

THE BISHOPS' CENSUS OF 1563: ITS SIGNIFICANCE AND ACCURACY

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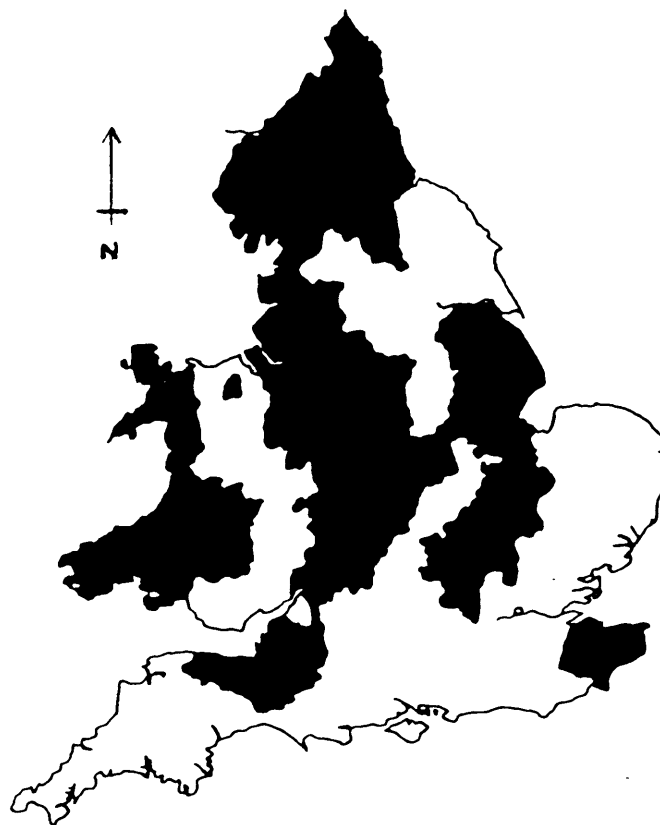
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The earliest general surveys of population levels which have survived for the modern period are the Chantry Certificates of 1548, the Bishops' Census of 1563 and the census of communicants of 1603. All are unsatisfactory from some point of view: the chantry certificates deal only with that small minority of parishes in which a chantry was located and the 1603 returns preserve parochial totals for a mere seven dioceses out of a total of twenty-six; both display too many obviously rounded totals. However the 1563 census provides surviving data for twelve dioceses with estimates of the total number of families in each parish. Despite the omission of large sections of the most populous parts of the kingdom, in East Anglia and central and southern England (see Figure 1),¹ the dioceses for which we have returns contained roughly 45 per cent of the communicant population of England and Wales in 1603² – sufficient to make it an invaluable basis for demographic work in the early modern period.

The survey is especially important in providing estimates of the population of individual parishes at a point when the parish registers had just begun to be kept and when the great demographic expansion of the period was still at an early stage. The census has been unjustly neglected in the past, but its value was brought to the attention of LPS readers in 1983 by Professor Palliser.³ One reason for its previous obscurity has been the fact that the returns lie entombed in manuscript in the British Library or in fragmentary and inaccessible printed versions, but now that the British Academy proposes to print them in their entirety under the editorship of Professor Palliser assisted by the present author, we may assume that local historians will soon have ready access to them. So this seems to be an appropriate moment to consider their accuracy and the techniques required if we are to translate them into estimates of total population.

In 1563 the bishops were asked to return the total number of 'families' contained in each parish and dependent chapelry in their care. The first issue to consider is whether the numbers returned really do represent totals of families, a caution based on contemplation of the 1676 census of communicants, in which it is clear that many incumbents misunderstood what was being asked of them and reported on the numbers of families, inhabitants, adult males or whatever.⁴ There is no evidence that such problems exist in the 1563 returns.⁵ The muddled returns of 1676 are revealed by comparison with other surveys

Figure 1 Dioceses with surviving returns for the 1563 census (dark tone)



dating from between 1603 and 1811, but there is no general survey available against which we can evaluate the 1563 returns. However we do have a Gloucestershire census of communicant numbers from 1551; the 1563 figure is clearly wrong in only one case out of a total of about 270 parishes for which there is a return for both years.⁶ If the diocese of Gloucester is typical, then incumbents were clear about what was being asked of them.

The mean household size in 1563

At this point we must consider the vexed question of the size of the mean household in which these 'families' lived in 1563. This will entail a lengthy digression from the immediate issue, but it is essential to the burden of the remainder of this paper that we establish the proposition that the average household was unusually large in 1563, that is to say larger than the 4.5 which has become the benchmark expectation for the pre-industrial period. The survival of data on household size in the sixteenth century is very limited.⁷ Urban Poole in 1574, when household size was 5.3, a rural Derbyshire parish in 1587 (4.5) and Ealing in 1599 (4.75) are all later than our date, when growth rates, and so probably household size, were lower. Much closer in date, and derived from a much large area, is the survey of twenty-three parishes in Clackclose Hundred in Norfolk in 1557, which yields a figure of 5.05.⁸ Of course Norfolk is not all England and 1557 stands at the start rather than the end of the demographic crisis of 1556-61. But it seems generally agreed that the mid-sixteenth century was a period of very rapid growth, when we might expect households to be relatively large.

All this evidence points to a multiplier for the 1563 figures which is well above the 4.5 which has so often been assumed. We should also recollect that the 1563 survey was taken at a time of pronounced demographic abnormality, since most communities were still recovering from the disturbance associated with the catastrophic mortality of 1557-60.⁹ The combined effects of two of the worst harvest failures of the century and a quite abnormally fatal series of influenza epidemics had distorted the country's demographic structure by depressing births and marriages and raising mortality, especially amongst the elderly. The birth and marriage rates had recovered by 1563, but the number of children in the population must still have been rather less than normal (which would have pulled down household size); more influential on the age structure of the population would have been the recent decimation of the elderly.

The evidence that establishes the elderly as the chief victims of these epidemics is too complex to rehearse here, and must await a future publication. However, it can be briefly summarised as being derived from a combination of comments in contemporary chronicles, analysis of social groups for which some biographical data have been accumulated, such as members of parliament, and the medical fact that both typhus and influenza are much more likely to be fatal to advanced ages. Also an analysis of parish registers shows that most of the victims are not recorded earlier as the parents of baptised children, which indicates that their families were completed before the registers were begun at the end of 1538: thus most of them would have reached the age of about sixty by the late 1550s.

