

AGE STRUCTURE IN THE EARLY EIGHTEENTH CENTURY

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Historical demographers have consistently been faced with using inadequate sources of information for calculating the size of the population of pre-industrial England. For the most part these sources resulted from either the central government's need for revenue, hence the compilation of lists of taxpayers, or the Anglican church's requirement for information about the size of the church-going population and the consequent requests to its incumbents for the total number of communicants in each parish. Since the resultant sources list only a particular section of the whole population of a community, either heads of households who pay tax, or adults receiving Holy Communion, total populations have to be calculated by the application of a multiplier which compensates for that proportion of the population not included in the original source.

For the sixteenth, seventeenth and eighteenth centuries the surviving sources from which population estimates can be calculated are few. Yet for those three centuries, from the subsidy of 1524-5 to the Bishop's Visitation returns of the eighteenth century, the tendency has been for historical demographers to use an unvarying multiplier for all those sources which convey similar information. Hence, the ecclesiastical census of 1563¹ and the Hearth Tax returns from 1660 to 1689² which both contain information on heads of households have been subjected to a multiplier of 4.5 to 5. Similarly, the Chantry Certificates of 1547³ the 1603 Ecclesiastical Census⁴ and the Compton Census of 1676⁵ have had the multiplier of $1\frac{2}{3}$ (1.67) applied to them to convert their adult communicants into population totals.⁶ In the use of this latter multiplier it was implicitly assumed that between the mid-sixteenth century and the late seventeenth century the proportion of children below communicable age remained constant at approximately 40 per cent of the total population.

However, both these multipliers have been subjected to recent revision. At least for the late seventeenth century, that relating to household size has been subjected to detailed analysis in this journal, where for England, excluding London, a Hearth Tax multiplier of 4.3 rather than 4.5 to 5.0 has been cogently argued.⁷ In the case of the established multiplier used to produce proportions of children in the population, more comprehensive revision is demonstrated in Wrigley and Schofield's **The Population History of England 1541-1871**, a publication which has shed much

new and essential light on the demography of pre-industrial England. They indicate that, in the Chantry Certificates, the proportion of children aged under ten was approximately 25 per cent of the total population, whilst in the Compton Census of 1676, the proportion aged under sixteen was 31.2 per cent,⁸ a figure more closely in accordance with the recent experience of the world's developed regions, which in 1965 had an average of some 28 per cent of their populations under fifteen years of age, by comparison with the developing areas which had an average of as much as 41.6 per cent of their populations under that age.⁹

Clearly such evidence indicates that any multiplier which produces a figure of 40 per cent for the proportion of the population aged under fifteen is likely to be unacceptable. A population with such a high proportion of young would imply very high fertility indeed, with, as Wrigley and Schofield show, a gross reproduction rate of about three.¹⁰ In reality, however, it fluctuated between 1.8 and 2.3 in the late seventeenth and early eighteenth centuries.¹¹ Such figures strengthen the established view that in the century between approximately 1650 and 1750 England's population was subjected to much slower rates of natural increase than in either the preceding or following centuries. Indeed, the latest figures suggest that the population actually fell between 1660 and 1690.² The lower gross reproduction rate also signifies that the slow population growth rate was the result mainly of declining fertility and not increasing mortality, thus determining that the population as a whole would contain a smaller proportion of children and a changed age structure.¹³

Unfortunately, evidence of the proportion of children to adults in the population of pre-census England is rarely available, although it can be occasionally ascertained from those listings of inhabitants in which ages are supplied. It is thus difficult to provide empirical evidence to confirm the Wrigley and Schofield hypothesis.

However, among the replies to questions about parish populations asked by the Bishop of Winchester in a Visitation return of 1725¹⁴ is one which provides substantive evidence that the numbers of children in one part of England were well below 40 per cent of the total population at that time. The second question on the Visitation return asked what number of souls there were in that parish, and one incumbent, John Imber, vicar of Micheldever, in response to this question gave a detailed reply not only for Micheldever, but also for the neighbouring parishes of East Stratton, Northington and Popham, all chapelries of Micheldever, and situated contiguously five and a half miles north-east of Winchester.¹⁵ Imber tabulated the population of all four communities separately not only by sex, but also by age, dividing both males and females into three categories: those seventy years old and over, those from fourteen years old to seventy and those under the age of fourteen. No other incumbent produced such detailed information and why Imber did is so far unknown. It is possible that he was aware of and had, been influenced by the earlier writings of John Graunt for, in his **Natural and Political Observations made upon the Bills of Mortality**, Graunt had separately tabulated males and females and also stressed among other useful economic, social and demographic factors, the necessity of knowing the number of people by both sex and age.¹⁶ Gregory King similarly constructed tables of the population grouped by age and sex, and much of

