Mortality, Marriage and Population Growth in England, 1550-1850

This book is dedicated to Tinka Rojas, whose sense of humour and warm support has been invaluable in writing this book.

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Preface.

In 1958, H.J. Habakkuk put forward a general thesis on the relationship between demographic and economic history in England before the nineteenth century. He presented a 'heroically simplified version of English history', which ran as follows:

> '... 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.'[1]

This argument is based on the assumption that population change was largely exogenous to economic development, an assumption supported by Chambers and others writing in the period leading up to the 1960s and early 1970s.[2] The main focus of Chambers' work was on the 'autonomous death rate'[3], and he was particularly critical of the influence of Malthus with his emphasis on fertility shaped by the standard of living.[4]

Chambers' argument was challenged by Wrigley and Schofield in research carried out with the Cambridge Group, which covered nearly four million individual parish register entries, as

[1] Habakkuk (1965), 148.
[2] Brownlee (1915-16); Griffiths (1926); Buer (1968); Chambers (1972); Utterstrom (1965); Jutikkala and Kauppinen (1971).
[3] Chambers (1972), vi, 82, 87.
[4] Ibid, 2-5, 17, 108, 119-120, 147, 149.

well as the linkage of detailed material from 26 reconstitution studies. Their main findings were that after a period of stagnation in the second half of the seventeenth and first half of the eighteenth century, population began to grow rapidly after the middle of the eighteenth century, with about two-thirds of the population increase due to a rise in fertility, and one third to decreasing mortality.[5] They have argued that the growth of population was mainly the result of the increase in fertility associated with a fall in the age of marriage, which in turn was due to growing real incomes lagged over time, a conclusion largely confirming the work of Malthus.

Evidence is produced in this book to present an alternative view: that fertility actually fell in the eighteenth century and that mortality reduction was the main engine of population growth in England during this period. No attempt has been made to create a mathematical model of population growth, which involves many demographic unknowns requiring a range of arbitrary assumptions.[6] Manipulation of these assumptions allows the shaping of conclusions to validate a particular thesis, in effect creating a circular self-affirming set of theoretical arguments. I have adopted a different methodological approach: an emphasis on sources which allow the direct empirical measurement of individual variables, along with the triangulation of data to evaluate the reliability of findings.

Because the main arguments and conclusions of this book are controversial, I have discussed in great detail both the methodological issues and the detailed findings which support those arguments. The result of this detailed work is the conclusion

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[5] Wrigley, Davies, Oeppen and Schofield (1997), 126.

[6] For example, as a part of their back projection programme, Wrigley and Schofield reduced the size of the age group 90-94 enumerated in the 1871 Census by 44%; if they had chosen instead to reduce this by 40%, their estimate of the English population in 1541 would have been about 9% larger. See Lee and Lam (1983), 446.

that population growth was largely exogenous to economic change in England from at least the early seventeenth century onwards. Demography has been seen traditionally as a function of economics, but the English evidence now suggests that since the early modern period it was largely independent of economic development. The further conclusion is that population growth contributed to the development of capitalism through the creation of labour surpluses and increases in aggregate demand, similar to what is now occurring globally, with multi-national companies exploiting demographically generated labour surpluses, resulting in the growth of global capitalism.

Chapter 1: The Reliability of Parish Registration and Population Growth in England.

Central to all discussion of population history before the introduction of civil registration in 1837 is the reliability of parish registers. Because of deficiencies in parish registration, it is necessary to inflate the number of burials, baptisms, and marriages in order to establish reliable measures of deaths, births, and marriages. During the period in which the Cambridge Group's research was carried out there were no methods available to independently measure the reliability of inflation ratios. This was recognized by Wrigley *et.al.* when they concluded that 'the lack of a reliable alternative data source makes it impossible … to test effectively the completeness of Anglican registration', resulting in 'arbitrary' inflation ratios which can only be based on 'internal plausibility and internal consistency of the results obtained.'[7]

A number of new methods to measure burial register reliability are now however available:

1. Comparing individual entries in probate and burial register returns.
2. Tracing married couples from one census to a subsequent one, checking whether the partner of a newly enumerated widow or widower has been registered in the burial register.
3. Comparing lists of pauper burials with parish register entries.
4. Using reconstitution schedules and tracing children under nine years of age in a subsequent census listing parents and fellow siblings.
5. Tracing 'traffic in corpses' listed in one parish register but occurring in another parish.
6. Analysing bills of mortality and data in burial registers.
7. Comparing civil register returns of deaths with parish entries of burials.

[7] Wrigley and Schofield (1981), 137; Wrigley, Davies, Oeppen and Schofield (1997), 91-92.

8. Employing the same name technique which searches for children known to be dead in the burial register.[8]

Numbers two to seven of the above methods are only available for specific periods, but one and eight are applicable to the whole parish register period between 1538 and 1837. However, it is necessary to use all eight methods wherever possible, in order to triangulate the reliability of the findings of any one method.[9]

The most important of the above eight ways of measuring burial registration reliability is the same-name technique. There was a custom in England to give the name of a dead child to a subsequent child of the same sex. Evidence from local censuses and other listings suggests that there were no living children with the same name in individual families in the period 1676-1849, According to probate evidence for different parts of England during the period 1600-1649 there were 13 living same-name children out of a total of 2,144 – less than 1% – and some of these children may have been step-siblings.[10]

Where two children of the same family were baptised with an identical name, it is therefore possible to measure the completeness of burial registration by searching for the first same-name child in the burial register. The technique can only be applied to families with at least two recorded baptisms of children of the same sex, but it is a valuable method of assessing the quality of burial registration. This can be illustrated by the example of one London family listed by the genealogist Percival Boyd, and traced in the 1695 London Marriage Duty Listing.

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[8] For the application of these eight methods see Razzell 2007, 3-39; Razzell, Spence and Woollard, (2010), Razzell (2011a), Razzell (2011b). Razzell (2012).

[9] For the triangulation of a number of these methods applied to London data see Razzell (2011a).

[10] See Razzell (2011b), 67 for a list of the places and dates involved.

Table 1: The Family of Samuel and Sarah Fowler, Tyler and Bricklayer, of St. Antholin's, London. [11]

Name Of Child	*Date Of Baptism*	*Date Of Burial*
Thomas	05/07/1677	04/01/1721
Samuel	**04/05/1679**	**29/04/1681**
William	08/01/1683	03/06/1708
Samuel	10/05/1685	15/02/1688
John	**07/08/1687**	**-**
John	**12/05/1689**	**09/10/1692**
Sarah	22/04/1691	06/02/1748
Mary	18/07/1693	12/11/1694
John	21/11/1695	-
1695 Marriage Duty Listing: Samuel Fowler, Wife Sarah, Son James, Son Thomas, Son William, Daughter Sarah.		

Of the three same-name cases, high-lighted in bold, two of them were traced in the burial register. The second same-name case – John baptised on the 7th August 1687 – was found neither in the burial register nor in the 1695 Marriage Duty Listing, indicating that he probably died without being registered. (The last John was baptised in late 1695 and therefore did not appear in the Marriage Duty Listing made before that date).

The same-name method allows for the correction of burial under-registration by multiplying recorded burials by the number of same-name cases divided by the number of same-name cases found in the burial register. In the case of the Fowler family the correction ratio is 3/2. This inflation ratio corrects both for non-registration due to omission from the burial register, as well as burial in neighbouring parishes and elsewhere, accounting for all

[11] For the background to this table see Razzell and Spence (2007), 274.

forms of under-registration. The findings from same-name research can be evaluated through data on probate and burial registers.

Table 2: Estimates of Burial Under-Registration in Fifteen Cambridge Group Reconstitution and Twenty-Eight Aggregative Bedfordshire Parishes.

Period	*Proportion of Untraced Burials in Same Name Cases in Fifteen Cambridge Group Reconstitution Parishes.*[12]	*Proportion of Untraced Burials through the Comparison of Probate and Burial Registers in Twenty-Eight Cambridge Group Aggregative Bedfordshire Parishes.*[13]
1600-49	31%	21%
1650-99	25%	27%
1700-49	25%	23%
1750-99	23%	21%
1800-49	20%	23%

The above two groups are not strictly comparable – one is for children in reconstitution research, the other is adults in probate documents. The probate/burial register research excludes defective periods in which there were gaps in the registration system, occurring particularly during the civil war period 1640-60.[14] The

[12] The parishes in the sample are: Alcester, Aldenham, Ansty, Austrey, Banbury, Bottesford, Bridford, Colyton, Dawlish, Eccleshall, Great Oakley, Hartland, March, Odiham, Shepshed. For some of the same-name data see Razzell (2007), 15. This was supplemented by the analysis of material kindly supplied by Gill Newton.

[13] Razzell, Spence and Woollard (2010), 53.

[14] Wrigley and Schofield estimated that the proportions of defective burials in the aggregative sample were as follows: 1558-1640: 6.3%; 1640-53: 26.6%; 1653-60: 17.5%; 1660-95: 7.0%; 1695-1754: 1.9%; 1754-1812: 0.8%; 1813-39: 0.1%. Wrigley and Schofield (1981), 25.

same-name data also largely exclude defective periods, as registers were not selected for reconstitution research where there were significant gaps and other obvious difficulties.[15]

In the period 1600-49 the proportion of untraced burials is higher in the reconstitution than in the probate/burial register sample, which may be partly be due to the existence of some living same-name children in this period. After the middle of the seventeenth century the pattern of untraced burials is approximately similar in both groups. The proportion of probate cases untraced in 124 burial registers for the whole of Bedfordshire are similar to the Bedfordshire Cambridge Group parishes in Table 2:

Table 3: Proportion of Probate Cases Traced in One Hundred and Twenty Four Bedfordshire Burial Registers, 1543-1849.[16]

Period of Probate	*Total Number of Probate Cases*	*Proportion of Burials Untraced*
1543-99	610	26%
1600-49	3731	21%
1650-99	4626	26%
1700-49	6030	23%
1750-99	3744	22%
1800-49	3303	27%
Total	22044	24%

[15] Ibid, 91.

[16] Razzell, Spence and Woollard (2010), 42. Research comparing civil registration returns and burial register data confirms the level of burial under-registration in the 1840s, as does tracing married couples from one census to a subsequent one, checking whether the partner of a newly enumerated widow or widower has been registered in the burial register. See Ibid, 50, 51.

Burials were traced by using the Bedfordshire Family History Society's burial database which covers the whole county, allowing a search of cases buried both inside and outside the parish of residence. The numbers of untraced burials are minimal because of strict matching criteria, but overall there was little variation over time, with about a quarter of all burials missing from the parish registers. This is similar to that found in other parishes outside of Bedfordshire:

Table 4: Proportion of Probate Cases Traced in Different English Parishes, 1546-1793.[17]

Parish and Period	*Total Number of Probate Cases*	*Proportion of Burials Untraced*
Newbury, Berkshire, 1546-1648	50	24%
Colyton, Devonshire, 1553-1773	124	28%
Long Melford, Suffolk, 1559-1610	97	21%
Great Dunmow, Essex, 1559-1610	50	20%
Thaxted & Saffron Walden, Essex, 1560-1602	82	13%
Hartland, Devon, 1598-1793	81	19%
Lyme Regis, Dorset, 1664-1749	232	35%
Total	696	26%

The overall proportion of missing burials – 26% – is approximately the same as that found in the much larger Bedfordshire sample, and

[17] Razzell (2007), 30.

also similar to the research on same-name cases in Table 2 and to a larger sample of 18 reconstitution parishes to be discussed later.[18]

Colyton is the parish in which E.A. Wrigley developed his work on family reconstitution, providing a suitable focus for a study of burial registration. The following table summarizes an analysis of same-name cases in Colyton:

Table 5: Analysis of Burial Registration of Same-Name Siblings in Colyton, 1538-1851.[19]

Period	*Total Number of Cases*	*Proportion of Untraced Cases*
1538-1600	95	35%
1601-50	121	41%
1651-1700	114	25%
1701-50	84	36%
1751-1800	94	36%
1801-51	115	15%
Total	623	31%

There is no linear trend in the proportion of untraced cases, but there was a sharp improvement in burial registration in the period 1801-51. This can be compared to parish register entries with civil register returns for the period 1837-50. According to the Colyton civil register, there were 199 children dying under the age of ten in 1837-50, of which 170 were registered in the Anglican parish register, an omission rate of 15%. This figure is identical to the 15% of same-name children not traced during 1801-51. It is also possible to compare evidence on people leaving wills with entries in the burial register, and of 124 wills registered in Colyton in 1553-1773, 35 – 28% – could not be found in the parish register –

[18] See Table 10.
[19] Razzell (1994), 188.

slightly smaller than the untraced cases in 1538-1800 in Table 5 – 34%.[20]

Research on the reliability of baptism registration raises similar problems to that on burial registration. The comparison of census returns with baptism register entries in parishes from different parts of England indicates that there were no significant changes in the reliability of birth registration in the period between 1761 and 1834.

Table 6: Comparison of 1851 Census Birthplace Statements with Baptism Register Returns in Forty-Five Parishes, 1761-1834.[21]

Period	*Total Number of Cases*	*Proportion of Untraced Baptisms*
1761-80	415	29%
1781-1800	1690	35%
1801-20	3506	33%
1821-34	5343	29%
Total	10954	31%

For the period before 1761 it is possible to assess the accuracy of baptism registration through research on the Cardington census of 1782, which listed the birthplace of all husbands and wives enumerated in the census, and included the maiden names of wives. The editor of the census, David Baker along with colleagues traced all baptisms occurring in the county of Bedfordshire, more than two-thirds of which took place outside of Cardington

[20] Razzell (1994), 189.
[21] Razzell (1994), 95. For a full discussion of the methodology used in compiling and interpreting these figure see Ibid, 82-149.

Table 7: Husbands and Wives Enumerated in the 1782 Cardington Census and Traced in Bedfordshire Baptisms Registers.[22]

Period of Estimated Birth	*Number Listed as Born in Bedfordshire*	*Proportion Untraced in Baptism Registers*
1710-42	119	29%
1743-62	87	21%
Total	206	25%

The overall proportion of untraced baptisms – 25% – is similar to the percentage of untraced Bedfordshire burials in the probate/ burial research in the period, 1700-49 – 23%.[23] Baker and colleagues attempted to trace the marriages of the couples enumerated in the census. 57 of the 204 cases – 28% – could not be traced in marriage registers in Bedfordshire and elsewhere, similar to the levels of burial and baptism under-registration.[24]

The main reason for omissions of birth, deaths and marriages was probably clerical negligence,[25] as indicated by Burn in his study of parish registers, first published in 1829:

> 'The custody of parish registers having been frequently committed to ignorant parish clerks, who had no idea of their utility beyond their being occasionally the means of putting a shilling into their own pockets for furnishing extracts, and at other times being under the superintendence of an incumbent, either forgetful, careless or negligent, the result has necessarily been, that many Registers are miserably defective, some

[22] Razzell, Spence and Woollard (2010), 48.
[23] See Table 3.
[24] Baker (1973). The traced marriages occurred in the period 1731-1782, and 56 of the 147 marriages – 38% – took place outside of Cardington.
[25] See Razzell (1994), 108-111.

having the appearance of being kept from month to month, and year to year, yet being deficient of a great many entries.'[26]

This clerical negligence appears to have been present from the sixteenth century onwards. For example, 'in 1567 the incumbent of Tunstall, Kent, appeared to have tired of registering the Pottman family because of its concentration in the parish and simply stated in the register: "From henceforwd I omit the Pottmans." '[27]

Some of the neglect of burial registration was due to the non-payment of fees. In the Northamptonshire parish of Brington, 'the very true reason why this register, is found as imperfect in some years as from 1669 to 1695 is because the parishioners could never be persuaded to take to see it done, nor the church-wardens as ye canon did require, and because they refuse to pay such dues to ye curate as they ought by custome to have payed.'[28]

In 1702-03 'a Committee of Convocation drew up a list of ecclesiastical offences notoriously requiring remedy, in which irregularity in keeping registers is prominent in the list of gravamina.'[29] Evidence for clerical negligence became abundant in the early nineteenth century. The *Gentleman's Magazine* remarked in 1811 that 'the clergyman (in many country places) has entered the names at his leisure, whenever he had nothing better to do, and perhaps has never entered them at all.'[30] The *Report of the Select Committee on Parochial Registration in 1833* provided substantial evidence on the reasons for defective parish registration. One of the witnesses, Mr William Durrant Cooper, a solicitor, had extensive experience of tracing individuals in parish registers for property cases, and concluded that parish registration was 'exceedingly defective … [with] a very large number of marriages,

[26] Burn (1862), 18.
[27] Ibid, 41.
[28] Cox (1910), 20, 21.
[29] Tate (1969), 49.
[30] Burn (1862), 42.

deaths and baptisms not entered at all … especially deaths.'[31] To illustrate this, he gave the following example:

> 'On the sale of some property [in 1819] from Mr Cott to Lord Gage, it was necessary to procure evidence of the death of three individuals, Mrs Pace, Mr Tuchnott and Mrs Gouldsmith. They were at different places, all in Sussex; Mrs Pace was regularly entered; Mr Tuchnott was buried at Rodmell, about five miles from Lewes, and on searching for the register of burial we found no entry whatever. On making an inquiry in the churchyard of the sexton, he stated he recollected digging the grave, and the ceremony being performed; Mr Gwynne, the rector, whose neglect in that and other parishes is well known, had omitted to enter it … Mrs Gouldsmith, who was buried at Waldron, in the same county, was not entered, but on going to the parish clerk, who was a blacksmith, he stated he recollected the circumstance, and accounted for her burial not being entered in this way: he said it was usual for him, and not the clergyman, to take account of the Burials, and he entered them in a little sixpenny memorandum book … If it so happened that the fee [of one shilling] was paid at the time, as was the case with affluent persons, no entry would appear in his book, he only booked what was due to him, and as the clergyman entered the parish register at the end of the year from his book, and not at the time of the ceremony, all burials that were not entered in his book would not find their way into the register.'[32]

Wrigley and Schofield had assumed in their aggregative research that other than defective periods, burial registration was perfect in the period leading up to the middle of the seventeenth century and only deteriorated significantly at the end of the eighteenth

[31] *Report of the Select Committee on Parochial Registration*, 24.
[32] Ibid*,* 25.

century.[33] This is reflected in the inflation ratios they used to translate burials into deaths which were as follows: 1540-99: 0%; 1600-49: 0%; 1650-99: 2%; 1700-49: 5%; 1750-99: 10%: 1800-39: 26%.[34] The sharp increase in estimated under-registration in 1800-39 is mainly due to 'residual non-registration' – 62% of the inflation ratio. Research discussed above as well as that on a number of parishes in different parts of the country indicates that between a fifth and a third of all burials were missing from parish registers in the period 1550-1837, with no clear linear trends in register reliability over time.[35]

Wrigley and Schofield's inflation ratios for baptisms in the period 1710-1836 are as follows: 1710-42: 11.5%; 1743-62: 13.9%; 1763-80: 16.4%; 1781-1800: 26.0%; 1801-20: 42.9%; 1821-36: 39.1%.[36] They assumed that the quality of birth registration was relatively good in the period 1710-80, but deteriorated sharply from the 1780s onwards, particularly after 1801.[37] This assumed pattern is at variance with the findings outlined above, which essentially show no major changes in the eighteenth and early nineteenth century.

