Disease or Poverty? The History of Mortality in England, 1500-1900.

There has been a long debate on the role of poverty in shaping mortality levels in England, but there is increasing evidence that disease patterns played a much more significant role in population growth than wealth or poverty.

This can be illustrated by the mortality of the royal family in the sixteenth and seventeenth centuries.

Table 1: Mortality amongst the British Royal Family (Sons andDaughters of Kings and Queens), 1500-1899.[1]

		Period	
		1500-1699	*1700-1899*
Number ofStillbirths		31	5
Number of Live Births		57	43
Proportion of Live Children Who Had DiedBy			
	One Day	15.8%	4.7%
	One Month	22.8%	4.7%
	One Year	45.6%	9.4%
	Five Years	63.1%	14.1%
	Fifteen Years	63.1%	14.1%
	Fifty Years	85.9%	35.0%

Infant and child mortality was extremely high before 1700: 63 per cent of all royal children died under the age of five, and this was accompanied by a large number of stillbirths. Mortality by five years of age fell dramatically after 1500-1699, reducing to 14 per cent by 1700-1899, and accompanied by a reduction in the number of stillbirths. Although the royal family was probably the wealthiest family in England, the state of personal and public hygiene amongst royalty in earlier period was highly deficient. For example, 'it is known on medical advice the King [Henry VIII] took medicinal herbal baths each winter, and also avoided baths when the sweating sickness was about. This avoidance possibly reflected a school of thought that rated bathing as a dangerous activity which "allowed the venomous airs to enter and destroyeth the lively spirits in man and enfeebleth the body."'[2]

High stillbirth and maternity mortality were probably due to poor hygiene and inadequate midwifery practices:

> If the membrane bag of fluid in which the baby had developedhad not been broken by the time the midwife arrived, she wouldput her hand up the mother's vagina and break the membrane with a specially sharpened fingernail, or a sharp-ended thimble … In 1687 a midwife estimated that two-thirds of miscarriages, stillbirths and maternal deaths in childbed were due to colleagues.[3]

It was impossible for the royal family to avoid infection as the court was the centre of great numbers of people attending regularly, encouraged by the practice of the monarch touching supplicants for the cure of "king's evil", a form of scrofula.[4] It was not just individual behaviour which was responsible for these health hazards, but also the condition of the

[1] P. Razzell, *Population and Disease: Transforming English Society, 1550-1850* (2007), p. 91.
[2] Ibid, p. 149.
[3] Ibid, p. 164.
[4] For a discussion of this and other issues on the lack of public hygiene in royal palaces see Ibid, pp. 151-156.

overall palace environment. One account described how 'the floors of the royal apartments [of Westminster Palace] in 1500 were still being strewn with rushes and sweetherbs that were changed daily, like sawdust in a butcher's shop … Dogs and beggars roamed the courtyards living on the scraps that fell from the royal table …'[5] These conditions were not confined to royal palaces, for as Erasmus described in 1517, 'the floors [of houses] are generally spread with clay and rushes from some marsh, which are renewed from time to time but so as to leave a basic layer, sometimes for twenty years, under which fester spittle, vomit, dogs' urine and men's too, dregs of beer and cast-off bits of fish, and other unspeakable kinds of filth.'[6]

Poor public and domestic hygiene continued well into the seventeenth century and beyond. The statutes regulating the streets of London which were still in operation in 1720, included the following:

> No Man shall cast any Urine-Boles, or Ordure-Boles into theStreets by Day or Night, afore the Hour of nine in the Night; And also he shall not cast it out, but bring it down, and lay it in the Canel, under pain of three Shillings and four pence. And if he do cast it upon any Persons Head, the Person to have a lawful Recompence, if he have hurt thereby.[7]

The diary of Samuel Pepys provides additional detail of the state of domestic hygiene. His main water supply was from a pump located in a yard shared with his neighbours, and his waste was discharged into a vault located in his cellar, which he also shared with his neighbours. In the first year of the diary, the following event occurred:

> This morning one came to me to advise with me where to make me a window into my cellar in lieu of one that Sir W. Batten has stopped up; and going down into my cellar to look, I put my foot into a great heap of turds, by which I find that Mr Turner's houseof office is full and comes into my cellar, which doth trouble me; but I will have it helped.[8]

On one occasion he kept a pet eagle in his latrine, but was glad to get rid of it, 'she fouling our house of office mightily.'[9] The result of this very poor personal hygiene was an infestation of lice and fleas. Pepys noted on one occasion that 'I have itched mightily these six or seven days … having found in my head and body above 20 lice, little and great.'[10] When he shared a bed in Portsmouth with Dr Timothy Clarke, physician to the King's household, 'we lay very well and merrily. In the morning concluding him to be the eldest blood and house of the Clerkes, because all the Fleas came to him and not to me.'[11]

These conditions and practices inevitably led to a high incidence of disease and levels of mortality, in spite of the wealth of these privileged populations. There is now evidence that mortality levels of the wealthy were very high in the earlier period, but changed significantly during the eighteenth century. Perhaps the best illustration of this is the changing life expectancy of Members of Parliament during this period. The data is of a very high quality, with about 95 per cent of information on birth and death dates during the period 1660-1820.[12] Members of Parliament came from all areas of the country, and their socio-economic status as owners of estates did not change during the period covered by the

[5] Ibid, p. 150.
[6] Ibid.
[7] Ibid, p. 158.
[8] Ibid, p. 159.
[9] Ibid, p. 160.
[10] Ibid, p. 163.
[11] Ibid, pp. 163, 164.
[12] See the online History of Parliament website.

following table.[13]

Table 2: Mean Number of Years Lived by Members of Parliament, 1660-1820 (Number of Cases in Brackets).[14]

Period of First Entry	*Age at First Entry*		
	29 Years and Under	*30-39 Years*	*40 Years Plus*
1660-1690	25.7 (429)	22.6 (458)	17.9 (633)
1691-1714	28.1 (520)	25.4 (402)	18.3 (438)
1715-1754	30.8 (541)	28.2 (422)	18.5 (347)
1755-1789	37.1 (480)	29.9 (354)	21.2 (431)
1790-1820	38.1 (571)	32.0 (432)	22.4 (572)

All age groups experienced mortality reductions, but the greatest mortality gains were amongst the youngest age cohort aged 29 and under. There was an increase in life expectancy of over 12 years in this group, distributed evenly in the entry period between 1660 and 1789. There were also substantial gains in the 30-39 age cohort – of about 10 years – but these were mainly confined to the entry period between 1660 and 1754. There was a modest increase in life expectancy of nearly 5 years in the oldest 40+ group, which was fairly evenly spread between 1660 and 1820.

Similar patterns are found in the aristocracy and other wealthy classes, along with reductions in adult mortality amongst all socio-economic groups and in all areas of the country.[15] This suggests that there was an autonomous reduction of disease incidence during the eighteenth century.[16]

The pattern of infant and child mortality was somewhat different. These forms of mortality did not reduce until the middle of the eighteenth century, and the falls in mortality appear to have occurred in some areas first amongst the wealthy.

Table 3: Infant and Child (1-4) Mortality (Per 1,000) amongst Elite and Control Families in Seventeen Rural Parishes, 1650-1799.[17]

Period	Elite Families		Control Families	
	Infant Mortality	Child Mortality	Infant Mortality	Child Mortality
1650-99	158	143	180	132
1700-49	177	106	223	146
1750-99	113	69	159	134

An elite family – gentlemen, professionals and merchants – was matched with the next control family in the baptism register, most of whom were artisans and labourers. There was little difference between the two groups in the late seventeenth century, but a sharp divergence thereafter, particularly in child mortality rates. Other sources indicate a variation in findings, although overall it would appear that these forms of early mortality reduced first amongst wealthy families and only later amongst the general population in the eighteenth century.[18]

[13] Ibid.
[14] P. Razzell, *Essays in Historical Sociology*, 2021, p. 169.
[15] P. Razzell, *Mortality, Marriage and Population Growth in England, 1550-1850*, 2016, pp. 43-56.
[16] See J.D. Chambers, *Population, Economy, and Society in Pre-Industrial England*, 1972, pp. 82, 87.
[17] Source: Razzell, *Mortality*, p. 37.
[18] Razzell, *Population,* pp. 91, 103-05, 111,-12; 133; Razzell, *Mortality,* pp. 37-41. Hollingsworth found that infant mortality 'was roughly constant from the beginning of registration in 1837 until about 1903 for the general population, but had been declining at least since the middle of the eighteenth century for the nobility.' T.H.