his analysis was published by Charles Davenant.¹⁷ Perhaps in the age of 'Political Arithmetic', Imber had become a statistically minded clergyman, although no evidence of his early training or the influences upon him has been discovered. His clerical career in the Winchester diocese shows him to have become a deacon in October 1715 and that he was ordained as a priest in September 1717. He was inducted into the living at Micheldever in October 1721, resigning in February 1736 to take up an appointment at Abbotstone and Itchen Stoke as well as becoming the Rector of Kings Worthy. His will indicates he died at Abbots Worthy in 1767.

In immaculate handwriting, Imber's Visitation return indicated that the population of Micheldever, alias Southbrook, plus the tithings of Northbrook, Weston and West Stratton, all in Micheldever parish, was 488, and the tithings (as Imber termed them) of East Stratton, Popham and Northington respectively contained 209, 47 and 166 people; in all a population total of 910. It seems unlikely that Imber's detailed analysis of the population in his ministry would leave much room for error. The meticulous nature of his return suggests that he accounted for everyone in the four parishes, and, to test his accuracy, perhaps the best surviving Hearth Tax return for Hampshire, that of Easter 1665,¹⁸ although over half a century earlier, can provide a comparative figure, since the intervening period is considered to be one of little population growth in England. The Hearth Tax return suggests that for Micheldever, entered as Southbrook, Weston, West Stratton and Northbrook, a total of ninety-four houses were occupied. If it is assumed, using Arkell's revised Hearth Tax multiplier, that these contained an average of 4.3 persons, then the community would have had some 400 to 410 people. Similarly, East Stratton with 43 houses would have held some 180 to 190 people, Northington's 34 houses would have contained 140 to 150 people and Popham's 14 about 60, giving a population total of about 800. This figure allows for a small growth of almost 14 per cent in the next 60 years. If the proportions of the combined population of the four parishes living in each community at the two dates are compared, then the similarities are striking. In the Hearth Tax return Micheldever contained nearly 51 per cent of the population while in 1725 it held 53.6 per cent; East Stratton in 1665 accommodated 23.1 per cent and in 1725 23.2 per cent; Northington found room for 18.1 per cent and 18.2 per cent respectively and Popham 7.5 per cent in 1665 and 5.2 per cent in 1725. The differences are so marginal as to suggest that both returns were accurate since it seems unlikely that they would have contained similar margins of error. If it is thus possible to accept Imber's population total as reasonably accurate then his other statistics can be approached with some confidence. Of his total of 910 people, 482 (53 per cent) were males and 428 (47 per cent) were females. Imber tabulated their ages and sex within each of the separate communities as follows: —

Micheldever		Males	%	Females	%	Total	%
70 years and over	—	13	5.0	17	7.5	30	6.1
14 years to 70	—	174	66.9	127	55.7	301	61.7
Under 14	—	73	28.1	84	36.8	157	32.2
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		260	100.0	228	100.0	488	100.0
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		Males	%	Females	%	Total	%
East Stratton							
70 years and over	—	5	4.7	4	3.9	9	4.3
14 years to 70	—	66	61.7	66	64.7	132	63.2
Under 14	—	36	33.6	32	31.4	68	32.5
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		107	100.0	102	100.0	209	100.0
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Popham							
70 years and over	—	2	7.4	1	5.0	3	6.4
14 years to 70	—	19	70.4	15	75.0	34	72.3
Under 14	—	6	22.2	4	20.0	10	21.3
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		27	100.0	20	100.0	47	100.0
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Northington							
70 years and over	—	4	4.5	4	5.1	8	4.8
14 years to 70	—	55	62.5	45	57.7	100	60.2
Under 14	—	29	33.0	29	37.2	58	34.9
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		88	100.0	78	100.0	166	99.9
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In the whole parish of Micheldever							
70 years and over	—	24	5.0	26	6.1	50	5.5
14 years to 70	—	314	65.1	253	59.1	567	62.3
Under 14	—	144	29.9	149	34.8	293	32.2
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		482	100.0	428	100.0	910	100.0
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The table follows Imber's layout but percentages have been added.