Such an abnormally heavy mortality among old people – and the poor (invariably the chief victims of dearth) – would have temporarily pushed up mean household size by reducing the numbers of these two (overlapping) social groups, which contained a high proportion of the smallest households. Epidemics killing the elderly will tend to create more widows, but our argument here would be that the destruction of older people was so pronounced and widespread that more existing widows were exterminated than new ones were created. The break-up of mature households following the death of their head would tend to enlarge the average household by sending children and servants to be absorbed into existing families. Severe harvest crises also prevented couples from marrying by depriving them of the material security which was generally thought to have been an essential basis for setting up an independent household. This is shown in the plummeting total of marriages in 1555 and 1556, thus enlarging the households of the parents or masters in which these young people were unwillingly detained. Although many of these younger people would have married by the summer of 1563, it is evident from the continuing high level of marriages until the summer of 1564 that this was still a significant factor when the census was made.¹⁰

Thus what little direct evidence there is, joined with theoretical considerations, advances the likelihood of a mean household size well above the conventional figure of 4.5 – perhaps something in the area of 5.1 might be nearer the mark. Some indirect evidence that the households of 1563 were indeed larger than normal must now be considered.

Ideally we would approach this problem by comparing data originating from before and after the crisis, but nothing survives which makes this operation possible; however there are surveys for three counties which may be made to reveal some sort of comparative evidence. Figures for Lincolnshire communicants in 1548, Gloucestershire communicants from 1551 and Kent communicants in 1557 may be compared parish-by-parish with the totals of families in 1563. This allows us to construct triangular arguments in which we can compare the likely balance between three imprecisely known quantities – firstly, the size of population in 1548, 1551 or 1557 when we do not know how to turn communicant totals into full populations; secondly, the population size in 1563 when we are ignorant of how to enlarge family totals into full populations; and thirdly, the actual course of population change between these years, when we have no idea what it could have been in individual counties but do have general estimates for England as a whole produced from register data by Wrigley and Schofield. A glance at Table 1 might suggest that this exercise merely obscures the issue still further by heaping new uncertainties on old, but in fact it does help by making much clearer the area in which the solution is likely to lie, and so the inadmissability of some apparently sensible interpretations.

We have already discussed one of the variables, namely mean household size in 1563, and suggested that it might lie somewhere around 5.1. The second variable is the proportion of communicants in the total population, for if we assume that everyone is counted as a communicant after confirmation, then we must estimate what proportion of the total population was too young to communicate at the date in question. This calculation depends in turn on two factors: the first is the proportion of children (however defined) in the population, which we may assume to be relatively high at this period of rapid growth. Wrigley and Schofield suggest that in the 1670s, when there are more data and growth is negligible, 29-30 per cent of the population was aged less than fifteen, but raise this proportion to 35-37 per cent in the mid-sixteenth century.¹¹

The second factor is age at confirmation, which presents severe problems. In the seventeenth century it was about sixteen, giving a figure of about 35 per cent for those too young to communicate, an estimate supported by a survey of the Archdeaconry of Nottingham in 1603 when a mean of forty-seven parishes indicates that 34 per cent were too young.¹² Evidence from six Kent parishes in 1565 points to a mean of 35 per cent, surprisingly high for this early date.¹³ However, the late medieval church, at least in the fifteenth century, seems to have expected first communion to begin at about the age of seven. During the Reformation the Church began to expect a greater degree of understanding by the child so that by 1560-1 the bishops were delaying confirmation to the age of twelve.¹⁴ It has been argued that in the 1540s, when protestantism had made few inroads into traditional practices, confirmation at an average age of about ten is not unreasonable, giving a non-communicant proportion of 25 per cent.¹⁵

Much recent work on the history of the English Reformation stresses the conservatism of the people and would support this view, yet one might suggest that a higher proportion would be consistent with the Kentish figure. One

Table 1a Changes in population size between 1551 and 1563: Gloucestershire parishes

Percentage non-communicant in 1551	Mean household size 1563					
	4.6	4.8	5.0	5.2	5.4	5.6
Percentage change in total population size						
38	-28.5	-25.4	-22.3	-19.2	-16.1	-13.0
36	-26.2	-23.0	-19.8	-16.6	-13.4	-10.2
34	-23.9	-20.6	-17.3	-14.0	-10.7	- 7.4
32	-21.6	-18.2	-14.8	-11.4	- 8.0	- 4.6
30	-19.3	-15.8	-12.3	- 8.8	- 5.3	- 1.8
28	-17.0	-13.4	- 9.8	- 6.2	- 2.6	+ 1.0
26	-14.7	-11.0	- 7.3	- 3.6	+ 0.1	+ 3.8
24	-12.4	- 8.6	- 4.8	- 1.0	+ 2.8	+ 6.6

Notes: Based on data from 72 parishes with apparently accurate returns from both years, containing 8326 communicants in 1551 and 2086 families in 1563.

Source: A. Percival, 'Gloucestershire village population', *Local Population Studies*, 8, 1972, with additional material from Bodleian Library Ms Rawl c. 790 (for 1563).

Table 1b Changes in population size between 1548 and 1563: Lincolnshire parishes

Percentage non-communicant in 1548	Mean household size 1563						
	4.4	4.6	4.8	5.0	5.2	5.4	5.6
Percentage change in total population size							
38	-20.2	-16.6	-13.0	- 9.3	- 5.7	- 2.1	+ 0.5
36	-17.6	-13.9	-10.2	- 6.4	- 2.7	+ 1.1	+ 4.8
34	-15.1	-11.2	- 7.3	- 3.5	+ 0.4	+ 4.2	+ 8.1
32	-12.5	- 8.5	- 4.5	- 0.6	+ 3.4	+ 7.4	+11.4
30	- 9.9	- 5.8	- 1.7	+ 2.4	+ 6.5	+10.6	+14.6
28	- 7.3	- 3.1	+ 1.1	+ 5.3	+ 9.5	+13.7	+17.9
26	- 4.8	+ 0.4	+ 3.9	+ 8.2	+12.5	+16.9	+21.2
24	- 2.2	+ 2.2	+ 6.7	+11.1	+15.6	+20.0	+24.5

Notes: Based on data from 24 parishes with apparently accurate returns in both years, containing 9037 communicants in 1548 and 2643 families in 1563.

Source: 1548- Chantry Returns, Lincolnshire, PRO E 301; 1563- BL Harleian 618.

might also make the argument that, in the absence of any evidence on this point in the half century before the Reformation began, it is possible that age at confirmation had been rising long before Luther, for the protestant attitudes most easily adopted were those which were already part-established on non-doctrinal grounds, such as the declining enthusiasm for monasticism. In any case the uncertainty and dislocation which unavoidably afflicted ecclesiastical administration in the middle years of the sixteenth century would have discouraged the efficient administration of confirmation and allowed some young people to attain a good age before being confirmed. This argument might point to 30 per cent as a sensible mean for the non-communicants in the years around 1550, supported by the high proportion of children then in the

Table 1c Changes in population size between 1557 and 1563: Kent parishes

Percentage non-communicant in 1557		Mean household size 1563				
	4.6	4.8	5.0	5.2	5.4	5.6
<hr/>						
Percentage change in total population size						
36	-22.2	-18.8	-15.5	-12.1	- 8.7	- 5.3
34	-19.8	-16.3	-12.8	- 9.3	- 5.8	- 2.4
32	-17.4	-13.8	-10.2	- 6.6	- 3.0	+ 0.6
30	-14.9	-11.2	- 7.5	- 3.8	- 0.1	+ 3.6
28	-12.5	- 8.7	- 4.9	- 1.1	+ 2.7	+ 6.5
26	-10.1	- 6.2	- 2.3	+ 1.7	+ 5.6	+ 9.5
24	- 7.6	- 3.6	+ 0.4	+ 4.4	+ 8.4	+12.4

Notes: Based on 28 parishes with reasonably accurate data in both years, containing 1870 communicants in 1557 and 494 households in 1563. These parishes tend to be rather small.