The above data on parish register reliability puts into question the accuracy of the Cambridge Group's population estimates, central to the analysis of the relationship between population and economic growth. Given the relatively unchanging levels of parish register reliability for most of the parish register period, the most appropriate way of estimating population growth

[33] Wrigley and Schofield (1981), 561.
[34] Ibid, 561.
[35] Razzell (2007).
[36] Wrigley and Schofield (1981), 541-44.
[37] Lindert used Registrar-General's nineteenth century data to estimate birth registration patterns, and concluded that 'birth registration was worse before 1780 than after.' Lindert (1983), 136.

is to use the Cambridge Group's raw figures of national baptisms and burials.

Table 8: Wrigley and Schofield's Estimated Total Number of Baptisms and Burials in England, 1539-1809.[38]

Period	*Number of Baptisms*	*Number of Burials*	*Baptisms Minus Burials as a Proportion of Baptisms*
1539-1569	3345389	2726288	23%
1570-1609	4847157	3690064	31%
1610-1649	5926116	5024644	15%
1650-1689	5587210	5841096	-5%
1690-1729	5875710	5770930	2%
1730-1769	6926101	6138753	11%
1770-1809	9267086	6961539	25%

Table 8 does not allow for migration, but this and other evidence suggests that the structure of population growth between 1539 and 1809 was N-shape in form. Population grew rapidly between 1539 and 1649, but fell sharply after the middle of the seventeenth century, before resuming significant uninterrupted growth after the 1730s.[39]

The Cambridge Group's raw data indicates that it was a fall in mortality rather than a rise in fertility that was responsible for eighteenth century population growth.

[38] Ibid, 537-552.

[39] See Chambers (1965), 331; Eversley (1965), 404, 408; Krause (1965), 195.

Table 9: English Baptism and Burial Rates (Per 1000) in England Calculated from Cambridge Group Data.[40]

Period	*Estimated Population*	*Baptism Rate*	*Burial Rate*
1701-40	5,350,000 (1721)	29.3	27.7
1741-80	6,147,000 (1761)	29.8	25.5
1781-1820	8,664,000 (1801)	29.4	20.6

It is only because Wrigley & Schofield disproportionately inflated the number of baptisms in the period 1781-1820 that they concluded that there was a rise in the crude baptism rate in this period. The raw figures do not allow for changes in age structure and other factors, including the estimates of population size and burial under-registration. The absolute levels of the baptism and burial rates were probably between a fifth and a third higher than indicated by Table 9. Given these uncertainties it is necessary to consider in detail the empirical evidence on mortality, nuptiality and fertility in the parish register period.

[40] For the sources of data on which this table is based, see Wrigley and Schofield (1981), 541-544, 549-552, 577.

Chapter 2: The History of Infant and Child Mortality in England, 1600-1850.

The most reliable way of calculating infant and child mortality rates before the advent of civil registration is to apply family reconstitution techniques to parish register data. There are however a number of difficulties with this methodology, which have been summarized by Ruggles with respect to the Cambridge Group's reconstitution research as follows:

> 'Given the complex combination of potential biases – the non-representativeness of the parishes, selection bias, censoring, and under-registration – we in general cannot be certain of the net direction or magnitude of error for any particular measure.'[41]

There were twenty-six parishes included in the Cambridge Group's reconstitution sample, but for the analysis of infant and child mortality there were only eight parishes covering 1790-1837, a period of rapidly expanding population. The eighteen parishes were excluded not on the basis of independent tests, but on subjective judgment and overall assessment of the quality of the evidence.[42] The following summary accounts for six of the parishes illustrate the nature of this selection process:

> '*Aldenham* – there was … an exceptionally sharp drop in infant mortality between 1750-99 and 1800-49 (from 140 to only 57 per 1000) … substantial under-registration of deaths must have occurred and 1789 was chosen as the closing date.
> *Austrey*… since the level of infant mortality also fell to an implausibly low level (from 100 per 1000 in 1700-49 to 47 per

[41] Ruggles (1992), 127.
[42] Wrigley, Davies, Oeppen and Schofield (1997), 32-38. See also Razzell (2007), 50-52.

1000 in 1750-99) it seemed prudent to disregard the post-1750 period.

Bridford – The completeness of registration appears to have deteriorated in Bridford towards the middle of the eighteenth century … these signs of deficiency suggest that the reconstitution post-1750 is significantly less complete than earlier.

Colyton – there appears to have been a weakening in burial coverage towards the end of the eighteenth century. It here seems prudent to use 1789 as the stopping date.

Hartland – There is … nothing implausible in the early eighteenth century level of infant mortality revealed by reconstitution, but its subsequent fall must reflect deteriorating registration. It would therefore be foolhardy to include the period after about 1770.

Terling – the number of burials over the … decades (1770-9 to 1820-29) changed so implausibly, so as to cause distrust in any tabulations based on data after 1789.'[43]

The language used in these passages to justify the exclusion of evidence – 'implausible', 'prudent', 'appears', 'suggest', 'foolhardy', 'distrust', – indicates the subjective nature of the selection process. However, the same-name technique allows an objective measure of burial register reliability, stated in advance and independent of any arbitrary assumptions. The following table summarises reconstitution data using the same-name method for 18 English parishes – 9 of which are from the Cambridge Group's reconstitution sample – covering the period 1600-1839.

[43] Wrigley, Davies, Oeppen and Schofield (1997), 32-38.

Table 10: Infant and Child (1-4) Mortality (per 1000) in Eighteen English Parishes, 1600-1837.[44]

Period	*Infants at Risk*	*Children at Risk*	*Same Name Ratios*	*IMR*	*CMR*
1600-49	16543	12414	965/642	158	113
1650-99	13723	10266	959/689	151	106
1700-49	14884	10747	1241/1014	181	106
1750-99	17697	13035	1143/841	148	100
1800-39	19082	12922	758/565	104	85

Infant mortality rose in the first half of the eighteenth century, before falling steadily after the middle of the century, whereas child mortality was fairly constant before reducing in the second half of the century. Although infant mortality nearly halved between1700-49 and 1800-39, some of this may have been the result of lengthening birth-baptism intervals in the late eighteenth and early nineteenth century, resulting in more infants dying before baptism.[45]

[44] The parishes are: Alcester, Warwickshire; Aldenham, Hertfordshire; Arrington, Cambridgeshire; Austrey, Warwickshire; Banbury, Oxfordshire; Barton-in-the-Clay, Bedfordshire; Bedford St. Cuthberts, Bedfordshire; Bedford St. Johns, Bedfordshire; Bedford St. Marys, Bedfordshire; Beeley, Derbyshire; Bottesford, Lincolnshire; Bridford, Devonshire; Chalgrave, Bedfordshire; Colyton, Devonshire; Great Oakley, Essex; Odiham, Hampshire; Sandy, Bedfordshire; Youlgreve, Derbyshire. I would like to thank Gill Newton for providing the original Cambridge Group schedules for reconstitution parishes.

[45] Wrigley, Davies, Oeppen and Schofield (1997), 229; Razzell (1994), 104, 105. From research on birth-baptism intervals and infant mortality, it is estimated that a maximum of 5% of children died before baptism in the period 1761-1834. However, many 'sickly' children were privately baptised, reducing mortality before baptism. See Razzell (1994), 106, 107. Given children dying before baptism, the infant mortality rate for 1820-39 in Table 11 – 116 per 1,000 – is probably fairly representative of

More detailed evidence is available for the 18 reconstitution parishes on the more exact timing of the reductions in infant and child mortality in the eighteenth and nineteenth centuries.

Table 11: Infant and Child (1-4) Mortality (per 1000) in Eighteen English Parishes, 1600-1837.[46]

Period	*Infants at Risk*	*Children at Risk*	*Same Name Ratio*	*IMR*	*CMR*
1600-19	6550	4890	362/243	165	96
1620-39	6943	5253	419/272	162	127
1640-59	5283	3990	320/216	131	116
1660-79	5486	4074	390/279	143	107
1680-99	6004	4473	433/321	165	105
1700-19	5667	4126	429/342	177	107
1720-39	6227	4392	561/470	190	104
1740-59	6171	4604	471/368	161	107
1760-79	7019	5143	498/375	153	107
1780-99	7497	5517	425/300	143	91
1800-19	9032	6690	394/286	103	83
1820-39	10050	6232	364/279	116	88

After a period of stability between 1600 and 1639, infant mortality fell in the period 1640-59 before increasing progressively to a peak in 1720-39. It subsequently reduced significantly to a low level in the nineteenth century, although there appears to have been a slight

national mortality rates in the 1830s when civil registration was introduced, particularly in parishes outside of large towns.

[46] For the parishes in the sample see footnote 44.

increase in the period 1820-39.[47] Child mortality grew in the first half of the seventeenth century but remained more-or-less constant for most of the eighteenth century, before reducing somewhat in the period 1780-1799 and stabilizing in the nineteenth century.

A number of other studies have been carried out on infant and child mortality which found a significant reduction of mortality in the eighteenth century, but all have lacked an objective method of measuring burial registration reliability.[48] One of the most comprehensive studies on infant mortality is that carried out by R.E. Jones on 60 North Shropshire rural parishes. His conclusion on burial registration was as follows:

> 'Throughout the period 1561 to 1810 the registers of adjoining and very similar parishes often yielded different burial rates. A substantial proportion of these rates were so low as to be very unlikely in a pre-industrial society and low when compared with nineteenth century civil registration figures for the same area. The most probable explanation of this was that a large number of clergy and parish clerks failed to keep a full record of infant deaths, while a minority kept a very full record.'[49]

In order to address this problem, Jones decided to select 'good registers' for his research, and used a method of linking estimated number of infant burials with the number of baptisms. He found that infant mortality rose in the late seventeenth century and fell significantly in the eighteenth – nearly halving by the early nineteenth century. However, the absence of an objective method

[47] The turning point occurred in the 1750s: infant mortality fell from 174 per 1000 in 1740-49 to 149 per 1000 in 1750-59.
[48] There are a number of historical studies of infant and child mortality which suffer from the same difficulty. See Jones (1980); Landers (1991); Houston (1992); Huck (1994); Dobson (1997); Galley (1998).
[49] Jones (1980), 240.

for correcting burial under-registration means that the timing of the above changes must be subject to a measure of uncertainty.

The samples covered by Tables 10-11 do not include any northern parishes or large towns, and under-represent industrial villages.[50] Infant and child mortality was much higher in large towns than in rural and provincial parishes. The infant and child mortality rates in the 18 reconstitution parishes in 1650-1699 were 151/1000 and 106/1000 respectively; the equivalent rates in four urban parishes in a similar period were 304/1000 and 237/1000. [51] Urban infant and child mortality was twice of that in rural and provincial parishes in the late seventeenth century, but by the nineteenth century the average infant mortality rate in these urban areas had reduced to 179 per 1000,[52] an even greater fall than that which occurred in the more rural parishes in Tables 10 and 11 in the same period.

However, there is some evidence to indicate that infant mortality grew in some urban and industrial parishes in the first half of the nineteenth century,[53] although the scale of reductions during the eighteenth century in London, Norwich, Ipswich and

[50] A reconstitution study of Ackworth in Yorkshire for the period 1687-1812 indicates that the pattern of infant and child mortality was similar to that in Table 10, although at a somewhat lower level. The figures are as follows: 1687-1749: IMR: 166, CMR: 114; 1750-1812: IMR: 82, CMR: 77. The numbers of infants at risk are: 1687-1749: 596, 1750-1812: 1,133; children at risk: 1687-1749: 431, 1750-1812: 776; same name ratios: 1687-1749: 31/21, 1750-1812: 28/23.

[51] Three hundred cases of infants at risk were selected from each of the four urban parishes: St. James Norwich (1681-1705), St. Alphage Canterbury (1681-1705), St. Peter and St. Nicholas Ipswich (1660-1709), and St. Swithin London (1675-99).See Razzell (2007), 75, 76. The 18 parishes are listed in footnote 44.

[52] The infant mortality rates in 1838-44 in these towns were as follows: City of London: 151/000; Canterbury: 153/1000; Ipswich: 171/1000; Norwich: 240/1000. See the *Registrar-General's Eighth Report*.

[53] See Armstrong (1981); Huck (1994); Szreter and Mooney (1998).

Canterbury greatly outweighed the relatively modest increases in urban areas in the nineteenth century.

The pattern of infant and child mortality in the most important urban area – London – is indicated by the results of reconstitution studies of 16 City of London parishes in the period 1539-1849.

Table 12: Infant and Child (1-4) Mortality (per 1000) in Sixteen London Parishes, 1539-1849.[54]

Period	*Infants at Risk*	*Children at Risk*	*Same Name Ratio*	*IMR*	*CMR*
1539-99	839	616	48/31	155	168
1600-49	1073	770	83/52	238	224
1650-99	1020	686	99/67	256	282
1700-49	704	387	68/39	409	176
1750-99	720	435	60/36	263	270
1800-49	199	102	8/4	141	118

Some of the sample sizes are small, particularly for the nineteenth century – although the infant and child mortality rates are similar to the mortality levels for the City of London established by the Registrar-General after 1837.[55] Infant mortality more than doubled in the period 1539-1749, before falling very sharply after the middle of the eighteenth century. There was a similar pattern in child mortality, except for the rise in mortality in the second half of the eighteenth century. This is an unexpected result and would require larger samples covering more parishes to evaluate these levels of mortality.

[54] For details of the parishes included in the sample see Razzell (2007), 13, 134.
[55] See footnote 52.

The findings on infant and child mortality in the sixteenth and early seventeenth century are supported by research carried out by Finlay on eight London parish registers in the period 1580-1650. He found an average raw rate of infant mortality of 191 per 1000,[56] which is consistent with the rates for 1539-1649 in Table 12. Finlay inflated the raw mortality rates to allow for burial under-registration, but he recognised that his correction ratios involved a degree of arbitrariness.

The data from the London Bills of Mortality suggests that the proportion of children dying under the age of two declined rapidly in London from the 1750s onwards: the number of children dying under the age of two as a proportion of the number of baptisms was as follows: 1730-39: 60%; 1740-49: 61%; 1750-59: 51% 1760-69: 33%; 1770-79: 33%; 1780-89: 38%; 1790-99: 26%; 1800-09: 22%; 1810-19: 20%.[57] By the middle of the nineteenth century infant and child mortality levels were not significantly different in London than elsewhere.[58]

There is very little available information on detailed changes in urban child mortality in the eighteenth century, but evidence from the Northampton Bills of Mortality suggests that this form of mortality in the town did not reduce until the end of the eighteenth century. The number of children dying under the age of two as a proportion of the number of baptisms was as follows: 1740-49: 44%; 1750-59: 35%; 1760-69: 49%; 1770-79: 45%; 1780-89: 38%; 1790-99: 26%; 1800-09: 22%; 1810-19: 20%.[59] The fall in child mortality at the end of the eighteenth and beginning of the nineteenth century is similar to what occurred in the rural and provincial parishes detailed in Table 11.

One way of further exploring the factors shaping infant and child mortality is to analyse the relationship between socio-

[56] Finlay (1981), 30.
[57] Razzell (2007), 110.
[58] See the *Registrar General's Eighth Report.*
[59] Razzell (2007), 110.

economic status and mortality. The following table summarises data from 17 Cambridge Group reconstitution parishes, where an elite family – aristocrat, esquire, gentleman, clergyman, lawyer or physician – is matched with the next non-elite entry in the baptism register.[60] This ensures the control of place, an important dimension in all mortality studies.

Table 13: Infant and Child (1-4) Mortality (Per 1000) amongst Elite and Control Families in Seventeen Cambridge Group Parishes, 1600-1799.[61]

Period	*Elite Families*		*Control Families*	
	IMR	CMR	IMR	CMR
1600-49	134	120	184	117
1650-99	158	143	180	132
1700-49	177	106	223	146
1750-99	113	69	159	134

Infant mortality levels were lower in all periods amongst elite than control families, although the pattern of rising and falling mortality is the same in both groups. Child mortality levels were similar in the elite and control population in the seventeenth century, but

[60] Where occupational information was available, most of the control group were labourers, husbandmen and artisans.

[61] The parishes are those listed in footnote 12, plus the parishes of Reigate and Shepshed. The numbers of infants and children at risk are as follows (the same name ratios in brackets): Elite families, 1600-49: IR: 1019, CR: 795 (80/61); 1650-99: IR: 1075, CR: 800 (76/63); 1700-49: IR: 905, CR: 620 (68/65); 1750-99: IR: 473, CR: 337 (28/23). Control Families: 1600-49: IR: 1131, CR: 883 (85/52); 1650-99: IR: 1130, CR: 863 (90/64); 1700-49: IR: 1048, CR: 787 (123/95); 1750-99: IR: 473, CR: 337 (59/41). There are insufficient numbers in the 1800-49 samples to enable reliable analysis.

diverged sharply in the eighteenth century when mortality fell rapidly amongst the elite but not in the control group.[62]

A study comparing evidence on eighteen parishes in Boyd's *Inhabitants of London* with the returns of the Marriage Duty Act yields information on wealth and infant/child mortality in 1681-1709 as follows:

Table 14: Infant and Child Mortality (1-4) Rates (per 1000) amongst London Wealth and Non-Wealth Holders, 1681-1709.[63]

Socio-Economic Status	*Infants at Risk*	*Children at Risk*	*Same Name Ratios*	*IMR*	*CMR*
Wealth Holders	611	448	61/46	284	184
Non Wealth Holders	642	424	81/51	384	232

Both infant and child mortality were highest amongst non-wealth holders at this time, although these forms of mortality were still high amongst wealthy families, with nearly a half of their children dying under the age of five. The pattern was similar in the town of Liverpool, with both infant and child mortality highest in the poorest occupational group – mariners and labourers – although the differences were not as significant as they were in London.

