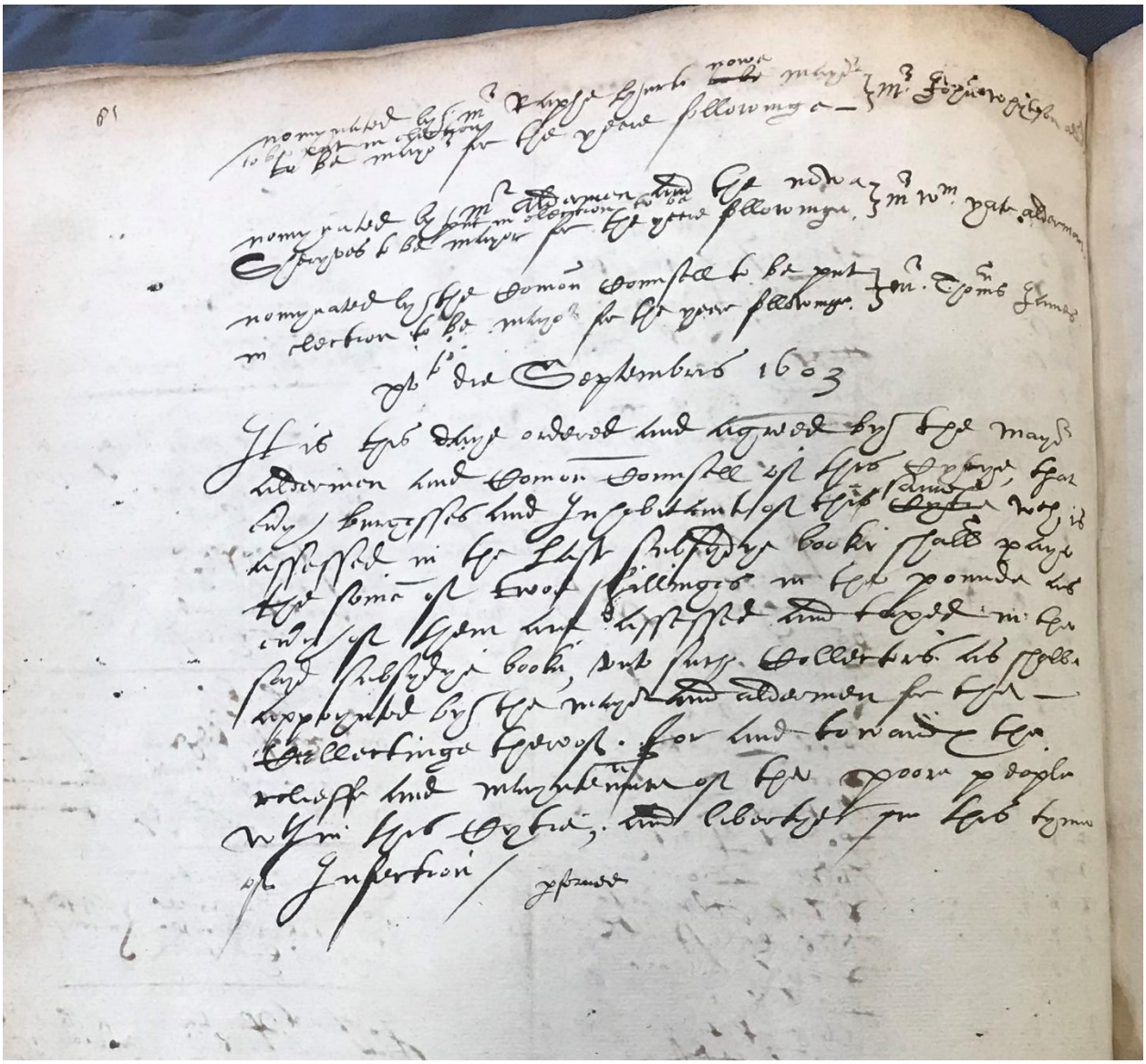
good discretion shall thinke meete

w*hi*ch persons soe taxed shall pay

the summes or ev*er*y of them assiatt

upon the like payne

Document 3- Bristol Record Office, M/BCC/CCP/1/1 Common Council Proceedings 1598-1608, p.81