Source: **Harpsfield's Visitation** and BL Harleian 594.

total population; thus it is highly unlikely that the level could have been much under 25 per cent or over 35 per cent, and a figure around 30 per cent has much to be said for it.

The third of these variables is the likely course of population change between 1548, 1551, or 1557 and our census in 1563. It would seem that Wrigley and Schofield have already solved this one, at least on a national level, with a population growing fast from 2.898 million in 1548 to 3.159 million by 1556 which was then cut back by the crisis of 1557-60, so that total population fell by 195,000 by 1560.¹⁶ However the basic data used by Wrigley and Schofield, although generally satisfactory in a long term sense as far as one can judge, are inadequate to the task of reliably measuring the extent of mortality in a crisis with wide regional variations at this early date. This is because the sample of registers is too small (only about 83 of the full sample of 404 begin as early as 1557 – and there are about 10,000 ancient parishes in England) and because these 83 are not representative of the regions. There are twenty-six registers from the over-represented south-eastern counties of Essex, Kent and Suffolk, which appear to have been relatively lightly affected by the crisis, while some of the hard-hit regions are found amongst the twenty-three counties which contribute two, one or no registers to the sample; in these twenty-three counties (over half the country) thirteen registers represent about 4,320 ancient parishes. If such a small and geographically biased sample happened to provide a valid overview of the crisis it could only do so by pure good luck.

The author is at present engaged on a detailed study of this mortality crisis, but at present only provisional conclusions can be given: it seems likely that the analysis of both probate and register sources will point to an excess mortality in England of about 15 per cent of the adult population in the period 1556-61. This would suggest that Wrigley and Schofield's figures underestimate the impact of the crisis, and revised totals reflecting its full impact can be calculated.¹⁷ If we apply these conclusions to the three counties involved in our calculations we might suggest that our Lincolnshire sample might have grown by about 2 per

cent between 1548 and 1563 (since its mortality experience was about average), Gloucestershire's inhabitants fell by about 4 per cent in 1551-63 because it was hit hard by the crisis, while Kent might have seen its population reduced by about 5 per cent from 1557 onwards as its mortality experience seems to have been relatively light.

We are now in a position to see how the interaction of these three quantities can be of help. In all three areas a relatively high household size is unavoidable if our other data have been soundly interpreted. In the case of Gloucestershire and Kent it would appear from the tables that a household size of less than 5.0 is rather unlikely, since this would demand a population loss much greater than the 4-5 per cent indicated above, or a proportion of non-communicants in the 1550s even smaller than the suggested minimum of 25 per cent. Indeed mean household size in 1563 looks to lie around 5.4 in Gloucestershire and 5.1 in Kent if we assume a likely level of non-communicants of about 30 per cent. But the reader may peruse the alternative interpretations and settle upon his or her own view.

In our Lincolnshire parishes a likely level of 2 per cent growth would suggest a smaller household size, possibly 4.9, unless more than 30 per cent of the population were not confirmed in 1548. Any extrapolation from these three counties to a national estimate must depend on whether we construct a mean from the three or choose one or more as typical.

The Kentish material used above provides additional insights, for here the 1557 survey supplies for some parishes estimates of both communicants and households; in many cases both of the totals are too approximate to be used, but for twenty-three parishes both figures look reasonably accurate.¹⁸ This provides us with rare contemporary evidence of the number of communicants in the average household. The resultant mean value of 3.3 communicants per household is itself a useful discovery, since most data on this matter come from the later seventeenth century, when a value of 2.8 is given by a stable population with fewer children, later age at communion and smaller households. This figure of 2.8 has sometimes been applied to the chantry certificate communicant totals to give what may be a misleading view of population levels in 1548. If we assume that this new Kentish figure of 3.3 communicants per household is reliable (and we have nothing with which to test it) Table 2 shows its implications, for within the parameters set out above for those too young to communicate of 25-35 per cent, mean household size in 1557 must lie between 4.4 and 5.1, with the likeliest level at perhaps 4.6-4.8. The evidence quoted above of 35 per cent level on non-communicants in Kent in 1557 might further encourage us to opt for the upper levels of possible household size. Here then is another pointer towards a high household size even before the disasters which began in 1557.

One further point of interest: if we apply the figure of 3.3 communicants per household to our three county surveys of communicant numbers before the crisis, the totals of households so produced can be compared with the numbers given directly in the 1563 survey. When this is done, we find that the number

Table 2 Communicant numbers and household size: implications of a level of 3.3 communicants per household

Mean household size	Non-communicant percentage
4.3	23.3
4.4	25.0
4.5	26.7
4.6	28.3
4.7	29.8
4.8	31.3
4.9	32.7
5.0	34.0
5.1	35.3
5.2	36.5

Source: Harpsfield's Visitation and BL Harleian 594.

of households seems to have been reduced by a greater extent than the total of population. In the case of Gloucestershire, between 1551 and 1563, households may have fallen by 15 per cent and population by about 4 per cent; in Lincolnshire population could have grown by about 2 per cent, while household totals fell by 3.5 per cent over the years 1548-1563; the Kentish survey would indicate a situation very like Gloucestershire's, with households down by about 12 per cent and population by about 5 per cent. If this disparity is genuine, then it would by 1563 have forced up the size of the average household by about the degree we have suggested, that is from 4.6-4.8 before the crisis to 5.1 or more in 1563, thus confirming our earlier predictions that the effect of an epidemic mortality concentrated on the poor and elderly would lead to a reduction in the number of small households and so a temporary increase in mean household size.

The reliability of the Bishops' Census

Those researchers who have used the Bishops' Census in the recent past have sometimes cast doubts on its reliability. It is unfortunate that one article has referred to some Kentish figures which are evidently very approximate, perhaps suggesting that they are typical, when we shall show below that Canterbury is much less reliable than any of the other dioceses.¹⁹ When Julian Cornwall printed the Buckinghamshire returns he observed that the population levels that he had derived from them seemed too low by comparison with the densities already suggested by the 1520s subsidies; he speculated that there existed some unexplained factor which made the 1563 returns underestimate population totals.²⁰ But the problem was created by the use of an estimate of the size of the average household well below the level we have already suggested as most likely.