[62] For a similar pattern of mortality amongst elite and control families in Bedfordshire, see Razzell (2007), 133.
[63] For full details of this data see Razzell and Spence (2007), 276.

Table 15: Infant and Child (1-4) Mortality Rates (per 1000) by Occupational Group in Liverpool, 1675-1749

Occupational Group	*Infants at Risk*	*Children at Risk*	*Same Name Ratios*	*IMR*	*CMR*
Gentlemen, Merchants, Professionals	968	556	79/55	187	217
Tradesmen, Artisans	3889	1980	300/149	188	229
Mariners, Labourers	2631	2536	199/108	205	278

By contrast in the town of Truro in Cornwall during the period 1629-1749, infant mortality was actually higher in the elite than the rest of the population, with little difference in child mortality.[64]

Table 16: Infant and Child (1-4) Mortality Rates (per 1000) by Socio-Economic Status in Truro, Cornwall, 1629-1749.

Socio-Economic Status	*Infants at Risk*	*Children at Risk*	*Same Name Ratios*	*IMR*	*CMR*
Gentlemen, Merchants, Professionals	694	396	86/72	287	272
Rest of the Population	2539	1587	259/206	235	289

The link between socio-economic status and infant & child mortality was clearly a complex one. By the mid-nineteenth century there is evidence that there was little or no association between status and mortality levels in London. The Registrar-

[64]For the source of these figures see Razzell (2007), 111.

General published figures of mortality by the mean rateable value of registration districts for the period 1839-44, which are summarized as follows:

Table 17: Infant, Child and Adult Mortality in London by Rateable Value of Registration District, 1839-44.[65]

Registration Districts	*Mean Annual Value of Rated Property*	*IMR*	*CMR*	*Adult (25-44) Male Mortality per 1000*
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

This lack of an association between socio-economic status and infant mortality is supported by evidence on Quakers, who by the nineteenth century were mainly wealthy merchants and professionals. The infant mortality rate amongst Quakers in London in 1825-49 was 150 per 1000, similar to the rate amongst the total population in equivalent registration districts in 1838-44.[66]

In some areas outside of London, child and adult mortality in the 1850s were higher in wealthy districts than poor ones. Using Registrar-General's reports, four registration districts known for their wealth – Bath, Cheltenham, Richmond and Brighton – were

[65] See Razzell (2007), 136.
[66] See Landers (1991); Razzell (2007), 137.

selected and matched with four poor areas in the same counties – Clutton, Westbury, Hambledon, and Hailsham.[67]

Table 18: Average Annual Child and Adult Mortality per 100 Living in Wealthy and Poor Registration Districts, 1851-60.[68]

Registration District	*Child (<5) Mortality Rate*		*Adult (35-44) Mortality rate*	
	Males	*Females*	*Males*	*Females*
Bath, Somerset	6.866	5.761	1.667	1.097
Clutton, Somerset	4.908	4.120	0.759	0.883
Cheltenham, Gloucstershire	6.029	5.268	1.212	1.026
Westbury, Gloucestershire	4.979	4.449	0.821	0.931
Richmond, Surrey	6.128	5.325	1.435	1.125
Hambledon, Surrey	3.755	3.232	0.834	1.073
Brighton, Sussex	8.098	6.998	1.579	1.224
Hailsham, Sussex	4.506	3.319	0.797	1.143

Both child and adult mortality rates were lower in the poor than in the wealthy districts, particularly amongst males. The gender differences may have been partly the result of the large number of domestic servants in the wealthy areas. The variations in mortality were probably largely a function of disease environment, with the

[67] See page 83 for the socio-economic characteristics of these districts.
[68] For the source of this data see the *Supplement Registrar-General's.*

wealthy districts being mainly urban and the poor districts largely rural.

To summarize, after a period of stability between 1600 and 1639, infant mortality fell during the two decades between 1640 and 1659, before increasing progressively to a peak in 1720-39. It subsequently reduced from the 1740s onwards, nearly halving between the middle of the eighteenth and nineteenth centuries. Child mortality increased in the first half of the seventeenth century but remained more-or-less constant for most of the eighteenth century, before falling somewhat in the period 1780-1819. In London and in other urban areas there were marked falls in both infant and child mortality. Child mortality amongst the wealthy reduced in rural and provincial areas at an earlier period – from the beginning of the eighteenth century onwards – than it did among the general population.

It is less clear what the influence of socio-economic status was on urban infant and child mortality, and in London by the mid-nineteenth century there appears to have been little or no association between poverty and these forms of mortality. Also, as we have seen, in a number of provincial districts mortality was significantly lower in poor than in wealthy areas in the 1850s.

The general timing and extent of reductions in early childhood mortality cannot fully explain the scale of population increase in the eighteenth century. For a full explanation of this surge in population growth we must look elsewhere.

Chapter 3: The History of Adult Mortality in England, 1600-1850.

There are major problems with adult mortality data from reconstitution research. As the samples are selected from individuals traced from the baptism to the date of marriage (to establish the age at which an adult enters observation), only between a fifth and a quarter are included in the Cambridge Group's initial reconstitution sample on adult mortality. This proportion further diminishes as a result of people being lost from observation, and the final group on which calculations of adult mortality are based, includes only between 8.6% and 10.2% of the total sample.[69] Such small minorities are unlikely to be representative, either sociologically or demographically. Evidence exists to show that migrants had significantly different demographic characteristics from non-migrants.[70] Additionally, migrants tended to be labourers or members of other poor socio-economic groups, whereas non-migrants were more likely to be farmers, shopkeepers and property-owners.[71]

As we have seen earlier, an additional problem is variations in burial registration reliability. There is also the difficulty of establishing accurate nominal record linkages between baptisms/marriages and subsequent burials, as most parish registers only list the names of people buried without further identifying information. This is a particular problem with adult deaths as there are frequently long gaps between baptisms/marriages and burials. It is for all these reasons that it is necessary to look elsewhere for reliable and meaningful evidence on adult life expectancy, and fortunately there are a number of sources which allow both the study of national mortality patterns and the triangulation of data.

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[69] These figures are calculated from data cited in Ruggles (1992), 522.
[70] Kasakoff and Adams (1995).
[71] Souden (1981), 250, 254, 310; Razzell (1994), 180.

In the year 1710 the government introduced a national tax on apprenticeship indentures – the Inland Revenue Register (INR Register) – which was in existence until the early nineteenth century. Details of these indentures have survived and are currently being digitised by the Society of Genealogists.[72] The indentures in the early period provide the following information on fathers: name, place of residence, occupation, and whether or not they were alive or dead. Additionally the name of the apprentice was recorded along with the amount paid for the indenture. There was however widespread tax avoidance, with many indentures not registered for tax purposes.[73] Comparing information on fathers' mortality status in London trade apprenticeship registers with that in the INR Register, suggests that the recording of the death of fathers was relatively accurate for the period 1710-13, but began to deteriorate somewhat after that date.[74] However, even in 1710-13 an examination of the consistency of recording the death of fathers – by comparing statements made about different apprentices to the same father at different dates – suggests that at least 5% of deaths were not recorded.[75]

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[72] I would like to thank the Society of Genealogists for making available the digital version of the INR Register, covering the surnames beginning with the letters A to M.

[73] For example, of 85 indentures listed in the Grocers' company register for the period 1710-25, only 33 – 39%– were included in the tax register. See Webb (2008) and the INR Register.

[74] The city trade company registers were for tylers & bricklayers, masons, plumbers, vintners, and grocers. See Webb (1996), (1999), (2000), (2006), (2008). There were 13 cases in the period 1710-13 in which information on fathers' mortality status was identical in Webb and the INR Register, whereas between 1714 and 1724 there were 8 deaths out of a total of 85 (9.4%) listed in Webb but not in the INR Register.

[75] There were 2 inconsistent statements in a sample of 45 cases.

Table 19: Paternal Mortality per 1,000 in English Regions, 1710-13. (Number of Cases in Brackets)[76]

Region	*Proportion of Fathers Dead*	*Mean Age of Apprentices in Years*	*Estimated Annual Paternal Mortality*
London, Middlesex	37% (372)	15.2	24.3
Surrey, Kent, Hampshire, Sussex	35% (234)	15.2	23.0
Bedfordshire, Berkshire, Buckinghamshire, Hertfordshire, Northamptonshire, Oxfordshire	28% (206)	15.9	17.6
Cambridgeshire, Essex, Lincolnshire, Huntingdonshire, Norfolk, Suffolk	32% (355)	15.1	21.2
Cornwall, Devon, Dorset, Gloucestershire, Herefordshire, Shropshire, Somerset, Wiltshire, Worcestershire	30% (411)	15.3	19.6
Total England	32%	15.3	20.9

[76] Data calculated from the INR Register surname letters A-M for the period 1710-13. See Razzell (2007), 101. The number of cases used for the calculation of the mean ages of apprentices is in sequence as follows: 86; 64; 59; 95; 148; 95.

There was no linear variation in mortality levels between the different regions, although the number of fathers dead in London & Middlesex was significantly higher than in the Bedfordshire and adjoining counties. Tracing the baptisms of 548 apprentices in the International Genealogical Index (I.G.I.) reveals that there was little difference between the different regions in their mean ages, which represents the period at risk of their fathers dying.

There is insufficient information to calculate the average ages of fathers by region, but it was possible to trace 188 for a limited sample of fathers in the I.G.I. The mean age of this sample was 34.3 years, with 72% (135 of 188) in the 25-44 age range. It is possible to calculate an annual rate of mortality of fathers by dividing the proportion of dead fathers – 32% – by the average age of apprentices – 15.3 years.[77] This yields an annual mortality rate for England of 20.9 per 1000 in 1710-13, which can be compared to figures published by the Registrar-General for the age group 25-44 in the period 1838-42 – 11 per 1000.[78] There are various uncertainties involved in these calculations, but they indicate that there was a major long-term fall in male adult mortality between the beginning of the seventeenth and middle part of the nineteenth century – nearly halving in that period.

There is other evidence to support the conclusion that male adult life expectancy was low at the beginning of the eighteenth century and earlier. During a period of civil registration in 1654-60, 226 of 380 spinsters and bachelors married in Lancashire and Yorkshire had fathers who were dead at the time of marriage – 59.5%.[79] According to a sample of 103 cases traced in the I.G.I., the average age of marriage of bachelors and spinsters was 26.2

[77] This was the mean age of apprentices for a large sample of 696 cases for the period 1710-14.
[78] Mitchell and Deane (1971), 38.
[79] Razzell (2007), 84.

years,[80] yielding an annual paternal mortality rate of 22.7 per 1000 (59.5/26.2), higher than the 20.9 per 1000 found in the INR Register national sample in 1710-13.

Marriage licence data is one of the most fruitful sources of information on paternal life expectancy, because parental permission was required by law for men and women marrying under the age of twenty-one. Some marriage licences – such as those registered by the Vicar General – required personal affidavits confirming parental consent, and where a father was dead, permission had to be granted by widows and guardians. The following table summarizes evidence on marriages that occurred in different regions of England.[81]

[80] The average age of 53 spinsters was 25.1 years, of 50 bachelors 27.3 years.

[81] The period covered by the East Kent data is for 1619-46. For a discussion of the marriage licence data, including that on East Kent, see Razzell (2007), 79-81. The data on London and the South of England was compiled from Vicar General's marriage licences in the Society of Genealogists' Library. The analysis of the Durham material is based on marriage licences in the Church of Latter Day Saints Library, and that for East Kent is supplemented by marriage licences in the Canterbury Cathedral Archive. The total number of cases is as follows: London: 4,928; Southern England: 1,958; East Kent: 5,373; Durham: 1,204.

Table 20: Fathers of Spinsters Under Twenty-One: Proportions Dead in English Regions, 1600-1799.

Period of Marriage	*London*	*South of England*	*East Kent Diocese*	*Durham Diocese*
1600-46	46%	40%	47%	-
1661-99	47%	44%	43%	-
1700-09	48%	47%	50%	-
1710-19	47%	44%	48%	-
1720-29	45%	39%	48%	-
1730-39	46%	39%	34%	-
1740-49	55%	45%	37%	42%
1750-59	40%	41%	27%	28%
1760-69	35%	35%	22%	27%
1770-79	39%	31%	24%	29%
1780-89	31%	32%	28%	25%
1790-99	31%	27%	22%	-

The average age of brides marrying under twenty-one did not change significantly during the late seventeenth and eighteenth centuries, with an average age of about 18.5 years.[82] The paternal mortality rate in the mid-seventeenth century was of the order of 23 per 1,000, similar to findings in Lancashire and Yorkshire in the 1650s. The mortality rate in 1710-19 was about 25 per 1000, greater than the rate calculated for the national sample in 1710-13 – 20.9 per 1000 – and this may be because of unrecorded deaths at this date.

Paternal mortality fluctuated somewhat between 1600 and 1720-29 in all regions, but was at an overall high level in 1600-1729. This began to change in the 1730s in East Kent, with sharp reductions which did not occur in London and the South of

[82] It was 18.5 years in both 1687-94 and 1780-81, figures based on the first 100 cases from the Vicar General's marriage licences in these two periods.

England until the 1750s. This is similar to the pattern in Durham, although there is no data available for this diocese before the 1730s. According to Table 20, male adult mortality nearly halved in all regions in the eighteenth century, and as the figures relate to fathers who were alive on average eighteen-and-a half years before the marriage of their daughters, mortality first began to fall in East Kent between 1710 and 1730, and in London, the South of England and Durham between 1730 and 1750. Most of the gains in life expectancy took place in the first half of the eighteenth century, but there were some modest falls in paternal mortality in the second half of the century.

The pattern of falling mortality is confirmed by other evidence, such as Landers' study of London, and Hollingsworth's research on the peerage.[83] Also, from marriage licence evidence for Nottinghamshire, it is estimated that paternal death rate reduced from 22 per 1,000 in 1661-63 to 14 per 1,000 in 1754-58, and 10 per 1,000 in 1791-93.[84] Increasing adult life expectancy in the eighteenth century can be tracked for apprentices becoming freemen of the Merchant Adventurers Company in Newcastle-On-Tyne. The mean number of years lived after admission increased from 21.1 years in 1660-79 to 30.3 years in 1760-79.[85] Fathers of masons' apprentices in London came from many areas of the country, and the proportion dead at the date of indenture of their sons was as follows: 1663-99: 42%; 1700-49: 33%; 1750-1805: 21%.[86] As the mean age of apprenticeship was about 15 years, these figures indicate a higher level of mortality than found elsewhere in the earlier period, but the halving of mortality in the eighteenth century is similar to that depicted in Table 20.

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[83] Landers (1993); Hollingsworth (1965).
[84] Razzell (2007), 83.
[85] The quality of the information appears to be high, giving full information on dates of admission and death for between 61% and 80% of cases. See Dendy (1899).
[86] Razzell and Spence (2007), 283.

Most of the 289 parishes in East Kent were small rural villages, suggesting that the environmental and cultural improvements first occurring in urban areas were not responsible for increasing male adult life expectancy.[87] This is consistent with findings about the relationship between socio-economic status and adult mortality. The information on occupation and the level of premium paid in the INR Register allows an analysis of socio-economic status and paternal mortality in the early eighteenth century. There was an association between occupation and premium paid, illustrated by the following figures:

Table 21: Mean Levels of Premium Paid by Father's Occupation, INR Register 1710-25.[88]

Occupation	*Number of Cases*	*Mean Premium Paid*
Gentlemen	2111	£48.1
Merchants	326	£47.3
Clerks (Clergymen)	426	£37.7
Farmers	169	£14.0
Yeomen	2455	£13.9
Husbandmen	541	£8.1
Labourers	607	£5.7

Generally there is a link between the socio-economic status of an occupation and the mean premium paid, and the occupational groups with the highest status – gentlemen and merchants – paid about seven times more than the lowest status groups – husbandmen and labourers.

The relationship between premium paid and paternal mortality is indicated by Table 22.

[87] For these improvements see Jones and Falkus (1990).
[88] The data is based on surnames beginning with A-M in the period 1710-25.

Table 22: Mortality amongst Fathers Listed in the INR Register 1710-13 by Amount of Premium Paid.[89]

Premium Paid	*Number of Cases*	*Proportion of Fathers Dead*
£1-£5	541	23%
£6-£19	587	30%
£20+	532	34%

Table 22 suggests a negative association between wealth and adult mortality among apprentices' fathers, although it does not allow for possible age differences in the three premium groups. Baptism dates of the apprentices were traced in the International Genealogical Index, and the mean ages by premium category were as follows (number of cases in brackets): £1-£5: 15.2 years (231); £6-£19: 15.0 years (267); £20+: 16.0 years (196). These ages represent the period of risk of fathers dying, and dividing the proportions of dead fathers by the mean ages of their sons yields the following figures: £1-£5: 1.51; £6-£19: 2.01; £20+: 2.13. The inverse gradient between wealth and paternal mortality still exists in these revised figures, although they do not take account of fathers' ages. A small sample of fathers' baptisms traced in the I.G.I. suggests these were not significantly different: the mean age of 94 fathers paying premiums of £1-£9 was 33.5 years, and for 94 fathers paying £10 and above it was 35.1 years.

The link between wealth and life expectancy might be partly explained by the wealthy living more frequently in London and other towns and cities, but even within those areas there was an association between premium paid and mortality levels.

[89] For the source of the data in Tables 22 and 23 see the INR Register, Volumes 1-6.

Table 23: Mortality amongst London Fathers Listed in the INR Register, 1710-13.

Premium Paid	*Number Of Cases*	*Proportion Of Fathers Dead*
£9 And Under	110	32%
£10-£19	93	41%
£20+	99	42%

Although the number of cases is small, there is still the same linear inverse gradient between wealth and paternal mortality in London as found nationally. The above data suggests that at the beginning of the eighteenth century, not only was there was no significant association between poverty and adult life expectancy, but that on the contrary, mortality was higher amongst the wealthy than the poor. There is other evidence that elite adults suffered from 'the hazards of wealth' – the excessive consumption of tobacco, alcohol and a surfeit of rich food, along with a relative lack of physical activity – until the end of the nineteenth century, when the social class gradient in adult mortality appears to have emerged.[90]

It is possible to explore the link between socio-economic status and life expectancy through an analysis of the East Kent marriage licences. The relationship between husband's occupation and paternal mortality was as follows:

[90] Razzell and Spence (2006). See also Razzell (2007), 202-204 and Tables 17 and 18 above.