Lower infant and child mortality levels amongst the wealthy continued throughout the nineteenth century,[19] although at significantly reduced levels than in the seventeenth century.

However, areas with different socio-economic profiles showed if everything a reverse pattern. This can be illustrated with reference to London, where the Registrar-General provided data on mortality by registration sub-district. He classified districts by poverty levels as measured by average rateable value.

Table 4: Infant, Child and Adult Mortality per 1000 in London by Rateable Value of Registration District, 1839-44.[20]

Registration Districts	*Mean Annual Value of Rated Property*	*Infant Mortality*	*Child Mortality*	*Adult (25-44) Male Mortality*
10 Districts With Lowest Rateable Value	£15	153	52	13
10 Districts With Medium Rateable Value	£26	168	59	15
10 Districts With Highest Rateable Value	£58	167	58	13

Most of the poor districts were in the East End of London, and the wealthy ones in the West End.[21] The difference in mortality levels in these districts was not highly significant, but with a slightly increased mortality in the wealthy ones – probably a function of the 'hazards of wealth' – the consumption by the wealthy of tobacco, strong alcoholic liquor, excesses of unhealthy food, and the lack of regular exercise.[22] This pattern of mortality in London continued until the end of the nineteenth century.[23]

These surprising findings are replicated in other districts of England. In the period 1851-60, mortality levels in the wealthy towns of Bath, Cheltenham, Richmond and Brighton were significantly higher than in poorer districts in the same county.[24] The wealthy areas were towns, and the poorer areas rural districts, indicating that disease environment was more important in these instances than poverty in shaping mortality levels.[25]

Given the historical absence of accurate descriptions of the diseases involved, it is not possible to analyse the disease patterns occurring over the four centuries covered by the present paper.[26] However, bubonic plague was well recognised and had made a significant impact on mortality levels from the fourteenth century onwards, but disappeared for no obvious reason in the late seventeenth century. It is also possible to analyse one other disease – smallpox – which was sufficiently distinct and recognised by contemporaries. It was a very mild disease in the sixteenth century, killing under five per cent of young children attacked in

Hollingsworth. *The Demography of the British Peerage*, Supplement to *Population Studies*, Volume 18, No. 2, p. 72.

[19] Razzell, *Population,* pp. 112-14.

[20] See Ibid, p. 136.

[21] Ibid.

[22] Ibid, pp.177-195.

[23] See P. Razzell, 'Rateable value as a historical measure of socio-economic status' on the Academia website.

[24] Razzell, *Mortality*, p. 41

[25] See R. Woods *The Demography of England and Wales*, 2000, pp. 170-202 for an analysis of the mortality differences between urban and rural districts in this period.

[26] Razzell, *Population,* pp. 140-142.

London at the end of the century.[27] The disease became progressively more virulent up to the end of the nineteenth century, so that by the 1880s it killed nearly forty-five percent of unvaccinated children attacked in London.[28] It was only the widespread practice of inoculation/variolation and vaccination which prevented the population from being significantly decimated.[29]

Smallpox also varied in its age incidence in different parts of England: in the south of England it was a disease of both children and adults, whereas in the north and elsewhere it affected mainly young children. This was important as case-fatality rates varied significantly between different age groups.[30]

There were medical and other developments that helped reduce infant and child mortality: the introduction of better personal and public hygiene, the elimination of malaria through the drainage of marshlands, the introduction of washable cotton clothing, and the transformation of midwifery practices.[31] Some of these improvements may have helped reduce adult mortality, but as we saw earlier the overall evidence suggests that there was an 'autonomous' fall in this form of mortality in the eighteenth century.