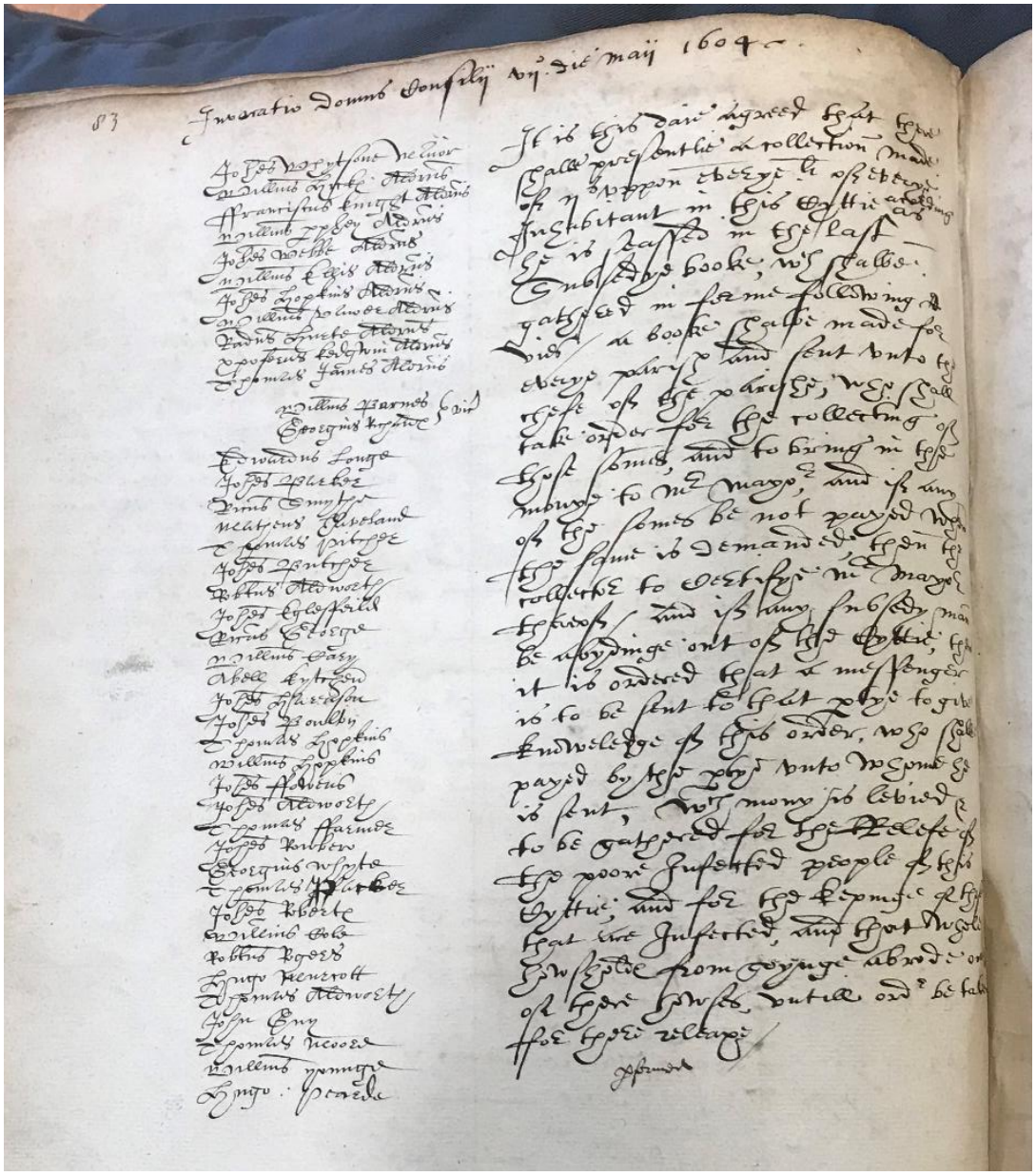


15 September 1603

It is this daye ordered and agreed by the may*or*
Aldermen and Com*m*on Counsell of this Cytye, that
ev*er*y burgesses and Inhabitants of this same w*hi*ch is
assessed in the Last Subsydye book shall paye
the sume of two shillinges in the pounde as
ev*er*y of them are assessed and taxed in the
sayd subsydye book, vi*delice*t such collectors as shalbe
appoynted by the mayor and aldermen for the
collectinge thereof for and towardes the
relieff and mayntena*u*nce of the poore people
within this Cytie[111], and libertye in this tyme
of Infection/

[111]Attempting to raise money in order to relieve poor people affected by the Plague.

Document 4- Bristol Record Office, M/BCC/CCP/1/1 Common Council Proceedings 1598-1608, p.83



Invocatio dommus consilij 7 May 1604

It is this daie agreed that there

shallbe presentlie a collection made

Of ii s[112] upon everye li[113] of everye

Inhabitant in this cyttie according as

He is Seassed[114] in the last –

Subsedye booke, w*hi*ch shallbe

gathered in forme following

vid*elicet*[115] a booke shallbe made for

everye parish and sent unto the

chefe of the parishe, who shall

take order for the collecting of

those som*m*es, and to bring in the

monye to Mr Mayor, and if any

of the somes be not payed when

the same is demanded then the

[112]Two shillings
[113]Pound
[114]Sessed or cessed: i.e. assessed for the payment of a tax
[115]Videlicet: 'That is to say'

collector to Certifye Mr Mayor

thereof and if any subsedy man

be abydinge out of the Cyttie, then

it is ordered that a messenger

is to be sent to that p*ar*tye to give

knowledge of this order, who shalbe

payed by the p*ar*tye unto whome he

is sent, w*hi*ch mony is levied *and*

to be gathered for the relefe of

the poore Infected people of this

Cyttie; and for the keepinge of those

that are Infected, and that whole

howsholde from goyng abrode out

of there howses, untill ord*er* be taken

for there release[116]/

[116]The money raised from the subsidy is intended to keep infected people in their houses while preventing them from starving to death. It is a health-related welfare scheme.

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All Saints

Christchurch

Holy Trinity, Horfield

Holy Trinity, Westbury-On-Trym

St Andrew, Clifton

St Augustine the Less

St Ewen

St George, Easton-In-Gordano

St James, Bristol

St James, Mangotsfield

St John the Baptist

St Luke, Brislington

St Mary, Henbury

St Mary, Redcliffe

St Nicholas

St Philip and St Jacob

St Stephen

St Thomas

St Werbugh

Temple

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