This vague suggestion of unreliability was powerfully reinforced by an incisive consideration of the population of the town of Cambridge by N. Goose in 1985.²¹ He points out that an estimate of the total population of Cambridge in

Table 3 Cambridge parishes 1560-69

	1 Families 1563	2 Annual Baptisms	3 Total Population 4.5	4 Baptism Rate	5 Revised 1563	6 Total x 5.1	7 Revised Baptisms Rate
Little St Mary	33	6	149	40	33	168	36
Great St Mary	80	17	360	47	89	454	37
St Benedict	40	7	180	39	39	199	35
St Edward	34	10	153	65	34	173	58
St Edward (revised)					54	275	36

Notes: Columns 1-4 derived from Goose, **Local Population Studies**, 34, pp.46-7; Column 5 = column 1 revised for rounding; column 6 = column 5 x 5.1.

1563 based on the census total of families multiplied by the conventional factor of 4.5 to represent the average household gives a total of 2,400.²² This figure conflicts with a contemporary estimate of 4,990 in 1587: a doubled population in only 24 years seems very unlikely, even if we know nothing of the means by which the later estimate was arrived at. He then takes four Cambridge parishes, calculates their crude birth rates from the parish register baptismal totals and the 1563 census and compares them with what is known of the general run of likely birth rates at this time, which he suggests lies between 28 and 40 per thousand.²³ These four parishes lie at, or beyond the upper limit, and so Goose concludes that their populations must really have been greater than the 1563 census suggests, thus confirming the impression of mysterious under-counting which his work on the population of the whole town had already suggested. This seems to be a serious indictment of the reliability of the 1563 census, all the more damning for its inexplicability. Later workers have followed this lead by assuming that the 1563 census is generally likely to underestimate total populations.²⁴

But a careful re-examination of the case reveals that these doubts are misplaced. Goose's case rests on an assumption of a mean household size of 4.5 persons which we have suggested above is too small. If we raise it to 5.1, all estimates of total population will be increased by 13 per cent, which in turn brings the birth rate in two Cambridge parishes within the 'zone of credibility' below 40 per thousand (Table 3). We can assume, on the basis of the data given below, that the forty families in St Benedict's parish may well have been rounded up from thirty-nine. The eighty families recorded for Great St Mary is one of the few numerals in this diocese which is conspicuously unreliable; if we assume that the incumbent was thinking in scores and meant 'closer to eighty than sixty or one hundred' then anywhere between seventy and ninety is possible. For the purposes of this argument we will take the actual figure to have been eighty-nine, which brings the birth rate down from an unlikely 47 to a quite feasible 37 per thousand. Some modest confidence in the soundness of these estimates is encouraged by the fact that the modified birth rates in all three parishes and Wrigley and Schofield's national rate of 36.7 for this decade are all now found in the range of 35-37 per thousand.²⁵

It is a general phenomenon that if we use the 1563 returns multiplied by 5.1 as the basis for estimating total populations, many parishes appear to have very high birth rates at this time (they would be even higher if we preferred 4.5 for the size of the average household). For instance, many Warwickshire and Worcestershire rural parishes produced levels of around 40 per thousand, so there is nothing untoward about the Cambridge figures.²⁶ Wrigley and Schofield suggest rates for the 1560s – 39.1 in 1565 for instance – which are not exceeded in their series during the next two centuries.²⁷ These very high birth rates are in part to be explained by the natural surge in births which follows most demographic crises, and partly by the fact that heavy mortality amongst old people and a shortage of births during the crisis years 1557-1560 distorted the age structure of the population during the succeeding decade, so that the section of the population represented by fertile married people was relatively larger than at other times, thus raising the crude birth rate to a misleading level. If we could calculate the age-specific fertility rate for this decade, it would probably show a rather more modest peak.

Thus we can explain away Goose's anxieties for three of his Cambridge parishes quite satisfactorily, but the figure for the fourth parish, St Edward, remains intractable. The return of thirty-four families must be raised to about fifty-four to give a birth rate in line with the rest of the town, so that we must conclude that either the baptismal records are incomplete or the incumbent gave in a wrong total of families or his original total has been subject to scribal error. We have to hope that such mistakes are uncommon, but the wisdom of checking individual returns against parish registers is obvious. Goose's point about the very rapid expansion of the town's population between 1563 and 1587 looks less serious when we allow the use of a multiplier of 5.1 to increase the 1563 total to approach 2,800; however this still postulates growth of 80 per cent by 1587. Perhaps a town of this sort was capable of such a spurt at this date, and when expressed as a mean net annual inflow of 92 people, the expansion looks less formidable. Thus there is no good reason to suppose that the 1563 returns under-recorded population levels in any way.

Any consideration of the accuracy of the census must tackle the question of the administrative procedures which gave rise to the returns as now preserved. The responses of the bishops to the original enquiry from the Privy Council consist for most dioceses of an initial letter giving details of parochial structure and other material which was already available 'on file', accompanied by an undertaking to survey the diocese to provide the totals of families demanded.²⁸ Typically the Bishop of London wrote 'it hathe not beyn acustomed in anie ecclesiasticall visitacyon to enquire of the number of householdes in everye parishe, and therefore we have no recorde thereof, but will wyth convenient spede cause enquirie to be made and hereafter certyfye, but that requireth some tyme'.²⁹ Some dioceses, such as Carlisle and Lichfield, responded with full details so quickly that they must have either already compiled totals of families as a matter of routine or had prior warning of the arrival of the Council's demand; in Canterbury we know such enquiries were already part of the regular visitation routine. The original letter from the Privy Council, the text of which has been lost along with the Council's register for this period, must have stressed the need for a rapid reply, for most of the bishops felt obliged to

apologize rather abjectly for even a brief delay. What information they did have they returned within a matter of days of the receipt of the Council letter dated July 9th, while the time taken to collect the demographic information and send it off to London varied between two weeks for Bangor, five weeks for Ely, two months for Worcester and Chester and the tardiest, St Davids, which took eleven weeks.³⁰

The replies never specify the precise method used to collect the information, which could have either involved the summoning of incumbents to a central point (the basic visitation routine) or the sending round of officials to each parish. The Bishop of Chichester states that he must 'sende to every curat of the diocese', Llandaff refers to 'conferens hadd with the parsons, vicars curates and some honest men of every paryshe or hamlete' while St Davids needed 'painfull inquisacons and diligent consultacon with the parson, vicare or curate of every parishe', but others refer merely to the need to consult lesser officials.³¹ It would be helpful to know whether incumbents were given any notice during which they could survey their flock with some accuracy, or whether an official appeared in the parish unannounced, stressing the urgency of his enquiry, and noting down a reply from incumbent or local representative which amounted to the first number which came into his head. Local variations in these practices might help to explain large differences in accuracy between dioceses, and in some cases between the archdeaconries into which the returns are always divided. Reliance on existing figures seems to have produced the sloppiest standards, as shown by Canterbury: here incumbents were required to submit communicant totals on several occasions before and after 1563, a practice which may have encouraged cynicism towards the whole bureaucratic operation which is not apparent elsewhere.³²

The accuracy of the Bishops' Census

We may now move on to the central issue of the accuracy of the surviving returns. Some sources of inaccuracy defy analysis on the basis of internal evidence. Scribal error, unless it gives a figure which is manifestly absurd, will always be very difficult to detect, as will mistakes by incumbents in the process of counting.³³ We can also do nothing with an incumbent who invented a likely number and avoided an obviously rounded figure. We are then left with the inaccuracies which result from clergy returning figures which are approximated rather than absolutely accurate, an issue which must be the commonest source of doubt over the reliability of any census at this date. Fortunately this factor is susceptible to analysis. We may compare the actual distributions of numbers with a theoretically uniform one in order to reveal disparities between the two.³⁴ The most obvious approach here is to look at the distribution of the likely rounded figures – not just the multiples of ten which would reveal rounding in the twentieth century, but also the multiples of twelve and twenty which were likely to have come naturally to sixteenth century minds.