Table 24: Paternal Mortality amongst Fathers of Spinsters Marrying Under 21, by Occupation of Husband in East Kent, 1619-1809.[91]

Occupation	*Period*		
	1619-1646	1661-1700	1751-1809
Gentlemen, Merchants, Professionals	39%	38%	28%
Yeomen, Farmers	41%	42%	15%
Tradesmen, Artisans	46%	49%	26%
Husbandmen	50%	39%	19%
Mariners, Fishermen	42%	45%	24%

Table 24 indicates that mortality diminished amongst all social groups in the eighteenth century, but gentlemen, merchants and professionals experienced the smallest reduction and had the highest mortality at the end of the period 1751-1809. This finding might be partly a function of small sample sizes and place of residence, although it is consistent with the earlier findings about the positive association between wealth and paternal life expectancy in the early eighteenth century.

However data on Members of Parliament indicates that there were very significant falls in mortality amongst this very wealthy group in the eighteenth century.

[91] Razzell (1994), 197. For higher paternal mortality amongst gentlemen and professionals in Nottinghamshire and Sussex during 1754-1800 see Razzell (2007), 117.

Table 25: Mean Number of Years Lived by Members of Parliament, 1660-1820 (Number of Cases in Brackets).[92]

Period of First Entry	*Age at First Entry- Mean Number of Years Lived*		
	Under 29 Years	*30-39 Years*	*40 Years Plus*
1660-1690	25.7 (429)	22.6 (458)	17.9 (633)
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 under the age of 29. 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.

Although all the evidence considered on adult mortality is for males, Hollingsworth study of the aristocracy suggests that females experienced even more mortality reductions in the same period.

[92] Razzell (1994), 199.

Table 26: Aristocratic Expectation of Life at the Age of 25, 1650-1849.[93]

Cohort Born	*Male Expectation of Life at Age 25 Years*	*Female Expectation of Life at Age 25 Years*
1650-74	25.6	27.5
1675-99	28.1	27.3
1700-24	29.3	30.0
1725-49	34.2	33.0
1750-74	35.6	36.5
1775-99	37.1	38.6
1800-24	37.2	40.4
1825-49	38.6	44.5

Most of the gains in life expectancy occurred amongst both males and females from the second quarter of the eighteenth century onwards, similar to the pattern for males in the marriage licence data. The timing of the reduction in adult mortality was different from the falls in infant and child mortality which occurred mainly in the second half of the eighteenth century, indicating that life table models are not a reliable basis for understanding eighteenth century mortality trends.

Increasing adult life expectancy probably had a direct impact on the structure of marriage during the eighteenth century. According to marriage licence evidence for the Diocese of Canterbury in East Kent, about a third of all marriages were of widows and widowers in the seventeenth century, reducing significantly in the eighteenth.

[93] Hollingsworth (1965), 56, 57.

Table 27: Proportions of Widow and Widower Marriages in East Kent, 1619-1809.[94]

Period	*Total Number of Marriages*	*Proportion of Widow Marriages*	*Proportion of Widower Marriages*
1619-1676	2000	30%	32%
1677-1725	2000	23%	27%
1726-1780	2000	18%	19%
1781-1809	1000	12%	18%

Diminished male adult mortality may also have had an impact of the frequency of the remarriage of widows, as indicated by limited evidence for the East Kent area. The proportions of widows remarrying were as follows (number in sample in brackets): 1619-46: 49% (100); 1661-76: 51% (71); 1751-80: 10% (100); 1751-1810: 9% (100).[95] There were clearly some radical changes in nuptiality patterns in the eighteenth century, a topic to be discussed in some detail in the next chapter.

[94] For the source of this data see Razzell (1994), 217. For similar reductions in widow marriages in the eighteenth century see Wrigley and Schofield (1981), 258, 259.
[95] Razzell (2007), 66.

Chapter 4: The History of Marriage and Fertility in England, 1550-1850.

Table 9 suggests that there were no major changes in the crude baptism rate in England during the eighteenth century. Given that parish register reliability did not change significantly during this period, one way of assessing levels of fertility is to analyse the Cambridge Group's raw figures of national marriages and baptisms.

Table 28: The Ratio of Baptisms to Marriages in England & Wales, 1700-1836.[96]

Period	*Number of Baptisms*	*Number of Marriages*	*Ratio of Baptisms to Marriages*
1700-19	2968451	820249	3.62
1720-39	3186218	914810	3.48
1740-59	3368432	947807	3.55
1760-79	3912936	1155328	3.39
1780-99	4615085	1321359	3.49
1800-19	5204268	1604971	3.24
1820-36	5830266	1842712	3.16

Table 28 indicates that fertility fell during the eighteenth and early nineteenth century, and it was only because the numbers of baptisms were inflated at the end of the century by Wrigley and

[96] Wrigley and Schofield (1981), 541-43, 557-60. There is no evidence that the accuracy of marriage registration changed during the eighteenth century. The introduction of Hardwicke's Act in 1753 made no significant difference to the number of marriages registered, so that according to Wrigley and Schofield's raw figures for England & Wales, there were 236,227 marriages in 1749-53 and 239,957 in 1754-58. Wrigley and Schofield (1981), 558.

Schofield that it was concluded that fertility rose at this time. Reconstitution findings on fertility do not help resolve these difficulties because of the methodological problems discussed earlier.[97] Reconstitution research on marital fertility also does not allow for the effects of changing nuptiality levels.

The strongest evidence for a rise in fertility is data on changes in the age of marriage. The Cambridge Group found from their reconstitution research that there was a fall of 2.4 years in the period between 1675-1724 and 1780-1837.[98] The proportion of baptised children included as adults in the Cambridge Group's marriage samples varied slightly over time, ranging between 20.3 and 25.9%,[99] i.e. only between a fifth and a quarter of the total population. It is possible that some of the untraced marriages were due to clandestine or unregistered marriages, but the probability is that most of them were the result of migration out of the parish of

[97] Such research does not include changes in illegitimacy levels. According to raw data compiled by the Cambridge Group (see UK Data Archive UKDA/5397) there was an increase in illegitimacy during the eighteenth century. Data for 25 Bedfordshire parishes for the periods 1698-1726 and 1813-20 indicates that the proportions of illegitimate children recorded in baptism registers increased from 1.3% (N = 2101) to 3.4% (N = 3379). A similar analysis for five northern industrial parishes in the periods 1740-49 and 1813-20 suggests a similar increase – from 3.1% (N = 2762) to 5.9% (N = 4355). The Bedfordshire parishes are: Biddenham, Cardington, Clapham, Clifton, Eaton Bray, Henlow, Houghton Regis, Kempston, Keysoe, Langford, Little Barford, Little Staughton, Maulden, Meppershall, Odell, Podington, Potten, Pulloxhill, Renhold, Souldrop, Southill, Tilbrook, Tilsworth, Upper Gravenhust, Wrestlingworth. The northern parishes are: Calverley, Yorkshire; Downham, Lancashire; Over, Cheshire; Prestwich, Lancashire; Warrington, Lancashire.

[98] Wrigley, Davies, Oeppen and Schofield (1997), 149.

[99] I have calculated these proportions from Cambridge Group figures quoted by Ruggles (1992), 522.

birth.[100] As we saw earlier, migrants and non-migrants had very different sociological characteristics, making those included in reconstitution research unrepresentative of the total population.

Marriage licences include information on both natives and migrants, which partly addresses this problem. Marriage by licence was more expensive than marriage by banns, but the proportion of the population varied between 30 and 90%.[101] Although the licences did not always cover a majority of the population and tended to exclude the poorest section of the population, they did cover a very wide socio-economic range, from husbandmen, fishermen, artisans, farmers, to professionals and gentry. Marriage licences form a significantly higher proportion of population in the pre-1750 period than that included in the Cambridge Group's reconstitution sample – covering a minimum of 30% compared to the average reconstitution figure of between 20 and 26%.[102]

The mean average age at marriage of spinsters marrying by licence in six counties – Yorkshire, Kent, Nottinghamshire, Suffolk, Wiltshire and London – was 23.8 years in the period 1660-1714,[103] significantly lower than the equivalent figure in the reconstitution sample for 1675-1724, 26.4 years.[104] The mean age of first marriage of women marrying in 1839-41 in England and Wales according to Registrar-General's figures was about 24.3 years.[105] The marriage licence figures suggest that there was a slight long-term rise in average marriage ages of about 0.5 years, contradicting the finding from the reconstitution study of a fall in age of marriage of 2.1 years.

There is however a more significant problem with evidence on nuptiality, which is the lack of information on the proportion of

[100] See Ibid for a general discussion of this issue.
[101] Razzell (2007), 62, 63.
[102] Ruggles (1992), 522.
[103] Razzell (1994), 83.
[104] Wrigley, Davies, Oeppen and Schofield (1997), 149.
[105] *Registrar-General's Fourth Annual Report,* 8.

women ever married. It is not possible with reconstitution methodology to create this type of data, and this was recognized by Wrigley and Schofield when they wrote that it was 'particularly disappointing that English reconstitution material yields no material about changes in proportions of men and women never married.'[106] In their later work, Wrigley and colleagues concluded 'that until the middle of the eighteenth century the substantial swings in nuptiality were produced almost exclusively by wide variations in the proportion of women never marrying.'[107]

Fortunately additional sources are available which allow an analysis of proportions of women ever marrying, as well as the ages at which they married. Long-term information on Lichfield, Stoke-on-Trent and Chilvers Coton at the end of the seventeenth century, compared to census data for the same parishes in 1851 reveals the following pattern:

Table 29: Proportion of Single Women in Lichfield Staffordshire, Stoke-on-Trent Staffordshire and Chilvers Coton Warwickshire 1684-1701 and 1851. (Total Number of Cases in Brackets).

	1684-1701	*1851*
Age Group	*Proportion Single*	*Proportion Single*
15-24	91% (522)	90% (511)
25-34	36% (445)	37% (401)
35-44	12% (348)	19% (305)
45+	4% (504)	16% (594)

Little change is evident in the number of single women in the age groups 15-24 and 25-34, but Table 29 indicates that there were significant reductions in the proportion of women ever marrying

[106] Wrigley and Schofield (1981), 11, 195.
[107] Wrigley and Schofield (1989), xix.

above the age of thirty-five.[108] This table only covers three parishes at limited periods of time, but information is also available on six late eighteenth century parish censuses which can also be compared with the 1851 Census in those parishes.

Table 30: Proportion of Single Women in Ardleigh, Astley, Cardington, Corfe Castle, Wembworthy and Wetherby, 1776-96 and 1851.[109]

	1776-96	*1851*
Age Group	*Proportion Single*	*Proportion Single*
15-24	85% (388)	87%
25-34	29% (290)	33%
35-44	11% (200)	14%
45+	8% (339)	10%

[108] The quality of data for the censuses in 1684-1701 is high, with only a small minority of cases without full information on marital status and age: in Lichfield 64 out of a total of 1079 cases – 6%; in Stoke-on-Trent 19 out of 514 – 4 %; and Chilvers Coton 11 out of 274 – 4%. The seventeenth century data is compiled from copies of the 1684 census of Chilvers Coton, Warwickshire, the 1695 census of Lichfield, Staffordshire, and the 1701 census of Stoke-on-Trent, Staffordshire, in the Cambridge Group Library. The 1851 figures are taken from the *1851 Enumeration Census (Online),* based on a one-in-two sample for Lichfield, a one-in-four sample for Stoke-on-Trent, and the complete census of Chilvers Coton.

[109] The 1776-96 data is compiled from the census schedules in the Cambridge Group Library, the 1851 figures are taken from the *1851 Enumeration Census (Online)*. The dates of the censuses for 1776-96 were as follows: Wetherby, Yorkshire 1776; Wembworthy, Devonshire 1779; Cardington, Bedfordshire 1782; Astley, Warwickshire 1782; Corfe Castle, Dorsetshire 1790; Ardleigh, Essex 1796.

There was a slight increase in the proportion of single women in all age groups between 1776-96 and 1851, which is consistent with the findings of Table 29.

Burial registers frequently include information on the marital status of women, and the Bedfordshire Family History Burial database allows an analysis of a number of parishes with relatively full information on such status.

Table 31: Proportion of Spinsters Listed in Twenty-Three Bedfordshire Burial Registers, 1695-1704 and 1795-1804.[110]

Period	*Number of Spinsters*	*Total Known Cases*	*Proportion of Spinsters*
1695-1704	26	817	3%
1795-1804	90	853	11%

The above Table covers the same parishes in the two listed periods, and although information was relatively full, there were a number of unknown cases in both periods.[111] Also, women listed as daughters were excluded from the analysis,[112] and for 192 cases with information on age in 1795-1804, 27 – 14 per cent – were daughters aged between 15 and 29. Table 31 therefore under-states the number of single women, and does not include a breakdown of

[110] The parishes are : Arlesey, Aspley Guise, Astwick, Bletsoe, Bedford St. Paul, Caddington, Chellington, Clophill, Cople, Cranfield, Carlton, Dean, Dunton, Eaton Bray, Elstree, Eyeworth, Farndish, Flitton, Goldington, Houghton Conquest, Henlow, Knotting and Luton. The first period was chosen because it was the time of the Marriage Duty Act and the second because it was 100 years later. The parishes were selected alphabetically, choosing the first 23 with good information in both periods.

[111] The number of unknown cases in 1695-1704 is 817 and 853 in 1795-1804.

[112] There were 1,365 daughters – out of a total of 2,294 (59.6%) – in the first period, and 1,325 out of 2,287 (57.9%) in the second.

the data by age, but the trend is nevertheless towards increasing numbers of single women in the eighteenth century.

However, Tables 29-31 only refer to a small number of parishes at limited periods of time, but information on female deponents in church courts includes material on much larger numbers of parishes from the early sixteenth century onwards. Detailed information is available on Sussex depositions for the period 1593-1694, and it is possible to make a long-term analysis by comparing this evidence with that of the 1851 Sussex census.

Table 32: Proportion of Single Women in Sussex, 1593-1694 (Total Number of Cases in Each Age Group in Brackets) and in the Sussex 1851 Census.[113]

Age Group	*Sussex, 1593-1694*	*Sussex, 1851 Census*
15-24	63% (98)	86%
25-34	21% (134)	35%
35-44	4% (141)	19%
45+	0% (208)	13%

This table reveals a significant decline in the propensity to marry among women of all age groups in the period between 1593-1694 and 1851. There was no difference in the incidence of marriage in women acting as witnesses in different kinds of disputes. Of 66 women aged over thirty-five acting as witnesses in personal disputes in the period 1573-1616, all were either married or widowed, and this was also the case in the group of 54 women acting as witnesses in property cases.[114]

[113] Burchall (2014); 1851 Enumeration Census. The quality of the 1593-1694 data is high, with 95% of cases – 581 of 612 – with recorded information on the age and marital status of female deponents.

[114] These samples were derived from the first 220 female witnesses in the period 1573-1616, 132 of which dealt with personal and 88 with property disputes.

There is evidence from an alternative source which dealt with mainly property cases – the Chancery Exchequer Court depositions for the county of Norfolk – which can also be compared to 1851 Census data.

Table 33: Proportion of Single Women in Norfolk, 1649-1714 and in the Norfolk 1851 Census (Number of Cases in Brackets).[115]

Age Group	*Norfolk, 1649-1714*	*Norfolk, 1851 Census*
15-24	72% (43)	84%
25-34	34% (76)	32%
35-44	5% (75)	16%
45+	2% (173)	10%

Although the sample sizes are small in the 1649-1714 material, they indicate that except for the 25-34 age group, there were increasing numbers of single women in all age groups, largely confirming the pattern indicated by the Sussex data.

However, these findings are based on evidence from only two counties, and to see whether this is representative of England as a whole it is necessary to look elsewhere. Church Court depositions have been used recently by Shepard and Spicksley in their study of wealth distribution in early modern England, and their research covered a wide range of occupational groups and English counties.[116]

[115] For the source of this data see *Norfolk Chancery Deponents, 1649-1714*.
[116] The female deponents resided in 24 different English counties, although they were concentrated in the counties covered by the church courts.

Table 34: Proportion of Single Women in the Dioceses of Canterbury, Chester, Chichester, Ely, London, Salisbury, York, the Archdeaconries of Lewes and Richmond, and the Cambridge University Courts, 1550-1699(Number of Cases in Brackets).[117]

Period	*Age Group, Proportions Single*			
	15-24	*25-34*	*35-44*	*45+*
1550-1624	76% (258)	22% (371)	5% (313)	2% (461)
1625-1699	78% (344)	29% (363)	7% (311)	4% (447)
1851 (England & Wales)	83%	33%	16%	11%

There was an increase amongst all age groups in the proportion of single women in the period between 1550-1624 and 1625-1699. Also, a long-term comparison of the 'worth' evidence with national returns in 1851 indicates that the proportion of women ever marrying was higher in 1550-1699 amongst all age groups.

Shepard and Spicksley only selected cases where there was information on 'worth' – a third of all church courts deponents in the districts studied[118] – and although they attempted to create a nationally representative sample, they admitted that 'despite attempts to create a balanced sample, the subset we have compiled remains unevenly distributed over time and place.'[119] However,

[117] For the nature and characteristics of the study see Shepard and Spicksley (2011). Where there was no indication of marital status but a woman was designated as a servant, it was assumed that she was single. In the 'Worth' dataset there were 190 women described as servants with a marital status, of which 183 were listed as spinsters. The national figures for England & Wales are taken from the *1851 Enumeration Census*.
[118] See *Worth of Witnesses*.
[119] Shepard and Spicksley (2011), 512.

there is sufficient evidence in the 'worth' dataset to allow an analysis of nuptiality amongst women over the age of thirty-five for some counties, which can be compared to evidence from the 1851 Census.

Table 35: Proportion of Single Women Aged Over Thirty-Five in 1550-1699 and 1851. (Number of Cases from 'Worth' Dataset in Brackets).[120]

County	*Proportion Single in 1550-1699*	*Proportion Single in 1851*
Lancashire and Cheshire	4% (103)	13%
London	3% (218)	17%
Kent	4%(639)	14%
Sussex	4% (117)	15%
Wiltshire	4% (178)	13%
Yorkshire	5% (87)	11%

There is little difference in the proportion of single women in the different counties in the period 1550-1699, and there is a significant long-term increase – of the order of about 10% – by the mid-nineteenth century.