Why he chose to divide his population into age groups of seventy and over, fourteen to seventy and those under fourteen is not explained, but it seems a reasonable assumption that he considered those aged fourteen to seventy represented the working population and those above and below those ages as the dependent sector of those too old or too young for work. For those too old, discovering supporting evidence of this assertion is difficult since very few survived to cease work at seventy. However, of the more numerous group of under fourteens it can be pointed out that fourteen was the modal age for the commencement of a seven-year apprenticeship terminating at the then age of majority. In addition the listings of inhabitants in parishes in rural England which provide age information show clearly that most under the age of fifteen were still resident at home.¹⁹ None of these surviving listings are from the early eighteenth century, but Christopher Tancred writing in 1724 assumed that the ordinary age of entry into service as an agricultural labourer was thirteen, and Charles Varley later in the century wrote that a farmer's children were a burden until they were thirteen or fourteen, when they went into service.²⁰ Furthermore, the modal age of entry into farm service as indicated in settlement examinations was thirteen to fourteen.²¹ Thus it seems likely that there was some logic in Imber's choice of age groups.²²

Imber's table indicates that nearly two-thirds of the male population were in the 'working' age group, although a slightly smaller proportion of the females were similarly tabulated. It is in this age group that the surplus of men over women is created and almost entirely in the community of Micheldever. Why this surplus should exist is unclear. Since there would be an excess of unmarried or widowed males it seems unlikely that females would have left the parish in search of husbands, a major reason for female migration. There may of course have been an increase in male employment opportunities in Micheldever although it is not easy to see what could have been its cause in a small rural community, or conversely, there could have been an emigration of women seeking employment, perhaps in domestic service elsewhere. Had Imber provided five or ten year age groupings and occupational information this problem could possibly have been solved.

What is clear, however, is that for at least some English men and women living in the early eighteenth century, just over one in twenty of the years lived by members of the population were enjoyed at ages greater than the Biblical lifespan of three score years and ten, which implies that about twenty per cent survived to reach age seventy.²³ Moreover then, as now, women had a better chance of surviving to a more advanced age. Even so, this section of the dependent sector was relatively small and it is at the opposite end of the age scale where the greater dependent sector lay. Nevertheless, it is clearly not as large as the 40 per cent so often estimated in the past as the proportion of children in pre-industrial society. The total of children under fourteen is 293 and they are almost equally distributed by sex. In three of the communities, the exception being Popham which had numbers too small to be significant, the numbers of children were approximately one-third of the population, and in the communities as a whole the proportion under fourteen was just under one-third at 32.2 per cent, approximately one-fifth lower than the proportion estimated to have been living in pre-industrial communities.

If, however, these communities were experiencing slow or negative population growth rates then, assuming no evidence of mortality increase, it is to be expected that through declining fertility the proportion of children would be reduced and the population become relatively more aged. It has already been indicated that these four Hampshire communities grew relatively slowly in the previous sixty years by comparing the estimated population totals of the Hearth Tax return with the Visitation return. Aggregative analysis of the parish registers for this period helps to confirm that slow population growth occurred. During the years 1711 to 1724, those which would have produced Imber's under fourteen age group, 299 baptisms in total occurred in the four parishes, an average of 21.4 each year. In the same period the number of burials totalled 221 (16.0 per year). The surplus of baptisms over burials for the four parishes was thus only 5.4 for each year, the baptism rate being as low as 23.5 per 1,000. Because of deficiencies in parochial registration it is not possible to make a direct comparison with the registers of one hundred years earlier, for only those of Micheldever and East Stratton survive and the latter are not free from flaws. What they indicate is that from 1611 to 1624 there were 260 baptisms in the two parishes and 158 burials, a surplus of 102, giving an annual figure of surplus baptisms of 7.3. Thus in a century the annual surplus of baptisms over burials would seem to have fallen by about 40 per cent. If, however, the baptisms and burials of Micheldever and East Stratton alone are directly compared with 100 years earlier, the total baptisms of the two communities between 1711 and 1724 numbers 231 and the total burials 166, providing a baptism surplus of 65, an average surplus of four per year and a consequent decline of 45 per cent in the communities' potential growth

over the century. It can also be seen that, despite the population growth which would have occurred between 1611-24 and 1711-24, the total baptisms in the latter period were below the total in the former, further strengthening the evidence for declining fertility.²⁴