The figures in Table 4 reveal firstly that the degree of inaccuracy indicated by this approach varies greatly from diocese to diocese, with the best ones showing levels which are so low that we can ignore approximation as an issue, while others, such as the diocese of Canterbury, have over half their parochial

Table 4 **Distribution of numerals subject to rounding**

	1	2		3		4		5
	n	expected	actual	expected	actual	expected	actual	suspect
Bangor D	139	6.2	14	7.8	35	9.4	20	32.8%
Bath/Wells D	79	3.5	6	4.4	14	5.3	8	18.7%
Bedford S	95	4.3	7	5.3	9	6.4	15	15.8%
Buckingham S	153	6.9	7	8.6	14	10.3	15	6.7%
Canterbury D	179	8.0	40	10.1	92	12.1	15	65.3%
Carlisle D	62	2.8	7	3.5	21	4.2	6	37.9%
Chester D	278	12.5	42	15.6	78	18.7	16	32.1%
Covent/Lich D	300	13.5	15	16.9	32	20.2	26	7.5%
Durham D	94	4.2	11	5.3	16	6.3	6	18.3%
Ely D	123	5.5	12	6.9	11	8.3	10	10.0%
Gloucester S	181	8.1	14	10.2	28	12.2	22	18.5%
Hunts/Hert S	137	6.2	16	7.7	11	9.2	13	12.3%
Leicester S	169	7.6	13	9.5	17	11.4	17	10.9%
Lincoln S	419	18.8	29	23.5	36	28.2	51	10.9%
St Davids D	302	13.6	35	17.0	73	20.4	24	26.8%
Warwick S	126	5.7	7	7.1	11	8.5	9	4.5%
Worcester S	109	4.9	6	6.1	6	7.3	15	8.0%

Notes: Covers the numerals between 17 and 105 inclusive, columns 2-4 listing the expected number of instances if numerals were to be distributed evenly, followed by the actual number of instances, and column 5 compares the total number of excessive numerals with the total sample.

D = diocese, S = shire. Coventry and Lichfield excludes Warwickshire parishes. Huntingdonshire includes Hertfordshire parishes in Lincoln diocese.

Source: Bishops' Census returns, 1563.

totals indicated as suspect. Since multiples of twenty are much the commonest destination of the rounding process it is obvious that incumbents found the score the most natural unit with which to work; multiples of ten, the automatic refuge for those grounded in the modern decimal system, are only about half as popular as the score, except in the dioceses of Ely and Lincoln. The dozen is a concept which beguiles in some regions, chiefly in the north and west, but is insignificant in others, where rounding is otherwise common, such as the dioceses of Chester and Durham. Some deep-seated cultural factor may be at work here, but it is not at all obvious what it is: it cannot be simply related to the counting practices applied to flocks and herds in the pastoral zone.³⁵ Multiples of five or six, reflecting thinking in halves of tens or dozens, do not seem to have been used. The only other number which seems unexpectedly frequent is sixteen, perhaps because it is divisible by two, four and eight and is the natural mid-point between the very common ten and twenty.³⁶ Odd numbers seem never to be used for expressing approximations, with the possible exception of the number fifteen in the diocese of St Davids: Welsh speakers would find fifteen a much more attractive mid-point between ten and twenty than would those thinking in English.³⁷

These observations do not apply uniformly over the full range of numbers involved, for the dozen is used to approximate at lower levels, and becomes much more rarely used above forty-eight. But beyond this particular level the

Table 5 Shortfall of odd numbers

Range	Worcs.		Bucks.		Hunts.		Leics.		Beds.	
	n	%	n	%	n	%	n	%	n	%
10-29	72	- 8.3	103	24.3	56	- 7.1	116	0	50	8.0
30-49	35	- 8.6	60	-10.0	60	16.7	69	33.3	36	27.8
50-69	17	17.6	15	6.7	23	56.5	17	29.4	23	13.0
70-99	16	25.0	11	45.5	14	28.6	12	83.3	8	50.0
10-99	140	-1.4	189	13.2	153	15.0	214	17.8	117	17.9
Range	Bath/Wells		Lincs.		Warwks.		Cov. & Lic.		Ely	
	n	%	n	%	n	%	n	%	n	%
10-29	47	6.4	270	19.3	85	27.1	123	15.4	48	8.3
30-49	22	54.5	141	27.7	52	23.1	103	37.9	52	30.8
50-69	18	11.1	78	12.8	17	-5.9	59	5.4	21	14.3
70-99	7	14.3	30	40.0	10	20.0	44	27.3	13	69.2
10-99	94	19.1	519	21.8	164	22.0	329	22.2	134	23.9
Range	St Davids		Gloucs.		Durham		Chester		Carlisle	
	n	%	n	%	n	%	n	%	n	%
10-29	157	8.3	144	36.1	21	42.9	67	55.2	12	66.7
30-49	98	28.6	60	23.3	40	55.0	81	63.0	21	23.8
50-69	76	68.4	30	26.7	18	33.3	71	38.0	14	85.7
70-99	31	6.5	16	12.5	17	-5.9	56	64.3	15	100.0
10-99	362	28.7	250	30.4	96	37.5	275	54.9	62	64.5
Range	Bangor		Canterbury							
	n	%	n	%						
10-29	80	50.0	111	67.6						
30-49	39	84.6	83	88.0						
50-69	28	78.6	35	71.4						
70-99	19	89.5	15	86.7						
10-99	166	67.5	244	76.2						

Notes: n = Total of numerals in the range specified. % = Percentage of odd numerals which is missing, assuming that exactly half of an ideal distribution should be odd. Minus quantities indicate an excess of odd numbers.

use of the score, and to some extent all multiples of ten, becomes more common, so that some dioceses (such as Ely) which look very accurate at the lower levels deteriorate seriously above the level of fifty, though since few parishes in the diocese are this large, the overall effect is small.³⁸ Conversely, some, like Durham, actually improve at these higher levels. When one looks at the small minority of parishes with over a hundred families in them, rounding seems if anything less common again, as if incumbents felt more obliged to count conscientiously at this point, though there is no improvement in some of the most inaccurate dioceses, such as Canterbury.