Most church court data is only available until the end of the seventeenth century, but that for the Consistory Court of London continues until the nineteenth century.

[120] For the worth dataset see *Worth of Witnesses*. The 1851 evidence is taken from the *1851 Enumeration Census.*

Table 36: Proportion of Female Deponents Single in the London Consistory Court, 1583-1817 (Total Number of Cases in Each Age Group in Brackets).[121]

Period	*Age Group – Proportion Single*			
	15-24	*25-34*	*35-44*	*45+*
1586-1611	62% (65)	15% (115)	1% (98)	0% (117)
1703-1713	72% (158)	25% (165)	7% (130)	4% (0)
1752-1783	77% (165)	43% (173)	14% (138)	5% (174)
1792-1817	76% (109)	53% (130)	13% (77)	15% (129)
London, 1851 Census	82%	36%	19%	17%

The evidence for the London Consistory Court indicates that there was a significant fall in the propensity to marry amongst all age groups in the eighteenth century. The similarity between the proportion of single women in the 45+ age group in 1792-1817 – 15% - and that in the 1851 census – 17% – suggests that the deposition sample was fairly representative of the general population at that time.

The almost universal tendency to marry in the period 1586-1600 is also suggested by evidence from the large London parish of St. Botolph Aldgate. The parish was on the edge of the city of London and contained mainly artisans, tradesmen and mariners.[122]

[121] The information for the early period, 1586-1611 is less reliable than for later periods. Only 65% of cases in the latter had full information on age and marital status, whereas there was complete evidence on 99% of cases in 1703-13, 1783-90 and 1805-16. The London Consistory Court figures for: 1586-1611 are all cases in Giese (1995); for 1703-13 they are based on all cases listed in Webb (1999); for 1752-83 they were from DL/C/273-281 in the London Metropolitan Archive and for 1792-1817 they are taken from DL/C/287-291, DL/C/641. The London figures for 1851 are taken from the *1851 Enumeration Census.*

[122] See the *St. Botolph Aldgate Parish Clerks' Memorandum Books.*

The burial register includes information on marital status and age at death, allowing an analysis of marriage patterns as follows:

Table 37: Proportion of Single Women in the St. Botolph Aldgate, London Burial Register,1579-1600.[123]

Age Group	*St. Botolph Aldgate*		
	Number Single	*Total Number in Age Group*	*Proportion Single*
15-24	90	111	80%
25-34	37	136	27%
35-44	8	109	7%
45+	10	306	3%

The proportion single in the groups above the age of thirty-five are similar in Tables 36 and 37 for the periods 1586-1611 and 1579-1600, confirming the very high incidence of marriage in late sixteenth century London. There are however slightly more women ever marrying in the younger age groups in the deposition sample than in St Botolph burial register. There is evidence that the marriage of women in London occurred at an earlier age than elsewhere in the seventeenth century.[124] For example the mean age of marriage of single women marrying in St. Dunstan & All Saints Stepney in 1653-66 during a period of civil registration was 22.5 years (N = 167), with 43% marrying under the age of twenty-one. There is other data to indicate early marriage in London: for example, 41% of single women who married by licence in 1660-61 were under the age of twenty-one.[125] It is probable that the

[123] The quality of evidence is high, with 662 out of 680 total burials – 97% - with full information on age and marital status. For the source of this data see Ibid.

[124] Elliott (1978).

[125] See the *St. Dunstan & All Saints Stepney Marriage Register* and the first 100 cases in the *Vicar-General's Marriage Allegations, 1660-68.*

deposition material is somewhat more representative of the general population than the burial register evidence.

There is also information on age and marital status of women in the Allhallows-in-the-Wall burial register for the period 1579-98, although the sample sizes are too small for a complete analysis of all age groups. There were 57 women buried over the age of 35, all of whom had been married or widowed[126] – 100% – again confirming the near universal propensity to marry in London at the end of the sixteenth century. The Stepney burial register also records information on age and marital status of women for the later period 1732-36 (89% with full information), and again indicating a very high incidence of marriage at this time.

Table 38: Proportion Women Single in St. Dunstan Stepney Burial Register, 1732-36.[127]

Age Group	*Proportion Single*	*Number in Sample*
15-24	52%	48
25-34	14%	92
35-44	8%	93
45+	2%	381

Evidence is also available on Yorkshire deponents for 1560-1857, allowing a detailed analysis for the whole period between the middle of the sixteenth and the nineteenth centuries.

[126] See the *Allhallows-in-the-Wall Burial Register*.

[127] The data for the earlier period is less reliable than the later ones, with the proportions of cases lacking full information on age and marital status as follows: 1600-05: 27%; 1660-65: 12%; 1700-08: 2%; 1750-57: 12%; 1800-05: 5%. See the *St. Dunstan Stepney Burial Register*.

Table 39: Proportion of Single Female Deponents in the Yorkshire Church Court, 1560-1857 (Number of Cases in Brackets).[128]

Period	*Age Group, Proportion Single*			
	15-24	*25-34*	*35-44*	*45+*
1560-99	78% (96)	27% (139)	3% (113)	0% (175)
1600-42	69% (83)	25% (122)	3% (122)	3% (147)
1660-99	87% (164)	41% (199)	8% (126)	4% (344)
1700-49	78% (113	42% (150)	11% (112)	4% (200)
1750-99	85% (67)	62% (63)	32% (59)	9% (118)
1800-57	86% (96)	43% (110)	28% (101)	13% (200)
Yorkshire, 1851 Census	81%	30%	14%	10%

The figures for the late eighteenth century are based on relatively small samples and the material for the nineteenth century suggests that this deposition sample was not totally representative of the whole Yorkshire population. However, the proportion of women ever married in the 45+ age group in 1800-57 – 87% – is very similar to that for Yorkshire according to the 1851 census – 90%, and the equivalent proportion in 1841-57 in the deposition sample – 89% (N = 78) – is nearly identical. The overall evidence in Table 38 supports the conclusion that there was a significant decline in the frequency of marriage in Yorkshire as elsewhere in England.[129]

Although not a random sample, the deposition records cover a wide range of socio-economic groups, as indicated by the Sussex depositions.

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[128] See the *Cause Papers*.

[129] Data for the burial register of Ackworth, Yorkshire provides an element of confirmation for this conclusion. The proportion of women over the age of 45 who died as single women was as follows in the period 1744-88: 4% (N = 142); 1789-1812: 14% (N = 107). See the *Ackworth Burial Register*

Table 40: The Occupations and Literacy Levels of Male Deponents in Sussex in 1556-1694.[130]

Occupation	*Number of Deponents*	*Proportion Signing Depositions*
Gentlemen	393	99%
Yeomen	679	59%
Artisans, Tradesmen	537	45%
Husbandmen	171	14%
Labourers	5	0%

All occupational groups are represented in the depositions, including large numbers of husbandmen, who were one of the poorest socio-economic groups in England,[131] although labourers are under-represented in the sample.

There is no similar information on the occupations of female deponents, but given that there was a correlation between socio-economic status and literacy, the most effective way of measuring the status of female deponents is to analyse their literacy levels. In Sussex for the period 1556-1694, the proportion of wives who signed depositions according to husband's occupation was as follows: husbandmen: 2%; artisans & tradesmen: 8%; yeomen: 17%; gentlemen & professionals: 44%.[132]

Houston has carried out an analysis of female literacy in Northern England in the periods between 1640 and 1770, using mainly husband's occupation as a measure of socio-economic status.

[130] For the source of this data see Burchall (2014).
[131] Baxter (1926).
[132] The number of total cases in each of the Sussex samples is as follows: Husbandmen: 110; Artisans & Tradesmen: 107; Yeomen: 44; Gentlemen & Professional: 18.

Table 41: Proportion of Women Unable to Sign Legal Depositions in Northern England, 1640-1770. (Number of Cases in Brackets).[133]

Occupational Group	*1640-99*	*1700-70*
Professional & Gentry	24% (17)	0% (10)
Craft & Trade	78% (60)	69% (94)
Farmer/Tenant	88% (24)	68% (31)
Labourer	95% (20)	88% (24)
Servant	85% (39)	75% (51)

Although the sample sizes are small, there was a moderate association between occupation and literacy which became stronger over time, with the wives of professional/gentry and farmers/tenants showing the greatest improvement.

The association between status and female literacy is confirmed by a study of Yorkshire church court depositions. In 1770-1817, 56% of women married to husbands with manual occupations signed their depositions with a mark, compared to 17% of those married to men with non-manual occupations.[134] Data from the civil marriage register of St. George Bloomsbury, London indicates a similar pattern in the later period, 1838-42: of the first 50 marriages of professionals and gentlemen, all but 1 of the brides signed the register, whereas this was true of only 14 of the 50 wives of labourers.[135]

In Sussex, the overall proportion of female deponents signing depositions was as follows: 1580-99: 2%; 1600-40: 4%;

[133] Houston (1985), 60.

[134] There were 78 husbands with manual occupations, and 36 with non-manual occupations. 14 of 16 women married to labourers signed with a mark, as against 0 of 16 women married to gentlemen and professionals.

[135] See the *St. George Bloomsbury Marriage Register.*

1661-94: 15%.[136] Literacy levels amongst the general population have been summarized by Stephens as follows:

> 'Women were almost universally unable to sign their names in 1500, and by 1600 only some 10 per cent could do so, the proportion rising to 25 per cent by 1714 … in northern England … female literacy [rose] from 26 [in the 1720s] to 32 per cent [by the 1740s]. From 1754 the fuller marriage register evidence suggests that signature literacy rose from … some 40 [in 1754] to 50 per cent [in 1840].'[137]

The Sussex evidence is compatible with Stephens' conclusions about female levels of literacy, but more direct evidence is available for London, where literacy levels were higher than elsewhere.[138] The London Consistory Court records indicate that the proportion of women signing depositions rose from 41% to 59% between the middle and the end of the seventeenth century, and increasing further to 75% – 685 out of 916 – in the period 1786-1816.[139]

A study of the marriage registers of twelve London parishes indicates that the proportion of brides signing these registers was as follows: 1754-60: 67%; 1786-97: 65%; 1806-16:

[136] These figures are based on the first 100 cases in each period in Burchall (2014).

[137] Stephens (1990), 555. Chambers cited evidence for Lincolnshire which showed in one sample an increase of women signing marriage registers from 27.7% in 1764-69 to 54.2% in1810-19. Chambers in Glass and Eversley (1965), 326.

[138] In 1838/39, 23.9% of women marrying in the metropolis signed the registers with a mark, compared to 48.7% in England & Wales. See the *Registrar-General's Second Annual Report*, 13.

[139] For the seventeenth century figures see Earle (1994), 37; for the 1786-1816 period see DL/C/282-293 in the London Metropolitan Archive.

73%; 1830-51: 77%.[140] This latter proportion is nearly identical to the percentage of all London women signing marriage registers in 1838 – 76%[141] – indicating that the marriage register sample is representative of all London marriages. The average marriage register figure for 1786-1816 is 69%, lower than the 75% found in the deposition sample, suggesting that there were slightly more literate women in the deposition sample than in the general population.

It is possible that changes in literacy levels played a role in the reduction of female nuptiality. In London in 1786-1816, female deponents over the age of thirty-five who signed depositions with a signature were more likely to be single that those signing with a mark.

Table 42: Literacy and Single Status amongst Women Aged 35+ in London, 1786-1816.[142]

Women Aged 35+ Signing Depositions		*Women Aged 35+ Signing With A Mark*	
Number of Cases	*Proportion Single*	*Number of Cases*	*Proportion Single*
323	20%	91	5%

[140] The parishes are: Allhallows Bread Street, Allhallows Lombard Street, Allhallows London Wall, St. Alban Wood Street, St. Alphage Greenwich, St. Dunstan & All Saints Stepney, St. George Southwark, St. John Hackney, St. James Clerkenwell, St. Mary Islington, St. Matthew Bethnal Green, St. Saviour Southwark. 600 cases were selected for each time period, the first 50 cases in each parish register were selected for the years 1754 and 1786, the last 50 cases counting backwards for 1816, and the first 50 cases from 1830 onwards.

[141] *Registrar-General's Second Annual Report,* 13.

[142] See DL/C/282-293 in the London Metropolitan Archive.

There was an association between socio-economic status and female literacy levels in London in the mid-nineteenth century, as revealed by Registrar-General's returns for the Western and Eastern districts of London.[143]

Table 43: Socio-Economic Status and Women Marking Marriage Registers in London Registration Sub-Districts in the Mid-Nineteenth Century.

Registration Sub-District	*Socio-Economic Status Rating (Glass) in 1851*	*Proportion Signing Marriage Register With A Mark in 1841*
Hanover Square	215	6%
St. James Westminster	182	6%
St. Martin-in-the-Fields	160	7%
Shoreditch	80	39%
Bethnal Green	60	40%
Stepney	57	40%
St. George-in-the-East	46	28%
Whitechapel	44	31%
Poplar	41	24%

Although there was no linear link between the status of a district and its literacy level, the wealthier sub-districts in the West End of London – Hanover Square, St. James Westminster and St, Martin-in-the-Fields – had significantly lower proportions of women marking marriage registers than the East End districts. The following table summarizes the nuptiality profiles of the sub-registration districts in order of their socio-economic ranking.

[143] For the rankings of relative socio-economic status – average 100 – see Glass (1938), and for the data on literacy see the *Registrar-General's Fifth Annual Report*.

Table 44: Female Marriage Patterns in Sub-Registration Districts of London in 1861.[144]

Registration Sub-District	*Age Group – Proportion Ever Married*				
	15-19	*20-24*	*25-34*	*35-44*	*45+*
Hanover Square	2%	17%	46%	67%	77%
St. James Westminster	3%	21%	54%	76%	82%
St. Martin-in-the-Fields	4%	25%	60%	79%	84%
Shoreditch	5%	45%	77%	88%	88%
Bethnal Green	5%	47%	82%	92%	91%
Stepney	5%	45%	80%	92%	94%
St. George-in-the-East	6%	45%	80%	91%	93%
Whitechapel	5%	39%	77%	89%	90%
Poplar	5%	45%	86%	93%	93%

There were marked differences in nuptiality levels in the two types of district, with marriage occurring much more frequently at all ages in the East End than the West End of London. This was probably a function of relative poverty, levels of literacy and the number of servants.[145]

A more focused analysis is possible by examining the enumeration schedules of four wealthy and four poor areas in London recorded in the 1851 census.

[144] *Enumeration Census 1861*, 10.

[145] See Glass (1938) for an analysis of the socio-economic profiles of London districts in the mid-nineteenth century.

Table 45: Female Marriage Patterns in London Areas in 1851 (Number of Cases in Brackets).[146]

Age Group	*Four Wealthy Areas*	*Four Poor Areas*	*Four Wealthy Areas Minus Servants*
	Proportion Ever Married	Proportion Ever Married	Proportion Ever Married
15-24	8% (424)	37% (355)	16% (200)
25-34	42% (332)	87% (352)	58% (208)
35-44	69% (241)	95% (286)	82% (173)
45+	79% (238)	97% (356)	87% (183)

There were strong differences in the propensity to marry between the two types of district, with women marrying much more frequently and at an earlier age in the poor than in the wealthy areas. This was partly a function of the large number of domestic servants in the former than in the latter, with 38% – 478 out of a total of 1247 women – of servants in the wealthy areas, compared to 1% – 8 of 1355 – in the poor districts. However, the analysis of non-servant women living in the wealthy areas again indicates significantly fewer women marrying in those areas.[147]

[146] For the source of this data see the *Enumeration Census 1851*. The four wealthy districts are Allhallows Bread Street, Allhallows Lombard Street, St. Alban Wood Street and St. James Square, St. James Westminster Enumeration Districts 2 and 3. The poor districts are: St. Dunstan Stepney Ratcliff Enumeration District 5, Bethnal Green Hackney Road Enumeration Districts 1 and 5, Southwark Borough Road Enumeration District 1, Greenwich West Enumeration District 6. The areas were partly chosen on the basis of the estimated economic status of the registration districts of which they are a part – see Glass (1938) – but also on the number of families with domestic servants.

[147] Tables 44 and 45 do not allow for the effect of migration, particularly young women becoming servants outside their parish of birth. However, the 1851 Census allows for the tracking of emigrants, and a pilot study of 100

Given that fertility was largely shaped by nuptiality in this period, this finding is supported by research carried out by Glass on the socio-economic status and fertility rates of the thirty-three registration districts in London in the middle of the nineteenth century. Using 1851 census and civil registration returns, he found a strong negative correlation between the status of a district and its gross reproduction rate for the period 1849-51.[148] Glass used four criteria for classifying the economic status of a district:

1. The number of males engaged in professional occupations per 100 occupied males.
2. The number of occupied males per 100 males employed in occupations indicative of low status areas.
3. The number of female domestic servants per 100 total population excluding domestic servants.
4. The percentage of the total population living less than two a room.[149]

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women – 50 aged 25 and 50 aged 34 – born in Bethnal Green, suggests that migration did not significantly affect findings on poverty and nuptialty. 61 of these 100 women continued to reside in Bethnal Green, 5 were domestic servants, and 73 were married or widowed. The proportion ever married – 73% – is lower than the proportion of women aged 25-34 ever married in the 4 poor parishes in Table 40 – 87% – but significantly higher than the 58% amongst non-servant women living in wealthy areas.

[148] Glass (1938), 118.

[149] Ibid.

Table 46: Relation between Fertility and the Socio-Economic Status Rankings of London Registration Districts, 1849-51.[150]

Registration District	*Gross Reproduction Rate*	*Socio Economic Status*
Hanover Square	1.035	215
St. James Westminster	1.094	182
Hampstead	1.065	178
Kensington	1.339	164
St. Martin-in-the-Fields	1.410	160
Strand	1.470	152
Pancras	1.632	139
Marylebone	1.371	139
Islington	1.583	130
Hackney	1.583	130
Camberwell	1.618	126
Wandsworth	1.667	119
St. Giles	1.646	119
Holborn	1.670	113
Lewisham	1.639	110
Chelsea	1.688	105
Clerkenwell	1.969	104
Lambeth	1.838	102
Newington	2.078	87
Shoreditch	2.212	80
Westminster	1.809	74
St. Luke	2.361	69
St. Saviour Southwark	1.951	66

[150] Ibid, 118.