In 1965, H.J. Habakkuk presented a 'heroically simplified version of English history' elaborating the role of population growth:

> ... long-term movements in prices, in income distribution, in investment, in real wages, and in migration are dominated by changes in the growth of population. Rising population: rising prices, rising agricultural profits, low real incomes for the mass of the population, unfavourable terms of trade for industry – with variations depending on changes in social institutions, this might stand for a description of the thirteenth century, the sixteenth century, and the early seventeenth, and the period 1750-1815. Falling or stationary population with depressed agricultural profits but higher mass incomes might be said to be characteristic of the intervening periods.[32]

This conclusion rests on the assumption that population growth was exogenous to economic development, a conclusion largely supported by a previous review of demographic evidence.[33] As a result of these trends a process of polarisation took place in English society during the sixteenth century: Lawrence Stone noted that 'the excess supply of labour relative to demand not only increased unemployment, but forced down real wages to an alarming degree ... [there was] a polarisation of society into rich and poor: the upper classes became relatively more numerous and their real incomes rose; the poor also became more numerous and their real incomes fell.'[34]

This has been confirmed by Alexandra Shepard in her study of church court depositions:

[27] P. Razzell, *The Conquest of Smallpox*, 2003, p. 169.
[28] Ibid.
[29] Ibid.
[30] Ibid, pp. x-xix.
[31] Razzell, *Population*, pp. 141-143.
[32] P. Razzell, *Essays*, 2021, p. 222.
[33] See Razzell, *Mortality*.
[34] Razzell, *Population*, p. 238.

Table 5: Median Wealth in England, deflated to 1550-1559 Values, by Social Group Over Time.[35]

	1550-74	1575-99	1600-24	1625-49
Gentry (N = 367)	£16.00	£8.00	£59.30	£50.00
Yeomen (N = 1104)	£5.34	£7.27	£23.92	£50.00
Craft/Trade (N = 2185)	£2.40	£1.40	£2.99	£5.00
Husbandmen (N = 2127)	£4.00	£3.37	£5.93	£5.00
Labourers (N = 273)	£1.58	£1.35	£1.36	£1.03

Although the gentry increased their wealth – increasing by about three times – yeomen's wealth had grown nearly ten times, while labourers' worth decreased slightly. There was little change among husbandmen and a doubling of wealth among craft/tradesmen. This data suggests that this was a period of 'the rise of the yeomanry' during the first half of the seventeenth century. Wrightson has summarized the situation of yeomen:

> Like the gentry, they benefited from low labour costs as employers, while as large-scale producers they stood to gain from rising prices ... Again like the gentry, they took a thoroughly rational and calculating attitude towards profit ... often ambitious, aggressive, [and] small capitalists ... [they experienced] gradually rising living standards, the rebuilding of farmhouses and their stocking with goods of increasing sophistication and comfort.[36]

Yeomen were part of the 'middle sort' who dominated the support for Parliament in the civil war and were the principal supporters of puritanism at this time.[37] This 'middle sort' were often the main traders in market towns, including Stratford-on-Avon, where Shakespeare and his contemporaries were practitioners of the forestalling of grain and other illegal trading activities. Not only did local tradesmen engage in the hoarding of grain during a period of scarcity, but all four local landed magistrates had arrangements with the townsmen to illegally store large stocks of grain on their behalf.[38] In 1601 the poor of Stratford were 'in number seven hundred and odd, young and old – something like forty per cent of the total population.'[39] As a result, the hoarding of grain resulted in threatened violence and riot by the poor, but they unwittingly appealed to the magistrates without realizing that they were some of the leading hoarders of grain.[40]

There was a similar period of economic and social polarization at the end of the eighteenth and beginning of the nineteenth century as a result of population growth. Malthus summarized this trend through his statement that 'farmers and capitalists are growing rich from the real cheapness of labour.'[41] This resulted in the impoverishment of labourers during this period. In a letter to the Duke of Clarence in 1790 Nelson described the condition of the poor in Norfolk:

> That the poor labourer should have been seduced by promises and hopes of better times, your Royal Highness will not wonder at, when I assure you, that they are really in want of everything to make