Not all English settlements were likely to have possessed an age structure such as that of Imber's parishes, since there were communities which were expanding mainly by attracting migrants. In the early eighteenth century London is the classic example of such growth²⁵ and, since most migrants would have been in the child-bearing age groups the proportion of children in the metropolis as a whole ought undoubtedly to have been higher.²⁶ Some confirmation of such higher urban child populations can be obtained from Southampton at a slightly earlier date than the Visitation return. From the returns made in 1696 of the taxes on births, marriages, burials, bachelors and widowers under the Marriage Duty Act²⁷ it can be shown that a population of the parishes both within and without the city walls, totalling 2,866, children accounted for 1,185, a proportion of 41.3 per cent in the seven parishes concerned, Holy Rood, St Lawrence, St Michael, St John, All Saints Within, All Saints Without and St Mary, the lowest proportion of children was 39.1 per cent at St Lawrence and the highest 44.4 per cent in St John's. Such minor variations suggest that children formed a larger proportion of the population throughout the city. Interestingly, Portswood, located in the contiguous parish of South Stoneham to the north of Southampton, was also covered by the surviving tax assessments. Its population was much smaller, only seventy-three inhabitants, but this small community on the boundary between town and country contained twenty-five children, a percentage of 34.2; much closer to the figures obtained from Imber's Visitation return.

Since the overwhelming majority of the population in the years covered by these differing sources lived in rural England, Imber's figures are more likely to be representative of the nation's experience as a whole. Thus it seems probable that John Imber got his sums right and in so doing provided posterity with the opportunity of a rare glimpse of the proportion of children which lived in early eighteenth-century England. Finally, it should be noted that Wrigley and Schofield's new estimates for age structures suggest that the proportion of the population aged from 0-14 in 1726, when the gross reproduction rate stood at 2.2, was 32.44, a figure remarkably close to that provided by Imber in the previous year.²⁸ Thus one small surviving gem of historical evidence provides empirical confirmation for the new revisionism of **The Population History of England**. Consequently historical demographers can be reasonably confident that 1.5 is a more acceptable multiplier for calculating the total population of communities from a source enumerating adults only in the late seventeenth and early eighteenth centuries.

NOTES

1. B L Harleian 594, 595, 618.
2. PRO. E179.
3. PRO. E301.
4. B L Harleian 280, 594, 595.
5. William Salt Library, Ms Salt 33.
6. For multipliers suggested see M. Drake, **Historical Demography: problems and projects**, Open University Press, 1974 p. 82.