Greenwich	1.841	66
St. George Southwark	1.960	64
Bethnal Green	2.432	60
Stepney	1.953	57
Bermondsey	2.367	57
St. Olave Southwark	1.656	49
St.George in the East	2.247	46
Whitechapel	1.972	44
Poplar	2.475	41
Rotherhithe	2.267	37
London	1.762	100

Glass recognized that the presence of domestic servants affected the association between a district and its fertility rate, so he excluded very wealthy areas with known high numbers of servants for a revised analysis, which also found a very high negative correlation between economic status and gross reproduction rates.[151]

There was a similar association between socio-economic status and marriage/fertility in areas outside of London. The sample of four parishes known for their wealth and status, matched with four poor parishes in the same county, were used for analysing nuptiality levels. The socio-economic characteristics of the parishes are as follows:

[151] Ibid, 119, 120.

Table 47: Socio-Economic Characteristics of Eight English Parishes, 1851 English Census.[152]

Parishes	*Proportion of Female Servants*	*Proportion of Male Labourers*	*Proportion of Male Professionals*
Bath, St. Michael	29%	4%	4%
Cheltenham	29%	13%	5%
Richmond	27%	6%	4%
Brighton	25%	13%	3%
Hambledon	14%	55%	2%
Hailsham	14%	44%	1%
Westbury	13%	51%	2%
Clutton	7%	17%[153]	1%

The following Table summarizes the frequency of marriage in the eight districts arranged in the order of their relative social-economic status. Given the influence of domestic servants – many of whom were single – data is also presented for all women minus the number of servants.

[152] The data in this table was selected from *ICEM Data*. The number of domestic servants was used as the initial criteria for selecting parishes.
[153] The proportion of labourers in this parish is low because of the presence of a large number of miners and others working in the mining industry.

Table 48: Proportion of Single Women by Age Group in Eight Parishes, 1851. (Number of Women in Brackets).[154]

	All Women Minus Servants			
Parish	*Age Group – Proportion of Single Women*			
	16-25	26-35	36-45	45+
Bath	83% (265)	38% (216)	19% (209)	17% (253)
Cheltenham	74% (1760)	32% (2345)	19% (2224)	17% (3702)
Brighton	82% (5092)	26% (4842)	17% (3869)	14% (5972)
Richmond	79% (661)	27% (622)	20% (485)	21% (882)
Hambledon	77% (156)	22% (125)	13% (119)	13% (209)
Hailsham	64% (102)	16% (114)	9% (100)	13% (150)
Westbury	65% (131)	46% (61)	5% (108)	7% (231)
Clutton	65% (63)	18% (107)	4% (68)	0% (47)

There were significant differences in nuptiality in the different types of parish, with women marrying much more frequently at all ages in the four poorer areas. These marriage patterns are reflected in the fertility levels of the registration districts of which the parishes were a part.

[154] *ICEM Data*.

Table 49: Numbers of Births per 100 Women Aged 15-44 in Eight Registration Districts, 1860-62.[155]

Registration District	*Proportion of Female Domestic Servants*	*Proportion of Male Labourers*	*Births per 100 Women Aged 15-44*
Richmond	25%	10%	9.4
Bath	22%	14%	8.6
Cheltenham	21%	17%	9.2
Brighton	19%	9%	11.1
Hambledon	11%	57%	16.0
Hailsham	9%	45%	16.7
Westbury	7%	26%	17.1
Clutton	6%	27%	17.4

The poorer districts had fertility rates significantly higher than the wealthier ones – with a more-or-less linear gradient depending on socio-economic status – similar to the findings in London.

The above links between status and nuptiality/fertility are based on ecological evidence, which do not allow for more detailed analysis of individual variations. However, such evidence is available for the county of Bedfordshire for the whole period 1538-1851. The Bedfordshire Family History Society has transcribed and digitised all baptisms in the county, both for the 124 Anglican parishes and the dissenting congregations with surviving records.[156] However, the data should be treated with a degree of

[155] For the data on births see the *Registrar-General's Twenty Third, Twenty-Fourth and Twenty-Fifth Annual Reports;* for the number of women living the *Enumeration Census , 1861*. The figure of births for Richmond is based on the two years 1860 and 1862, as the return for 1861 was inflated by hospital admissions.

[156] A CD of all baptisms, marriages and burials for the period 1538-1851 has been kindly provided by the Bedfordshire Family History Society.

caution, as the number of baptisms in 1849-51 was only 71% of the number of births in the same period.[157] An analysis of occupational fertility rates, expressed as percentage of baptisms per 100 men living in the age group 20-50, reveals the following pattern.

Table 50: Bedfordshire Baptism Fertility Rates, 1849-51.[158]

Occupational Group	*Number of Baptisms 1849-51*	*Number of Men Living Aged 20-50 in 1851*	*Annual Fertility Rate per 100 Men Living*
Farmers	294	1148	8.5
Labourers	5280	10887	16.2
All Other Occupations	3008	11120	9.0
All Occupations	8582	23155	12.4

The number of farmers was relatively small compared to the number of labourers, but there was a sharp difference in their fertility rates. This partly accounts for the large number of baptisms to labourer fathers – about two-thirds of the total – although according to the census they formed under half of the total population.

It is possible to trace marriage patterns amongst landed families in Hertfordshire and Northamptonshire for the three hundred year period 1550-1849. Genealogies were compiled using a large number of sources: parish registers, wills, monumental inscriptions, visitations, inquisitions and other forms of evidence. Although the focus of these genealogies was on landed families,

[157] The number of baptisms was 9,889 and births 14,003. For the data on births see the *Registrar-General Twelfth, Thirteenth and Fourteenth Annual Reports.*

[158] The number of men living aged 20-50 is taken from the *Enumeration Census 1851*.

often their daughters married into mercantile, trading and other middle class families, particularly in the earlier period. The proportion of women who were single at the age of thirty-five was as follows:

Table 51: Women from Landed Families in Hertfordshire and Northamptonshire: Proportion Who Were Single at the Age of 35, 1550-1849.[159]

Period Of Birth	*Number of Cases*	*Proportion Single at Age 35*
1550-99	68	12%
1600-49	94	13%
1650-99	94	31%
1700-49	103	39%
1750-99	100	42%
1800-49	153	26%

It is probable that some women may have married after the age of thirty-five, diminishing the proportion of single women. However, Table 51 indicates that there were a minimal number of single women in the period 1550-1649, but a very sharp rise after the middle of the seventeenth century. Although the numbers of single women were much higher amongst these landed families than in the deposition and other samples discussed earlier, the pattern is very similar in all datasets: nearly a universal propensity to marry

[159] Source Warrand (1907); Barron (1906). Only women who were in observation until the age of thirty-five were included in the analysis. This could be through death, mention in a will or in one of the other sources used in the study. Of 953 women listed in the genealogical volumes, 612 were in the 35+ category. Most of the 341 cases not included in the analysis were the result of truncated periods of observation or imperfect information in the genealogies. For a similar pattern of nuptiality amongst the aristocracy see Hollingsworth (1965), 17.

in women until the middle of the seventeenth century, and then an increase in single status after this date.

We have already seen that in Sussex during the seventeenth century only a minority of the wives of gentlemen and yeomen were able to sign depositions. Evidence from the analysis of London wills indicates that wealthy women in these districts were unable to sign their names in the early period, but that this changed significantly during the eighteenth century.

Table 52: Proportion of Women Signing London Wills, 1599-1851.[160]

Period	*Proportion Signing Wills*	*Number of Cases*
1599-1601	2%	100
1639-41	15%	100
1699-1701	38%	100
1749-51	64%	100
1799-1801	77%	100
1849-51	86%	100

Most of these wills in the early period were made by widows, although their numbers reduced during the eighteenth and early nineteenth centuries. In 1700-01, according to a small sample of cases, 84% of London wills were made by widows, whereas by 1849-51 this proportion had fallen to 45%.[161] Widows were probably aged about 65 years on average,[162] and as most wills were

[160] These figures are based on the first available 100 women leaving wills selected alphabetically in the periods in question. See *London Wills and Probates, 1507-1858*.

[161] The first 100 cases of women leaving wills in 1700-01 and 1849-51 were selected from *London Wills and Probates, 1507-1858*.

[162] The age at burial of widows dying in St. Botolph Aldgate in 1583-95 was 63 years (N = 188) and that in St. Dunstan Stepney in 1732-36 was 64 years (N = 242).

left by widows in the eighteenth century, this suggests that increases in literacy women in Table 52 occurred mainly from the middle of the seventeenth century onwards, similar to the chronology of the changes in marriage patterns. There is very little data on the wealth of widows but research on 50 inventories for the late seventeenth century indicates that they were moderately wealthy at that time.[163] A sample of 100 cases indicates that women in London left an average of £519 in wills in 1849-51,[164] a reasonably large sum for the period.

The proportion of spinsters leaving wills in England & Wales increased significantly between the middle of the seventeenth and nineteenth centuries. In 1658 during a period of civil registration, 12% of wills were made by single women, a proportion that had increased to 35% by 1860.[165] There was an even greater increase in London: from 13% in 1700-01 to 41% in 1849-51.[166] These figures provide further evidence of increasing numbers of single women in this period.

The general relationship between status and fertility was widely recognised by contemporaries in the nineteenth century:

> 'In England most of the writers who took part in the Malthusian controversy in the early part of the nineteenth century were fully aware of the existence of a negative relationship between fertility and socio-economic status. It was

[163] Earle (1991), 109.

[164] The sample was taken from the first 100 cases in *London Wills and Probates, 1507-1858*.

[165] The 1658 figure is based on the first 100 cases in Brigg (1894); the 1860 one from the first 100 cases in the *National Probate Calendar*. The mean value of the personal estate left by 35 spinsters in 1860 was £885, compared to £968 left by 53 widows.

[166] The 1700-01 and 1849-51figures are based on the first 100 cases in each period in *London Wills and Probates, 1507-1858*. The mean value of the estates of spinsters in 1849-51 was £630 (N = 41), and for widows it was £460 (N = 45).

> referred to by Malthus himself, by William Godwin, John Stuart Mill, Harriet Martineau, and Nassau Senior, to mention only a few of the better known intellectual figures of the day …'[167]

Malthus wrote that 'it is not … among the higher ranks of society, that we have most reason to apprehend the too great frequency of marriage … [it is] squalid poverty … which is a state the most unfavourable to chastity…'[168]

More recently Szreter and Garrett have concluded that the inverse relationship between nuptiality and socio-economic status emerged first in the middle of the eighteenth century:

> 'Why was it that, from the mid-eighteenth century onward in the economically fastest-growing and most prosperous society in the world, the most privileged strata, rather than their less fortunate countryman, became increasingly conscious of the need to defer marriage?'[169]

Szreter and Garrett were mainly interested in the impact of economic circumstances on male nuptiality patterns, but the focus of the present book is on the frequency of female marriage.

There is the possibility that church courts disproportionately selected married women as witnesses because of their greater social standing, particularly in courts dealing with domestic matters. However, the evidence on deponents in Sussex and the Norfolk chancery court in Table 33 dealing mainly with property disputes, also indicates that marriage was virtually universal amongst non-domestic deponents in the sixteenth century.

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[167] Wrong (1958), 78.
[168] Malthus (1992), volume 2, 114, 150.
[169] Szreter and Garrett (2000), 67.

More importantly, if married women were chosen disproportionately, the evidence from the 'worth' study and the analysis of the London and Yorkshire church court records would be subject to this bias across the whole of the seventeenth and eighteenth centuries – like for like – and yet the evidence from these studies shows that there was a consistent and significant reduction in the propensity to marry over the period. Additionally, the evidence for the nineteenth century suggests that the deposition data for the 45+ age group for London and Yorkshire was representative of their 1851 census populations, and the material presented in this book – from the censuses for the three parishes covered by Tables 29, the burial registers of the Bedfordshire parishes, St. Botolph Aldgate, Allhallows-in-the-Wall and St. Dunstan Stepney, and the data on landed families and national wills – provide independent evidence that marriage was nearly universal before the eighteenth century.

Tables 29-39 indicate that there was a very high propensity to marry amongst women in the late sixteenth and the whole of the seventeenth century. This might explain why the population expanded so rapidly in the first half of the seventeenth century, in spite of very high adult mortality.

The reasons for the decline in the incidence of marriage are likely to involve a number of factors. For example, the death of men in the English civil war reduced the number of marriage partners for women after the middle of the seventeenth century.[170] For the eighteenth century, the decline in adult mortality probably had an impact on the incidence of marriage and the remarriage of widows, and may have also influenced the frequency of female marriage through a decline in the number of widowers available for

[170] Carlton has estimated that about 190,000 extra people were killed as a result of the civil war out of a total population of about five million. As most of these extra deaths would have been of adult men, this suggests that well over ten per cent of men were killed as a result of the war. See Carlton (1995), 212-14, 386.

marriage.[171] Malthus concluded that falling mortality had led to a reduction in the incidence of marriage:

> '… the gradual diminution and almost total extinction of the plagues which so frequently visited Europe, in the seventeenth and the beginning of the eighteenth centuries, produced a change [in the incidence of marriage] … in this country it is not to be doubted that the proportion of marriages has become smaller since the improvement of our towns, the less frequent return of epidemics, and the adoption of habits of greater cleanliness.'[172]

There is also strong evidence that increasing literacy played a major role in the reduction in the incidence of marriage, particularly amongst wealthier women. This does not seem to have been the case amongst very poor women, such as those covered by Table 45. The propensity to marry was very high in these poor parishes, but literacy levels also appear to have been high, with 61% signing the marriage registers in the period 1754-1838.[173]

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[171] During the late seventeenth century about 26 % of spinsters in East Kent married widowers, and on average they married 3.8 years later than spinsters marrying bachelors. By the beginning of the nineteenth century, the proportion of spinsters marrying widowers had fallen to 11 %, probably reflecting the diminished number of widowers available for marriage due to a reduction in adult mortality. It is possible that many spinsters who had married widowers in the early eighteenth century were unable to find marriage partners in the later part of the century, leading in some areas to a fall in the mean age of marriage but a rise in the number of women never married. Razzell (2007), 131.

[172] Malthus (1992), 326. This is an example of the contradictory nature of Malthus's work, with his theoretical emphasis on the primary causal role of marriage, and his empirical work on England, which placed the stress on the influence of mortality.

[173] The marriage registers in question are for St. Dunstan Stepney, St. Matthew Bethnal Green, St. George Southwark and St. Alphage

Literacy may have been a necessary condition for the growth of single marital status for women but it was not sufficient. The lack of economic independence would have made it difficult for poor women to sustain a single marital status.

The above discussion on nuptiality suggests that the propensity to marry among women was nearly universal in the sixteenth and seventeenth centuries, but diminished significantly during the eighteenth century. Given that fertility was largely shaped by nuptiality in the early modern period, the evidence reviewed in this book suggests that there were falls in fertility in the eighteenth century, and that population growth in England was the result of reductions in infant, child and adult mortality.[174]

Greenwich. See the marriage registers in *Ancestry Online.* The first 50 cases were selected from each marriage register in the periods in question, with 800 cases in the total sample. The proportion of women signing the marriage register with a mark was as follows: 1754-55: 46% (N=200); 1786: 44% (N = 200); 1816: 36% (N = 200); 1838: 32% (N =200).

[174] See Benedictow (2012), 36.

Chapter 5: Explaining Changes in Mortality.

The factors responsible for mortality levels are complex. For example, smallpox became much more virulent between the sixteenth and nineteenth century: case fatality rates amongst unprotected children in London rose from about 5% to 45% in this three hundred year period. It is possible that the increasing fatality of smallpox was the result of the importation of more virulent strains with the growth of world trade. It was only the practice of inoculation and vaccination that prevented the disease from destroying a large part of the population.[175] Smallpox also varied in its age incidence between different areas of the country: in the South of England it was a disease of both adults and children, whereas in the North and elsewhere it affected mainly young children. This is important as case-fatality rates differed markedly between different age groups.[176]

To some extent, disease had its own internal logic, so that for example the disappearance of the plague in England in the 1660s does not appear to be the result of any environmental or other improvements. However, it is known that environmental factors did influence the incidence of disease. Mortality was higher in marshland areas, in industrial and urban districts, in certain coastal and estuarine regions, and lower in isolated rural areas with the right geographical and ecological characteristics.[177] The data presented in this book does not deal with these issues, and any conclusions reached from its evidence must necessarily be provisional.

It is possible that the lower levels of infant mortality amongst the wealthier socio-economic groups in Tables 13-15 are partly a function of wealth, although falling elite mortality in the second half of the eighteenth century suggests that non-economic

[175] Razzell (2003).
[176] Ibid, xiv-xix.
[177] Dobson (1997), Razzell (2007), 98, 99.

factors were at work.[178] The rapid fall in child mortality in elite families in the eighteenth century, at a time when it was stable amongst the control population, indicates that this reduction of mortality was exogenous to economic development. Also, the negative association between socio-economic status and child mortality in the mid-nineteenth century depicted in Tables 17 and 18 suggests that disease environment rather than poverty was the most important factor in shaping the level of mortality.

The explanations of these trends are complex: the wealthy are known to have fled London and other towns during the plague, to have escaped childhood diseases such as smallpox by moving away from areas known to be affected by the disease, and to have avoided marsh areas known to suffer from endemic malaria.[179] It is possible that by the mid-nineteenth century the avoidance of disease was no longer important in protecting wealthy groups from infection, particularly when they lived in urban areas.

Given that the reduction in adult mortality probably occurred more-or-less equally amongst all areas of the country and in all socio-economic groups, this suggests that there was an 'autonomous' fall in the adult death rate from the early eighteenth century. Although there is no consensus on real incomes, there appears to have been no significant rise in income levels in the

[178] Also, the level of infant mortality in Bedfordshire was higher amongst the elite than the control population in 1700-49. See Razzell (2007), 133.