A more subtle form of rounding is analysed in Table 5. This examines the balance between odd and even numbers, which ought to be about equal in a regular distribution. Yet it will be evident in nearly all areas that we have too many even numbers. We might expect this, since all the multiples of ten, twelve and twenty which we have already analysed are even, but rounding to even numbers from odd ones in some dioceses goes far beyond the use of those numerals which are the obvious targets of approximation. Sometimes this preference for even numbers is present throughout the range of numerals, though there does seem to be a general likelihood that numbers between forty and eighty are most affected, so that the much commoner smaller parishes are damaged least by it.

An illustration of this problem is presented in Table 6, based on figures from nine dioceses which display this trend most clearly. In the numerical range forty to fifty-four we would already expect numbers to be rounded to the obvious destinations of forty, forty-eight and fifty, but one would not have expected that the odd numerals forty-three and forty-five would be so much less common than their even neighbours forty-two, forty-four and forty-six. This phenomenon may be due to the operation of two trends. One is the tendency to think in pairs, analagous to our previous discovery of thinking by dozens or scores; so these incumbents may have counted their families, as we might do today, in the pattern two - four - six - eight etc. so that when they reached an odd total they were liable to carry on to the next even number. Alternatively, whatever the means by which they reached their totals, they found an odd number so much less satisfactory than an even one that they consciously or unconsciously selected its following even neighbour for submission to the archdeacon. This is all rather curious and unexpected: it may well be that there are basic forces involved in our perception of number which make even numerals more attractive or 'natural' than their odd partners – after all the terms themselves suggest that to be 'even' is preferable to being 'odd'. The traditional counting rhyme which begins 'One for sorrow, two for joy ...' sees even numbers as good omens and odd ones as less promising. It may also be significant that in the aftermath of the 1556-61 crisis incumbents, aware of the recent fall in the number of households in their care, felt that a slightly inflated figure would be less misleading.

The level of inaccuracy revealed by comparing the frequency of neighbouring odd and even numbers may seem worryingly high,³⁹ but it may be set in

Table 6 Distribution of odd and even numbers. Frequency of numerals in the span 40-52

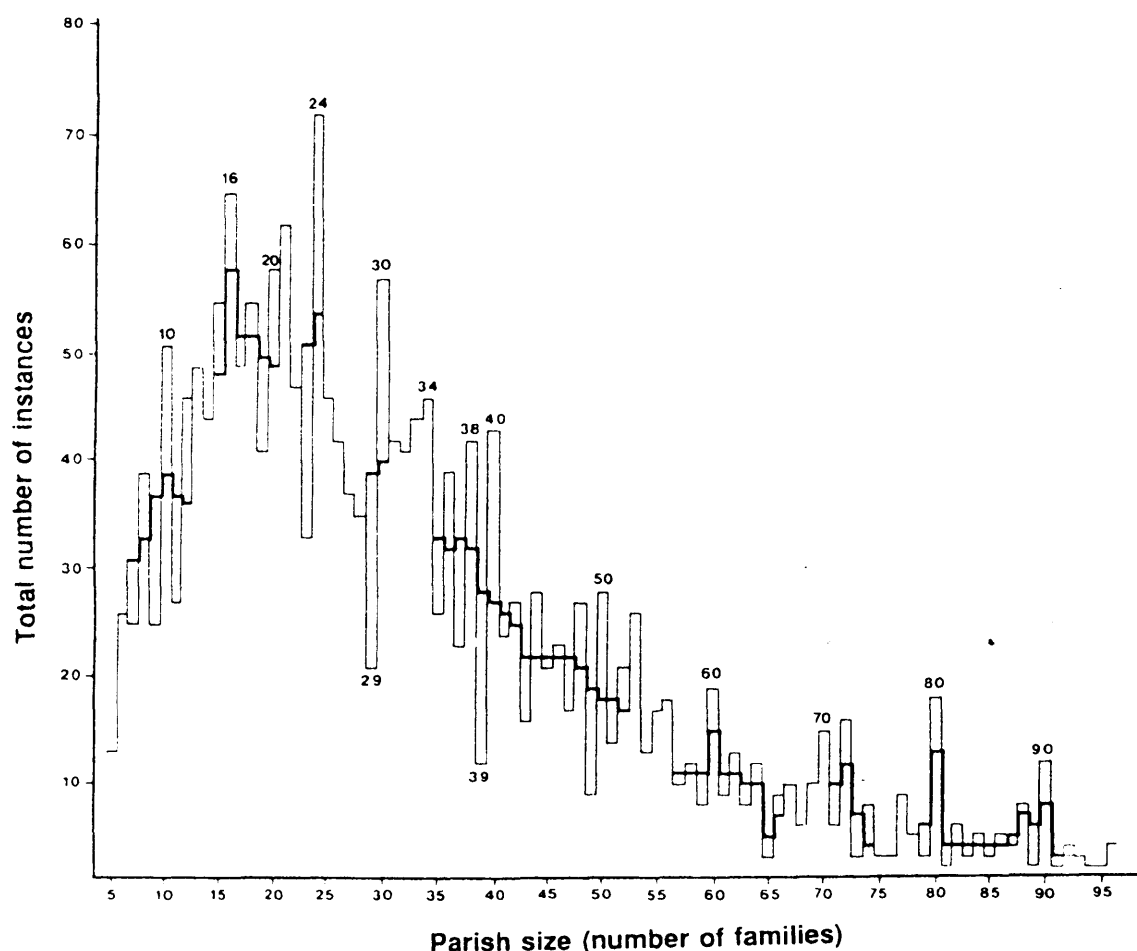
	40	41	42	43	44	45	46	47	48	49	50	51	52
Unreliable areas*	96	20	35	10	29	16	28	8	34	9	49	15	34
Theoretical***	28	27	26	25	24	23	22	21	20	19	18	17	16
Distortion	+68	-7	+9	-15	+5	-7	+6	-13	+14	-10	+31	-2	+18
Reliable areas**	35	18	13	12	16	15	14	18	15	9	19	9	7
Theoretical***	19	18	17	16	15	15	14	13	12	11	10	9	9
Distortion	+16	0	-4	-4	+1	0	0	+5	+3	-2	+9	0	-2

Notes: * = Unreliable areas at this level: Bangor, Bath, Canterbury, Chester, Coventry & Lichfield, St Davids, Lincolnshire, Leicestershire, Warwickshire.
 ** = Reliable areas at this level: Durham, Ely, Carlisle, Bedfordshire, Huntingdonshire, Gloucestershire, Buckinghamshire, Worcestershire.
 *** = Suggested frequency without distortions. These figures are inserted to clarify the extent of distortion, and are mere approximations.

proportion by examining a graphic profile of the distribution of numbers (Figure 2).⁴⁰ This can only be based on amalgamated totals from a number of dioceses with a similar standard of accuracy because no single diocese produces enough numbers at any given level to reduce to an acceptable level the distortion produced by random variation in a small sample. In general terms the graph shows the profile of the distribution of parish sizes, with the commonest size at about twenty families and the frequency building up rapidly below this level and dropping away much more slowly through a long 'tail' as we come to the less common larger parishes. This is just what one would expect on statistical grounds since there is a very limited range of numerals available below twenty but a much greater one, running into the several hundreds, above that level.