7. T. Arkell, 'Multiplying Factors for Estimating Population Totals from the Hearth Tax', **Local Population Studies**, no. 28, 1982, pp. 51-7.
8. E. A. Wrigley and R. S. Schofield, **The Population History of England 1541-1871: A reconstruction**, 1981, Appendix 5, pp. 563-70.
9. United Nations, **The Determinants and Consequences of Population Trends**, vol. 1, New York, 1973, p.265.
10. Wrigley and Schofield, p. 529 indicate that in England's population history between 1541 and 1871 a gross reproduction rate of 3 is reached at the end of only one quinquennium, in the year 1816 when the proportion of the population under 15 is estimated to be 38.86 per cent. the highest proportion under 15 was reached in 1826 at 39.62 per cent.
11. Wrigley and Schofield, pp. 528-9.
12. Wrigley and Schofield, pp. 179-86 and 207-15.
13. A. J. Coale, 'The Effects of Changes in Mortality and Fertility on Age Composition', **Milbank Memorial Fund Quarterly**, XXXIV, 1956, pp. 79-114; and Wrigley and Schofield, p. 443 for evidence that age structures are chiefly determined by fertility.
14. Hampshire Record Office, B/2/A.
15. *Ibid.* f238.
16. J. Graunt, '**Natural and Political Observations made upon the Bills of Mortality 1662**', pp. 73, 76-82. Reprinted in '**The Earlier Classics**', Gregg, 1973.
17. G. King, **Natural and Political Observations and Conclusions upon the State and Condition of England**, 1696, p. 40. King did not publish this work but Charles Davenant included much of King's analysis in his **Essay upon the Probable Methods of Making a People Gainers in the Ballance of Trade**, 1698, which appears in **The Political and Commercial Works of Charles Davenant**, ed. Sir Charles Whitworth, 5 vols. vol. II, pp. 182-3 reprinted Gregg, 1967.
18. PRO E179/176/565 — includes both those paying the tax and those exempted.
19. See Cambridge Group for the History of Population and Social Structure collection of parish listings, for example, Ardleigh, Essex, 1796, Corfe Castle, Dorset, 1790, and Ealing, Middlesex, 1559.
20. Christopher Tancred, **A scheme for an Act of Parliament for the Better Regulating Servants, and Ascertaining their Wages, and Lessening the Future Growth of the Poor and Vagrants of the Kingdom**, 1724, p. viii; Charles Varley, **The Modern Farmer's Guide, by a Real Farmer**, 1768, p. 393, both quoted in Ann Kussmaul, **Servants in Husbandry in Early Modern England**, 1981, p. 70.
21. Kussmaul, pp. 70-1.
22. Richard Wall, 'The Age at Leaving Home', **Journal of Family History**, 3, 2 1978, pp. 181-202 suggests that movement from home was a gradual process from before 15 until after 30 and no set age for departure can be given. However, the chronologically nearest example to 1725 which is given, Swindon in 1697, confirms that the vast majority of children, 94 per cent were still at home at age 14.
23. This inference depends on the assumption that the population was stationary: i.e. first that the number of births was constant so that each age group in the census represents the survivors from the same number of births, second that mortality was constant, and third that net migration in each age group was zero. If fertility had declined over the decade before the census, as is argued below, the survival chances of the elderly are over-estimated by taking the proportion they comprised in the return. The population surviving to age 70 is calculated from A. J. Coale and P. Demeny, **Regional Model Life Tables and Stable Populations**, model north, level 10; since 5 per cent over age 70 in a stationary population implies an expectation of life at birth of about 38.5 years. I am grateful to Dr R. S. Schofield for his advice on this point.
24. Hampshire Record Office, 7M80 PR1-2; IM48 PR1; 42M73 PR1; 26M69 MR1, parish registers of Micheldever, East Stratton, Popham & Northington respectively. Because of deficiencies in the parish registers it is not possible to calculate accurately baptism surpluses between the Hearth Tax of 1665 and the Visitation return of 1725. Total baptisms from 1666 to 1724 were 798 and total burials equal 743, producing a surplus of 55 baptisms compared with the 70 or so increase in population which the Hearth Tax estimate and the Visitation return suggest. However, although the registers of East Stratton (1666-1724 total baptisms 242, burials 185) and Popham (baptisms 63, burials 68) appear reasonably complete, those of Micheldever and Northington are not. Micheldever baptisms are deficient over a 20 year period from 1670 to 1689 whilst the burials are deficient for only 9 years (1670-8). At Northington there are no entries between 1666 and 1694 and baptisms are deficient for the years 1708-15 whilst burials are missing for 1706 to 1714. If these deficient periods are ignored

then at Micheldever for 1666-1724 baptisms would total 373 instead of 395 and burials 302 instead of 411 and at Northington 98 baptisms would reduce to 86 and burials from 79 to 76. These somewhat unsatisfactory adjusted figures would produce baptism totals for the four parishes of 764 and burial ones of 631, resulting in a consequent baptism surplus of 133. These figures would therefore be consistent with some net emigration between 1666 and 1724.

25. E. A. Wrigley, 'A Simple Model of London's Importance in Changing English Society and Economy 1650-1750', **Past and Present**, 37, 1967, pp. 44-70.
26. R. Wall, 'Regional and Temporal Variations in English Household Structure from 1650' in J. Hobcraft and P. Rees, (eds), **Regional Aspects of British Population Growth**, 1979, pp. 104-6 indicates that c.1700 the proportion of children in London within the walls was abnormally low (26.0 per cent). However, by 1725 it would be more likely that migrants would be settling in the growing areas outside the walls, where indeed Wall indicates some evidence that children were being placed by parents living in the city (p. 106).
27. Southampton Record Office, SC14/2/66-81. This document indicates children in families not defined by age. Hence it could be argued that the proportions of children are too high and are certainly not directly comparable with Imber's return.
28. Wrigley and Schofield, p. 529.