[179] For evidence of avoidance of the plague by the rich, see Porter (2009), 77. The wealthy not only went to great lengths to avoid smallpox directly, but also frequently only hired servants who had previously had smallpox or had been inoculated or vaccinated. See Razzell (2003). Jane Austen wrote in *Sense and Sensibility* of the avoidance of infection at the end of the eighteenth century: "the word infection … gave instant alarm to Mrs Palmer on her baby's account … and confirming Charlotte's fears and caution, urged the necessity of her immediate removal with her infant." Austen (1994), 186. For the avoidance of unhealthy marsh areas, see Dobson (1997), 296-300. For a general discussion of avoidance of disease see Riley (1987).

eighteenth century.[180] This is consistent with the Cambridge Group's conclusion that, in the parish register period, 'mortality changes were not closely linked to economic factors such as changes in real incomes per head.[181] There is evidence that there was no one-to-one relationship between income and nutritional health and mortality. The nutritionists Clarkson and Crawford in their study of the history of nutrition in Ireland concluded:

> 'The potato period presents a paradox. To an economist, this was a time when the poor traded down to an inferior good. Not so the nutritionist. Potatoes and milk were excellent fare. There was a paean of praise for potatoes from contemporary observers, and only an occasional discordant note. Nutritional studies support the optimistic judgements and the population boom in the century before the Famine confirms the most cheerful of opinions. Post-famine Ireland offers an example of economic well-being and healthy diets moving in different directions. Living standards were rising, but the poorer people were not, in nutritional terms, better off. They ate wheaten bread, they drank stewed tea made syrup-like with sugar, and their 'desire for bacon', the fatter the better, had 'become almost an instinct'. They disdained whole milk in favour of thin, watery stuff left over from the creameries.'[182]

In spite of the increasing pauperisation of the Irish population in the pre-famine period, they were on average taller than the English

[180] There is still no overall consensus on economic development and changing real incomes in the eighteenth century. See Crafts (1989), Morsa (1989), Lucassen (1989), Woodward (1994); Feinstein (1998); Boulton (2000); Clark (2007), Allen (2007), Cinnirellan (2008), Humphries (2013).
[181] Wrigley, Davies, Oeppen and Schofield (1997), 552.
[182] Clarkson and Crawford (2001), 248.

and experienced lower mortality levels.[183] The data reviewed in this book about the relationship between socio-economic status and mortality further supports this conclusion that per-capita income was not a major determinant of health and mortality. The evidence indicates that the reduction in adult mortality was not linked to wealth/poverty or changes in per capita incomes, confirming Chambers' main thesis about the role of exogenous factors in mortality decline and population growth.[184]

The falls in infant mortality in rural and provincial parishes from the middle of the eighteenth century may have been in part due to an autonomous reduction in disease incidence, as well as the result of a variety of health improvements. These included better breastfeeding practices, inoculation/ vaccination against smallpox, and improved personal and domestic hygiene,[185] linked to growing literacy amongst women. There is good evidence that personal hygiene may have played a significant role in improving health and reducing mortality during the late eighteenth and early nineteenth century.[186]

The dramatic reduction of infant mortality in London was also probably a result of major improvements in public health –

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[183] Mokyr and O'Grada (1989), 83-92; O'Grada, (1994), 18-22, 83-5, 104-10; Clarkson and Crawford (2001), 240; Razzell (1967), 268.

[184] The diseases involved in the reduction of mortality are unknown, but the disappearance of the plague in the seventeenth century is an example of a change in disease incidence exogenous to economic development.

[185] Jones and Falkus (1990); Porter (1991); Razzell (1994), 224-229; Razzell (2003).

[186] Herberden (1801); Haines and Shlomowitz, (1998); Guha, (1993). During the period 1801-41 per capita consumption of soap nearly doubled: from 5.3 pounds in 1801 to 9.9 pounds in 1841. Mitchell and Deane (1971), 8, 265. Cultural factors were very important: in the late nineteenth century, Jewish infant mortality was lower in very poor districts largely as a result of very high standards of personal and domestic hygiene. Marks and Worboys (1997), 187. For a detailed discussion of the impact of improved sanitation and hygiene on childhood mortality from diarrhoea see Burger and Esrey (1995).

increased water supplies, better drainage, and rebuilding of the urban landscape[187] – as well as much better maternal and neo-natal care.[188] The Lying-In Charity in London was founded in 1757 and delivered at home up to a third of all children born in the city.[189] Lettsom wrote in 1774: 'Within the space of a few years many lying-in hospitals have been established; in the lying-in charity alone nearly 5,000 women are delivered annually in their own houses, by persons well instructed …whereby not only many infants but likewise many women are saved',[190] a conclusion borne out by the surviving records of the charity.[191]

Although most of these measures were not the result of economic developments, clearly economic change did have an indirect influence on mortality. Agricultural improvements led to the drainage of marshland which may have contributed to the elimination of malaria,[192] and the production of cheap cotton cloth enabled working class families to improve their standard of personal hygiene. There was also an economic element in some of the other factors responsible for mortality decline: for example the rebuilding of houses and house floors in brick and stone. The increasing use of coal enabled water to be boiled more easily, important for personal and domestic hygiene.[193] However, elite social groups had always had the economic resources necessary for these improvements, and the majority of them probably resulted from new attitudes towards disease, personal hygiene and the

[187] George (1966); Jones and Falkus (1990); Porter (1991).
[188] George (1966), 61; Loudon (1992); Loudon (2000), 61.
[189] George (1966), 326.
[190] Lettsom (1774), 187.
[191] See the records of the Lying-In Charity in the Royal College of Obstetricians and Gynaecologists Library.
[192] Dobson (1997).
[193] I would like to thank Tony Wrigley for pointing out the potential importance of coal in boiling water for improving personal hygiene. For the use of boiling water and milk in preventing infant diseases see Marks and Worboys (1997), 192.

environment.[194] These changes in attitude and belief appear to have first influenced the educated and wealthy, and gradually spread to the general population later in the eighteenth and nineteenth centuries.

These improvements in personal and domestic hygiene took place amongst all classes of the community, as described by Francis Place in 1822:

> 'the change … has taken place, not only in London, but all over the country, in the habits of the working classes, who are infinitely more moral, more sober, more cleanly in their persons and their dwellings, than they were formerly, particularly the women; partly from the success of the cotton manufactures, which has enabled them to discard the woollen clothes which were universally worn by them, which lasted years, and were seldom, if ever washed; partly from increased knowledge of domestic concerns, and the nursing and general management of children. Notwithstanding the vice, the misery and disease which still abounds in London, its general prevalence has been greatly diminished.'[195]

The spread of improved personal and domestic hygiene might partly explain why there little or no difference in mortality rates between different socio-economic groups in London in the nineteenth century.

The reduction in adult mortality took place at a much earlier period than covered by the above improvements – from the early eighteenth century onwards – and there is evidence that these

[194] This shift in attitudes was partly associated with the eighteenth century enlightenment movement. The Royal Society's statistical investigation in the 1720s into the effectiveness of inoculation – comparing natural smallpox mortality with that amongst the inoculated – is perhaps the first historical example of a scientific assessment of a medical treatment. Razzell (2003), 172-74.

[195] Place, (1994), 253. See also Heberden (1801).

were largely the result of an ‘autonomous’ fall in mortality, exogenous to economic, cultural and medical developments.

Chapter 6: Population Growth and the Development of Capitalism.

The impact of population growth occurred within a particular English political, social and economic context, as noted by Chambers:

> 'it should be remembered that it performed this role in the especially favourable conditions that obtained there: an island economy, free from destructive wars, with a relatively equitable tax structure which placed the burden where it could best be borne, an innovating class that was prepared to make use of these advantages; and perhaps especially an agriculture with an inbuilt propensity for making the best use of the soil through the landlord-tenant system of cultivation.'[196]

The importance of this institutional context has been described by the medieval historian, Jane Whittle, in her discussion of the impact of exogenous population growth on the development of rural capitalism. She noted that population change had a different impact in England to that in Continental countries, depending on institutional variations:

> 'The severe reduction of population levels in England following the Black Death led to the dissolution of serfdom, a similarly severe reduction of population in seventeenth century Bohemia, the result of the Thirty Years War, led to the intensification of serfdom … in late medieval England, lords proved unable to enforce serfdom, and the institution collapsed…Serfdom also disappeared from France and western Germany, but led to different trends …The most obvious causes of difference, and lack of prosperity [in France], were the wars conducted on French soil from the fourteenth to the

[196] Chambers (1972), 18, 20.

> sixteenth centuries, and the heavy royal taxation to which French peasants were subjected from the late fifteenth century onwards … That English peasants were not subjected to a similar level of taxation was not a matter of chance. There were rebellions against taxation in 1489, and 1497 and 1525, as well as 1381... Yet because of the low level of taxation, English governments could not afford to keep a standing army to put down these rebellions.'[197]

Although Whittle is critical of unilateral demographic explanations of economic development, she accepts that population growth did have a major impact on economic and social change when economies were dominated by market relationships:

> 'Fluctuations in population levels have been used to explain some of the most important trends in medieval and early modern history, trends with vital importance to the development of capitalism … Manorial lords had retained their hold on the economy in the century before the Black Death because of the high demand for land. Once this factor was removed by population decline, the diversified economy undermined the manorial lord's position … Peasants, or rather wealthy peasants, had capitalized on the fifteenth century situation, building up their land holdings, and orientating themselves increasingly towards market production … Additionally … there was no shortage of labour in the sixteenth century [for the growth of capitalism]…'[198]

However, this account does not explain the English government's inability to impose high levels of taxation, along with its failure to form a standing army. Pellicani in his discussion of the history of

[197] Whittle (2000), 18, 19, 311. See also Brenner (1976).
[198] Whittle (2000), 18, 310.

capitalism, has emphasized the importance of political and military constraints on personal freedom:

> 'The *consumer's freedom* is as essential for the functioning of capitalism as the *entrepreneur's freedom* … The emancipation of the urban communities marks the beginning of the genesis of modern capitalism. Its roots are political and military, not economic. Cities were able to inject dynamism and rationality into the stagnant rural world only to the extent to which they succeeded in withdrawing from the effective jurisdiction of their lords and the spiritual control of economic obscurantism centred around the condemnation of profit and trade. They were successful precisely because they were opposed by a crumbling public power, lacking as never before the military and financial means to compel its subjects to obedience.'[199]

England's geographical position as an island on the edge of Europe and the Atlantic, meant that it was relatively free from the wars occurring on the continent, resulting in periodic recruitment of militias rather than the establishment of a permanent standing army.[200] The consequence of this was that the crown, as well as the aristocracy, was dependent on the population at large for the creation of military force.[201] The absence of a standing army made it difficult for the government to impose taxes and establish trade monopolies, important in the seventeenth century civil war, and eventually resulting in the development of markets relatively free of political and military control. England relied primarily on its navy for defence – which included its merchant fleet – and this partly explains its active involvement in world trade, an important dimension in the growth of English capitalism.[202]

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[199] Pellicani (1994), 10, 123.
[200] Anderson (1974), 122-25.
[201] Barnett (1970), xvii-xx, 3-37.
[202] Ibid.

There were also important internal geographical factors associated with the development of capitalism in England.

> '… [there was] a growing distinction between working communities in forest and in fielden areas. In the nucleated villages characteristic of the latter … manorial customs [were] fairly rigid, political habits comparatively orderly, and the labourer's outlook deeply imbued with the prevalent preconceptions of church and manor-house. In these fielden areas labourers often … more or less freely [accepted] their dependence on squire and parson. Few of them were really well-off, their holdings were usually small, and their common rights negligible; but the very poor were less numerous than in woodland settlements … In the isolated hamlets characteristic of forest settlements … the customs of the manor were sometimes vague or difficult to enforce, the instincts of the poor were anything but law-abiding, and the authority of church and manor house seemed remote. In these areas, labouring society frequently consisted, on one hand, of a core of indigenous peasants with sizeable holdings and a relatively high standard of living; and, on the other, of an ever growing number of poor squatters and wanderers … more prone to pick up new ways and ideas. It was primarily in heath and forest areas … that the vagrant religion of the Independents found a footing in rural communities.'[203]

Everitt concluded that this independent culture was linked to the growth of mercantile enterprise:

> 'By 1640 the community of wayfaring merchants covered the whole of the country. It members were often familiar with the towns and villages of a half a dozen different counties … Its

[203] Everitt (1967a), 462,463. See also the discussion of the contrast between pastoral and arable areas in Thirsk (1967), 14.

> spirit of speculation and adventure ran counter to the stable traditions of the English peasantry .. it is not fanciful to trace connection between the rapid spread of private trading in the early seventeenth century and the rapid rise of Independency. For Independency was … mobile, virile and impatient of human institutions, like the wayfaring community itself.'[204]

This type of independence was associated with the growth of individualism, a culture perhaps characteristic of England from the thirteenth century onwards.[205] It was also linked to the growth of capitalism, which itself was the result of the erosion of political control over individual freedoms. This political control extended to the power of the guilds, which were seen by the government, along with monopolies, as 'one of the traditional instruments of industrial control'.[206] Much of this development took place in rural areas, where the power of the guilds was progressively weakened:

> '… during the thirteenth century there was an increasing shift of industry away from urban areas to the countryside. … The growth of the rural cloth industry was partly enabled … by a rural location … [which] permitted cloth producers to take advantage of cheap labour away from the prohibitive restrictions of the guilds … 'the very existence of craft guilds or endeavours to establish them might encourage merchants to transfer their entrepreneurial activities to the countryside. Textile skills were traditional there and rural overpopulation made labour available …'[207]

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[204] Everitt (1967b). There is a possible link between this type of independent trading and Shakespeare's father John Shakespeare. Both Shakespeare and his father were involved in the illegal hoarding of grain, along with local magistrates and townsmen, an example of late sixteenth century capitalism. See Razzell (1990), 16-20, 141-42

[205] Macfarlane (1978); Macpherrson (2010)

[206] Ashton (1961), 145.

[207] Unwin (1978), 136.

However, the early development of industry was not confined to rural areas and much took place in towns like Manchester, Birmingham and Leeds which were relatively free of corporate and guild controls. London was the biggest manufacturing centre of England during the eighteenth and early nineteenth centuries,[208] but activity was largely centred on Southwark south of the river. According to Barnett:

> 'The universality of manufacturing in London was still a feature of the 1840s when George Dodd recorded his impressions of both the City and Southwark. Of the former, he noted that in Shoe Lane there were "many factories for articles of copper, and also of brass, lead, tin, and other metals"; of the latter, he observed: "Those dwellers in and visitors to the Great Metropolis who cross from Southwark Bridge from the City to the Borough can scarcely fail to have observed the array of tall chimneys which meets the eye on either side of its southern extremity; each one serving as a kind of beacon or guide-post to some large manufacturing establishment beneath – here a brewery, there a saw-mill, further on a hat factory, a distillery, a vinegar factory, and numerous others. Indeed Southwark is as distinguishable at a distance for its numerous tall chimneys and the shrouds of smoke emitted by them, as London is for its thickly-congregated church-spires." '[209]

Southwark had long been an area beyond the control of the City – brothels, bear baiting and illegal theatrical productions[210] – but also

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[208] Barnett (1998).

[209] Ibid, 38. William Blake lived in Lambeth and would have encountered many factories on his way into the City, and this may well have been the origin of his reference to the 'dark satanic mills'. See Notes & Queries in the *Guardian,* Wednesday 12 September 2012. For a description of the introduction of steam engines in London sawmills see Mayhew (1980b), 65.

[210] Anonymous (1658).

attracted unregistered artisans and foreigners who brought with them a range of industrial skills:

> 'The more the city became the commercial centre of England, the more the actual industries moved beyond the walls. The poorer craftsmen who did not have the money to set up shop within the city, and the 'foreigners' or unfree men – often including aliens – who were not qualified to do so, not having served an apprenticeship, tended to settle in the suburbs. Over such recalcitrant workers the [guild] companies found it difficult to assert any control, even when empowered to do so by statute or charter.'[211]

This was partly the result of the growth of London's population, which undermined the capacity of the City authorities to regulate industry in the suburbs.[212] This lack of regulation applied to the employment of young children who were used in a range of London industries, including factories and workshops.[213] Children were employed in all regions of England, with 'agriculture, small-scale manufacturing, and services … [providing] the majority of jobs for children.'[214] Humphries has recently emphasized the role of 'cheap and amenable female and child labour' in the industrial revolution, providing evidence to show 'that the classic era of industrialization, 1790-1850, saw an upsurge in child labour.'[215] The *First Report of the Employment of Children in Factories* published in 1833 detailed the incomes of adults and children in English and Scottish factories. The weekly wages were as follows:

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[211] Johnson (1969), 313.
[212] Wallis (2002), 87.
[213] Davin (1996), 159. Dickens working in a blacking factory along with other boys is an example of this employment.
[214] Humphries (2010), 366.
[215] Humphries (2013), 693; Humphries (2010), 366.

Table 53: The Mean Weekly Wages of Adults and Children in English and Scottish Factories. [216]

Age Group	*Male Weekly Wages (Shillings)*	*Number of Cases*	*Female Weekly Wages (Shillings)*	*Number of Cases*
Below 11	2.1	1536	1.9	1543
11-16	4.0	7040	4.4	9340
16-21	9.2	3750	5.9	9844
21-26	16.9	2443	6.8	4886
26-31	18.5	1925	6.7	2333
31-36	19.7	1594	6.9	937
36-41	18.9	1308	6.6	856
41-46	18.5	996	6.4	435
46-51	17.8	769	6.4	317
51-56	16.6	471	5.9	157
56-61	15.8	338	5.7	116
61-81	13.0	338	6.7	102

The majority of people employed in these factories were young women and children, working for significantly lower wages than adult men. One witness to the commission stated that 'there is always plenty of fresh children ready to take work when this is to be had; if a man starts a new mill or night-shifts, he may be sure of hundreds of applicants.'[217] The availability and cheapness of labour of women and children was largely the result of a rapidly increasing population, with migration providing the mobility necessary for the functioning of the new industrial system.

England was one of the first countries to develop an economic system – modern capitalism – which involved the

[216] *First Report* (1968). The figures in Table 53 are calculated by aggregating the data on all individual factories in the report.
[217] First Report (1968), C2, 21.

systematic exploitation of labour surpluses.[218] As a part of this process, Lawrence Stone noted the changes that had taken place in English society during the sixteenth century as a result of population growth: '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.'[219]

In addition to the role of surplus labour in the development of capitalism, the increasing numbers of the wealthy also had an impact on economic and social inequality. The pressure of their growing numbers led the aristocracy and gentry to increasingly monopolise elite positions in the army, church, navy, judiciary and civil service,[220] which in turn may have led the middle classes to focus more vigorously on trading and manufacturing activity. The increasing number of elite families pressurised the wealthy to exploit their capital assets more forcefully, through the enclosure of land and the growth of large farms in the countryside, and the development of the competitive system in industrial villages and towns.[221]

There is uncertainty about changes in the structure and distribution of wealth and income in eighteenth and nineteenth century England.[222] Lindert has summarized a number of partial conclusions to emerge from research on the topic:

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[218] Stone (1966)).
[219] Ibid, 26-29, 49
[220] Razzell (2007), 229-251.
[221] Mayhew (1980), 16, 17; Chambers (1972); Shaw-Taylor (2012).
[222] Soltow (1968); Williamson (1980); Williamson (1985); Lindert (1986); Lindert (1987); Feinstein (1988); Horrell and Humphries (1992); Lindert and Williamson (1982); Lindert and Williamson (1983); Jackson (1994); Feinstein (1998); Lindert (2000a); Lindert (2000b);Humphries (2013).