Ideally one would be able to construct a theoretical smooth curve against which the graph of actual numbers could be set, the difference between the two representing the inaccuracies of the census returns. But an examination of the graph shows that it contains irregularities which are caused by factors other than inaccuracy. The most conspicuous deformity occurs in the early thirties, when the graph veers upwards again, but there are others further to the right too. Since odd numbers are involved, and we have suggested that there is no reason to suppose that the frequency of these numerals is inflated, we must accept that these abnormalities were present in the original distribution. The bulge around the numeral thirty-three can be coped with because it is so pronounced, but the lesser distortions at higher values are very difficult to disentangle from the results of the rounding process around such numbers as eighty and ninety. The factor which accounts for the absence of a smooth distribution is that the size of parishes and their chapelries depends on a variety of forces which are difficult to analyse closely. These factors will vary from region to region, so that when several dioceses are amalgamated the result must be that a whole series of different distribution curves are superimposed upon each other, each with a slightly different peak and profile: it is surprising in fact that the underlying pattern is as even as it seems to be.

Figure 2 Frequency distribution of parochial totals



Notes: The thicker bold line indicates the effect of equalizing over-estimated even numbers and their immediately preceding under-estimated odd partners.

At first sight, the graph appears to undermine confidence in the accuracy of the numbers in the census, for the extent of the variations between adjacent numerals is alarming. If however we modify the original profile by moving the excess on each even numeral to supply the deficiency in the immediately preceding odd one, a much smoother and more credible pattern emerges. This simple corrective removes most of the irregularities below the level of the fifties, indeed the excessive fondness for the multiples of ten, twelve and twenty can be removed almost completely in this way. Thus the high levels of inaccuracy in some areas indicated in Table 4 can be seen to represent on the whole a minimal degree of distortion, often to the extent of adding only a figure of one to the original total. Unfortunately this is no longer true for popular numerals over fifty, for the excess which has accumulated on numbers such as sixty, seventy, seventy-two and eighty has been siphoned from a wider range of depleted numerals than the adjoining lower neighbour. Table 7 lists some of the more obviously suspect numerals in each diocese. It should be emphasised that these are only the more obvious of such cases, and that the local researcher should consider preparing an analysis of the distribution of all numerals occurring in the archdeaconry or diocese in which he or she is interested in order to assess the reliability of any specific parochial estimate.

Table 7 Numerals showing excessive frequency

Diocese	
Bangor	12, 14, 16, 20, 24, 28, 30, 32, 36, 40, 50, 52, 54, 56, 60, 70, 80, 140.
Bath & Wells	14, 20, 30, 36, 40, 60, 140.
Canterbury	10, 12, 14, 15, 16, 20, 24, 30, 34, 40, 50, 60, 70, 80, 100, then multiples of 10.
Carlisle	20, 24, 30, 40, 60, 70, 80, 100, then multiples of 20.
Chester	12, 16, 20, 24, 26, 30, 32, 40, 46, 50, 60, 70, 80, 90, 100, 110, 120, 130, then multiples of 20.
Coventry & Lichfield*	10, 17, 20, 30, 36, 40, 42, 44, 46, 60, 72, 74, 80, 140, 160.
Durham	18, 20, 30, 32, 40, 60, 80, 120, 150, 190.
Ely	30, 34, 36, 46, 50, 80.
Gloucester	10, 12, 14, 18, 20, 24, 28, 30, 38, 40, 50, 60, 70.
Lincoln	
Bedfordshire	10, 28, 30, 34, 66.
Buckinghamshire	8, 16, 18, 20, 24, 28, 60, 70.
Huntingdonshire	30, 34, 48, 50, 70.
Leicestershire	24, 38, 40, 44, 46, 48, 50, 55, 70, 80.
Lincolnshire	8, 10, 12, 16, 18, 24, 36, 38, 40, 44, 48, 50, 52, 56, 60, 70, 80, 90, 140.
St Davids	10, 15, 16, 20, 30, 36, 40, 42, 46, 48, 50, 52, 60, 80, 90, 100, 140, then multiples of 20.
Worcester	
Worcestershire	72.
Warwickshire*	10, 12, 16, 30, 34, 40.

Notes: * = Northern Warwickshire removed from Lichfield and added to Warwickshire parishes in Worcester diocese.

Since there is no exact mathematical method for determining the over-use of a numeral in samples of this nature, this list may either include or exclude marginal cases: it should not be regarded as definitive.

In summary, we might assume that all odd numbers are very likely to be correct, but that any even number which occurs more frequently than the distribution curve of the area concerned would support, is suspect, though not necessarily condemned since the clustering inherent in relatively small samples will always produce anomalies. The range of greatest unreliability lies between about fifty and one hundred, in which multiples of twenty, and to a lesser extent ten, are highly suspect. In the more accurately assessed dioceses, many of the suspect even numbers, even some of those over fifty, have probably only been rounded up by one numeral, which is too small a distortion to bother with. However in the more inaccurate dioceses, such as Canterbury, Carlisle, Bangor, Chester and St Davids, where the extent of approximation is more general, multiples of ten, twenty and sometimes twelve should be regarded as mere approximations, indications at worst of little more than an order of magnitude.

We should end on a cautionary note. The Bishops' Census is very much of a curate's egg – good in parts – and it will never be possible to be quite sure where those parts are, despite the efforts of this paper to point the way. At best some of the returns are suspect to a slight degree in even the most accurate dioceses, and in the worst dioceses the most untrustworthy numerals deserve little credence without supporting evidence derived from other sources. And where the number of families in a particular parish does seem reliable, we shall

never have a completely accurate means of translating this figure into a total population, for even if it does turn out to be generally true that a multiplier of about 5.1 will bring us nearest to the truth, we should always remember that mean household size can vary quite widely over short periods of time, and between different communities in the same region, and between regions. Caution should always be exercised in readily assuming that 5.1 represents the 'right' answer in every instance.