[35] Data from *Perceptions of Worth and Social Status in Early Modern England* , ESRC Reference Number RES-000-23-1111.
[36] Wrightson, *English Society*, pp. 134, 135.
[37] See P Razzell, 'A sociological analysis of the English civil war', in Razzell, *Essays.*
[38] Ibid, p. 122.
[39] Ibid.
[40] Ibid.
[41] Razzell, *Essays*, p. 222. For a bibliography of evidence for the low wages of labourers during this period see K.D.M. Snell, *Annals of the Labouring Poor*, 1985.

life comfortable. Hunger is a sharp thorn, and they are not only in want of food sufficient, but of clothes and firing.[42]

Nelson also claimed that labourers could not afford candles, soap or shoes, and for 'drink nothing but water, for beer our poor labourers never taste.'[43]

One of the most detailed and reliable accounts was provided by the Reverend John Howlett, who had been the Vicar of Great Dunmow in Essex for about 50 years. Describing the condition of labourers he wrote in 1796:

> … for the last forty or fifty years, some peculiarly favoured spots excepted, their condition has been growing worse and worse, and is, at length, become truly deplorable. Those pale famished countenances, those tattered garments, and those naked shivering limbs, we so frequently behold, are striking testimonies of these melancholy truths.[44]

He argued that these developments were the result of 'the rapid increase of population on the one hand and from the introduction of machines and variety of inventions … [which have led to] more hands than we are disposed or think it advantages to employ; and hence the price of work is become unequal to the wants of the workmen.'[45] He compiled figures of income and expenditure in his parish, using details of wages from farmers' wage books and local knowledge of family incomes and consumption, for the two ten-year periods, 1744-53 and 1778-87. The annual expenditure per family in the first period was £20.11s.2d and earnings £20.12.7d, leaving a surplus of 1s.5d. In the second period the figures were £31.3s.7d and £24.3.5d, leaving a deficit of £7.0s.2d.[46] Howlett concluded that

> Of this deficiency the rates have supplied about forty shillings; the remaining £5 have sunk the labourers into a state of wretched and pitiable destitution. In the former period, the man, his wife, and children, were decently clothed and comfortably warmed and fed: now on the contrary, the father and mother are covered with rags; their children are running about, like little savages, without shoes or stockings to their feet; and, by day and night, they are forced to break down the hedges, lop the trees, and pilfer their fuel, or perish with cold. [47]

Cobbett presented detailed evidence of the pauperisation of labourers at the end of the eighteenth century. By 1805 he came face to face with the poverty of southern agricultural workers:

> The clock was gone, the brass kettle was gone, the pewter dishes were gone; the warming pan was gone … the feather bed was gone, the Sunday-coat was gone! All was gone! How miserable, how deplorable, how changed the Labourer's dwelling, which I, only twenty years before, had seen so neat and happy.[48]

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[42] N.H. Nicolas, *The Dispatches and Letters of Vice Admiral Lord Viscount Nelson, Volume 1, 1777-94*, 1845, p. 295.
[43] T. Coleman, *Nelson*, 2002; Nicholas, *The Dispatches*, p. 297.
[44] J. Howlett, *Examination of Mr Pitt's Speech in the House of Commons ... February 12th, Relative to the Condition of the Poor*, 1796, p. 2
[45] Ibid, p.19. Technology was clearly important in displacing labour during the eighteenth and nineteenth centuries, but this issue is beyond the scope of the present paper.
[46] Ibid.
[47] Ibid, p. 49. For budgets of labouring families in 1796 which showed an almost universal deficit of expenditure over income, see D. Davies, *The Case of Labourers in Husbandry*, 1796, pp. 7, 176-227; F.M. Eden, *The State of the Poor*, Volume 3, 1797, pp. cccxxxix-cccl. Davies and Eden compiled between them budgets in twenty-three counties of England.
[48] W. Cobbett, *Rural Rides*, 2001, p. x.