> 'The only period between 1688 and 1914 in which the rent/ wage ratio clearly rose was circa 1750-1810, roughly the period in which the social tables [of Gregory King, Massie and others] show their only rise [of income] in the top-decile and top-quintile … By contrast the separate estimates of wealth-holding inequality and of earnings inequality do not follow the same chronology … When one follows the average levels of estimated new worth by social classes – landed gentry, merchants, yeomen, craftsmen, and so forth – one finds a striking widening of the wealth gaps between 1810 and 1875. The top landed groups and merchants accumulated at a prodigious rate, it would seem, with their wealth growing faster than that of professionals, shopkeepers, yeomen, or craftsmen … [although] even the middling groups gained in absolute real wealth and held their share of the population, instead of slipping down into the proletariat.'[223]

Lindert believes that demographic factors were more important than economic variables in the growth of inequality during the period 1760-1810,[224] although he implies that the widening of inequality in the subsequent period may have been due more to economic forces. He has linked these different interpretations with two distinct intellectual traditions: the 'first follows Malthus and Ricardo in inferring that income gaps were destined to grow wider as a rising population pressed against land, pushing workers down to subsistence while landowners prospered. The second, Marxian tradition implied that the industrial forces would cause the same widening.'[225] These two intellectual traditions can be partly reconciled by focusing on the concept of 'surplus labour',[226] and

[223] Lindert (2000a) 175-178.
[224] Lindert (2000b), 6.
[225] Lindert (2000c), 11.
[226]This is following in the tradition of Lewis's work on the role of surplus labour in economic development. See Lewis (1954). Lewis's work has

this is a core feature of demographic and economic development in England during the eighteenth and nineteenth centuries.

Lindert acknowledged that his numbers were 'very tentative and subject to a wide range of error.'[227] Also, there is considerable uncertainty about wealth distributions because of the changing structure of the population:

> 'When generations are being compared, however, it might be misleading to compare the fortunes of persons with the same occupation. In what sense were the yeomen or shopkeepers of 1875 the descendants of the yeomen and shopkeepers of 1740? The whole population grew, some occupations grew faster than others, and individual family lines rose and fell through the occupational ranks. Marx, Engels, and other pessimistic critics might have been on the mark if the lowest-ranked occupations were a rising share of the labour force, netting many of the descendants of the previous middle classes.'[228]

Baptism registers frequently include information on the occupations of fathers, and after 1813 this became a compulsory provision. These registers have been used by the Cambridge Group in their research project on the long-term occupational structure of England. One of the most fruitful sources is that for the county of Bedfordshire, and a long-term comparison shows an increase in the proportion of labourers from 45% in 1698-1724 (945/2101) to 66% in 1813-20 (2230/3379).[229] However there is a major problem with

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influenced the thinking of a number of subsequent scholars including Fei and Ranis. See Fei and Ranis (1964). *Development of the Labour Surplus Economy: Theory and Policy*. Illinois.

[227] Lindert (1980), 706.

[228] Lindert (1986), 1139.

[229] Source of this data is UK Data Archive UKDA/5397. The parishes are: Biddenham, Cardington, Clapham, Clifton, Eaton Bray, Henlow, Houghton Regis, Kempston, Keysoe, Langford, Little Barford, Little Staughton, Maulden, Meppershall, Odell, Podington, Potton, Pulloxhill,

the use of baptism registers, which can be illustrated by the Bedfordshire registers.

Analysis of baptism registers for the 124 parishes in the county for post-1813 period indicates that the proportions of labourers were as follows: 1813-19: 60% (9832/16375); 1820-29: 64% (16603/26039); 1830-39: 64% (19031/29621); 1840-49: 62% (17111/27406). These are very high percentages and a comparison with census data reveals that they are unrepresentative. The 1841 Bedfordshire Census indicates that 47% of occupied males were labourers (12404/26220),[230] compared to 62% (1648/2650) in baptism registers for the same year. A more exact comparison for 1851 reveals an identical disparity: 47% of males aged 20-50 were labourers in the census,[231] as against 62% of fathers (5280/8582) in the baptism registers during 1849-51.

There is a problem with all evidence based on baptism registers, as it assumes that 'fertility differences between major occupational groups were limited'.[232] The information in Chapter 4 on socio-economic status and fertility/nuptiality in the eighteenth century indicates that this was not the case, and that the fertility of farmers and other prosperous socio-economic groups had reduced significantly at a time that had stayed fairly stable amongst poorer groups. This would explain the discrepancy between the baptism register and census data above, as the fertility of labourers probably remained more-or-less constant as it was diminishing elsewhere.

Renhold, Souldrop, Southill, Tilbrook Tilsworth, Upper Gravenhurst, Wrestingworth. The quality of the data is very high with only 50 cases with no information on occupation in the early period – 2% – and 18 – 1% – in the later period.

[230] Occupation Abstract, England and Wales 1841.

[231] Enumeration Census 1851. This figures includes all types of labourer enumerated in the census, to allow for comparison with the baptism registers which do not distinguish different types of labourer.

[232] Shaw-Taylor (2012)

The Cambridge Group has also used baptism register returns to calculate the labourer/farmer ratio in order to study the growth of rural capitalism.[233] However, there is a marked discrepancy between the baptism register and census data for Bedfordshire. The ratio of labourers to farmers in the baptism registers for 1849-51 was 18.0 (5280 over 294) and in the 1851 Census 9.5 (10919 over 1148).[234]

There is currently no overall consensus on changes in economic inequality and levels of real income in the eighteenth and early nineteenth centuries,[235] partly because of the uncertain structure of occupations and the unknown incidence of male unemployment and the employment of women and children.[236] However, the development of rural capitalism in the sixteenth and seventeenth centuries is now widely recognised as a prelude to the general growth of industrial capitalism in the eighteenth and nineteenth centuries.[237]

In the absence of reliable national evidence, it is not possible to satisfactorily resolve any of these difficulties. Given the uncertain quantitative data, it is necessary to turn to literary evidence which suggests that labourers became increasingly

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[233] Shaw-Taylor (2012).

[234] The census data relates to males aged between 20 and 50. All types of farmers and labourers were used in order to calculate these comparisons.

[235] See footnote 222.

[236] For a discussion of increasing numbers of women and children in industrial and agricultural occupations see Pinchbeck (1981), 44, 53, 183; Honeyman (2000), 72; Humphries (2013), 693. On unemployment Mayhew wrote in the middle of the nineteenth century that 'in the generality of trades the calculation is that one-third of the hands are fully employed, one third partially, and one third unemployed throughout the year.' Mayhew (1980), 14.

[237] Chambers (1972); Whittle (2000); Crafts and Harley (2002); Shepard and Spicksley (2011); Shaw-Taylor (2012).

pauperised in the late eighteenth and early nineteenth century.[238] One of the most detailed 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 in his parish 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.'[239]

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.'[240] He compiled figures of income and expenditure, 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.[241] Howlett concluded that

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[238] For an overall account of this evidence see Taylor ((1969); Inglis (1972); Vincent (1981); Humphries (2010). For a detailed discussion of changing poverty in the first half of the nineteen century see Mayhew (1980), 1-29.
[239] Howlett (1796), 2. For a similar account of the condition of labourers, see Davies (1796), 7.
[240] Howlett (1796), 19.
[241] Ibid, 48.

> ‘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.’[242]

That this was not an isolated instance, was confirmed by Cobbett, who had practised as a farmer, and travelled extensively in the South of England, gave an account of the changes in rural life that had occurred in his lifetime. 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 … The pulling down of 200,000 small houses and making the inhabitants paupers were not an improvement.’[243]

The poverty of rural labourers was illustrated in an autobiographical account published in *Macmillan’s Magazine* in 1861:

> ‘I was born in Wimbush, near Saffron Walden, in Essex. My father was a labouring man, earning nine shillings a week at the best of times; but his wages were reduced to seven

[242] Ibid, 49.
[243] Cobbett (2001), x, xii.

shillings. There was a wonderful large family of us – eleven was born, but we died down to six. I remember one winter, we was very bad off, for we boys could get no employment, and no one in the family was working but father. He only got fourteen pence a day to keep eight of us in firing and everything. It was a hard matter to get enough to eat.'[244]

A more detailed account of the life of agricultural labourers was provided by the *Morning Chronicle Survey* in the middle of the nineteenth century:

'Their labour is at the command of any one who bids for it; and as their employment is precarious, and their wages fluctuating, their lives are spent, in the majority of cases, in constant oscillation between their homes and the workhouse, with no alternative beyond but starvation or the goal … If the reader will accompany me, I shall lead him into a cabin constituting the abode of [the labourer] … There are but two rooms in the house – one below and the other above … the glass in window … [in] the lower one is here and there stuffed with rags, which keep out the air and sunshine … At one corner a small rickety table, while scattered about are three old chairs – one without a back – and a stool or two, which, with … a shelf or two for plates, tea-cups, etc. constitute the whole furniture of the apartment … As you enter, a woman rises … [and] has an infant in her arms, and three other children, two girls and a boy, are rolling along the damp uneven brick floor at her feet. They have nothing on their feet, being clad only down to the knees in similar garments of rag and patchwork. They are filthy … There are two boys who are out with their father at work … the mother takes the pot from the fire, and pours out of it into a large dish of a quantity of potatoes. This,

[244] Humphries (2013), 693, 694.

together with a little bread and some salt butter for the father and the two eldest boys, forms the entire repast.'[245]

Cobbett linked the pauperisation of labourers in the south with the decline of the living-in system and the increasing wealth of farmers:

'[The] farm-house was formerly the scene of plain manners and plentiful living. Oak clothes-chests, oak chest of drawers, and oak tables to eat on, long, strong, and well supplied with joint stools … there were, in all probability, from ten to fifteen men, boys and maids … [but now] a *parlour*! Aye, and a carpet and bell-pull too! ... [and a] mahogany table, and the fine chairs, and the fine glass … And … decanters, the glasses, the "dinner set" of crockery ware … it [is now] *Squire* Charington and the *Miss* Charingtons … transmuted into a species of mock gentle-folks …'[246]

He argued that this polarisation of wealth was associated with the development of capitalism, with bankers and city merchants playing a significant role in the consolidation of estates and farms:

'The small gentry, to about the third rank upwards … are all gone, nearly to a man, and the small farmers with them. The Barings [merchant bankers] alone have, I should think, swallowed up thirty or forty of these small gentry without perceiving it … The Barings are adding field to field and tract to tract in Herefordshire; and as to the Ricardos, they seem to be animated with the same laudable spirit ... [acquiring a number of] estates …'[247]

[245] Razzell and Wainwright (1973), 3-5.
[246] Cobbett (2001), x, xviii, 358.
[247] Ibid, 223.

Cobbett also described the way the gentry and aristocracy employed urban stock brokers to speculate in stocks and shares, directly linking rural and urban capitalism,[248] which is confirmed by Stone's account of the economic activities of the aristocracy in the eighteenth and nineteenth centuries:

> 'By 1750 there were few great landlords who did not have some money – often a great deal – in the public funds of the Bank of England. In this sense they were themselves becoming inextricably linked with the monied interest, and their mental attitudes to banking and stock speculation changed accordingly … Others poured surplus cash into canal companies and turnpike trusts in the eighteenth century, and into railroad companies and dockyards in the nineteenth. From the early seventeenth century onward many were deeply involved in urban development of London.'[249]

Although real wages were higher in the North of England,[250] there is some evidence that the pauperisation of the working class was not confined to the South of England.[251] 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

[248] Ibid, 6, 115.
[249] Stone (1995), 189.
[250] Mitchell and Deane (1971), 346-47.
[251] See for example Thompson (1980) and Razzell and Wainwright (1973).

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.'[252]

Population was a critical part of the pauperisation of labourers and the growth of economic inequality linked to the development of industrial capitalism. Deane and Cole directly associated population growth with economic development in the eighteenth century as follows:

'It was not until economic expansion was well under way, in the 1760s and seventies, when the pressures of a growing population were beginning to stimulate investment in measures designed to economise other resources, such as land (enclosures) and coal (canals), that the great labour-saving inventions of the eighteenth century laid the basis for the revolution in the textile industries and the introduction of the factory system … the quest for technical improvement which gave rise to these revolutionary innovations was itself stimulated by the great upsurge of population which began a generation before.'[253]

[252] Shaw (1980), 42-43.
[253] Deane and Cole (1969), 97

Harley has more recently concluded that 'the emergence of Britain's modern growth depended more on a long history of capitalism than on the industrial revolution.'[254] Paradoxically, Malthus was one of the first to recognise the role of surplus labour in these developments, acknowledging the reality of contemporary capitalist society by concluding that 'farmers and capitalists are growing rich from the real cheapness of labour.'[255]

[254] Harley (2014), 492.
[255] Malthus (1992), 28.

Chapter 7: Conclusion.

The relationship between economic development and population growth has long been a matter of controversy.[256] The debate has not only interested demographers but has attracted the attention of economic historians and other social scientists concerned with explaining economic and social change. Much of this debate has been influenced by the assumptions of classical economics, summarized by Adam Smith in his conclusion that 'the demand for men, like that for any other commodity, necessarily regulates the production of men; quickens it when it goes on too slowly, and stops it when it advances too fast.'[257] His analysis influenced the work of Malthus, Marx, Marshall and others, who all assumed the primacy of economics over demography. Keynes accepted that population influenced levels of aggregate demand – he was a strong admirer of Malthus – but had little or nothing to say about the impact of population growth on the supply side, in particular the supply of labour.[258] Malthus influenced all the above economists, having argued that the main impact of economic factors on population change occurred through the mechanism of nuptiality, with shifts in the standard of living influencing age at first marriage and the propensity to marry.

The evidence presented in this book indicates that it was not fertility but mortality that was the main driver of population growth in England during the seventeenth, eighteenth and early nineteenth centuries, and that mortality levels were not fuelled mainly by poverty but by disease environment. This conclusion affects the theoretical assumptions about the relationship between economic and demographic development. The reduction of infant and child mortality was not brought about mainly by economic

[256] Hodgson (1988); and Simon (1986).
[257] Smith (1976), 98. Smith emphasized the impact of poverty on mortality. Ibid, 97.
[258] Keynes (1961) and Keynes (1973).

factors, but was probably mainly due to autonomous declines in disease incidence and shifts in attitude towards health and the environment, linked to growing levels of literacy. There is a similar process in many developing countries today, with reductions of mortality occurring largely without economic development.[259] Much of this diminished mortality has resulted from WHO and other health programmes of vaccination, re-hydration, the eradication of malaria and a range of other medical and hygienic improvements.

On the central argument of the present book, this process is similar to the situation in England during the eighteenth and nineteenth centuries, where mortality fell not as a result of economic development, but as a consequence of the transformation of the disease environment. The marked reduction in adult mortality preceded the events of the industrial revolution of the eighteenth century, and is consistent with Habakkuk's thesis about the impact of population growth on economic development.

If the above argument is correct, it has general implications for the analysis of demography and its relationship to economics and sociology as disciplines. Most economists have followed Adam Smith and Malthus in assuming that demography is a function of economics, playing at best a very secondary role in economic and social development.[260] Marxist economists and sociologists have attempted to modify this view by stressing the role of surplus labour in the development of capitalism, but they see this surplus resulting mainly from the development of technology and the more efficient exploitation of labour. Although technology has undoubtedly played a major part in creating surplus labour, in the early phase of the industrial revolution it was only a secondary factor.

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[259] See Easterlin (1999); Cutler, Deaton and Lleras-Muney (2006), 110; Easterlin (2012)

[260] See Coontz, (1988) and Simon (1986) for a discussion of this topic.

There are similarities between the historical demography of England and the demographic experience of developing countries, although the scale and rapidity of falling infant and child mortality has been greater in the latter.[261] Developing countries have been able to benefit from some of the medical technologies developed elsewhere, partly explaining their more rapid mortality reduction. However, many of the processes responsible for the falls in mortality were similar in both cases.

Population growth in the developing world has largely been shaped by mortality reductions, most of which occurred as a result of non-economic developments. Preston concluded from a statistical analysis of available evidence that 'factors exogenous to a country's current level of income probably accounted for 75-90 per cent of the growth in life expectancy for the world as a whole between the 1930s and 1960s. Income growth *per se* accounts for only 10-25 per cent.'[262] More recently, Easterlin has concluded that 'all of the modern improvement in life expectancy is due to advances in health technology, not to higher GDP per capita.'[263] Theories of demographic transition have also tended to emphasize the central role of economic forces in population change, but reductions in mortality and increases in population growth have occurred largely without economic development.[264]

Demographic factors have played an independent role in initiating economic change and continue to be a major determinant of the expansion of world capitalism. Multi-national companies move their operations from country to country and exploit labour surpluses for both manufacturing industry and the service sector. These economic developments have been associated with a

[261] However, combined infant and child mortality amongst the general population fell by approximately 50% between 1750-99 and 1800-49 in London, similar to the reductions in many developing countries. See the *United Nations Development Programme* (1992).
[262] Preston (1975).
[263] Easterlin (2012), 304.
[264] Caldwell (1986); Cutler, Deaton and Llera-Muney (2006), 110.

polarisation of wealth, with increases in economic and social inequality.[265] However, much of this inequality is a result of rapid population growth due to improvements in health not linked to economic development. As in England, the growth of population in developing countries has created a surplus of labour, which has been harnessed by multi-national companies for profit maximisation. This surplus of labour has conferred an increasing advantage on those owning capital, a process which is only likely to alter when reductions in fertility stabilize levels of population growth, changing the balance of power between capital and labour, and shaping the long-term future of global capitalism

[265] For a discussion of a similar pattern of inequality in England during the eighteenth and nineteenth centuries see Lindert (2000a), (2000b), (2000c).

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