NOTES

1. The map conceals a thin coverage of the diocese of Bath and Wells and the absence of data from the Archdeaconry of Stow in north-east Lincolnshire. Parishes exempt from episcopal jurisdiction ('peculiars') rarely present returns. Throughout this article the terms 'family' and 'household' have been assumed to be interchangeable.
2. British Library, MS Harley 280, ff 157r-172v.
3. D.M. Palliser and L.J. Jones, 'The diocesan population returns for 1563 and 1603', **Local Population Studies**, 30, 1983, pp.55-8.
4. A. Whiteman (ed), **The Compton Census of 1676: a critical edition**, 1986, pp.xxv-xxxi, xxxiii-xxxvi.
5. However the Bishop of Bath and Wells did misunderstand what was required to the extent that he only reported on the 16 per cent of his parishes that contained a chapelry.
6. Aylburton has 60 communicants in 1551 but 50 families in 1563. A. Percival, 'Gloucestershire village population', **Local Population Studies**, 8, 1972. A few of the larger numbers in St Davids diocese look as if they might be intended to represent communicants or inhabitants rather than families, but confirmation of this point must await meticulous local study.
7. Most of our evidence on household size comes from after 1600, when a figure of 4.5 is not unreasonable. It is frequently assumed that the whole pre-industrial period was much more uniform in this respect than is likely to have been the case.
8. D.M. Palliser, **The age of Elizabeth: England under the later Tudors, 1547-1603**, 1st ed., 1983, pp.38. We have ignored the very small households revealed in Coventry in the 1520s because of the abnormal circumstances – famine, slump and epidemic – under which these censuses were taken. (C. Phythian-Adams, **Desolation of a city**, 1979, pp.238-48).
9. Published information on the crisis is summarised in E.A. Wrigley and R.S. Schofield, **The Population history of England, 1541-1871: a reconstruction**, 1981, pp.333, 664-6; Palliser, **Age of Elizabeth**, pp.35-6, 53; P. Slack, 'Mortality crises and epidemic disease in England, 1485-1610', in C. Webster (ed), **Health, medicine and mortality in the sixteenth century**, 1979.
10. Wrigley and Schofield, **Population history**, pp.496, 519.
11. Wrigley and Schofield, **Population history**, p.528.
12. Whiteman, **Compton Census**, p.lxvii.
13. M. Zell, 'Families and households in Staplehurst 1563-4', **Local Population Studies**, 33, 1984, p.57.
14. Wrigley and Schofield, **Population history**, pp.564-6.
15. Wrigley and Schofield, **Population history**, p.565.
16. Wrigley and Schofield, **Population history**, p.531.
17. If total population in 1556 was 3,158,664 (Wrigley and Schofield, **Population history**, p.576) then the total aged 25 and over was 1,438,771 (p.528, assuming this group comprised 45.55 per cent of the total). If 15 per cent of this group was killed off in excess of normal by 1561, this loss amounts to 215,800. When added to a loss of unborn children of 82,000 (p.496, assuming that an annual total of 112,000 would have been born in normal conditions) this gives a total loss of about 298,000 by 1561. Allowing for natural growth of 90,000 between 1561 and mid 1563, this would give a 1563 total of 2,950,664 – a reduction of 97,500 on the Wrigley and Schofield figure. The implication of this (with Wrigley and Schofield figures in parentheses) is that the total population of England grew between 1548 and 1563 by 1.8 per cent (5.2 per cent), fell 1551-63 by 2 per cent (1.2 per cent growth) and 1556-63 fell by 6.6 per cent (3.5 per cent). Estimates of the severity of the 1556-61 crisis in particular counties are based on a comparative analysis of probate sources.
18. **Archdeacon Harpsfield's Visitation 1557**, Catholic Record Society, xlv, 1950-1. In a further 46 parishes in which one or both estimates are obviously rounded, but do not involve hundreds, the mean is 3.46.
19. M. Zell, 'Families and households', pp.54-8.

20. J. Cornwall, 'An Elizabethan census', **Records of Buckinghamshire**, 16, 1953-60, pp.258-73. A multiplier of 4.75 is used to convert families to population, but one of 5.4-5.5 would be needed to match his estimate of what the total population in 1563 should have been.
21. N. Goose, 'The Ecclesiastical Returns of 1563: a cautionary note', **Local Population Studies**, 34, 1985, pp.46-7.
22. No mention of the university is made in the census, but one presumes that its members are excluded because beyond the jurisdiction of the parish clergy.
23. Cambridge birth rates are calculated from the 1563 returns multiplied by 4.5, and the average annual level of baptisms in the parish registers over the decade 1560-9.
24. E.g. **Victoria County History of Gloucestershire**, 4, 1988, p.73; P. Clark, K. Gaskin and A. Wilson (eds), **Population estimates of English small towns 1550-1851**, 1989, p.v. The suggestion made here that plague distorted the returns is probably unfounded. The disease seems in 1563 to be confined to the London area (unrepresented in the returns) and a few south coast towns. It had as yet penetrated only slightly into the countryside, the location of most of the parishes involved in the census, and could not have affected the pattern of households as early as July and August when most of the dioceses reported.
25. Wrigley and Schofield, **Population history**, pp.496, 531. The national birth rate has been recalculated on the same basis as that used to arrive at the Cambridge figures.
26. These counties are amongst the most reliable of the 1563 returns and preserve an unusually large number of early registers.
27. Wrigley and Schofield, **Population history**, pp.531-4.
28. BL Harley 594, 595.
29. BL Harley 595 f.77.
30. The resultant separation of the demographic material from the remainder of the bishops' replies in the Council's records may help to explain the subsequent loss of so much of it. At no stage was any explanation given of the purpose of the population survey.
31. BL Harley 594 f.114r, 595 ff.10v, 79.
32. **Archdeacon Harpsfield's Visitation 1557**, xlv, 1950-1; Zell, 'Families and households', pp.54-8.
33. An obvious scribal error is the return for Holy Trinity Coventry of '49' households. Something in the region of 749 would be about right. Most errors seem to lead to under-estimation, probably through the omission of one or more letters in the roman numerals which were generally used.
34. In the tables and discussion below, it has been assumed that a perfectly accurate distribution would be uniformly spread over the full range of numerals, but in fact there are many more numbers returned in the lower part of the range, especially in the twenties. This factor varies between dioceses. It should not affect the validity of the exercise too seriously.
35. M.L. Faull, 'Celtic numerals for counting sheep', **Local Historian**, 15, 1982, pp.21-3.
36. The whole question of numeracy in this period is discussed in K. Thomas, 'Numeracy in early modern England', **Transactions of the Royal Historical Society**, 37, 1987, pp.103-32. The score was widely used as a basis for reporting communicant numbers in 1676 (Whiteman, **Compton Census**, pp.lii-liv, lviii-lix). The educational standards of the clergy were as a whole low in this period, but how this affected their numeracy when arithmetic played a very minor role in education is an open question: a non-graduate cleric who regularly took sheep to market might have been better at counting his parishioners than a Doctor of Divinity.
37. In the Welsh language the numbers from sixteen to nineteen are expressed as 'fifteen and one' etc.
38. Average diocesan standards of accuracy will be influenced by the proportion of larger parishes which they contain. Since accuracy is generally at its lowest between fifty and one hundred, a diocese such as Chester with 43.5 per cent of its returns between 56 and 105 will be likely to appear less accurate than the county of Warwick with only 15.9 per cent of its parishes falling within this range.
39. Tables 4 and 5 are compiled in fundamentally different ways and cannot be validly compared with each other.
40. Figure 2 is based on data from the more accurate areas, omitting those eight dioceses which appear in Table 4 with a level of suspect returns of more than 17 per cent.