The Captain Swing riots in 1830 occurred widely in southern and eastern counties, and according to Hobsbawm and Rude 'the basic aims of the labourers were singularly consistent: to attain a minimum living wage and to end rural unemployment ... [much of it the result of] a permanent surplus of labour ... due in the first instance to the growth of population.'[49]

There is some evidence that the pauperisation of the working class was not confined to the South of England.[50]. Charles Shaw in his autobiography described the conditions of workers in the Staffordshire Potteries in the 1830s and 1840s:

> All the great events of the town took place … [in] the market place. During the severity of winter I have seen one of its sides nearly filled with stacked coals. The other side was stacked with loaves of bread, and such bread. I feel the taste of it even yet, as if made of ground straw, and alum, and Plaster of Paris. These things were stacked there by the parish authorities to relieve the destitution of the poor. Destitution, for the many, was a chronic condition in those days, but when winter came in with its stoppage of work, this destitution became acute, and special measures had to be taken to relieve it. The crowd in the market-place on such a day formed a ghastly sight. Pinched faces of men, with a stern, cold silence of manner. Moaning women, with crying children in their arms, loudly proclaiming their sufferings and wrongs. Men and women with loaves or coals, rapidly departing on all sides to carry some relief to their wretched homes − homes, well, called such … This relief, wretched as it was, just kept back the latent desperation in the hearts of these people.[51]

Not all workers were resigned to the poverty they experienced at this time. John Buckmaster described in his autobiography the political turmoil that occurred in Buckinghamshire during the 1830s:

> Numbers of men were out of work, bread was dear, and the Chartist agitation was violently active. Copies of the *Northern Star* and other Chartist papers found their way into every workshop. Meetings were held almost every evening and on Sundays. Some of the speeches advocated physical force as the only remedy … Lectures on Peterloo, the Bristol Riots, the Monmouth Rising, and the Pension List were common. Bad trade, low wages, and dear bread were the stimulating causes of widespread discontentment. Men were driven to their lowest depth of hatred of the governing classes ... the country was passing through the throes of a political convulsion which was fast ripening into a revolution. The mechanics institute gradually degenerated into a violent revolutionary club.[52]

The country was saved from revolution by the reduction in the price of bread and other economic and political changes. The fall in bread prices occurred largely as a result of the importation of wheat and other commodities from the United States and elsewhere.

Table 6: The Mean Price of Bread in London, 1700-1900.

Period	Mean Price of Four Pounds of Bread in London (Pence)[53]
1700-1749	5.1
1750-1799	6.4
1801-1851	10.7
1852-1900	7.4

[49] E.J. Hobsbawm, G. Rude**,** *Captain Swing*, 1973, pp. 22, 163.
[50] P. Razzell, R. Wainwright, *The Victorian Working Class*, 1973, pp. xix-xxiv.
[51] C. Shaw, *When I Was a Child*, 1980, pp. 42, 43.
[52] J. Buckmaster, *A Village Politician*, 1982 pp. 98, 99, 124, 153. For a detailed account of the political consequences of the pauperisation of the working class see E.P. Thompson, *The Making of the English Working Class,* 1980.
[53] B.R. Mitchell, P. Deane *Abstract of British Historical Statistics*, 1971, pp. 497, 498.

The price had risen significantly during the eighteenth and the first half of the nineteenth century, but then fell during the second half of the century.

Conclusion.

Disease patterns were responsible for the rise and fall of population growth, which had a major impact on the supply of labour. During periods of falling mortality, labour surpluses were created which affected both the price of labour and patterns of inequality. Most economists have seen demography as a function of economics, but this paper illustrates the way disease and mortality shaped both the economy and the structure of society. This was true both historically but also in recent times, when the elimination of diseases in Asia led to a surge in population growth and the creation of labour surpluses.[54] A number of countries – in particular China – took advantage of these surpluses to create cheap manufactured goods, which they exported to developed economies, including England, the United States and Europe.[55] This in turn resulted in the growth of economic and social inequality in these countries, with the virtual elimination of manufacturing activity and the creation of economic rustbelts.[56]

Epidemiologists have not always recognized the central importance of their discipline to the social sciences, but hopefully the present paper will contribute to a recognition of its centrality.

[54] Razzell, *Essays*, pp. 322-334.
[55] Ibid.
[56] Ibid.